

Another O scale locomotive build



rnb3 Jul 2019 Jul '19

Bob Sobol dropped an email at the end of May 2019; it seems he found some new etched metal details on the market for the Atlas SW8/9/1200. For a while Scott Lupia of KV Models out of Denville, NJ has been making some very nice etched metal details for HO and N scale end cab switchers. He has decided to bless O scale with twelve different etching sets designed to fit the Atlas O scale SW models. These sets upgrade the radiator/fan/screens, end steps, and pilots. It looks like it's time to dig out my stash of Atlas switchers and start a new project!

Bob has spearheaded a couple posts on the Appalachian & Ohio forum pertaining to his work on his model of A&O SW1200R #88. He has also been active on the O Gauge Railroad forums, explaining in detail, his decoder, sound, and lighting installation. I will be following his proven path in these areas!

rnb3 Jul '19

First up; here is the painting guide from the Antioc & Dover roster book.



9d ago



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Over the years I have managed to acquire two Atlas SW1200 models. Both were used and cost about \$50 each. One was missing its box and the other was missing some handrail parts. I am combining parts from both models to produce my model of Antioc & Dover #1503. 1503 will have full length handrails, non-MUed, and ride on AAR type A solid bearing trucks. (I am saving the second powertrain for a future SW1000 project!) I completely disassembled the model and separated the cast metal hood and frame from the plastic cab, exhaust stacks, and pilots. I stripped the thick paint from the metal parts using automotive gasket stripper. This is pretty fast and very effective and also dissolves any factory glue. I used an old toothbrush to clean the dissolved paint and after allowing everything to completely dry, I used a bead blaster to finish off any remaining paint. For the plastic parts, an overnight dip in 91% isopropyl alcohol and a quick toothbrush scrub made short work of the paint.

Atlas O Scale SW1200 pair await their destinies! A couple bins of parts; I hope I remember where everything goes! Look mom...no paint!



Jul 2019

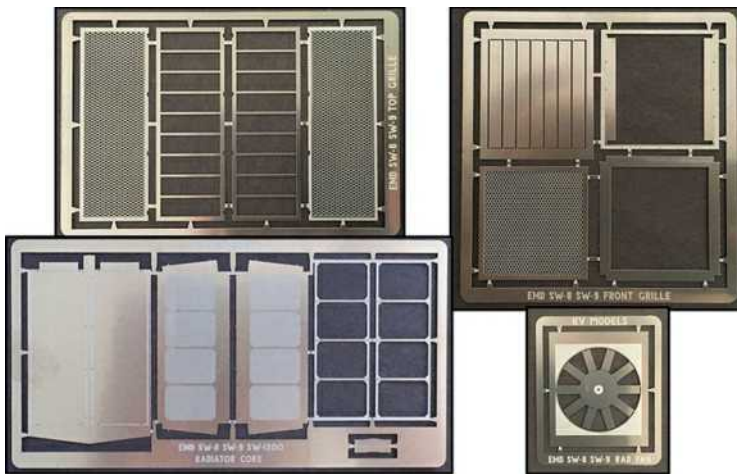
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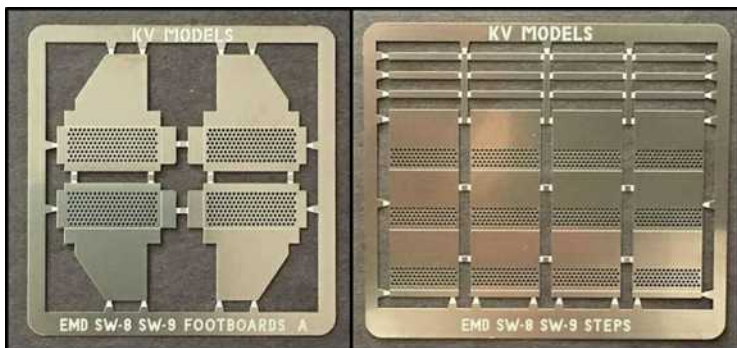
A KV Models montage of etchings for the radiator, grills, screens, and fan.



rnb3

Jul '19

Here are factory shots of the step sets. Check out kvmodels.com for the whole line!



Bob

Jul '19

Rick -

Nice job! How did you get those two SWs *so cheap*?

Did you use the same gasket stripper on the plastic cabs and mix of plastic and metal parts on the shells? Some of the SWs have a few flimsy plastic handrail "loops" but others like my 1200 are solid brass. All seem to have a plastic vent on the top of the hood and louvers for the battery boxes.

Jul 2019

You give me *way* too much credit. Many years ago it was *your* HO RPM detailed D&RGW SW9(?) with a visible fan that inspired me to upgrade my 1200. And if I recall, you built *two* locomotives in different paint schemes.

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Jul 2019

Hey, there are some *interesting* developments in ACC glues for bonding to metal. Some of them have incorporated rubber in the mix and that is said to make them much tougher to debond, particularly to metal. Common ACC is brittle and can snap loose. Both Loctite and Microscale have primers to help ACC adhere to slippery plastics such as polyethylene and Teflon (and presumably acetyl a/k/a Delrin handrails.) If one of the primers works, I'll try it prior to painting.

Loctite has several interesting options including #430 for metal (recommended by Joe Fugate) and another (number momentarily lost due to a brain *ahem*) that actually has rubber in the mix.

There is currently a Youtube "infomercial" for a product "Flexy 5K" that is flexible and holds brass wire to styrene sheet with incredible tenacity compared to a "whatever" ACC. Today there is an unopened bottle of 5K sitting in my refrigerator. It was \$9 plus shipping instead of ~\$26 plus shipping for Loctite.

We will see which is the better value after I order a bottle of the Loctite...

9d ago



It's been a while since we've seen cwebster — their last post was 3 years ago.



cwebster

Jul '19

I'm eager to see how the KV Models parts work out for you.

FYI, Jay Criswell (right-o-way.us) sells [replacement brass retainer plates](#), in case you need to replace the plastic Atlas ones. Unfortunately, Jay's parts cost almost as much as you paid for each locomotive!

Chooch also made laser-cut replacement glass for the cab windows, but I don't know if that part is still available - it is not listed on their website.

Bob

Jul '19

I haven't seen the Chooch windows listed in years. On a 1200 I rebuilt years ago, I did a somewhat unsafe hand-hold of the cab in my Sherline mill, using a cylindrical Dremel burr to ream a rabbet all around the inside of each window. In one spot I got too aggressive thinning the 0.1" thick plastic and ended up calling Mr. Orange Bondo.

If I recall Jay's gearbox covers (or retainer plates) also move the truck side frames inboard a bit, to remove extra clearance needed for 3R wheels.

rnb3

Jul '19

Bob, I think word is getting around about the inexpensive Atlas SWs! I haven't seen one that low in a while. A big secret is to look for missing parts or boxes!

I have one with brass handrail fittings and one with plastic fittings. I'm using the brass fitting shell. As for the battery box vents, I don't like the look of the plastic insert so I'm going to fill the opening and figure out how to add new vents; maybe some Archer decals. Before I applied the gasket remover, I removed all the plastic parts, but the shell with the brass handrail fittings wasn't removed and stripped as easily as the cast metal shell. All the plastic parts were stripped with 91% isopropyl alcohol. Everything came out very clean and didn't require a lot of effort!

I did some looking into ACC and am going to try a rubberized ACC from Loctite. I have been studying the pictures on KV's website and at least for the pilot foot boards, I think in gong to also drill and pin the etchings to help. I'm worried that gluing alone will not hold up as this area is prone to impacts from miss-aligned couplers and uncoupling sticks as well as possibly being able to strike the rail head in a derailment. I think I can disguise the pins by using brass NBW castings and they won't look out of place.

Chris, I do have the Criswell plates on my shopping list, but may hold out for a while as one of my pair is not damaged. They do close up the gap between the wheel and the side frame. As for windows, I haven't managed to track down a set of the Chooch windows yet. I seem to remember some talk back in the day that they don't fit well, but I'd like to see that for myself! I have put a lot of thought into the window problem. The ultimate answer is to scratch build a new cab, but I'm not ready to commit to that yet! I am thinking about a partial cab wall replacement or maybe opening up the cab (read cut it apart and glue it back together) and milling the walls down. There are several options, all with pros and cons! I just need to find the balance that works for me!

The etchings arrived in the mail. Bob, you are going to love the detail on the top screen. It is a multi-depth etching that looks very "to scale" and looks very much like the prototype weaved screens. These will really pop with a good dry brush finish! All of the etching look very well done; sharp corners, crisp depth, and straight lines. These should build out well. These are on par with some of the high end etchings I've seen in the armor modeling world.

Jul 2019

Jul 2019

I will be using a miniature bending tool from Mission Models. It is designed for etched details and was recommended by Gene Fusco back when he was still running Railyard Models. I used it on several of his kits and it works well; nice sharp "z" bends!

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Jul '19

Here is a cheap shot of the Etch Mate by Mission Models. Part number EM-001.



9d ago



Bob

Jul '19

Rick -

I really like the radiator etchings but they would block sound from firing up through the radiator. I plan to make thin styrene frames with gray or dark brown silk for the cores themselves. New ones would be gray; old ones a chocolate brown giving a dark background to contrast against A&O gray on the chicken wire. Here's the rear radiator core set of Great Western GP7 #2233 during scrapping in 2007. That's an SW8 radiator in the background with cores clogged by orange paint. There really should be a 1" tall lip all the way around the SW chicken wire.

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Bob

Jul '19

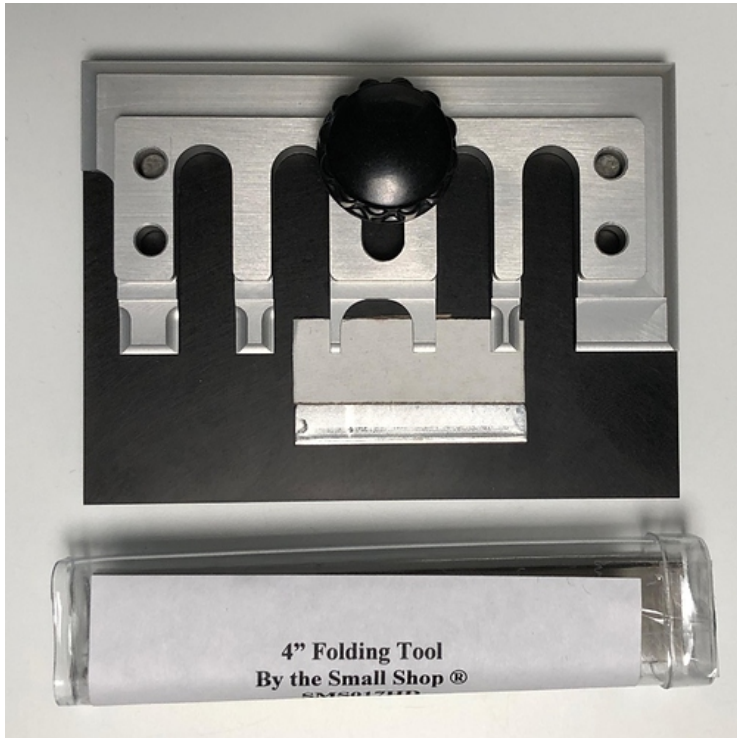
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Which of the rubberized Loctite adhesives do you plan to use? McMaster-Carr shows 6 different products suitable for bonding to stainless steel and plastic.

Here's a "cheap shot" of a Small Shop 4 inch bending brake. That's a scraper blade inside the plastic tube.



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bigtrainjames

Jul '19

If anyone is interested, I have the remains of an Atlas switcher that I pinched the trucks and motor from for my sw1500 project. While the original motor and trucks are gone, I have since purchased additional gearboxes and motors from Atlas. So the unit could be made essentially whole again. I even have the 3-rail electronics to sweeten the deal!!! 🤔🤔🤔🤔

I'd be happy to move it on for \$50 plus shipping. I tried for a while, but I can't think of anything in particular I would use the parts for.

If anybody really wants it, I'll dig out everything and make sure I have all the parts I claim to have.

Jim

VIEW 1 HIDDEN REPLY

hms

Jul '19

Jim,
Thanks for contacting me. I only withdrew the post because I had the picture and I wasn't sure if I broke forum protocol. Although I've been reading the forum for years I just recently signed up.

Yes, if you have something with the correct handrails, I would be grateful. I do want them. I moved a couple of years ago and just opened the SW9 box to find half the handrails missing. My prototype only had the front and rear handrails, plus the little handrail at the front steps on the side.

I appreciate you checking it out. Let me know.

A sincere thanks,

Howard

bigtrainjames

Jul '19

I will take a look and see which type of handrails I have with this model. If nobody expresses interest in the whole thing within a short while, I will be glad to part out the remains. I'll be in touch.

Jim



Jul 2019

bigtrainjames

Jul '19

I need to rescind my offer above for my leftover Atlas sw8/9 . After a search through my many tubs of parts, I now see that I'm missing many of the necessary drive train parts to make the model whole again. I do have spare gear boxes and motors. However, I do not have any of the worms, worm gears, universals, gear box covers, or wheelsets! Some of that makes sense, since I was going to use NWSL p48 wheelsets and Jay's replacement p48 covers. But I'm trying and failing to understand now why I wouldn't have purchased the gearing and universals at the time I bought the boxes and motors.

So really at this point, I think the only real value is as parts. I'm still hunting for handrail parts for Howard, but anything else is available. If you want something, let me know and I will see if I have it.

I apologize for misrepresenting what was available in my earlier post. Clearly I did not remember things as they actually were 🙄

Jim

9d ago



hms

Jul '19

Thank you Jim. Right now I only need the non-MU handrails. Let me know. I appreciate the trouble you've had to go to.

As for the real topic: Rick, I'm glad you decided to take on this project. I had purchased the KV Models details and am about to take on an SW9 myself.

As always, I'm grateful that Bob had done such serious groundwork on the model. I keep going back to review what he has posted.

Thanks to all. I am one that really needs the help.

rnb3

Jul '19

A couple weeks delay, but back to the workbench...!

I started major shell modifications with the cab. It is styrene, my favorite material to work with. There are a couple issues with the cab, mostly related to the overall thickness of the injection molding. The two areas that this thickness is apparent is the roof, and the windows. The windows are not an easy problem. The factory glass inserts are poorly fitting and not salvageable to convert to flush fit. There is a rumor of an aftermarket laser cut acrylic window set available years ago, but I haven't managed to find a set. Bob Sobol experimented with a method of under cutting the back side of the openings to thin the cab walls around the windows. I went this route for the front windows, but chickened out on the rear windows due to the very tiny amounts of material separating the individual windows. Fitting windows isn't going to be fun! For the side windows, I haven't completely "imagineered" my solution yet, but it will have something to do with the sliding windows on the prototypes.

The roof thickness was a lot easier to fix. Basically, I trimmed the factory thick edges back to the walls and laminated a thinner styrene roof over the factory roof. Before trimming, I used double sided tape to stick a 3x5 card to the roof. I penciled around the roof to draw a template. After removing the card and tape, I simply cut the card to shape following the pencil lines. I cut the card template out with ordinary scissors. This template is used to trace the shape onto .010 styrene. The same scissors were used to cut the styrene, and a quick pass with a fine sanding stick cleaned the edges up. I used flush cutters, a razor blade, and several sanding sticks to square the roof up to the walls. I

laminated the new roof using fast evaporating solvent (I have a very small supply of Tenex 7 left!). I started the lamination from the center of the roof and worked towards the sides using a measured pencil mark at the center line of the roof as a start point. Truthfully, this method causes the overall height of the cab to increase by .010 of an inch, but I think the look of the thinner edge more than makes up for the extra height.

I also replaced the front cab step, the window access step on the rear wall, and both door handles. The Factory grab iron was oversized, so I plugged the holes with styrene rod and drilled them for closer to scale .020 brass wire grabs. I added a scratch built "fire cracker" antenna that I turned from some brass wire. The antenna is mounted to a styrene base with NBW castings. I want a flashing beacon, so I built a level base from some styrene shapes. The beacon will be a very close to O scale detail I found in a 1/35 scale armor kit. I added rain drip rails above the side windows with .005 styrene rod.



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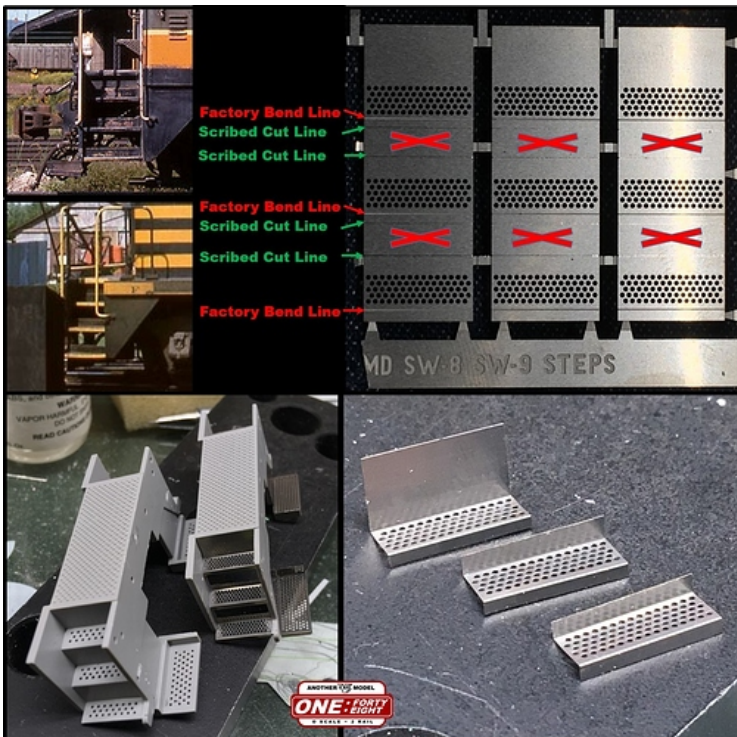
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Jul '19

The styrene steps and end sills are separate from the cast metal frame. This makes modifying the steps/end sills a lot easier. I am using KV etched metal parts for the steps and the foot boards. The KV parts are etched in stainless steel and need to be bent to shape. Overall, I am impressed with the KV etchings. The art work is very precise resulting in very sharp and clean etchings. A pair of sharp high quality miniature metal shears make quick work snipping the etchings from their frets. A small jeweler file will clean any nubs of fret if needed. Make sure you run the file along the edge of the etching and not against it or it will bend out of shape. All the needed folds are marked with an etched line. I used a small bending brake tool to make these folds. The folds could be done with flat, smooth pliers but it would be difficult to make clean folds especially along long edges. KV doesn't package instructions with the etchings, but there are simple instructions on their website with a lot of good close-up detail pictures. I found everything pretty intuitive after a quick glance at the website. Spend a little extra time studying the pictures before I started cutting on the model, kind of a measure twice, cut once thing!

The foot boards were pretty straight forward. Cut the factory ones off with a razor saw and clean up the cuts with a sandpaper. I sanded the footboard etching. Superglue the etching onto the end sill. Repeat three more times!

The steps needed a little more effort. To start, after looking at pictures from the internet, I need to modify the KV Models etchings a little to better reflect my prototype preference. Based on KV's website pictures, the etchings are folded as a one piece assembly for each step well. On the prototypes I'm following, there are 3 individual steps in each step well with a clear gap between them. I cut the etchings apart to create the separate steps. The plastic factory steps need to be removed. At first I used a razor saw to carefully slice the steps away leaving a small remainder to serve as a shelf to mount the etchings on. This was pretty tedious, as I had to do a lot of carving in a tiny space to match the individual steps. After my first step well, I changed my tactic, and completely removed all of the factory steps. I sanded the wells smooth and added .015 styrene square strip stock to replace the mounting shelves. This was much faster and cleaner!



rnb3

Jul '19

OK, I'm jumping ahead a little now! About 30 minutes after my bedtime, I found myself looking at the KV Models etching set for the SW radiator cores. There are 6 etchings in total. A base, two core assemblies, two core frames, and a small tab that goes around the nose headlight. Of special note is the well-engineered mechanical attachment method for joining the cores to the base. I had assumed this would be an all ACC glue joint. Closer inspection revealed tiny tabs on the cores that match tiny holes in the base. The tabs extend through the holes. I found that by bending the protruding tab over, it would provide a very tight and firm mechanical attachment! I finished this up with ACC around the perimeter of the mating surfaces. I knocked out the whole radiator assembly in about 30 minutes. Excellent job Scott over at KV Models! As a side note; folding the cores definitely require a bending brake tool. Both cores fit perfectly on my first try with no fiddling! If the model builder makes the folds correctly, the etchings fall together perfectly!



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Bob

Jul '19

Looking great, Rick! And thanks for figuring out how to fix the roof line. You make it look easy. It will be a while before I start working on mine. Good call on the steps, too. I'll have to do that with mine. I may attempt a fixture to hold the plastic step assemblies in the mill to hog out the steps since there are 6 SWs to rework.

I *do* need to make a fixture to hold the car body on the Sherline mill tooling plate so I can open the radiator and fan. And another one to make it easy to put an inside rabbet around the cab window openings. I tried that once freehand and had to put some orange Bondo to repair an oopsie on the lower window on the cab door.

I'm awed by the radiator core. It isn't exactly correct (too long at the front); there is a ~6" shelf just below the chicken wire at the front of the hood. No-one else will know (unless I just let the cat out of the bag) and I didn't until I stood and shot straight down on a GW SW8 hood section being scrapped in Loveland.

I like how you reworked the grabs on the back of the cab.

Bob

hms

Jul '19

Rick, Excellent work! You will be takin yours much further than I would ever dream of. The roof is great improvement. Cleverly done.

Thanks for the pictures of the original and KV steps. The KV steps make quite a difference and great job of bringing them to be prototypically correct. I may have to try that. I held back to see what my prototype would be like. There were a few variations. They are very nice and do make a difference. Well worth the effort.

I've only installed a Loksound V5.0 decoder and a Tang Band T1-1925S speaker in the same manor that Bob did in his earlier SW. I needed to do that to see how much room I would have for the KV parts, There isn't a lot of room between the top of the speaker and the bottom of the radiator core. I may be able to sneak it in by lowering the speaker mounting platform and just using the core without the base. I have to play aoundnd with it for a bit. I haven't removed the metal covering the holes yet. It will be a few weeks. Sound wise I decided to add one more speaker in the fuel tank. a Tang Band W1-1925SB should fit. 1" die, .58" deep.

One of the things I realized was that Atlas had mistakenly put the cross pieces above the screen, I was goofing around today and removed them and will add them underneath. It has a more prototypical look. That said, I ordered the screen that Bob pointed out had very

prototypical measurements, ie the 1.75 between links. I'll see how that looks when it gets here. I couldn't find it through Grainger, but I may have missed it there.

This picture is only to show what the Atlas top grills look like with a little effort, again I haven't done the cross braces yet.



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The cheap and lazy man's method. The cross pieces can be refitted under the screen.

Anyway, Rick thanks for showing your fine work. Great stuff!



[bigtrainjames](#)

Jul '19

Hey Rick,

On the steps with the full panels between, I had the same thought you did about the lack of a space. However, I seem to recall finding prototype photos that showed the full kick plates just as they are etched. So perhaps it's a legitimate design for the appropriate prototype.

I just went and took another look around. There are plenty of examples of steps with no openings between the kick plate and step above. However, it's also clear that there's a wide variety of implementations, so specific proto photos or personal preference should probably dictate decisions.

Would it be possible to put a set of mics or calipers on the step material and get a thickness for the stainless steel. I'm curious how easily the parts fold. I have some test etches for sw1500 steps that are overly thick at .0165", and they are a bit heavy even with half-etched fold lines. Granted, these parts were added, as a test of size and fit, to a set of other etched parts, so I didn't get to choose material thickness. I'd probably use something closer to half that for a final part.

I agree that the etching and engineering is well done. And I think the screen is pretty convincing as a woven material. Like Bob, I wouldn't be able to use the etch piece which represent the core fins as a solid piece, as I want the sound to come out of that area. I'm not sure how finely slotted an etch can be, normally the the holes and bars have to be at least as wide as the material thickness, but I would prefer that piece to have the slots open.

Nice work on the cab roof. One of my modeling associates from the UK did the same type of work on an mp15dc cab, except he actually sanded down the thickness of the roof before adding the overlay. I think he described the effort as lots of filing interspersed with the use of many cross words. Something to that effect. 😊 He used a brass sheet overlay. It does look much better, as does yours.

I'm at a bit of a loss at the moment regarding the same issues with the cab that you are dealing with. Namely roof and wall thickness, especially at the windows. Fortunately, I can remove almost all of the overhang on the front of the cab since the SP units had the number board housing there instead, so the filing there will be manageable. The back side of the cab will be more difficult. Some units have the extra SP lighting removed in between the ends of the number board housing, so that could be a chore to file. The other issue is that the existing Atlas rear number board housing is sized to fit tightly up against the underside of the roof overhang. If I thin the overhang, then there will be a new gap above the top of the housing.

The cab is another issue. I ideally would like to come up with a replacement, of a two-part, inner and outer wall component, type of design. The idea is to end up with a narrow cavity between the outer wall and the inner wall where a piece of window glass can slide into after painting. I've seen it done with etched metal components in UK steam kits. The problem is, I don't really want to totally rebuild the cab. But really, I've chopped this thing up so much by this point, what's a bit more work. 😞

Jim



Jul 2019

bigtrainjames

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Jim

9d ago



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rnb3

Jul '19

Hey Jim!

You are correct; there are plenty examples of solid step SWs! Amazingly, of all the photos I had gathered for modeling reference, I managed to collect only open step examples! I'll edit my post above to be fair to KV Models.

I'll get a thickness measurement when I get home tonight. Your sixteen and a half thousands thick test piece would be tougher to fold. It is also about 3/4 of an inch thick scaled! That's armor!

I'm going to plow ahead with the radiator core etchings. I might try to work with inverting the speakers to push the sound out the bottom. For me, predominately looking down on the model from above, the visual detail outweighs the sound advantage of pushing ^{the} through the screens.

I almost bit the bullet and totally scratch built the cab! To be honest, I want to finish this model pretty quickly, so I settled ^{for} a new roof overlay. I'm still working through the windows! In the end, it will be mostly just tricks to fool the eye! I guess I'll see how well it lasts once it makes it to the layout! My million dollar dream would be to produce the entire Cannon & Co catalog in O scale! Thin wall cabs, and EMD doors for everyone! Of course C&C doesn't do switcher hood doors, so back when I built my HO scale SW1000, I had still ended up nearly scratch building that hood!

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Bob

Jim -

Supporting your point, here's an example of an SW8 with solid steps. I shot it in 2002 in the Steamtown yards.



9d ago



bigtrainjames

Jul '19

Rick,
Yes, the .0165" material is too thick, and the one bend I did took some effort. Clearly thinner material would be more appropriate. We also did a test set with the treads half etched, but the holes came out smaller than planned. It's one of the nuances of creating etch artwork. The undercut is different for full thickness than it is for half etched parts. Those are the types of things I'm still trying to get a handle on.

Anyway, I'll get pictures tonight, after my machining class (👍), and post them up.

By the way, I had a discussion with Dave Hussey about taking the Cannon library to O scale. Mostly the discussion was about me buying his knowledge and data, and maybe cad when it exists, to use to create new cad for O scale. He didnt laugh at me or call security, but he did suggest it would be better if I undertook this project as the new owner of Cannon. 😊 Maybe I'll being up the top again if I see him at another RPM meet.

Off to class. Pictures later.

Jim

rnb3


Aug '19

OK Jim,

The KV Models etchings are stainless steel, stock material measures 0.005". The etching is one sided at a average depth of 0.003". The lines are very clean, and the etched edges are crisp. Using my bending brake, the long folds bend very easily. I believe the combination of

the stainless and the etched fold lines make these parts rigid and precise.

While I was measuring, I observed that the total height of the assembled KV radiator core kit is 0.160".

In my book, Dave Hussey is good people! He is the perfect match to follow C&C founder Gordon Cannon. His answer pertaining C&C moving into O scale is sadly a smart reality! If only Dave could be swayed to join the dark side and switch to O scale! I t  Gordon was an On3 modeler before he started C&C.

Jul 2019

[bigtrainjames](#)

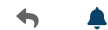
Aug '19

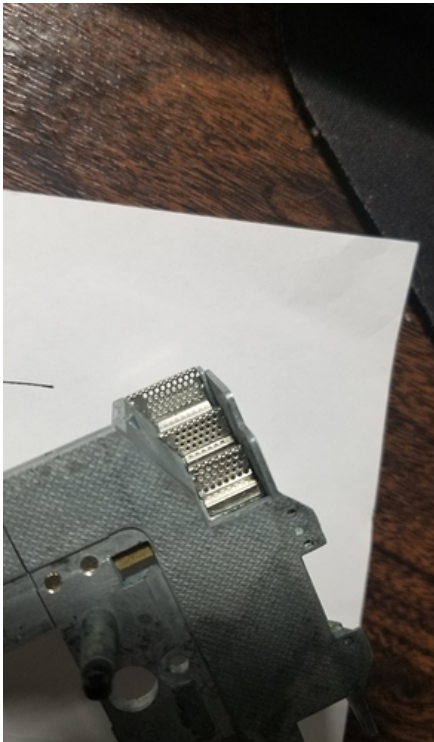
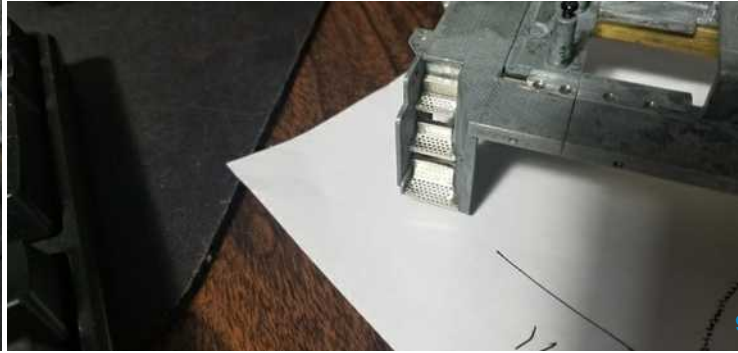
Thanks for the info. I should have also asked for the width of the "bars" on the "woven" top and front screens. If you have a chance, can you measure that part too?

26 / 84

I got my tool makers vise cleaned up and proceeded to bend up my test steps for my project. The parts actually fold easily enough, even being overly thick, if you have something to hold them in. I still managed to do a couple folds not quite right, but these are literally my first experience with etched materials. So I expect more reps will improve my game.

9d ago





Jul 2019

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9d ago



Overall, I'm happy with the size of the steps versus the existing Atlas frame, which was 50% of the purpose for the test etch. There are some minor issues to address with a second attempt, but really several issues are a direct result of the thickness of the etched material. A final version will be much thinner, so will fold more cleanly and have better relief. One thing that I will need to address is the diecast kick plate behind the etched kick plate. I didn't remove it yet because I was going to use it to attach the new steps. But it doesn't look right sticking out past the ends of the etched kick plate. So a reassessment is in order. I'm also hoping that with a much thinner material, the holes that sit right on the folded front edge of the steps will render more cleanly. I expect they will.

Jim

P.s. I should add that I'm pretty stoked about these steps. They look pretty decent, certainly much better than the original Atlas plastic treads. And it's actual modeling, which I often have difficulty achieving, but enjoy when I actually accomplish something. I know this is just a test, but I set the bar pretty low as to what qualifies as success! 😊😊

Bob

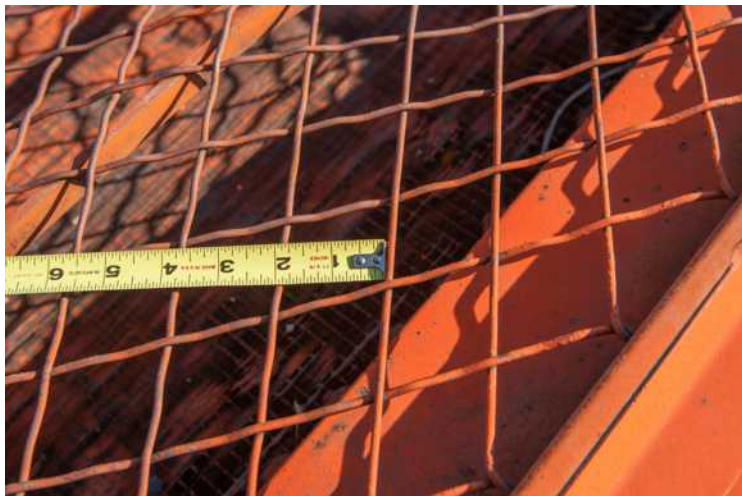
Aug '19

Jim -

If I recall, the support bars below the top screen wire on a GW SW8 measured roughly 3/8" wide by 1" tall. Since the screens we have in O-scale are not as open as the prototype, an oversize support bar might be easier to see. Rick can relate the bar width on V parts.

A prototype radiator core sits 7" below the screen. That would take up a lot of the room needed to mount a TB speaker [fringops](#) so I plan to cheat that dimension. To avoid blocking sound I currently plan to scratch a styrene frame for the radiator supports and use gray or dark brown silk for the cores.

In the photo below, the front of the locomotive is in the lower right corner. This is the only photo I have with a tape measure stretched flat and close to a support bar.

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Aug 2019

9d ago



Bob

bigtrainjames

Aug '19

Bob,

I was actually talking about the material that makes up the screen, rather than the support bars underneath the screen itself. I probably used the wrong term, although in etching terms "bars" would represent the material between two slots. In this case meaning the wires that are woven to form the screens.

A common standard for "bar" width, as well as slot width, is a minimum equal to the material thickness. So in theory, for material that is .005" thick like the KV parts, the screen wires could be .005" thick. Which would be a fairly prototypical .25" diameter. However, the hitch is that many etch companies will actually have an absolute minimum, without respect to material thickness. So they might say that holes and bars can be no smaller than .015" even if the material is only .005" thick.

There are places that will exceed that spec, but the trick is finding them at all, and then having them be willing to do short run custom work for things like model railroad products.

Ultimately, I hope to produce the front and top screens for my project with someone that is willing to push the minimum bar size as close to .005" as possible, so that the screens are as open and prototypical as possible.

Jim

Bob

Aug '19

Jim -

I mis-understood. Sorry.

The wire diameter appears to be about 1/8", or 0.0026" in O, with wires spaced about 2" apart. A while back I tried some tulle from Hobby Lobby, but was never successful at getting a glue to hold the nylon in place on a styrene frame. Since you are scratch building your own, note that there is a 1" high frame all the way around the screen unit.

Bob

rnb3

Aug '19

Here is a shot of the etched top screen. The #11 bade gives some scale. I couldn't get the top of my calipers inside the gaps in the mesh but it looks to be around 0.005 thick mesh wires which matches the thickness of the base material. Also, the screen is not m d or woven, but etched to appear that way.



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9d ago



rnb3

Aug '19

Jim, I like your sw1500/1000 steps! I agree a thinner base material will improve the radius of the folds and clean up the holes that butt up to the fold.

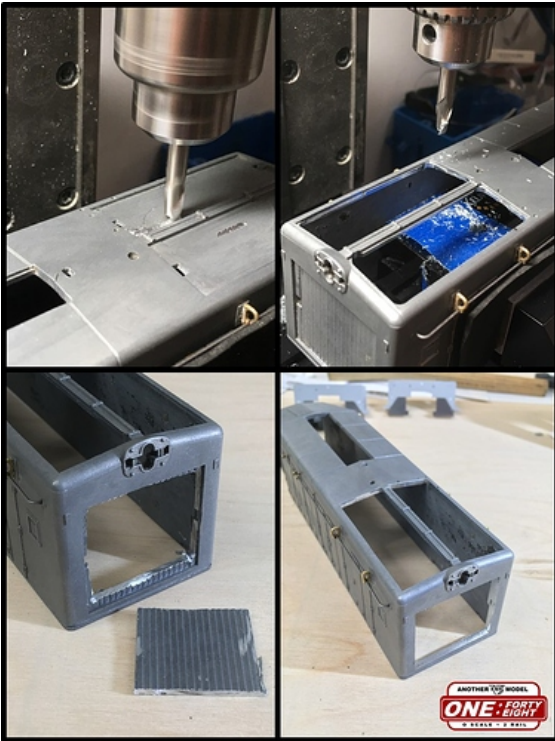
rnb3

Aug '19

My progress over the weekend amounted to cutting open the metal body shell around the radiator area to accept the KV Models etchings. I started with the top grill. I used my Sherline mill for most of this cut. I made a block of acrylic to fill the inside of the shell and clamped the shell into a machinist's vise. The acrylic blocks keep the vice from distorting the shell. To protect the shell surface details, I placed foam rubber strips between the shell and the vice faces. Once the vice was mounted and squared on the mill table, I used multiple passes with the tool at high speed to cut away the grills. I finished the edges and squared the corners by hand with a triangle file.

For the fan grill on the nose end I used a "Screaming Banshee Hand Mill" otherwise known as a Dremel and a cut off wheel! This method is not as clean and required more hand filing to dress up the cuts. I am happy I didn't nick or ding the shell with the motor tool; it took a lot of concentration and patience to let the cutting disk do the work and not over pressure it!

At this point the thickness of the shell is noticeable. I don't anticipate this will be visible on the finished model. It did dawn on me that there is some room here to increase space for a Tang Band speaker. I'm primarily referring to the center support of the radiator screen. If it was totally removed, and a replacement scratch built with a thinner cross section I'd estimate nearly 1/16 of an inch could be gained for speaker clearance. Just a thought, I didn't try it...yet!



Jul 2019

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Aug 2019

9d ago



rnb3

Aug '19

So far this build has been pretty straight forward. The KV Model etchings have been the base for the modifications. But now I have run into the first real issue with these etchings; actually just the radiator core set. The core is very well done with nice fin texture and framing detail. Everything fits precisely. The problem is that all of the core detail is invisible when installed under the screen! Bob has pointed out that the stainless steel etchings will block sound if a speaker can be fit underneath. I was considering sacrificing the sound some by flipping the speaker to fire down. I wanted the visual jewelry of the etched core details. I want my cake and to eat it too; or at least most of it!

Well, I started test fitting the radiator parts and discovered this invisible detail issue. It looks like Bob's idea of using cloth over a frame to simulate the core might be the better compromise if only a vague shape is all that can be seen. If the finished model will have no sound, I can see the easy to assemble etching would fill the void best, but if sound is a concern, the etching might not be the best option.

Check the pics... What do you think!



rnb3

Aug '19

Different lighting and angle.



Jul 2019

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Aug 2019

bigtrainjames

9d ago

Aug '19

My gut instinct is that you either need to really lighten up the radiator core finish, or you need to increase the open area of the mesh substantially. Or both. Without doing either of those things, I'm not sure the radiator core is worth the doing. Is the mesh prototypical? ↩ n 🔔

PeteM

Aug '19

Outstanding work as always! And those etched parts are so nice. I vote for speaker cloth under the grilles so you can get maximum airflow for bass.

I only ever used TB1925s in these locos before but I saw this video on FB and realized a TB1931s will fit. Nice to have the extra bass. 😊

<https://www.facebook.com/ian.watts.756/videos/10156896249323692/>

He takes the shell off at 1 minute mark.

Not sure if it's better to have the driver or the radiator end right under the grilles. I suppose you could tell people there's an actual working radiator under those grilles. Just don't mention that it's audio, not coolant! 😊

But as Bob mentioned before, with the driver right under the bell (good), you might get too much "sea-shell to the ear" hiss (bad). But I have to say that loco in the video does sound pretty good.

Pete

Bob

Aug '19

Pete -

Interesting video. I do have one concern. I can't identify the decoder but it appears to be HO-sized. Assuming it is a Loksound (so it can drive 4 ohm speakers) Matt Herman confirmed that the HO V4 and select decoders have been tried in the Atlas SW and ended up fried. I do know that Atlas nominally rates the stall current at 3A, so I only use the physically larger L decoders.

If I were using a 1925 or 1931 I'd probably install it with the speaker cone under the radiator and passive radiator under the bell to minimize the "sea shell" resonance. Recently Matt revealed that ESU is looking at a graphic equalizer feature so that might help mitigate a resonance.

Certainly with a 1931 there would be insufficient headroom to model a radiator core.

Bob



Jul 2019

Bob

Aug '19

Rick -

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Aug 2019

After some further "pondering."

A lot of visibility depends upon the visual contrast of adjacent surfaces. Let's assume you will paint them the same A&D red as seen on your rebuilt ex-Lionel crane (and she's a beauty!)

If so, the top screen won't be nearly as reflective. That's a *good* thing that will help operators peek inside.

If you go as dark as last shown on the radiator cores, I concur. They will disappear as you photo shows. But if you model a freshly-rebuilt radiator (engine parked and not drained during last winter?) the cores would be a bright aluminum-ish color. That has a better chance of being visible. To do so all you need to do is strip the core and go back to the original photo etch color.

9d ago



My intended choice of a dark silk to simulate an aged core is to hide the fact that air movement from the speaker will cause the crown to vibrate. The current plan is to scratch a styrene frame with the 4 radiator core bolt-ends and two end "shelves" painted a bright silver.

I know the hole shape is wrong, but K&S aluminum screen, available in rolls at Hobby Lobby, is what I used on my SW1200 rebuild many years ago. The styrene radiator cores were painted silver. The K&S hole pattern is too big but that helps to create a larger % open area, all the better to see you, my radiator! While milling the top of the shell, there is about a 30 thou shelf left around the opening. The screen and built-in-place styrene frame nestle right in.



It is painfully obvious that the 1200 screen support bars are way oversize, but the cartoon size doesn't look that out-of-scale given the 3-R heritage of the Atlas designs.

Another factor is that visibility for a lot of detail depends on the type and angle of lighting. To see into the radiator, we need light from almost straight above. To see the radiator fan assembly we need light from the front. This is one of many reasons I designed a mix of halogen spot lights with art gallery quality 3000K fluorescent lights for the A&O. Spot light sources penetrate recesses, produce shadows, and make detail pop. You can see the radiator in the 1200 when it is in Havens Yard or switching the paper mill when the halogens are on. Otherwise, not so much.

When it comes up for a decoder re-work, should I live that long, it will get a Loksound 5L decoder upgrade and either a Tang Band 2008 or 1925 speaker. That will require scrapping the radiator core assembly.

My preference is currently for the sound come out of the top and/or sides of the engine, especially with the smaller TB modules that can't handle the full wattage of a Loksound decoder. A speaker crying for help when the voice coil is at maximum excursion causes me to cringe.

That said, Craig's GP9 has a now unobtainium QSI 2.077" speaker firing down out of the fuel tank, and everyone likes the sound.

#BlatherOff

Bob

Jul 2019

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Aug 2019

9d ago



PeteM

Aug '19

Hi Bob,

The decoder is a LS 5DCC which is the so-called "HO" version. I think it's rated at 1.5A continuous. I just started to play with them myself. Lots of improvements!

You've alerted me to Matt's advice about the HO V4 and Selects frying in SWs before. 😞 I confess I do use them myself and I know I'm pushing my luck! But I have had Select HO in 2 x Atlas SWs and 3 x MP15DCs since they came out and no issues so far. Actually I use them in Atlas China drives (motors wired in series) as well. They are all weighted to get to wheel slip before stalling and they only pull max 15 x 1lb cars each on level track, so they don't work very hard. I'm sure they would see a lot more load working on the A&O!

For my small application I decided it's worth the risk due to the cost savings and extra room for TB speakers.

Agreed re speaker height limitation and orientation. In that video the speaker seems to be about touching the top of the motor (which it overlaps length-wise) and only slightly spaced up from the front truck mount. But I was quite surprised at how good it sounded with the shell on, and that it didn't suddenly sound a whole lot better when the shell was removed. Maybe there's hope...

I'm looking forward to the LS EQ, hopefully just a firmware update away!

Pete

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Pete

rnb3

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Aug 2019
Aug '19

Bob,
I agree, it's all about the contrast! This locomotive will be painted dark red like the crane. I plan to dry brush the radiator core with a lighter color to bring out the detail texture. I think most modelers will want to see silver or aluminum (and it helps my contrast issue), but I bet the prototype cores are chemically blackened copper from the factory. I'm sure over the years they end up over sprayed with the body color. I have seen radiators painted black, but only in equipment that was overheating! Turns out paint is about the opposite of copper when it comes to heat transfer! This is a big issue in machine/auto restorations (including my 1944 Fairmont M19 speeder). A lot of effort is put into making the radiator look good by painting it, but the paint blocks or narrows the tiny air passages between the fins and tubes reducing air flow needed to transfer the heat. Plus paint does not conduct heat at all like copper, but rather insulates the copper holding the heat in! But a freshly painted radiator looks pretty! Aluminum is also not very efficient at transferring heat and only becomes an option when weight is a concern (not a problem for locomotives!) such as in a race car or aircraft, or if the hot rod guy wants it to look pretty!

As a side thought, I wonder if a photo-texture of a radiator core would serve better? I bet sound passes through paper better than stainless steel!

Also, the front of this shell will be open too with the KV Models fan, shudders, and grill. I'm pretty sure I can find a very good compromise between perfect sound and perfect visual!

PeteM

Aug '19

This is such a neat project! Could you maybe print a photo-texture of the cores onto white silk or speaker grille cloth instead of paper?

Pete

Bob

Aug '19

Here's a color reference of an SP SW1500 in Cheyenne. I couldn't get a top-down photo of the cores without getting yelled at. What can be seen of the surface seems to be silver-is in color.



I also have on file a photo of a GP7 or GP9 at the Illinois Railroad Museum receiving a new radiator core. The old ones were a dark "munge" color, but the fins on the new one looked like it was aluminum or some sort of galvanized metal. I won't post that here because it isn't my photo.

Bob



hms

Jul 2019

Aug '19

Both Rick and Pete have come up with similar thoughts to what I had about the radiator cores. I really like the KV cores and want to use them, however I haven't gotten to the point that I can make the decision to use them. I planned to assemble cores with the upper screen, etc. and evaluate the sound.

About color, KV recommended the surfaces be painted dull grey, leaving the core fins stainless. (Just a note.) I still have not decided on how to finish mine.

However, as a back up, when I found there may not be room for the cores, I did think the solution could be a printed fabric. Now that others have had the same thought, it doesn't seem so far out.

46 / 84

9d ago

hms

Aug '19

Something I would love to see PE from KV, is the interior 600 Volt electrical cabinet that Atlas has put holes in for lighting. If the cabinet had gauges, they would be pointed out the engineer's side of the cabinet. Although a lot of the cab control units have been modified and replaced, the middle cabinet is still there on many of these engines. Two front doors with red 600 Volt stickers on each door. It's because of the door detail on these cabinets that photo etching would make for a nice cabinet.

9d ago



Keystone Locomotive Works did a cab in HO that was fairly accurate (Walthers P/N 395-3302).

That brings up another interior issue, which is the seating in the Atlas engine. The engineer usually sat in a swivel seat that was somewhat centered between the front and rear of the cab.

I can understand why Bob got frustrated with the interior and didn't perform his magic.

rnb3

Aug '19

Worked on a few details over the weekend. A couple of the details I'm refining are the grab irons, hood vent, battery box vents, and exhaust stacks.

For the grab irons, I'm replacing all the factory oversized grabs with .020 brass grabs. In order to do this I need to fill the original holes and drill new correct holes. I opened the factory hole to .050 and used CA to fill the hole with .050 styrene rod. When I'm sure the CA has fully hardened, I'll center drill the new holes.

I don't actually know what the next detail is. In every picture I find with a top view of the hood, there is a pipe like object sticking out of the hood right behind the radiator grill. I don't know if this is a car body vent, or maybe the fill tube for the radiator. The Atlas model has a plastic blob inserted in the metal shell at the correct location. When I was disassembling mine, the blob wouldn't release and was destroyed. I made a new one by turning some styrene in a Dremel, using sanding sticks to shape it.

For the battery box vents, Atlas used a plastic insert into the metal shell to simulate the louvers. Again, these were destroyed during disassembly, so I am filling the opening with styrene and CA. After sanding and smoothing, I will use Archer surface detail decals to replace the louvers.

A big visual detail is the exhaust stacks. I decided to scratch build a set of the box and screen style spark arrestors common on MP, MKT, D&RGW, C&O, and a few other roads in the 60's and 70's. I used styrene, and "guessedimated" the dimensions to what looked right. I shortened the factory stacks and used solvent to glue everything together. The screen is aluminum and will be attached with CA and weathered after final painting. I really like these, and will use the same style on all of the Antioch & Dover non-turbo locomotives (GP9, RS-3M).



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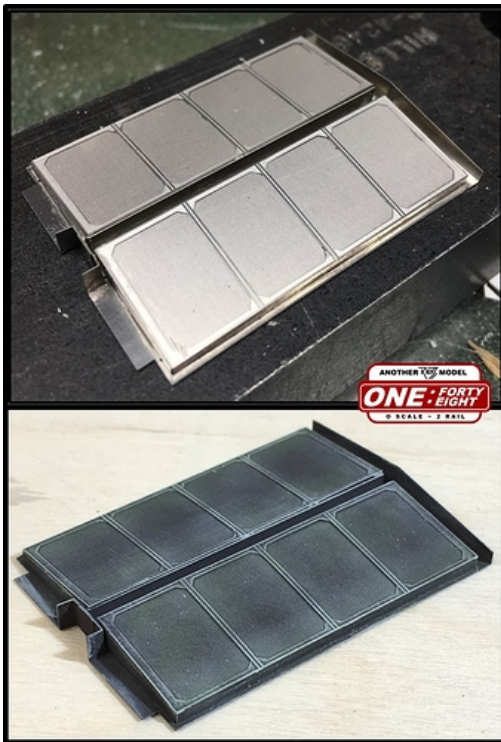
Aug 2019

rnb3

Aug '19

The jury is still out on the KV Models radiator core. The etching is very nice! There are some valid concerns about it blocking sound. Until I get to the part of the build where I fit the speaker, I won't be able to make my final decision. In the meantime, I went ahead and did some finish painting on the KV part. I spray painted the core a base dark brown. After this was cured, I dry brushed silver over the entire part to force a contrast in the texture. On top of this, a dry brushed a small amount of light green around the lower edges of the cores to simulate brass corrosion. Finally, I dry brushed all of the high points with a light cream color to simulate sun light hitting the edges. If the sound concerns dictate this part not being used, I bet it ends up in the Ricksburg, W.Va. engine facility junk pile...no detail was

9d ago



bigtrainjames

Aug '19

Hey Rick,
So the issue of the windows keeps coming to mind. My question is, have you considered simply having somebody laser cut windows instead of trying to get comfortable with the Chooch version?

Laser cutting is a fairly common technology these days, and I feel confident that there is somebody in the Denver market that can do the job for you.


Best of all, you even know somebody that could do the cad for you, if needed.

I'm going to suggest that it would be a pretty simple thing to get done. So perhaps that will be food for thought.

Jim

rnb3

Aug '19

Again Jim, we are thinking the same thing! I have the laser located, I just have a couple time interruptions right now! I st  it to examine the Chooch work to see if I can learn from them.

Jul 2019

Bob

Aug '19

I've never used them, but Pololu Robotics in Las Vegas offers laser cutting in a wide variety of materials. For example they precision stencils for circuit board soldering paste. I have ordered electronic parts from them. They appear to cater to the low-volume and one-off maker community.



Pololu - Custom Laser Cutting Service

Our custom laser cutting service is ideal for making custom parts quickly and economically for any project. You can get started with making custom laser-cut parts for only \$25. If you are in a hurry, we can have custom plastic parts delivered to your...

46 / 84

Aug 2019

Back when Gene ran Railyard Models, he had part of a car under frame master laser cut. He may have some thoughts.

9d ago

Bob



bigtrainjames

Aug '19

Bob, I've looked at Polulu before. I was once going to get some styrene laser cut for a freight car project, but never got around to it. I did get onto them though by virtue of a thread on one of the discussion forums, where a guy used them to cut all the parts for a very large station scratchbuild. If I recall correctly, he was perfectly satisfied with the results.

Rick, let me know if you need the cad drawn up. I've got a cab here that I could measure for opening sizes.

Jim

Bob

Aug '19

PeteM:

But I have had Select HO in 2 x Atlas SWs and 3 x MP15DCs since they came out and no issues so far.

Pete -

I'm listening to a Lok driving a 1931 speaker slipped inside an SW8 shell with the speaker just a few mm below the grills. The sound project is the old V4 74360 12-567C that doesn't have the annoying door rattles featured in the new 12-567A V5 projects. Even with volume turned *way* down to about 25% it still sounds *really* sweet in notch 1. The increased bass of the '31 is amazing inside the SW shell. If/when ESU adds the graphic equalizer, it would be a big help with "Fletcher Munson" loudness compensation (boost bass and treble at low volumes.)

I must admit that the '31 sounds so nice, I ordered a V5 HO decoder rated at 1.5A continuous just to give it a try. The V4s were only rated at 1A. It will be first deployed in a switcher at the Hatfield coal rotary where it would normally only handle 4 hoppers at a time plus an idler car.

The test SW has been sitting new in its box for many years. I'll clean and re-lube the gears to make sure everything runs freely.

With a '31 under the hood, there will be no room for a simulated radiator. Rick's radiator looks fabulous, but I would trade it for '31. The speaker is already black so it would mostly disappear. A small ESU PowerPack will fit inside the fuel tank.

As for my other SW's, the jury is still out. In particular, Havens yard service requires two in consist, since a single engine goes into wheel slip. I know that even with my best "tuning" my V4 decoders in consist still fight each other, and that causes the faster engine to draw a lot more current. So far I haven't installed a pair of V5s in a consist, so there's a new learning curve for the 5's different motor control.

Bob

I've had some success with speed matching of Selects with simialr drives, but there's still room for improvement. The locos in this clip have Selects and you'll note the loco on the left has some jerkiness starting off. This seems way easier to smooth out in the 5 with the new settings.

<https://youtu.be/sJdUcmYywmQ>

I've ended up having the back emf tail off above about speed step 20 or so in consists for the same reason you mention. This seems to prevent the fighting but not spoil the pulling power or smooth slow running. I'm looking forward to learning more about all this as I get into the LS 5s.

Jul 2019

Pete

rnb3

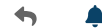
Aug '19

Here is my next step in my quest to address the overly thick cab walls. EMD cabs have sliding windows on the sides of the cab. These are two separate panes of glazing that slide behind the cab wall to the left and right. These panes are trimmed with aluminum channel. When fully opened, the windows are hidden with only the aluminum trim visible from the outside. I surmise that replicating this trim might hide the overly thick wall profile. It is also common to find an arm rest or cushion along the bottom edge of the window opening. This too can hide the thick cab wall.

I used some pieces of 0.020 x 0.040 styrene strip to simulate the window trim. The arm rest is a piece of styrene channel with the corners rounded off. I will paint the trim aluminum and the arm rest a weathered leather color.



9d ago



rnb3

Aug '19

Another detail I changed is the diamond plate tread on the cab step. From the factory I think this detail is too bulky. I filed the factory detail off and used some Archer Surface Details O scale diamond tread decals to add a finer detail back. I used the same Archer products for all the cab steps. The Archer product is very easy to use; it's simply resin 3D shapes printed on decal paper.



Jul 2019

rnb3

Aug '19

Here is a couple overviews of the progress so far. Still to be completed is the horn and bell, headlights, front handrails, and fabricating the anti-climber/coupler buffers. I haven't permanently mounted the KV screens, radiator core, and fan yet. There are a number of smaller fragile details that will be added after the paint job in complete. I figure there is a couple days of detail work left before this model will be ready for paint. Also before paint; DCC, lights and sound!

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 Aug 2019



9d ago



David

Aug '19

You're killing me Rick.

Poobah

Bob

Aug '19

Great project coming together, Rick!

As for the Poobah, to quote the black Knight of Monty Python's Flying Circus, "It's only a flesh wound!" 😊

and Pete -

On my consisted V4 F-units, I backed off the low-speed back-EMF tail to 1. Now I don't claim that has any effect being so low, but ESU doesn't specify the actual minimum. The slow-speed region runs so wonky that I want to cut it out as early as possible.

Bob

Craig

Aug '19

Rick...you are a Master my friend!! BRAVO!

That is what I love about my A&O family...you need to learn something...you got all of the best people in all things modeling...right here!!

PeteM

Aug '19

Bob - As you say, the whole starting-off and speed step 1 & 2 having separate CVs thing in V4/Select is really odd. I was never able to get it where I wanted it on any motor.



Jul 2019

David

Aug '19

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Poobah

65 / 84

Sep 2019

Bob

Aug '19

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9d ago

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PeteM

Aug '19

Bob - As you say, the whole starting-off and speed step 1 & 2 having separate CVs thing in V4/Select is really odd. I was never able to get it where I wanted it on any motor.

The good news is that based on my limited time with LS 5 DCC, the motor control is hugely improved. I don't understand some of the new parameters yet but I already have way better results just from ill-informed tinkering. 😊

Pete

rnb3

Sep '19

A couple final details. I think simple details like this add extra depth to the overall project. I added an airline to the horn using a piece of .013 brass wire. I also fabricated a coupler buffer assembly and filled in the pilot around the Kadee coupler box. Styrene is the material, shaped and sanded to fit following a prototype picture. The train line is a mix of white metal valve casting, brass coupling casting, and rubber hose.



Jul 2019

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Sep 2019

9d ago



rnb3

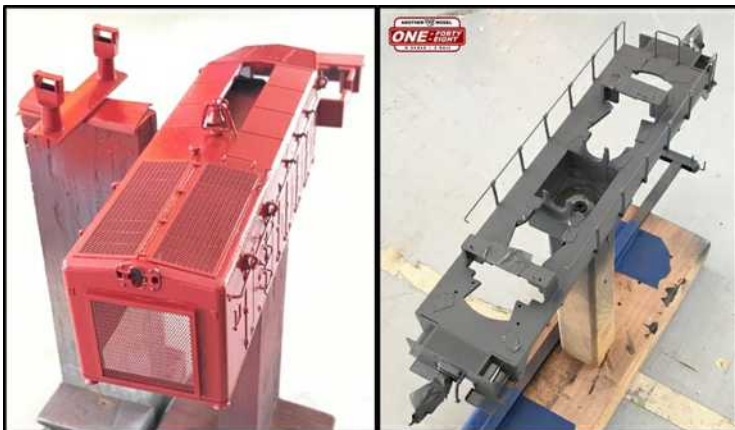
Sep '19

Now that most of the modifications and detailing is done, it's time to start adding color! I use a basic flat grey primer to even out all the different material colors before the finishing colors are applied. I masked off all the screw holes so they won't get clogged with paint.

I made a couple simple wooden fixtures to hold the frame and body while painting. These are self-standing and serve as hand holds.

The cab is still waiting on windows, so it isn't being painted in this round. Also the trucks need to be cleaned and tuned so the side frames will be painted later.

The Dark Gray and Colonial Red finish colors are a glossy finish so decals will set better. I will let the new paint set for at least a week so it will be fully hardened before I start on decals.

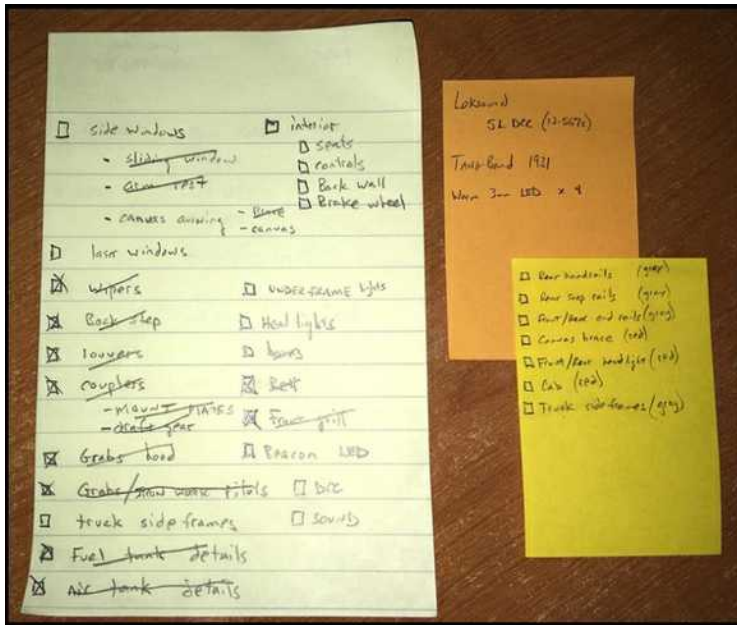


rnb3

Sep '19

As a project like this nears the finish it can be easy to miss something. The paint phase is a big event as it closes out the previous detailing and modification phases. Once the paint is on, it is super hard to make corrections or add a forgotten detail without damaging the paint.

I find it helpful to make a check list of the entire project in order to think through the whole project and make sure each step is complete and in the proper order. The list can also help visualize what still needs work and what needs purchased. I also take the time to group the remaining sub-assemblies into finish colors.



Jul 2019

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Bob

9d ago

Sep '19

Looking great, Rick!



One of the decisions you will want to make is *which* of the many 12-567 sound files you want to use. There several V4s (that also work in the V5) and a couple new for the 5s.

One thing I *don't* like about the new V5 files is that there is an annoying car body door rattle as the engine spools up and down. Several doors were probably open during recording so that microphones could get a more isolated sound of the engine (I saw photos a friend sent during a recording session he attended of an SW900.)

Sure, the new files sound a little bit cleaner since they are 16 bit instead of 12 bit compressed sound. Cleaner sound files can make a difference in larger scales, but generally can not be appreciated through tiny HO and smaller speakers including "sugar cubes."

In the V4 files, #76331 is a 12-567B. The governor on that locomotive was set up to drop to idle *incredibly* quickly. Exhaust sounds are nice. The horn is the Leslie A125 which is correct for a factory single-note.

#74560 is a 12-567C. It has a throatier sound than 331 (more bass boost?) but drops back to idle more slowly. That said, it drops a lot faster than the old Soundtraxx 567 recording with the annoying transition drop that should have happened at a fixed speed of ~18MPH (depending on gearing.) This one also has a Leslie A125 horn.

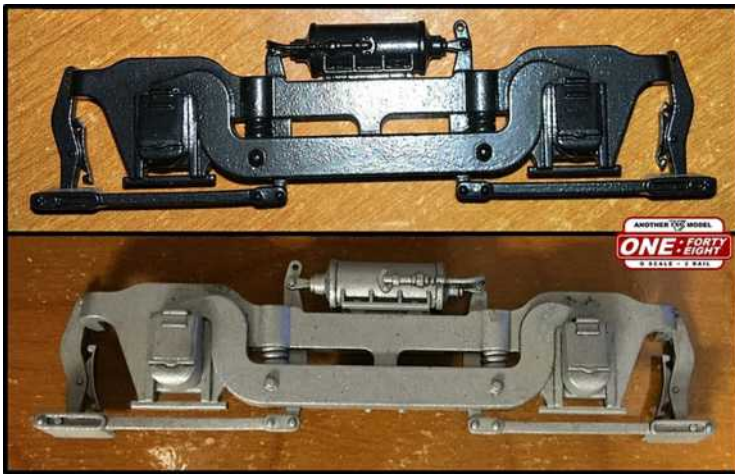
#74460 is also a 12-567C. It may be the same engine recording as 560. The horn is a "Dual Nathan Single Chime", which sounds like a low-note long bell. I intend to compare it to some horns recorded from RS3s on the Delaware-Lackawanna to see if it has Alco applications.

Of course horns can be mixed and matched. A V5 decoder can be loaded with a V4 sound project then have selected sounds overwritten with V5 stuff, including a "select-your-own-horn." (That CV is no longer 48 as it was in the retired Select decoder line.)

rmb3

Sep '19

I stripped the factory paint from the truck side frames yesterday. These are cast metal so I used my tried and true can of gasket remover. A little tooth brush scrub and a soapy rinse left them 98% paint-less! A quick bead blasting finished off any remaining paint.



Jul 2019

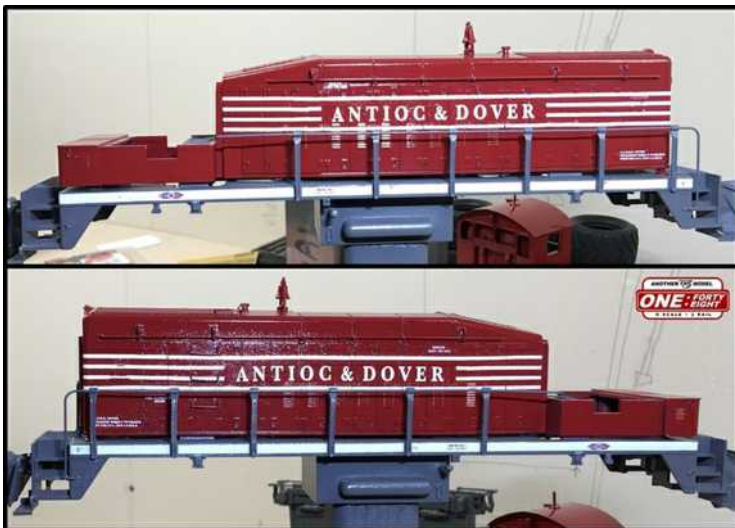
rnb3

65 / 84 Oct '19
Sep 2019

It's been a while since I managed to spend some time in the workshop! I'm still saving my pennies for the electronic stuff! But I have made some progress on the paint and decals. I got the truck side frames painted. I also decided to skip ahead on the cab and got it painted. I was holding off until I solved the window issues, but I have decide to move on for now.

The hood and frame decaling is nearly finished, and the cab will get decals this weekend. Detail painting is next, followed by re-assembly. In order to hit my goal of running at the 26 October open house, I might temporarily install a NCE decoder I have on hand.

9d ago



rnb3

Oct '19

My original goal was to have this model finished for the A&O layout tour/open house scheduled for October 26th. I'm going to come up short here! I am still saving up for the necessary electronic components and haven't solved the window issue. But, I do plan to bring to model for static display!


I have been working on the paint and finish. All of the base painting and decaling is done. I am working on detail painting and weathering as well as integrating separate details parts like the exhaust stacks, and headlights.

My weathering technique is a layered based process. I start with an overcoat of Testor's Dullcoat. This seals the paint and decals and adds a nice "tooth" to the model surface. I let this dry for a couple days, until there is no smell. The next layer is a gauche wash. I make this wash with a tiny "dot" of gauche paint mixed in about a half ounce of Windex. Bob Sobol introduce me to gauche and I love it. It is soluble in Windex, can be wiped off after it dries, using a sponge moistened with...Windex! It is available at crafts stores in all kinds of colors; I mostly use black and brown. For model building, my favorite gauche fact is that the Windex based wash dries very fast and doesn't haze Dullcoat! I use a 1/2 inch flat brush to apply the wash over the entire model. I only applied one wash as I will be adding more latter. This first wash toned down the red and grey base colors and added a little depth to the cracks and crevices.

Layer number 3; rust! For this layer I followed the technique published by Don Smith of Industrial Models in the May/June issue of O Scale Trains (Issue #44). This technique used artist's acrylic paints. I use 4 different shades, dark umber, burnt umber, umber, and light umber to

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Layer number 3; rust! For this layer I followed the technique published by Don Smith of Industrial Models in the May/June issue of O Scale Trains (Issue #44). This technique used artist's acrylic paints. I use 4 different shades, dark umber, burnt umber, umber, and light umber to represent old and dark to new and bright rust. This acrylic paint is a thick creamy paint that not only provides color, but forms a built-up texture that resembles rust and metal decay very convincingly. I use a light "dabbing" motion with a soft bristle brush. The trick here is that the more you dab it, the lighter and thinner the effect. I started with the darkest color, covering the largest area. The acrylic dries fast! I use

the next lighter color to re dab over the dark areas, but not totally covering. Next lighter color and even less coverage. This receding coverage pattern and color looks like ongoing decay. For flat surfaces, I concentrate on dabbing to make tiny "specks" of color. For vertical sides, I first dab followed by lightly brushing downward to pull the color into streaks. A dip of the brush in water can lighten and thin out the color and help the streaking. It took me about 2 hours broken up across a day to cover the tops walkways, pilots, steps, and sides of the model. I went very heavy around the exhaust stacks and down the center of the hood where the engine heat would burr the paint.

4th layer is what I call "bare metal". There are several areas on a locomotive where continuous contact by the crew would wear the paint down to bare metal. Of course the same continuous contact would keep rust from forming too. The walk ways are the most obvious area, but wear would also happen along the hand rails, and around steps where worker boots often strike vertical surfaces too. To replicate this I copied an idea I saw used in military modeling. I used a simple mechanical pencil to rub some graphite (pencil lead) onto the area where the paint would be worn off. I then use an artist's paper blending stick to smear the graphite into the finished pattern. The graphite leaves a slightly shining, but dull metallic appearance. This layer will need to be sealed to remain permanent, or it will rub off over time with contact.

For me, the secret to weathering in layers is to spread the work out over several days using short work periods. I think this helps maintain randomness, allows drying times, and breaks up the tediousness of each task. Before I move on, I will be adding dark chalk layers for soot, light chalk for dust, more Dullcoat, and more washes to contrast seams and panel lines. My final layer will be a very delicate dry-brushing using a light tan-cream color to simulate sun highlights and shadows.

Here is a couple teaser pictures showing the different colors and textures. I like it!

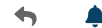


Jul 2019

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9d ago



Bob

Oct '19

Looking forward to seeing it in person tomorrow!

rnb3

Dec '19

Here is a shot of the recently completed front screen area with the shudders and fan visible through the screen. The fan, shudder, screen, and housing are all KV Models etched parts.



Jul 2019

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Oct 2019

9d ago



rnb3

Dec '19

Atlas, as well as the other major O scale (3-rail) manufacturers often add figures to the locomotives and cabooses they produce. These figures are usually crudely formed with very bad paint jobs, if painted at all! I remove these from all my models, but for good measure add them to my O scale figure storage bin. For the cab of my SW1200, I decided to try and salvage a couple of these cast off figures!

For the engineer, I modified the selected figure by removing and repositioning the right arm and head. I want the engineer to fit in the cab window. I will actually mount this figure to the cab so he will fit correctly without interfering with the fit of the cab interior.

The fireman/brakeman is unmodified but will be positioned in the cab turned to face the engineer.

Both figures were primed grey before being painted with various craft paints. After a good coat of Dullcoat, I'll finish both figures with a couple washes to bring out the details and blend everything.

For the cab interior, I slightly modified the Atlas factory parts. The floor lacks proper depth due to the weight hidden underneath. I moved the control and brake stand to more accurate positions, and added some brass wire to better simulate the throttle and brake handles. I brush painted everything except the floor, a mint green color. I also used the same green on the inside of the cab walls. I'm not too worried about perfectly covering everything with the green because visibility is pretty restricted. A little weathering and detail painting will blend everything.



Jul 2019

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Oct 2019

9d ago



David

Dec '19

I love the look of the interior, Rick. But why is the driver's seat positioned so oddly positioned relative to the steering wheel? 😞

Poohbah

rnb3

Feb 18

I have to admit, this project has been delayed in part to my hesitation to dive into a DCC install! In my mind there is a lot of money tied up in the DCC aspect and I haven't developed a sense of comfort working with all of the electronic components. But I need to push through! I also want to point out a very important fact; I would never have even tried this without the wisdom, advice, and examples from Bob Sobol! THANK YOU BOB!!

So...here we go! My install is composed of 3 basic components; a Tang Band 1925S speaker, ESU Loksound V5L decoder, and a home built adapter board. Of course there is a number of separate areas that tie in to the DCC install such as the rotating beacon, head lights, ground lights, and cab interior details.

I started by building a styrene platform to hold all the electronics above the motor (Bob's idea). This styrene platform is shaped to fit inside the body shell and serves a secondary function of separating the wiring from the mechanism. I used .040 styrene sheet reinforced with styrene angle strips to stiffen everything. The platform is mounted to the factory chassis using the screws and stand-offs that originally supported the factory lighting board. I used Gorilla Glue brand double sided tape to attach the three basic components but not until after all the various wiring was complete.

The Tang Band speaker was modified by removing the factory mounting tabs. This greatly reduces the overall length of the speaker housing, saving valuable space. Following Bob's advice, I ohm checked the speaker, and sure enough, there was a tiny solder trace on the external circuit board that needed to be cleaned up. Once the speaker is mounted this board is no longer accessible, and the trace will damage the decoder. THANK YOU BOB!!

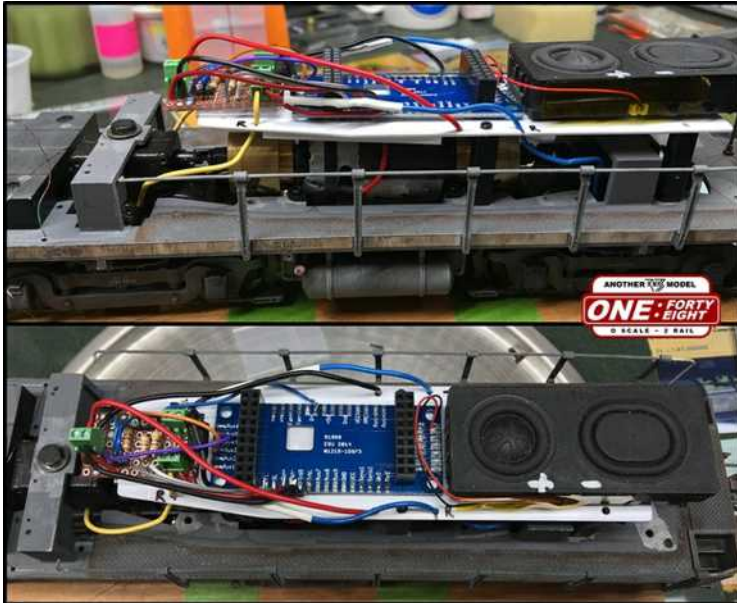
The Loksound V5L decoder I'm using is part number 58325 for the NMRA DCC compliant version. (ESU also offers a V5L European multi-protocol decoder part number 58315.) The V5L mounts to an interface board. All of the wiring connections are soldered to this interface board and the decoder plugs into the interface board. This allows the decoder to be removed and re-programmed/updated without un-doing any wiring! The V5L has a built in keep alive feature and like all Loksound decoders can be user programed for any sound file.

Again, following Bob's advice, I also built my own secondary adapter board. This board uses screw terminals to collect all of the track power and motor wires. This board holds the track snubber, all the LED resistors (5 total), multiple 2 pin connectors for the head lights and beacon, and consolidates the lighting common wiring. The pin connectors allow the body shell and cab to be completely separated from the chassis by disconnecting the wire harnesses for the lights. All of the chassis and shell wiring is consolidated through this board and neatly soldered to the interface board. I was able to do all of the soldering for the install on my work bench before adding the completed ' I combo to the chassis platform. Not having to work around the entire locomotive chassis while making all of the connections was by fa. best pay out!
 THANK YOU BOB!!

Jul 2019

This was a major learning event for me and a real expansion of my modeling skill set! I am nowhere near proficient but have developed a new level of "comfort". I also refined my workbench functionality and tooling by adding a Weller temp control soldering station. It is amazing the increase in craftsmanship that good tools can leverage.

I'm 9 months into this locomotive build and it is getting very close to complete. The last big hurdle is the windows! I've got a couple ideas (and a new tool...a Cricut cutting machine). We'll see how this turns out but I won't be surprised if the next A&O operating session has a new locomotive in the fleet!



The decoder is not shown; it will plug into the two black multi-pin headers.

78 / 84
Mar 4

9d ago





Jul 2019

78 / 84
Mar 4

9d ago



Inching closer to completion. Installed the fake radiator made of light weight paper.

rnb3

Feb 26



Still need to finish the engineer's cigar! Widows are being installed now...

antlor

Feb 27

Looking good Rick. Are you using real glass for this project?



rnb3

Jul 2019

Feb 28

Good morning Anthony. No, I'm not using real glass. As of now I am using Evergreen .015 clear styrene. The front windows are recessed from behind so the fit doesn't have to be exact. The rear windows will have to be cut, trimmed, and sanded to fit one at a time! I want to make them flush fit to hide the overly thick walls. With the curved corners and needing an exact fit, I think real glass would be a bridge too far for me right now!

antlor

78 / 84

Mar 4

Feb 28

Rick, seeing your work and the skill level your at I dont think that using real glass is above your level at all. Practice makes perfect though lol...

9d ago

Cant wait to see it finished...



rnb3

Mar 3

The end is near! I bit the bullet and hand cut the windows! It only took about 2 hours! I used .015 clear styrene. I trimmed each window to roughly the shape needed and used a multi-grit sanding stick to make the final fit. Each window is pressure fit but I still used a tiny amount of Testors Canopy Glue as insurance.

The last details are the windshield wipers, sun shade, and hand rails.

All that is left now is to plug in the decoder and go for a test drive!



Jul 2019

78 / 84
Mar 4

9d ago



antlor

Mar 15

Did you get to do a test run?

Bob

Mar 15

Beautiful job, Rick!

The only tip I might add is that, when I made my own flat headlight glass covers for my F3s, I found that running a black Sharpie pen around the perimeter of the clear plastic hid the roughness from my cuts on the perimeter of the covers.

For the F3 exercise I found two cheap "Horrible Freight" drills in a cheap drill index that were about the right diameter. I used the sharpened ends to drill mating holes in a piece of aluminum, solidly clamped to my father's 80+ year old Craftsman drill press table, then ground and honed the butt ends of each for use as a punch.

I'm certainly no tool and die machinist, just a poor hobbyist hack.

YMMV.

antlor

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Jul 2019

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YMMV.

81 / 84

Mar 17

9d ago

**rnb3**

Mar 17

After conferring with Bob, I bit the bullet and redid the radiator! This should be my final solution for this! Funny thing is I knew this was the answer from the beginning but for some reason didn't want to accept it until now!

So what did Bob say? Simple; "Sound isn't easily fooled."

I am always looking for the line between true to scale and what looks right. I believe this is a visual hobby where the best models fool the eye and mind into thinking they see something that they know isn't true. Basically, I know that is a miniature train, but it looks real. An artist finds the "looks" that fool the mind and exploit them. Of course, there are some traps that must be avoided too. My rule for these is to be aware that "physics doesn't scale". Real water always looks and acts like real water, nothing is as bright as the sun, weight can't be scaled... So in this line of thinking, I realized that Bob's statement was simply an extension of the illusion concept. Except now there is a new dimension in the mix, sound!

So, I rebuilt the radiator core, keeping in mind that it only has to look right, and now sound right.

Bob's experience and research has shown that the speaker is only a third of the formula for good sound. The sound file is the second part. ESU Loksound decoders are managing this part very well.

The third part is the "sound chamber" created by the model where the speaker is contained. I think there are two points to consider with this chamber. One, getting the sound out, and two material reactions to the sound.

Getting the sound out is simply a matter of making a hole for the sound to escape the chamber. This can be accomplished in a variety of ways such as simply opening holes in the body or frame. A more elegant method is to find and use holes that are more natural to the model such as grill work resembling radiators, dynamic brake grates, and fans screens. The opened radiator area of my model is a very large natural pathway. The value here is that the volume settings for the decoder don't have to be set so high that the speaker becomes over driven and wrecks the sound. A lot of factory sound in HO suffers from this problem.

The material reaction problem is where Bob has been really sensitive. Remember, sound is actually a function of movement. A small tuned vibration. The very vibration that make up the sound we want to hear can cause other things to vibrate and make their own sounds. These reactionary sounds can easily corrupt the original desired sound. Buzzing, hissing, flutter sounds that our brains don't separate, but rather combine with the target noise and equate as bad. My original method for simulating the radiator only addressed the visual layer and not the auditory layer. A solid material like the KV Models stainless etched core will physically block the sound and in the case of my cardstock core, actually vibrate and make its own sound.

My ultimate answer was to cut a piece of .015 styrene sheet to simulate the shape of the radiator core frame. This results in eight large openings surrounded by silver painted styrene. For the core, I looked for a cloth like material that was as thin as possible, dark (black) in color, and not too sheer or see through-able. I ultimately chose a black formal sock from the dollar store! I layered the styrene frame over the cloth using 3M Super 77 spray glue. To insure the cloth doesn't visually move or vibrate, and to even the thickness, before I glued the frame, I used masking tape to hold it stretch out on my work bench. A weight was placed on top of the assembly until it 'ry. I trimmed the cloth to match the styrene after it dried and used ducting tape to secure the core into the locomotive shell.

In the end, I think it looks right and will sound better! Thanks Bob!



Jul 2019

81 / 84

Mar 17

9d ago



Craig

Mar 19

Fantastic write-up Rick. And great job with the result! Looks like that will be a winning combo.

rnb3

10d

Its been a few days short of a year since I started this build! I believe the final chapter is upon us!

After an agonizing COVID19 delay, I finally picked up the V5 decoder Bob programmed for this model. I spend an afternoon finishing up the install and testing my plug-in lighting. Bob did a great job of programming the decoder. The start, stop, and momentum settings are spot on. Best of all, the sound is amazing and timed to perfection to match the momentum. My test track is only 3 feet long, but I have switched miles over the last week! I finished buttoning up the wiring, installed the headlight lenses, and screwed down the shell. The only thing left is to make two hand rails for the back of the cab.

We can now add to the collective O scale 2 rail DCC build files; a Loksound V5L decoder and TangBand 1925s speaker along with adapter boards will fit in the hood of an Atlas SW with a detailed radiator core and blast high quality sound through the radiator area. The KV Models etched steps, pilots, screens, fan, and grills look awesome and are a pleasure to build. A new roof and some flush mounted windows go a long way to thin out the extra thick factory cab.

Next ops session, the Antioch & Dover's Mt Union turn will be serviced by a home road locomotive and caboose!



Jul 2019

81 / 84

Mar 17

9d ago



antlor

9d

It looks awesome, get you a little photo diorama and get some photos outside. Sunlight makes a huge difference on a model for realism...