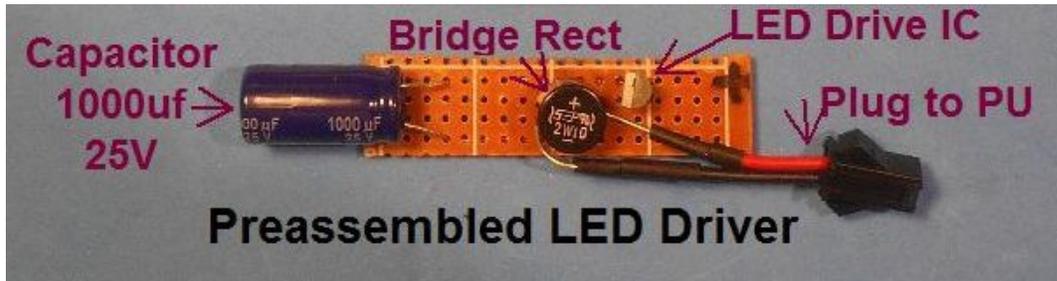


## O & S Scale Lighting replacement with LEDs

### Assembling the LED Driver unit

The kit supplied for this project includes this unit preassembled on a perforated board to ensure that the assembly is correct. Here is how it is constructed to fit the LED lighting system when an electric pickup is already present.

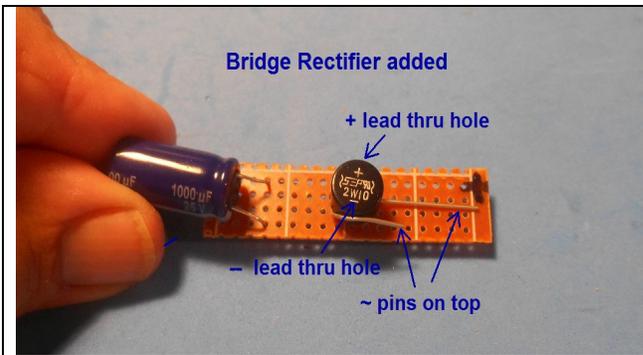


The components of the LED Driver unit include.

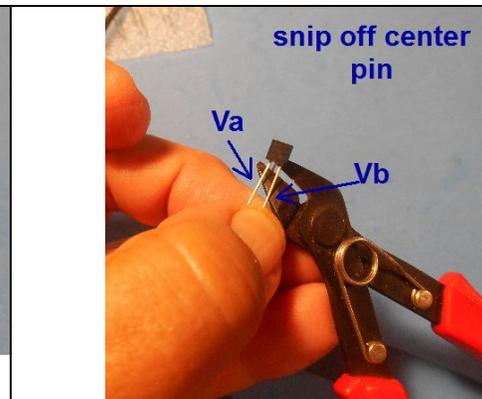
- A 1000uf or higher Capacitor rated for 25 Volts (CAP)
- A Bridge Rectifier 2W10 2A Bridge Diode Rectifier (BR)
- A LED Driver IC chip 20 milliamps constant current to 90 Volts. CL2N3
- Connecting male plug with wires to track pickup
- Perforated board approx 1/2" x 2 3/4"

Here are the instructions for how to make the unit.

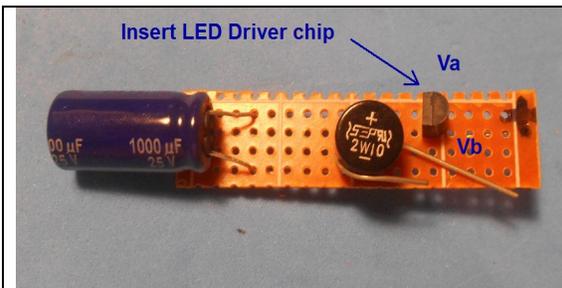
<p>1) Label the perforated board with a (+) symbol on one edge. 2) Insert the capacitor leads on appropriate edge. Positive lead on the + side and</p>	<p>near one end of the board. 3) Bend the CAP body back onto the board. 4) Bend the wires underneath toward the other end</p>



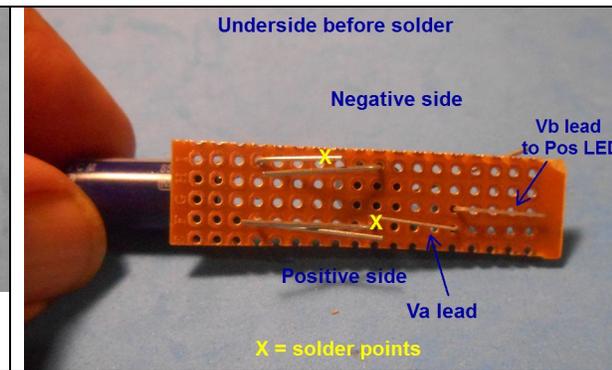
5) Insert the Bridge Rectifier (+) and (-) leads into the board according to polarity.  
 6) Bend the Leads labels (~) back toward the end and on top. Avoid touching other wires.



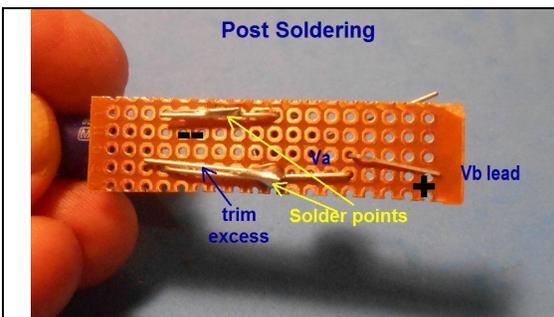
7) Snip off the Center pin of the LED Driver Chip as it is not used. The Va lead is on the left when looking at the flat side of the driver chip, the Vb lead is on right.



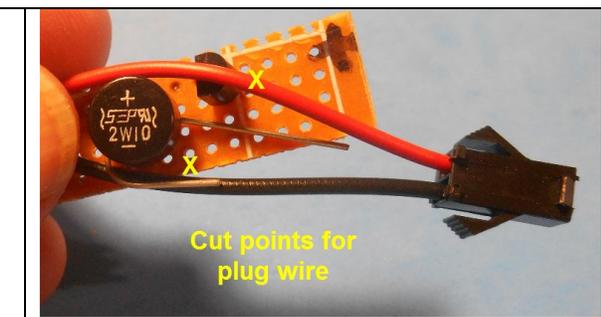
8) Insert the Driver Chip with the flat face toward the capacitor. Bend the Va lead back to touch the other positive leads. Bend the Vb lead away toward the end.



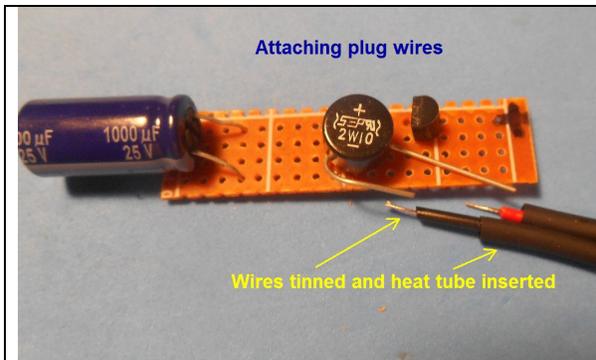
9) Turn the board over. The leads on the positive side Cap, BR and Va will be soldered together and on the Negative side the leads of the Cap and BR will be soldered Label (-) and label the Vb lead (+)



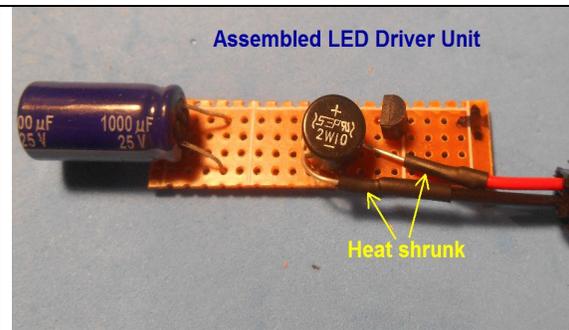
10) Note the solder points. Trim off any excess leads



11) Mark the cut points for the male plug wires about 1 inch from the plug.



12) Cut and strip the wire ends. Tin with solder and insert heat shrink (HS) tube over ends before soldering.



13) Solder the wires, return the HS tube over the joint and shrink it with a heat gun or hair dryer on high setting.

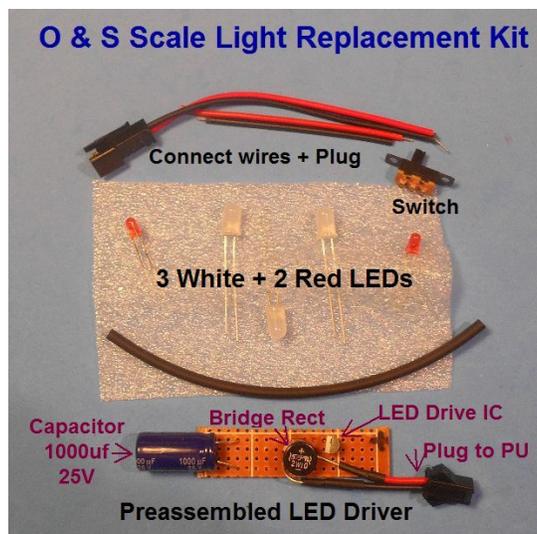
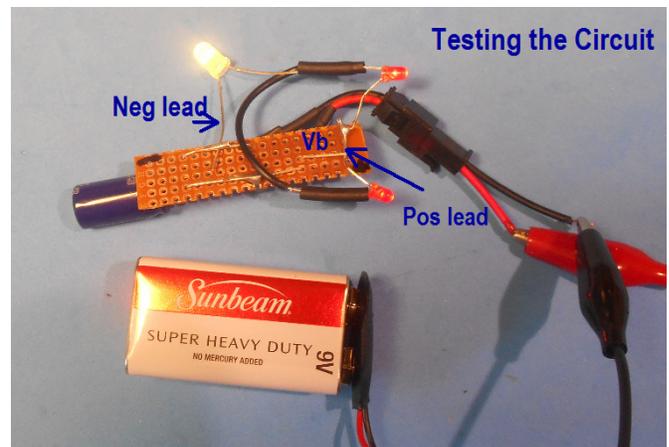
Test the circuit either with a single LED or a proposed LED Circuit.

Connect a 9 volt battery to the leads that will go to track pickup.

The order does not matter as the Bridge Rectifier will correct the polarity

Temporarily attach the Positive lead side of the LED or LED circuit to the Vb lead and the Negative lead to the negative side of the BR Cap junction. All lights should light up if the circuit has been correctly assembled.

**Do Not Test without the LED Driver unit present** otherwise the bulbs will blow out.



Order at [www.modeltrainsounds.com](http://www.modeltrainsounds.com)