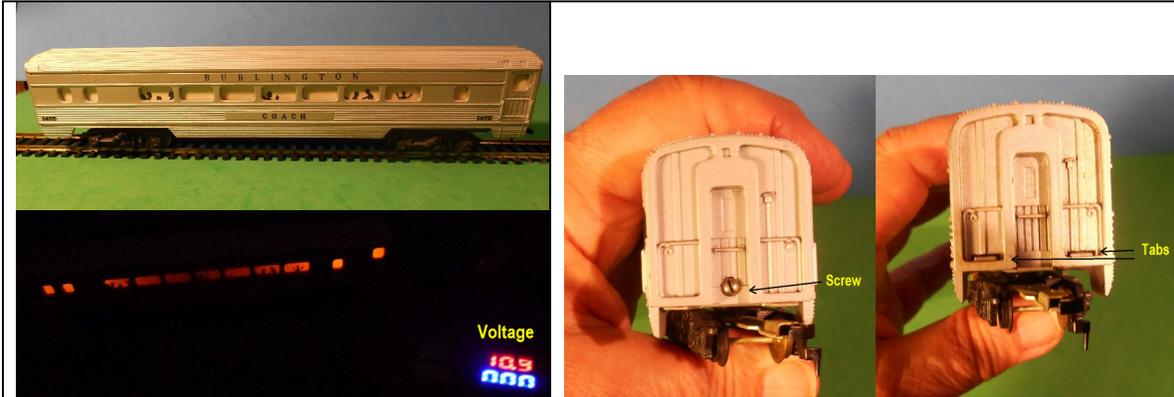


Installing LED Lighting on HO Scale Passenger Cars with Electric Pickup.

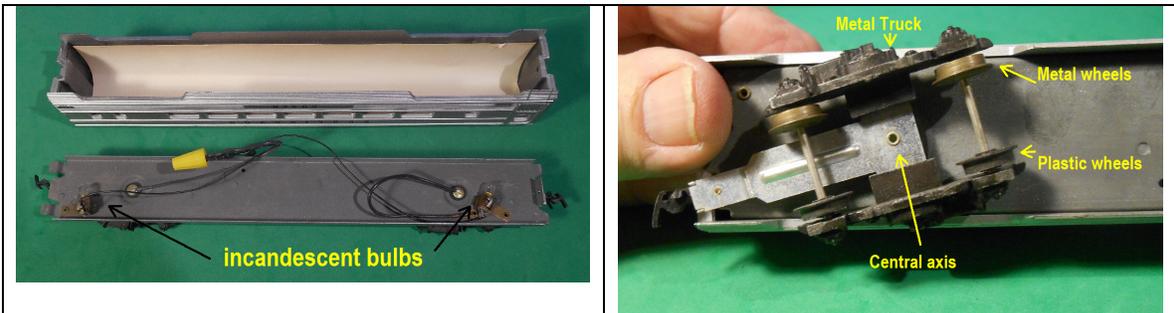
Robert J. Wilkins (Dec 2018)

The LED Lighting system can be used on passenger cars with an electrical pickup system already installed. In this example the electric pickup is obtained using wheel sets containing one plastic wheel and one metal wheel along with metal trucks. The wheels are set on each truck with the metal wheels on one side or the other so that current is picked up through the central pivot which is insulated from the chassis. Other methods of electrical track pickup employ the use of wipers. The principles for installation are the same.



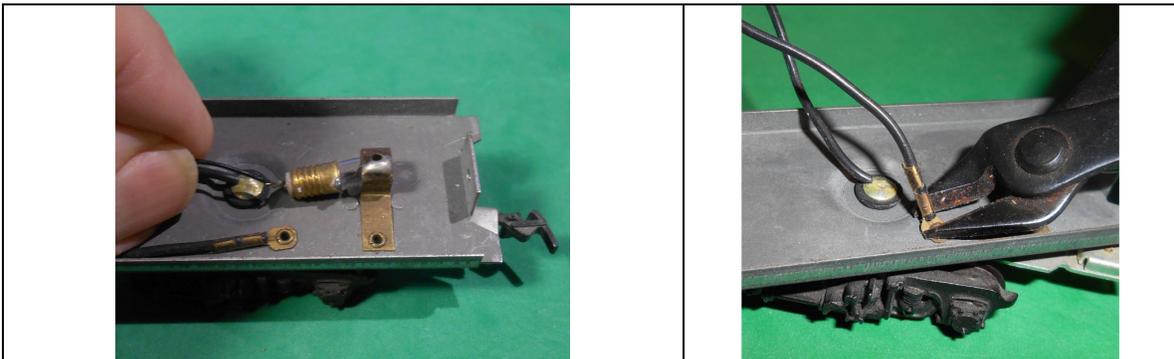
A Burlington Coach with incandescent bulbs. The lower photo shows the threshold voltage of 10.9 Volts required for minimal illumination.

The cabin is secured with a screw and tabs . Removing the screw allows the cabin to slide off the chassis exposing the two incandescent bulbs and wiring setup.



Shell removed showing existing wiring attached to the central axis rivet on the truck. One wire attaches to the metal floor.

One end truck showing 2 metal & plastic wheels, metal truck and central axis rivet. The other truck has wheels set opposite.



Remove the bulbs and common wiring attached.

Cut the wire to the floor.

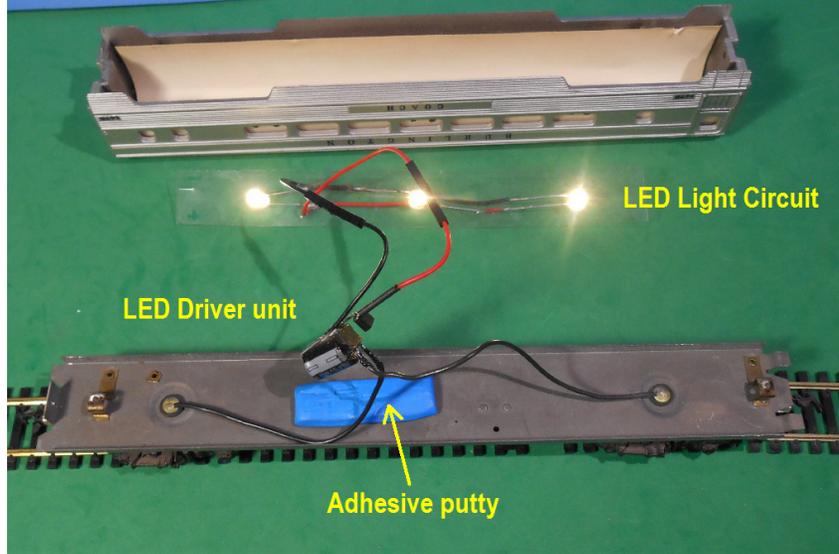


Strip the ends of the two pickup wires and tin with solder.

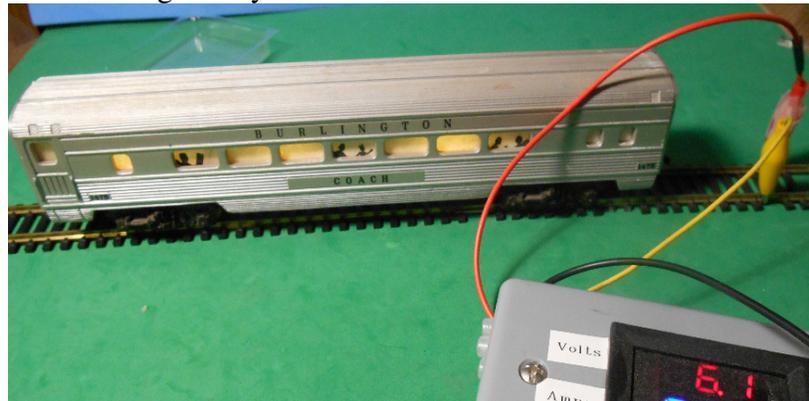


LED Driver unit

Prepare the LED driver unit as per instructions in Project 3.



The LED light circuit is set up with the three LEDs set in parallel arrangement as shown in Project 3 using the **Passenger Car Lighting Kit** items. The lights can be set in the roof with adhesive putty. The led driver unit is set into the floor using adhesive putty to hold and to act as an insulation from the metal floor. The lights are tested prior to reassembly and should light fully at around 6 Volts.



Adding a Red Rear Light



If you wish to add a red rear light to one of the end cars, either a luggage car, viewing car or caboose we can add this light to the circuit. Only three LEDs are recommended on the car circuit hence 2 white 5mm LEDs are used along with one 3mm Red LED. The White LEDs are set in parallel and the red is set in series. If all are set in parallel the red will not light and if all are set in series they all light but at a higher voltage threshold.

The circuit is shown here on the right. A wire is soldered to the positive side of the two white LEDs extending to the positive lead of the red LED that will be set into a hole drilled through the rear wall of the carriage cabin. This hole is drilled to 7/64th" in diameter then filed till the LED fits snugly into this hole. The negative lead is soldered to a wire that leads back to the connecting wire on the negative side of the LED Driver unit.

