Bowser drive assembly.

Since the late ‘90s the Bowser drive has become the de-facto drive for repowering HO trolley cars. While other available drives fit certain situations the Bowser seems to be the first choice. I have about 30 HO trolley cars and about 20 have the Bowser drive.

I have a set procedure for setting up Bowser drives in my streetcars that I’ve practices for years. With the last car I built, a LVT 700 car from KND Enterprises, I decided to do things a bit differently that I would like to share with you. But first a brief description of my standard procedure.

I like to use a metal floor – if the car doesn’t have a Bowser floor I make one from .032” brass sheet.

An A-Line flywheel and universal is added to all cars.

3M picture tape is used to mount the motor to the brass floor – the motor mounts, cut down to clear the flywheel are used on a Bowser floor.

The pole base is made from a 1/16” tube drilled out with a #58 bit and soldered to a PC board drilled to accept the tube. This is then glued to the ceiling of the car.

I don’t like connecting wires when putting the body on and off the floor so I use a .015” Phosphor-Bronze (PB) wire soldered to the motor lead and curved to spring against the PC board in the ceiling.

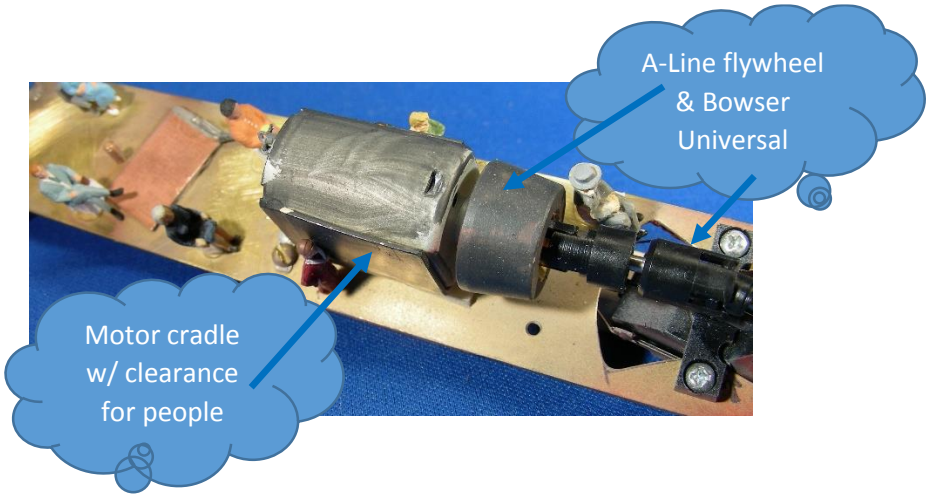
I also don’t like screwing the floor to the car body so when possible I glue a styrene strip above and below the floor position in the center of the car. Then I can drop the floor out just by spreading the bottom of the body.

For lighting I now use LEDs controlled with a current limiter. See Microluminia.

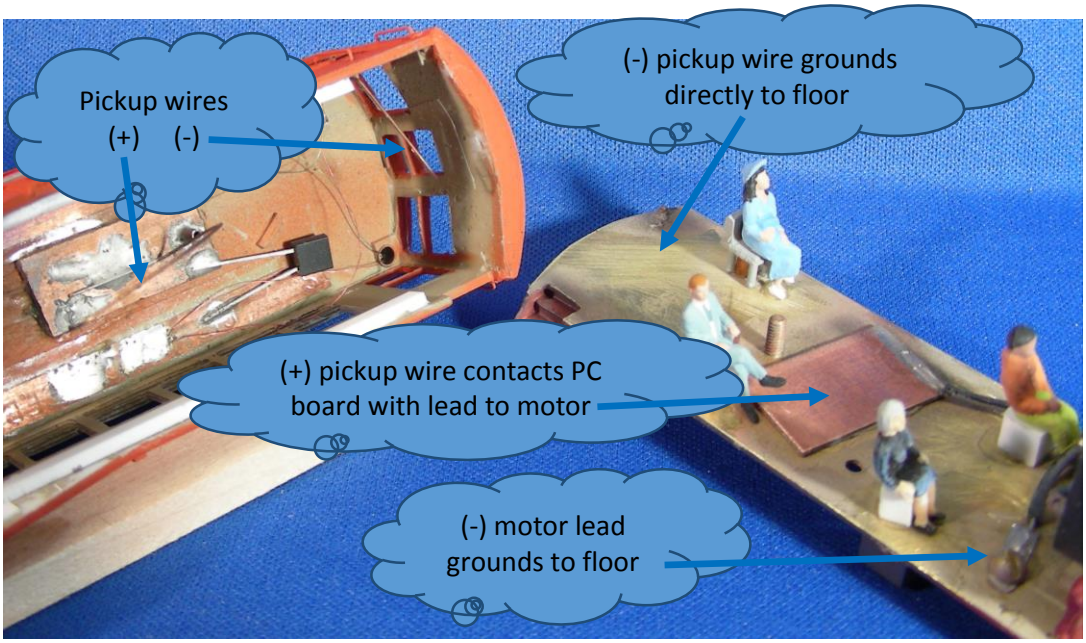
Differences on the LVT 700 car.

Mounting Motor. I like to add passengers to my cars but there is little room inside, especially next to that wide Bowser motor. I thought I would try mounting on its round side but I didn't think the 3M tape would hold it. Then I had the idea of making a cradle for the motor – just a piece of brass with two bends in it. As luck would have it this U shaped brass holds the motor firmly enough that the 3M tape was not necessary on the motor itself; 3M tape holds the brass to the floor. An advantage of rotating the motor is its shaft aligns with the power truck shaft so it was not necessary to build up the motor mount.

Universal drive. I added the A-Line flywheel and universal to the motor but, for the first time, I used the Bowser four-prong universal that came with the drive. I always assumed that this mechanism would not be acceptable until Larry Loyko mentioned that he uses it in his cars. It saves me the trouble of filing flanges off the A-Line universal.

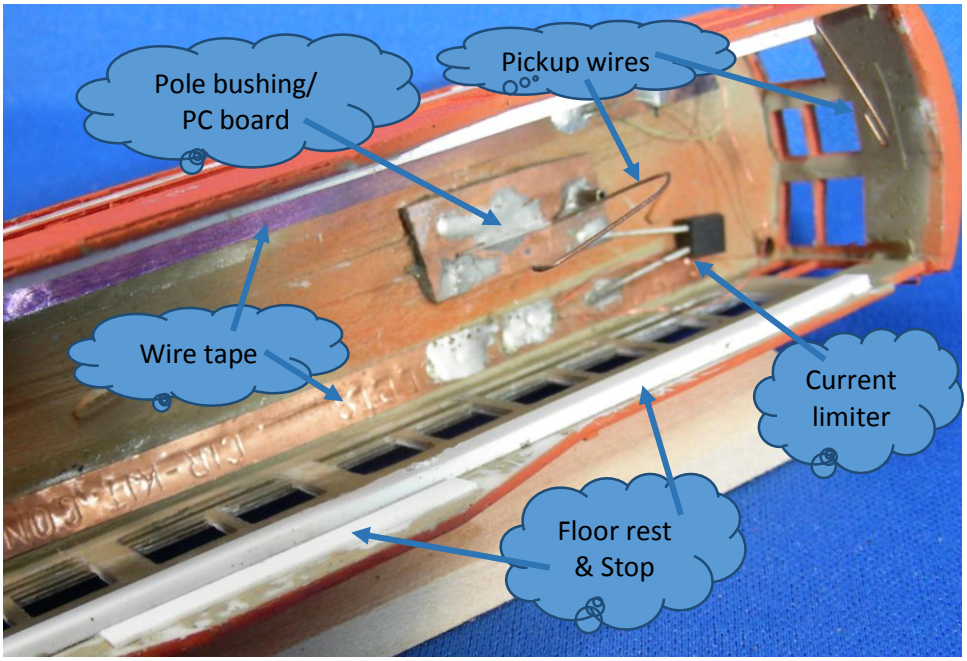


Power from Overhead. After having the sprung PB wire from the motor to the ceiling getting hooked on everything on my workbench when working on the models I decided to do something different. Now I solder this wire to that PC board and mount a second PC board on the floor with a short wire to the motor lead. if the car had lighting I try to keep it all in the body so I need to run a ground to the floor. I use a sprung PB wire for this also. The negative motor lead can be run directly to the floor but I make a soldering post and screw it into a hole in the floor. Getting the floor hot enough to solder/unsolder this wire is not worth it.



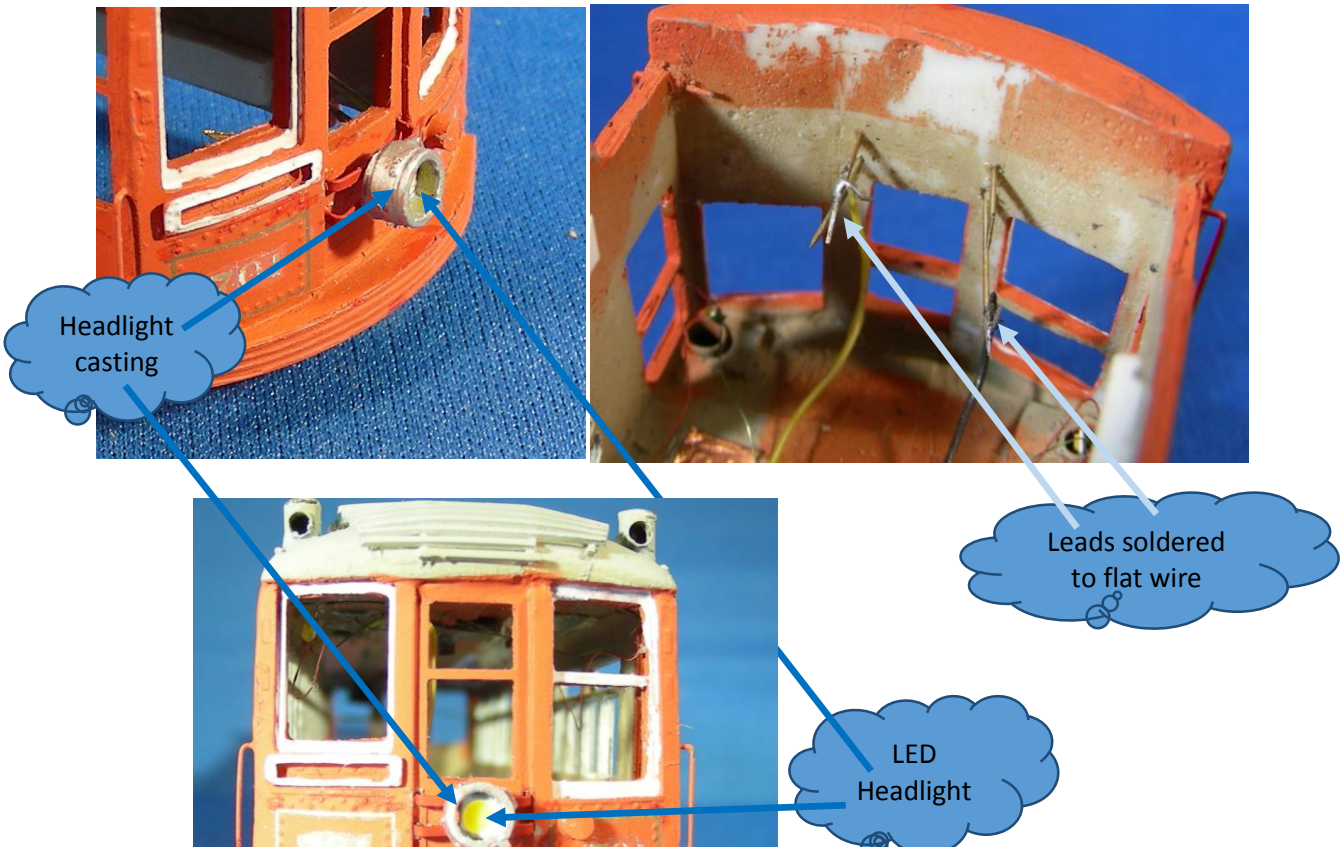
Wire tape in ceiling I do not like wires cluttering the inside of my models, they get in the way and look unsightly hanging in front of the windows. One solution I have found is the electrical tape sold for dollhouse wiring. It has and adhesive backing and can be soldered. If I plan on adding lights to the car I cut two strips of this tape and attach it to the ceiling of the car. Any electrical component or leads can then be soldered to the strips. If you are careful and secure the car body it is not hard to solder to the strips down in the car body, especially with a small chisel tip.

LED control. As you probably know LEDs need some resistance to keep them from burning out as soon as power is applied. It takes some math calculation and OHMs law to figure out the correct resistors to use. But there is an easier way – current limiters. The only thing that needs calculating is the voltage required by each LED. The current limiter is put in series with the LEDs and takes up to 90 volts. So you'll burn out the motor before blowing the LEDs.

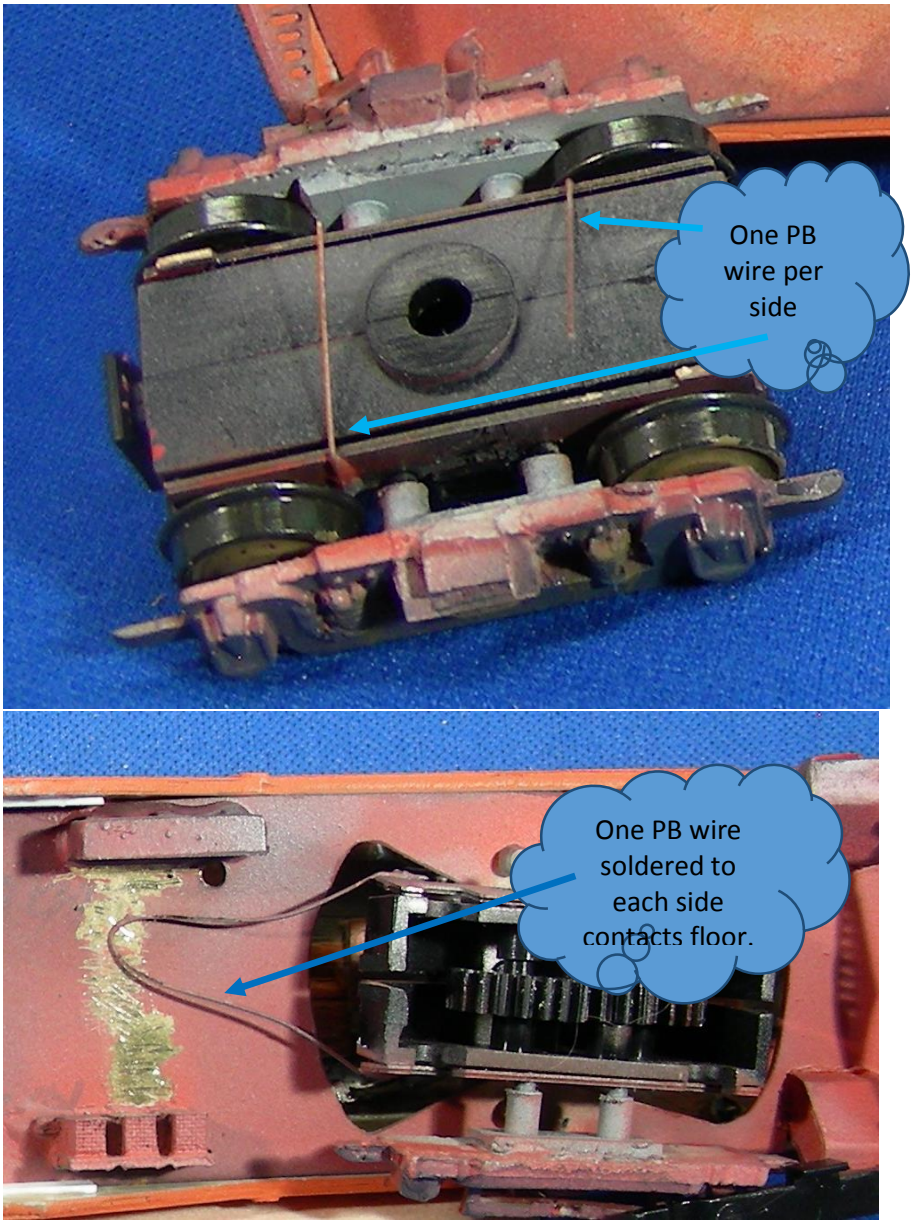


Window glazing. Window material is almost always cemented to the inside wall of HO trolley cars, it would be near impossible to fit it into the window opening. There are several good white glues available for this task but I always seemed to smear some glue onto the glazing. Although it dries clear it is still visible. Not long ago I bought a bottle of Pressure Sensitive Adhesive (PSA) from Micro-Mark. I'm sure there are other similar products out there but this is the one I have. A thin coat is brushed onto the inside wall of the model and allowed to dry. Then the glazing is placed over it and pressed into place. Since the PSA is dry at that time there is no smearing. We've been using this method for a couple years now and have not seen any windows loosen or fall out.

Headlight. LED technology has given us a chance to try things we would never even thought of with light bulbs. Adding a headlight always involved drilling a hole the size of the bulb through he front of the car. Many prototype cars, though, had separate headlights that were hung a frame on the front of the car when needed. I decided to try something similar. I soldered .010" x .030" flat wire directly to a n x n warm white LED and bent the wires to the width of the door. I drilled 4 holes to match the wire, which I had cut with pointed ends, then forced the wires through the holes. Inside the car I soldered the leads to the appropriate flat wire, one to the top and one to the bottom. Then I drilled through a headlight casting and filed it to fit over the LED. The ends of the flat wire get bent to keep the assembly in place and I can remove it simply by unsoldering the leads.



Electrical Pickup. For some time now I've eliminated wires from the trail truck buy soldering a PB wire to each side of the pickup pieces then bending those wires over the top of the truck allowing it to rub the floor. On this model I tried something similar with the drive truck. A loop of PB wire is soldered to each of the pickup pieces then bent to rub the floor when the car is on the track. This is a little tricky because it must not have enough pressure that it raises the front of the truck off the rails yet it must stay in contact with the floor when the car goes into an up-hill transition. No more wires dangling from the trucks and making maintenance harder.



Side Frames. I don't like the Bowser side frames, except on the PCC, and I have a collection of cast side frames that I like to use. But to assure they stay on the truck I cut down a Bowser side frame and cement my cast unit on to it. Recently I realized that this pushes the side frame too far out from the

truck. Now I snip off the tip of the plastic tube that fits on the post. To get the correct length I cut a piece of 1/8” brass tubing to 1/8” length and slip it over the plastic tube; what shows can be cut off.