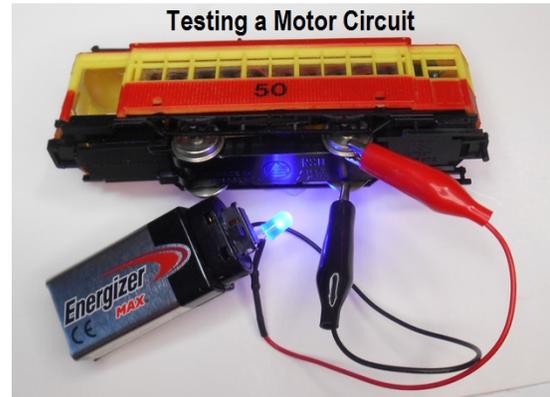
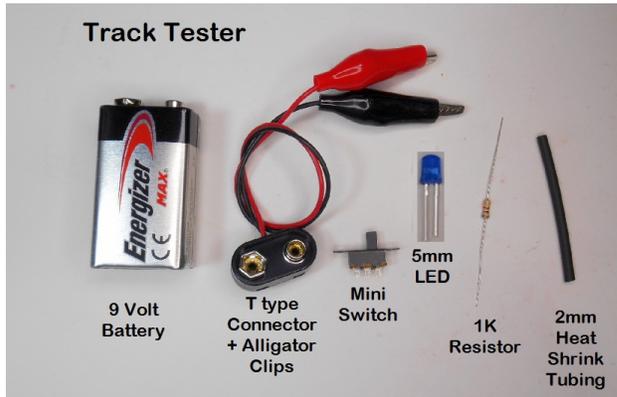


# A Handy Electrical Tester for all scales

*modeltrainsounds.com Jan 2026*

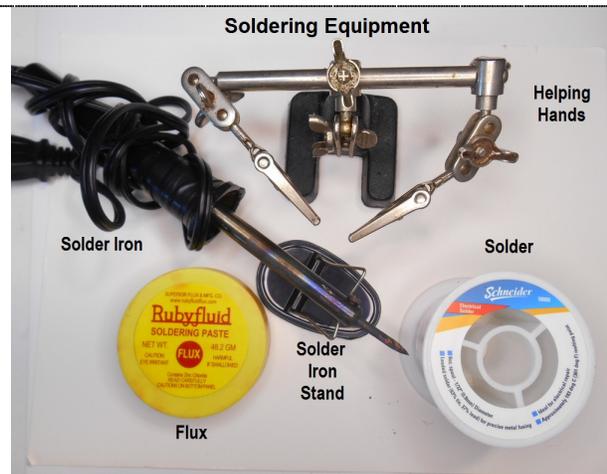
A simple means of testing LED circuits, track and locomotives for current flow and polarity can be made using the following components.



9V Battery connector with alligator clips, switch, Blue LED, 1K Resistor and heat shrink

Example: Testing electrical pickup and motor circuit of a AHM Trolley

## Tools Required



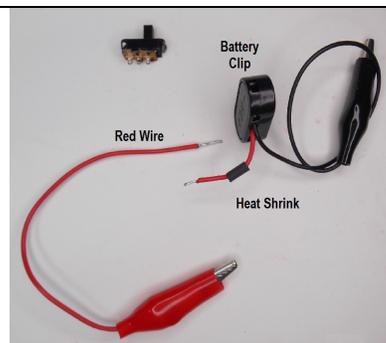
Pliers, Wire Cutter/Stripper, Clamp CA glue

Solder and soldering tools and heat source.

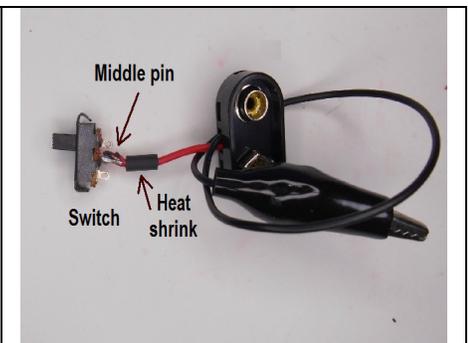
## Assembly



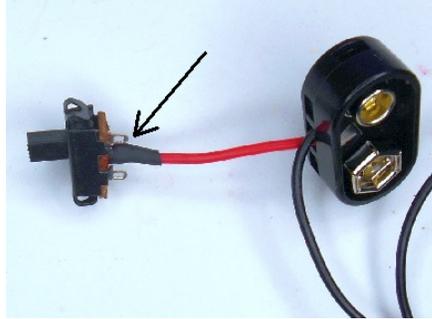
Bend the wings of the switch inward with pliers to cover the sides of the switch



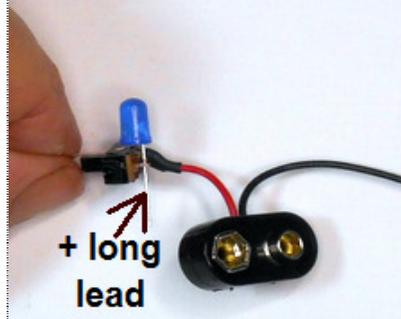
Cut the Red wire 1" from the battery clip. Strip off a 1/8" of the insulation from the cut ends. Add 1/4" of heat shrink to the short red wire



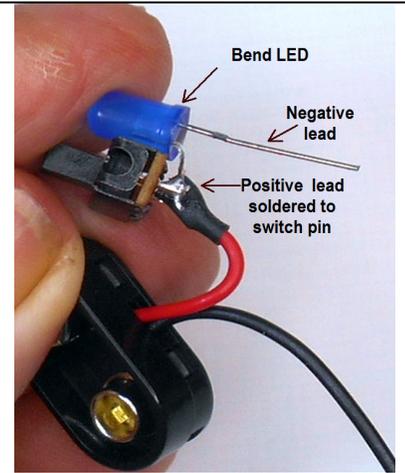
Solder the wire to the middle pin of the switch. Cover joint with 1/4" heat shrink tubing and heat with lighter flame or hair dryer.



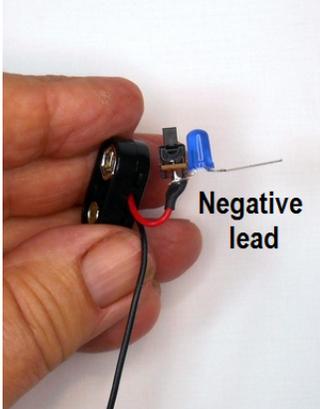
Here the tubing has been shrunk over the solder joint of the short red wire to the middle switch pin.



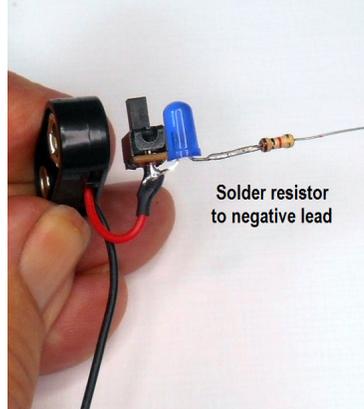
Insert the longer, positive lead of the LED into the outer pin of the switch on the side of the red wire.



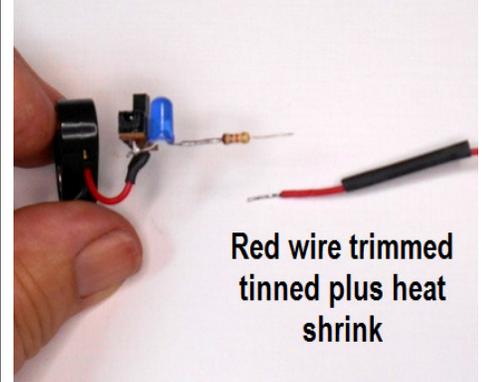
Bend the LED onto the side of the switch and solder the (+) LED lead to the switch pin. Trim off the excess wire from the lead at the solder joint..



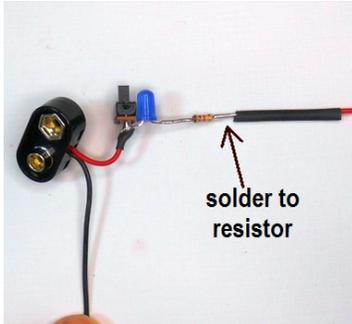
Bend the negative lead out. Cut off the end to 3/8" from the base of the LED.



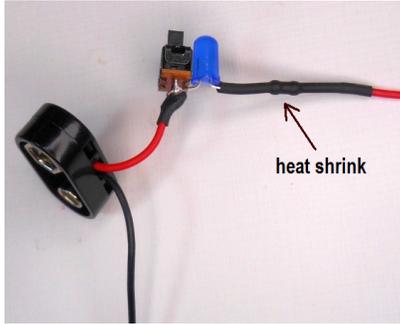
Cut one of the wires of the resistor to 1/2" from the body and solder it to the negative lead of the LED.



Cut the other end of the resistor to 1/2". Trim 3/8" of the insulation off the red wire free end and add 1" of heat shrink tube.



The red wire with the alligator clip is now soldered to the resistor. The heat shrink tubing is moved over the resistor body.



Heat the tubing with hair dryer or lighter flame to shrink the tubing over the resistor and solder joints.



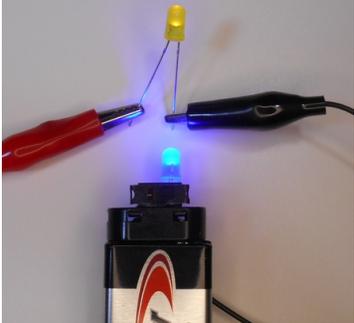
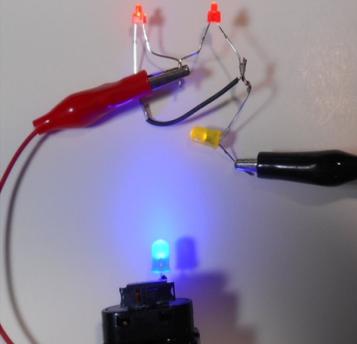
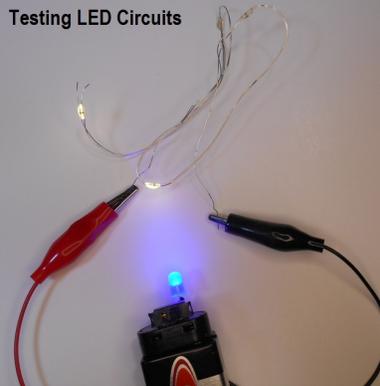
Add a dab of gel type Super glue to the top of the battery clip and bottom of the switch. Bend the switch onto the clip and hold in place together for around 20 seconds to bond.

		
<p>Use a clamp to firmly seat the switch onto the battery holder and let set for a few hours. Test that the switch moves freely.</p>	<p>Add the 9 Volt battery and test the working by turning ON the switch and touching the ends of the Alligator clips</p>	<p>The LED Should light if assembled correctly and be off when the switch is turned OFF.</p>

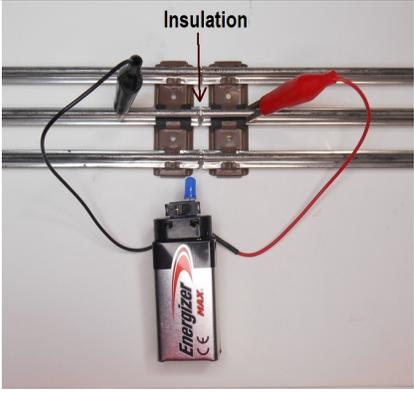
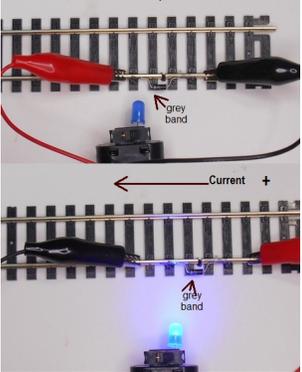
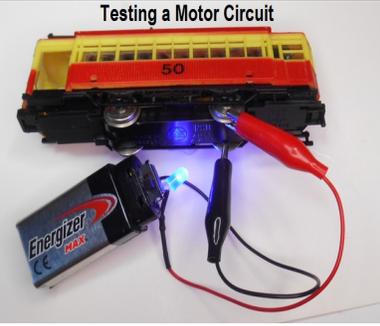
## USES

The Tester unit can be used for testing the integrity of a circuit, check for potential short circuit and testing LEDs. The battery and resistor combination will generate around 8 milliamps of current with current flowing in one direction from Positive to Negative..

### 1. Testing LEDs and LED Circuits

	<p>Testing LED Circuits</p> 	<p>Testing LED Circuits</p> 
<p>Testing a single LED and its polarity</p>	<p>Testing an LED Circuit</p>	<p>Testing Fairy light Circuits. Note 2 are on and 2 off .</p>

### 2. Testing Circuit Integrity

<p>Insulation</p> 	<p>+ Current → X</p>  <p>← Current +</p> <p>grey band</p>	<p>Testing a Motor Circuit</p> 
<p>Testing for current across a cut rail gap or insulator indicates if cut or insulation is incomplete</p>	<p>Testing a diode current flow. The grey band on the anode side show blocking of current flow.</p>	<p>Testing circuit integrity on a locomotive or trolley by checking the track pickup on the wheels.</p>

### 3. Testing for Short Circuits

<p>Here the LED reveals a shorting of the track due to bad insulation of the middle rail of this 3 rail O scale track.</p>	<p>Here the track shows no cross current in the top track test but lights when tested on the same rail as expected..</p>

### 4. Testing for Power

By jumping the battery connections the circuit can be used to test for power in a circuit of under 20 Volts. Here the wire of a metal paper clip is cut and bent outward. It is used to jump the Positive and Negative terminals of the battery connector. Because of the polarity of the LED, as a diode, the black wire must be connected to the positive side of the circuit being tested.

<p>Cut paper clip inserted into Tester terminals</p>	<p>Can be used to test track for power. Note black is connected to Positive side for LED to light</p>
<p><b>Tester Kit</b> A kit containing the components necessary to prepare this Tester is available at the website <a href="http://modeltrainsounds.com">modeltrainsounds.com</a> under Project #31. These instructions are included with the kit.</p>	