

Installing DCC-SOUND in an Athearn RTR SW1500 (or SW1000) with Scale Sound Systems Drop-in Speaker Systems

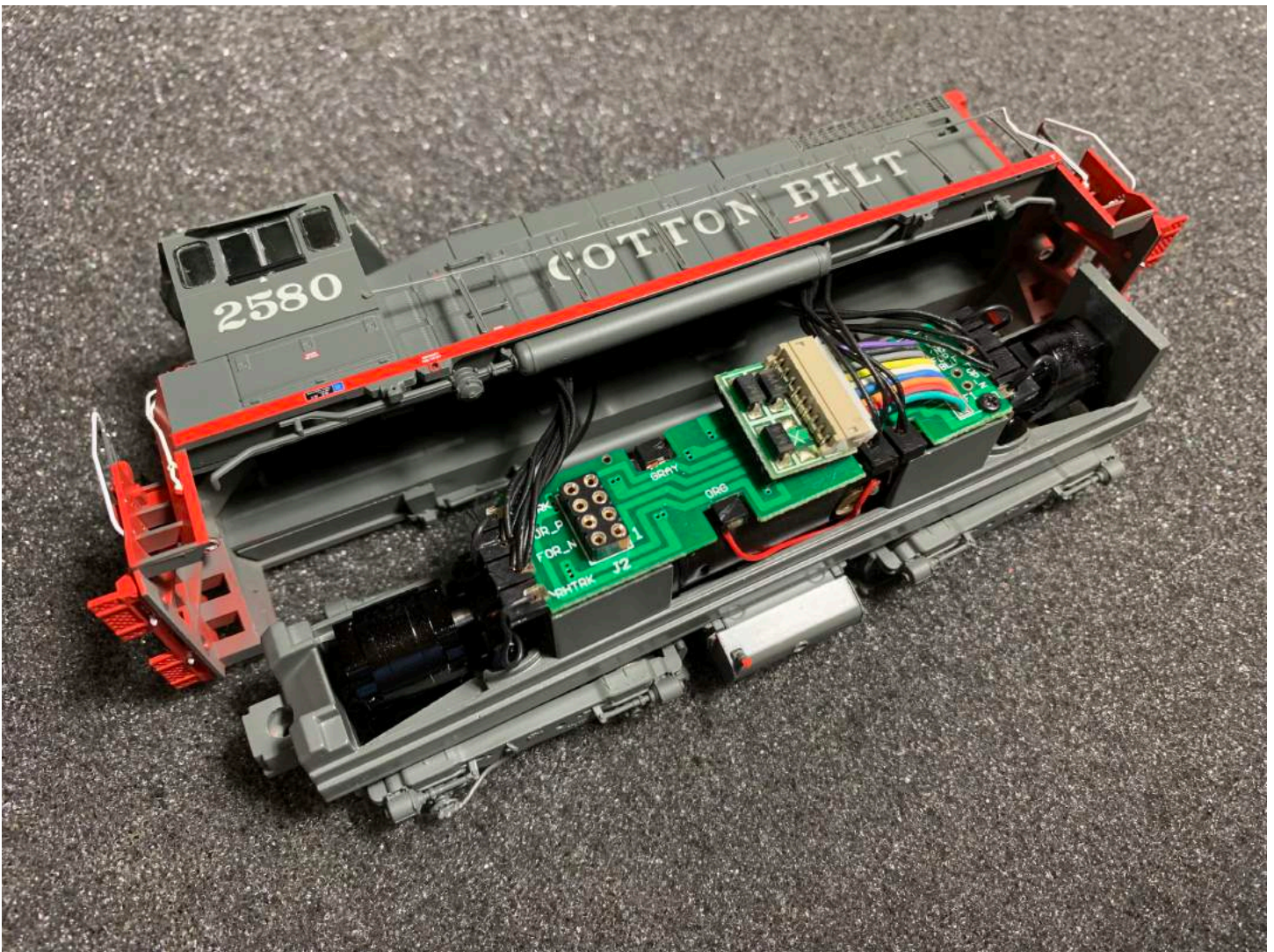
by jt burke

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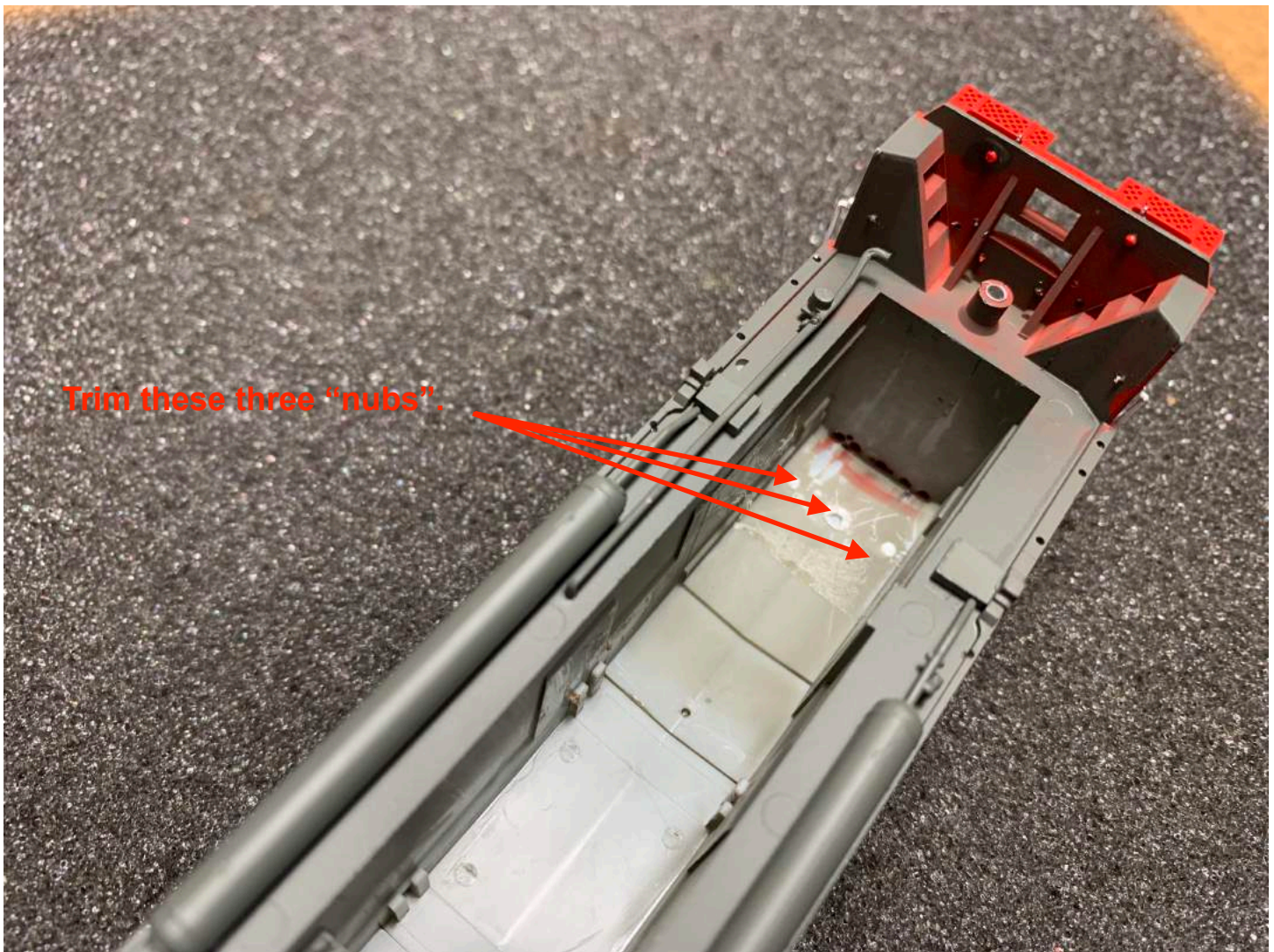
This guide covers performing a DCC-Sound installation in an HO Athearn RTR SW1500. It is a fully featured sound & lighting installation, with a 21-pin decoder, TCS KeepAlive®, speaker and Southern Pacific lighting package. The parts used in this installation are:

- Nix Trainz Decoder Buddy Motherboard
- TCS WOW121-Diesel Decoder (your choice of 21-pin sound decoder will work!)
- TCS KA2 KeepAlive®
- Scale Sound Systems AHRR-1500-087 Speaker
- Scale Sound Systems LED Conversion Kit

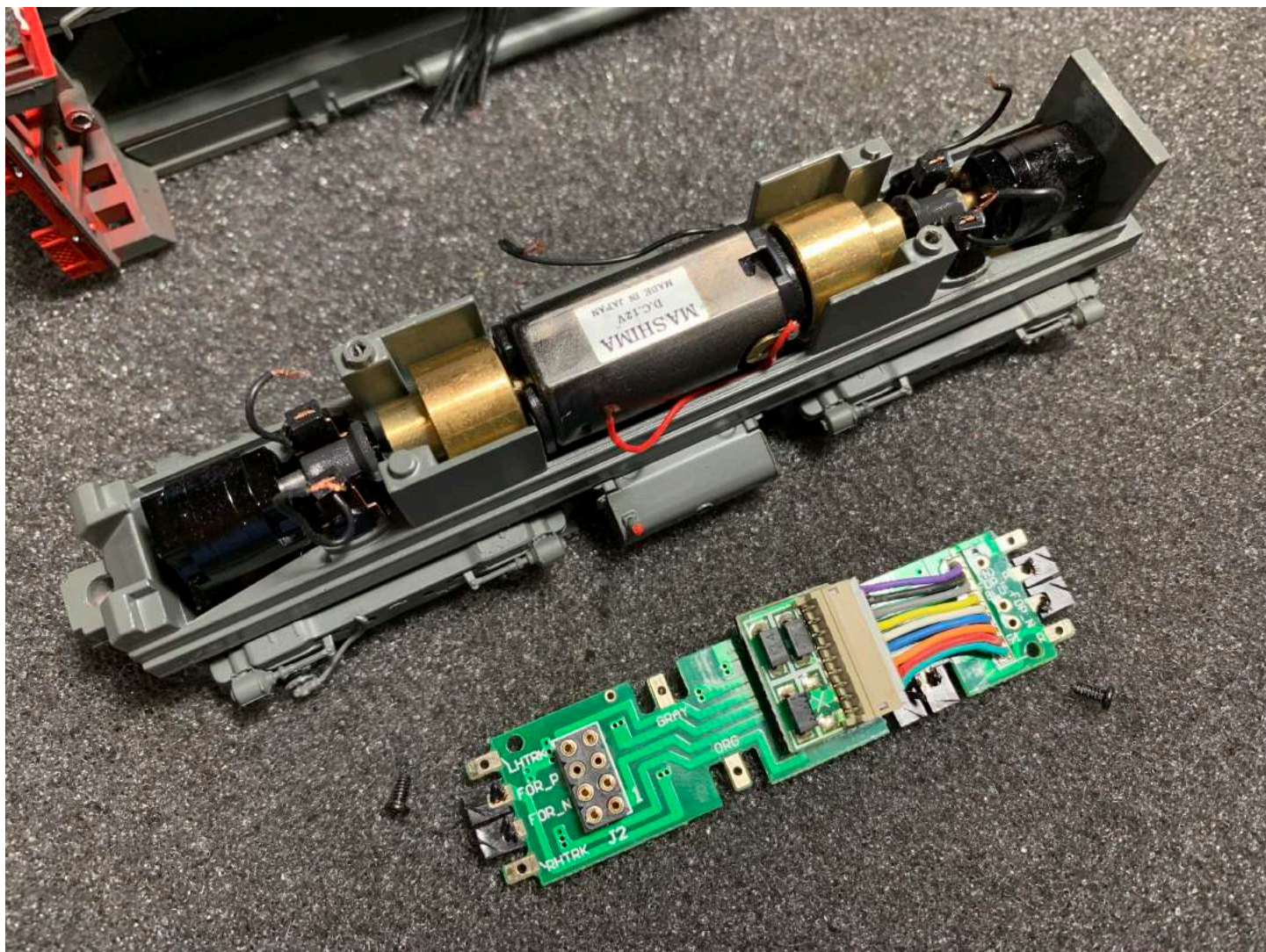
Lets begin with a look at the stock locomotive as it comes out of the box.



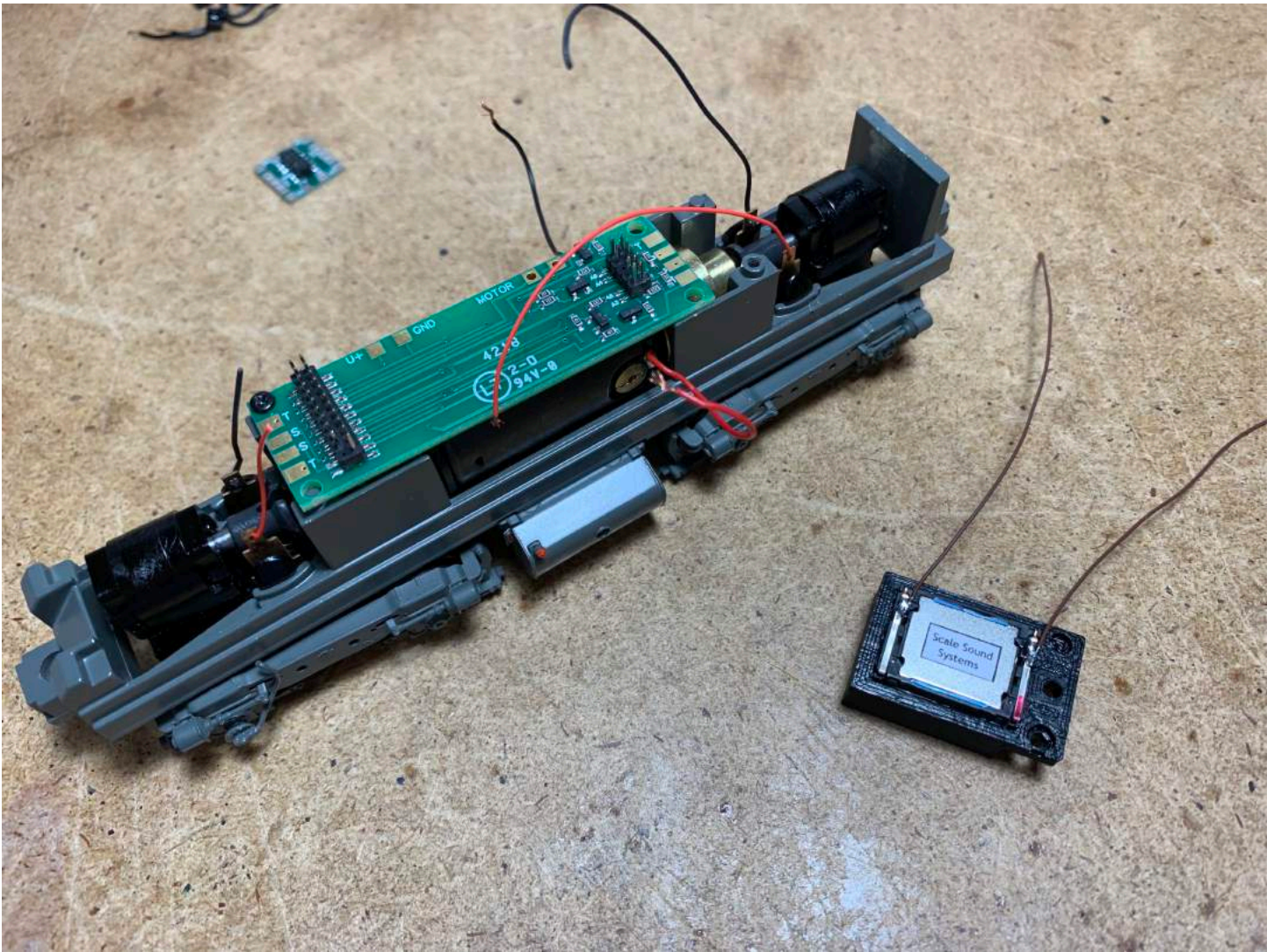
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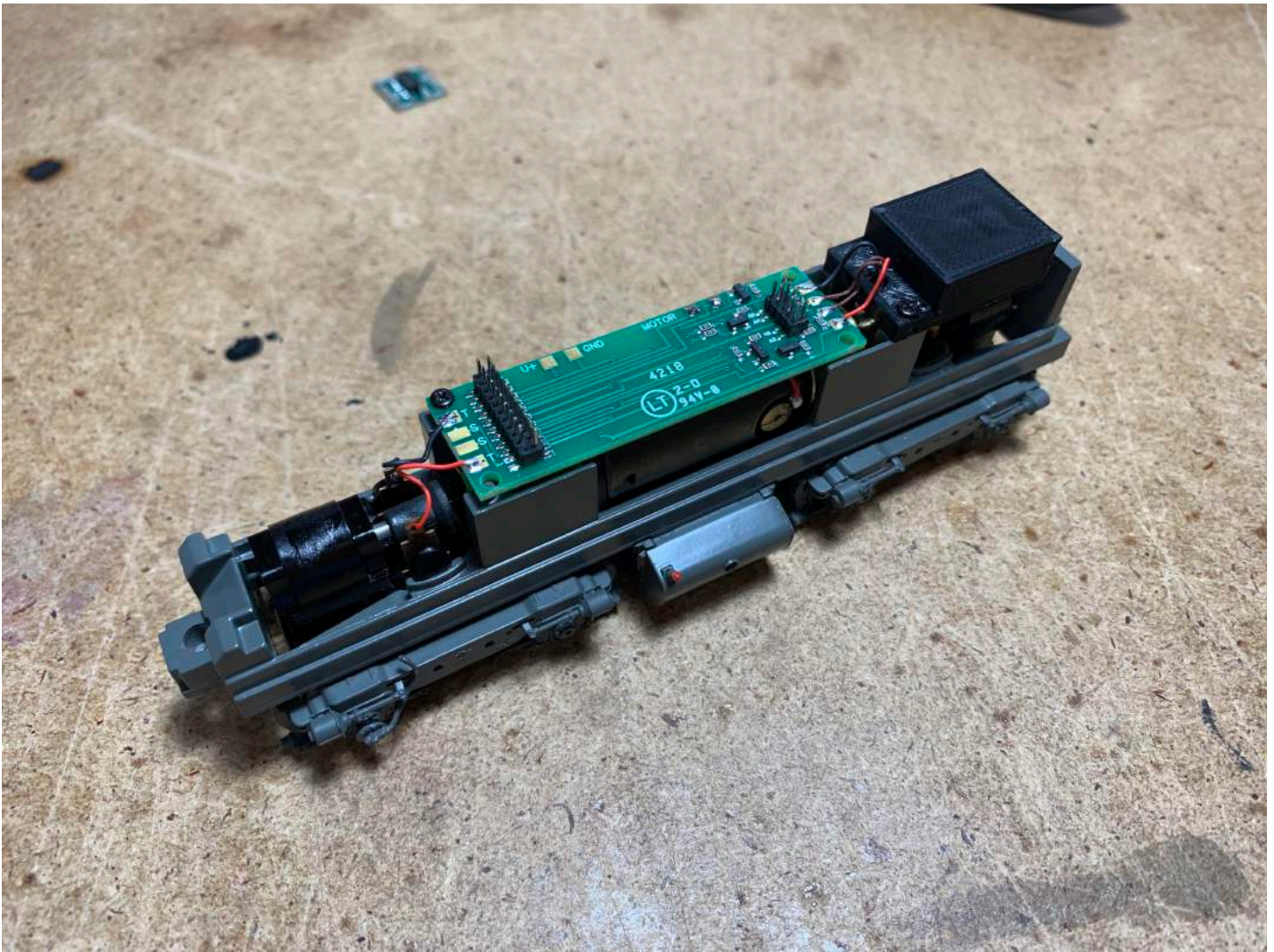
The only required modification to the locomotive is to nip off the three plastic "nubs" inside the shell behind the headlights. These serve no purpose that I am aware of and they will interfere with the speaker enclosure.



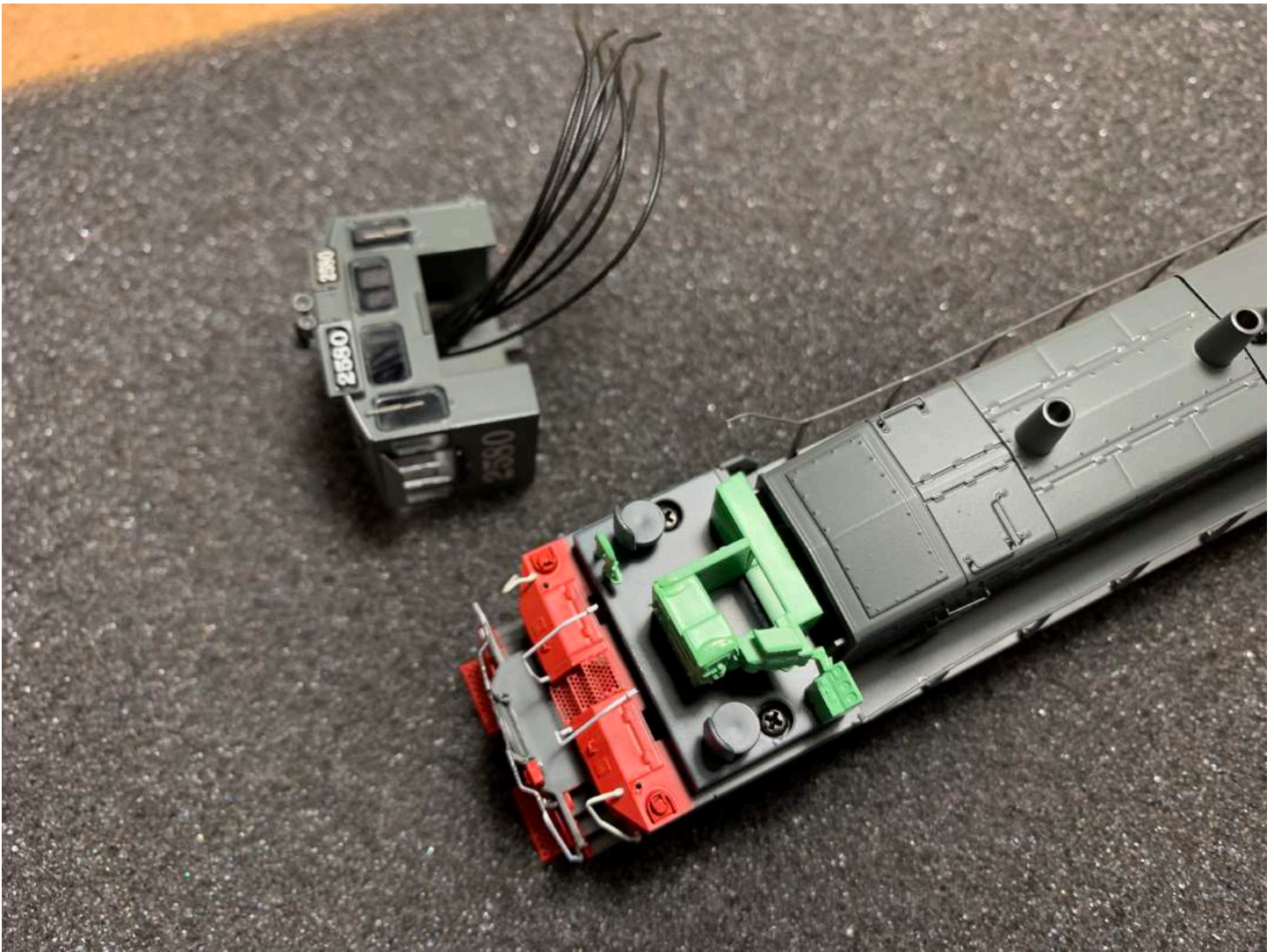
Remove the factory PCB wire clips and truck/motor wires, then remove the two screws and save them. Discard the PCB.



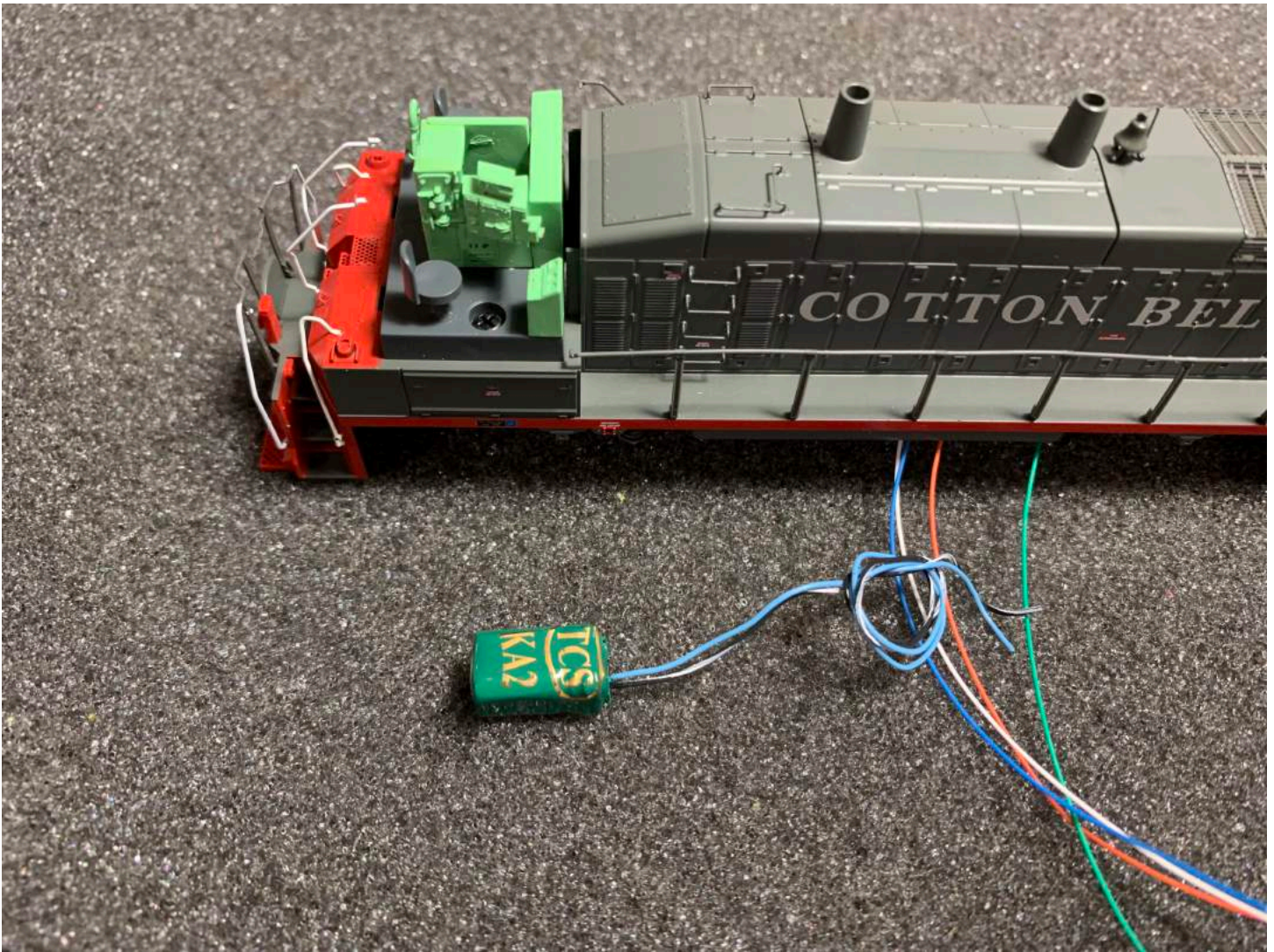
Use one of the PCB screws to secure the Decoder Buddy Motherboard using the rear, left screw-hole. The Scale Sound Systems speaker will mount using the other screw and hole. Classy! Be sure to solder wires to the speaker before installing it.



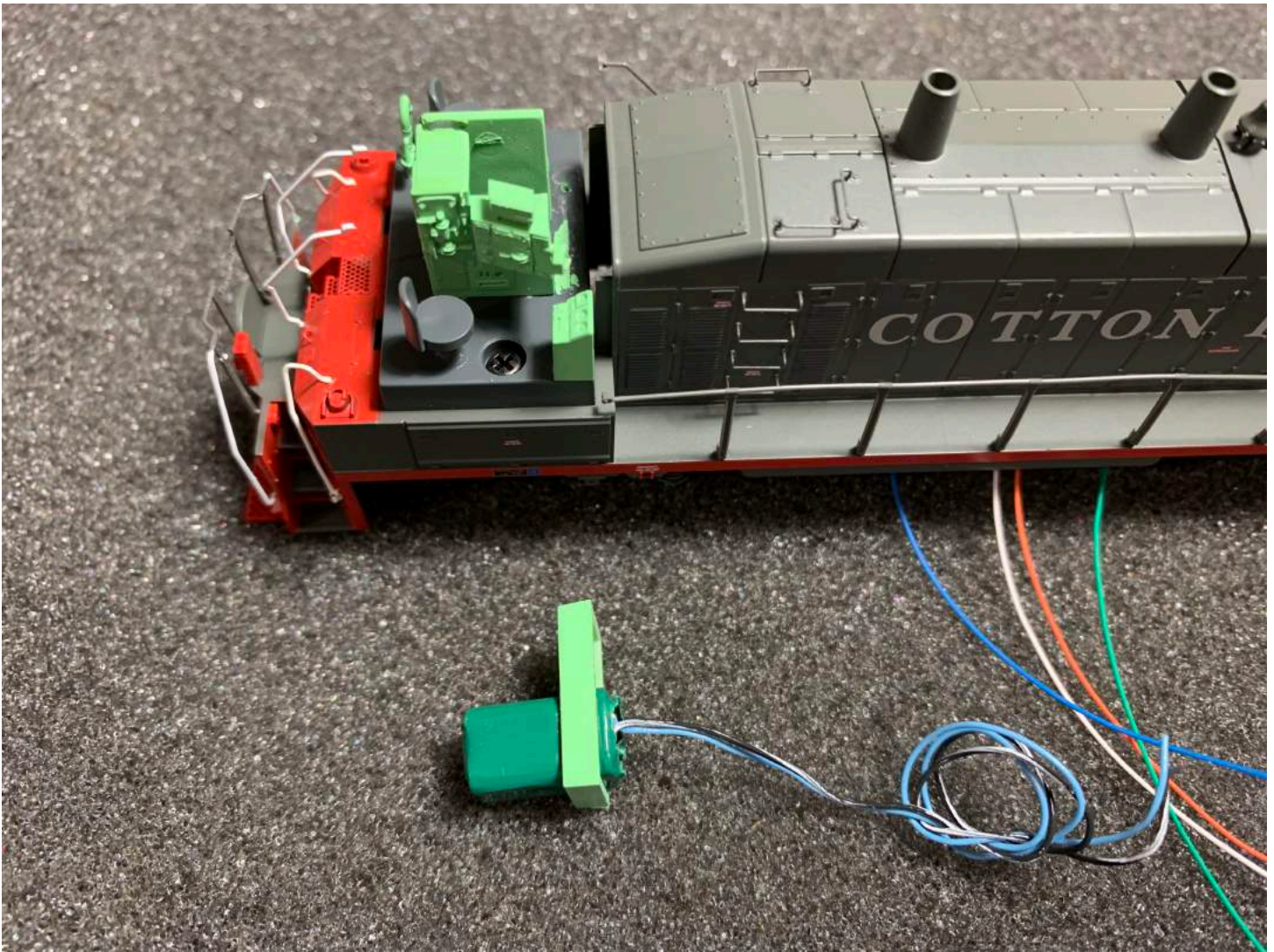
Trim the truck wires and solder them to the four track-pads on the motherboard. The speaker has a center hole designed to pass the front truck and speaker wires through, keeping them clear of the flywheel. Trim and solder the motor wires to the two motor-pads on the motherboard. Trim and solder the speaker wires to the motherboard's front speaker-pads. Now is an excellent time to pop on your 21-pin decoder and test that it's sounding good, working smooth and moving in the right direction. If the forward/reverse direction is backwards, simply switch the two motor wires around.



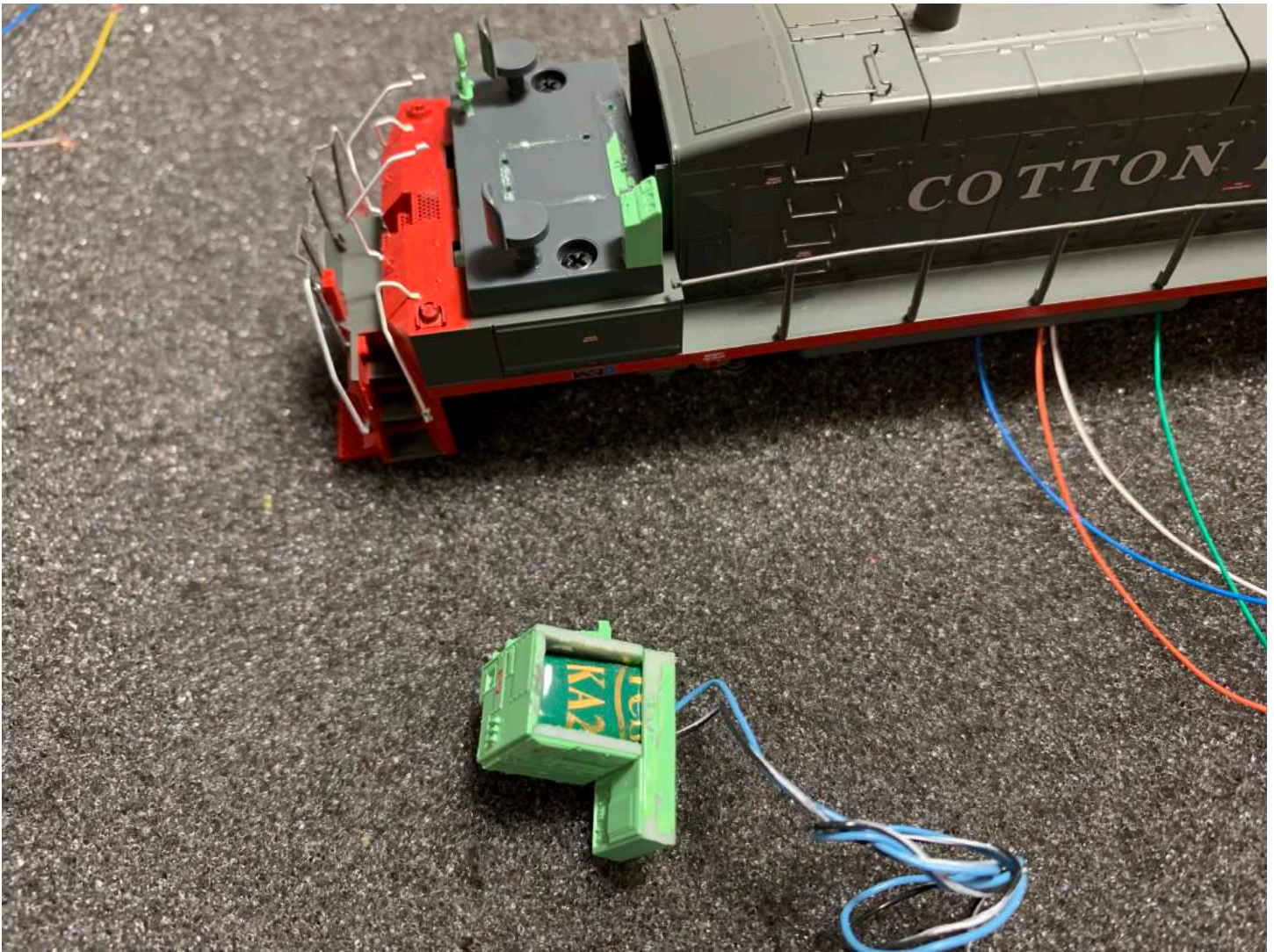
Now we will install the KeepAlive®. Remove the cab from the hood/sill and set aside. Be sure that you pull any attached handrails out of the holes in the cab so that you do not break them.



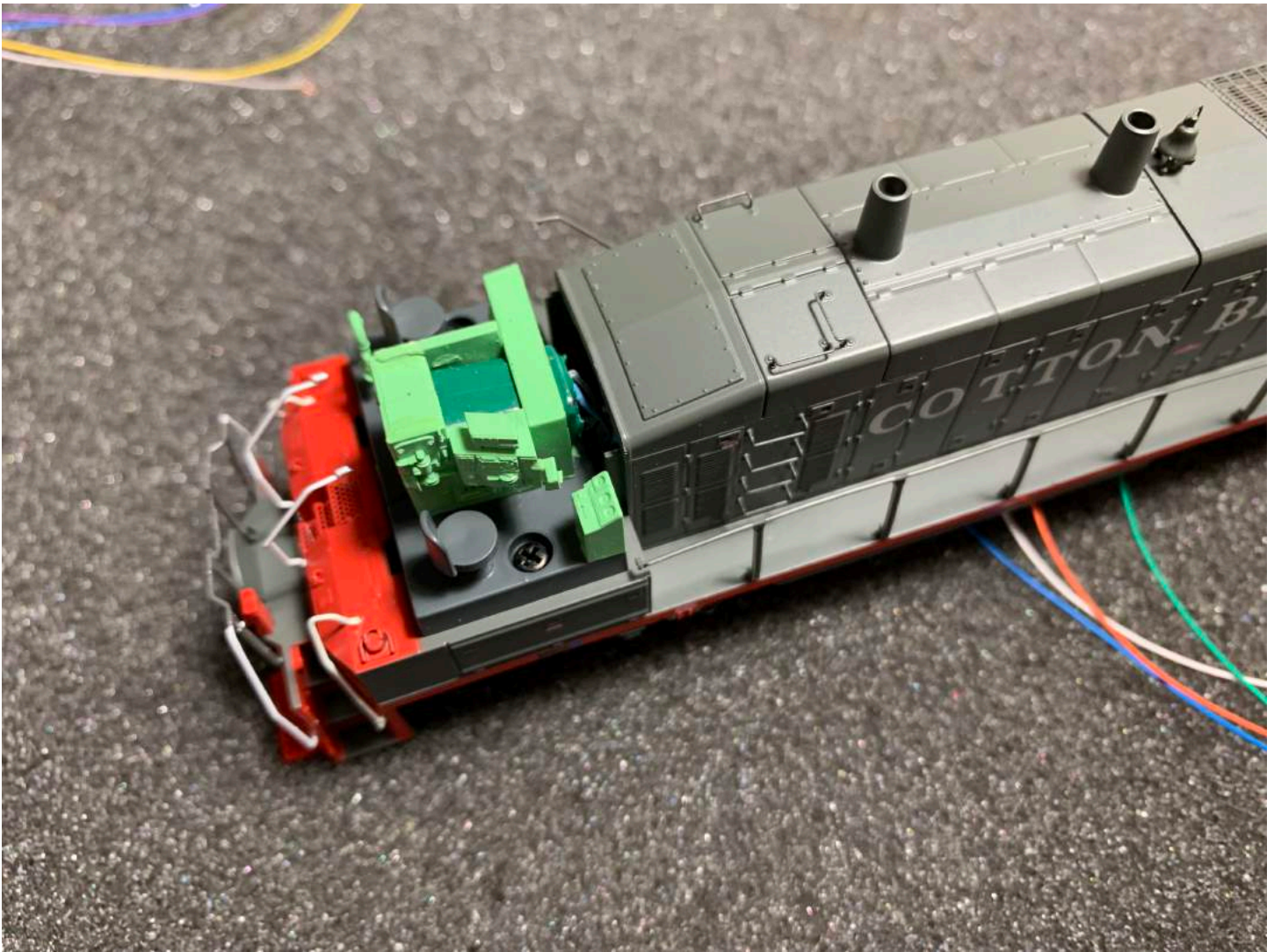
The TCS KA2 is a Godsend and will nicely fit *within* the control stand of the cab interior.



We will need to remove the control stand and slightly disassemble it. Working carefully, break the control stand free from the frame. It is secured at the factory with super-glue, so it should snap cleanly with no damage. Poke the KA2 through the hole of the rear cabinet as shown.



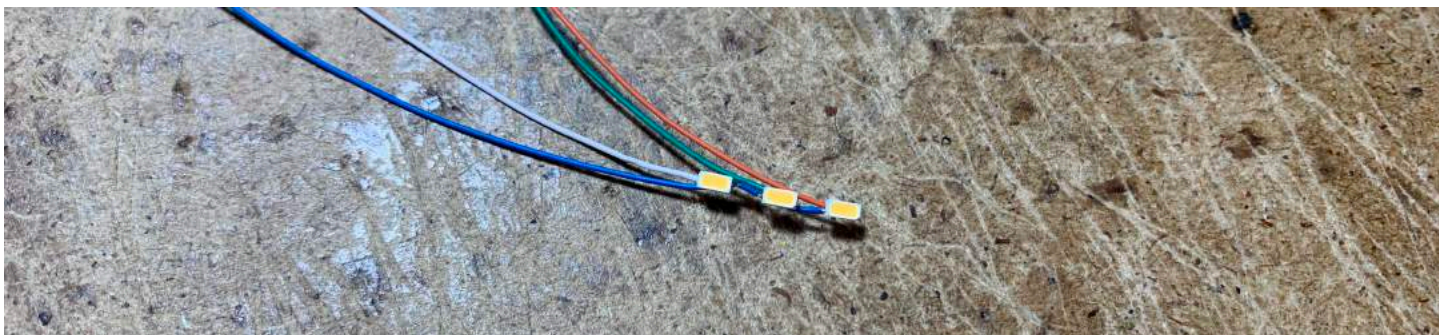
With the entire control stand free from the frame, reassemble it around the KA2 and lightly glue it back together with CA. Sand the bottom of the assembly to remove the original locator pins that poked into the cab floor's holes.



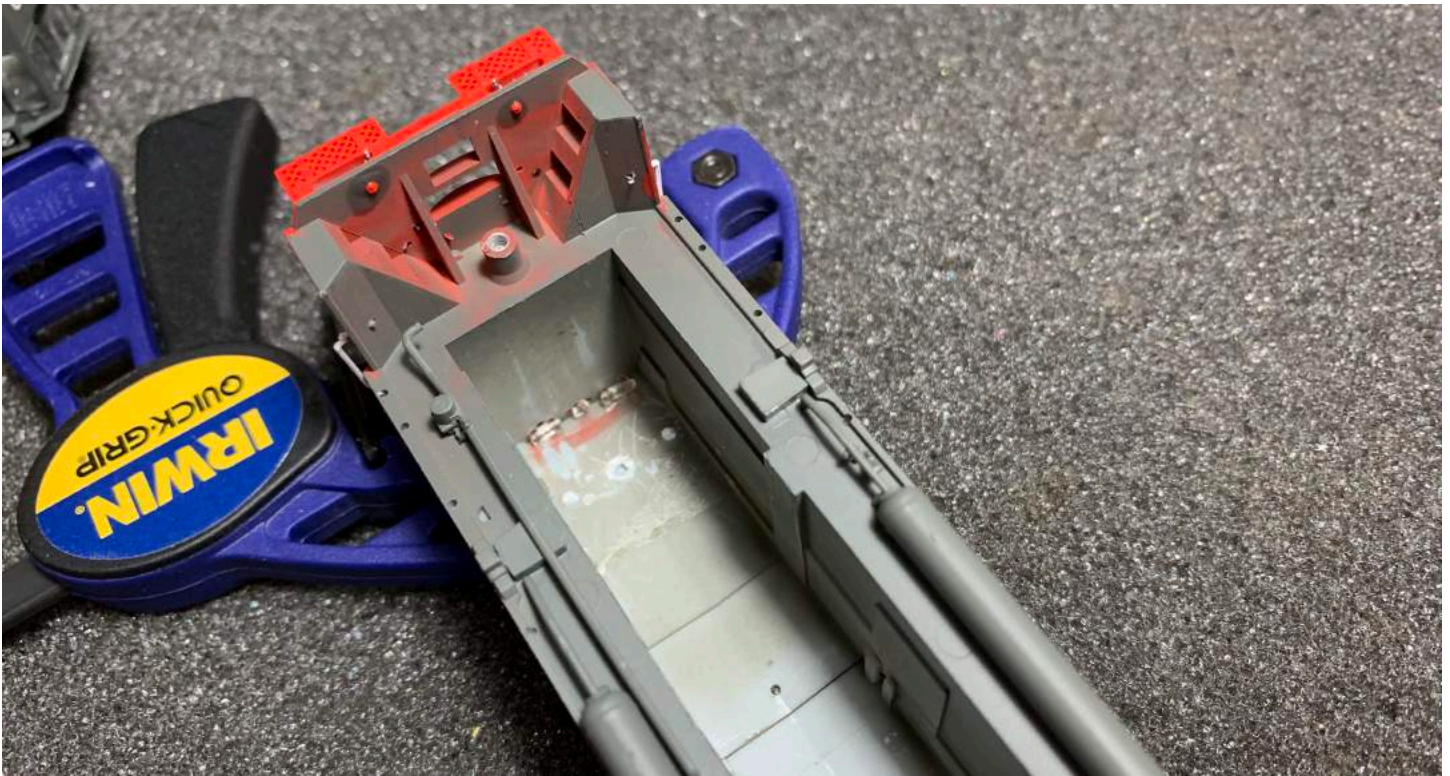
Apply a light coat of CA to the bottom of the control stand and reinstall it on the cab floor, *but positioned about 1mm further towards the rear than the original placement*. This leaves room for the cab's front clip to slip through and latch onto the hood. The slight rear-ward positioning of the control stand will never be noticed. I promise.



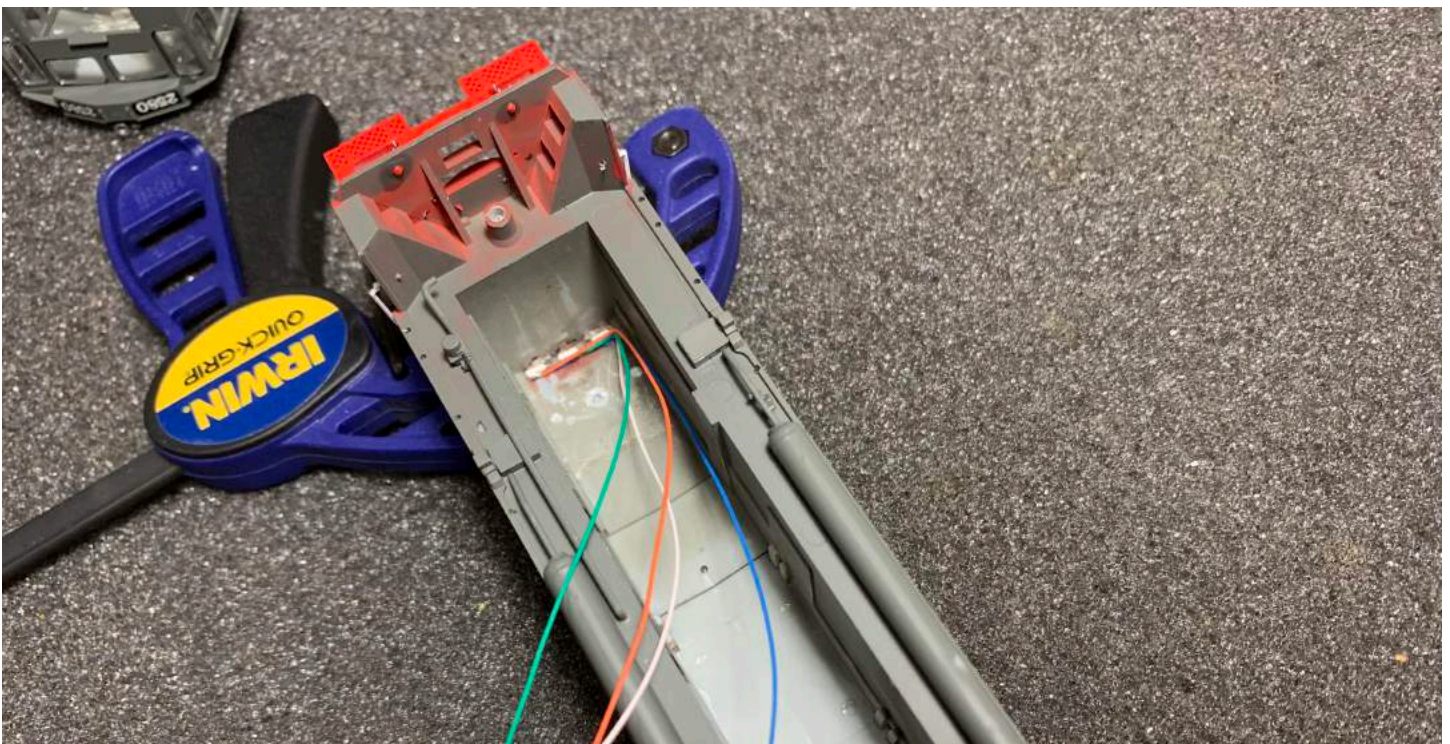
Since I'm replacing all of the factory light-bulbs with LEDs, I removed them.



If this were a "normal" locomotive, we'd only have a single headlight on each end. The Southern Pacific enjoys giving us modelers a little more bench-time! Here I've wired three 1206 LEDs that I spaced out for the headlight, emergency light and action light. I made two of these, one for each end. I used a single blue, common-anode wire to connect all three LED anodes, then soldered individual cathode function wires to each LED.



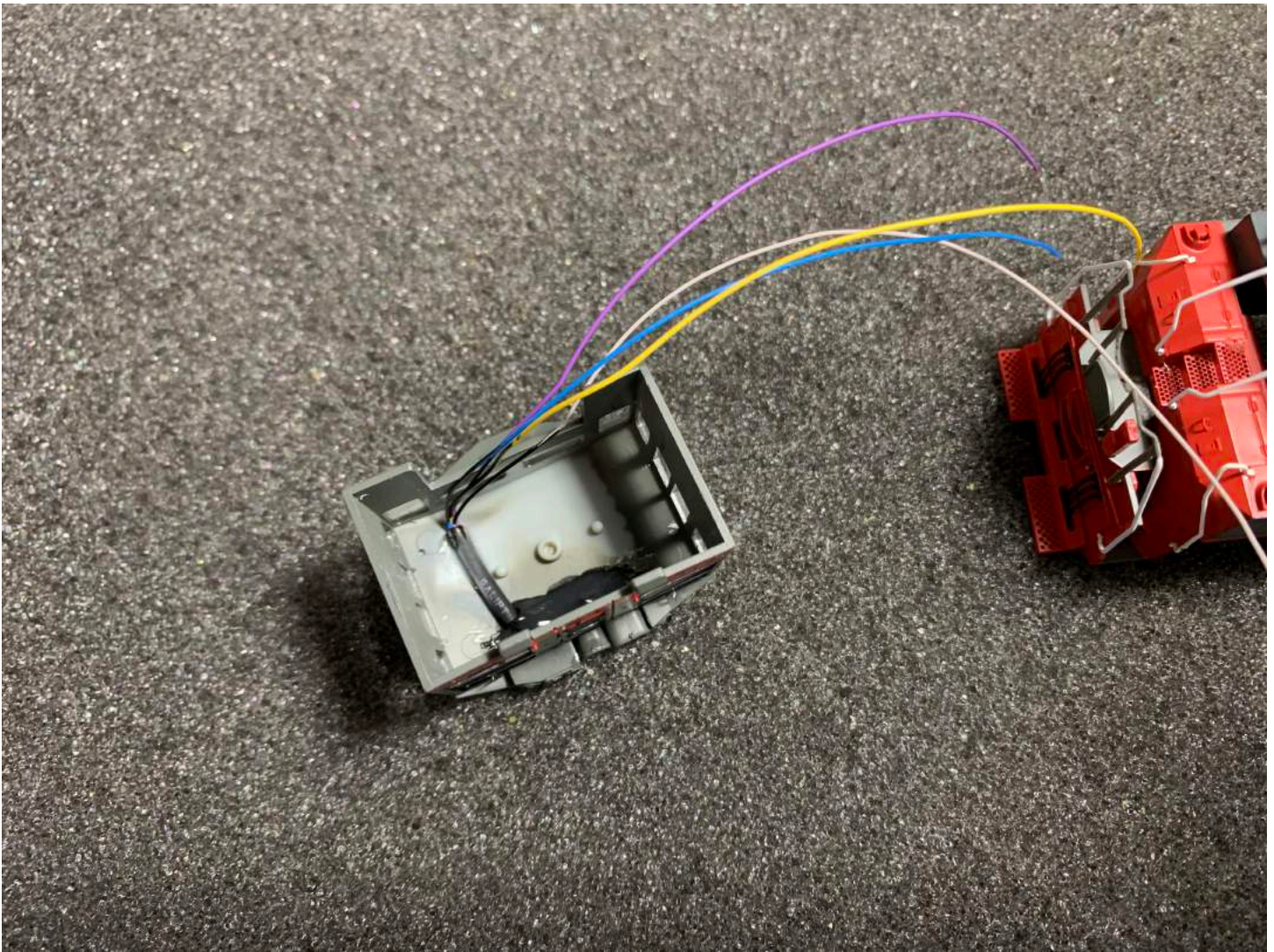
Normal procedure for Scale Sound Systems LED Conversions is to glue the lens onto the pre-wired LED first, then install the wired light assembly into the shell. For these SW1500s, the hood lights are tucked up in the corner and prevent a straight insertion. Thus, here we see that I've installed all three conversion lenses in their appropriate holes.



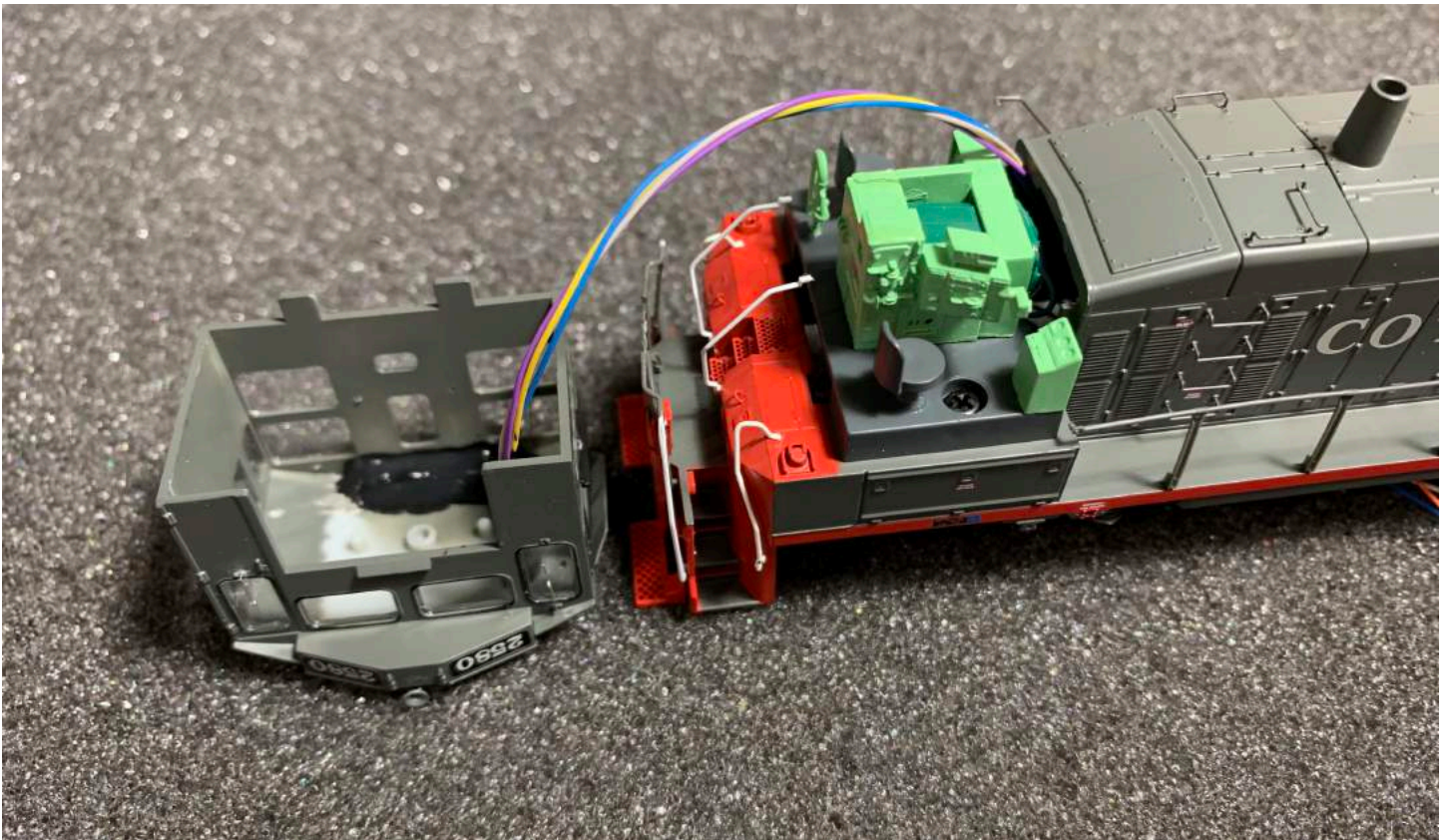
I then glue the pre-wired LED assemblies to the back of the lenses. Clean and compact!



I then use a thick, acrylic dimensional paint (often called “Writer’s Paint”, available at craft stores) and coat each LED, then the whole lot. This dimensional paint works much better than common black paint or even liquid e-tape. This will prevent not only light leakage in the cab, but also light cross-contamination between the three LEDs. Obviously, this whole process is simpler with only a single LED. Nevertheless, this SP light package only took a few minutes to assemble, wire-up, glue in and black-out.



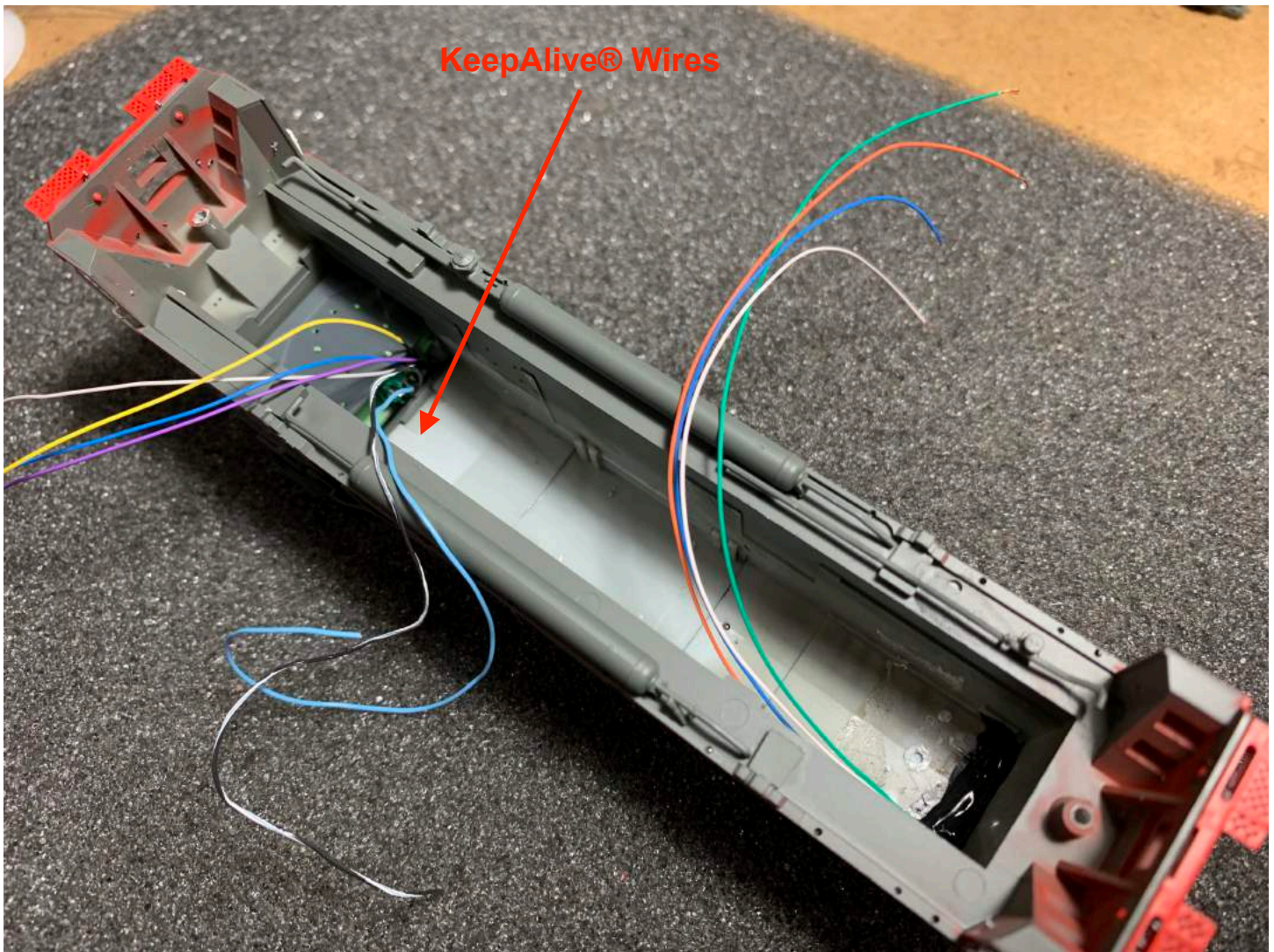
I then used a black Sharpie marker to blacken the wires that might be visible through the cab windows and ran the wires through a short piece of heat-shrink tubing that was then glued to the cab-roof. Note that I oriented the tubing so the wires would route down between two windows.



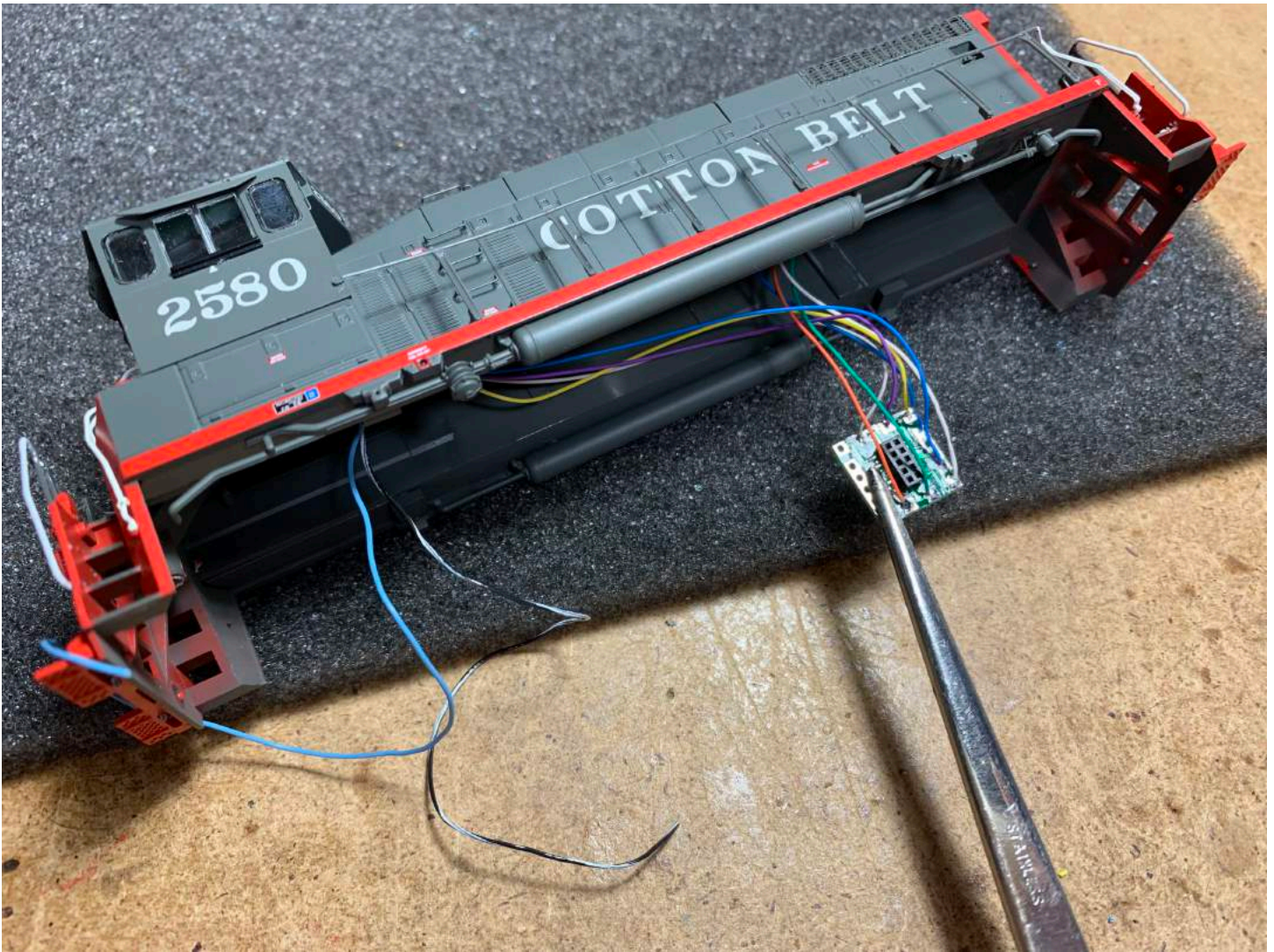
A rainbow of wire as we prepare to reinstall the cab. Tidy!



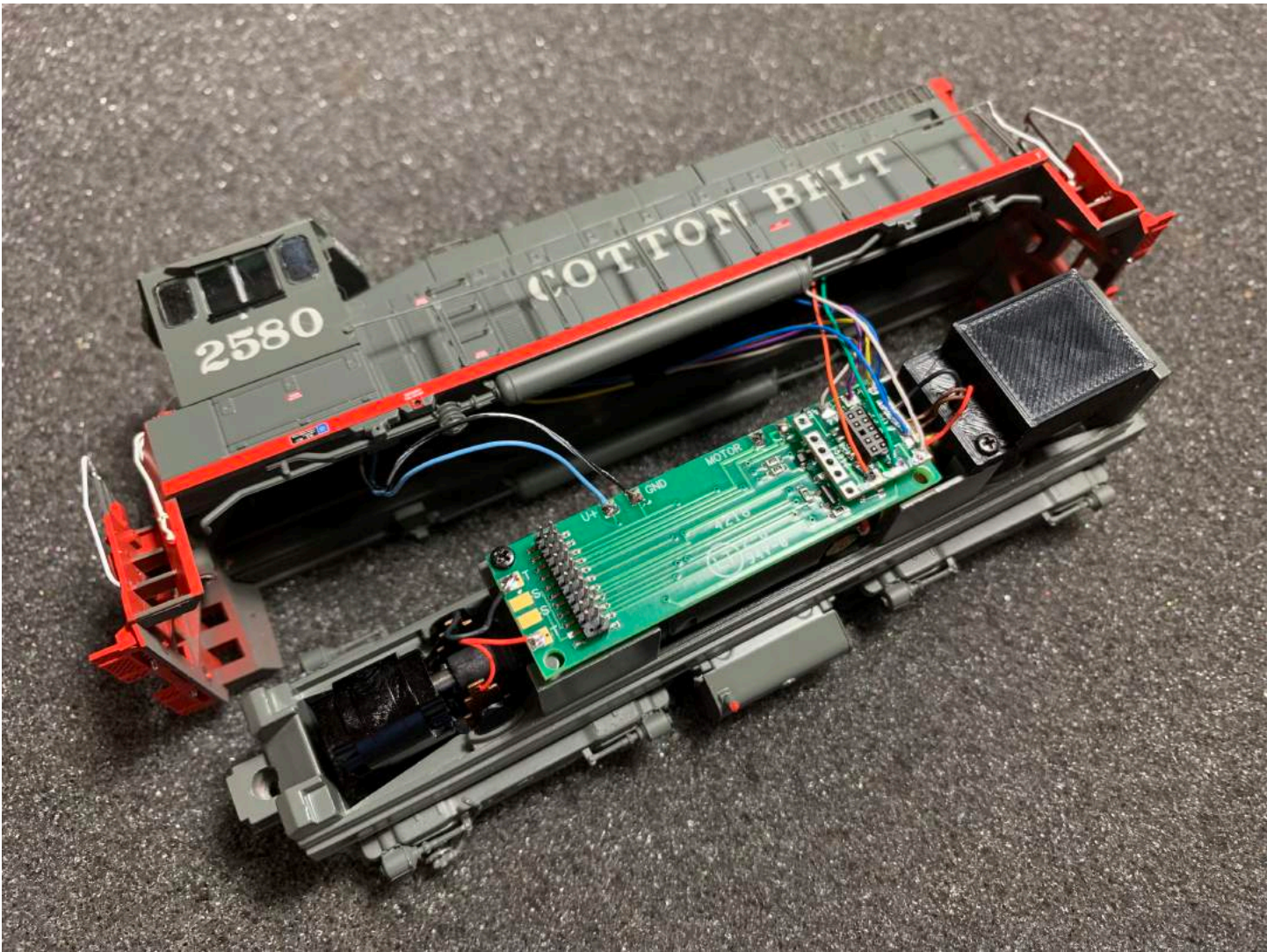
Remember when I promised you would never notice the slight rear-ward control stand positioning? I am a man of my word. The cab interior looks just as “roomy” as before with no wires or KeepAlive® to be seen!



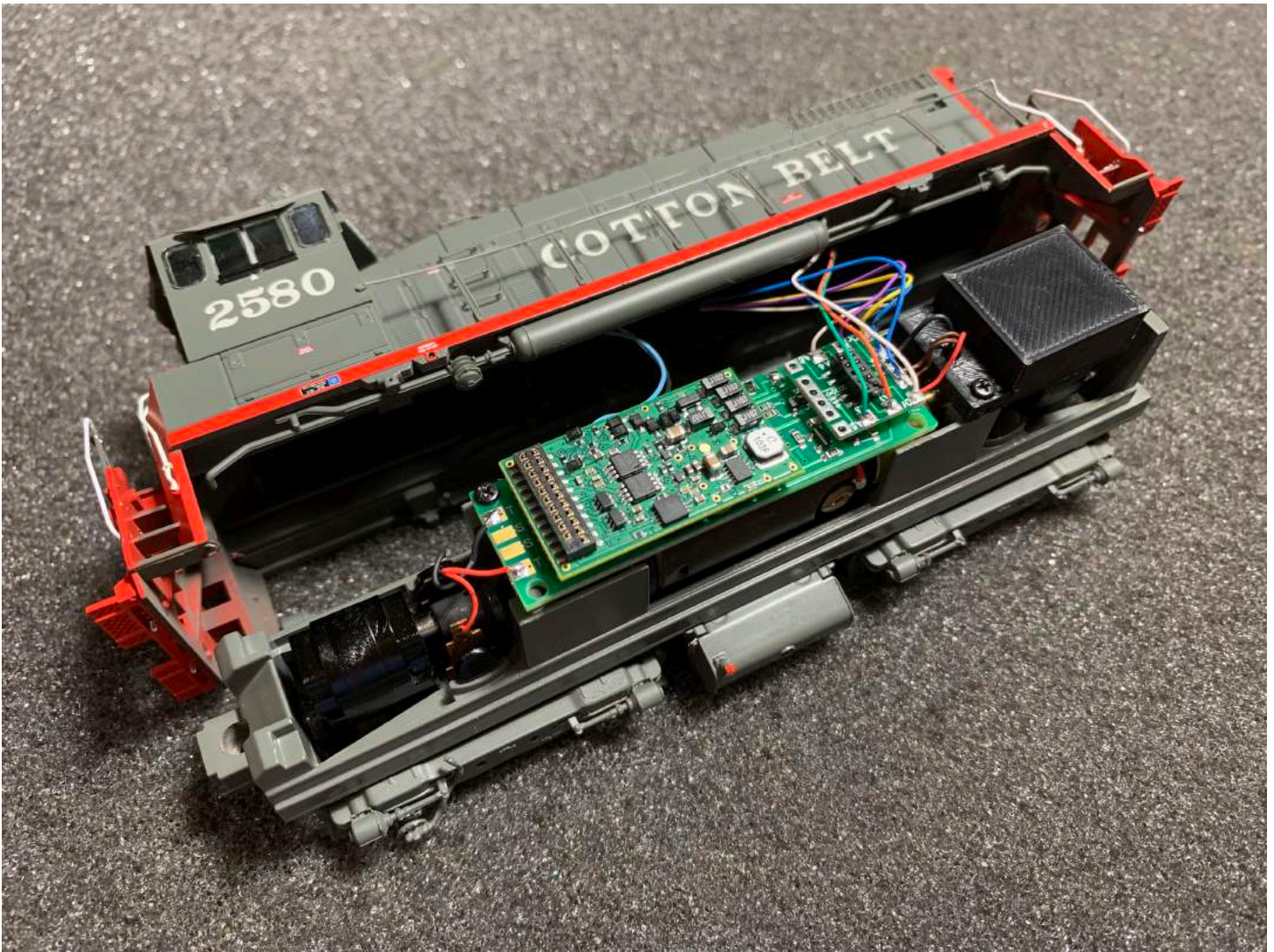
Time to wire up all of those lights. Thankfully, we have the Decoder Buddy's lighting-board to make this neater - and no resistors needed! Yay!



I used a few short bits of heat-shrink tubing to harness the wires (they're slid up into the shell in this photo). Wire all of the lighting to the Decoder Buddy lighting board, using whatever function outputs you require.



Trim and solder the two KeepAlive® wires to the Decoder Buddy's stay-alive pads. You could use a small, 2-pin connector here if you so desired. Install the lighting board, dress any wires and admire your handiwork!



The finished installation with a TCS WOW121-Diesel decoder installed. Thanks to the Nix Trainz Decoder Buddy, the TCS KA2 and the Scale Sound Systems drop-in speaker and LED conversions, the installation didn't take long and it runs great, sounds great and looks great!

You can see and hear this bad-boy in action at: <https://youtu.be/JxYU-034CTo>

Visit www.scalesoundsystems.com to purchase all of the products used in this installation.

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