

## Rebuilding the HO Bachmann Old Time 4-4-0

The Bachmann HO Old Time 4-4-0 has been around a long time and suffers from two problems: the latest motor will burnout with a frying of the added DCC decoder and the pickup system is very poor. This article delves into solving the problems. This isn't a "how-to" but a "what-I-did".

(Click Images to Enlarge)



This is our "beta" locomotive, excuse the disrupted cross heads and other cosmetic problems. The loco has a "daylighted" cab, Soundtraxx Tsunami sound, prototypical spacing between loco-tender, bigger tender wheels and will crawl along.

### THE MOTOR



This motor was presented on the "CWRailman blog". It changed everything about running the Bachmann 4-4-0.

The Nichibo PC-130 is the first motor that changes the performance of the locomotive. It is "high" torque and low RPM.

It is available from E-bay suppliers and Jameco. Google "PC-130SF-09480" I have tried various other motors and none of them were satisfactory. The Nichibo allows enough room to accommodate sound.

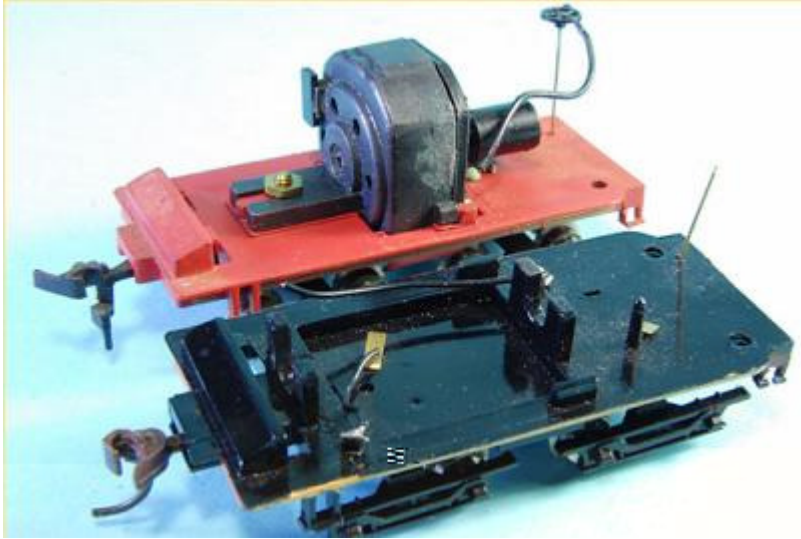


**Mascot Precision Tools Mini Reamers/Broaches Set, MPTH311**

The shaft on the Nichibo is larger than the Bachmann motor shaft so the u-joint cup has to be have the hole enlarged. Tapered reamers work the best.



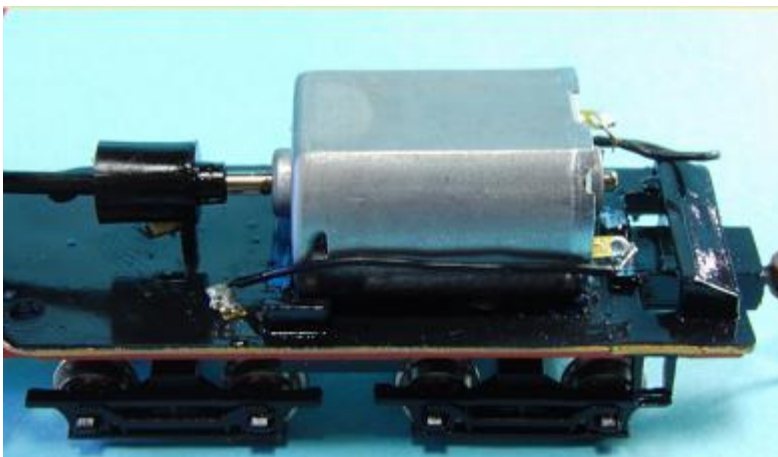
**A motor tool with a 1/8" diameter burr makes the conversion easier. I find this the most controllable size.**



**The newer tender frames have a recess for the motors while the older pancake motor frames don't and the electrical pickups are different. The old ones will require more mods but will work.**



**Remove the front motor mount and relieve the frame at the back of the motor well so the motor "snaps" in.**

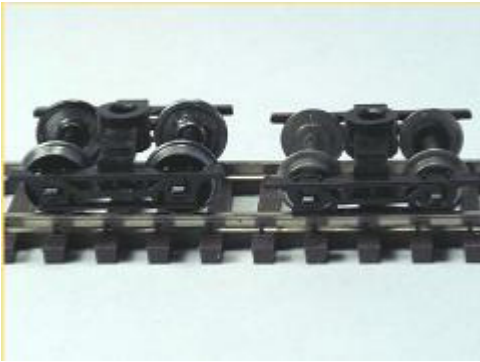




Six Mantua 1860's cars and a Bachmann bobber can be easily pulled up a 4% grade with the daylighted cab.

### Fixing the Electrical Pickups

The electrical pickup in the Bachmann 4-4-0 is atrocious at worse and criminal at the least. This will also get rid of those little tender wheels.



Kadee #5 centering springs for electrical pickups and 28" wheels are used in the conversion. I like the Kadee wheels because they have recessed back and look more prototypical and are readily available cheap.



A "Reboxx HO T-100 Exxact Socket Tool" is used to open up the sideframes to accept the longer axles.





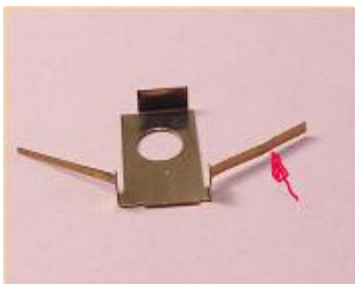
Keep taking material out of the sides until the sideframe sides are flat.



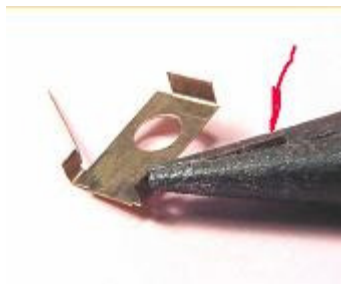
The Kadee wheelsets have a coating that doesn't conduct electricity. Put the wheelset in an EXPENDABLE truck frame and burnish the wheels with a brass brush in a motor tool.



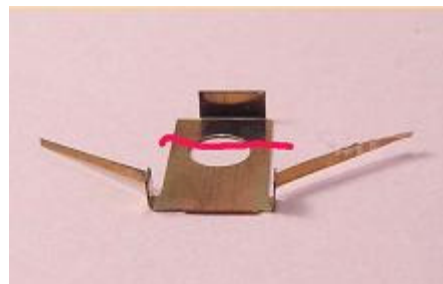
Let the the axles cool occasionally or the truck frame will melt. D-oh!!!



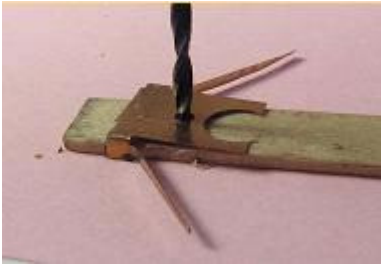
Spread the "wings of a Kadee #5 Centering spring and straighten out the bend wing.



Taper the straight wing by holding the wing with pliers.



The spring should be symmetrical after tapering. Cut off the back portion of the spring.



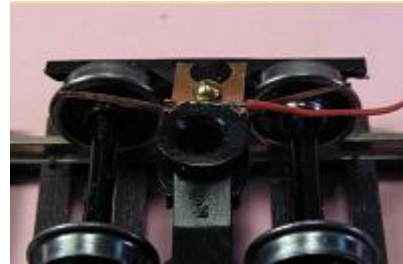
Drill a #60 tap drill hole through the spring body. Support it with a small piece of wood. I used a coffee stirrer.



Place the spring on the sideframe and drill and tap for a #00-90 screw.



Use the truck reamer to break the edge of the tapped hole to make the insertion of the screw easier.



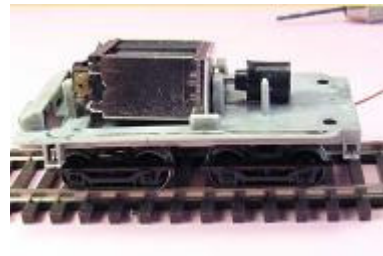
Attach the wiper to the truck with a #00-90 x 3/16 long screw. The longer screw will allow the wiper to be pulled up off the wheelsets during tuning without taking the wiper off. The wires are from the original idea in our 2006 article.



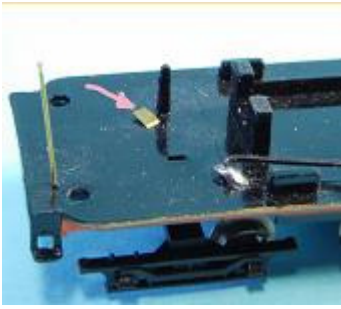
Test the electrical pickup with an automotive tester while rolling the truck along the track. Test one wheel at a time. Adjust the wiper for least rolling resistance.



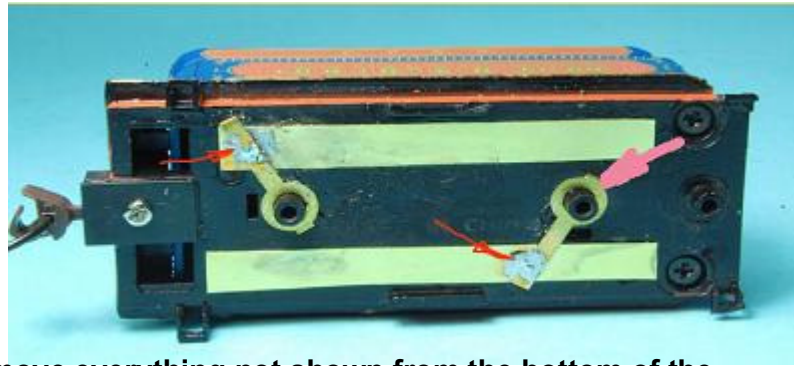
Place the truck on the frame with the motor as a weight. The wheels should turn as the tender is pushed along. Take the wiper off and do the wiper on the opposite side. After both wipers are individually "tuned" test that they will roll together.



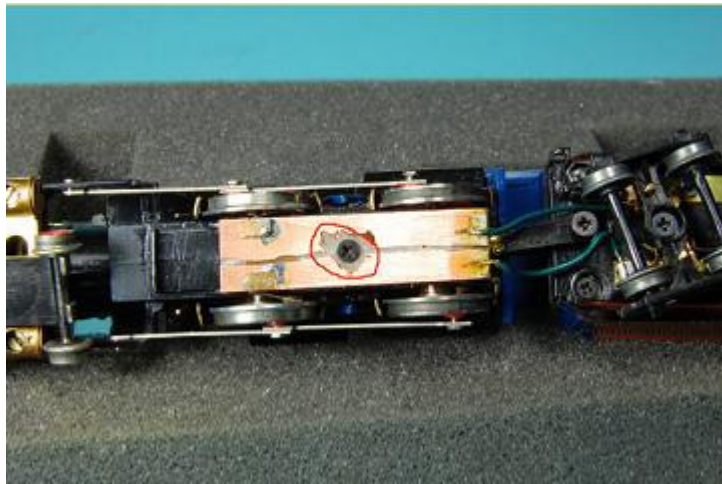
Cut the original wipers in half and bend them as shown. Slide them under the truck pickups. Cut about a 1/16" off of the wiper blade.



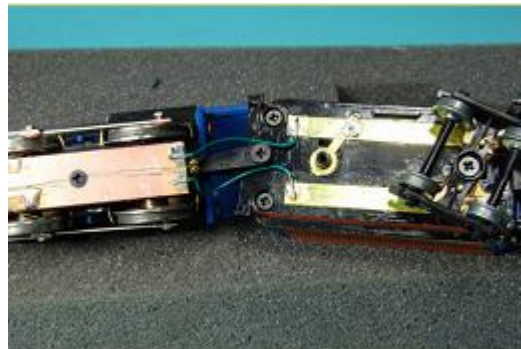
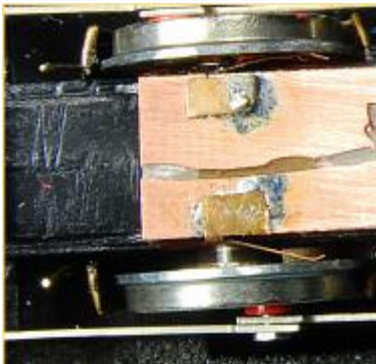
Remove this tab from the truck bolster designated in pink. Glue the bolster back in place.



Remove everything not shown from the bottom of the tender frame. Slide 3/16" wide x .002 thick brass strips under the tender contacts so the truck wipers touch the strip. Solder them as shown and ACC the strips to the frame when the solder has cooled.



Cut a piece of PCB to cover the bottom of the loco. 1/16" is shown. That won't work, D-oh!!, the tender connector wires will short out on turnouts. I replaced it with 1/32" thick and that worked. If you can't find PCB that thin an alternate is brass shim stock glued to styrene like the strips on the tender. Relieve the board at the gear. Electrically separate the sides and remove the copper clad from around the screw.



Cut a KD #5 spring in half to make a wiper and solder them to the PCB. Solder flexible wires to the pickup strips and the locomotive.

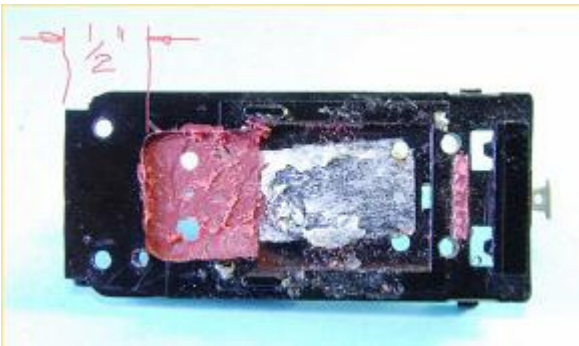
Put everything together and run the locomotive, mine crawl and the new motor gives a realistic speed range.

## Close coupling

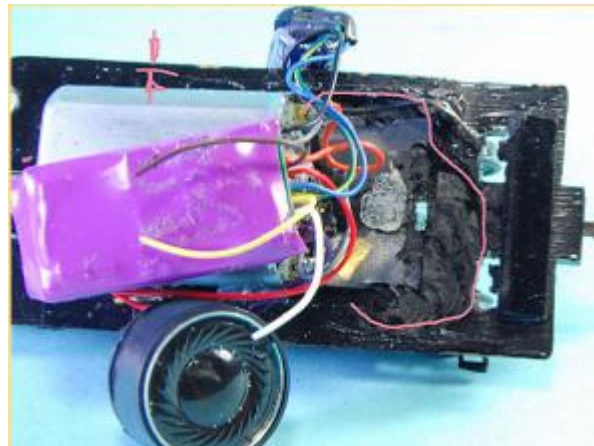


Shorten the drawbar to 7/16 cl to cl

The original driveshaft isn't round. Shorten as shown. File the shaft to a round shape until the NWSL 2.0 mm ball presses onto the shaft. Make sure the ball fits loosely in the cup on the motor.



Lengthen the motor cutout as shown.



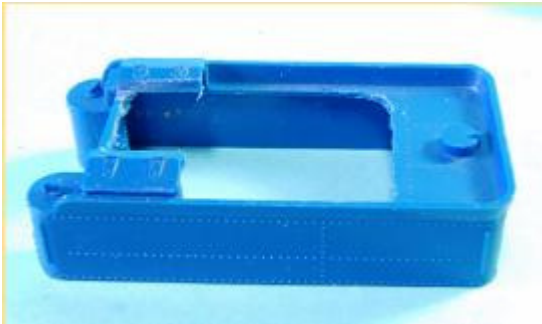
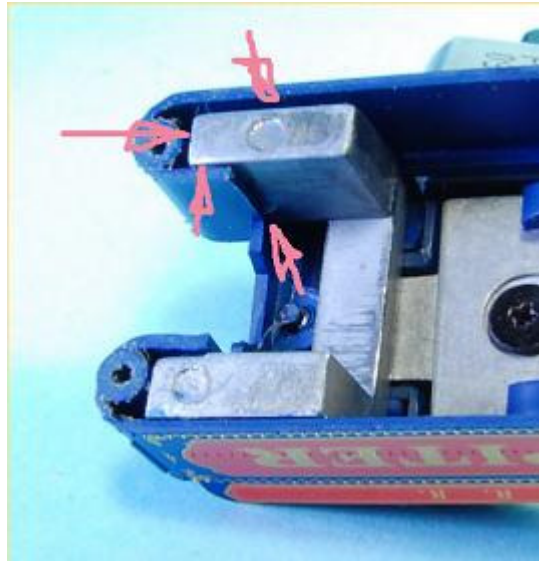
Cutout these areas to accommodate a 1/2" speaker and baffle and the capacitor. The cutout should go no wider than the lug at the arrow.



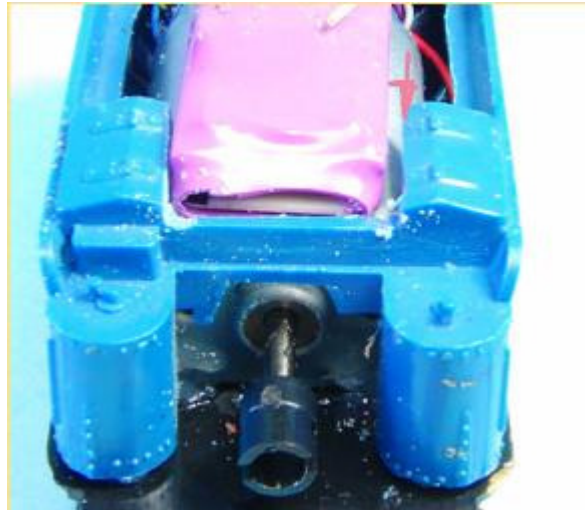
I am using a Soundtraxx Micro Tsunami C-16 version, it has more old locomotive sounds. The speaker is a Soundtraxx 1/2" using their baffle.



Some of the weights are glued to the tender shell. Liberally apply MEK or laquer thinner at the arrows on both sides and use an knife and screwdriver to loosen the weight.



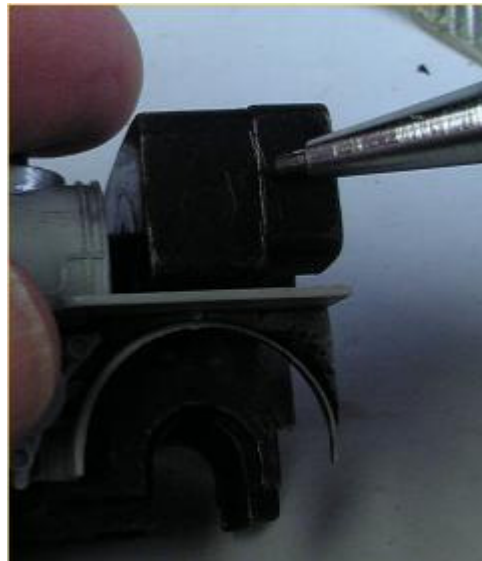
Cut the tender shell as shown and cut back the tool boxes to the edge of the hinges.



Put it all back together and blow that whistle and ring that bell. Just needs a wood load to cover the decoder.

### Daylighting the Cab

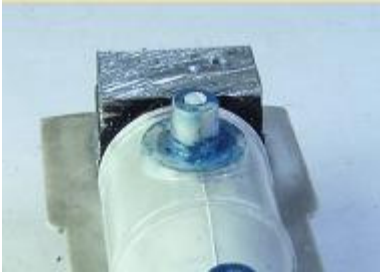
The biggest cosmetic improvement is daylighting the cab.



Mark the cab to conform to the boiler and to the end of the frame.



**Just hack away with hacksaw and files.**



**The daylighting doesn't effect the pulling power. 13 Mantua 1860's and a Bachmann bobber, I just ran out of cars.**

**I never believed I would get the Bachmann 4-4-0 to run this well and with SOUND. Long time in coming!!!!**



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