

10 weeks to a better layout

Tips on how to improve the looks and operation of your model railroad

By John Pryke • Photographs by the author

After reading a magazine article or watching a video about a really great model railroad, have you ever asked yourself, “Why doesn’t my layout look and run like that one?”

You may be surprised to learn that most model railroads can be improved significantly just by completing a few straightforward tasks and maintenance steps. In fact, you may be only 10 weeks

away from a better looking, better operating layout.

The following common, yet important tune-up projects will improve any layout. Though some of the jobs take longer than others, most can be completed in two or three evenings and can provide one task a week for a 10-week period. So, grab your tools and your calendar and let’s get started!

Clean rails and smooth-running equipment are all part of the “well-oiled machine” that is John Pryke’s HO scale New York, New Haven & Hartford layout.

John Pryke is a frequent contributor to Model Railroader. He’s also the author of two MR books: Building City Scenery and Steam Locomotive Projects and Ideas.



Week 1 - Checking track gauge

Out-of-gauge trackwork – places where the distance between the rails is either too close or too far apart – will usually cause derailments. To check for track problems, you'll need a National Model Railroad Association (NMRA) Standards Gauge. An NMRA gauge, available at most hobby shops, has many uses and is a must for every model railroader's toolbox.

As shown in the photo below, check the track gauge by inserting the points between the rails and sliding the gauge along a stretch of track on your layout. On correctly gauged track, the tool should move easily. If your rails are too close together, the gauge's points will scrape or bind; if the rails are spaced too wide, the small lip next to the point on the right will fall between the rails. In both cases the track will need some work.

Wherever the gauge is wide, use needle-nose pliers to drive a spike tightly against the outside of the rail, pushing it slightly inward. If the gauge is too narrow, place the spike against the inside of the rail to force it outward. If you use flextrack with plastic ties, before driving the spike you'll need to drill a pilot hole through the tie with a no. 65 bit in a pin vise to keep the tie from splitting.

You should also use the gauge to check each of your turnouts, making sure to inspect the frog and switch points for both routes. If you find a gauge problem here, correct it with spikes in the same manner as you have elsewhere. [Be careful when placing spikes on a turnout that they don't interfere with the movement of the switch points. – Ed.]

Next, test the check gauge between the guardrails, wing rails, and frog. To check these locations, use the flangeway points on the top of the NMRA gauge as shown in the illustration below.

If you have a problem with a check gauge that is too narrow, you can modify the guardrail by cementing a .010" styrene shim to its working side. You may need to file the guardrail shim a bit to make the gauge exact. Make sure the shim is also level with the top of the rail.



NMRA Mark IV HO scale gauge

Track that's out of gauge can cause derailments. Whether you use manufactured track or handlay your own, it's a good idea to check that the rails are in gauge.

Checking flangeways

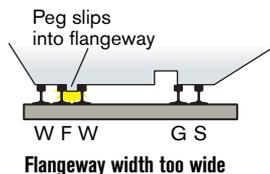
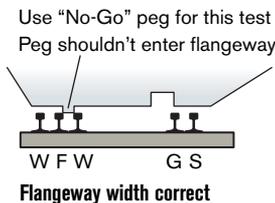
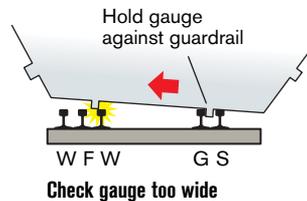
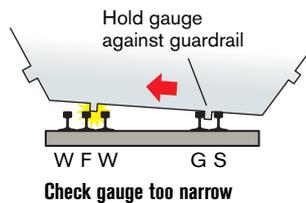
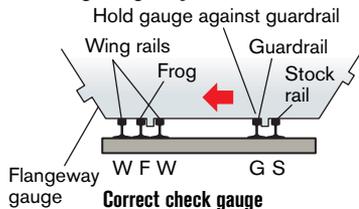
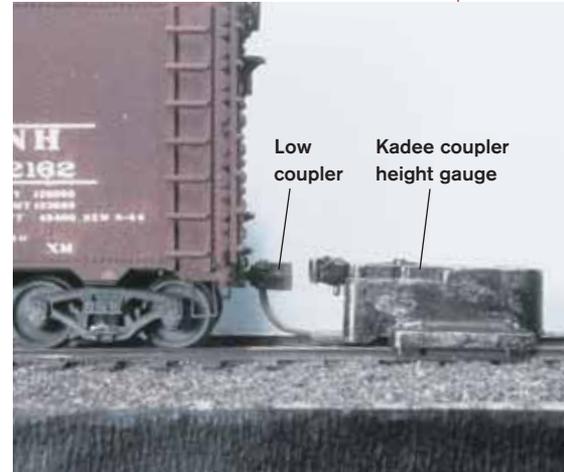


Illustration by Rick Johnson

Week 2 - Correcting couplers



High or low couplers can cause unwanted uncouplings. Using a Kadee coupler gauge speeds up the task of checking coupler heights.

Most modelers use magnetic knuckle couplers on their rolling stock. If the coupler height varies from car to car, trains can uncouple when you don't want them to, or low uncoupling pins can get hung up on turnout rails, grade crossings, or bridge guardrails and cause derailments.

As shown in the photo, you can quickly check the coupler heights of your rolling stock with a Kadee coupler height gauge (similar products are available in most scales). Place the gauge on the rails next to a car or locomotive – you should be able to tell immediately if the car's knuckle coupler needs adjusting.

To correct a coupler that's too low, add Kadee no. 208 or 209 fiber washers between the trucks and bolsters. If it's too high, you may need to use thin pieces of styrene to shim the coupler box lower. If you can't move the box, try replacing the coupler with one that has an offset shank.

Sometimes the coupler is the correct height, but the coupler pin hangs too low. To raise the pin, bend it slightly with a pair of needle-nose pliers, or use a special coupler-pin pliers like those offered by Kadee and Micro-Mark.

Week 3 - Cleaning wheels

The best way to keep wheels clean is by running your railroad every day. Unfortunately, few modelers have time to do this, so dirt and dust build up on the rails and accumulate on car and locomotive wheels, resulting in poor electrical contact and a rough ride.

Sometimes a lot of dirt accumulates on wheel treads, forming a tire of gunk that's easy to see. The most effective way to remove this built-up dirt is with a jeweler's screwdriver. As shown in the illustration below, hold the screwdriver blade to the tread and use your thumb to turn the wheel, letting the blade scrape away the dirt.

You can also clean wheels with a brass wire wheel and a motor tool. Run the tool at its slowest speed and bring the brush in contact with the wheel tread at a slight angle so the brush touches the tread and flange. For non-powered wheels, put your finger on the wheel at the other end of the axle to serve as a brake (shown in the right-hand photo). If you let the wheel turn too fast, the friction will be enough to melt plastic axle points.

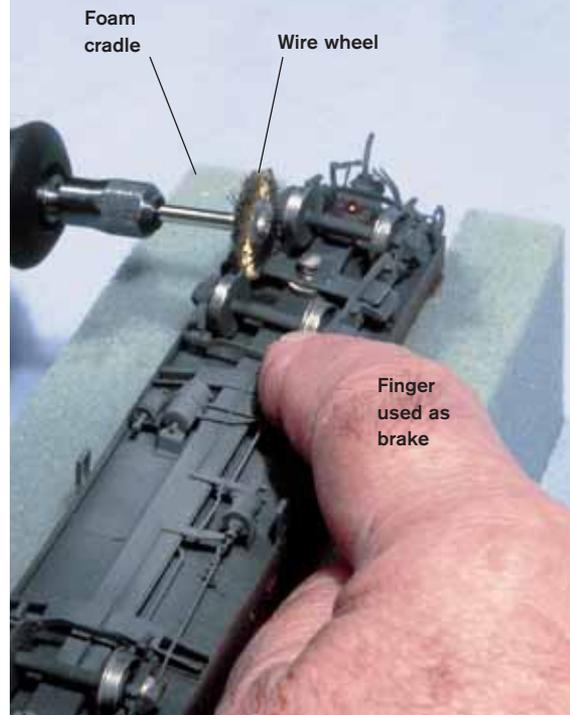
To clean engine wheels, attach clip leads to the locomotive and apply enough power so that the locomotive wheels rotate slowly opposite the wire wheel.

For wheels that are maintained regularly, you can clean them with a solvent such as Goo Gone.



Illustration by Rick Johnson

Dirt builds up on the wheels of all cars and locomotives. Using a wire wheel in a motor tool is one way to clean metal wheel treads.



Week 4 - Maintaining locomotives

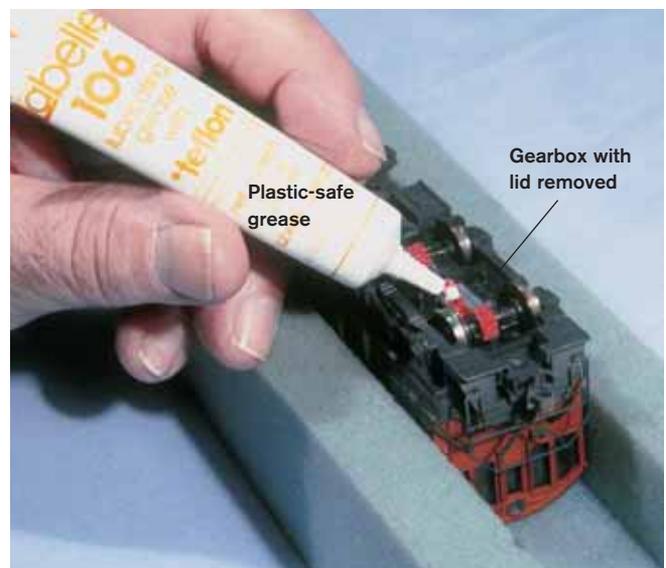
You should clean and lubricate your locomotives regularly. Disassemble each of your engines so that you can service its motor and power train. The motor, gearbox, and wheels have bearings that need periodic lubrication. Put a drop of Labelle no. 108 lubricant on each of these bearings. Because most model locomotives use a combination of metal and plastic parts, make sure the lubricants you use are safe for plastics.

For diesel locomotives, remove the cover plate from the bottom of the locomotive's trucks and squeeze some Labelle no. 106 white grease onto the exposed gear train, as shown in the photo. Replace the cover plate and rotate the gears slowly so that the grease will spread to the other gears in the power train.

Use only a small amount of grease for this task. Too much grease can cause just as many problems as too little. If you do use too much, remove the gears, clean them, and then start over. Applying lubricants in small doses is always best.

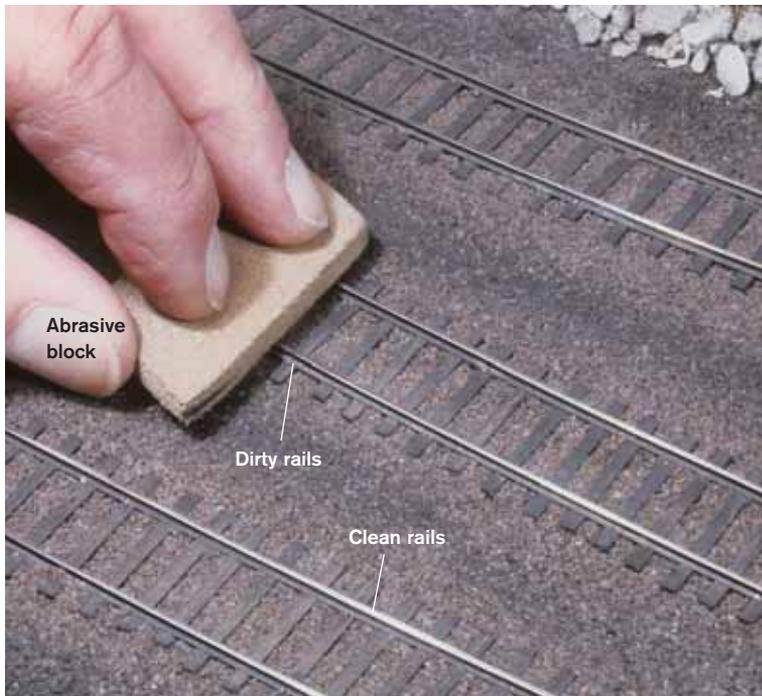
If you are lubricating a steam engine, add a drop of Labelle no. 108 lubricant under each side-rod screw, on the crosshead guides, and in the journal boxes and bearings of the leading and trailing trucks.

When you are finished, remove any excess oil or grease from the wheel treads and the body of the model.



Moving locomotive parts such as gears and bearings need occasional lubrication to continue providing top performance. Use lubricants sparingly, however, as a little goes a long way!

Week 5 - Cleaning the track



Make it a habit to clean your track regularly. As shown here, John uses a Walthers' Bright Boy abrasive block to scrub built-up oil and dirt from the rails.

Clean track is one of the most important factors in trouble-free operation. Run your index finger along the top of a rail for several inches. If your finger comes away with a dirty line on it, your track needs cleaning.

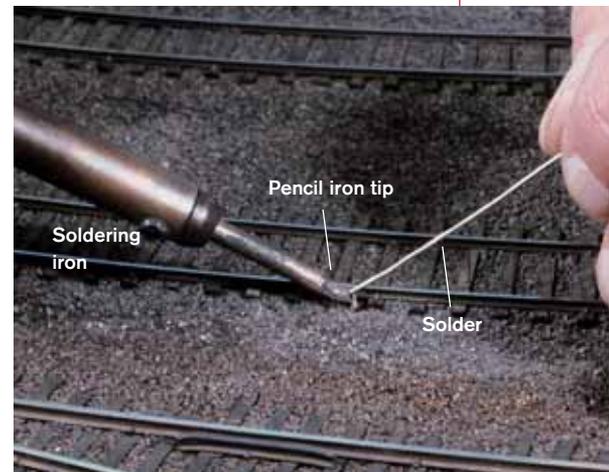
I use an abrasive track-cleaning block made of a flexible core with tiny grains of pumice embedded in it. The block removes dirt from the railhead by sanding it off as you push the block along the rails.

A problem with abrasive blocks is getting your hand into tight places such as inside a truss bridge or under an overpass. You can solve both problems by cutting a piece of the abrasive block slightly wider than the two rails and gluing it with epoxy onto the end of a piece of scrap wood. You can then push the block into places where your hand will not fit, as shown in the photo below.

To clean hard-to-reach places, John used epoxy to cement an abrasive block to a wood handle.



Week 6 - Checking your wiring



Without careful inspection, broken feeder wires may go unnoticed for years, leaving your layout under-powered. Feeder repair is as simple as cleaning up the wire and rail, and soldering them back together.

The most common wiring problem on an established layout is that track feeders can break loose from the expansion and contraction of the roadbed and benchwork. All materials will expand and contract to some degree because of changes in temperature, but wood is especially susceptible to changes in humidity. Therefore, the soldered joint where a track feeder connects to the rail may break after a long period of dryness or high humidity, causing intermittent or total loss of power to a piece of track.

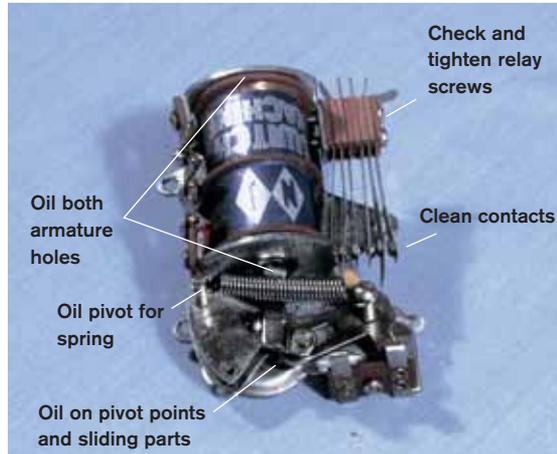
Check your feeders by testing the bond to the rails with the point of a modeler's knife. If the feeder is loose, re-solder it to the outside of the running rail. To reattach a feeder, bend the wire away from the rail and then clean any weathering or paint off the vertical web and base of the rail with a file. Next, apply a small drop of rosin flux to the cleaned area and tin it with solder using a soldering iron. Tin the feeder wire also. Then bend the wire so that it lies parallel to the web of the rail and solder it back in place, as shown in the photo above.

Once the joint has cooled, remove any solder from the top of the rail with a small file, and paint the soldered joint to match the weathering on the rail.

Week 7 - Lubricating switch machines and linkages

If you use twin-coil, electromagnetic switch machines on your layout, like the N.J. International machine shown at right, you'll need to clean and oil them once in a while. (Enclosed switch motors like Hanksraft or Tortoise don't need this step.) The photo at right shows where to oil the moving parts on an N.J. International switch machine. Use Labelle no. 107 oil for all the switch machine's moving bearing points.

While you're at it, tighten and clean the switch machine's contacts. The screws holding



Twin-coil switch machines need occasional maintenance and light lubrication to work better.

the contacts in position can come loose from vibration and may need to be tightened. A jeweler's screwdriver works well for this task. To clean the contacts, use a small piece of fine-grit black emery paper. Fold the emery paper in half, insert it between each pair of contacts, and move the paper back and forth to remove dirt and corrosion. The contacts are very delicate, so be careful you don't bend them out of alignment while cleaning.

Many switch machines use a bell crank and linkage to move the switch rod, as shown in the photo below. Lubricate the surface bell crank with Labelle no. 108 oil.



Week 8 - Vacuuming

No matter where your layout is located it will collect dust and dirt. If your layout is in an unfinished basement that doesn't have a ceiling, you probably get all sorts of dust and debris shaken loose by foot traffic from the floor above. I vacuum my layout regularly with a powerful shop vacuum outfitted with a set of miniature brushes (available from specialty tool suppliers such as Micro-Mark). Miniature tools provide excellent suction and are small enough to fit into tight places.

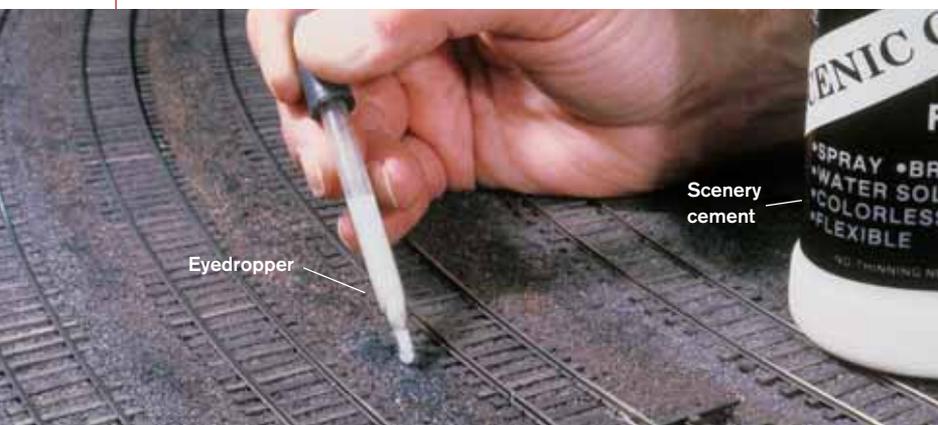
Start by cleaning the track and roadbed using a miniature brush, as shown above. Next, switch to a "snout" tool and clean the scenery. Be careful to watch for loose patches of scenic materials that will need to be cemented back in place.

Finish the vacuuming process by using the brush attachment to remove dust from roads, structures, and water. Watch out for details, people, and vehicles that aren't cemented to the layout. It's best to move them ahead of time.



Even the cleanest layouts get dusty. Vacuuming your layout annually is a really good idea, but watch out for loose scenery objects.

Week 9 - Patching ballast



Spots where ballast is missing along the right-of-way are easy to fix. And, if you prepare all the materials ahead of time, you'll probably be able to complete ballast repairs for your entire layout in one evening.

No matter how well you've cemented it, over time patches of ballast disappear from main lines and yards, leaving small bald spots. When you find a bare spot, prepare the area by removing any surrounding loose ballast with a brush or a vacuum. Then sprinkle matching ballast onto the bare patch using a spoon or small paper cup, as shown in the top photo. Tamp the new ballast into the hole with your finger so it's even with the surface around it.

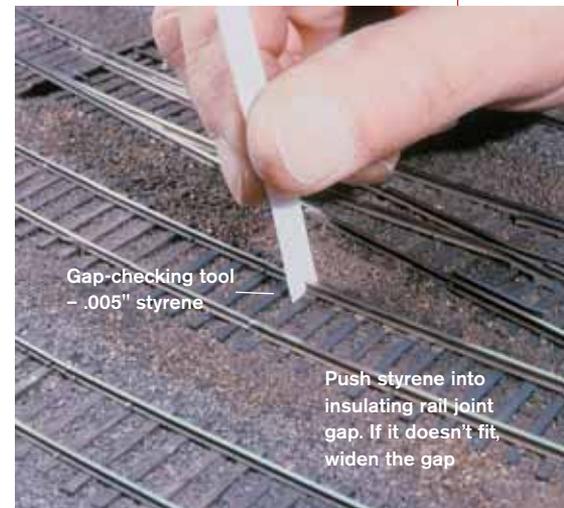
Next, wet the ballast patch with water that has a few drops of dish detergent in it. [You can also use rubbing alcohol. – Ed.] I use a small misting bottle for this step, as shown in the center photo, but you can also use an eyedropper. Finally, apply Scenic Cement from Woodland Scenics (or diluted white glue) to the patch and surrounding area with a small eyedropper as shown above.

Allow the patch to dry overnight. Once all of the holes in your ballast have been patched, the right-of-way on your roadbed will look like new again.

Week 10 - Checking rail joints

Uneven, misaligned rail joints often cause derailments. As mentioned in week six, your model railroad is affected by changes in temperature and humidity, causing rails to shift out of alignment and kink at the joints. Movement of the rail can also close gaps that isolate electrical blocks, resulting in a short circuit. Therefore, you should visually inspect all of your rail joints – preferably during the winter months. [Filling insulating gaps in place with styrene or ABS plastic cemented in place with epoxy will keep them open permanently, thus eliminating the need for this step. – Ed.]

To relieve the pressure where rails are starting to kink at a joint, you'll need to



remove a small piece of rail. Start by sliding the rail joiner back along one of the rails to clear a kinked joint. Then, using a cutoff wheel in a motor tool, slice through the rails at the gap. One cut should be enough to ease the pressure and return the rail to its normal position. Slide the joiner back in place when finished.

To check insulating rail joint gaps, cut a piece of .005" styrene and slide it into the gap between the rail ends, as shown above. If the styrene doesn't fit, open up the gap using a cutoff wheel.

With the completion of week 10, your layout should be running and looking better than ever before.