Caboose Lighting Kit Installation

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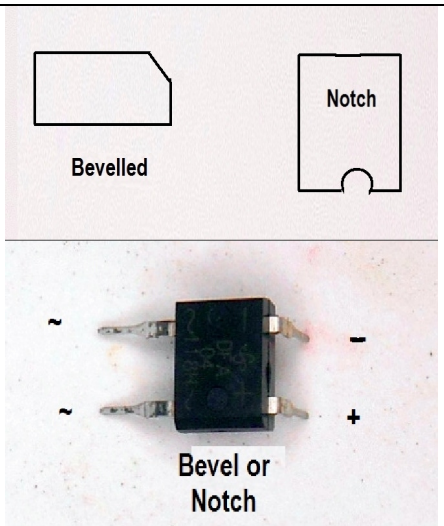
These instructions in color for this assembly can be found at the website above. Project #5

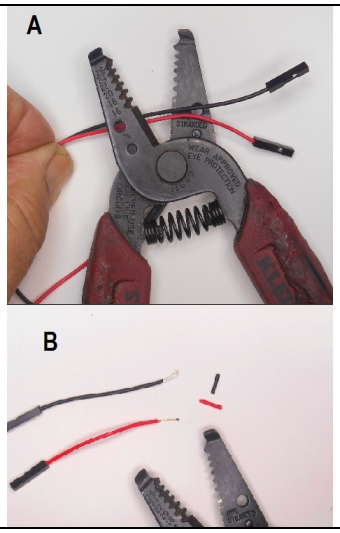
This example of a 60s-70's HO scale Maroon, Grey & Yellow Eire Caboose will be used. You can adapt these directions for your model caboose. The shell is first separated from the chassis. In this case the trucks were removed to expose the locking clips holding the cabin to the chassis

Components of the MTS Caboose LED Light kit

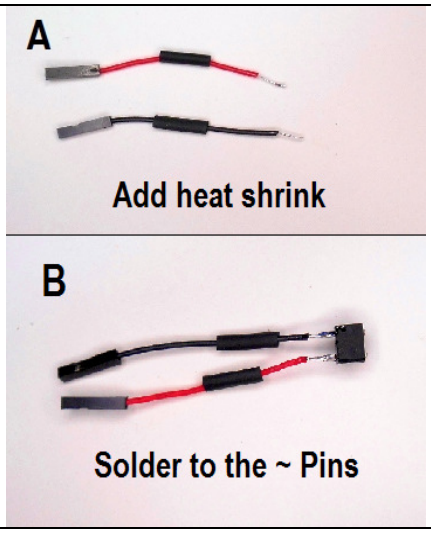
Step 1 Preparation of the LED Driver Unit.



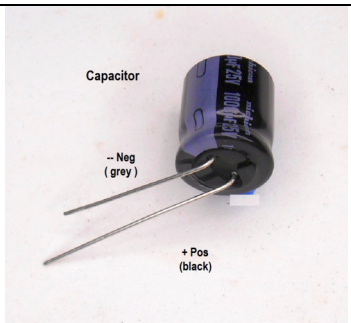
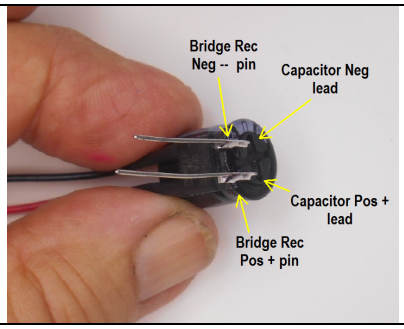
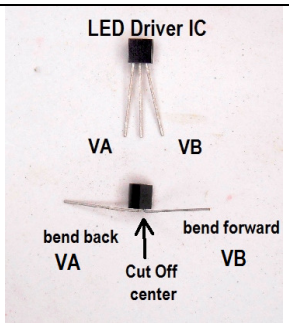
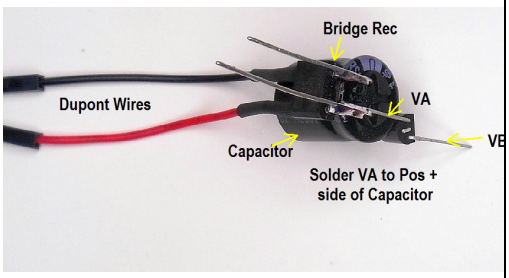
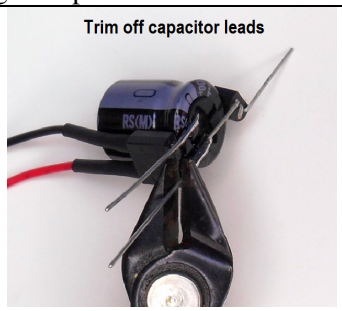
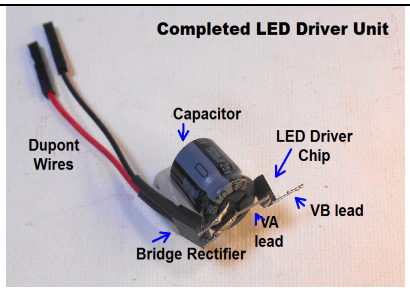
1. Bend out both of the pins labeled with the tilde ~ symbol on the Bridge Rectifier. Note the beveled edge or notch to orient the chip.



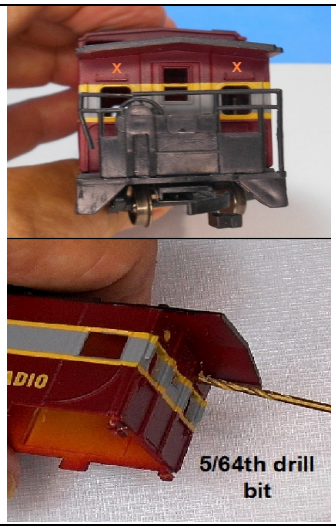
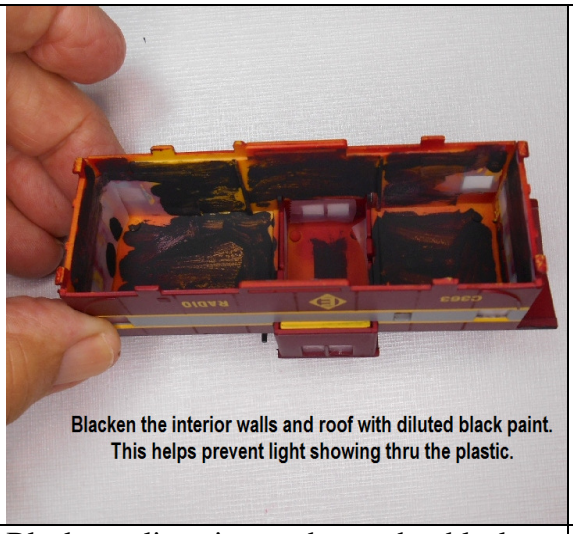
2 A. Cut the Dupont wires 2" from the female plug
B. Strip 1/4" off cut ends and tin with solder



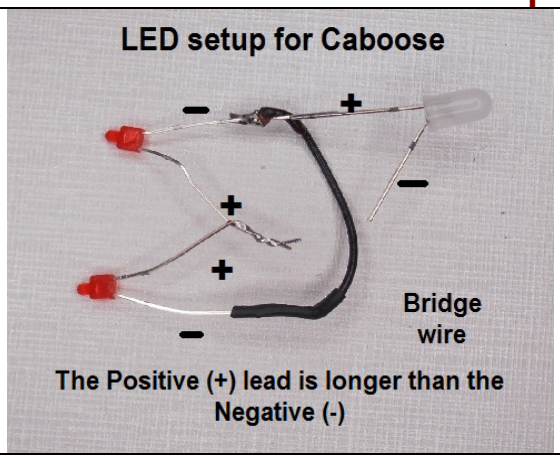
3.A. Add 3/8" of heat shrink to the wires
B. Solder the ends to the pins marked with the tilde ~ symbol. Preferably put the red wire on thepin opposite the positive + for easy identification.

		
4.With the grey side of the capacitor facing you bend the leads of the Capacitor to the left.	5.Line up the Positive (long) lead of the Capacitor with the Positive Pin of the BR and solder together. Repeat with the Negative lead of the Capacitor soldered to the negative pin of the BR.	6.With the flat side of the LED Driver Chip facing you, identify the VA lead on the left and VB lead on the right. Bend the VA lead back and VB forward. Cut off the center lead
		
7.Solder the VA lead of the LED chip to the Positive junction of the Capacitor /BR joint	8. Trim off the excess leads extending from both Capacitor BR joints.	9 Completed compact LED Driver module.

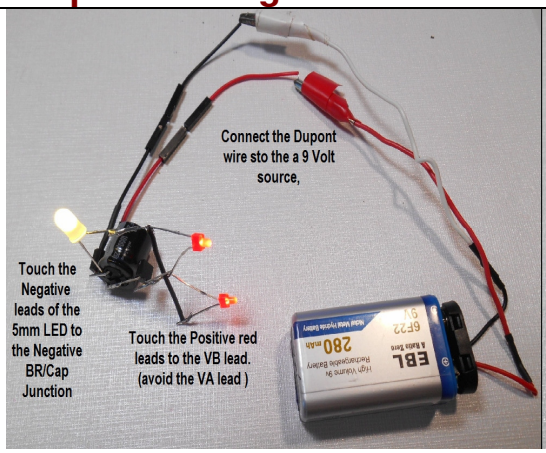
Step 2 Prepare the Cabin for the lighting installation

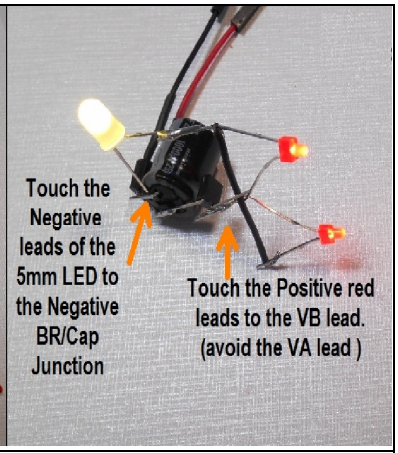
		
Two holes (5/64") are drilled into the rear wall just under the roof to fit the two red 2mm LEDs. These should fit snugly into the 2 holes.	Black acrylic paint can be used to blacken the interior cabin to reduce light from being seen through the plastic walls.	If desired frosted or Clear windows can be added to the existing open windows for a more uniform interior lighting . Use adhesive tape semi transparent or clear.

Step 3 Prepare the Light Circuit



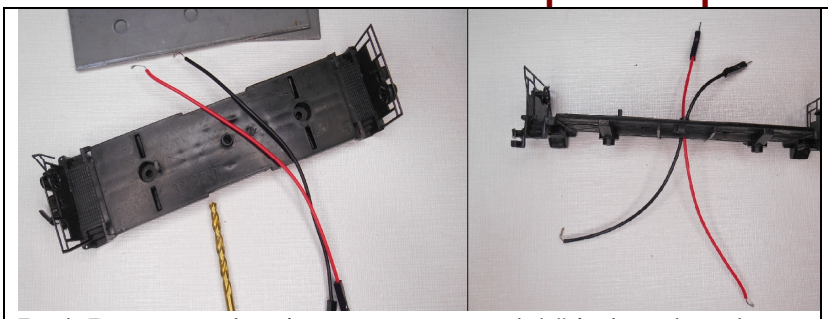
The LED circuit for this Caboose is prepared using the 2 red 2mm LEDs and one 5mm LED. (Yellow or White based on the Caboose era) The positive lead of each LED is the longer lead. Twist the positive leads of the red LEDs together as shown maintaining some distance between the LEDs and solder. Solder the Bridge wire cut from the Black Dupont wire (1.5") to the negative leads of the Red LEDs. Finally solder the Positive lead of the white LED to the negative lead of one of the red LEDs.



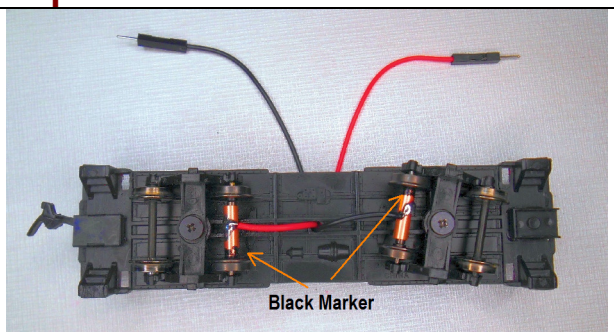


The lighting circuit can be tested before soldering to the LED Driver unit using a 9volt battery connected to the track pickup wires . Touch the positive wires of the Red LEDs to the VB lead of the LED Driver unit. **Do not touch the VA lead as the current will be too high and blow the LED lights**.
Touch the negative wire of the 5mm LED to the wires on the Negative side of the Bridge rectifier/Capacitor Junction. If the lights work you can solder these contact points to complete the lighting system.

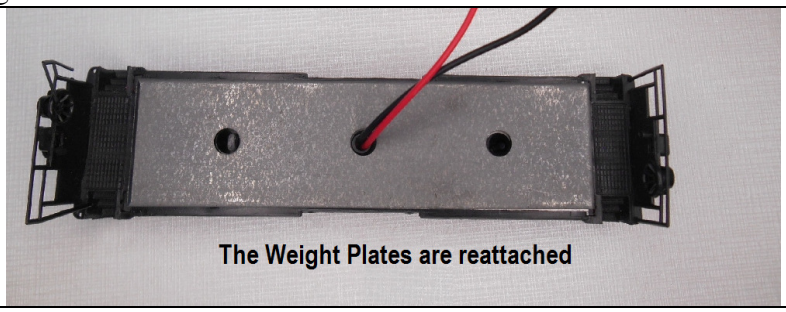
Step 4 Set up the Pickup wheels



Both Dupont male wires are cut around 4 " in length ends are stripped and tinned with solder. The male wires have the cut ends threaded through a 1/8th hole drilled in the floor of the chassis after the weight plates have been removed . This arrangement might vary depending on how the weights are attached in the cabin. Adequate weighting is important for good electrical track contact.

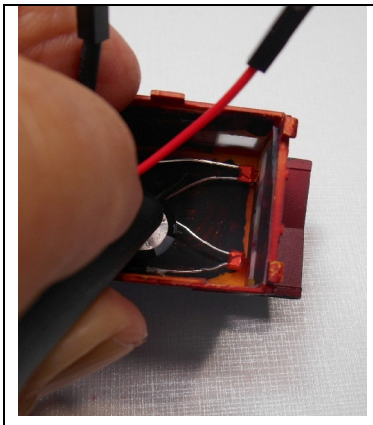
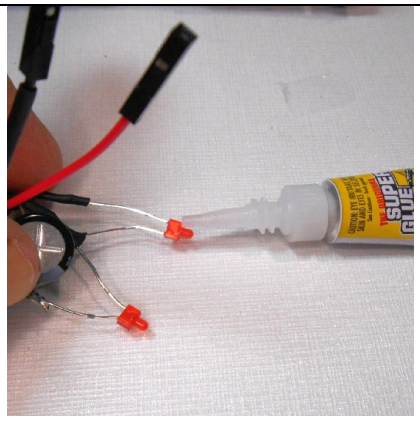
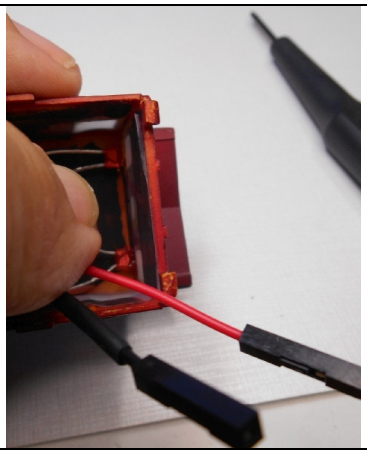
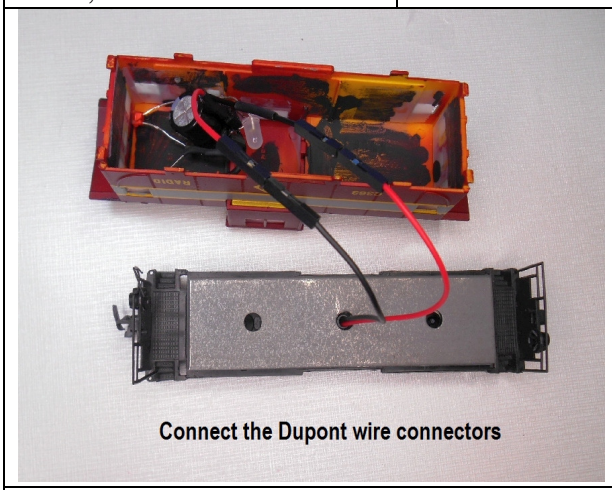
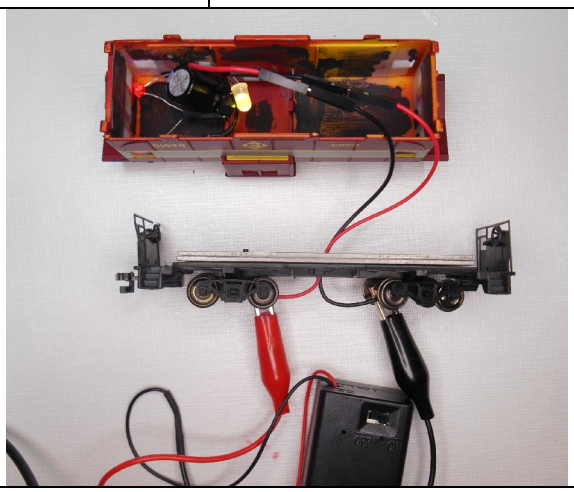


The wires are curved over the copper collar and soldered . Note that the pickup wheels are attached to the truck as shown. Make sure the insulated wheels are set opposite one another. A black mark on the collars denotes the insulated wheel. The 2 male pins will connect to the LED light circuit.



The weight plates are reattached to the chassis floor. Double sided tape, adhesive or mounting material can be used to avoid movement in the cabin.

Step 5 Install the Lighting Circuit into the cabin

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Line up the red LEDs with the holes in the rear wall. Bend the other LED into the cabin,</td><td>Apply a small dab of CA glue to the rim of the LEDs. The gel glue appears to work best.</td><td>Reinsert the leds and hold in place for 15 seconds till glue holds.</td></tr>
<tr><td colspan="2"> 
</td><td>  </td></tr>
<tr><td colspan="2">Once the glue has set connect the Dupont wire connectors . Note that the openings in the connectors align</td><td>The circuit can be retested to make sure lights still work before reattaching the cabin. this can be done with track supplied power or by applying battery power to the collars.</td></tr>
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