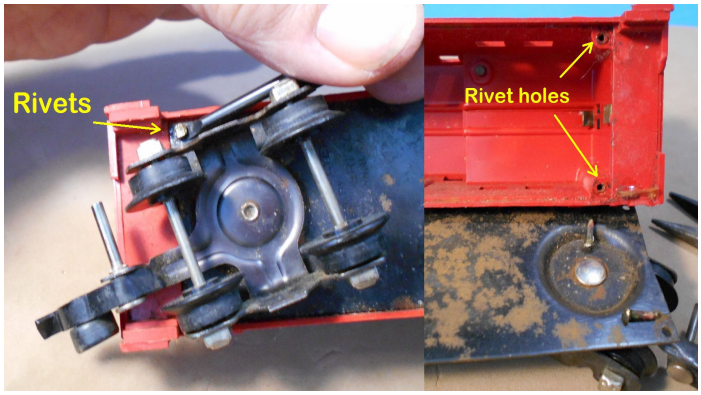
# S or O Scale End of Train Flashing Red LED Instruction Sheet

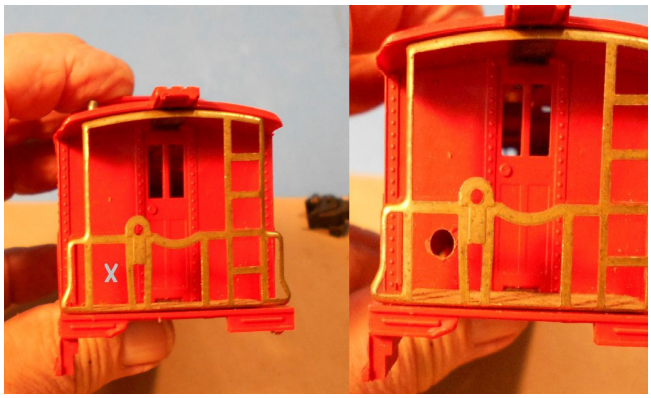
*Robert Wilkins Jan 2020*

Instructions in color and video can be found at the website ***www.modeltrainsounds.com***
Instructions will vary depending on the rolling stock used. These are given here as a guide.

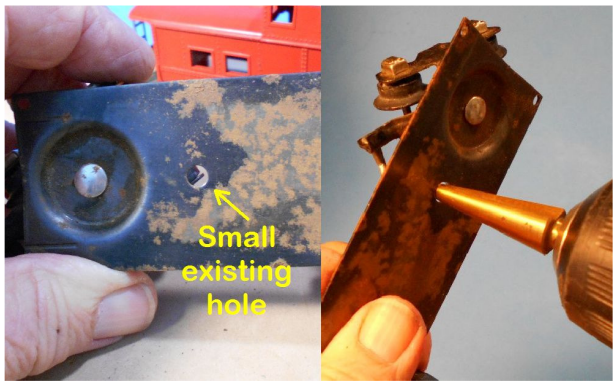

Select the Rolling Stock to be used and disassemble the body from the chassis. Usually screws or tabs at either end secure the body to the frame.




This American Flyer S Scale Caboose is secured by rivets at each corner of the floor. The rivets are lifted by heating with a solder iron then prying out of the holes using a flat screwdriver and long nose pliers

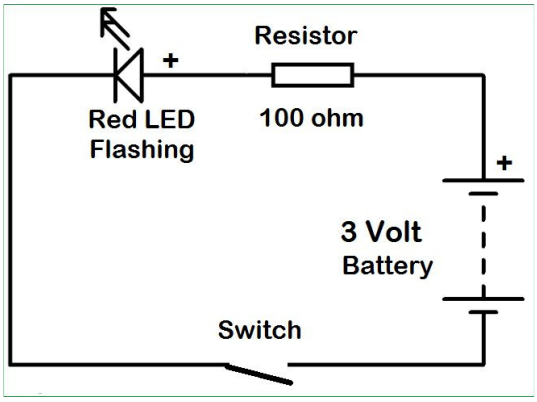



Select a spot where the Flashing End of Train (EOT) will be set. Drill a small pilot hole and expand this to 5/32" in diameter to allow the LED to pass through..

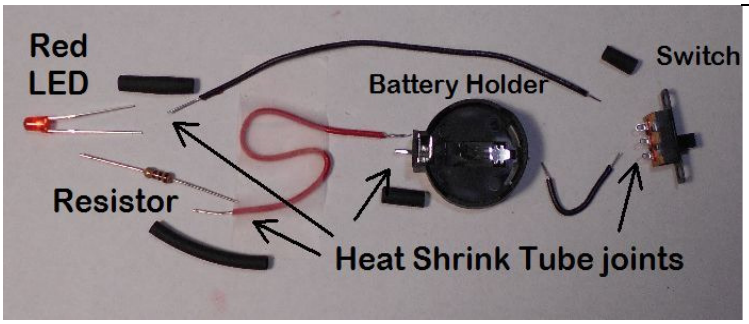


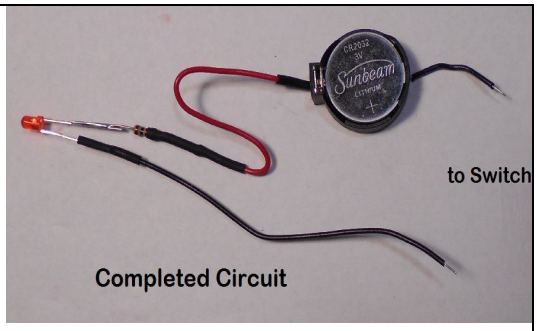

The switch will be inserted into a hole in the floor. Many pieces of rolling stock have a small hole that can be used or widened using a reaming drill bit . The hole should be around 5/16" in in diameter.

Remove any old rust, debris or spurs and sand the floor the floor flat. The switch is glued into place using a small amount of CA Super Glue make sure the slide moves freely in the hole before and after glueing.

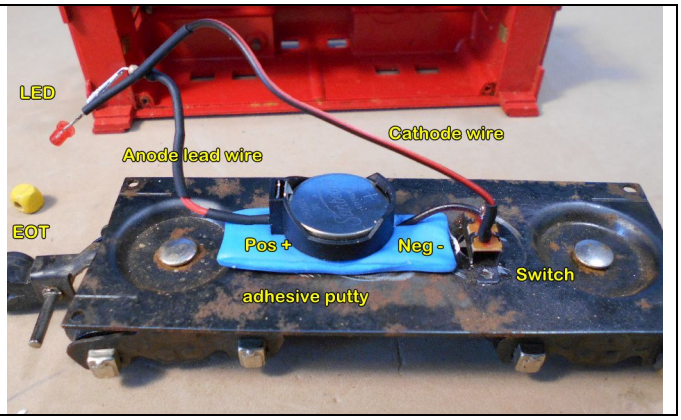


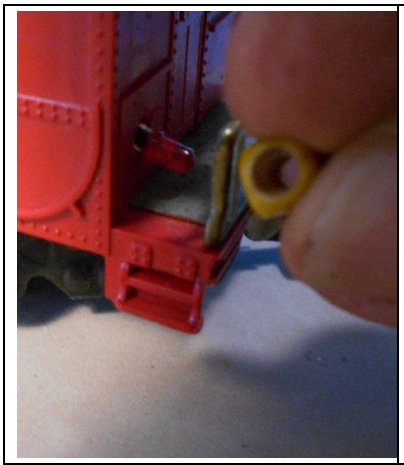

The circuit is setup as shown here using the flashing LED, 100 ohm resistor , 3 Volt battery in holder and a switch. Heat shrink tubing is used to prevent any short circuit. Cover the solder joints and heat with a heat gun or air dryer set on high.




**The lighting circuit** is setup as shown. Shorten the **LED** leads to around 3/4", keeping the anode positive lead slightly longer. Shorten the **resistor** leads to about 1/2" on both sides. Solder the resistor to the anode (Positive) lead of the LED.
Separate the **Red and Black wires**. Determine the length of these wires needed to fit the circuit in the cabin. Cut 1 inch from the black wire. Strip and tin 3/8" from one end and 1/4" from the other on both the **black wires**. Take the short black wire and solder the 3/8" end to the battery terminal as shown above. Solder the longer black wire 3/8" end to the Cathode (Negative) lead of the LED. Cover this joint with heat shrink tube and heat. The free ends of the 2 black wires will eventually be attached to the switch.
Strip the ends of the **red wire** 3/8" at one end and 1/4" at the other. Solder the 3/8" end to the resistor. Cover this joint and half the resistor with 1" of heat shrink tube. Add 3/8" of heat shrink to the free red wire and solder the end to the battery terminal with the clip (positive side). Cover this joint with the heat shrink and heat.
**Test the circuit** by adding a 3 V CR2032 battery to the battery holder and touching the black wires together. The LED should flash on and off.

| | |
|---|---|
| The lighting unit can now be soldered to the switch and installed on the car.<br>The battery is connected to the switch on the negative side of the circuit. Solder the 1 inch of black wire from the battery to the middle pin on the switch. Cover this joint with heat shrink tube. The longer black wire going to the LED is soldered to the outer pin of the switch.<br>Secure the battery holder to the floor of the car with the adhesive putty as shown. Again test the switch<br>**To change the battery squeeze the battery clip to release the battery. (CR2035 - 3volt)** |  |

| | | |
|---|---|---|
|  |  |  |
| The cabin is reattached with the LED inserted through the hole. | The yellow EOT piece is glued to the LED using the wider opening on the yellow cube. | A Kit for this project containing the components is available at the website listed below. |

***If questions or concerns check the website www.modeltrainsounds.com***