

MTH GP7 Outside Rail Power Pickup Improvement
Mark DiVecchio (SanDiegoMark)
4 Jul 2020

I have two MTH GP7 diesels (20-20246-1) lettered for my railroad of choice, the Pittsburgh & Lake Erie. My layout uses postwar style tubular track and RossPlate switches.

These diesels regularly stall when going over the RossPlate switches. They hit a particular spot, and stop dead. (Partial spoiler alert – the problem was NOT the switches.)

Over other parts of the layout, the engines run fine. I originally thought the problem was with the engines so I spent time checking the motors and looking for bad solder joints or some mounting problem.

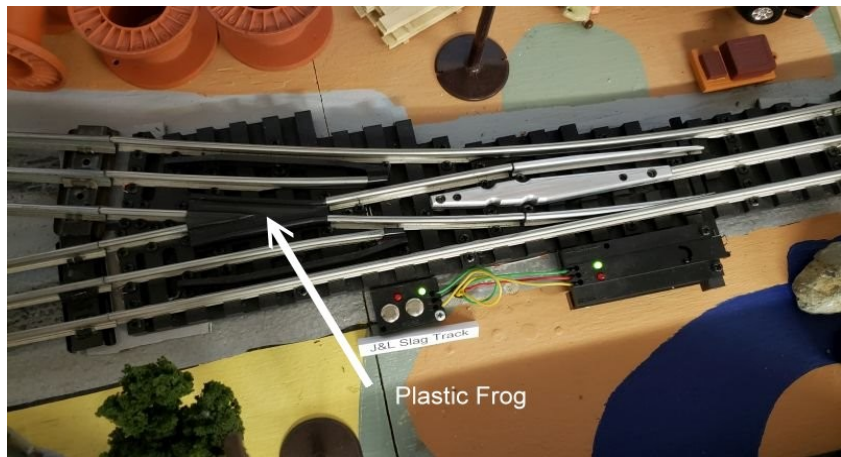
I finally realized that one truck was actually lifting slightly and loosing contact with the outer rail causing loss of power to the engine. But how could that be? This engine has two two-axle trucks for a grand total of 8 wheels that contact the outer rails.

Or do they?

First, 4 of wheels have traction tires so they never contact the outer rails.

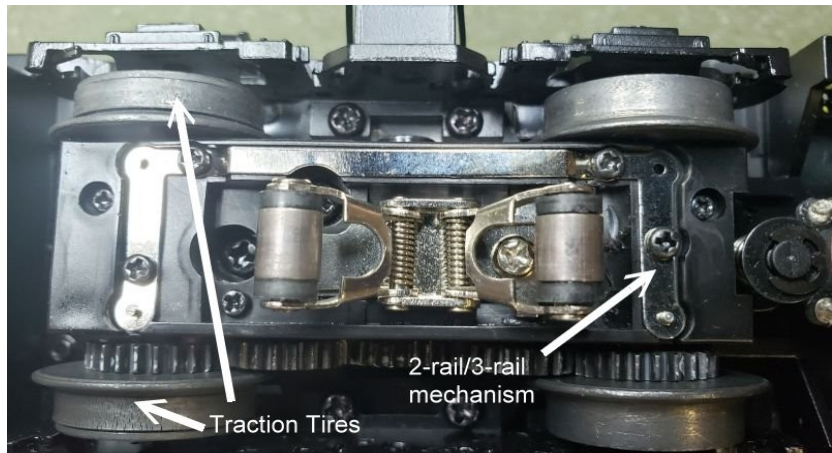
Two wheels are part of the 2-rail/3-rail system using insulated axles so in 3-rail mode, these two wheels never transfer power to the engine.

Then, when going over a switch track with a plastic frog (like the RossPlate switches), one of the remaining wheel is on the plastic and thus not in contact with the outer rails.

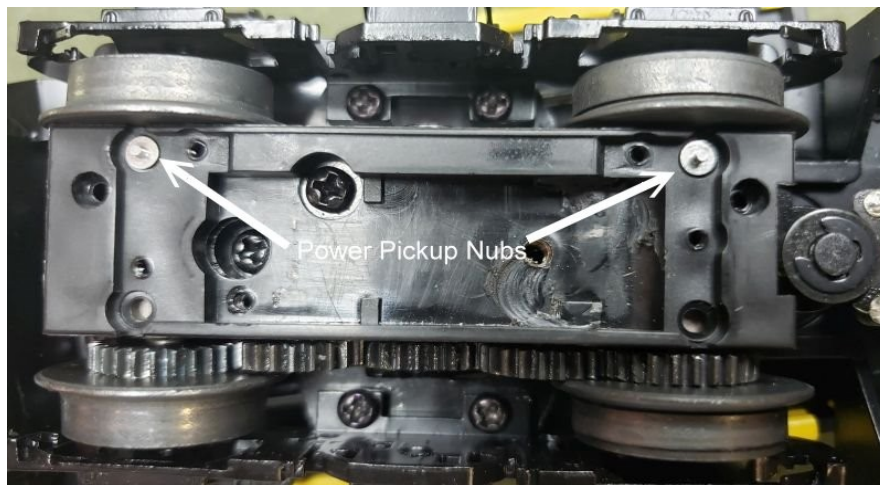


This leaves ONE wheel to get power to the motor. On my layout, I saw that the one wheel (not on the plastic) raised up slightly and lost contact with the outer rail. The engine lost power and stopped. Sometimes when the engine was going fast enough, it just hiccuped, coasted a bit and then kept on going. But it was a very noticeable jerk.

Here is a typical truck on the GP7. There are two traction tires, two full metal wheels and the unusual 2-rail/3-rail powering buss bar. These engines have a switch that lets you run them as either 2-rail or 3-rail engines. I have the switch in the 3-rail position.



I removed the center rail rollers and the 4 screws holding the buss bar. Here is a photo what I saw.

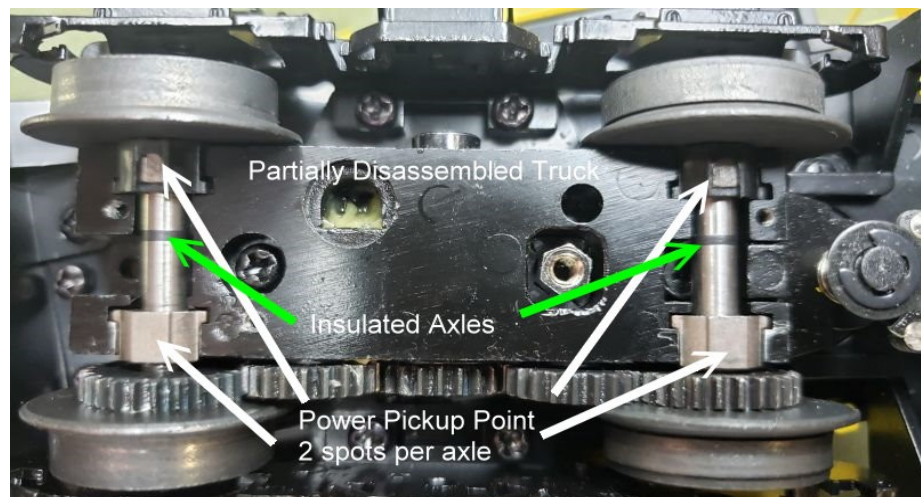


Underneath the metal bus bar are two power pickup nubs. On this truck, they are in the bottom position (Sorry that the photo does not show this exactly – the nubs can be moved and I was already playing around with that.) The nubs just sit in a hole in the plastic. You can grab them with needle nose pliers and just lift them out.

The nubs transfer outer rail power from the wheels/axles to the buss bar.

(NOTE: if you are just installing this fix, you do not need to do what I describe in this step.)

I removed three more screws and then lifted off the plastic part of the truck. In this photo I've exposed the insulated axles and I show the four points where outer rail power can be picked off by the nubs.



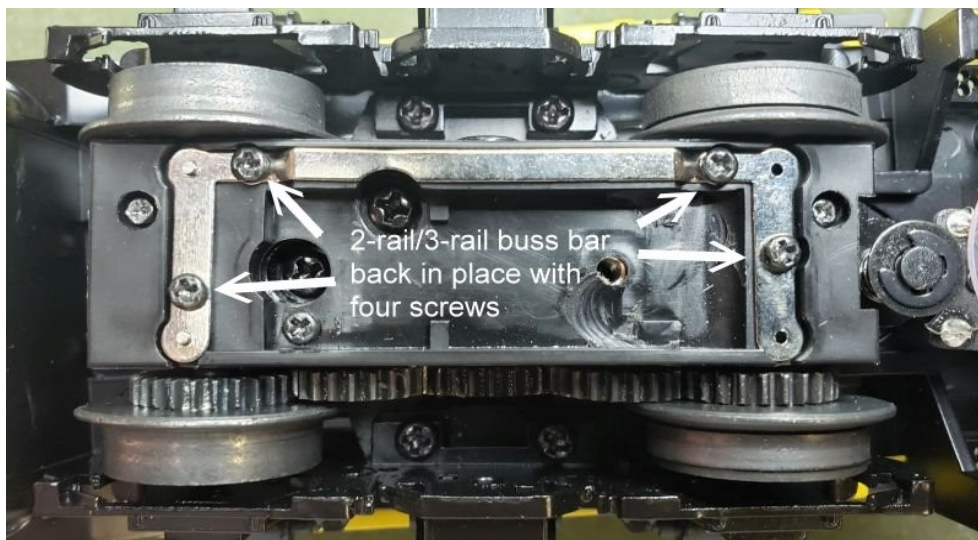
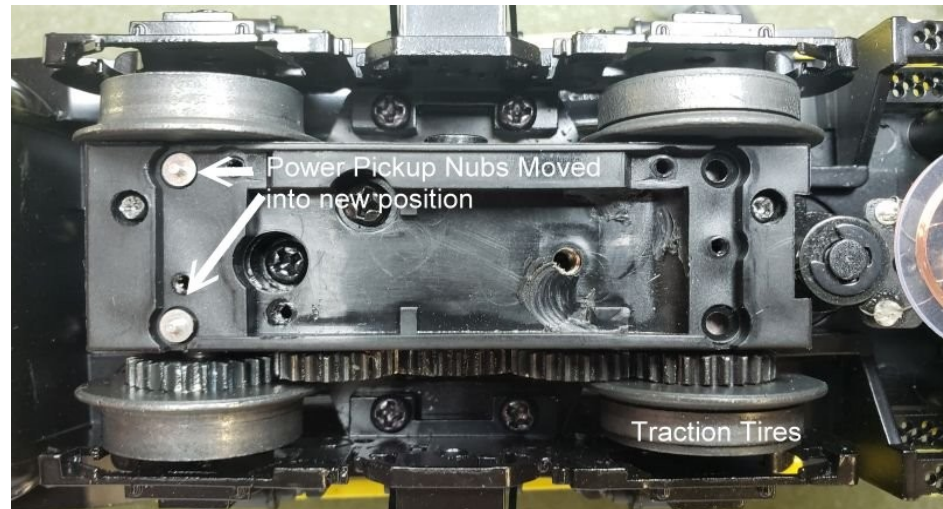
Having a power pickup nub on either point of the

traction tire axle is useless. Since the traction tire insulates the wheel from the track, there is never any power at that pickup point.

But you can see in the earlier photo that there is a power pickup nub contacting the power pickup point of the traction tire axle. This may be true on every diesel engine type so this fix may apply to other engines as well.

First, use the three screws and re-install the plastic bottom of the truck.

This is so simple, just move the power pickup nub from the traction tire axle where it does no good to the other axle where it can at least do some good.



With the nubs in their new position, use the four screws to re-install the buss bar and then re-attach the center rail rollers.

Repeat this on the other truck and you will have 4 wheels that can supply outer rail power to the engine. (Caution: after you make this change, you cannot use the engine in 2-rail mode until you put the nubs back into their original position.)

Now with FOUR wheels making outer rail contact, the GP7 just rolls over switches like they weren't there.