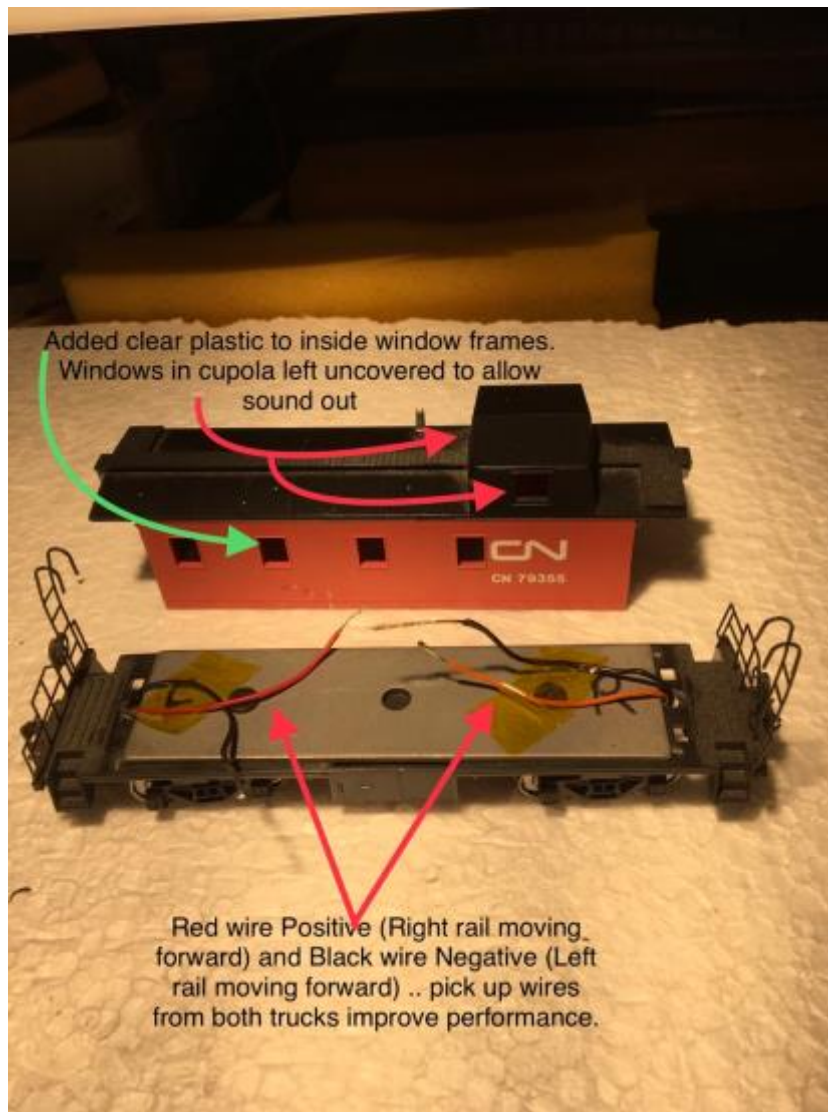


Install a SoundTraxx Sound Car Decoder into an HO Caboose

Doug Dyer Victoria BC. Date: Oct 29 2017.

The SoundTraxx Sound Car Decoder has Bells, whistles, Brake squeal, wheel clickety-clack generator and other sounds, and 4 function outputs for lighting effects. SoundTraxx consist technology allows you to sync the sounds with the locomotive pulling the freight by a simple wave of a magnet over a sensor in the decoder, thus emitting a sound simulating release of air brakes. Then pressing the mute key four times (F8) puts the sound Car into the current locomotive address's consist.. By the same token, after spotting the car and uncoupling, you break up the consist by waving the magnet over the decoder's sensor again. Now you hear the sound Car emitting sounds simulating turning the brake wheel and setting the brakes. Three sound cars in a consist are very effective and realistic. The four lighting output functions are very useful in a caboose or passenger car.

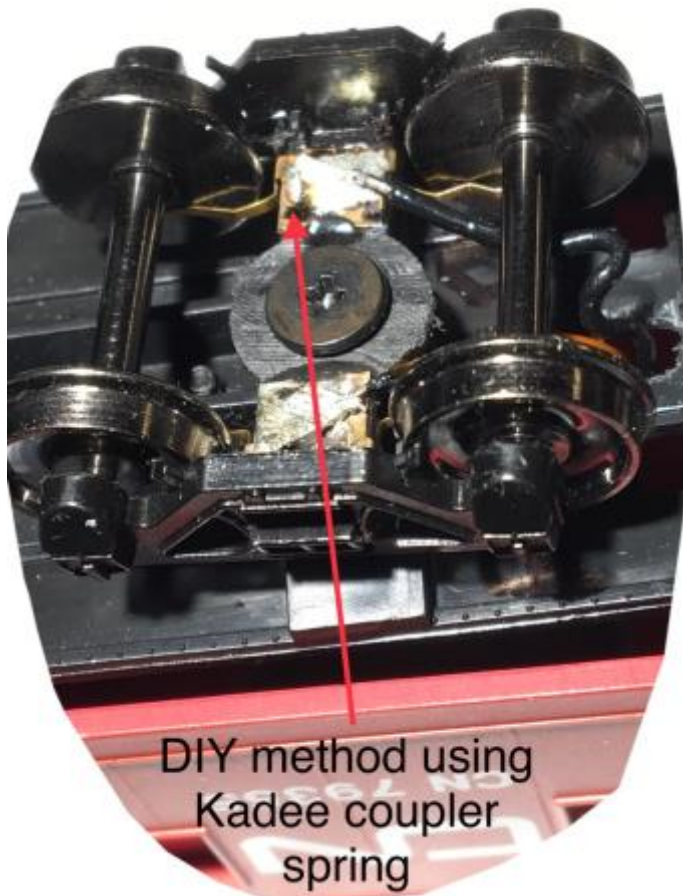
The first issue is **getting power from the tracks.**



There are pre-wired trucks available for purchase, but it is easy to make your own truck rail electrical pick ups using the coupler Springs from a Kadee #5 HO knuckle coupler.

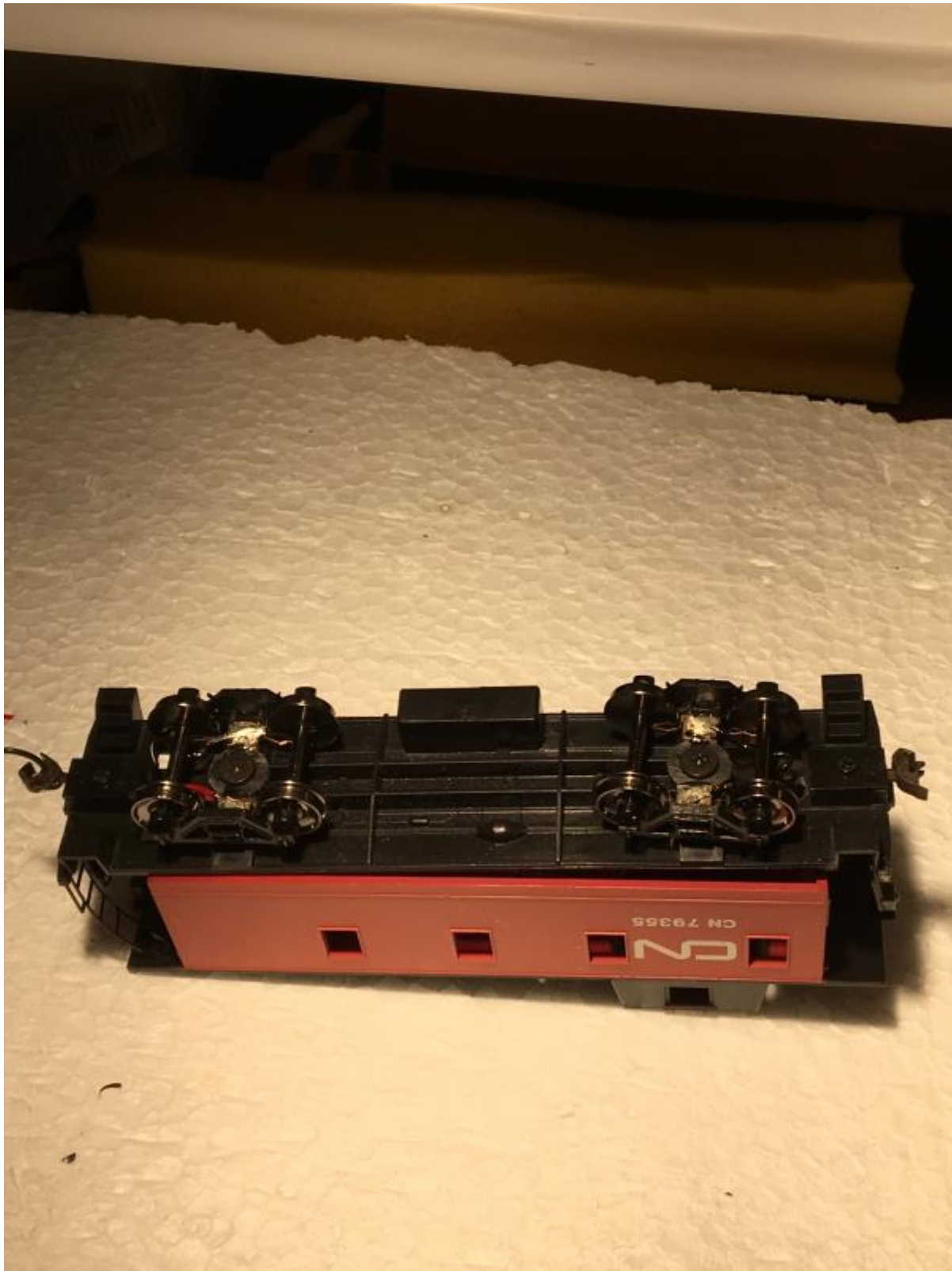


Solder a wire to this and attach to the truck bolster with epoxy. Make sure the axel insulators are on the



correct sides, for positive and negative rail pick up.

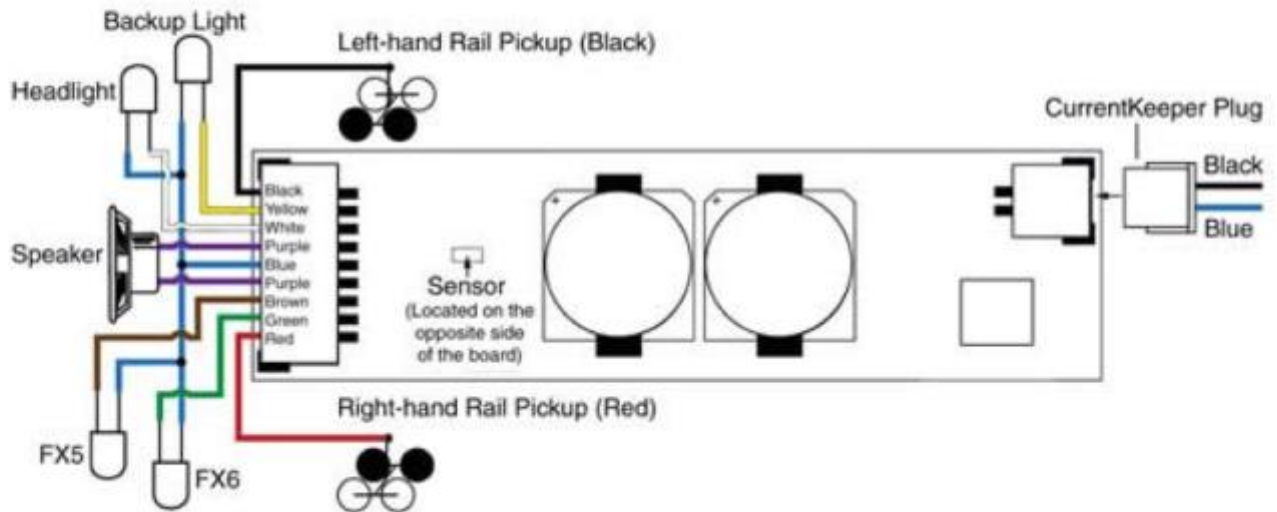
Doing this to both trucks improves performance. This is what my caboose looks like after performing this task.



The following is a **wiring diagram** of the **Tsunami Sound Car** courtesy of Soundtraxx.

Tsunami™ SoundCar™ Wiring Diagrams

SoundCar Wiring Diagram



The decoder has **4 Function lighting outputs**. For the caboose project I used F(0) Forward (front headlight white wire) for the cabin light. Operated by headlight button in Forward on the cab throttle.

The rear headlight under the caboose roof, and the cupola light are wired to F(0) Reverse Function (Backup light - yellow wire). Operated by headlight button in Reverse.

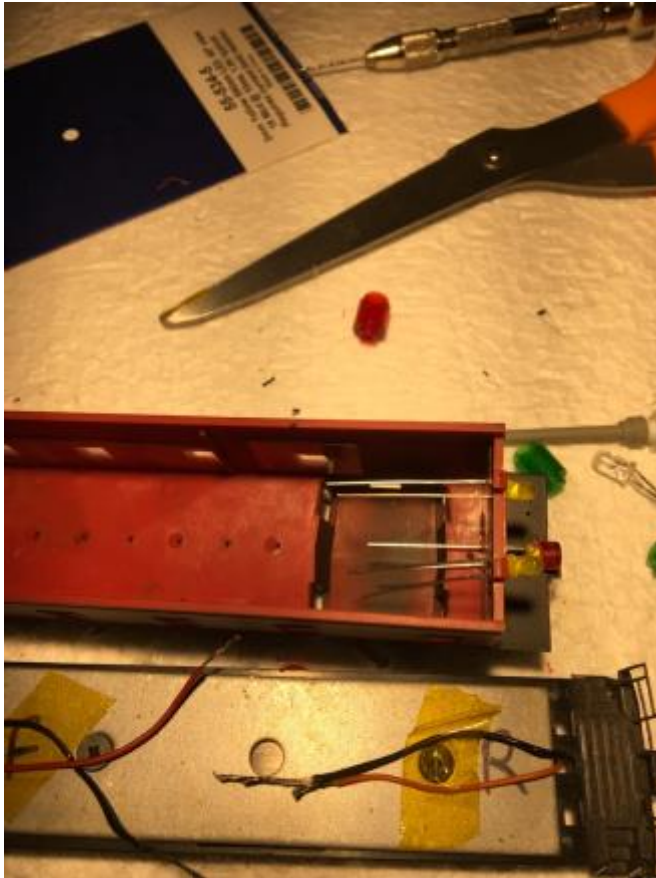
The rear alternating Ditch lights are connected to Function outputs 5 and 6. (FX5 -Brown wire and FX6 - Green wire). These are operated by Function buttons F5 and F6 on the cab throttle.

Some notes for programming CVs to get the appropriate lighting effects are described at the end of the article.

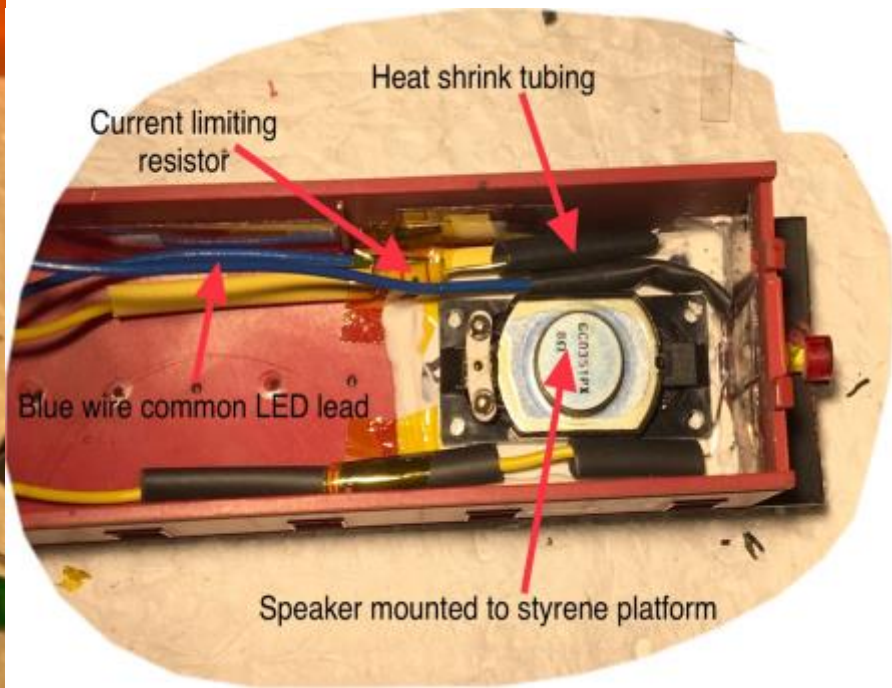
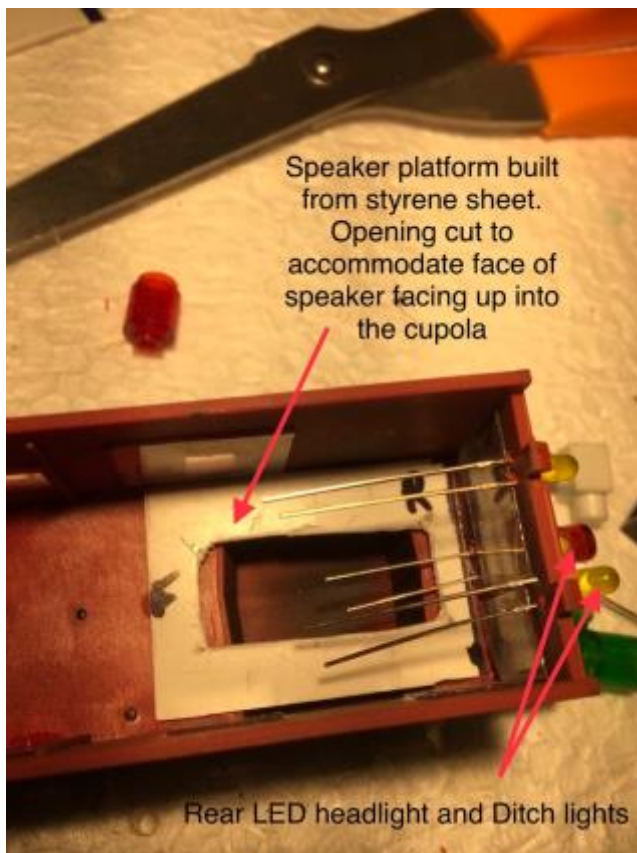
Parts list:

- Soundtraxx Sound Car Decoder
- Soundtraxx Current Keeper
- Soundtraxx Mini Oval Speaker 8 ohm
- 30 AWG flexible wire .. multiple colours
- 3 or 5 mm LED Red and appropriate current limiting resistor (1.5 K ½ watt)
- Kapton tape, miscellaneous parts
- Rail power electrical pick up trucks

I added a rear light and alternating rear Ditch lights (Functions 5 and 6) to the back of my caboose, which I intend to use as a switching caboose. Interior LEDs light the cabin F(0) forward and the cupola F(0) reverse..also connected to the rear headlight. 3 mm Golden White LEDs work well for the rear headlight and Ditch lights, and 5 mm Sunny White LEDs work well for the cabin and cupola lights. Each LED requires its own current limiting resistor (1.5 K ohms) on the cathode (short) lead. Drill small holes in the rear wall to pass the LED leads and glue on the outside with Cyanacrylate glue. You may wish to drill a 3mm hole instead and pass the LED out from the inside?



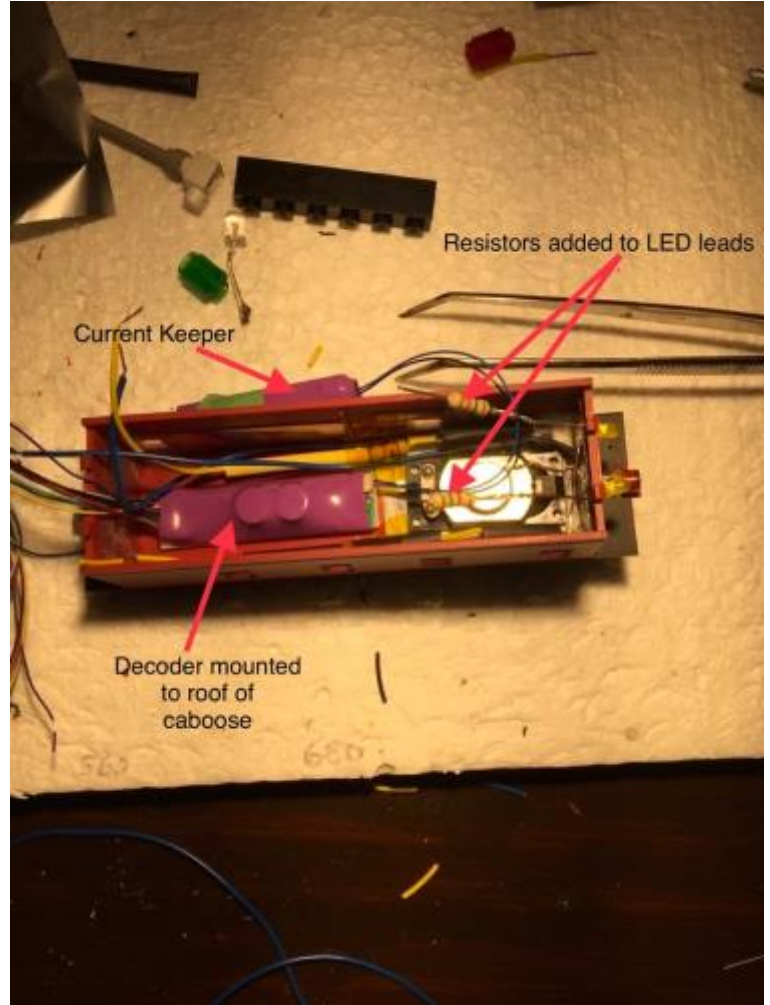
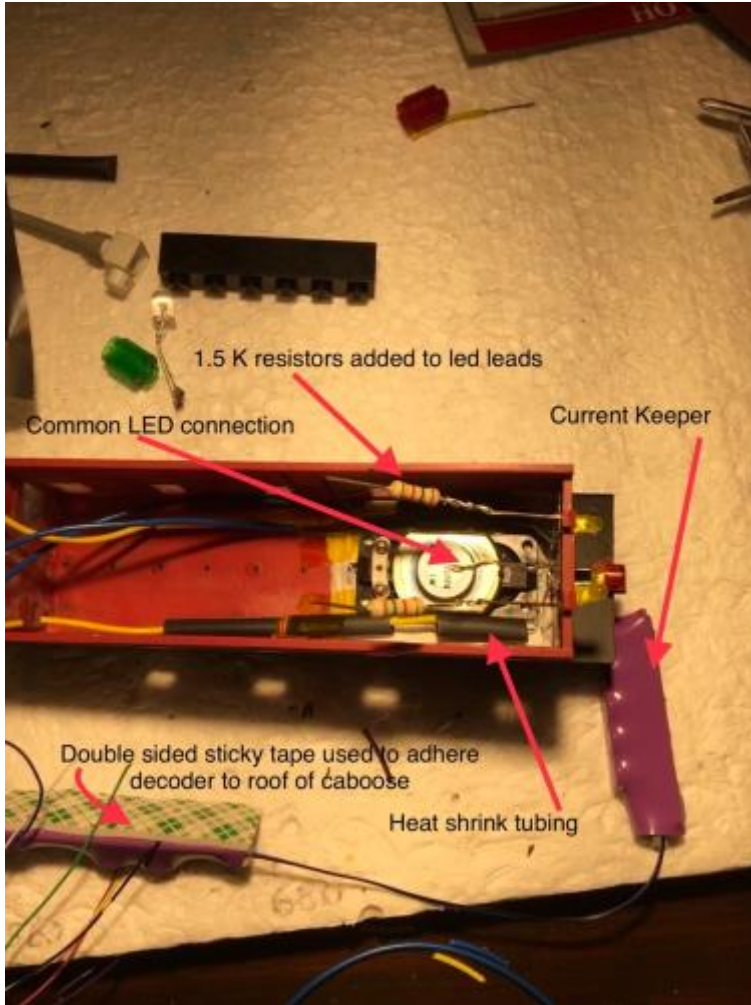
Accommodating the speaker requires building a Baffle. As I wanted to cover the windows in the body of the caboose with plexiglass, I chose to put the speaker in the cupola, facing up and leaving the windows of the cupola uncovered to let the sound out. The whole body of the caboose shell then becomes my Baffle. This may not be the best arrangement as the Baffle should be a certain size relative to the speaker governed by a specific ratio formula available from the science of acoustics. However this still worked well for me. See next page for the Baffle and speaker platform I constructed from a sheet of styrene, and glued to the cupola opening. This served as a platform to mount the speaker.

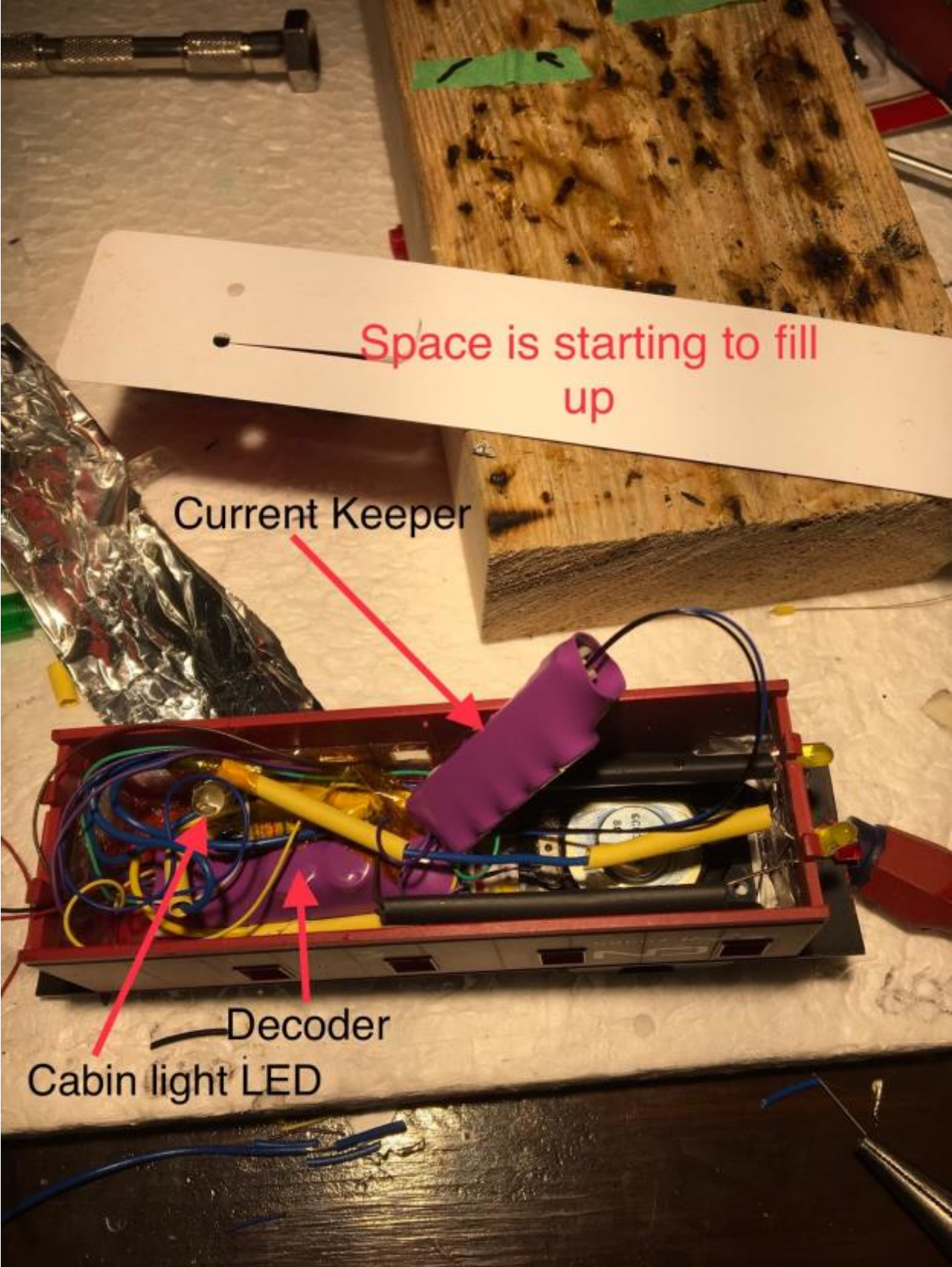


These photos show how the speaker is mounted facing up into the cupola

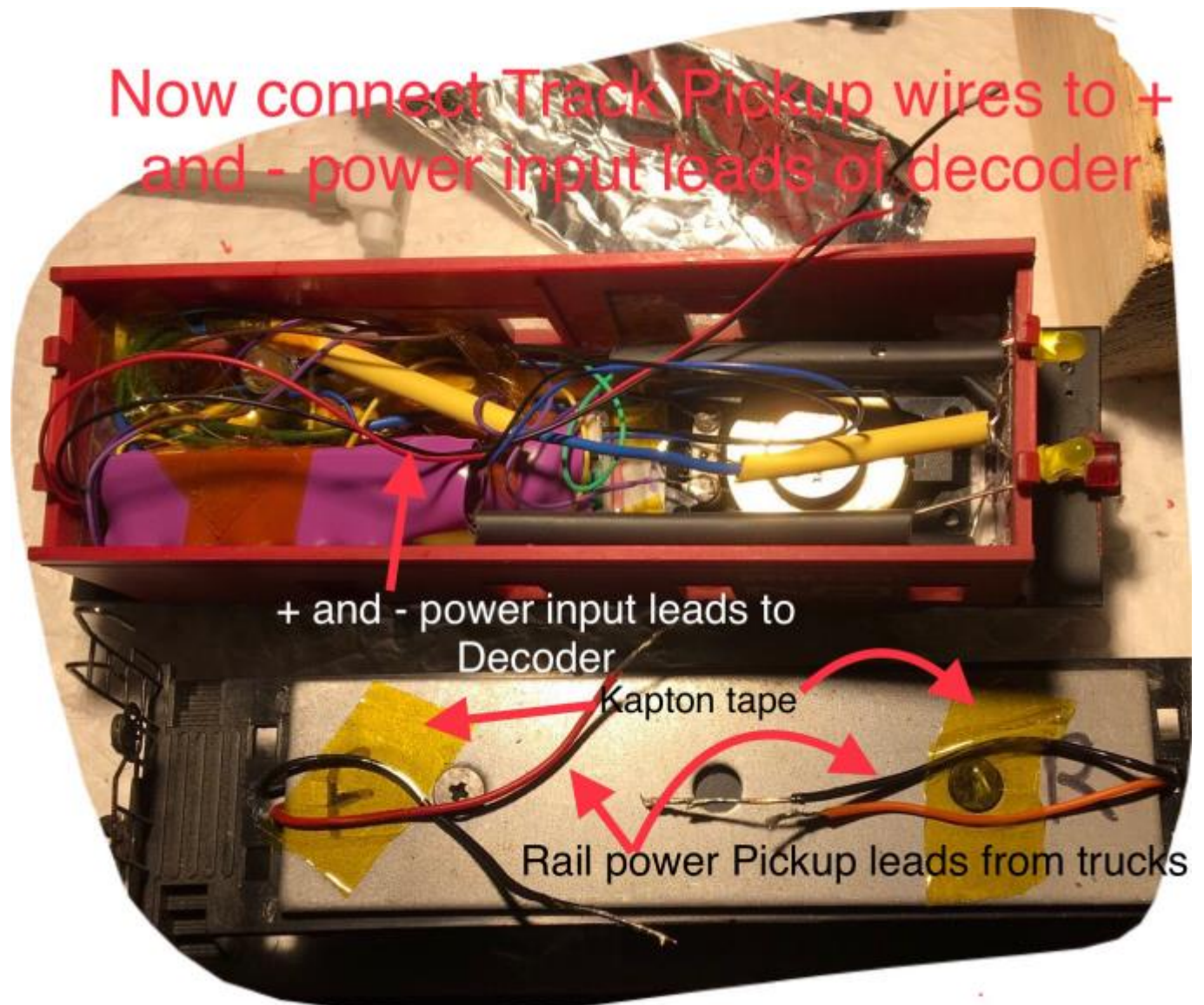
I used double sided sticky tape to mount the decoder to the roof of the caboose. Kapton tape is also useful for securing components. All the positive common leads of the LEDs connect to the common Blue wire of the decoder. The Current Keeper has a convenient plug connector to plug into a receptacle on the decoder. Notice the Sunny white LED for the cabin light. There is a similar LED wired to the reverse Function (yellow wire of decoder) in the cupola above the speaker not visible on these photos. The rear headlight is also connected to this lead. This means that to turn on the Cupola light after the caboose has been added to the consist, you have to select the locomotive address! Put the loco in reverse and then return to the caboose Sound Car Address (for example 3) and turn the head light (F(0)) OFF and ON in order to register the Sound Car rear headlight and cupola light as ON. Now return to the locomotive address to run the consist. From here on in the cupola light and rear headlight of the caboose will stay on while the locomotive is running forward or in reverse. To turn on the caboose cabin light which is wired to the Sound Decoder's F(0) Forward Function, repeat the process only setting the loco in forward, then returning to the Sound Car Address and pressing the F0 Headlight Function, to turn on the caboose cabin light. See the Sound Car User's Guide for other options for programming CVs to alter this functionality.

The caboose is starting to fill up!





The last task is to connect the rail pickup leads from the trucks to the left and right rail pickup leads of the decoder. (Red and Black wires)



Not much room left but everything fits! Now we will program some CVs to set up alternating Ditch lights for F5 and F6. These notes are taken directly from the Soundtraxx Sound Car User's Guide.

Program CVs 51 and 52 for Alternating Ditch Lights:

- CV 51, FX5 Effect Select
- CV 52, FX6 Effect Select
- CV 57, FX5, FX6 Directional Control Enable
- CV 58, FX5, FX6 Lighting Override Enable
- CV 59, Flash Rate

Type I and Type II ditch lights – These operate identically. However, if Grade Crossing Logic is enabled, the Type I ditch light will revert to a steady “on” state when it is not flashing, whereas the Type II lights will turn off.

LED Compensation Mode – The SoundCar’s lighting effects are designed to work with either LEDs or incandescent bulbs. However, because of the different brightness characteristics of the two bulb types, some lighting effects may appear less realistic when set up with an LED. You can enable LED Compensation Mode (by adding a value of 128 to the appropriate CV) to correct this, which will improve the contrast of the lighting effect by automatically adjusting the function output level to compensate for the brightness of LED bulbs.

Alternating Single-Flash Strobe Lights

In this example, we will assume use of incandescent and configure the FX5 and FX6 outputs as alternating strobe lights like those that can be found on a cab car.

1. In Table E, locate the value associated with the single-flash strobe effect under the column labeled, “Crossing Logic OFF.” For the first of the alternating lights (FX5), we will use the Phase A value, which is 5. To get our alternating effect, a second light (FX6) must be programmed with the Phase B value, which is 21.

2. Program CV 51 (FX5 Effect Select) with a value of 5 and CV 52 (FX6 Effect Select) with a value of 21.

For Alternating Ditch Lights:

Alternating Ditch Lights on the Caboose Sound Car

Program CV 51 (FX5 Effect Select) with a value of 9 phase A, Crossing Logic OFF) and CV 52 (FX6 Effect Select) with a value of 25 + 128 for LED Compensation mode.(137 and 153)

Current values for CV51 = 137 and CV 52 = 153

Setting the Flash Rate and Hold Time

CV 59 (Flash Rate) is used to adjust the flash rate of Hyperlight effects and can be programmed with any value from 0 to 15; 0 indicates the highest frequency and 15 indicates the lowest frequency. When Grade Crossing Logic is enabled, CV 60 (Crossing Hold Time) can be used to adjust the length of time in seconds that an effect will remain active after the horn/ whistle function key is released. CV 60 can be programmed with a value from 0 to 15, indicating the minimum and maximum number of seconds that the effect will remain active.

To turn on the alternating Ditch Lights, press F5 and F6.



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