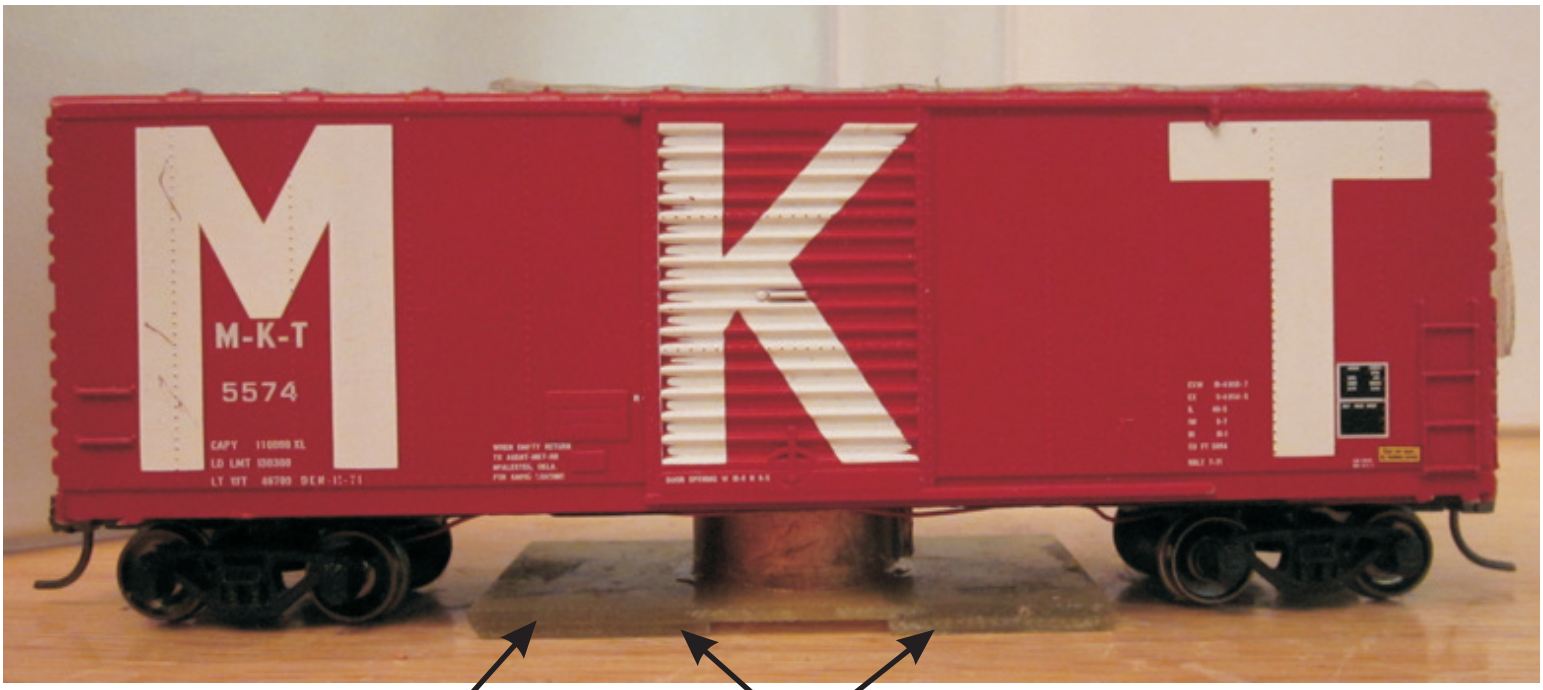
HO GAGE RAILROAD
TRACK CLEANER/VACUUM CAR



Vacuum plate.

Track cleaning/polishing plates.

My model railroad used to fill a quarter of the basement. Now it's a circle under the Christmas tree! That creates a major dust problem. The need for a track vacuum was great so I designed one.

The circuit board has a reed switch on each side of the box car. When they come near a magnet, the circuit is alternately switched on/off. My goal is to make a lap counter to push/pull a magnet near the track so the vacuum is on for one lap in every ten or so. But for now, it is turned on and off every other lap by a magnet housed in a roadside shack. Great for testing purposes.

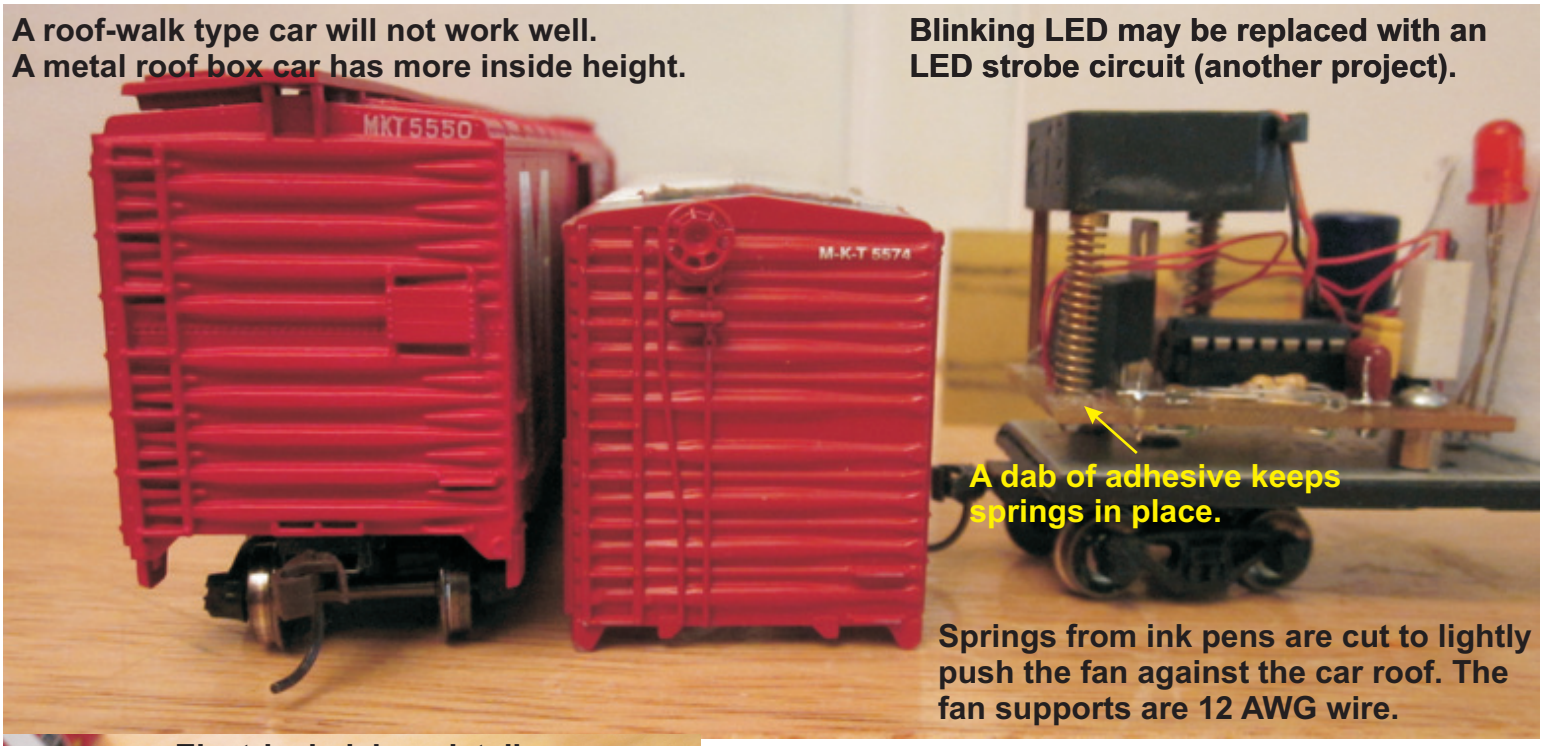
A used filter from my C-Pap machine happens to fit in the box car. Air is drawn into the car from the track cleaner/vacuum inlet resting on the rails and exits out the top, which is removed for cleaning.

The fan is a 5 VDC brushless type, 25x25x10 mm. It is driven by an 8 volt regulator. A typical 5 volt fan is rated at 6 volts maximum. Pushing it to 8 volts is a stretch. The higher voltage increases suction and makes it sound like a vacuum, but shortens the life of the fan. Replacing the fan is extremely simple and easy. It just plugs in!

The circuit board mounting holes align with the mounting holes for the wireless 8 volt camera cars, but that's another project.

This vacuum works very well. This is year number 2 (2013). This unit was designed for Digital Command Control (DCC) but will work with standard throttle controllers, perhaps not as well. There is no need for DCC control. For normal layouts, simply vacuum the tracks a few times, park the car on a siding and turn it off with a magnet attached to the end of a stick or wand.

A roof-walk type car will not work well.
A metal roof box car has more inside height.

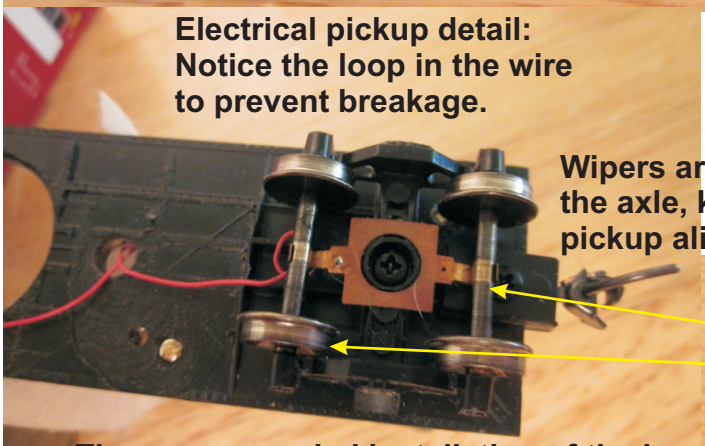


Blinking LED may be replaced with an LED strobe circuit (another project).

A dab of adhesive keeps springs in place.

Springs from ink pens are cut to lightly push the fan against the car roof. The fan supports are 12 AWG wire.

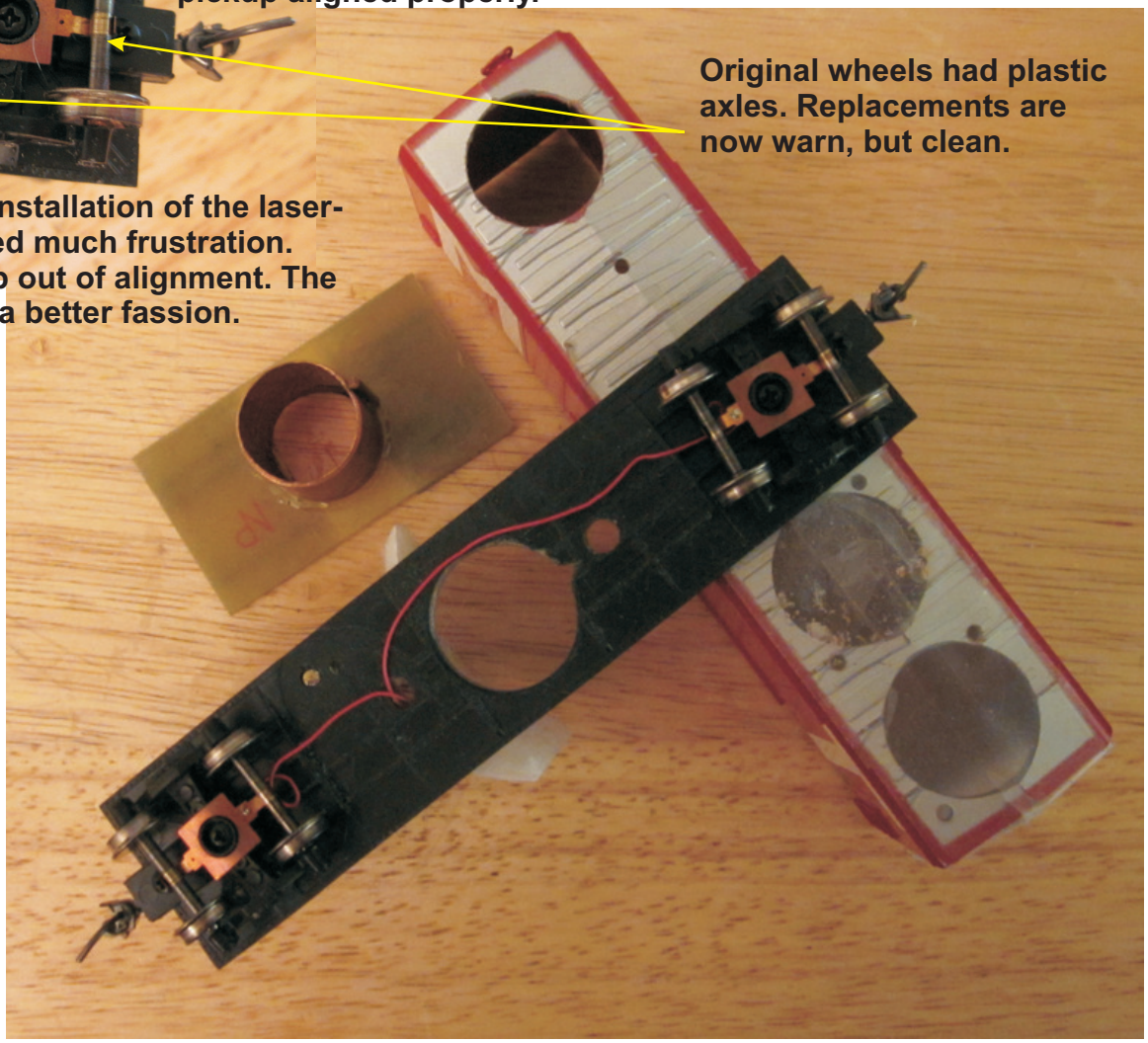
Electrical pickup detail:
Notice the loop in the wire to prevent breakage.

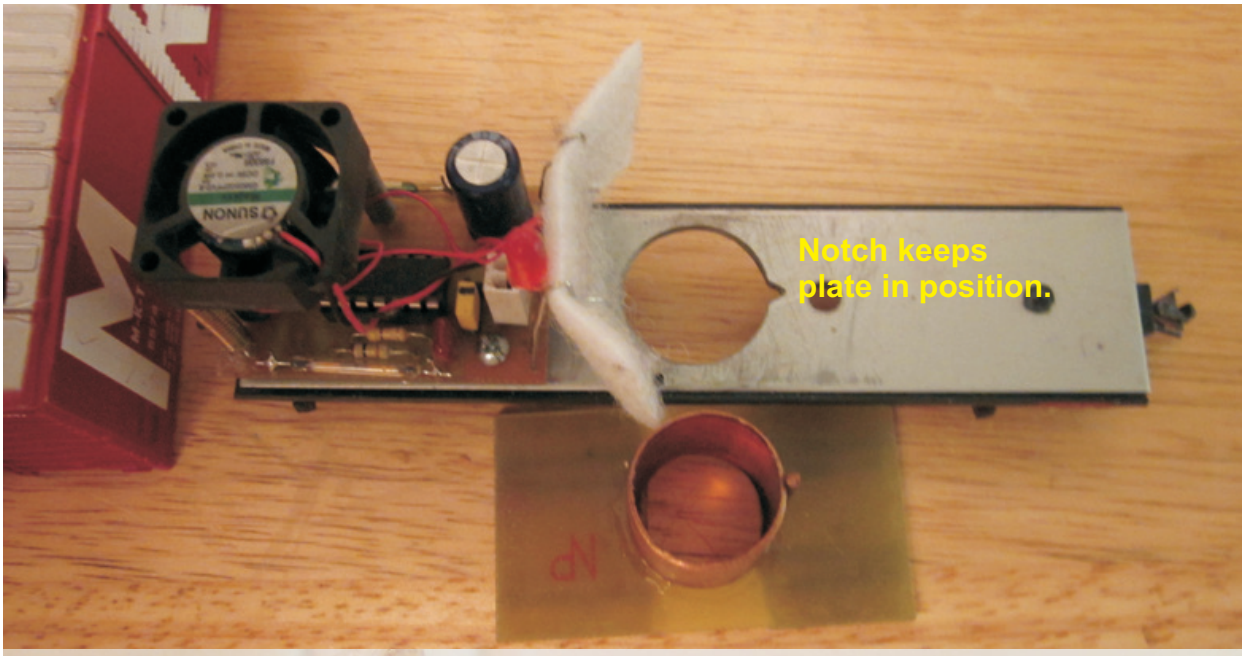


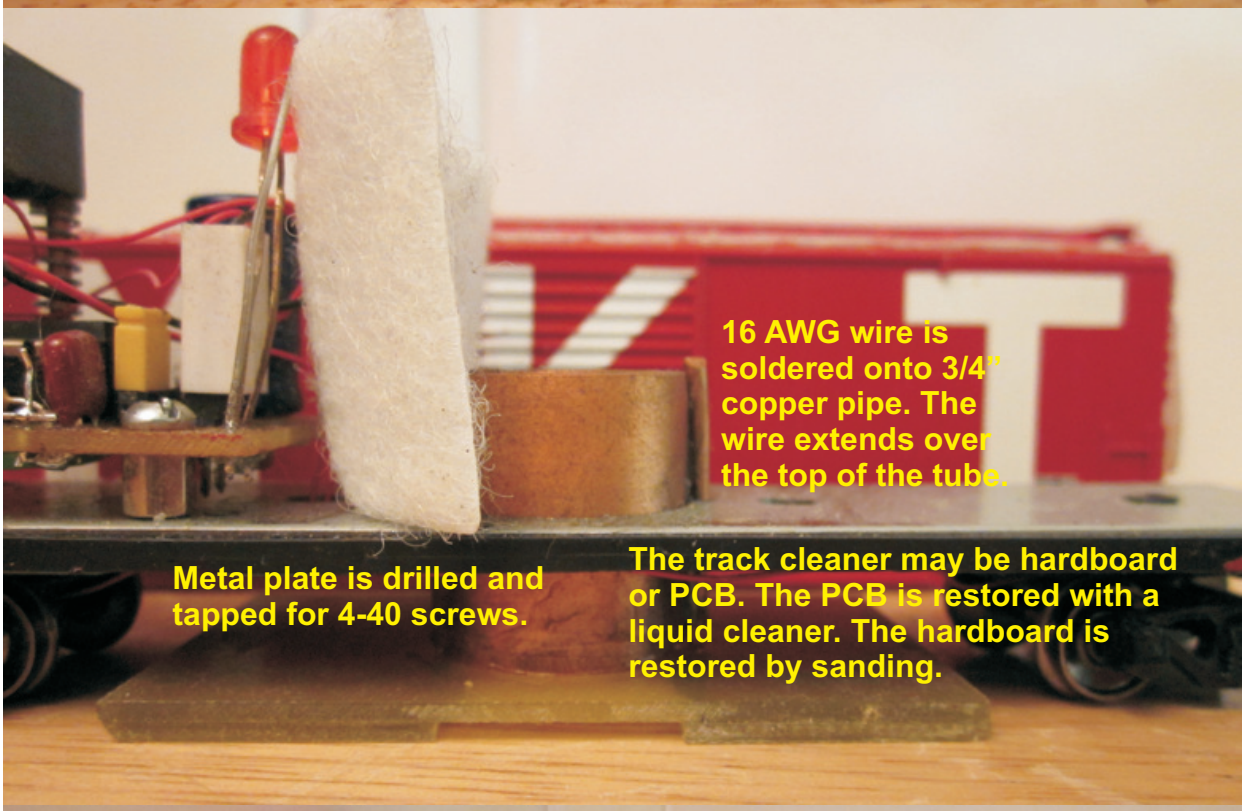
Wipers are bent around the axle, keeping the pickup aligned properly.

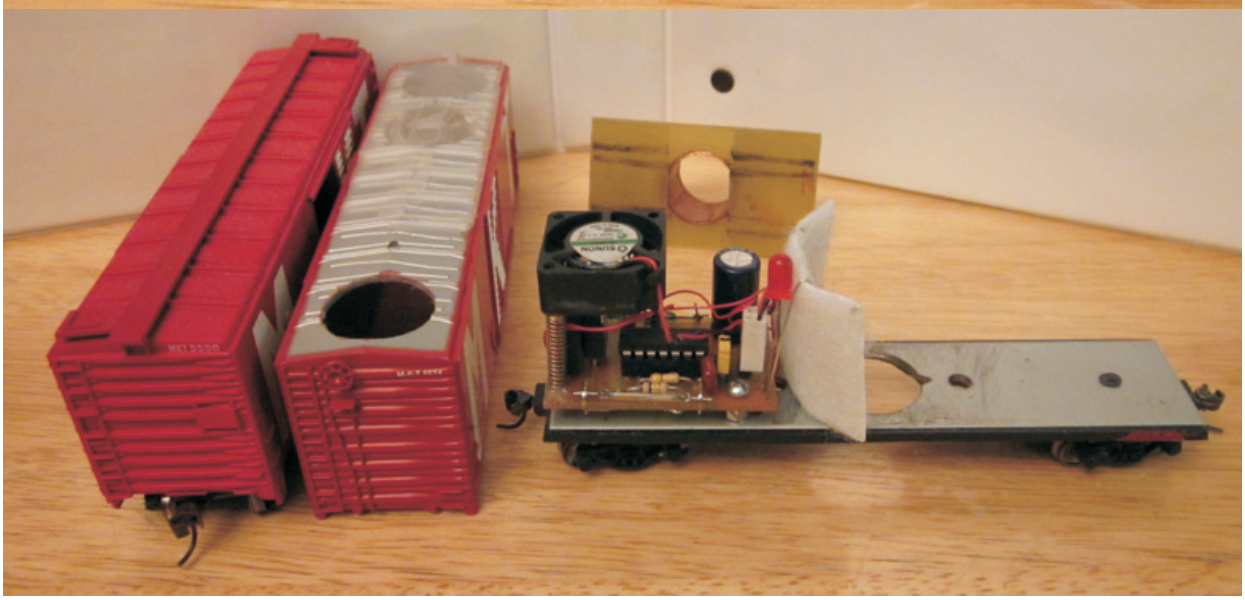
Original wheels had plastic axles. Replacements are now warn, but clean.

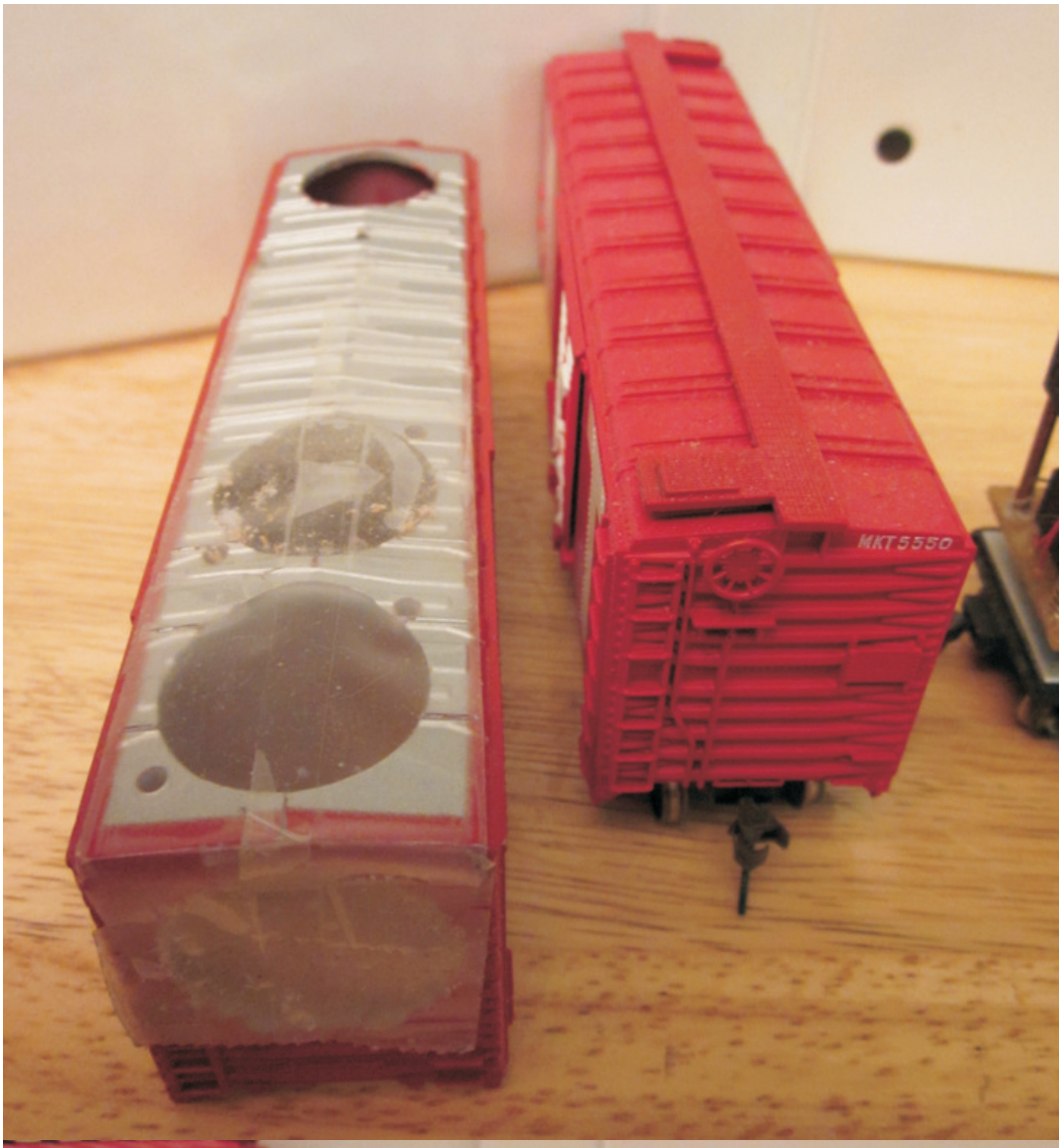
The recommended installation of the laser-cut axle wiper caused much frustration. The wiper would slip out of alignment. The wiper is installed in a better fassion.











The holes in the box car are from fan position tests. The best ended up as a single vent in the top.

The end position stirred up dust.

Two fans in the top were attached to the roof. This was not a convenient method. The 2 fan prototype was not effective as the fans starved for air. It looked and sounded impressive though!

This view clearly shows that a roof-walk type car would not make a good presentation.

I only tried ready-to-run Athearn cars. A hobby knife drawn between the car wall and frame breaks the glue spots well. The box is easily removed and replaced.

The tube/plate fixture moves freely up and down. The side inlets clean dust off the rails. There's enough air flow to do this as well as pick up particles from the track ties. You'll be amazed!

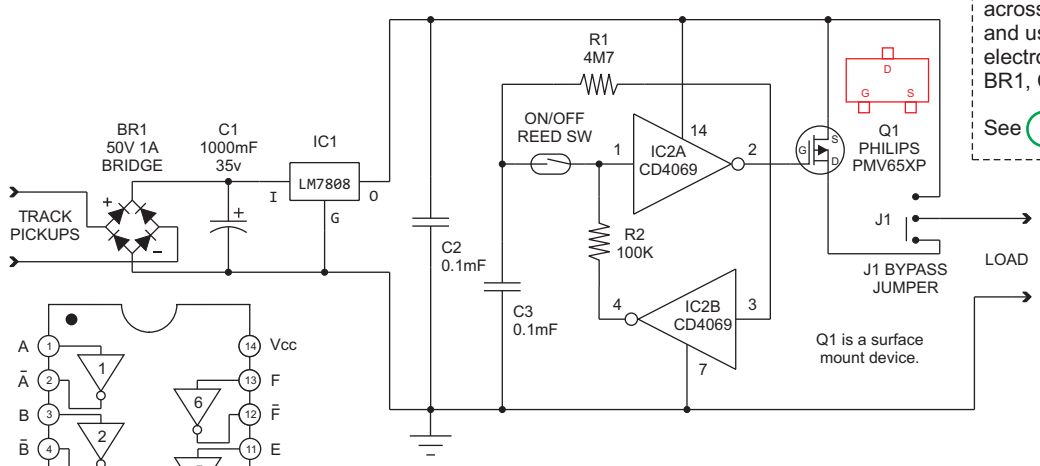
Caution: The methods I used to make these plates, accessories, and car modifications, could be hazardous. It is your responsibility to use care and caution. You assume all responsibility and liability!

PRESS ON/OFF LATCHING CIRCUIT

Original: http://www.discovercircuits.com/DJ-Circuits/on-off-latch.htm

J1 BYPASS
For a constant voltage to the fan, solder a wire across the jumper bypass and use only these electronic parts:
BR1, C1, C2, IC1.

See ◯ on parts layout.

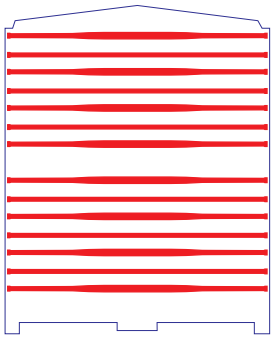


CD4069UB
HEX INVERTER

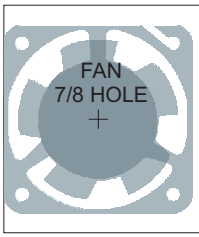
HO GAGE RAILROAD TRACK CLEANER/VACUUM CAR POWER SOURCE

Print templates and adhere to particle board blocks. Cut/sand to template size. Roof block should be a snug fit.

STEEL ROOF



40 FT
ATHEARN
BOX CAR



LED
7/32
#50
DRILL

ROOF
Use #43 drill bit
for all holes first

4-40 THREAD
#43 DRILL
FLOOR

WIRE INLET HOLE
7/32
#50
DRILL

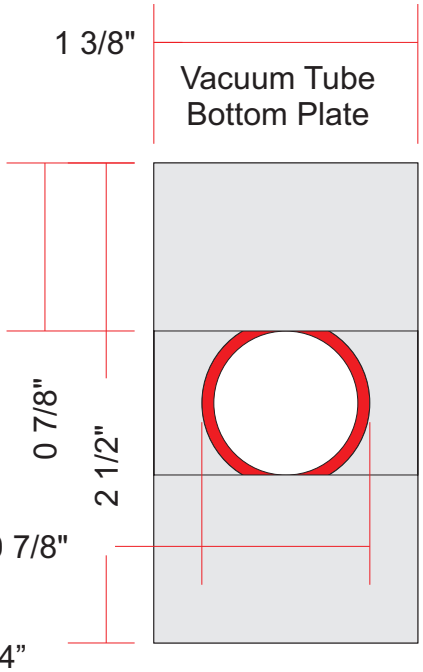
4-40 THREAD
#43 DRILL
FLOOR

FLOOR
Use #43 drill bit
for all holes first

8-32 THREAD
#29 DRILL
CAMERA

4-40 THREAD
#43 DRILL
CAMERA

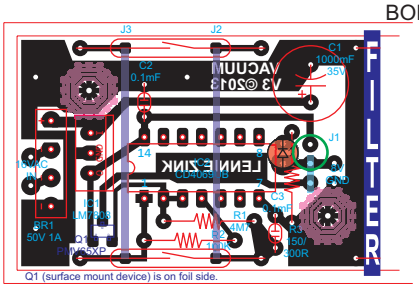
The FLOOR template is used for both the Vacuum and Video Camera cars.



Bottom View

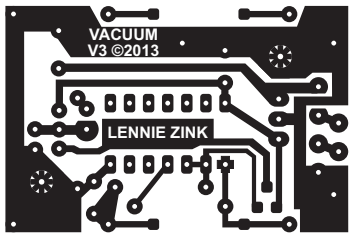
PARTS LAYOUT

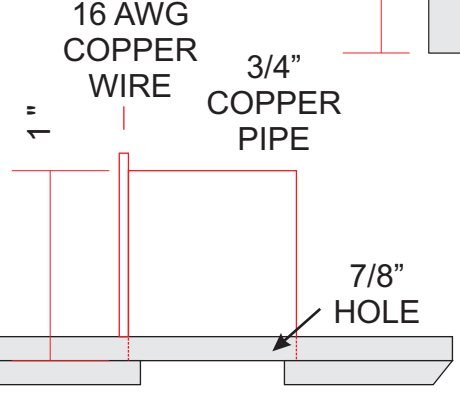
CAR BODY



Track Powered Vacuum
Power Supply Switch

BOTTOM VIEW





CHAMFER EDGE
IS A MUST!

TRACK CLEANING PLATES MADE FROM EITHER COPPERLESS PCB MATERIAL OR 1/8" PRESSED HARDBOARD

DO NOT SCALE TO PRINT