

## **Rapido RailCrew Electromagnetic Decoupler**

<http://rapidotrains.com/on-off-remote-coupler/>

### **Description:**

The decoupler is in a 'puck' that has magnets located on the ends of a rotating arm that moves 90° when 12v DC is applied via a double-pole, double-throw, center-off, momentary switch (supplied). The supplied connector/harness has contacts for a LED/470Ω resistor (supplied) as a current limiter for the diode. This LED is for the panel – the 'puck' has an LED in the center. The magnet orientation is controlled by the supplied DPDT switch – there is no 'centering' spring – you have to flip the switch to uncouple and then back to the non-uncouple position. The momentary switch prevents continuous power to the 'puck' which could burn out the electromagnet wiring (says so in the instructions). When the power is applied, the LEDs come on and stay on. There is an internal micro-switch in the puck that keeps power to the LEDs until switched back to the uncouple position.

### **Installation (in existing roadbed):**

Extra hardware needed

- A 1 ¾" hole saw with 1/4" pilot drill and arbor (not supplied) [Lowes or Home Depot]
- A 1/8" drill (not supplied)
- A 12v DC power supply – I used a wall-wart for the test assembly.

### **Procedure:**

- Drill a 1/8" hole between ties where decoupler is to be located (from the top). **IMPORTANT:** be sure hole is centered between the rails. [This is REALLY important – otherwise you get unequal magnetic force applied to the coupler glad-hands if the 'puck' isn't centered beneath the rails.]
- Set the depth of the hole saw at 1/4" below the rail head (from underneath). I used several wraps of masking tape on the outside of the hole saw as a guide. This is very important – if the hole saw goes through the roadbed/ties, it will tear up the rails – don't ask why I know.
- Start the hole saw (from underneath) in the 1/8" hole using the 1/4 inch drill/mandrel in the hole saw. Suggestion – try making a test hole in scrap first.

**Important:** do NOT use the supplied guide pin until after the hole saw has made an initial cut – approximately 1/8 – 1/4 inch into the sub-roadbed [Don't ask why I know].

- After the initial cut, mount the guide pin in the hole saw arbor and continue drilling until the depth is reached.
- Pop the 'plug' out with a screw driver and clean up the bottom (top) of the hole.
- Plug in the supplied connector harness to the decoupler 'puck'.
- Insert the decoupler 'puck' with the clear plastic spacer on top and clamp/screw in place with the supplied brackets – noting the alignment ridge on the top of the decoupler. Alternately, put a couple dabs of caulk or glue between the puck and the sides of the hole to secure the puck.
- Mount the 'panel' with the DPDT switch and the supplied LED/resistor. Hook up the LED +/- wires to the connector (polarity as noted in instructions).
- Hook up the DPDT switch leads to the decoupler connector.
- Hook up the 12v DC power to the DPDT switch.