

I've Never Found a Model I Couldn't Improve

This handout follows the principal order of the slide presentation. Slide titles and topics are indicated below in bold type.

Clinic presents techniques that make rolling stock look and operate better. Emphasis is on the following:

- Setting up "Ready-to-Run" equipment
- Various ways to improve kit-built models
- Upgrading older, more primitive models
- Making "Funeral Sale" models acceptable
- Some Aspects of Painting and Finishing.

What could possibly be wrong with that beautiful and probably expensive RTR piece? Here are some of the possibilities from my experience: 1) out-of-gauge wheels; 2) unpainted wheels and couplers; 3) dragging couplers; 4) particularly on locomotives, oil in abundance; 5) parts askew or broken parts and 6) conspicuous parts missing.

Fixing Wheel Problems. The first step achieves the all-important goal of getting wheels in gauge - Remove wheels from trucks then check and reset using NMRA gauge.

The following is the procedure I recommend to prepare and paint wheels so that they appear prototypically weathered:

- Clean: 1) dish soap/distilled water solution; 2) rubbing alcohol rinse (in ultrasonic bath, if possible); 3) air-dry; 4) handle with latex gloves thereafter
- Paint: 1) cleaned as above; 2) mask axle bearings and wheel treads; 3) air-brush color ranging from roof brown to rust (note - wheel faces are black to grimy black on cars with friction bearings); 4) clean any excess paint off treads when it is dry but before it cures.

Fixing Coupler Problems. Start with making the coupler properly functional then paint and finally lubricate coupler working surfaces. The steps in this process are:

- Bend (generally upward) the "glad-hand" end of the steel uncoupling pin then check with coupler height gauge (without disassembly) and repeat if necessary
- If not happy with performance, replace with appropriate Kadee coupler, following Kadee instructions to de-burr edges although I use 1200-grit paper to polish rather than burnishing
- Add Kadee washer inside coupler box if coupler box allows coupler as a whole to sag
- Paint: 1) clean as wheels; 2) mask inside bearing surfaces; 3) air-brush color ranging from roof brown to rust
- Lubricate: Soft pencil rubbed on inside surfaces and knuckle face (note - I never use the graphite puffer!).

Fixing Excess Factory Lubrication. These steps respond to conditions ranging from minor to major excesses of factory-applied lubrication:

- If oil is only on truck surfaces, wipe away with lint-free cloth; operate normally, check for fresh oil seepage occasionally (no disassembly required)
- If oil is on packaging or outer surfaces of body shell, do not operate until source is identified and cleaned up (disassembly required)

- Following instructions, remove shell from chassis, mop up all oil that's not where it's supposed to be; reassemble and operate
- If oil seepage persists, disassemble whole drive train; clean wheels, gears, housings, bearings and electrical contacts; re-lube with appropriate plastic-compatible lubricants (remember - a little goes a long way).

Fixing RTR Askew or Missing Parts. We might expect an RTR car costing \$30 to \$50 or locomotives costing \$250 to \$500 not to need any extra work but many do. Here are some of the things that still may need attention before putting an item into service:

- Parts askew are worse than missing parts because everything is already welded together and painted
- Difficult to know what material a part is made of: plastic will probably break before it will move
- Be prepared to replace parts and touch up paint
- Attach replacement parts or additional details with appropriate adhesive applied INSIDE the shell.

Various Aspects of Improving Kit-Built Models. Topics addressed include:

- Window "glass"
- Making window gaskets
- Replacing oversize or adding missing details
- Operational improvements
- Scratch built details not otherwise available.

I do windows! A black Sharpie pen drawn around the edges of individual panes or around the raised edges of multi-pane snap-in windows kills the "halo." Inside window openings in the shell must also be black. The pen is useful for blackening the moldings that represent rubber window gaskets.

More on Windows. American Model Builders (AMB) LaserKits solve many window improvement needs. For example, they make a kit for the Athearn F7 with a separate frame to reduce the windshield opening size. I show my alternative solution - a strip of Evergreen 1" x 2" styrene bent around inside the window opening. The AMB product appears to be thin Plexiglas which is harder than styrene. I find it easier to blend materials of the same hardness.

Fixing Oversized and Conspicuous Missing Details. On freight cars, most plastic underbody piping and rods are oversize. I replace these with brass wire. Cutting Grant Line D&RG turnbuckles in half make excellent clevises. Corner gussets noticeably absent on an ACF boxcar body are made from styrene heat-formed to hold its curvature. The kit roof walk and brake platform were too thick and not of the correct pattern. These were replaced with etched brass.

Examples of Functionality Improvement. The examples shown focus on modifying coupler mountings on locomotives: 1) cutting off coupler mount on older Athearn Geeps allows coupler box to hold body and chassis together and easy separation; 2) coupler mounting modification allows prototypical coupling distance on F-units.

Scratch-build details that are otherwise not available. Even with a super-abundance of detail parts, some are simply not available or have never been made. The examples illustrated are a see-through radiator grill on a Baldwin S-12 switcher and coupler pockets, pilot and stanchion-mounted cut levers on a U-28-C.

Number Board Gaskets Where None Existed Before. Athearn U-boat shells, for example, have no rear number boards; the prototype does. Rubber gaskets around window glass, number boards, etc., can be made from thin copper wire (a single strand untangled from multi-strand hook-up wire) wrapped around a mandrel the shape of the number board opening. Application to a U-28-C is illustrated.

If 1980's models already have details crude by today's standards, is there anything worth doing with stuff from the 1950's? ANSWER: Yes, and I can prove it! The following can upgrade even the oldest and crudest locomotives:

- Replace conspicuous details with modern parts
- Don't be afraid to add different materials to Zamac or brass models
- Up-grade motors and gears
- Scratch build details if nothing available
- Paint, finish and weather to obscure remaining shortcomings.

Example 1: Reborn Lindsay NW2 Model Vintage 1948. I added: 1) DA plastic cabbage stacks; 2) GSB windshield wipers and cab interior; 3) Utah Pacific arm rests; 4) scratch-built handrails; sun shades; sand pipes; radiator cover; 5) Scalecoat paint and 6) Champ and Microscale decals.

Example 2: Rebuilt Tenshodo SD-7/9 Vintage 1958. I added: 1) Athearn SD-9 plastic pilots/steps and Zamac fuel tanks spliced on with thin brass pins and CA adhesive; 2) Cal-Scale brass stanchions ; 3) DW breather pipes; 4) DA plastic walk-over steps and MU hoses; 5) scratch-built handrails; sun shades; windshield wipers, Mars lights; 6) Floquil paint and 7) Champ and Microscale decals.

Is it worth upgrading "Funeral Sale" items? Five cars are illustrated. The following modifications were made on the AHM covered hopper. First, I cut off over-scale ladders, grab irons and brake parts. Then I added: 1) DA ladders, brake wheel, brake gear and air hoses; 2) Overland etched roof walk; 3) Walther's sprung RB trucks; 4) Kadee wheels and couplers; 5) scratch built- grab irons; cut levers; brake piping and levers and brake platform gussets; 6) Scalecoat paint and 7) Champ decals. Similar improvements were made on the other cars illustrated.

AHM Ore Car Modification. Another "Funeral Sale" body. Basic body casting is accurate and of decent quality making it a good and cheap basis for conversion into an unavailable UP 26000-series car.

Painting and Finishing. The following topics are discussed:

- Working with factory-painted equipment
- Using decals to achieve crisp color separation
- Grab irons not body colored
- Subtle and not so subtle weathering.

Working on factory-painted models - how much paint do you disturb? It all depends on what you want to do. For example, around the C&NW GP-50 nose gong it's hard to blend yellow over a black shell and nose will need to be stripped and repainted over a light gray primer base. However, roof touch up with dark green ending at roof edge is easy. With care, paint stripping pilot of a UP SD-40-2 can stop at sharp edges allowing easy touch up with Harbor Mist Gray.

Removing Lettering. In the “good old days” factory-printed letters washed off with rubbing alcohol. Now, more aggressive approaches are necessary. A hard pencil eraser removed lettering on the illustrated Atlas GP-7.

Decal Coloring. Decaling different colors offers sharper edges and is easier than using an air brush and masking tape. The box car illustrated has re-weigh data applied over Microscale black decal film. On an UP Geep, gray battery box tops, steps and cab interior were decaled with Microscale UP anti-glare panels. Thin-film decals are available in a variety of colors.

Only paint grab irons once! Grab irons should be test fitted before shell is painted. If they will be a different color, leave them off while body is painted (also for decaling ease). Paint grab irons last with a brush using added clearance from shell to avoid paint smears on body. Finally pull grab irons into proper position (a four scale inch offset) and CA from inside shell.

Undersize grab irons & handrails. Each coat of paint adds about 2 mils to wire diameter. This can be compensated by under-sizing, e.g., in HO using 10-mil instead of 12-mil wire to represent $\frac{3}{4}$ -in pipe. Sometimes there is no need to paint grab irons and handrails. Those on illustrated BN #744 were chemically blackened only.

Custom grab iron bending tool. The appearance of many models can be improved by replacing molded or cast-on plastic grab irons with brass wire. Not all grab irons are the same width and if you want to use 10-mil or smaller wire diameters, no commercial parts are available. I illustrate a simple tool for bending up straight or drop grab irons of any size.

Weathering adds realism and hides blemishes. I do not like using powdered pastels. A neat substitute for some effects are water colors. They do not disappear when sprayed with sealer coat. Weathering on illustrated BN units is water color with air-brushed Floquil dust.

Rusty Interiors. I usually finish models in a clean condition and weather them later. This is good way to use up paint left in the air brush after spraying other work. Rust color left over from painting wheels and couplers can always be put to use. Spray a very dry coat on interiors of steel open cars until it has texture. When dry but before it cures, brush texture away to get desired rust effect.

Subtle Weathering. On pre-painted equipment, touch up alterations and blemishes with closest matching body color. Do not mask factory-applied lettering. Remove over-spray by wet sanding with 2000-grit paper. Overspray is left in rivet lines to produce weathering effect.

Masking For Repair Effect. Mask and spray a different hue of the basic body color around a simulated or actual repair. If done delicately, this represents a prototypical repair quite well.

In Conclusion. There are no perfect models out there and probably few of us even care. Regardless of price and complexity, the appearance and/or performance of essentially any piece of rolling stock can be improved by modelers with ordinary skills. This clinic covered a few of my techniques but there are always many other and better approaches. I hope members of this audience will teach me some new modeling tricks.