LED Lighting of the Bobber Caboose

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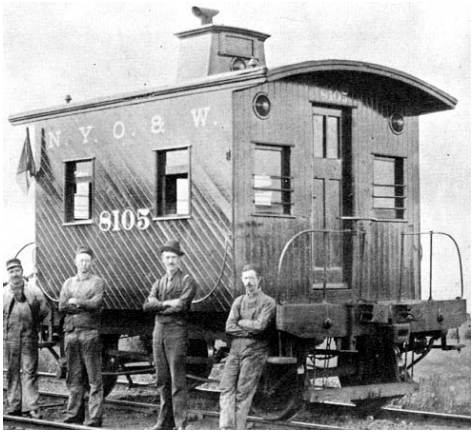
The Bobber was one of the earliest Cabooses to be built in the 150 year history of the freight train Cabooses. The Cabins were initially built of wood set on a metal chassis that rode on 4 rigid mounted wheels. The ride was bouncy hence the name "Bobbers" . They served to accommodate the trains conductor and brakemen. The cabin was lit at night by lanterns and the rear also by side lanterns and eventually incandescent lights.

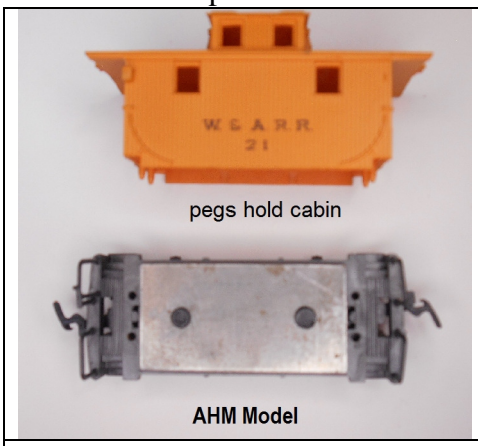


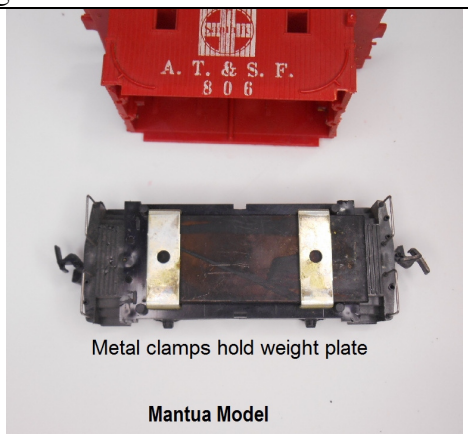
HO scale Bobber cabooses are popular for trains of the early years of steam locomotion. Several companies produced Bobber Cabooses for the model train market. Popular models include those from Bachmann(TM) AHM (TM) and Mantua(TM) were similar in outward appearance but differ in the attachment of wheels and weight setup.

On the rear wall there is a difference as to where to locate the red LEDs. When working on these models to add lighting these differences need to be addressed.

Disassembly

The cabin is separated from the chassis using a small flat bladed screw driver.



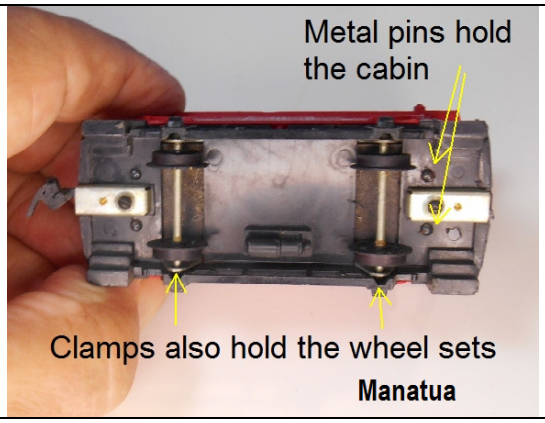


In this AHM and the Bachmann models pegs are on the base of the cabin wall insert into holes in the chassis. The weight plate is held on with round plastic inserts.	In this Mantua model two metal clamps hold down the weight plate an extend below the frame to hold the wheels.

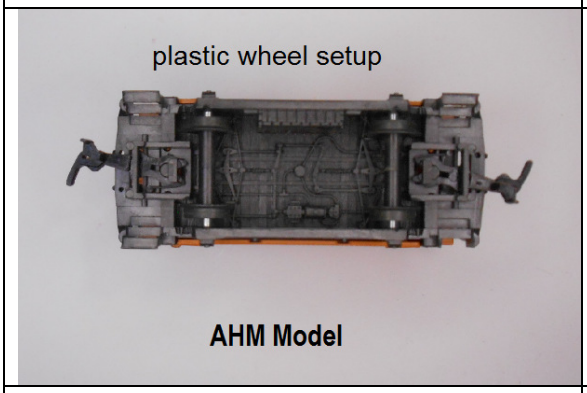
To light the car using track electrical pickup the wires must pass from the pickup wheels to the cabin. This can be accomplished without the need to drill a hole in the metal plate.

NOTE: These instructions and those for conventional models are at the website Project 5

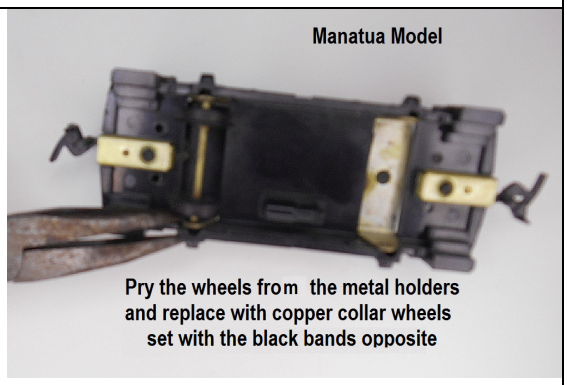
Two holes are drilled through the plastic projections using a 5/64th" drill bit on this model



Here the wheels are inserted into the metal clamp . Four pins hold the cabin onto the chassis. Take care not to lose.



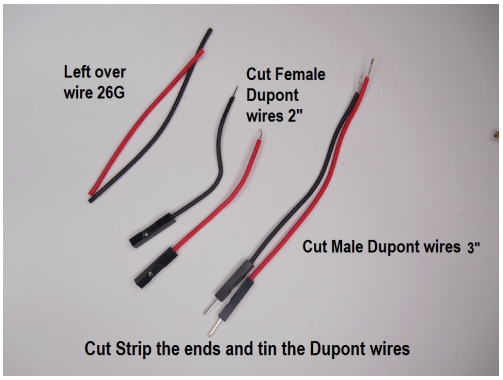
The plastic wheels are easily removed from the chassis in these models

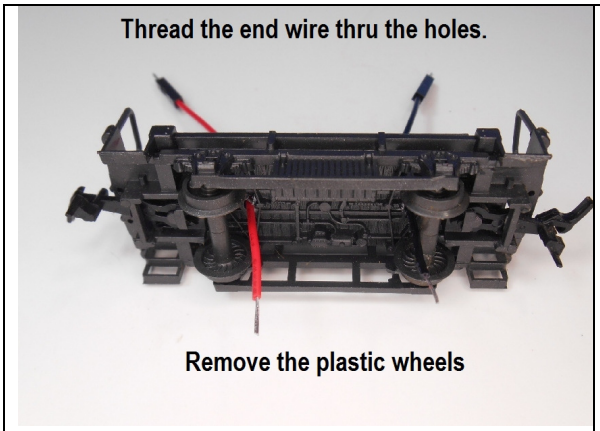


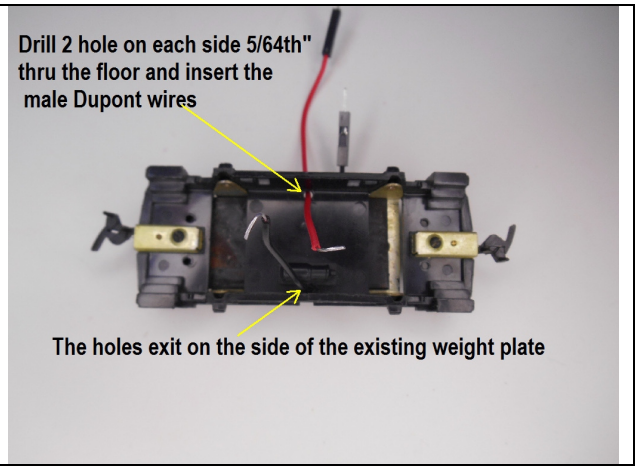
To remove the wheels pliers and careful manipulation is required

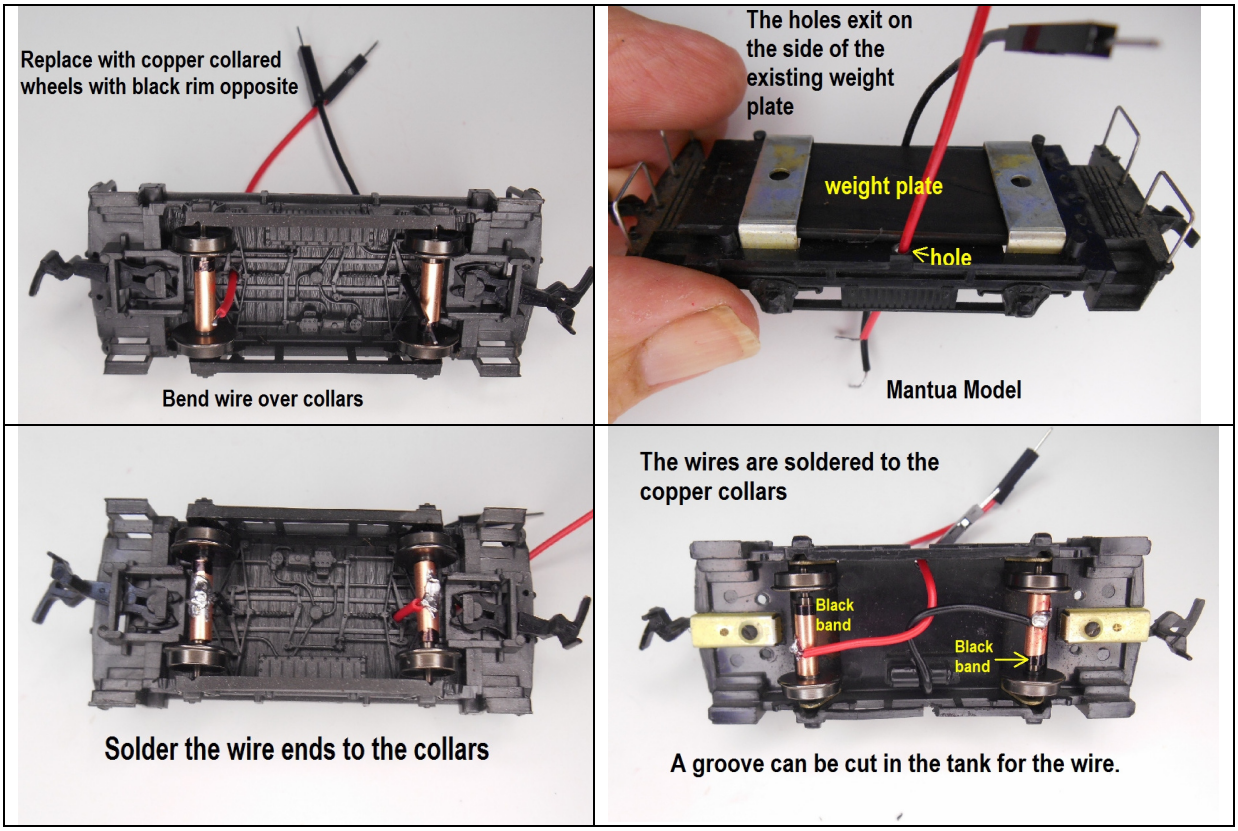
The Dupont Wires

Cut the M/F Dupont wires as shown . Cut at around 2 inches from the female connector and 3 inches from the male terminal . This will leave around 2 inches of unused wire. Strip the ends of both sets with connectors an tin each with solder

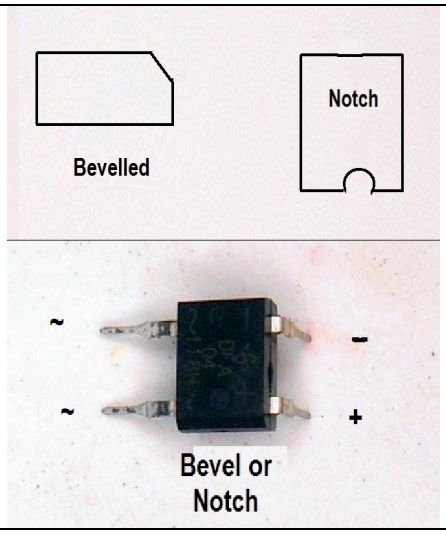
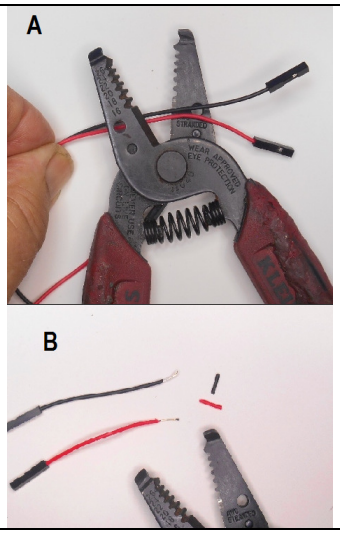
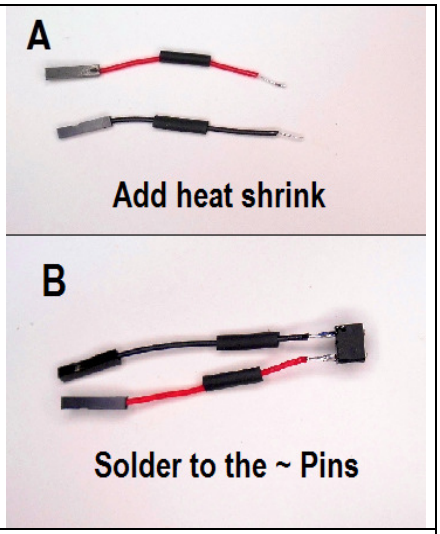


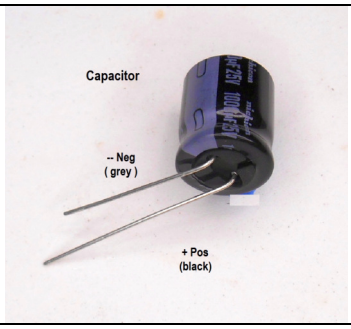
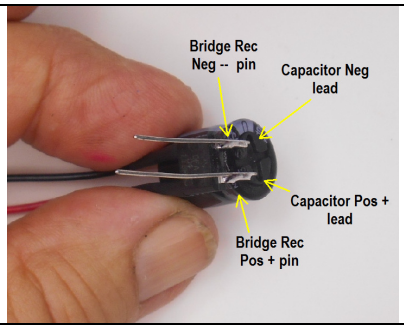
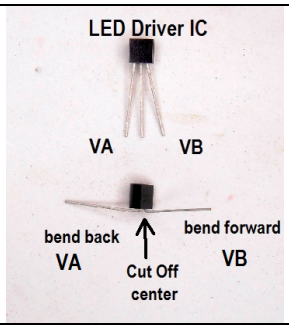
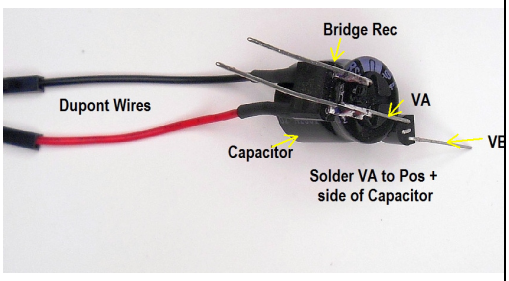
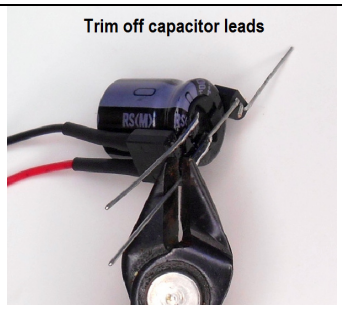
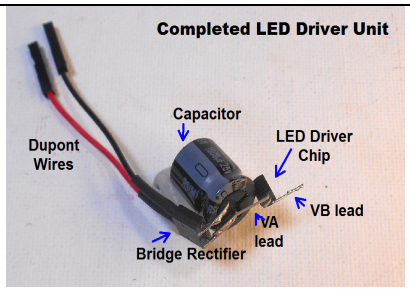






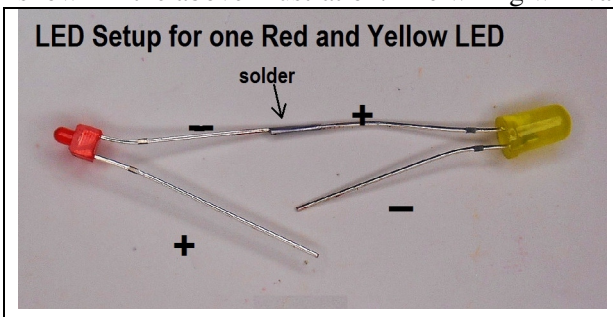
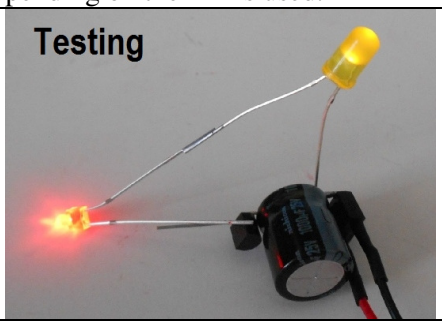
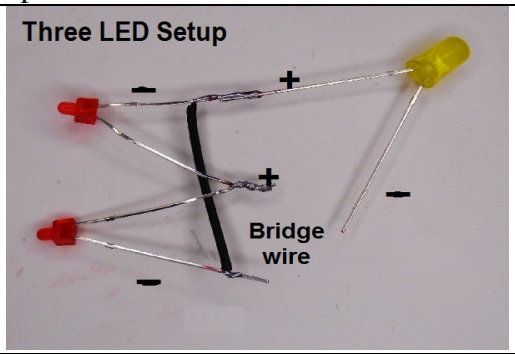
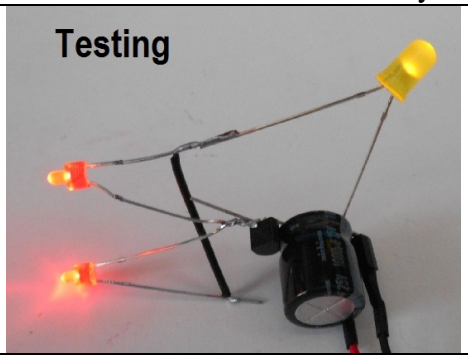
Preparation of the LED Driver Unit.

		
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.

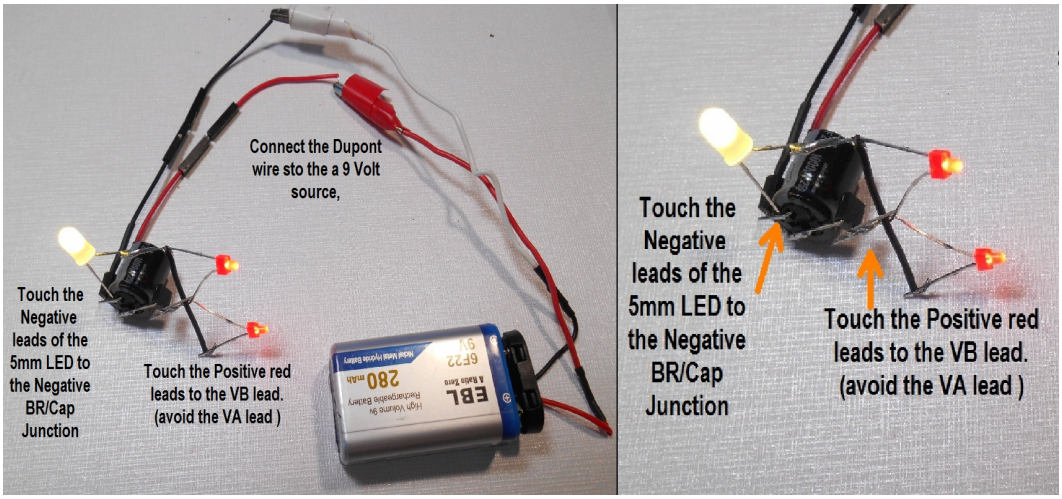
		
4.With the grey side of the capacitor facing you bend the leads of the Capacitor to the left.	5.Line up the Positive (long) lead of the Capacitor with the Positive Pin of the BR and solder together. Repeat with the Negative lead of the Capacitor soldered to the negative pin of the BR.	6.With the flat 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.

The Lighting Setup

Either one or two Red LEDs can be inserted into the rear cabin wall in the possible positions as shown in the above illustration. The wiring will vary depending on the LEDs used.

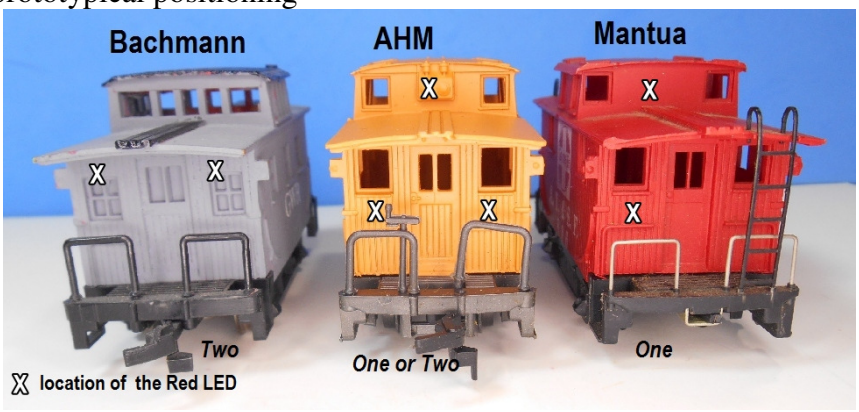
	
Setup for One Red LED	Test with the LED Driver unit only
	
Setup for 2 Red and one Yellow LEDs	Testing connecting with LED Driver

The lighting circuit can be tested before soldering it to the LED Driver unit by using a 9volt battery connected to the track pickup wires .
Touch the soldered 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.



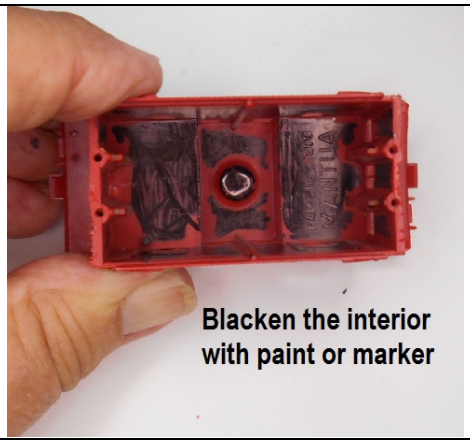
Preparation of the Cabin

The location for the Red LED/s should be selected based on visibility from the rear or based on prototypical positioning

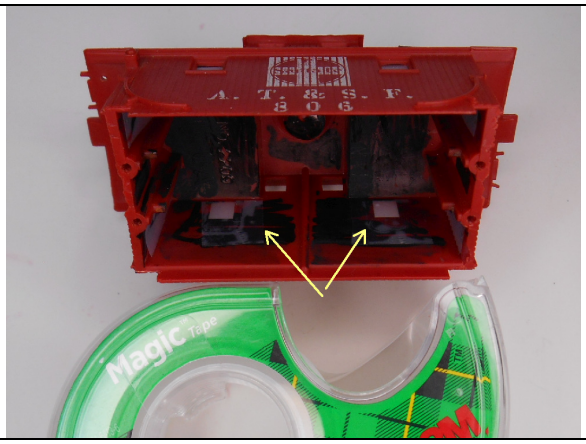


Each model make will have different locations for the insertion of the rear LEDs
Potential locations are marked here with an X

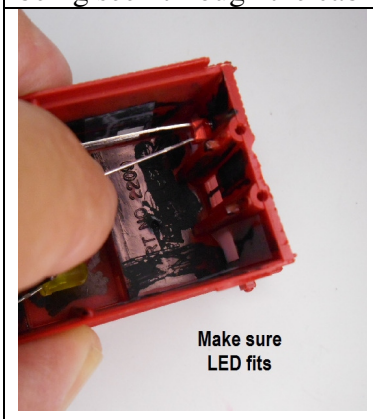
Here a 5/64th size hole has been drilled in the rear cabin wall for the insertion of a single red LED. This model has a ladder set on the other side obstruction visibility of another LED.



The interior of the cabin can be blackened with a wash of black paint or marker pen to reduce light from being seen through the cabin walls

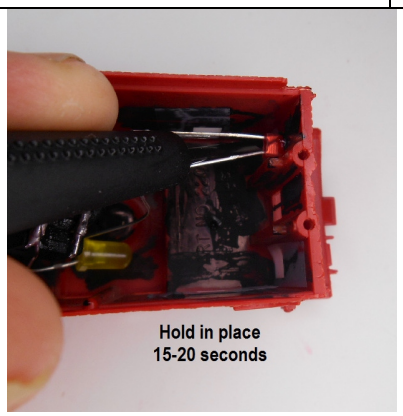


Use clear or transparent tape to cover some of the windows if desired. This will diffuse the lighting in the cabin.

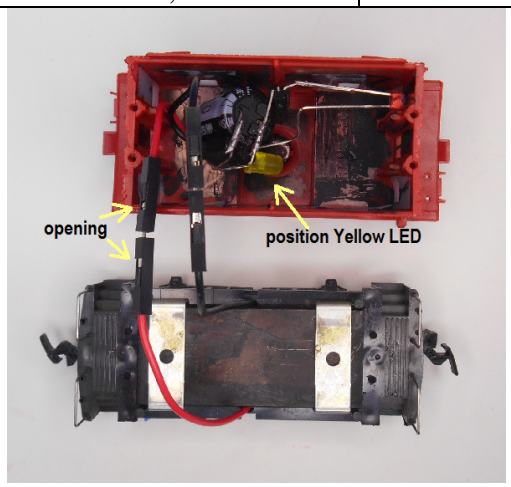


Line up the red LED/s with the hole/s in the rear wall. Bend the other LED into the cabin,

Apply a small dab of CA glue to the rim of the red LED. The gel glue appears to work best as the setting time is longer.



Reinsert the LEDs and hold in place for 15-20 seconds till glue holds. When dry reposition the yellow LED



Connect the Dupont wire connectors . Note that the openings in the connectors align . Position the yellow LED in the cabin.
The circuit can be retested to make sure lights still work before reattaching the cabin

The cabin is reattached and ready for the track. The LEDs will light when the track voltage exceeds 5 volts.. Refer to the website ***modeltrainsounds.com*** Project 5 for more details and these instructions in color