

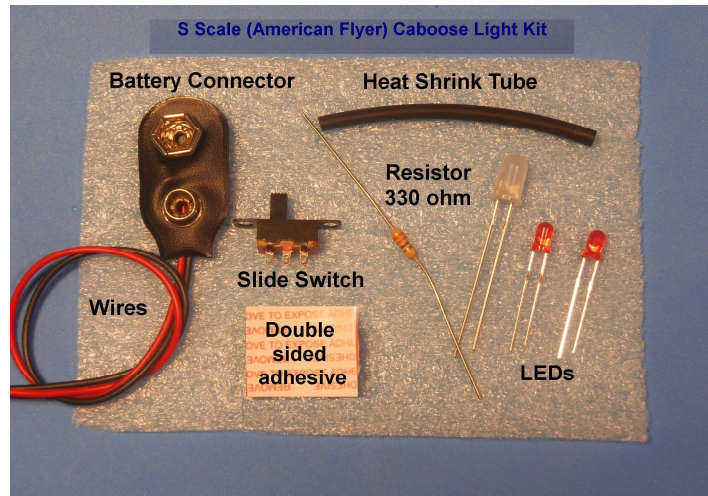
Instructions for Lighting an S Scale Caboose

The S Scale Caboose lighting kit is adaptable for most caboose models of rolling stock including American FlyerTM and contains the same components as found in the O scale version .

The kit* components include

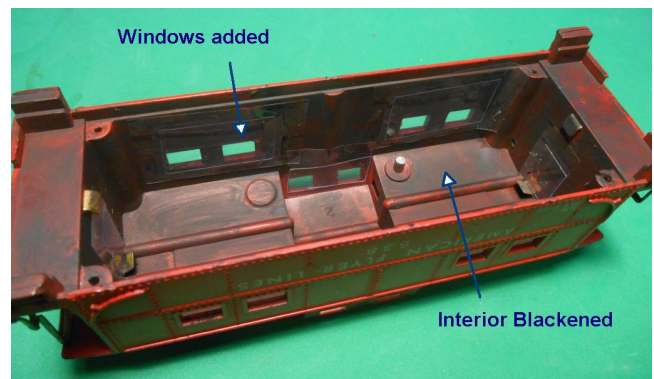
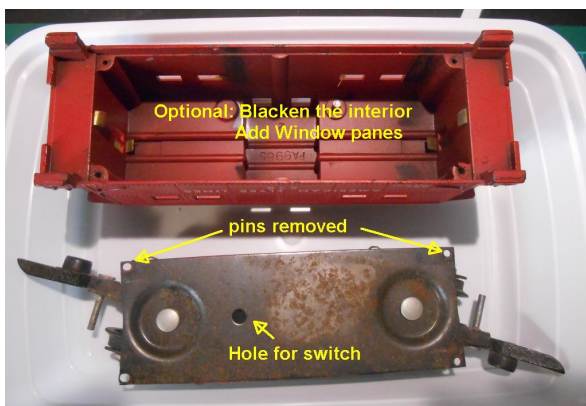
- Three LEDs . Two red 3 mm LEDs and one soft white 5mm LED
- 330 ohm resistor
- 9 volt battery connector and wires
- A slide switch
- Double sided adhesive pad
- Heat shrink Tubing

In addition tools needed include a hobby type solder iron, solder and flux, pliers, a small flat screw driver, small round file, slow speed drill and drill bits up to 1/4", heat gun or hair dryer. Super Glue.



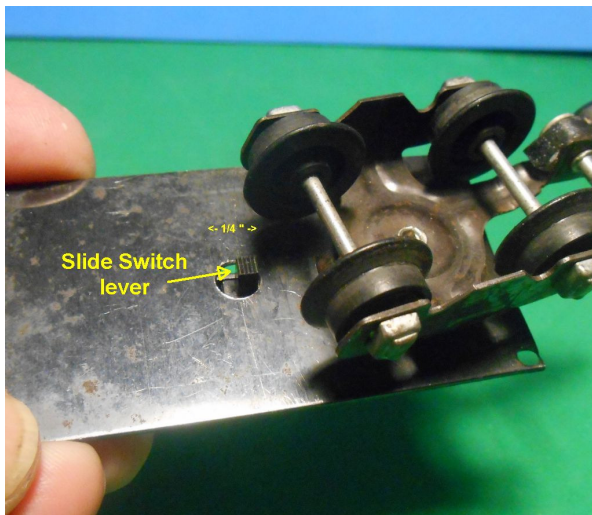
Step 1 Disassemble the cab from the chassis by releasing pins at each corner. Carefully pry up the floor with a small flat screw driver , once the head of the pin is exposed remove it with the pliers. Keep the pins in a safe place for reassembly.

Once separated the cabin and chassis should be cleaned of dust and debris. The interior cabin can be darkened with black water based paint. Windows can also be installed using clear plastic and tape as described in Project 6.



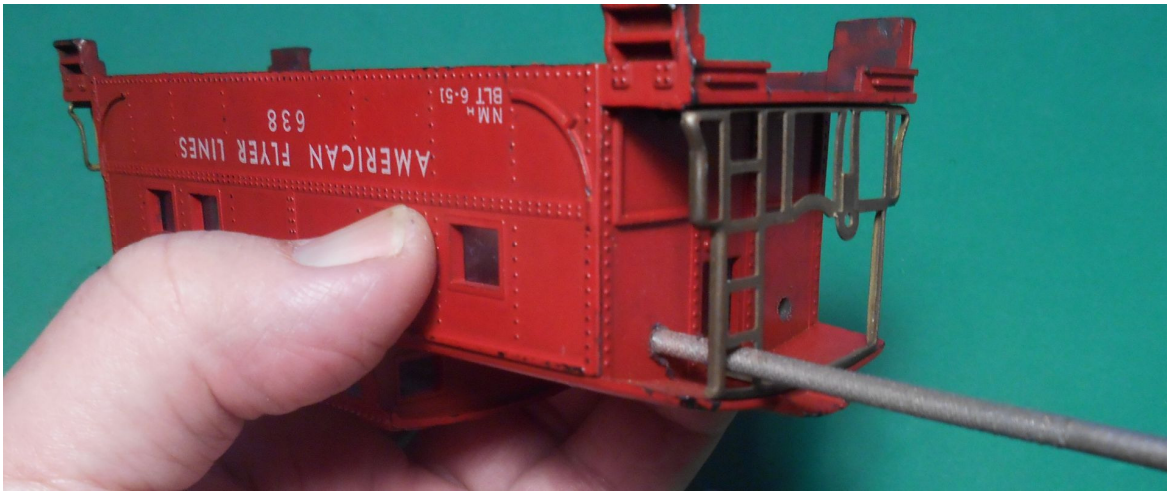
Step 2 Install the switch

The hole in the floor of the caboose is used for access to the slide switch. It must be widened to at least 1/4 inch in diameter in order for the slide switch to operate. This is accomplished using progressively increasing diameter metal drill bits while holding the floor in a vise. Safety glasses should be worn during this step as fine metal filings will be given off. If the floor is plastic the same size hole can be drilled set just behind the wheel truck and allowing room for the 9 Volt battery. The switch is inserted through the hole and glued in place with Super Glue making sure that the slide moves freely between the ON/OFF positions when in the hole.



Step 3 . Drill Holes in the rear wall. Two holes are drilled in the rear wall of the caboose. Position holes about 1 inch apart. Use a fine pilot bit to drill the first hole then use the 3/32 drill bit . This is a smaller diameter than the LED. Use a small round file to ream the holes until the 3 mm red LEDs fit in snugly. This will avoid glueing the LEDs in place though this can be an option when the LEDs are installed.



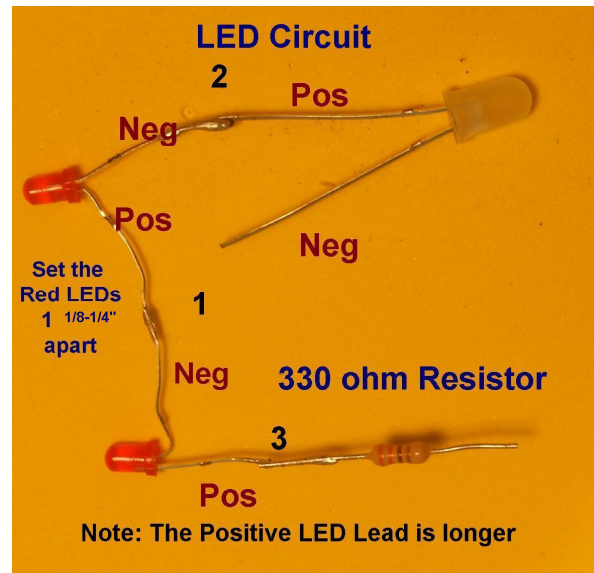


Step 4. Prepare the Light Circuit.

1 Solder the 2 red LEDs together. Negative lead of one to the Positive lead of the other. The Positive lead is always longer than the negative lead. Make the connection just over 1 inch (eg 1 1/8" - 1 1/4" wide)

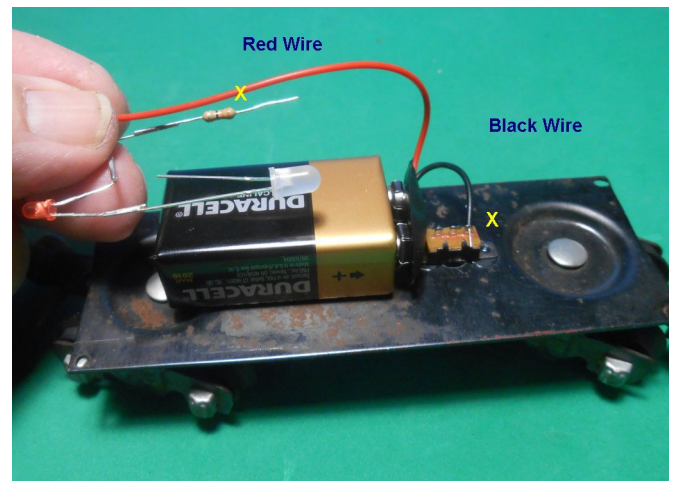
2 Solder the red Negative lead to Positive lead of the white LED.

3 Trim the resistor leads shorter on both sides then and solder one lead to the Positive lead of the red LED.

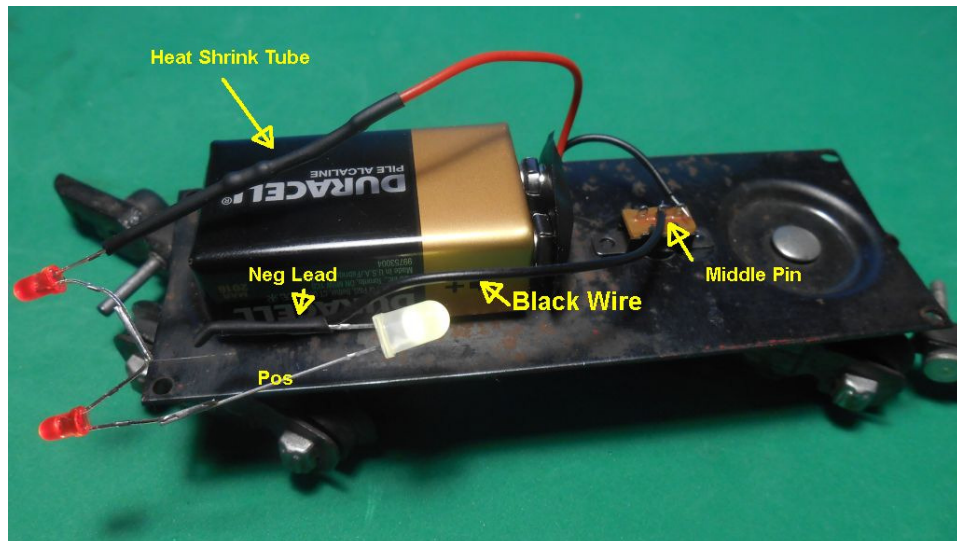
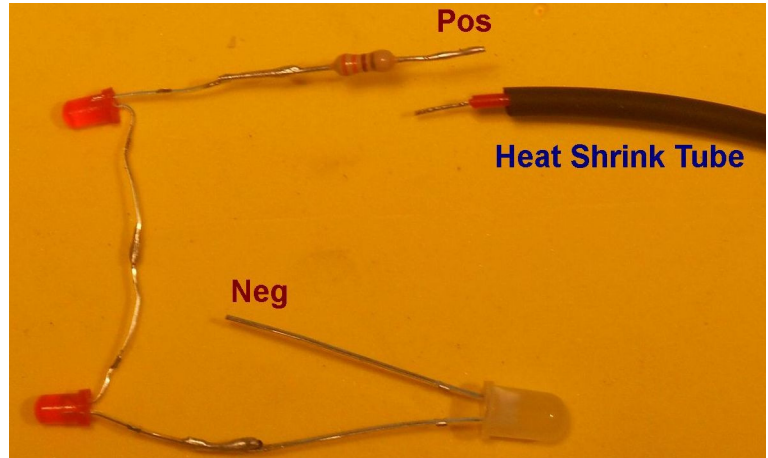


Step 5 Battery Connection

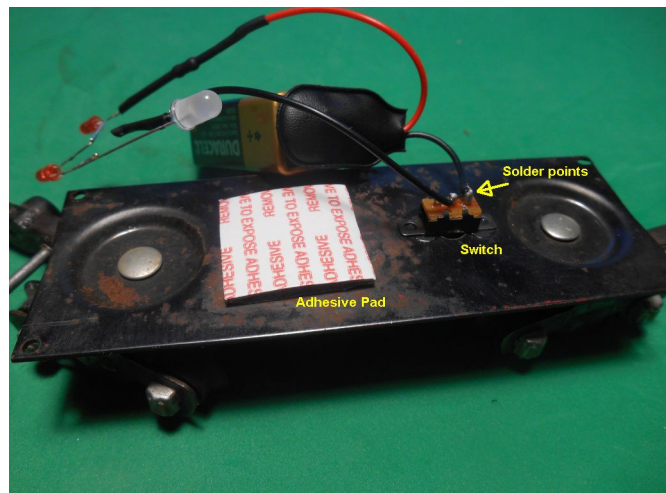
Place the battery with connector attached onto the floor. Cut the black wire about 1", strip and tin. It will be soldered to the far pin of the switch at the (X). Position the light circuit approximately as it will be set in the cabin to determine where the cut in the red wire will be made (X) (about 2 1/2 inches). Leave enough slack to allow the lights to be installed into the cabin. Strip and tin the cut end of the red wire.



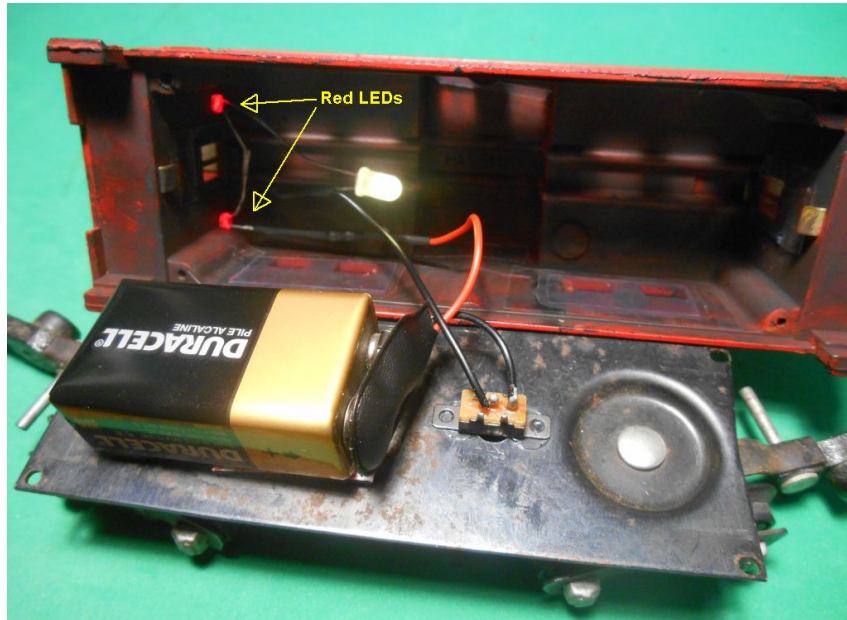
Slip 1 1/2" heat shrink tube over the red wire and solder the end to the resistor . Move the heat shrink tube over the resistor and connections and heat with a heat gun or hair dryer set on high heat. Strip, tin and solder the black wire to the Negative lead of white LED. Place the remaining heat shrink tube over the joint and shrink it with the heat gun. Now solder the black wire to the middle pin of the slide switch and the short black wire to the end pin to complete the circuit. Test the switch and circuit to see all lights work.



Add the double sided adhesive pad to the floor behind the switch. Attach the battery to the pad.



Step 6. Reassemble the Caboose.



Push the red LEDs into the socket holes in the rear wall. Re-position the white LED toward the center and reattach the cabin. Re-insert the 4 pins to lock to the floor to the cabin. Leave the pins slightly exposed, but no loose, so they can be easily removed when the battery needs to be replaced. Fine screws could replace the pins if desired.



Completed Caboose ready for the track.

Turn switch off when not in use.

A new battery will last over 150 hours of use.

* S Scale Caboose Light Kits are available at www.modeltrainsounds.com