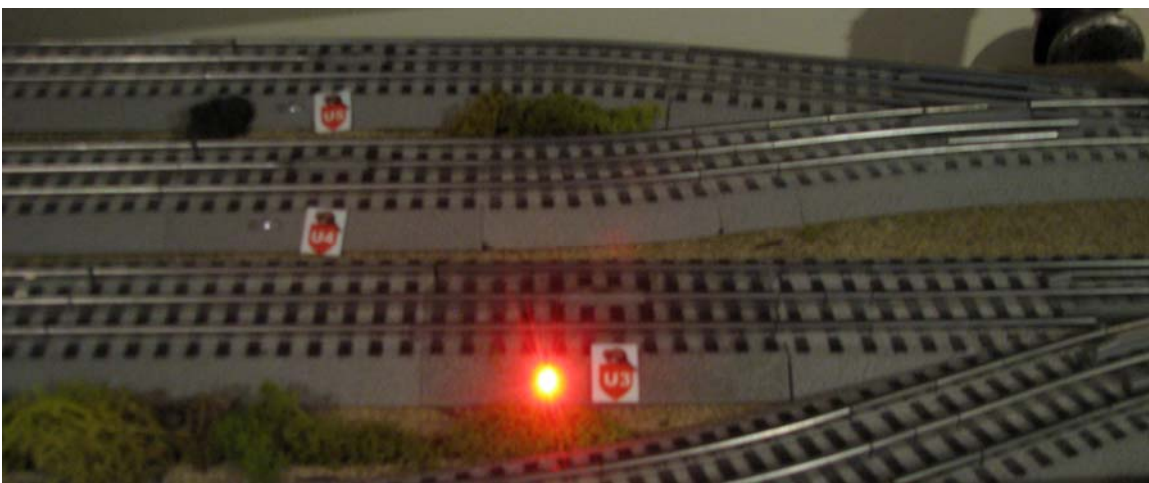


Fastrack Uncoupler LED indicator light Installation

In order to know when the uncoupler magnet is energized, an LED lighting system can be added to the fastrack uncoupler, and fit under the roadbed as part of the uncoupler track section.

This will give you a positive feedback that you have pressed the correct uncoupler pushbutton, and confirm that the pushbutton has properly released and is now off. If the pushbutton is stuck, the LED light will stay ON, telling you that the pushbutton is stuck. If the uncoupler magnet stays on too long (for more than say 15 seconds), the magnet will overheat, melting the uncoupler track roadbed and destroying the uncoupler track section.

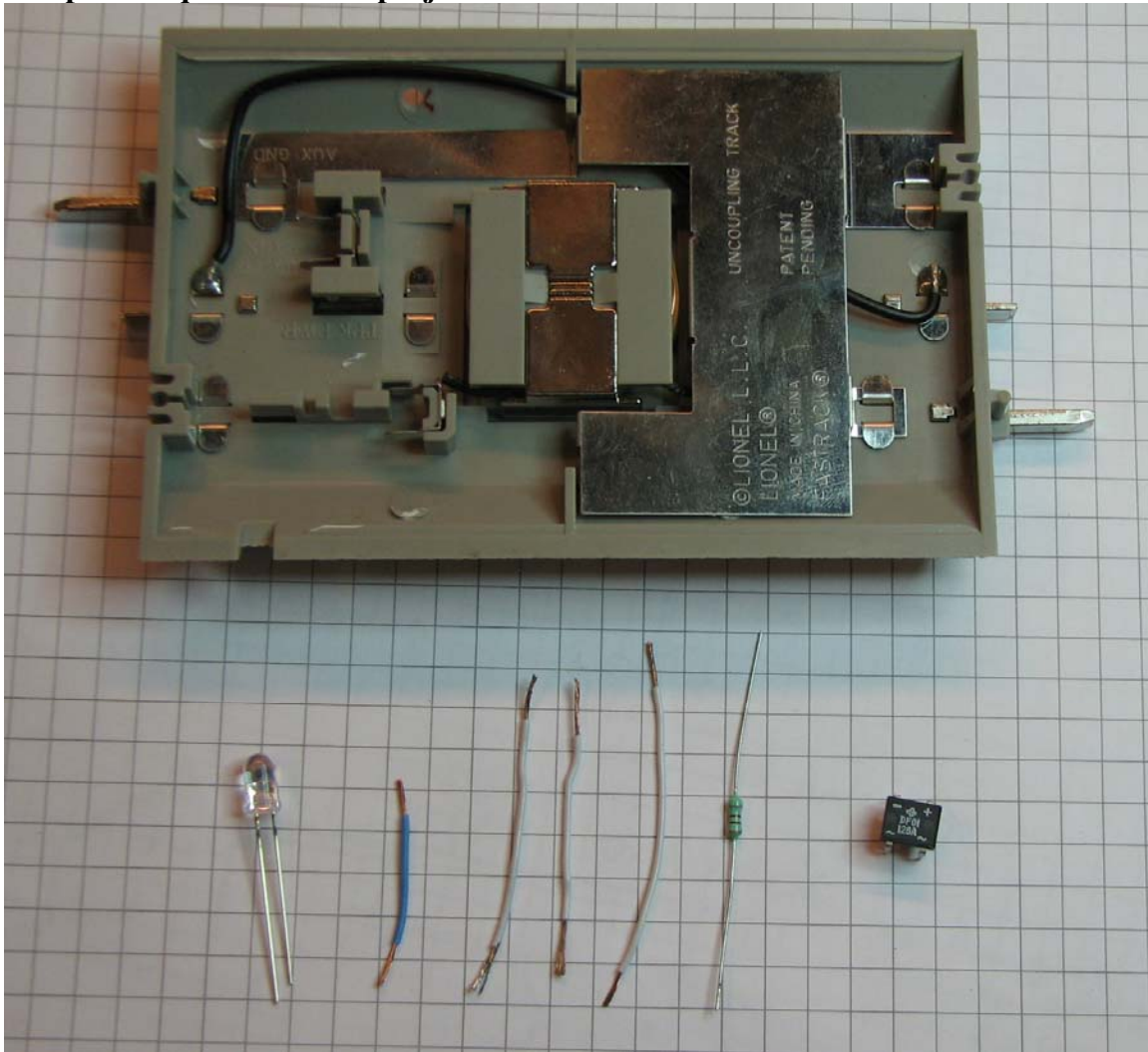
I have lost 4 uncoupler track sections so far, you can smell the burning/melting plastic, but cannot see what uncoupler pushbutton is stuck. By the time you smell the overheated uncoupler, it is destroyed.



The LED used is clear red, which means it is clear when off (and generally invisible), and bright red when energized ON.

Fastrack Uncoupler LED indicator light retrofit instructions

The parts required for this project are:



Water clear
Red LED

22 gauge wire

Rectifier

820 Ohm
Resistor

1/16" & 3/32"
Heat shrink tubing



Fastrack Uncoupler LED indicator light retrofit instructions

Parts List:

- 5mm water clear red LED 2000 mcd, 2.6V @ 20 mA
- 22 gauge wire
- 100V DAP, 120A DF01 Rectifier
- 820 Ohm resistor
- 1/16" dia heat shrink tubing
- 3/32" dia heat shrink tubing

Tools required for this project are:



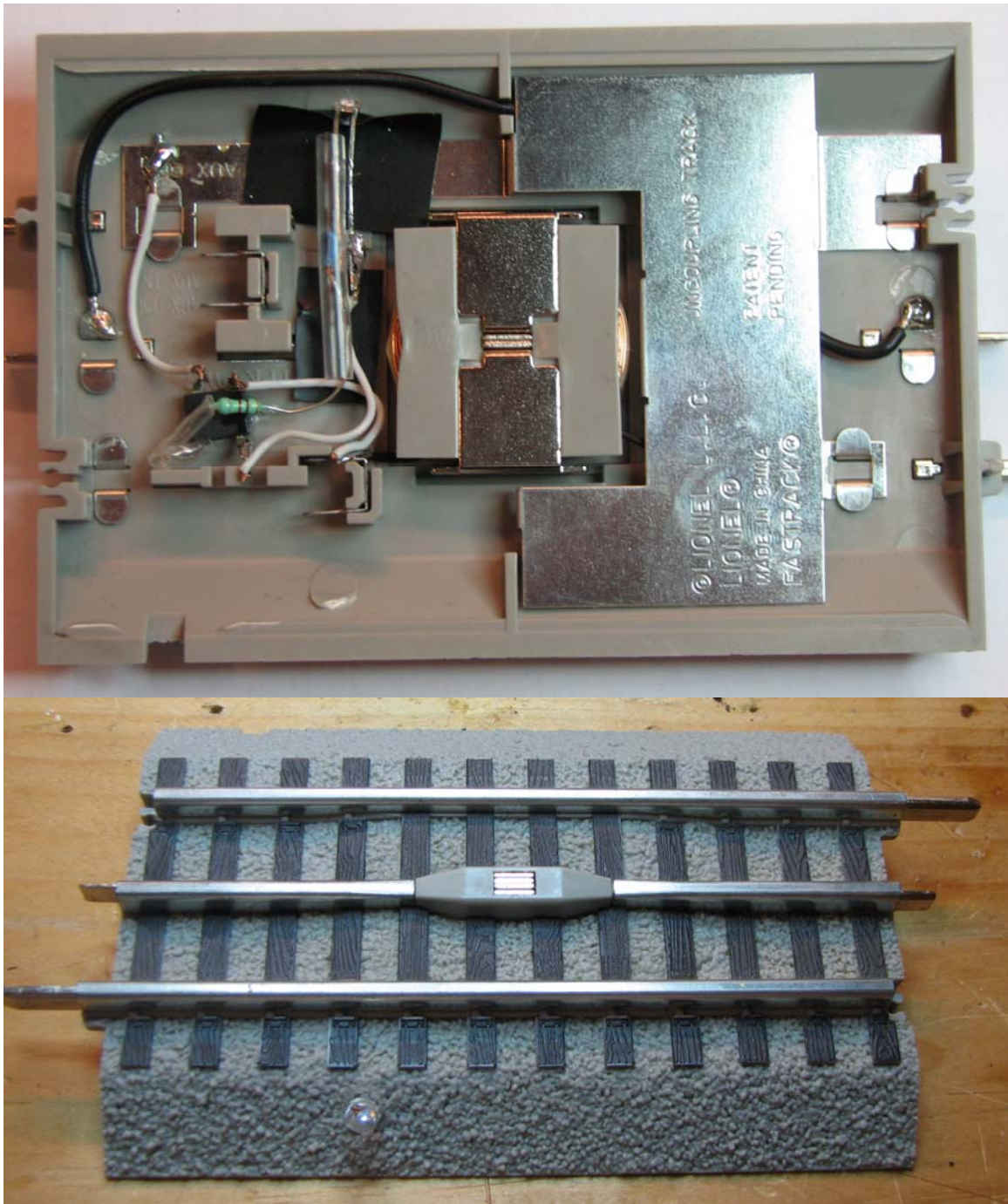
Tool List:

- soldering iron
- resin core solder (small dia is better for fine work)
- soldering paste (used as part of the tinning process)
- black electrical tape

Fastrack Uncoupler LED indicator light retrofit instructions

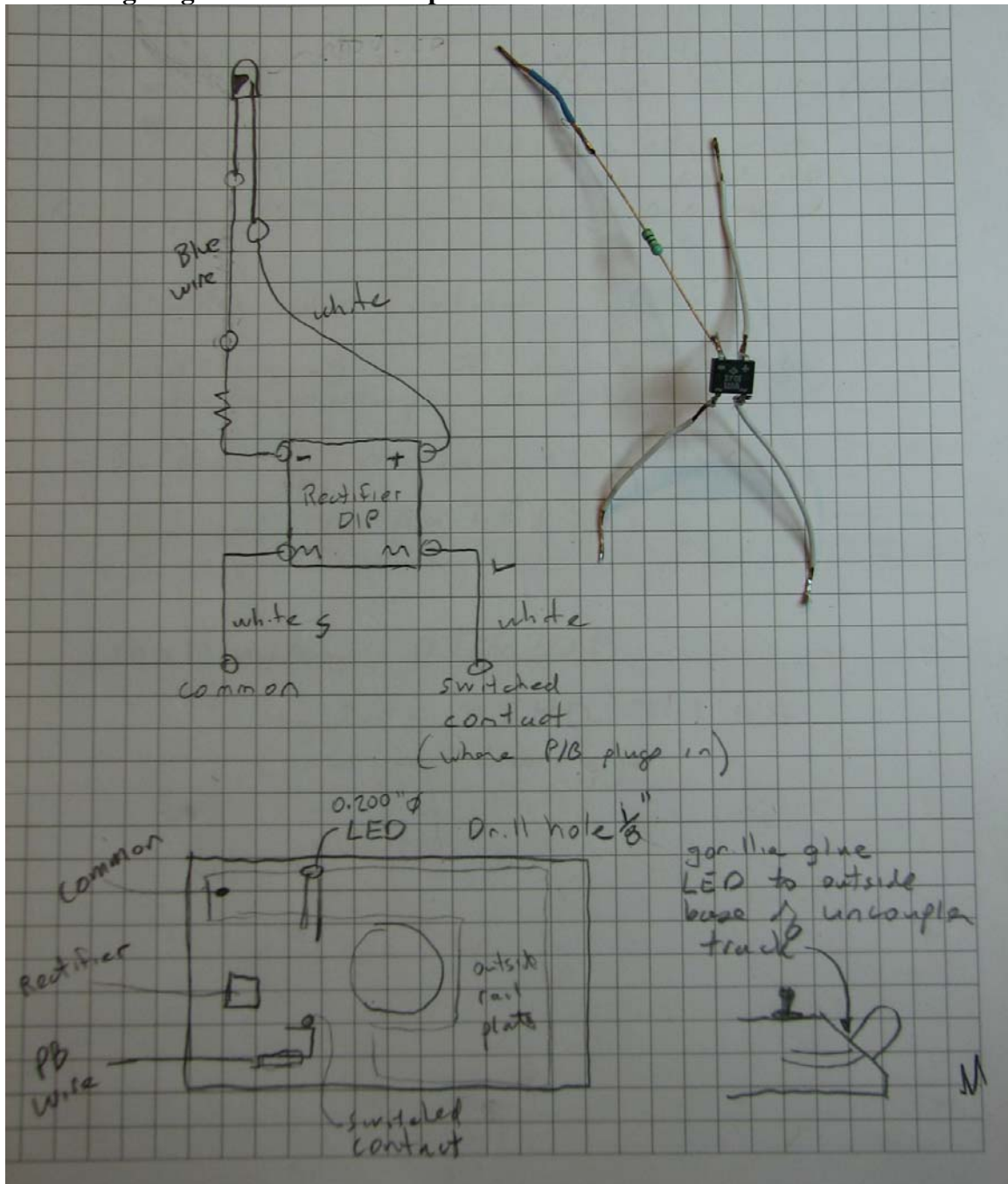
- wire clippers
- needle nose pliers
- soldering tool or small screwdriver for manipulating fine wires
- super glue and accelerator (accelerator is optional, however I found the gluing much easier and faster using the accelerator)

Finished product:



Fastrack Uncoupler LED indicator light retrofit instructions

The wiring diagram with an actual piece soldered for connection to the LED:

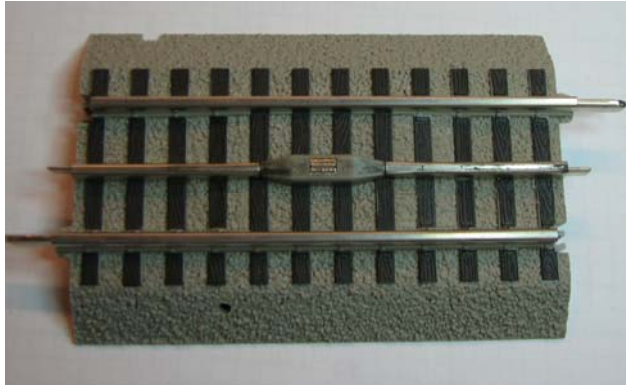
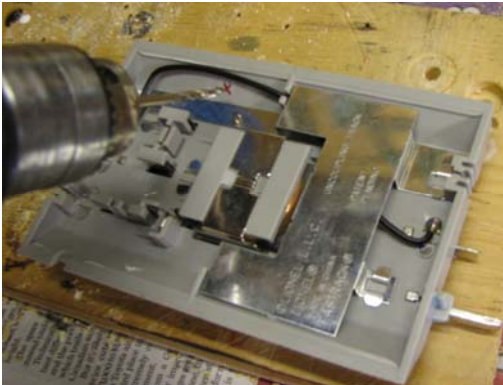
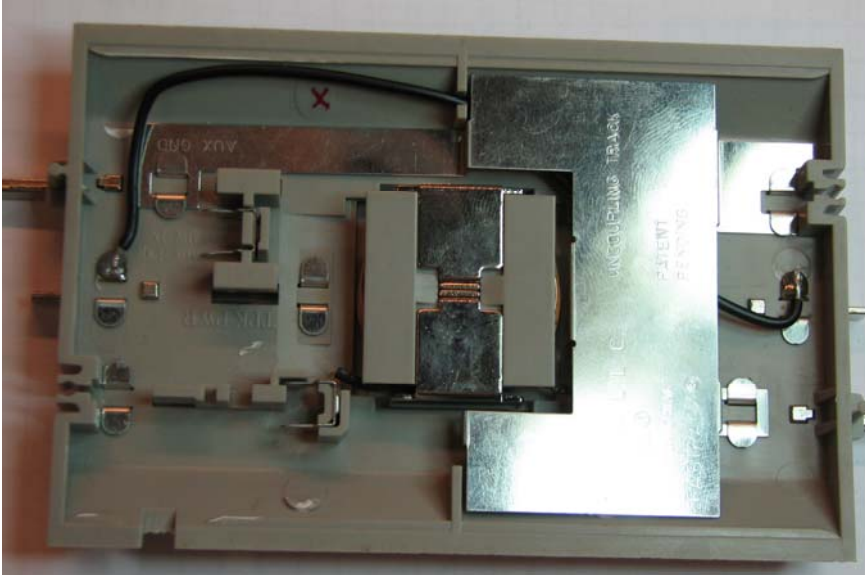


I solder up the resistor and attachment wires to the rectifier, then solder the 4 wire connections to the underside of the fastrack uncoupler roadbed. The resistor connects to the LED short lead wire, the rectifier +ve terminal connects to the LED long lead wire, one rectifier terminal connects to the track ground and the other connects to the PB (pushbutton) switched contact input terminal. The rectifier is glued to the underside of the fastrack section, such that you can still connect your pushbutton wire to the center rail terminal.

Fastrack Uncoupler LED indicator light retrofit instructions

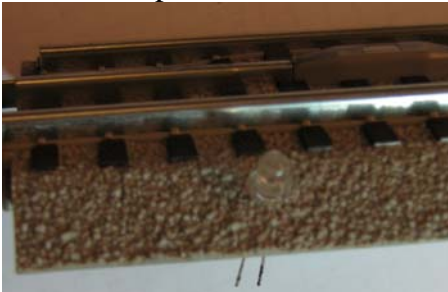
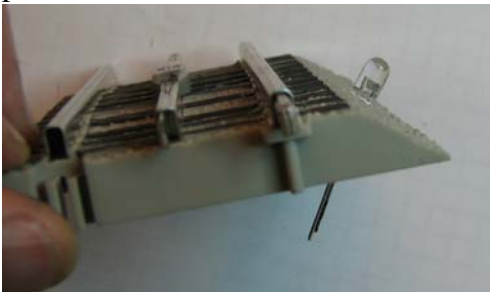
Step 1: Prepare uncoupler track:

Drill 1/8" diameter hole in side of uncoupler track (the LED chosen is 0.200" diameter)



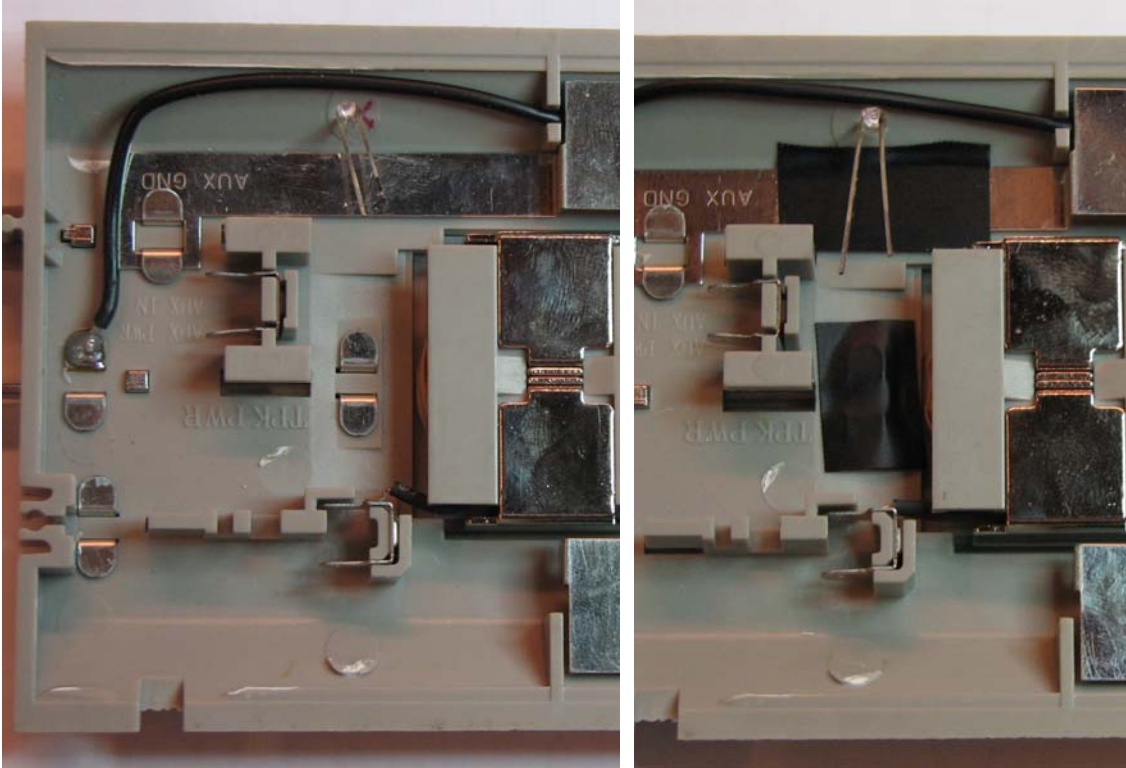
Step 2: Attach LED to uncoupler track:

Use super glue (and accelerator if you want faster drying time) to glue the LED to the outside of the uncoupler track. Be sure to have the wires parallel to the roadbed edge, so that they can be easily soldered to the wires, without the wires touching each other. I keep the orientation of the LED the same, so the blue wire always connects to the short LED post, on the same side when the roadbed is turned upside down.



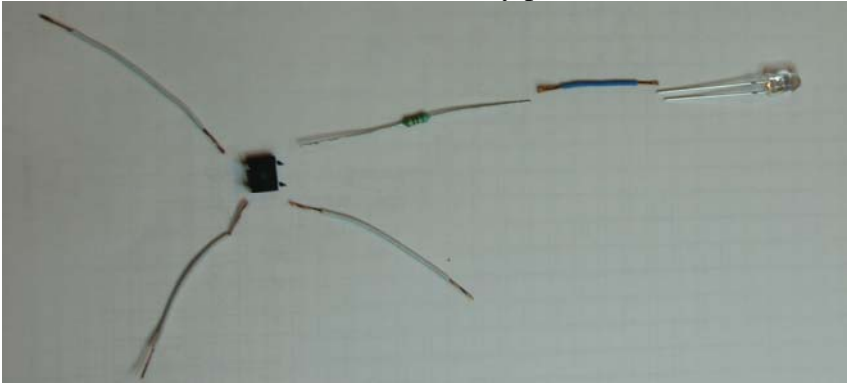
Fastrack Uncoupler LED indicator light retrofit instructions

Add two strips of electrical tape to keep the LED circuit from touching the track hot or ground connections on the underside of the roadbed.



Step 3: Solder wires and resistor to rectifier:

The blue wire attaches to the resistor and LED. This makes assembly easier, however the length of the resistor is sufficient to connect to the LED directly. I use the blue wire for identification, the color difference is my preference, but is not really needed.



Since I was converting a number of uncoupler tracks, I prepared all the parts in advance. I cut the wires to length, (you can estimate the lengths from the wiring diagram, where the squares on the paper are 1/4") I made the wires longer than needed, to make assembly easier. I dipped each wire end, resistor end and rectifier post into the soldering paste, then tinned each end using the soldering iron.

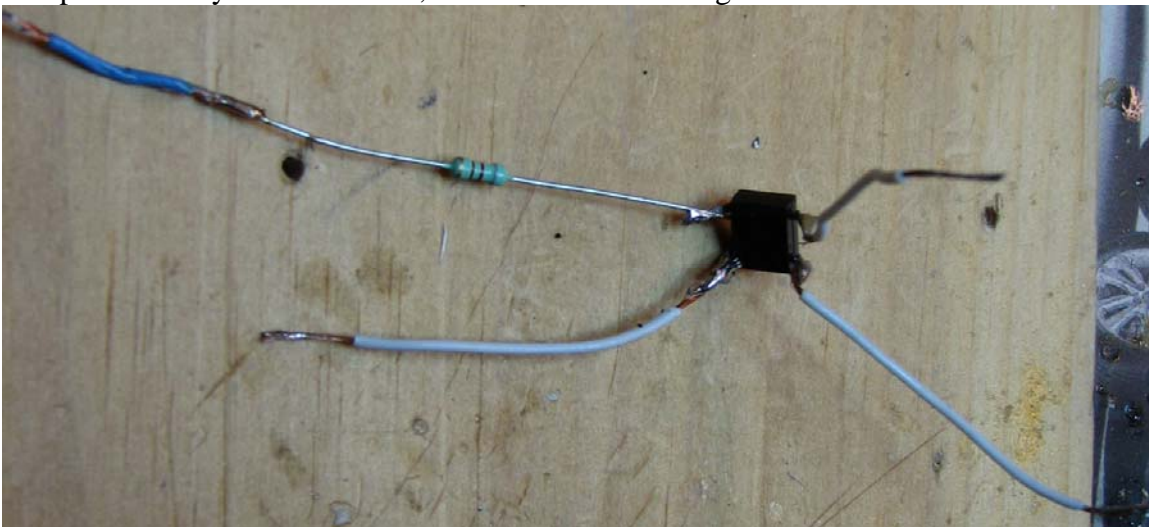
Fastrack Uncoupler LED indicator light retrofit instructions



Start with soldering the blue wire to the resistor, then attach the resistor to the diode –ve terminal. Bend the negative terminal outwards, to make it easy to distinguish from the other terminals during soldering. If you connect the diode to the wrong terminal, the LED will not work. I use a clamp to hold the wire to make soldering easier



The pre assembly of the rectifier, resistor and connecting wires is shown below.

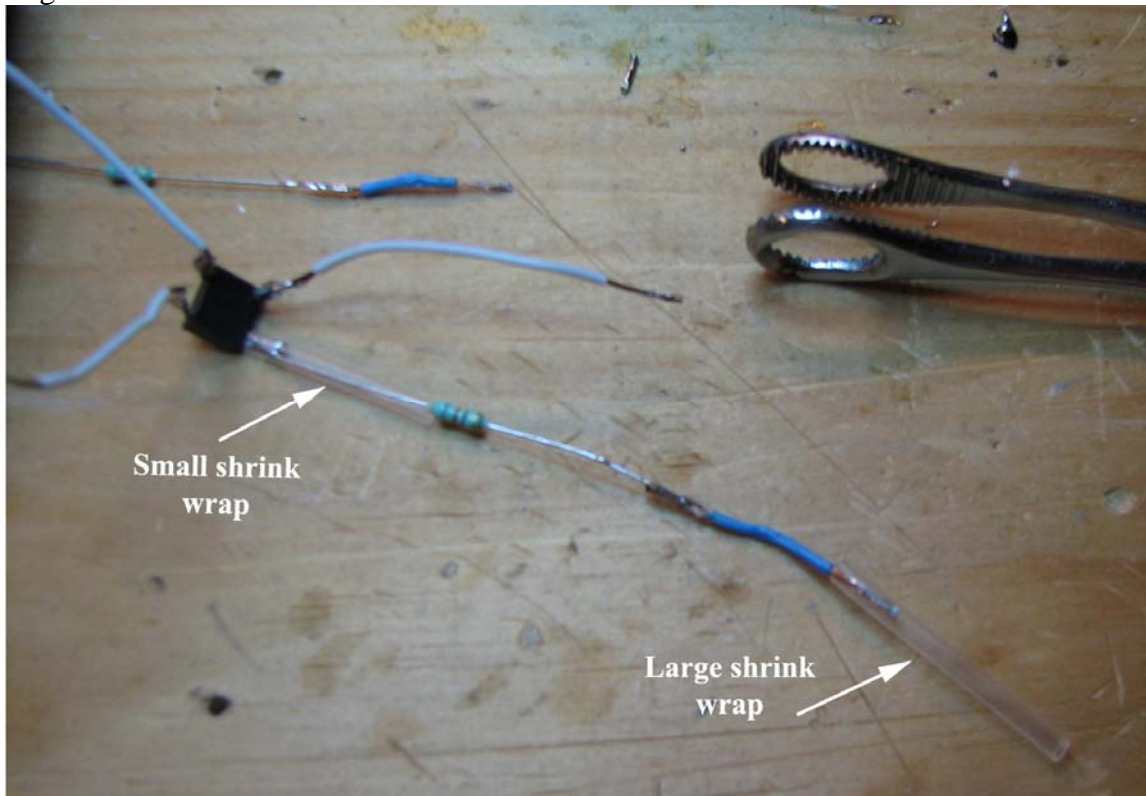


Fastrack Uncoupler LED indicator light retrofit instructions

Step 4: Solder wires and resistor to rectifier creating a rectifier assembly:

The bare wire between the resistor and rectifier connection should be completely covered in 1/16" shrink wrap tubing. Once shrunk in place (shrinking the tubing is optional if tubing is cut the correct length), the larger 3/32" shrink wrap is then pulled over top, clear of the blue wire which will be soldered to the LED later.

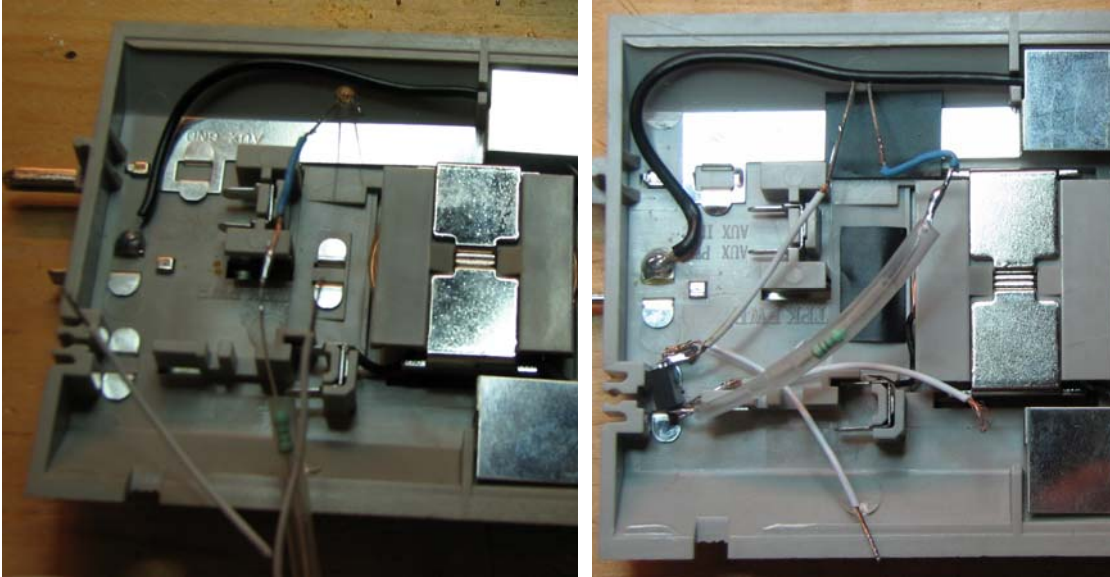
It may be better to add the 1/16" shrink wrap to the rectifier side of the resistor before soldering, then pulled over the wire and rectifier post. Alternatively, the shrink wrap can be pulled over the blue wire and resistor, then heat shrink in place. This can be problematic if the solder builds up on the blue wire connection such that the tubing no longer fits over the solder.



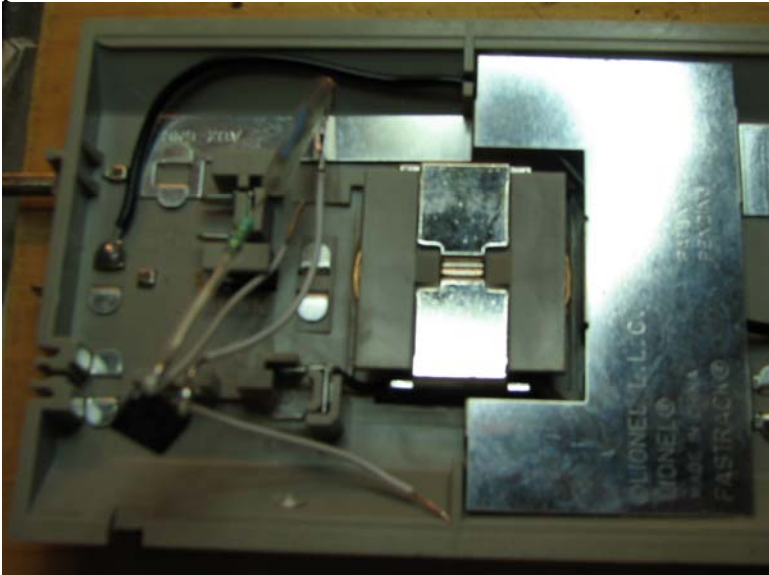
Fastrack Uncoupler LED indicator light retrofit instructions

Step 5: Solder rectifier assembly wires to LED:

Solder the resistor blue wire to the LED short wire. The LED only works in one direction, so if the wires are crossed, the LED will not work. Solution is to simply reverse the blue and white wire connections to the LED.

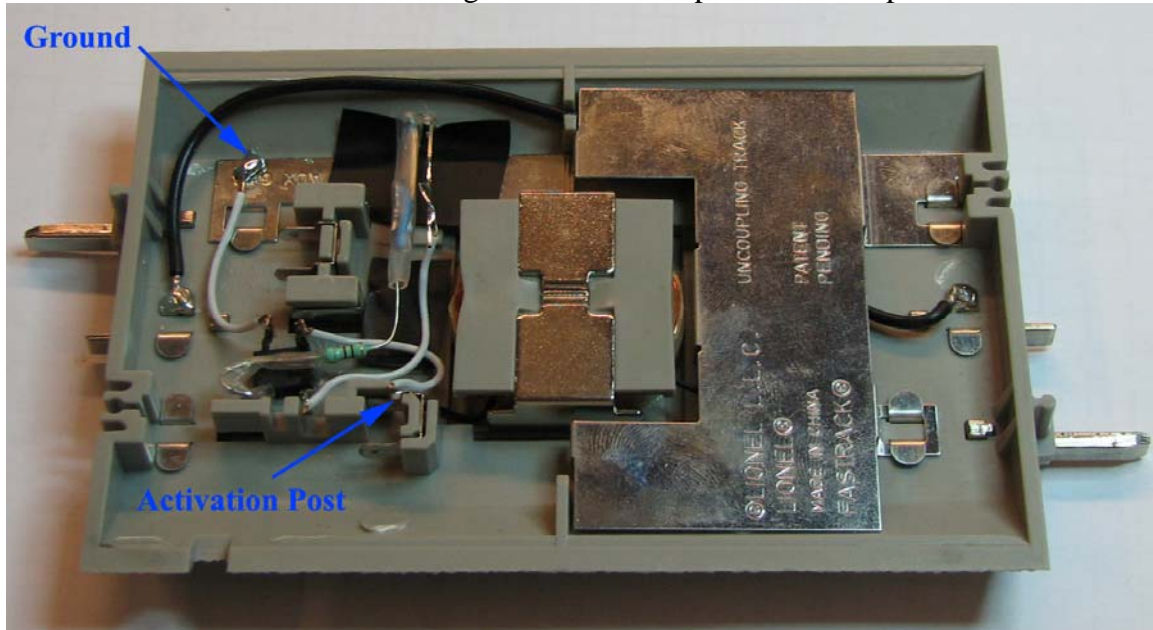


Slide the 3/32" shrink wrap tubing over the blue wire and LED post, so that the two LED posts cannot touch and make electrical contact.



Fastrack Uncoupler LED indicator light retrofit instructions

Solder the other two white wires to ground and uncoupler activation post.



Step 6: Test the assembly:

Take the uncoupler track to your layout and connect. Test the circuit to ensure the light comes on when the uncoupler button is pushed.

If light does not come on, then check:

- 1) for loose connections at ground and uncoupler input
- 2) look on underside of rectifier to be sure the resistor is connected to -ve terminal
- 3) check to see the blue wire (resistor) is connected to the short LED lead

Step 7: Glue rectifier to underside of fastrack roadbed:

Once assembly is tested and working OK, spray the bottom of the fastrack roadbed with super glue accelerator, covering the electronic parts, then super glue rectifier to base.

