

## 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.

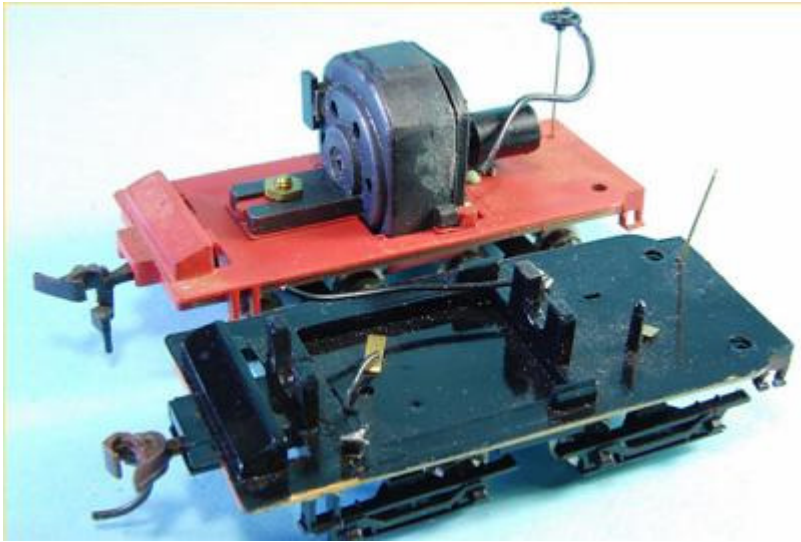
### THE MOTOR



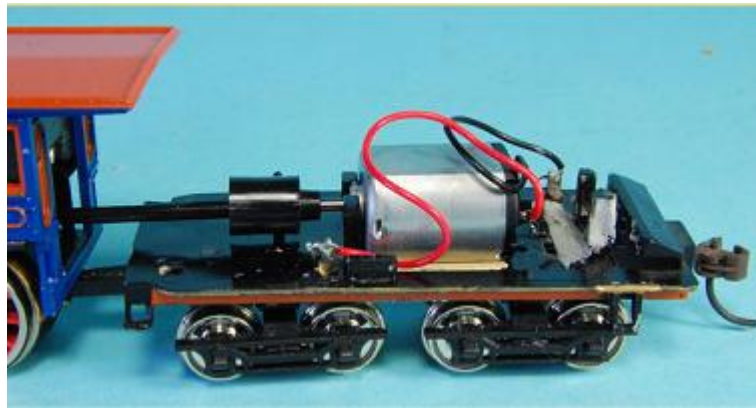
I found this motor at Allelectronics. It is a Mabuchi # FF-030PA 08250. It is the best motor I have tried and only costs a buck and a quarter. There is no cogging and it is strong. The motor shaft is 1.5mm so the Bachmann universal slide right on.



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.



Mount the motor with RTV or double sided tape and attach some wires. The RTV can be found in the automotive section of stores.

### 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.



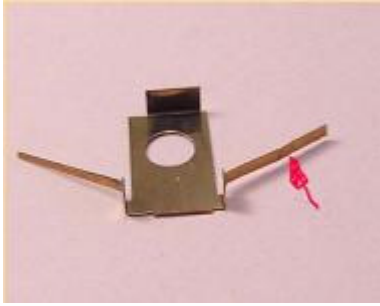
Keep taking material out of the sides until the sideframe sides are flat.



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!!!

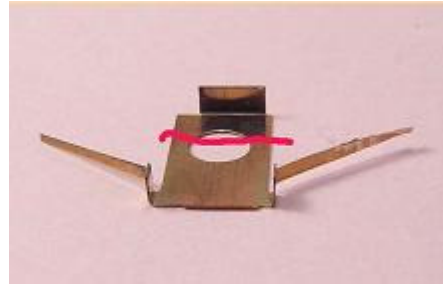




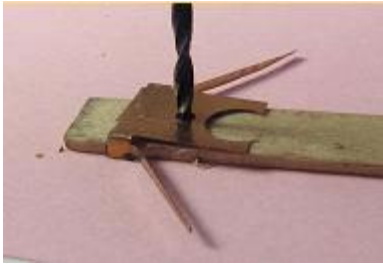
Spread the "wings of a Kadee #5 Centering spring and straighten out the bend wing.



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.



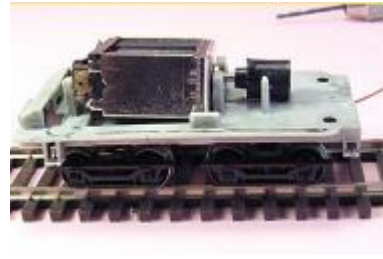
Use the truck reamer to break the edge of the tapped hole to make the insertion of the screw easier.



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.



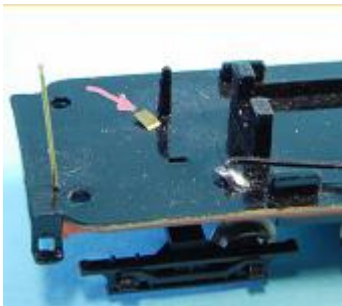
Test the electrical pickup with an automotive tester while rolling the truck along the track. Test one wheel at a time. Adjust the wiper for least rolling resistance.



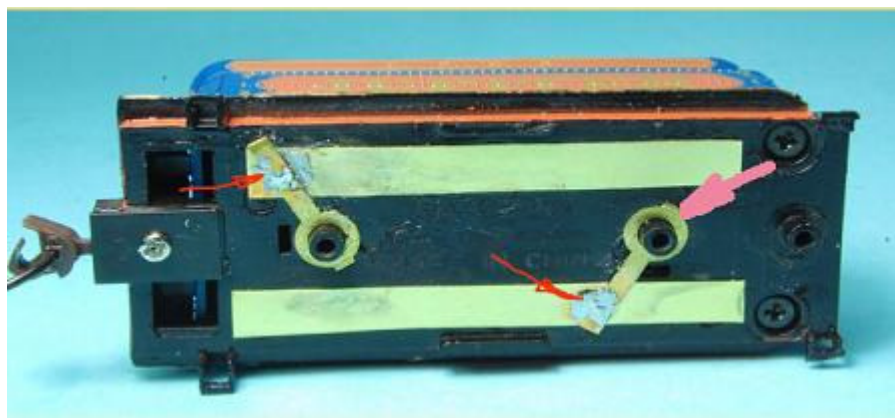
Place the truck on the frame with the motor as a weight. The wheels should turn as the tender is pushed along. Take the wiper off and do the wiper on the opposite side. After both wipers are individually "tuned" test that they will roll together.



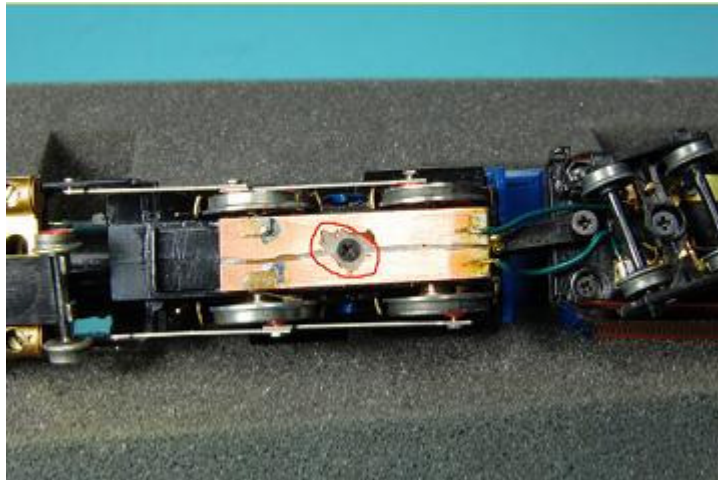
Cut the original wipers in half and bend them as shown. Slide them under the truck pickups. Cut about a 1/16" off of the wiper blade.



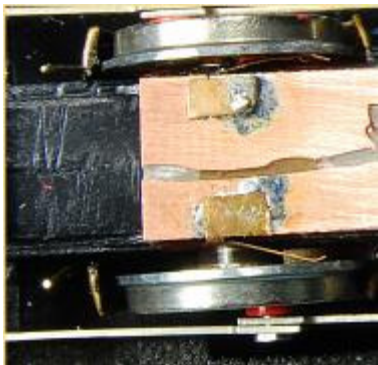
Remove this tab from the truck bolster designated in pink. Glue the bolster back in place.



Remove everything not shown from the bottom of the tender frame. Slide 3/16" wide x .002 thick brass or preferably phosphor-bronze 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**



The NWSL 1.5mm balls have a "D" shaped hole. Use a series of drills to get to a #53. Easiest way is to hold the ball between your thumb and forefinger. Press fit a 1/16" diameter brass or aluminum tube into the ball.

The ears on one ball have to be trimmed to slide into the Bachmann worm.

Cut them off the tube.

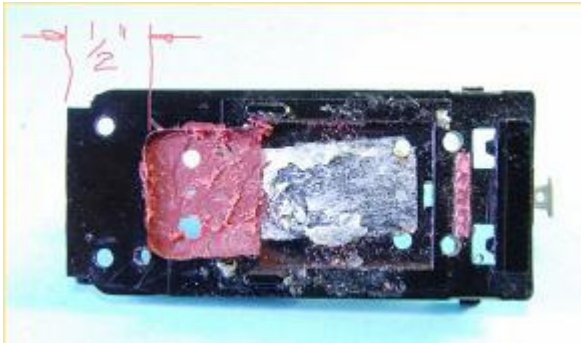




Glue a piece of 1/32" diameter rod between the balls with the ears parallel.

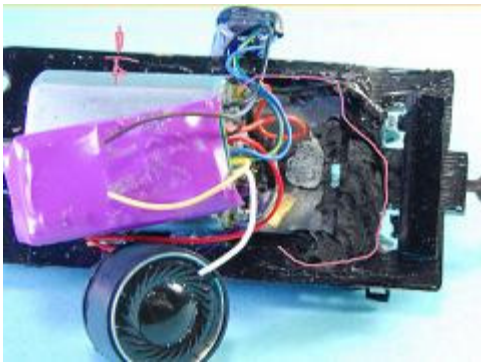


Shorten the drawbar to 7/16 cl to cl



Lengthen the motor cutout as shown to move the motor forward. Position the motor with the drive shaft and use silicon adhesive or double sided tape to attach the motor.

## Sound and Speakers



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. Use a Soundtraxx 1/2" Baffle for the speaker.



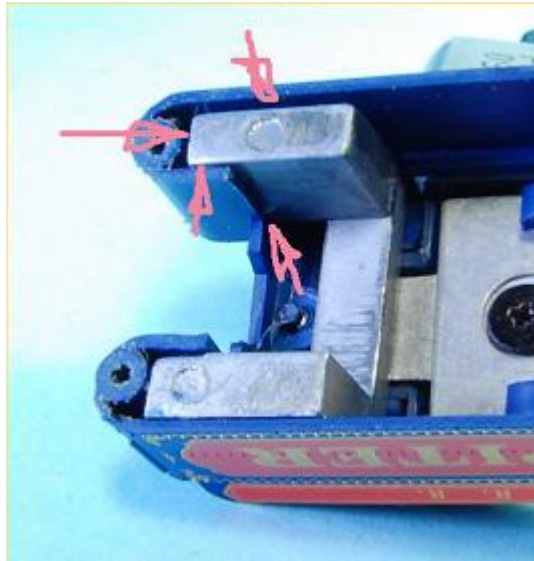
I found these two speakers at Digikey, a 13mm and a 15mm. They give similar sound and are far superior to the Soundtraxx 1/2" which is really a 15mm. They both fit in the Soundtraxx 1/2" baffle.

[Click here for Digikey speakers](#)

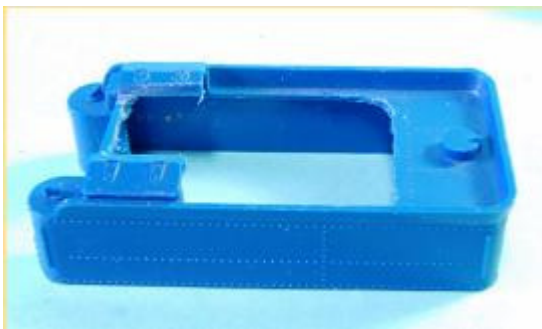
## Tender



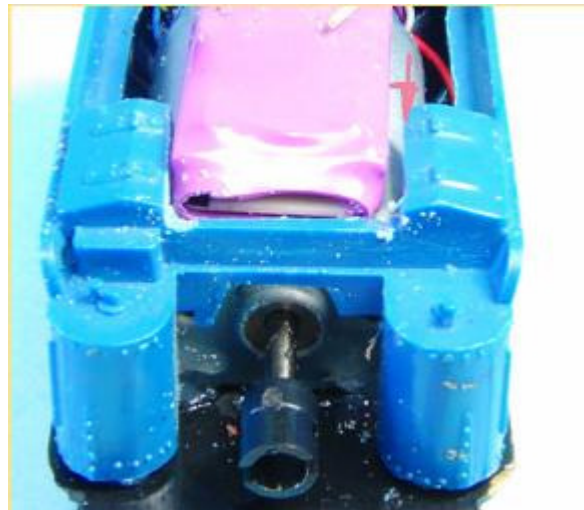
Some of the weights are glued to the tender shell. Liberally apply MEK or laquer thinner at the arrows on both sides and use an knife and screwdriver to loosen the weight.



Cut the weight and glue onto the tender. Add two 3/16x1/4x3/4 metal weights as shown.



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

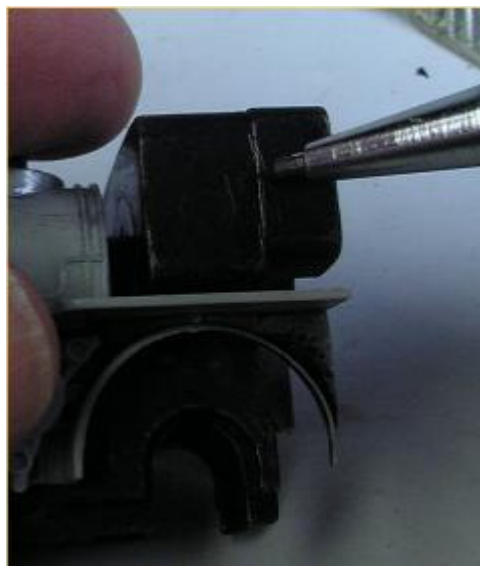


Put it all back together and blow that whistle and ring that bell. Just needs a wood load to cover the decoder.



### 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!!!!