

Rolling Stock Maintenance & Repair

Good maintenance of model railroad rolling stock helps eliminate operating problems, puts broken cars back in service, and often improves their appearance by replacing or adding detail parts. Operations will be greatly enhanced by (a) good couplers at correct heights, (b) clean, free-rolling, in-gauge wheels, and (c) optimal car weights.

This information is also useful in building kit cars and renovating used cars purchased at swap meets.

I know articles have been published on this topic, and a lot of model railroaders know all about it, but I'm writing up the process I use, just in case anyone else may find it helpful.

- **Visual inspection:** Take a good look at the car and identify items to be replaced or repaired. Are there missing brake wheels, brake staffs, brake cylinders, roof walks, hatches, ladders, stirrup steps, couplers, trucks, wheels, etc.? Make a list and collect needed parts. (I usually replace detailed parts after I've done wheel & coupler work, which requires a lot of car handling.)
- **Weigh-in:** Weigh the car with trucks and wheels attached to determine if more weight is needed. I use an inexpensive postage scale.

NMRA Recommended Practice (RP) 20.1 recommends optimal HO car weights of 1 oz., plus ½ oz. for every inch of car length. For example, a 40' box, reefer or stock car, which is 5-5/8 inches long, should weigh about 3.75 oz. Similarly, a 50' car at 7 inches would weigh 4.5 oz! See www.nmra.org, "Standards and Conformance" / "Standards and RP's"/"RP 20.1" for all scales.

Most cars that are weighted by manufacturers are good to go, even if they weigh less than the NMRA standard, which many experienced model railroaders say is too much weight. So if your car is half an oz. below the standard weight, don't sweat it.

If weight must be added, I use ¼ or ½ oz. lead weights with sticky tape backing, fastened to interior flooring of enclosed cars. Open cars may require more creative solutions, like using loads to disguise added weights. But loads also add some weight, so.... The main thing is to decide if and where extra weight should be added.

- **Coupler type & operation:** Do you want to replace existing couplers with better ones? If existing couplers are to be used, do they move and re-center properly, or do they need lubrication (graphite), new springs, or new couplers? Are there any missing knuckle springs that need replacing, or is it easier for you to just replace that coupler with a new one?

If you want to use Kadee #5, consider the newer #148 whisker couplers, and eliminate the separate centering spring.

I am replacing all couplers with Kadee #153 short-shank, "scale-head" whisker couplers if shanks are long enough for good swing clearance of the frame. If not, I use medium-shank #158. These are operationally compatible with Kadee #5 or #148.

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- **Coupler height:** If the couplers operate properly, or you add new couplers, check them with a coupler height gauge (Kadee #205, \$6.45, or #206, which is insulated for use on powered track, \$5.95).

Determine if coupler or trip pin heights need adjusting upward or downward. Coupler heights can be adjusted upward to some degree by using Kadee fiber washers, Kadee #208 and #209. Plan to insert one or two washers when the trucks are removed and replaced (below).

If couplers are too high, they may need to be replaced with overset shank couplers, or body-mounted coupler boxes may have to be shimmed. Most cars manufactured these days, should have coupler boxes very close to the correct heights.

- **Wheels:** Do you want to replace existing wheel sets with preferred ones? I replace most plastic wheels with steel wheel sets, but this may not be worth it for a large fleet of rolling stock. Steel seems to roll more easily than plastic, and there are differing opinions about which picks up dirt faster. Intermountain, Kadee and Proto 2000 all seem good to me.

If existing wheels are kept, do they need cleaning? If so, clean them for improved operation.

Check wheels with an NMRA wheel gauge; remove wheels from trucks and adjust, if necessary. (I almost never find wheels out of gauge.)

- **Truck “tuning:”** With both new and old wheel sets, it’s advisable to remove wheels from the trucks, ream out journal boxes with a Micro-Mark #82838 HO Truck Tuner (\$19.95), and then place a tiny drop of Labelle 102 oil, or similar light lubricant (XL Excelle Light), in each pocket before re-installing the wheel sets.

This should reduce friction, or drag, and enable your engines to pull more cars more easily. Once the car body and trucks are reassembled, test how well the wheels roll on track inclined on a slight grade. If there are no grades available on your layout, just incline a piece of test track.

If you need to add a washers between trucks and bolsters for correct coupler height, do it now before screwing the trucks back on.

Order of work steps: As you work on several cars, you will probably develop an order of work to increase efficiency. My order of work usually goes something like this:

1. Visually inspect and make list of detail parts to replace.
2. Weigh the car, keeping in mind that replacing plastic wheels with steel will add a ¼ oz. of weight.
3. Collect the bits and pieces, such as, weights, replacement detail parts, new wheels, new couplers, etc.

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4. Check coupler heights and coupler action. Even if couplers are replaced, it may be necessary to add a fiber washer or two, and you can get an idea of that height adjustment requirement before taking off the trucks.
5. Remove trucks and gauge wheels if they are to be retained.
6. Remove wheels from trucks.
7. Check wheel gauge on new wheels. Adjust gauge on wheels (new or used) if necessary, by squeezing wheels outward or inward on the axle. See that wheels are equidistant from their respective ends of the axle. Wheels that are off-center on an axle are not a good thing.
8. "Tune" and lubricate wheel axle pockets on the trucks, cleaning out the pockets with a Micro-Mark tuner and placing a drop of Labelle's 102 or other acceptable light lube in each pocket.
9. Replace gauged wheels in trucks, and give them a little push on the test track to see how nicely they roll.
10. Remove car body and add lead weight, if needed. (For open cars and tank cars, more creative remedies are required to add weight.) Reassemble.
11. If replacing or repairing couplers, open coupler pockets and replace couplers and/or coupler centering springs. When placing whisker couplers, make sure the whiskers are set down inside the coupler box.
12. Close coupler pockets and test centering action to ensure coupler is working well. Maybe add a squirt of graphite lube. If not working well, reopen pocket and check to make sure spring is working or whisker is completely inside the coupler box. Close it up and test again.
13. If there's an expected need to raise the body-mounted couplers above the trucks, place a fiber washer or two as trucks are re-attached to the body.
14. With trucks back on and couplers working, check the coupler and trip pin heights with the height gauge. If the coupler is too high, remove trucks and remove a fiber washer. If too low, remove trucks and add a washer. Put the trucks back on.
15. Once the coupler height is correct, check the trip pin height again. The trip pin should be bent up or down as necessary, to be at the correctly gauged height. Be sure to hold onto the coupler and car body while bending a trip pin. Make sure to hold the car in a way to avoid breaking detail parts. Proper grasp, finger position and pressure are learned things.
16. Test-roll the car on inclined track so you may appreciate the improved results from truck tuning and proper weighting.
17. Add missing detail parts, hatches, ladders, stirrup steps, brake wheels, brake staffs, underbody detail, etc. If adding stirrup steps, it may be helpful to take the trucks off again. It may be a good idea to add detail parts after doing couplers, wheels and trucks just so all that handling doesn't break off a new detail part.
18. Touch-up paint and weather, as desired. Again, it's usually a good idea to do this after all the intensive handling for repairs or rebuilding. Apply DullCoat spray if chalks or powders are used for weathering or if a bright shiny paint job needs toning down.