TIPS for BETTER OPERATION

Presented by BOB VAN CLEEF
of the North River Railway
THE BEST TRACK CLEANER ... 

Is the constant movement of trains with a lot of operation.

- Constant operation provides a rubbing action which keeps the railhead polished and clean.
- Many constantly running store displays have no problems.
- Nor does the mainline of many club layouts.
- Well used Tracks, in an idealistic world, should never require cleaning.
THINGS HAPPEN HOWEVER.

• Scenery projects requiring plaster can instantly destroy any operation at all.
• A harsh environment can also conspire to rust, corrode and degrade both tracks and wheels.
• Attempting to operate over dirty track combined with modern transistor or DCC circuitry can further accelerate this destruction.

Long times between running trains can destroy operation.

So what can be done?
ENTER the TRACK CLEANING SQUAD

• No one method for track cleaning is best for all situations.
• It is an intuitive art.
• Here is a caddy to carry around a few track cleaning tools.
These are the most common tools for track cleaning.

- **Contact Cleaners** are used to improve contact between wheels and rail.
- **Track Abrasives** clean stubborn dirt.
- **Kerosene** (or any petroleum-based solvent) helps to remove dirt.
- A Balsa block combined with a mixture of ordinary soap and kerosene can be used to scrub dirt from the railhead.
ABRASIVE TRACK CLEANERS

• Use of an abrasive track cleaner should be done sparingly, mostly where rails have been painted or covered with new scenery.

• Excessive use of abrasives can eventually wear down the railhead.

• Always use extreme caution around turnouts to avoid damage. Work from the frog toward the points.
BALSA WOOD

- Balsa wood is an excellent track cleaner. Simply cut a 1”x1” block to desired length and use.
- It is cheap, effective and is less likely to damage sensitive track work such as the points of turnouts.
- Simply sand periodically to remove any accumulated dirt.
• Kerosene, lamp oil and petroleum based track cleaning products can be used to clean track.
• They work by dissolving the greases and oils on the track so they can be wiped away.
• They do nothing to improve the electrical conductivity between wheel and track.
• Lamp oil is cheap, easy to store and comes in a convenient container.
KEROSENE, SOAP and BALSA WOOD

- Balsa wood is an abrasive but much less aggressive than common Abrasive blocks.
- Soap and an oil-base track cleaner will dissolve dirt and grease.
- Together, these three tools will clean and polish your tracks.
• Contact cleaners work differently as they are conductive.
• Use sparingly as they are designed to leave a thin conductive film.
• Remember that **ANYTHING** wet on rails attracts dust and gunk.
• Apply in small dabs and run whole train over area to clean track and wheels.
TRACK CLEANING CARS

- Cars like this Centerline rail and wheel cleaner can be used wet or dry.
- A brass roller covered with an absorbent materiel is soaked with a cleaner and rolled along the tracks.
- This car does present a drag in the train but in time it can remove a considerable amount of surface dirt.

Centerline Track cleaner with spare rollers.
A MODIFIED TRACK CLEANER

It is easy to cut down a plastic box car to fit over the Centerline Chassis.

Here is the LaSalle and Bureau County Railway (ex-New Haven) car this was modeled from. Need more be said?
Here is another track cleaner based on an interesting prototype. The original did have a belly as shown here that was actually an oil tank. Tank cars did not exist in 1870 and other experiments to haul oil also included building tanks around the axles of trucks.
CLEANING LOCOMOTIVE WHEELS

- Sometimes it is the wheels of a unused locomotive that need cleaning.
- One pair of rollers are inserted under each driver.
- Use soap, track cleaner or better still, contact cleaner to clean wheels.
- Don’t forget to dry the rollers and run engine again to “dry out” the wheels.

Rollers used to clean wheels of locomotive
NO! NOT RECOMMENDED

- Sometime the wheels are so filthy a wire brush must be used as shown.
- I DO NOT recommend this unless it is absolutely necessary.
- This may improve electrical contact at first but in time the metallic bristles tend to break off and collect in motors and sensitive electronic circuitry.
AVOID VOLTAGE DROPS

ALL SYSTEMS
• Use #16 or less for transmissions lines 6 or more feet long
• Use #22 or less for all other feeds
• Only .05 volts can make a very noticeable difference in the speed of an engine, especially at slow speeds.

DCC SYSTEMS
• Avoid long runs of closely bundled wires or cables.
• This can add undesirable capacitance than can degrade the control pulses of the system.
• Try breaking the bundles apart and running wires separately.
WIRE TURNOUT POINTS/FROGS

• Do not rely on the points to make contact and carry current.

• This applies mostly for hand-laid trackwork but CAN on rare occasions also apply to commercial turnouts.

• Most stall motors and some solenoid machines have contacts for this purpose.
USE BOND WIRES.

• Joiners can fail electrically yet still hold the rails in alignment.
• This can be caused by ballast glue, oil, grease or dirt.
• Making a simple forming tool helps form bond wires that are then be soldered in place.
• These add detail and insure electrical continuity.
PREVENTING DERAILMENTS

• There is more to good operation than good electrical contact.
• Sometimes problems can be purely mechanical.
• This little accident wasn’t caused by a spec of dirt on tracks.
TRACK GAUGE.

- One of the most frequent causes of derailments is the tracks being out of gauge.
- Use a gauge wherever a derailment occurs.
- Check the distance the rails are apart and any clearance points in a turnout.
- If the track is in gauge then check the wheels of the offending car(s).
CHECKING TANGENT TRACK

• This type of gauge can be used where tight tolerances are involved.
• Place the gauge squarely across the rails holding the left tab against the rail.
• The tab to the right should pass freely past the rail but not so far as allow the step to pass.
CHECKING TURNOUTS

• Switches are the most frequent culprit in causing derailments.
• Use the tabs at the top of the gauge to check the width and depth of the flange ways. plus the clearance of the closure rails and points.
• This gauge does not check all dimensions involved but it does go a long way to finding any problems.
• Also Be sure to make sure that trackwork has no dips or kinks.
CHECK WHEEL AND AXELS

• If the tracks seem OK then make sure wheels are in gauge.
• Look for wheels to conform to RP-25 recommended practice.
• Axels should be free turning. Look for damage to [needle] bearings.
• Lubricate with graphite or a tiny amount of light oil.
• Metal wheels work best.
CONSIDER THESE TRUCKS

- Neither truck actually uses the rollers on the beam but...
- Truck on left has wide bearing surface of the bolster
- Truck on right with smaller surface may tend to rock
- Polished wheel treads look much more realistic and prevent the build-up of dirt that can cause derailments.
TRUCK BOLSTERS

- This bolster may not be the most realistic but you will never see it above the truck.
- You can also file the bolster on a plastic model flat and glue a shim or large washer to provide a larger bearing surface.
- You may also need to add shims to adjust the coupler height.
MAKING A UNIVERSAL BOLSTER

• A reasonably good bolster is easy to construct
• Glue a couple of reinforcing ribs on a 5”x22” piece of stripwood.
• Cut the 12” x 24” block square.
• Glue these pieces and taper the ribs.
WHILE GLUE DRIES

- This small tool was used to hold the pieces together while the glue dried.
- The end of each side of bolster are sanded even with the side of this tool to ensure the two sides symmetrical.
CHECKLIST FOR TRUCKS

• Do not over-tighten truck screws. Trucks should be free-wheeling and swivel smoothly.
• Use a washer to prevent excessive sideway movement between screw and truck.
• Use a .020 shim between rail and wheels to verify side frames have enough play to navigate uneven track.
COUPLERS

• KaDee is the most popular coupler used today in HO.
• Note that one series of couplers are designed to allow the whole coupler to move when over a ramp.
• Others allow the opening of the knuckle only.
• While KaDee does an excellent job in removing the metal flashing on their parts they are not perfect.
CLEANING DRAFT GEAR

- Both plastic and metal draft gear usually have flaws.
- Sometimes this is in the form of gritty particles.
- Most often there is a flashing that leaks past the different parts of the mold.
- These must be removed to insure proper operation.
- Use a fine file to remove all sharp edges and lubricate with dry graphite.
BURNISHING COUPLER SHANK

• Remove burrs from all corners of the coupler shank.
• Make no more than two or three passes across the shank with a fine file.
• Then make a short pass on each edge at a slight angle.
• Also remove the burrs on the slot for the coupler spring.
• Flash on the knuckle can lift wheels off the rails while the train moves forward or backward.
• Use a round needle file to remove flash on ALL sides of knuckle and other parts of couplers.
KADEE COUPLER HEIGHT GAUGE

• The height of the coupler is important.
• This type of gauge makes it easy to check the height easily and quickly.
• It also helps to make sure the uncoupling pin also just clears the top of the ramps.
• Couplers should be lubricated with powdered graphite, not oil or grease.
COUPLER PIN

- The KaDee gauge has a step to simulate the height of an uncoupling ramp.
- Check to insure pin will clear ramps.
- Adding a slight angle to the underside of the uncoupling pin will also insure pin does not hit the ramps.
CHECKING A COUPLER FOR HEIGHT

Couplers meet at exactly the right height.
Shims (washers) on bolster are used to adjust height.
Rolling Stock Weights

• A properly weighted car will stay on the tracks much better than one that isn’t.
• Almost any type of scale can be used to check the weight of a car. The postal scale above is quite sufficient while the electronic scale below is a bit of overkill.
• The new NMRA recommendation for weight in HO is 1oz. + ½ oz. for every inch of car length.
• I prefer the old standard of 3 oz. for any car up to 40’, then 1 oz. for each additional 10’ of length.
LOW MELTING POINT METALS

- Wood’s metal, Cero-bend or special low-melting point solders can be used weight cars.
- These can be melted safely in boiling water.
- It is however very expensive and can be toxic.
- Use only when other methods cannot be used such as locomotives.
LEAD OR TUNGSTON SHOT

- Lead shot is much less expensive and easier to use.
- The Twenty-five pounds or so that you will have to buy will probably last a lifetime.
- Simply weigh, pour in and glue like the ballast it is.
- #12 shot is roughly .050 in diameter.
WEIGHTS FOR JUST PENNIES

• Pennies, despite their odd shape, are about the least expensive weight that can be used for a car.
• They are readily available and could even become a collector’s item.
• It takes about 13 cents for the average box car.
BRASS BAR STOCKS WORKS TOO

- Steel strips are sometimes included as part of a kit but may not be enough.
- Brass stock can be obtained for less per ounce than the steel weight found in a hobby shop in virtually any size.
- Flat cars can be built around brass bar stock and still be up to standard weight.
For More Information...

American Weigh Scales
Digital Scales
http://www.americanweigh.com

Ballistic Products
http://www.ballisticproducts.com/

Centerline Products
Rail and Wheel cleaning cars
http://www.centerline-products.com/

KaDee
The Coupler People
http://kadee.com

Metals Depot
Small quantities of metals (cut to order)
http://www.metalsdepot.com

National Model Railroad Assoc.
http://nmra.org/ Standards &
Recommended Practices for wheels, tracks and other key topics pertaining to
the interchangeability of model railroad equipment.
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THE END