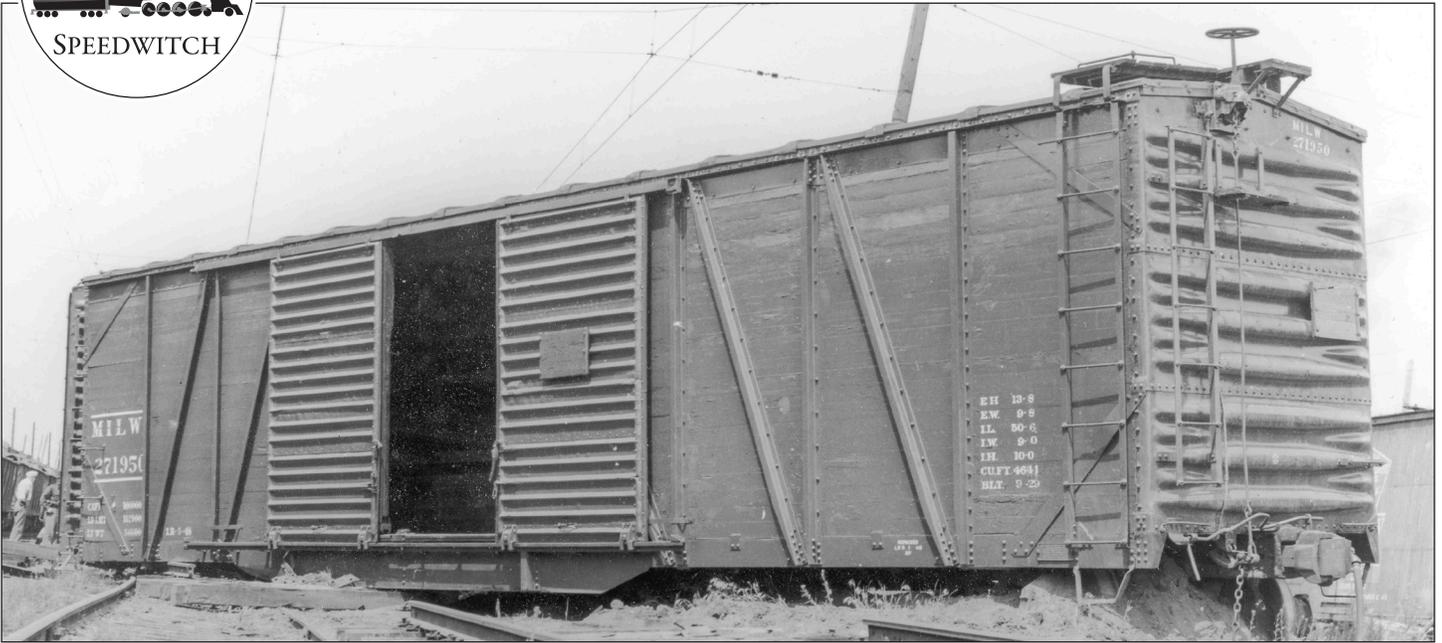




Kit K126 - Milwaukee Road 271500-series 50' Single Sheathed Automobile Cars



For reasons unknown to us, this car was repainted by the Northern Pacific and restenciled using Northern Pacific type ("font.") Regardless, it affords a good view of many of the characteristics of the class. Bob's Photo

History

The Chicago, Milwaukee, St. Paul & Pacific (the Milwaukee Road) rostered a couple groups of fifty-foot single sheathed automobile cars. The second group was built in 1929 by Pullman Car & Manufacturing Co. They were assigned to the number series 271500-271999. The Milwaukee also had forty-foot automobile cars that obviously shared design traits with these longer cars.

The car body featured structural members arranged in a Howe truss configuration. The two panels closest to each end were the same dimensionally while the one to the right of the main door was slightly wider, evidenced by the slightly shallower angle of the diagonal structural member. The cars also incorporated Dreadnaught ends of three panels with three main corrugations in each, plus a lumber door in the A end. Youngstown steel doors and Hutchins Dry Lading roofs were also used. The cars were equipped with underframes that employed straight center sills, a departure from the fishbelly center sills used on most fifty foot auto cars of the era. The cars rode on Dalman one-level trucks.

As delivered, the cars lacked the familiar diagonal emblem of the Milwaukee, but did have "The Milwaukee Road" name stenciled on the car sides. At repaintings, the emblem was added and the road name was dropped.

Instructions

General - please, please, please read first, even if you are an experienced resin freight car modeler

This kit includes some extremely detailed etched parts. They can be fussy and may be fragile if not handled as directed or assembled in a different order than laid out herein. It is recommended in the strongest possible terms that you pay attention to the order of

operations and also follow the suggestions for tools (as noted at the end of this section.) Rest assured that the challenge is worth it. Exercise care and patience and you will be rewarded with one of the finest models in your fleet.

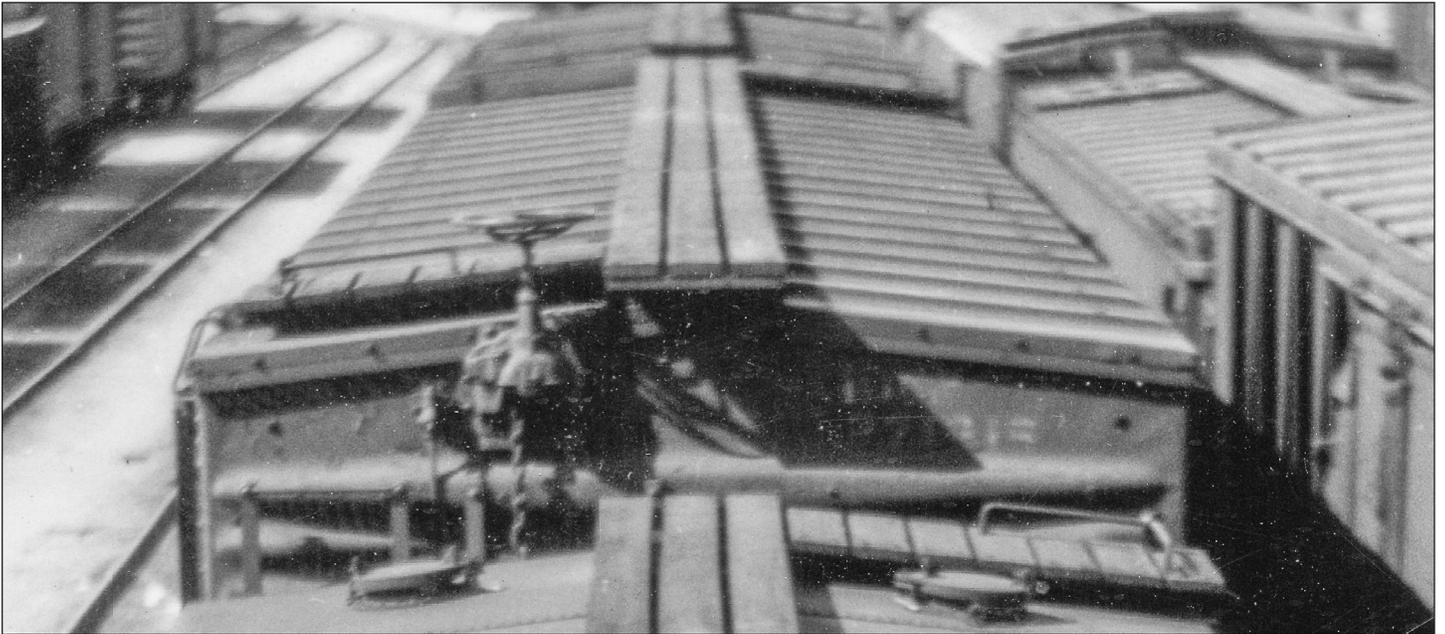
The instructions contain high resolution images. You can print the file or zoom in quite a lot to aid in understanding assembly.

The general order of the assembly is in many ways up to the preferences of the modeler. There are also few things that are optional and require items not included in the kit. These are noted throughout the instructions.

Resin casting can generate air bubbles. If everything goes according to plan, the ones that do exist in the castings are small and not on an outer surface. Should you have a bubble that causes you concern, you can fill it with some ACC. [full disclosure: my pilot model was constructed using "defective" castings and I would challenge you to find any defects on the finished model.]

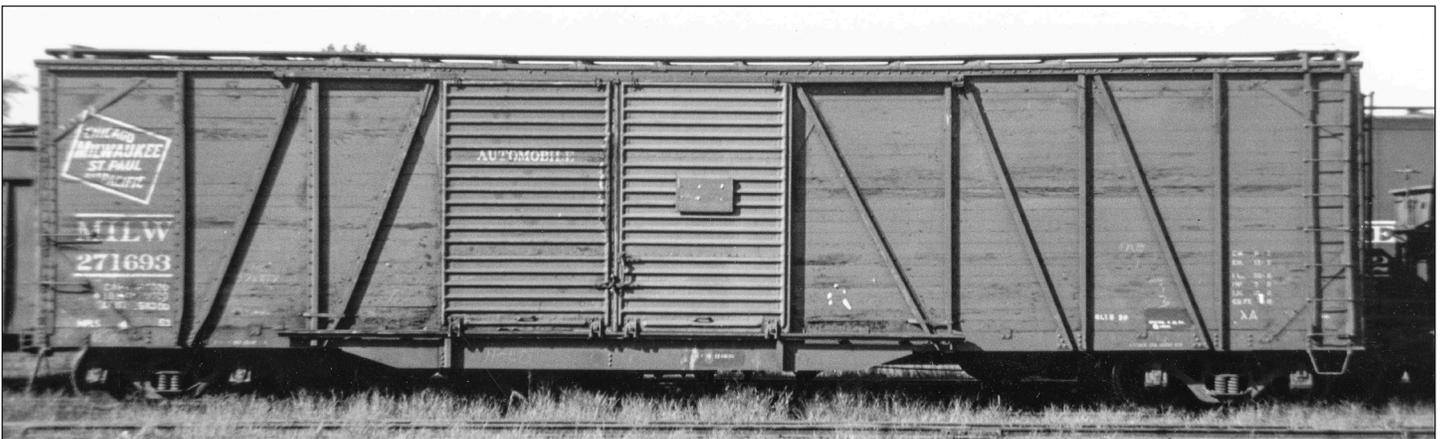
Important note about working with the etched metal parts... many of the etched metal parts have half-etched "score" lines. These are to be used to aid in folding the parts. *Unless specifically instructed to fold "away" from the score line*, always fold *into* the score lines, meaning that the angle formed by the subsequent bend will "contain" the score line, which will "disappear" into the fold in most instances, such as 90° bends. Also, the etched parts in this kit are quite thin and easy to cut or trim. I recommend the following method: lay the parts flat on a cutting mat and overlay that with a steel ruler. Trim straight down using a chisel blade like an X Acto no. 17. When overlaying with the steel ruler, leave the excess "gate" that joins the parts together exposed and the actual part under the ruler. Yes, this leaves you a little "blind" in terms of what you are cutting, but there are extra parts and

San Diego, December 23, 1954, Col. Chet McCoid photo, Bob's Photo



above - Michael Urac Collection, courtesy of Dan Smith

below - Bob's Photo





"San Bernardino, California. An emblem on a Chicago, Milwaukee, Saint Paul and Pacific Railroad (Milwaukee Road) freight car," Jack Delano, March, 1943, Call number: LC-USW3- 021562-E FSA-OWI Collection, Library of Congress



Ray Mumford photo

you will get the hang of it! If a part bends, you can flatten it by "crushing" it between the mat and steel ruler. Also, while I did not encounter any un- or underfilled holes, it does happen and they can be cleaned out with a drill bit (as referenced in the tools section below).

Suggested tools:

- Tweezers such as [these with serrated jaws](#) or [these with diamond tips](#) - etchings can be difficult to handle and plain tip tweezers, no matter how high quality, are not the best tool for the job... avoid flying pieces of metal followed by colorful language!
- Etched part bending tool - these devices make bending etched metal parts, especially long narrow ones like ladder stiles, much easier - I use [this one](#) and *highly, highly* recommend it, but [UMM-USA](#) carries many types.
- Drill bits - all drill bits are not created equal. I purchase mine from [McMaster-Carr](#) for quality and durability. I also recommend [this specific one](#) to have on hand to "ream" holes in etchings in case you find one that is not etched completely. Yes, it is an expensive bit, but I use it only for this purpose.
- Square - I recommend having a [tool grade combination square](#) in your arsenal, but for this model, I use it to "finish" the bends in the ladder stiles. Yes, it's expensive, but I use it all the time!

Parts List:

- Resin castings (body, floor/underframe, detail castings)
- Decals
- Tichy KC and AB brake sets
- Kadee couplers, pair
- Plate C Dalman one-level trucks, pair

- Moloco angle cock/air hose, pair
- 0.088" tread width wheelsets (4)
- Etchings
- 0.008" wire - 1
- 0.010" wire - 3
- 0.012" wire - 2
- 0.015" wire (small piece)
- 0.020" wire - 1
- Retainer valve
- Screws (2-56 and 0-80, one pair each)
- Nut-bolt-washer (NBW, 4)

Extra Parts and other optional items (not included):

- Chain
- Branch pipe tee
- [Scale Hardware 0.4mm brass rivets](#)
- [Plastruct 0.010" styrene rod](#)
- Paint
- Weathering media
- Chalk mark decals

Assembly Sequence

◇ Begin by examining the castings. The inside of the car body will require some cleanup work. Apologies also for the fact that there are a couple "flavors" of body castings. As this is the first one-piece body I have ever cast, I ended up trying different ways to skin this cat. There are different thicknesses to the sides and different sizes of vents (the vents are the small to medium sized

"posts" on the inside of the car body "behind" the side sills." Depending upon their size, you can either ship them off or (as I did on the pilot model) use a razor saw to saw between them and the inside of the car body before snipping them off. Note that on the bodies that are "lined" the terminus of the lining is arbitrary and *not* a "stop" for the floor casting. The underbody/floor casting will also likely require some filing to fit into the car body, as well. Note that there is an A and B end to the floor casting; on the crossbearers, you will find "dimples" to drill for the train line. One side has three dimpled crossbearers and the other has only one. *The "lone" dimpled crossbearer is closer to the A end* (the end with the lumber door.) Take care to keep things straight and square, particularly at the corners. At the ends, the floor should be slightly below the level of the ends, with the "pads" for the coupler pockets (draft gear) level with the bottom of the car body at the ends. Once satisfied with the fit, continue, but do not glue the floor into the car body just yet. *Note that there are distinct A and B ends on the car body* - the A end has the lumber door. I find it useful to write a 'B' on the floor adjacent to the B end to avoid any future confusion as I add details.

◇ Drill the holes for the train pipe through the center sills (if adding that detail) at a slight diagonal and appropriate crossbearers at the dimples, using a no. 65 drill bit; the exact size isn't paramount, although it is better if it is slightly larger than smaller. What is important is that the height of the holes are such that the train pipe can pass through the center sills and crossbearers without a large degree of mismatch in height variation; the train pipe should be relatively straight along its length and when the car is oriented on its trucks, the train pipe passes *through* the crossbearers at the dimples. Please consult photos of the completed underframe for locations. From the end of the floor, drill through the bolsters for the train line. Consult photos.

◇ Add the end sill/draft gear detail to the top of the draft gear (coupler pocket) as shown in the photos. It is best to secure the detail casting to the draft gear with a contact cement to allow everything to be lined up, followed by addition of sparing amounts of ACC to secure the detail. NOTE: if you are using different boxes, follow these instructions, but replace the kit draft gear with your own. If you follow my instructions, these draft gear may be a tight fit (purposefully to replicate the prototype more closely) but they do work!. Also, add the etched angle cock/air hose brackets to the side face of the draft gear. You may have to remove some detail from the side face to create a flat surface. Secure with contact cement (like Barge cement mixed with MEK) followed by ACC. I did not add the angle cock/air hose parts until the very end to avoid any unnecessary potential damage to those details.

◇ Drill the underbody for the truck screws. The truck screw holes should be drilled with a no. 50 bit. The screws provided should be self-tapping if gently screwed into the holes. Do not do anything at this time to adjust the bolsters vis-à-vis truck and coupler height. That will be addressed later in the build. Add desired amount of weight to the floor.

◇ Insert the floor casting into the body, but do not glue it in place yet. First, tack the draft gear boxes in place, again using a contact cement (we like Barge cement mixed 50/50 with a solvent such as MEK.) The goal is to carefully adjust the draft gear so that the detail that you added will nest nicely against the end sill (bottom) of the end of the car body. When you have the draft gear boxes aligned and in place, add some ACC to secure them to the floor casting. Once you are certain that the floor casting placement is good, you can begin to glue the floor in place. We started by flowing some ACC into the draft gear boxes and end sills using a pin and then worked from the ends of the car to the center, carefully tacking the floor in place at numerous locations, including the bolsters and crossbearer/side sill joints. It is not uncommon to tack one part of the floor in place, adjust another part of the floor and tack it in place, etc. These aren't injection molded parts, but attention to detail will result in straight and aligned parts. You can either continue to add more ACC with the pin or carefully add sparing amounts of thin ACC and allowing it to flow into the floor/car body joints. Do not use the thin ACC until you are satisfied with the way the floor is glued in place (the reason why you tack it in many locations) and use sparing amounts of the thin ACC; it is like water and will find gaps and if there are no gaps it will run in places where you don't want it to go. I also have several pieces of paper towel twisted into "points" to wick away any unwanted thin ACC, should it go places I don't want to be.

◇ You can do so now or later, but at some point, drill the draft gear boxes and lids for screws. We have provided 0-80 screws, but you can use a 1-72 if you prefer. A 2-56 screw is probably too wide. Screw in far enough for the lid to be completely in place, but not too much as you could make the "post" in the box bulge, inhibiting free coupler movement.

◇ Add the etched channel crossties from the etched parts. They require folding and fit carefully "into" the center sills. The angles formed by the "C" shape face towards the ends of the car. Also note that some have holes for the train line, so please pay attention to location. Note the locations based upon the photos. You can tack these parts in place using a contact cement followed by sparing amounts of ACC at the center sill and side sill to secure the joints.

◇ Add the train line using 0.020" wire. Use the photos as a guide for the bends. We added it in two pieces with the "break" between the center sills. You will also note that we added an aftermarket branch pipe "tee" from David Jobe, Sr. This is where the pipe between the AB valve dirt collector and the train line is connected, should you wish to add such a detail. Secure with ACC

◇ Add the bolster bottom cover plates. Clean up the cast resin parts, including the tear drop shaped openings in the plates. I used the following approach although you are free to do something that works for you. First, I *slightly* "bent" the end that rests on the bottom of the side sill so that when glued, it rests flatly on the bottom of the side sill. Consult photos if this is unclear. I first checked the overall length of the cover plate versus the bolster

area to ensure that it wasn't too long. I tacked the plate in place against the truck/bolster area with ACC, leaving the remainder "free" as shown in the photos. I then used a pin to flow ACC under the plate and pressed down so that the plate would match the contours of the bolster webs. I then finished by adding some ACC where the plate meets the side sill (from behind the side sill to keep glue mess to a minimum.) Repeat for the other three bolster halves.

◇ Add the four bottom crossbearer cover plates. These are narrow (8 scale inches wide) resin strips with rivet detail. The fit between the side sills. They will need to be shortened slightly (better too long than too short!) Secure them with ACC.

◇ Add the brake cylinder bracket. It is comprised of two pieces for an AB brake arrangement or three for a KC brake arrangement. There are two ways you could do this. I chose to tack the cylinder bracket in place nested into the center sill with contact cement and then added the zee bar support (the parts do need to be bent to shape and the zee bar may need to be filed slightly to fit between the crossbearers.) The other option is to "assemble" the bracket(s) and zee bar and add as one assembly. Note that the third part, for KC brakes, is a support for the reservoir of the KC system (the KC system had the cylinder and reservoir as an integral single tow-part assembly.) See the diagram in the image portion of these instructions.

◇ Add the crossbearer/side sill webs. Note that these are only used at the locations where the side sill support is located. In other words, only three per side. The angles formed in the etchings (once folded) face the ends of the car.

◇ If modeling a car with AB brakes, assemble the cylinder from parts AB-3, AB-8, and AB-9, using liquid solvent cement. Once the parts have dried, drill the rear nipple with a no. 78 or 79 drill bit. You can use the Tichy clevis (AB-25 or AB-29.) However, I choose to fill in the front opening of the cylinder with styrene rod and then drill an opening and use wire, plus an etched "clevis" to simulate the brake arrangement. If following my lead, you should fill, drill, and test fit a piece of 0.020" into the opening *before* attaching the cylinder to the car. Once you have decided and are satisfied with your approach, attach the cylinder using contact cement followed by some ACC.

◇ *If you are modeling a car with AB brakes*, assemble the reservoirs from parts AB-1, AB-2, and AB-10, using liquid solvent cement. Once the parts have dried, drill the nipples with a no. 78 or 79 drill bit. Set the reservoirs aside. Drill three holes in the AB valve (part AB-5) with a no. 78 or 79 drill bit. Set this aside, as well.

◇ *If you are modeling a car with AB brakes*, add the mounting apparatuses for the reservoirs and AB valve. The angle that supports the single lug of the reservoirs must be trimmed as shown so that it does not interfere with the train line. Use the reservoirs to aid in gauging the proper location for the angle. Tack in place and then secure further with ACC. Add the "platform" for the AB valve as well, as shown.

◇ Add the AB valve and reservoirs to the underframe. I tacked things in place with the Barge cement/MEK mix, followed by adding some ACC to secure things.

◇ Add brake piping. Using 0.012" wire, create the piping between the reservoirs and the AB valve and cylinder and the AB valve. Beading pliers with round jaws are particularly good for this task. Mimic the piping as shown in the photos. Trim the dirt collector (part AB-6) from the Tichy parts sprue and drill a hole (no. 77 or 78) in the front of the dirt collector, glue the dirt collector into the AB valve and then add 0.015" wire between the dirt collector and train line (or branch pipe tee, if you added one,) bending as shown, and secure the end of the wire "pipe" to the train pipe by joining both with a blob of ACC.

◇ Should you choose to add them, there are other bits of mounting hardware. There is a bracket for the train line/branch pipe tee, created from an etching. I did add it and then added pieces of 0.006" wire bent into a "U" shape, and passing through the holes in the bracket and "over" the wire train line, securing the bracket and train line together. There are also brackets/supports on either side of the center sill where the train line passes through the center sills. These parts do require 90° bends, but the etchings have score lines to aid. The last bit (for now) is a brake rod carrier. It requires two bends to create a "slot" for the brake rod from the cylinder to the bell crank. Consult the photos to see these parts.

◇ Add the brake levers and rods. The following describes the use of etched brake levers and clevises. First, for the clevis/lever assembly on the front of the cylinder, I threaded 0.010" wire through the etched clevis and brake lever. For the other assemblies, it is far easier to just fold the etched clevis over the lever and glue in place and frankly, is generally strong enough. You do need to ensure that the hole in the center of the etched clevis will accept the wire brake rod. I "open" the holes a little before bending the etched clevises. Also, the dead lever (the one not attached to the front of the brake cylinder at the piston) has a two-part mounting bracket with holes to simulate the manual, pin slack mechanism. In the instance of the dead lever bracket, I do recommend threading a piece of wire through the assembly to keep everything aligned and secure. See photos. If using Tichy styrene levers or creating your own, please disregard and proceed in your own fashion. Use 0.010" for the rods, as shown. The chain at the clevis on the cylinder is an optional item and not included in the kit. The rods are attached to holes drilled between the center sills or the bolster cover plate. Secure all parts with ACC. There are photos from many different angles to help clarify these assemblies.

◇ Assemble the ladders. The etchings include jigs to aid in the assembly of the ladders. I "open" the upper and lower holes in the jigs with a no. 80 drill bit (the ones that will not receive rungs until they are added to the car body.) Add a piece of fairly sturdy styrene strip (I think I used 0.080" square) to the back of each ladder jig. Glue these jigs to a larger piece of styrene. Slide the no. 80 drill through the jig and drill holes in the styrene that the jig is attached to (you need not drill all the way through the styrene.) Add bits of 0.010" wire into these holes and secure into the styrene with ACC. Fold an opposing pair of ladder stiles using an etched metal part tool (as noted at the beginning in the "suggested tools" section.) Slide these over the wire to hold them

in place. *NOTE that on these Milwaukee cars, the angle formed by the stiles faces "outward" which is different than almost all other ladders!*) Using a piece of Plastruct 0.010" styrene rod, add the rod and a rung to the jig. Flood the stile/rod/rung combo with solvent cement. Do the same for the other side of the rung, gently pushing both rungs against the faces of the stiles. Repeat for the remainder of the rungs, except top and bottom since those holes in the stiles are filled with the wire from the assembly jig. Let dry. Once dry, add *very* sparing amounts of ACC to the stile/rod/rung joints using the fine point of a pin or needle. Let dry. Carefully trim the rods almost flush with the rung – we use P-B-L Swiss-made sprue nippers for this. Carefully remove the ladder assembly from the jig and flip it over on to a work surface. Add more sparing amounts of ACC to the back of the rod/stile joint. Let dry and trim with the sprue nippers. The back need not be entirely flush cut, although since the "back" these Milwaukee cars because of the orientation of the stiles, it is advisable to trim as closely as you are comfortable doing. Set aside and repeat for the other ladders. *Remember that the top and bottom rungs have still not been added to the ladder at this point.*

◇ I opted to attach the ladders to the car body through a combination of the ladder brackets and "pins" created from wire. I added the side ladders first. They use angle brackets at the top that attach to the zee flange of the upper side and the supports for the latitudinal running boards also attach to the zee flange. First, I attached these angles to the top of the ladder stiles. I threaded a single piece of 0.010" wire through the angles and the ladder stiles. I tacked the angles to the stiles using the Barge/MEK mixture and then solidified further with ACC. Once dry, I trimmed the wire to leave only what was necessary to hold things together. To secure the top of the ladders to the zee, I used 0.010" wire as pins. There are two holes on each angle that can be used to pin the ladder stiles. I only used one. However, I used the wrong one... learn from my mistake! I pinned on the "inner" ones, which resulted in my latitudinal running board supports being too close together (fortunately not egregiously so.) Before gluing the ladder stiles in place, though, if you are drilling holes to pin the top ladder rungs, do that first. I used a no. 78 drill bit to allow a little play in case my holes were not drilled exactly right. Do the same at the bottom, as well. However, do not glue anything in place yet! , Slide the angles at the top of the ladders onto the wire at the zee flange, but do not glue the ladders in place yet. Insert 0.010" wire through the four "open" holes in the ladder stiles and into the holes that you drilled into the car body to pin the stiles. Once the wire is in place in these holes secure the wire, *NOT the ladder stiles*, with ACC. Add the ladder brackets at the bottom of the stiles. The lower brackets must be bent and they attach to the inner face of the ladder stile (remember that the stiles on these cars are oriented differently than on most other cars.) My approach is to attach the bracket to the stile that is still "floating" on the pins used to secure the ladders. I attached the brackets with Barge cement/MEK that was then secured with ACC. I then gently pushed the stiles down until the brackets were pressed against the car body's side sill and secured the stiles

with ACC applied to the *underside* of the stile. Photos will help clarify these instructions. Secure the upper portion of the stiles with ACC, again from the underside. Lastly, add the top and bottom ladder rungs, secured with sparing amounts of ACC. Once dry, trim the extra wire from the rungs. Leave the extra wire above the ladder stiles as this will be used to secure the latitudinal running board supports. If you feel that this wire is too long, you can trim it back somewhat so that it isn't "in your way" as you add other details.

◇ Add the end ladders. The process is similar, except the top of the end ladders do not attach to a zee like on the sides. There are four brackets to mount the ladders. Like at the bottom on the side ladders, I used wire "pins" to adjust the offset from the end, but only for the right stile; the left stile was attached using only the brackets. There are many photos from numerous different angles that illustrate the attachment of the ladders.

◇ Add the brake step. The step is comprised of a resin casting plus two L-shaped brackets, bent from etchings. I used 0.010" wire "pins" to attach the brackets and then added the resin step (clean out the hole in the step first!) There is detail on the outer edge of the step so ensure that you orient it correctly. Again, photos are your friend!

◇ Add the power hand brake housing. Note that my model uses small chain, which is not provided, but is available from several sources, including now from Tichy. I used 40 links/inch. The linkage between the chain of the housing and is one long rod plus a small linkage at the bottom that then connects to the bell crank. I have provide etchings that allow you to faithfully replicate this arrangement. You will have to "open" the circles at the ends of the rod and loop chain over it at the top and loop the long rod into the small linkage at the bottom. I used fine wire cutters to "open" the loops. The chain was inserted into a hole I drilled in the hand brake housing (resin casting.) You could make and "open" a piece of ladders tung to simulate an "eye bolt" or just bend a piece of wire, like I did. At the bottom, the small length that links to the bell crank uses an etched clevis to connect to the bell crank, as shown in the photos. I am really happy with how this detail turned out! Note that the bell crank (Tichy part from the brake sprue with most of the upper portion trimmed back) fits into an etched bracket for the bell crank.

◇ Add the pressure retainer valve and pipe. Find the round dimple in the bottom of the pressure retainer valve and drill deeper into the part using a no. 80 drill. Drill a no. 75 or 76 hole in the appropriate location at the top of the car end for the insertion of the post on the retainer valve. Using ACC, attach the retainer valve, taking care to orient properly with the hole pointing directly down to the bottom of the end. Take the 0.008" and insert into the hole in the retainer valve. Carefully bend the wire, using trial and error, replicating the bends in the photos, finishing with a 90° bend at the bottom of the end, with the wire routed directly under the car end, with a little portion continuing under the end. When satisfied with the bends and routing of the wire, insert into the vale and glue at the valve and at the bottom of the end, using ACC.

◇ Clean and attach the running board. My technique is to rub back and forth on medium grit sandpaper (nothing more coarse than 220-240 and not smoother than 320) to roughen the back of the casting. Then carefully trim (looking at the outer surface or "front" of the casting) between the boards, on both edges of the gap. Note that there are places where the boards are "connected" and no gap exists... this is on purpose and don't trim at those places! Carefully "push" the trimmed areas through the casting and remove them at the ends of the gaps by pulling them away. I then carefully take a no. 11 blade and slide it back and forth along the edges, from the back of the casting, to clean up the edges further. When done, you should have a running board with gaps between the boards, just like on the prototype. Turn the part over and add some styrene (1x4 HO scale strip or 0.010" x 0.040" works fine) to simulate the boards on the underside of the ends of the running board. Then add the etchings that simulate the diagonal straps that attached to the top of the end of the car to support the running board. I pinned them into the underside of the running board and styrene strip using 0.010 wire. When this assembly as dried, attach the running board to the roof. It is advisable to carefully and gently rub the running board brackets on the car body on a piece of sandpaper. Tip: color the top of all the brackets with a Sharpie or other permanent marker. Rub back and forth on the sandpaper until all of the brackets are showing resin on top again and not marker ink (a little ink could have bled down the other faces of the brackets, but we are concerned with the surface that the running boards will rest on.) I prefer to tack the boards in place with some Barge cement/MEK to allow me to carefully position the running boards. I then add ACC to all the bracket/running board joints to secure the everything. Ensure that the boards are centered both side-to-side and end-to-end.

◇ Add the latitudinal running boards. The trickiest part of this is securing the support straps. They should be bent as shown in the photos. Remember that I messed up, too! The L brackets at the top of the ladders have two holes. I only used one pin per L, but I should have used the holes closer to the ladder stiles. Because I did not, my latitudinal running board support straps are too close together versus the prototype. Heed my mistake. Honestly, unless you are building this kit and know, you might never notice. The part of the support straps that is under the boards must be bent into an angle (there is a half-etch score line on the etching) and the part that is glued to the underside of the main running boards must be angled slightly so that it rest flat against the underside of the running boards. As the photo illustrate, I found it best to attach the straps completely and then glue the boards on top of them. I also added the corner grabs to the latitudinals before adding them to the car. There are eye bolts on the etching sheet for these corner grabs. The way I create these corner grabs is a three step process. I make a 90 degree bend in a piece of wire and place it in one of the two "non-eyebolt" holes and rotate it so it follows the path that the grab would. I mark the next bend using a marker and make the second bend, also 90 degrees. I then reinsert the grab into the same hole as before and realign it along the intended path and mark the third bend

location. I make that third bend and that is the grab (you may have to practice a little to become proficient.) The first and third bends are "down" as these legs will be inserted into the latitudinal. The middle "leg" is part of an eye bolt etching. See photos.

◇ Add the door castings to the sides. Ensure the area behind the door rollers is clear and not filled with any bits of resin flash. It may be necessary to clean these out. I made a few careful passes with a square edge needle file on my door castings. Add a strip of styrene (I used 0.020 x 0.030) to the top edge of the door, longer than the etched upper door tracks; you will trim it back later. The imaginary line that is the top edge of the styrene strip should align with an imaginary line that is the bottom edge of the flange at the top of the side (the flange where the side structural members terminate.) Glue the door in place. I added very sparing amounts of the Barge cement/MEK mix to help tack things in place and then secured the doors and the strip in place with ACC. The strips can also be tacked in place at the top with ACC. Add the upper door track. This is an etched part that must be bent into a long angle. I cannot recommend highly enough the use of the bender reference in the tool section in the early portions of these instructions. It is exceptional at bending long narrow parts like these upper door tracks, resulting in consistent, straight, "clean" bends and parts. Glue the upper door track in place. I tacked it to the styrene strip using Barge cement/MEK and then secured further with ACC. The guide essentially creates a "hood" over the strip and a "lip" over the upper edges of the doors. The excess styrene strip can be trimmed flush using sprue nippers once everything has dried. Repeat for the other door.

◇ Create and add the lower door tracks. Like the upper door tracks, these must also be bent and all the same guidance applies. I bent the tracks and then test fitted them under the doors, between the rollers and door posts. The angle of the tracks is not equal; one leg is slightly smaller than the other. When attached to the car, under the doors, the "face" of the longer leg should be what you see when looking at the car side. Also, the angle created by the two legs should face down towards the rails. I glued the leg to the bottom of the doors using the Barge cement/MEX slurry followed by judicious application of ACC in places. The portion of the tracks not under the doors remains loose for the time being. The door track supports consist of a "bracket" face that attaches to the side sill and a channel section for the portion between the bracket face and the door track. Full disclosure: the channel sections are tiny and must be bent from the etchings. They can be frustrating. I know my limits and took a shortcut. I added the bracket faces in the appropriate places (the "spade" shape faces down toward the rails) and then simply used bits of strip styrene to simulate the channel bits. It is very difficult to see these details and the etched channel sections are difficult to work with (but gladly provided!) For me, the metaphorical juice was not worth the squeeze. The styrene should fit snugly between the brackets and the door track. The ones that are not under the doors will help secure those portions of the tracks. Make sure to keep the track straight (or straighten it, if necessary) as you glue these brackets. Lastly, add the lower door stops. These are also

bent from etchings. Lastly, add the door guide straps. These are etched parts, as well. They attach to the faces of two structural members as well as the car's side sheathing. They can be pinned should you choose.

◇ Attach the four placard boards, one to each end and one to each main door. These are cast resin details.

◇ Add the grab irons. The grab irons above the end sill are located above the cast on detail. There is an etched part to help bend these grabs from wire. I used 0.008, but 0.010 or 0.012 will work, too. Make a 90 degree bend in a piece of wire, put the bend through the hole and nest the other part of the wire in the groove. Clamp with pliers or tweezers at the "V" in the etched tool and make a second 90 degree bend... grab made! Drill holes (no. 80, 79, or 78 drill depending upon wire size and your comfort with small bits) above the detail on the end sill and then insert and attach the grabs. If a grab is not straight, you can remove and slightly bend the legs in opposite directions to adjust the tilt of the grab. Once satisfied, glue in place with ACC. Add the end bracket grab irons. These are created from two brackets plus a long "grab." I find it easiest to attach the right bracket (I pinned the bracket using 0.010 wire) first. I glued the right grab leg into the bracket with 0.010 styrene rod and then made holes to pin the second (left) bracket in place, using the left end of the grab to guide my placement efforts. After adding the second bracket, I glued the left leg of the grab in place, again using styrene rod. Note that the right bracket and left bracket are different. The right leg of the right bracket has a greater offset so it is longer. Take care! Repeat for the other end. Add the side grabs. The lower left grab is also a bracket grab... note that the right bracket is angled; this is prototypical. Follow the same general instructions as used for the end bracket grabs. The second (upper) grab is a traditional grab iron and would have been added to the prototype in the late 1930s. Note that the mounting of the upper grab will interfere with decal application so I tacked the upper grab and NBWs in place with Barge cement so I could paint them with the car body, remove them for decaling and then reinsert them for weathering.

◇ Add the grab irons to the left edge of the car side. Note that as-built the cars had only a single grab at the left edge of the car side. A second grab was added later, with photos in the '40s displaying two grab irons. The upper grab iron is slightly different in that there was not a circular protrusion around the mounting area on the right portion of the grab, as on the one below it. See photos for clarification. Use the same techniques as noted for the attachment of other grab irons.

◇ Add the uncoupling devices to both ends. These include an etched metal bracket and then wire you must bend to simulate the devices. Before the bracket is attached, make "u" shapes in the lower parts of the bracket. Consult the photos for guidance. Drill a hole adjacent to the draft gear end sill bracket to accommodate an etched eye bolt. Bend wire (I used 0.010) to the shape of the uncoupler (note that the one on the B end incorporates a "curve" to go around the hand brake rod.) Slide the eye bolt on to the uncoupling rod and insert the eye bolt into the hole you drilled and have the handle pass in the center of the bracket at

left with the lever resting into the right "u" you bent into the etching. Secure everything in place with ACC. Consult photos for guidance!

◇ Add the brake wheel from the Tichy brake sprue, secure with ACC, and trim the brake staff if necessary. Add the angle cock/air hoses into the brackets and secure with contact cement followed by ACC.

◇ Add the upper door stops. These are bent etched metal parts. They should nest somewhat "into" the plane of the face of the structural members, using the bottom of the flange at the top of the sides as a surface for gluing. Also use adjacent surfaces as places to add glue. I used the Barge cement/MEK slurry to tack them in place, followed by ACC to secure everything.

◇ Add the sill steps. These are etched parts. I pinned mine to the car using 0.010 wire. The upper part (where the mounting holes are located) must be rotated 90 degrees relative the rest of the strap to replicate the prototype. This may sound a little confusing, but a look at the photos should help. I held the upper part with pliers and then grasped the "lower" part with other pliers and gently twisted 90 degrees. It's easier than it sounds, but if you are skittish, you can practice on some of the plain etched strap that holds the etching sheet together.

◇ Construction is complete! *The sill steps, upper door stops, and other details are fragile. If you or anyone else is handling the model, I strongly suggest that you grasp by the doors, from the top, with fingers on one side and thumb on the other. Pick up before tipping to prevent any damage to the sill steps. The parts are quite durable if the model is handled correctly.*

◇ Before painting the model, we recommend lightly [sandblasting](#) all metal and engineering plastic surfaces with [aluminum oxide](#) to ensure that the paint will not chip or flake. This should be followed by a washing using liquid dishwashing detergent and a soft toothbrush, taking great care to avoid delicate parts and assemblies. Rinse thoroughly and allow to dry completely.

◇ We highly recommend painting using an airbrush. Prime the model with your choice of primer. The pilot model shown was primed with grey primer from the Badger Stynylres line. The sides, roof, ends, and underframe were painted with MiG Ammo ATOM Rotbraun RAL 8012 (ATOM-20046.) This is a red hue that, to my eye, matches the color of many Milwaukee single sheathed cars and stock cars I have seen in color photos. The trucks and wheelsets were painted with Tamiya black. Add [a gloss coat](#) to aid in decal adhesion.

◇ For decaling, our recommended approach is to apply the decals with only water. After sliding them in place (with a dull object) let them dry *mostly*. Apply decal setting solution by touching the edge of the decal with a brush that has the solution on it and letting capillary action pull the solution under the decal. Again, let the decals dry thoroughly. After they have dried again, add setting solution over the entire decal and let that dry (and don't panic if the decals wrinkle or pucker a little when wet). After they have dried yet again, using a sharp knife, slit any areas where there are bubbles or silvering. Add setting solution. Keep repeating until all traces of air are gone. Add a gloss coat to seal the decals and hide the edges of the film. Add a flat

coat. Weather to your preference, add reweigh and repack stencils, and [chalk marks](#), and your model is ready. Congratulations!

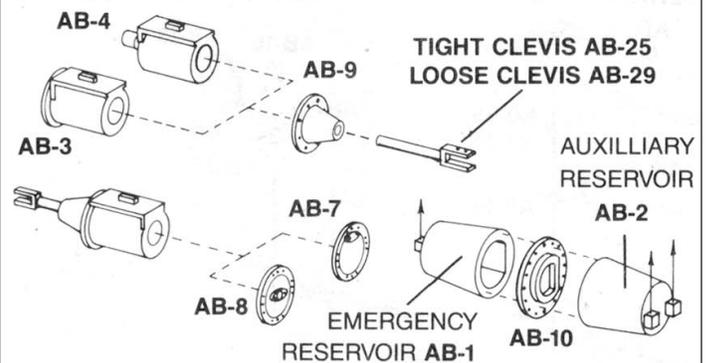
Thank you to:

- ▶ [Cartograf](#)
- ▶ Ron de Pierre
- ▶ [Tahoe Model Works](#)
- ▶ [Moloco Trains](#)
- ▶ [PPD](#)
- ▶ [Tichy Train Group](#)

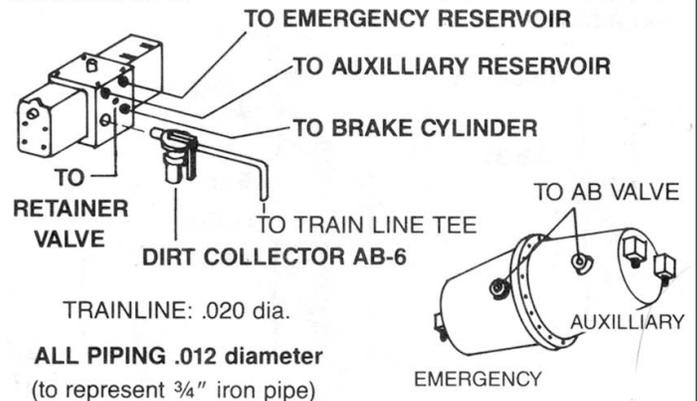
TYPE "AB" BRAKE SYSTEM PART #3013

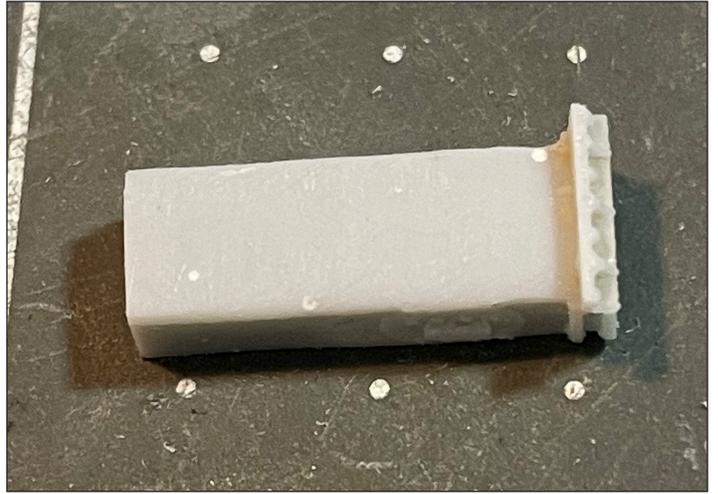
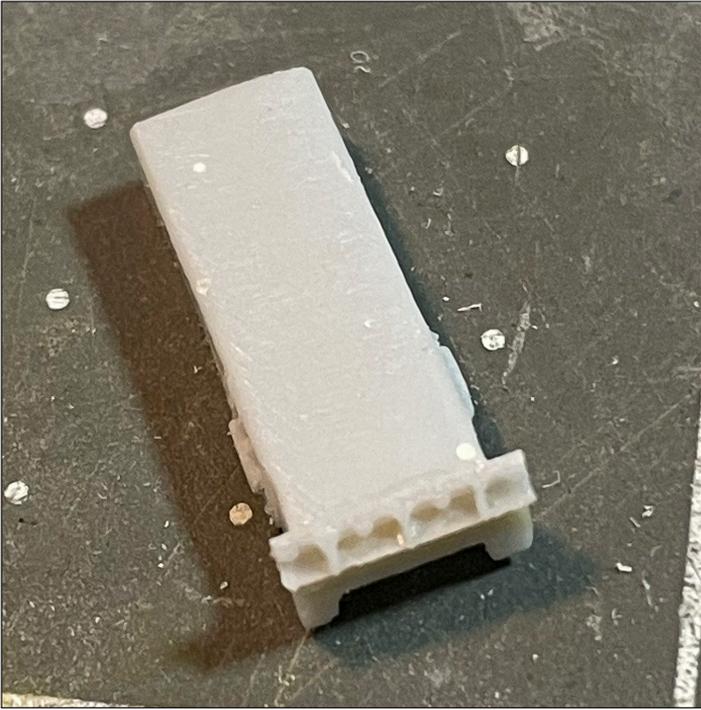
The major components are provided as multi-part assemblies to best represent the detail of the prototype, as well as allow you options to suit your specific application. The illustrations are a guideline only — refer to drawings and photos for your prototype. Several parts are included that are unique to specific TICHY TRAIN GROUP kits, and are referenced in the kit instructions.

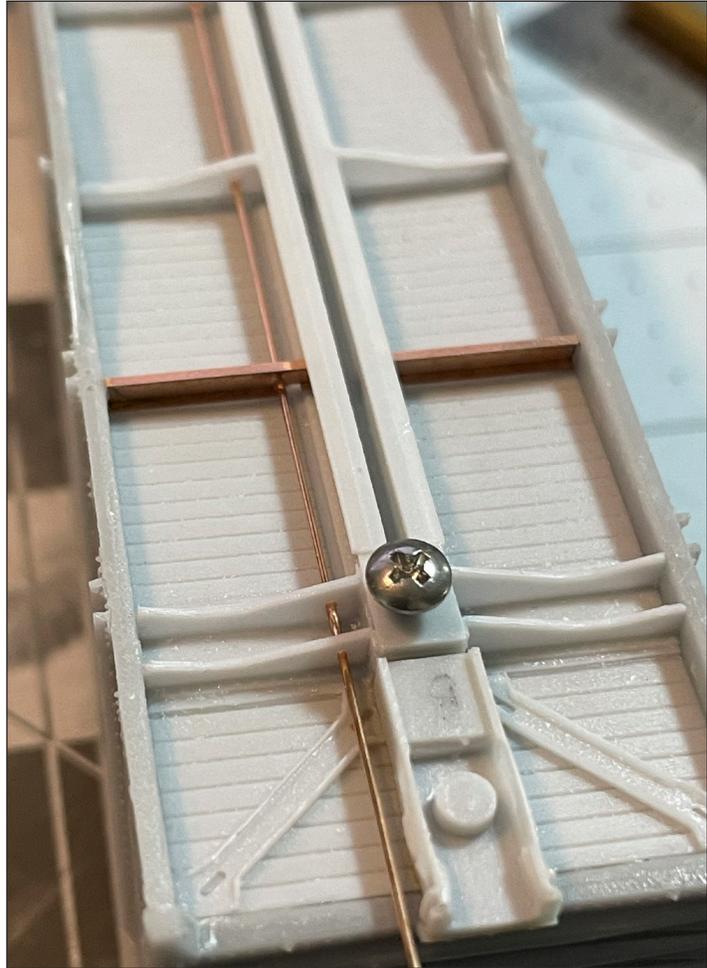
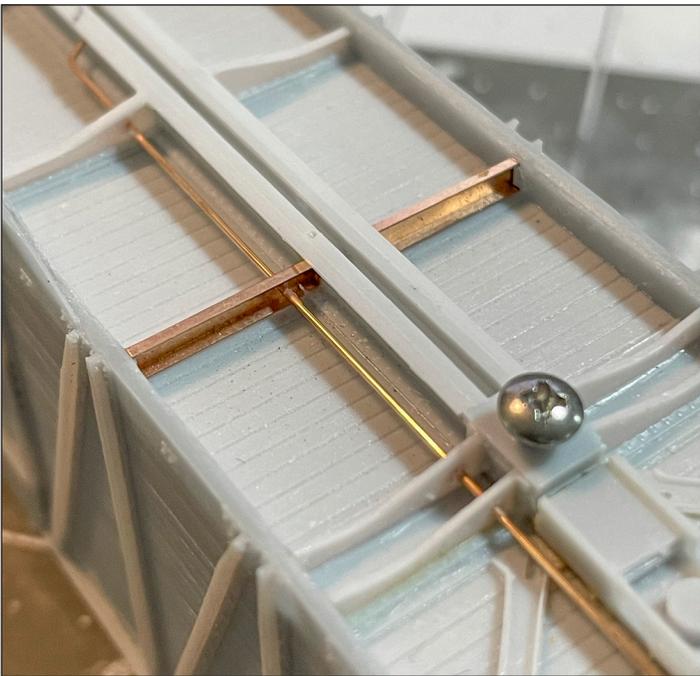
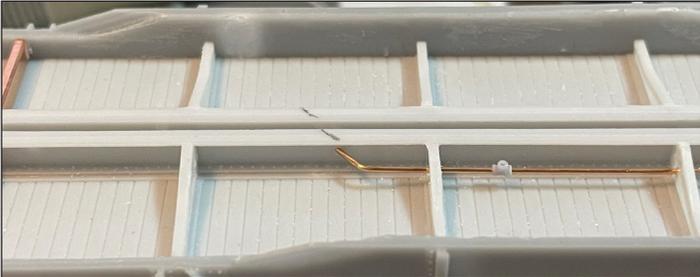
Choose either **FLANGED AB-3 or CAST AB-4 (modern) BRAKE CYLINDER**

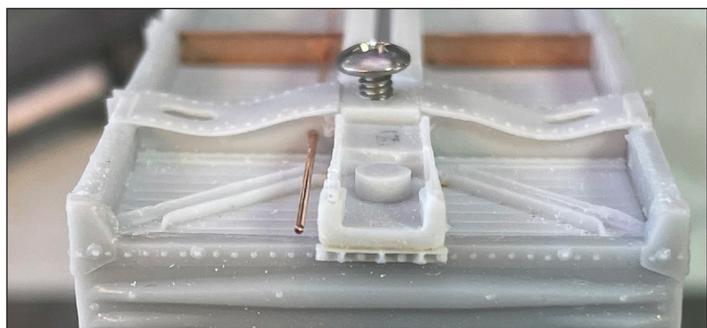
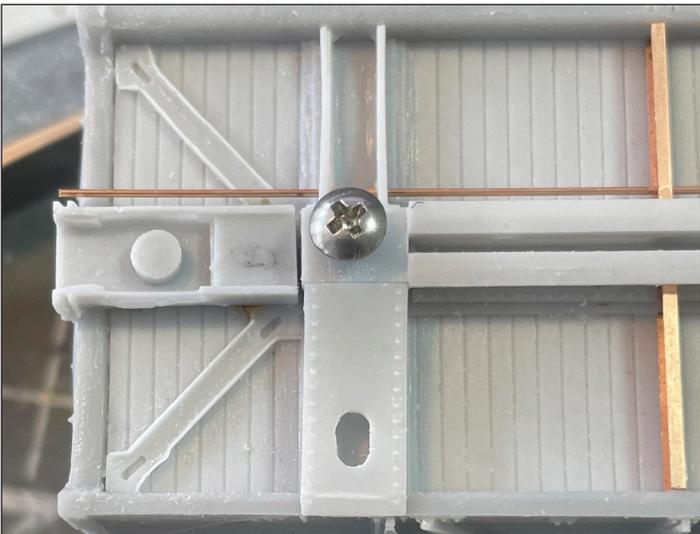
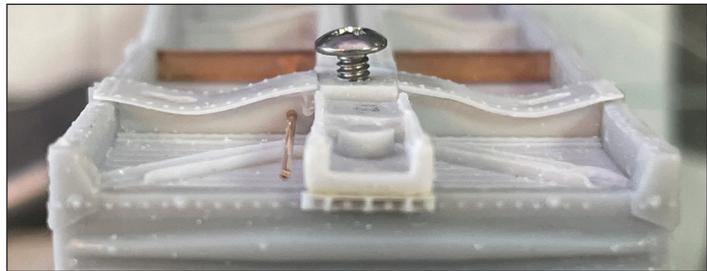
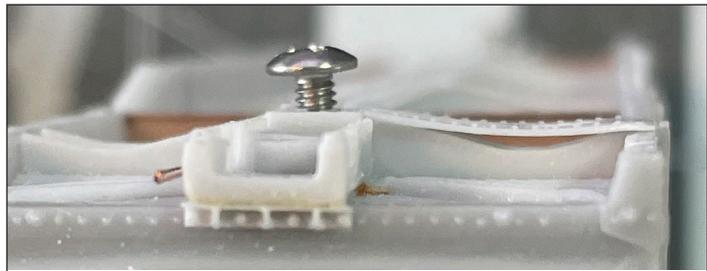
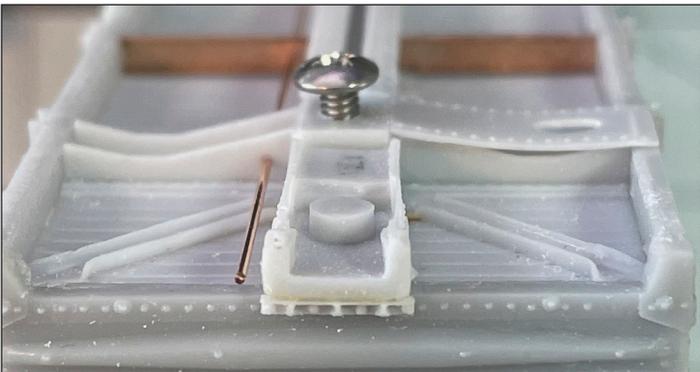


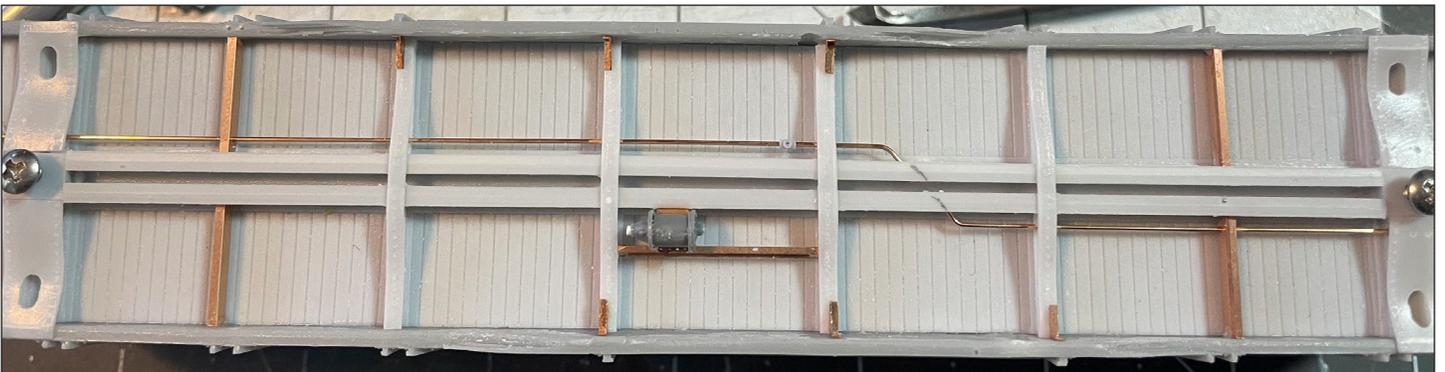
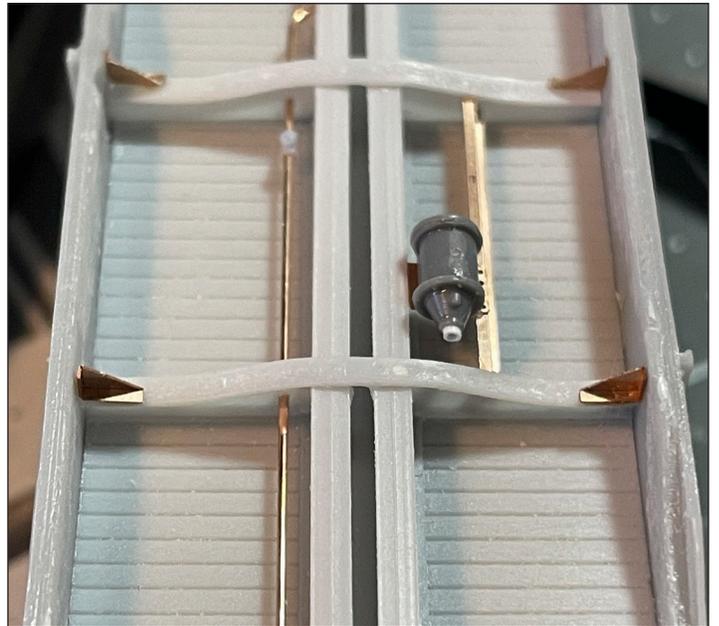
AB VALVE AB-5

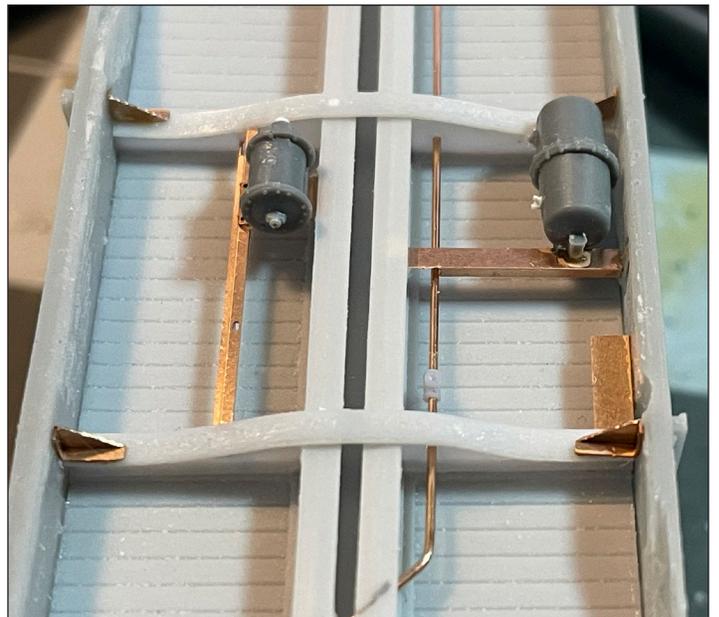
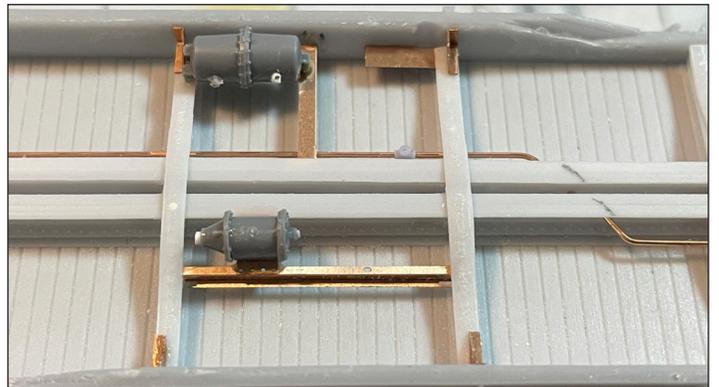
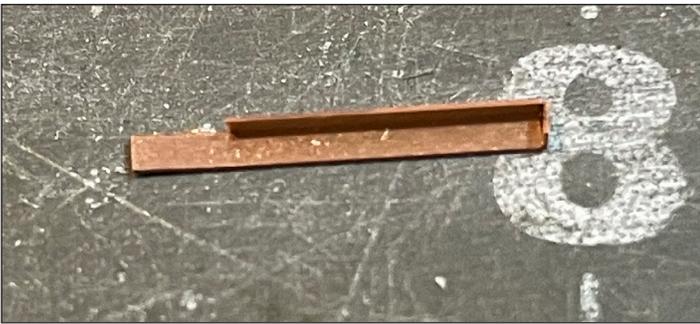


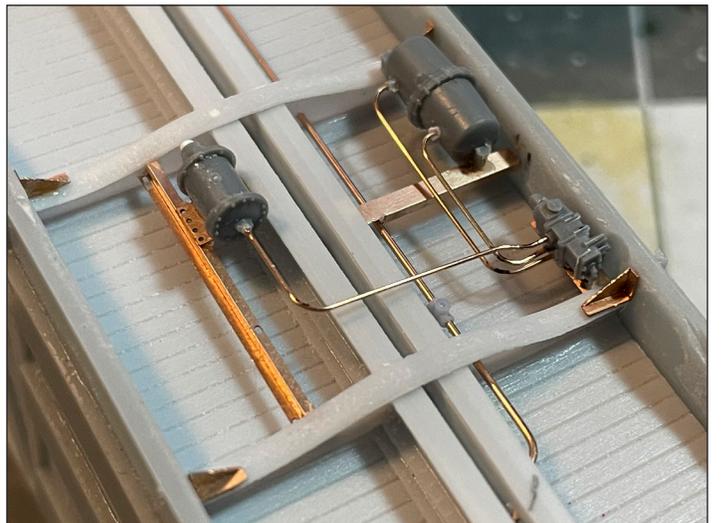
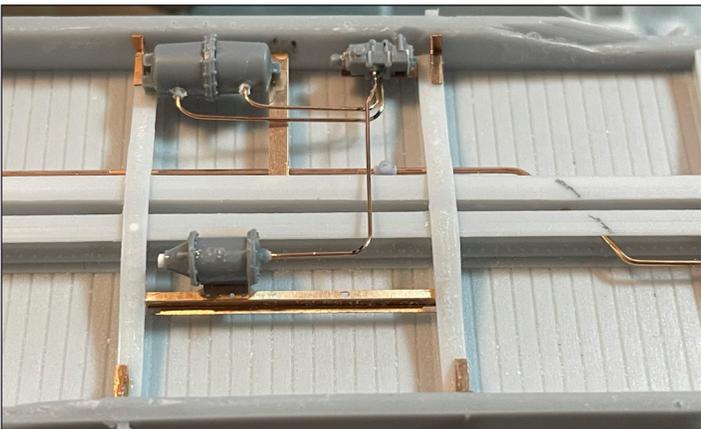
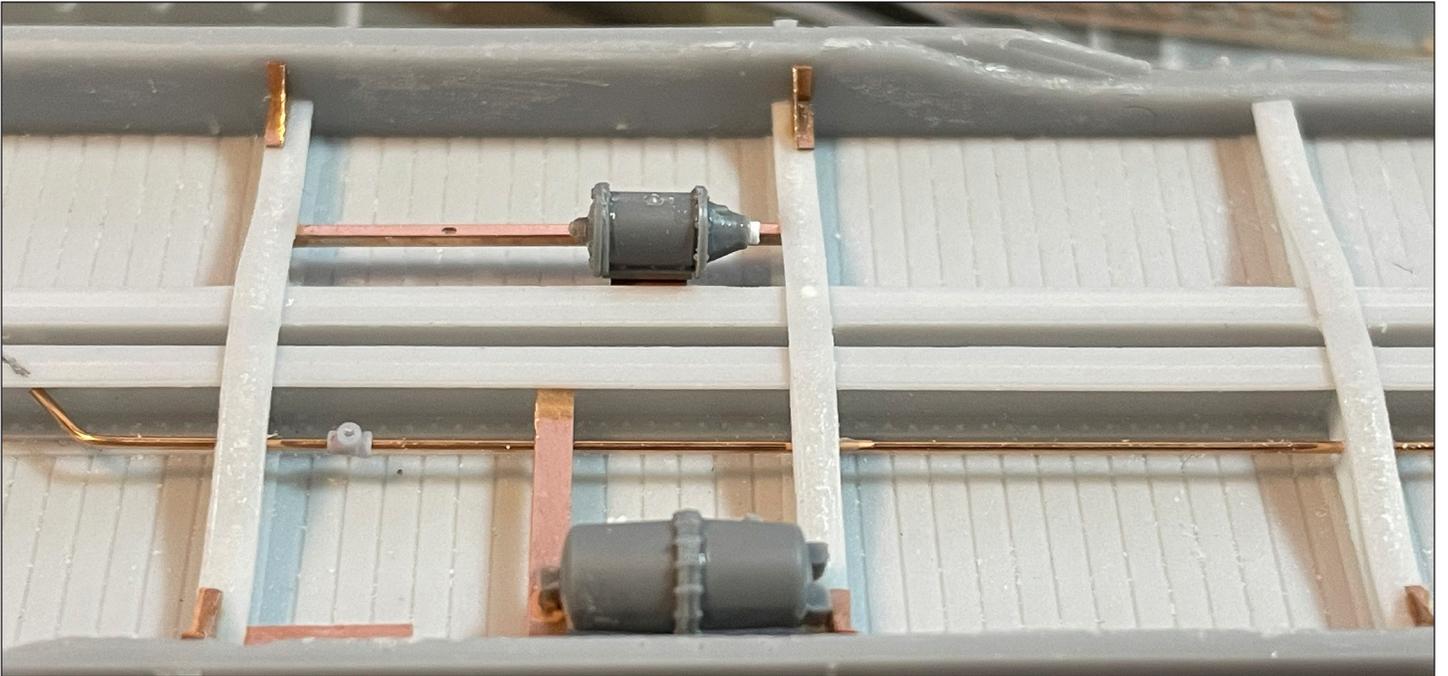
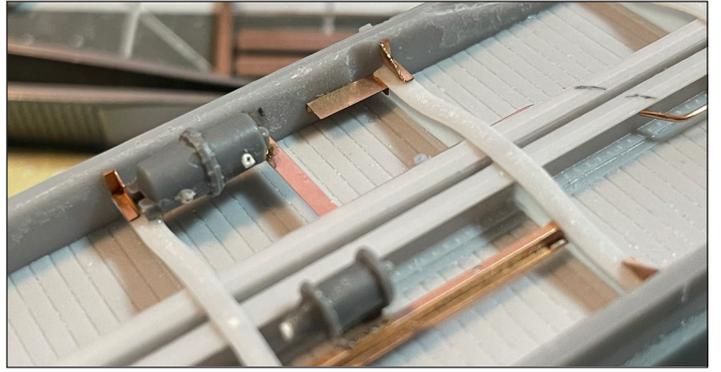
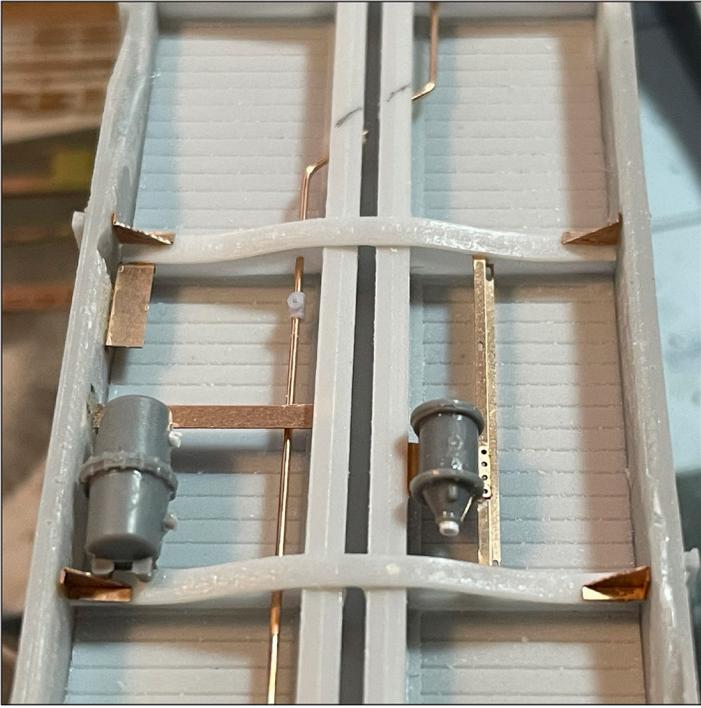


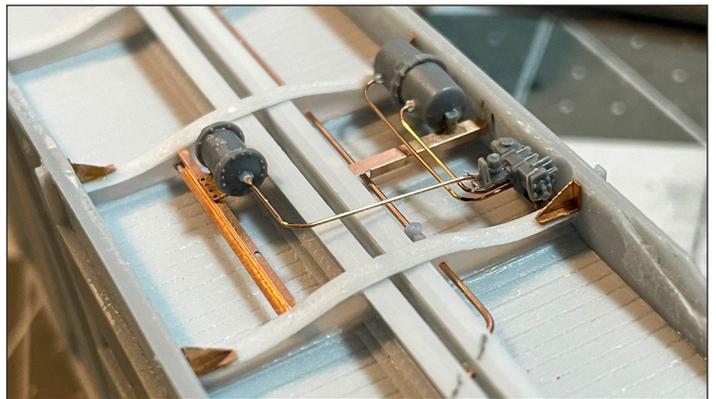
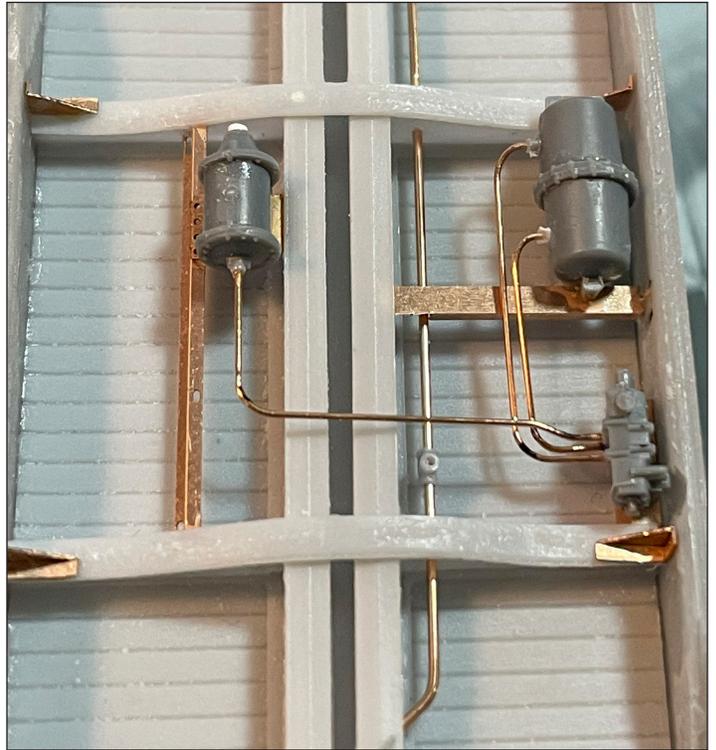
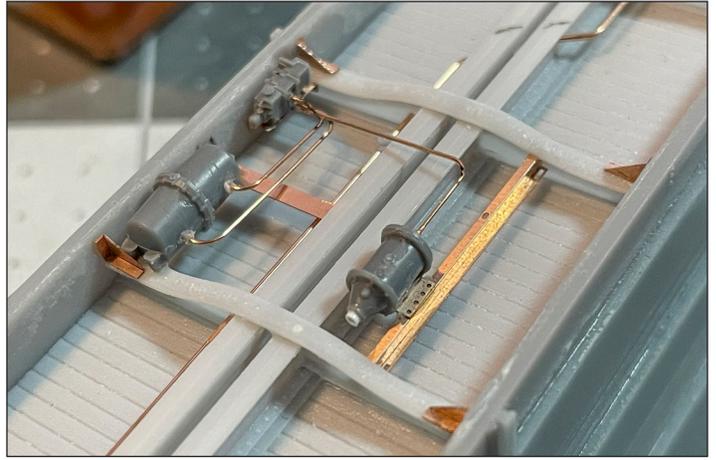
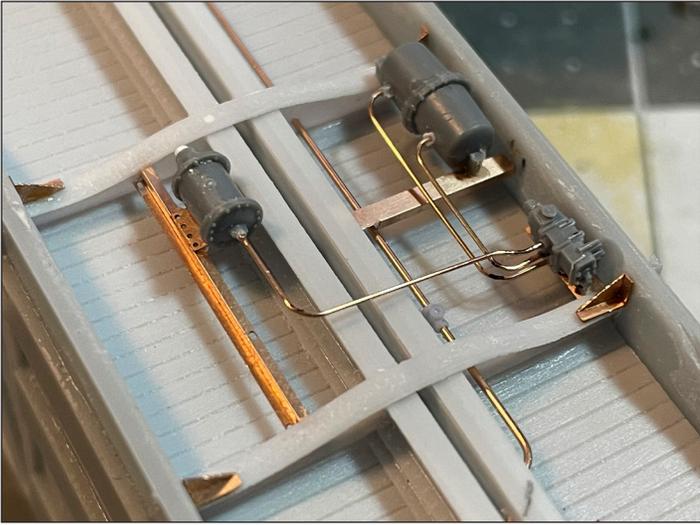


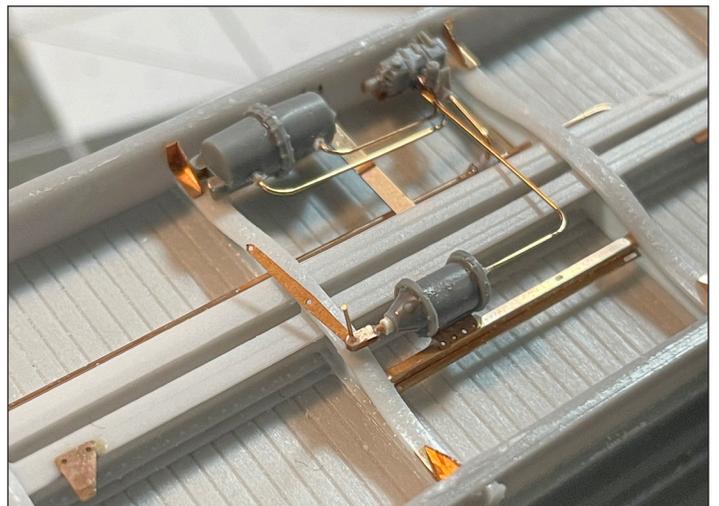
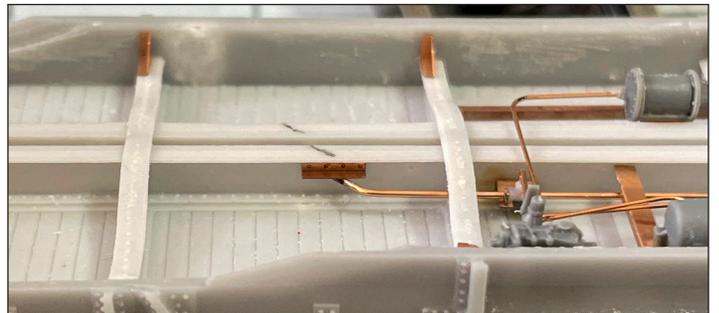
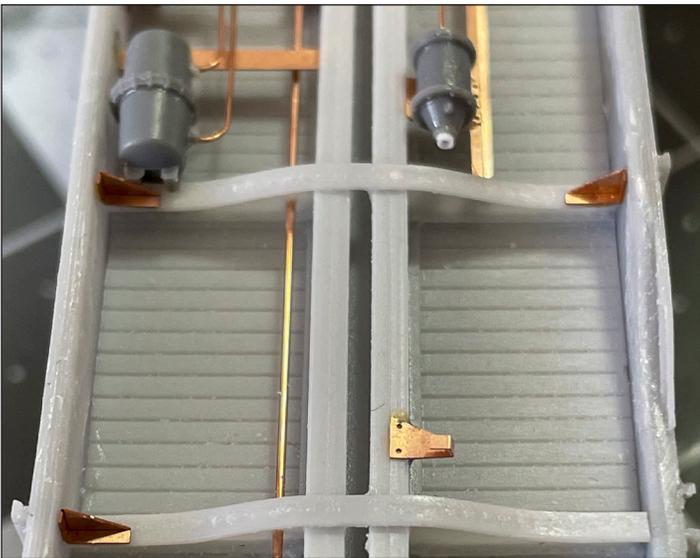
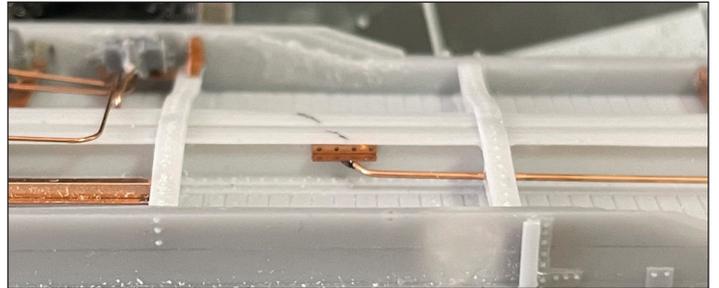
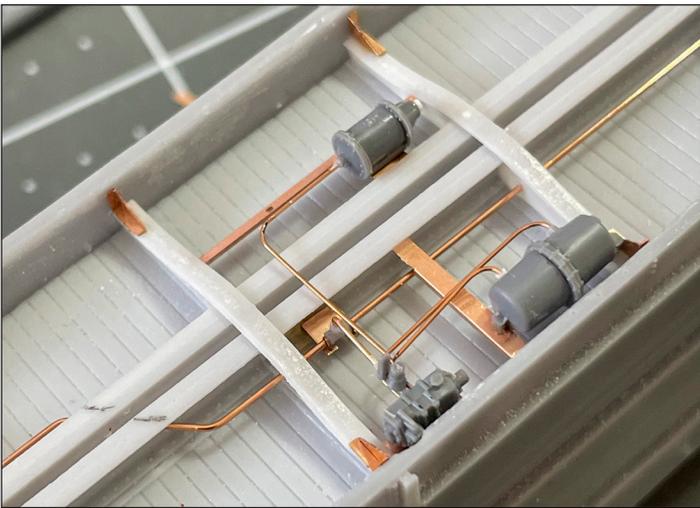
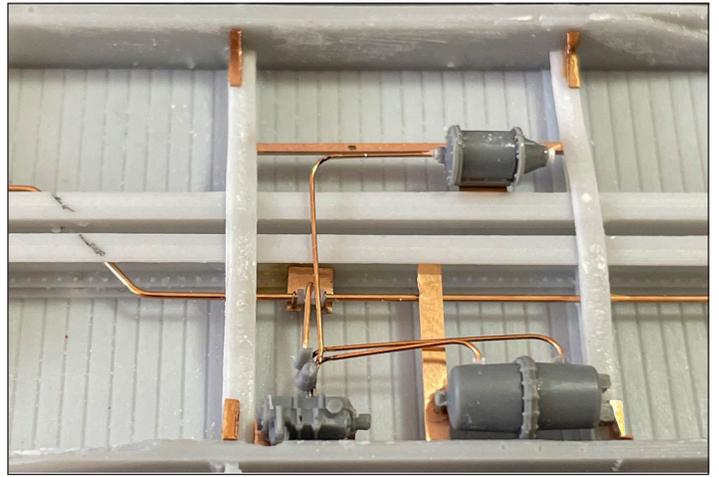
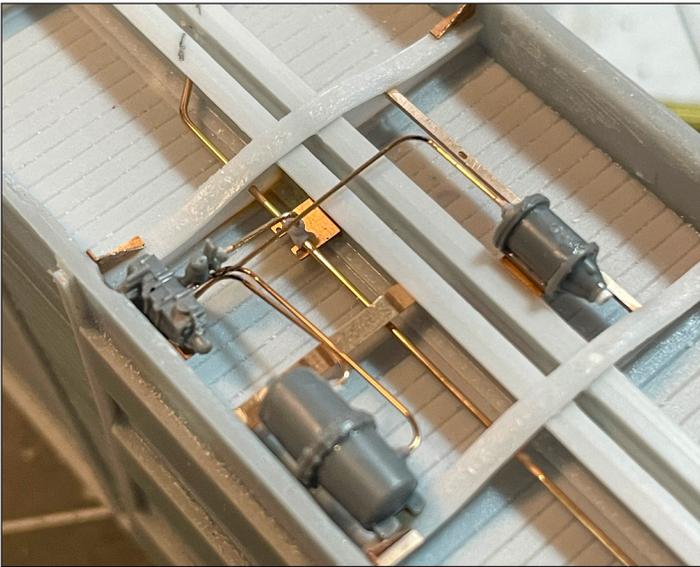


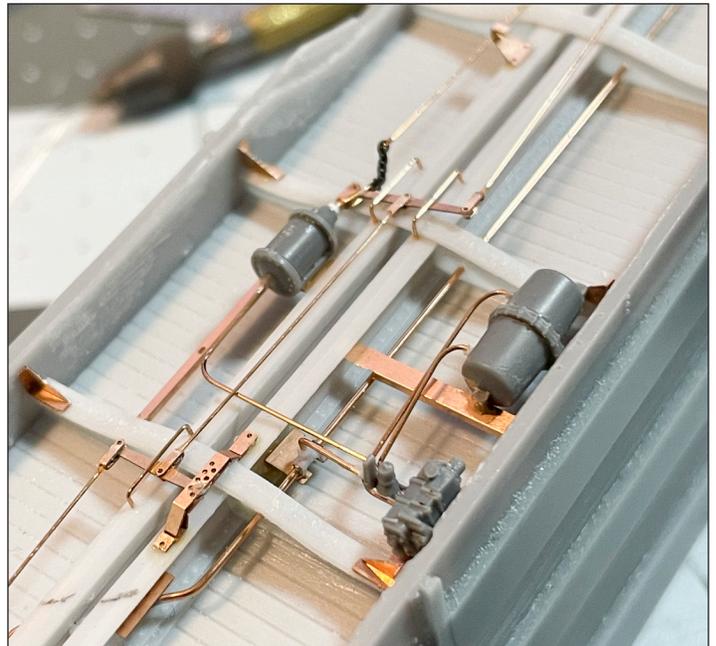
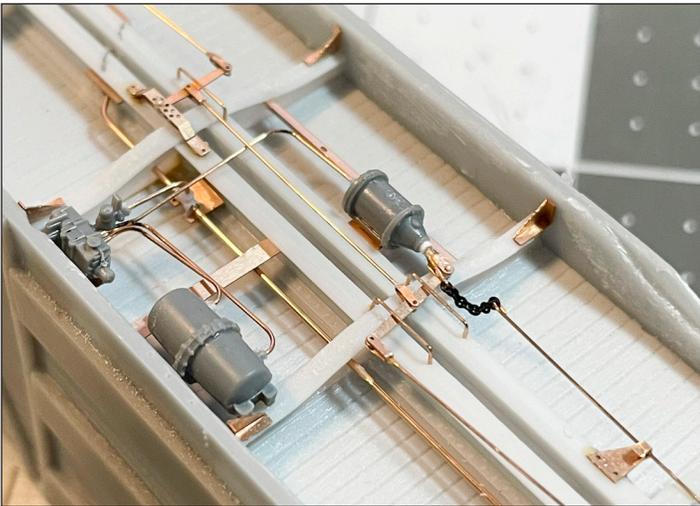
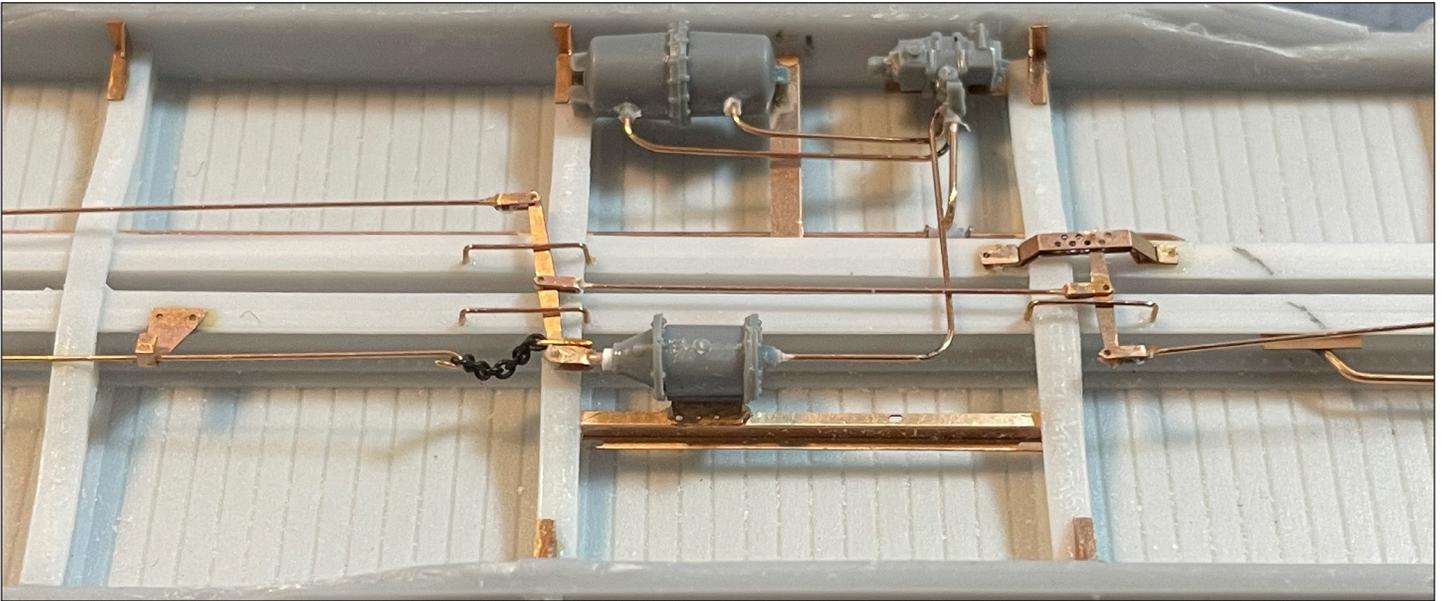
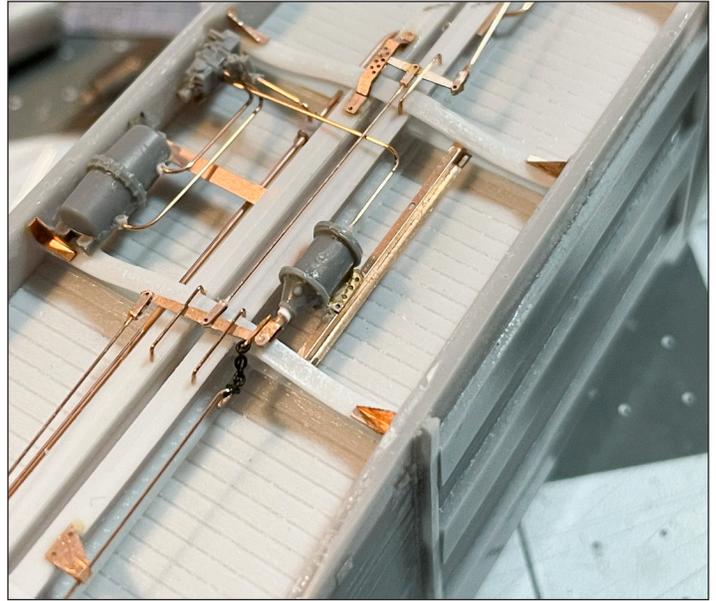
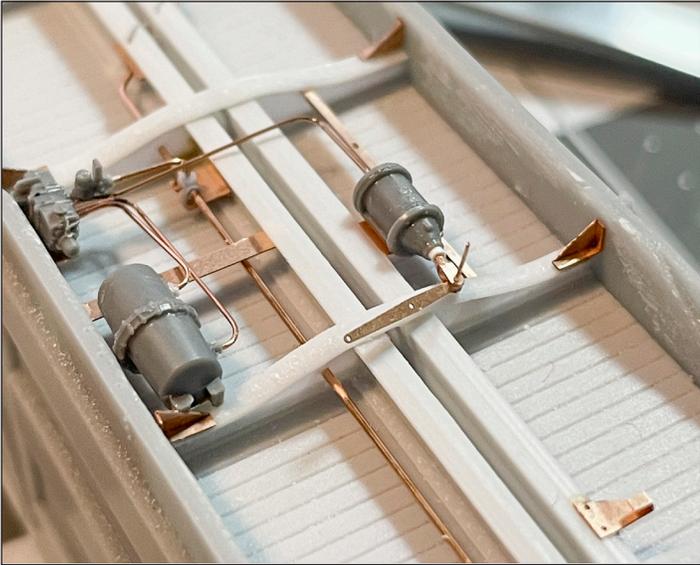


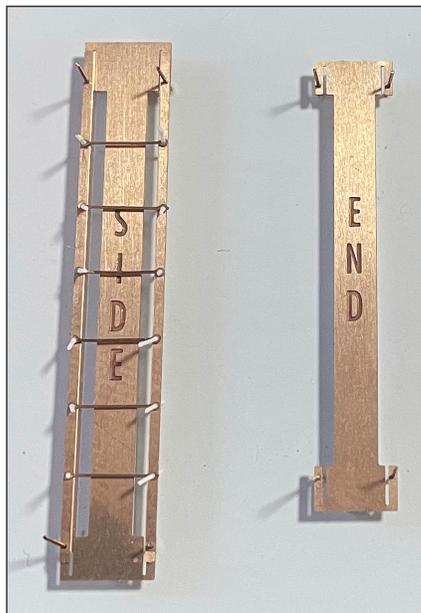
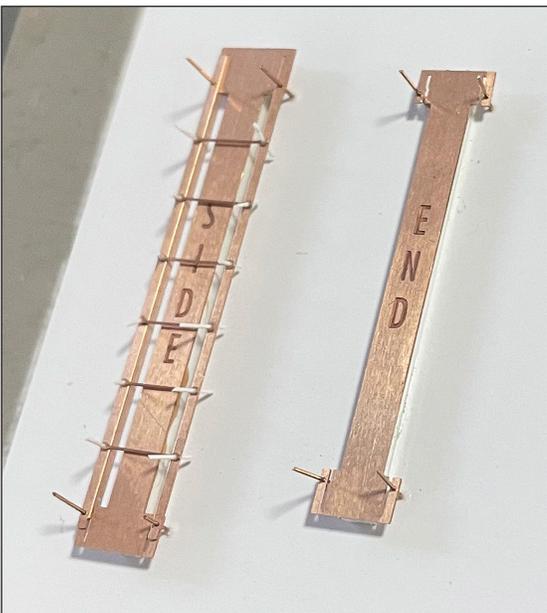
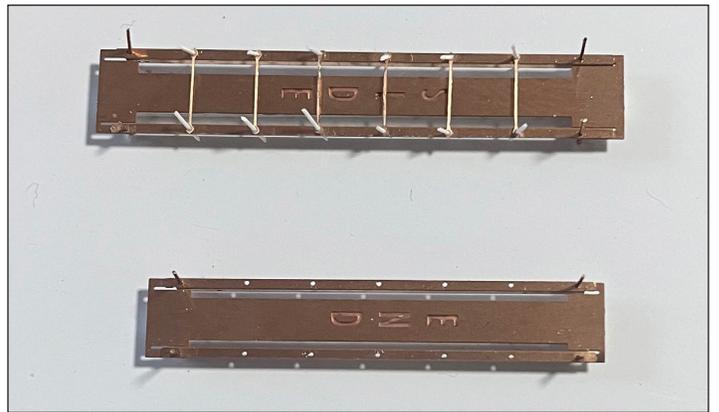
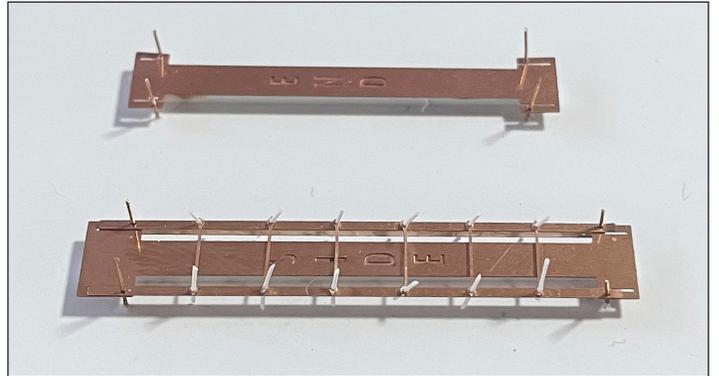
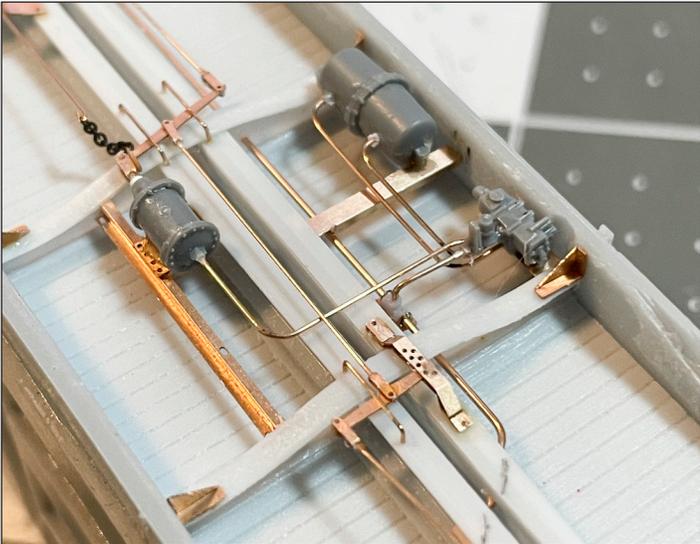
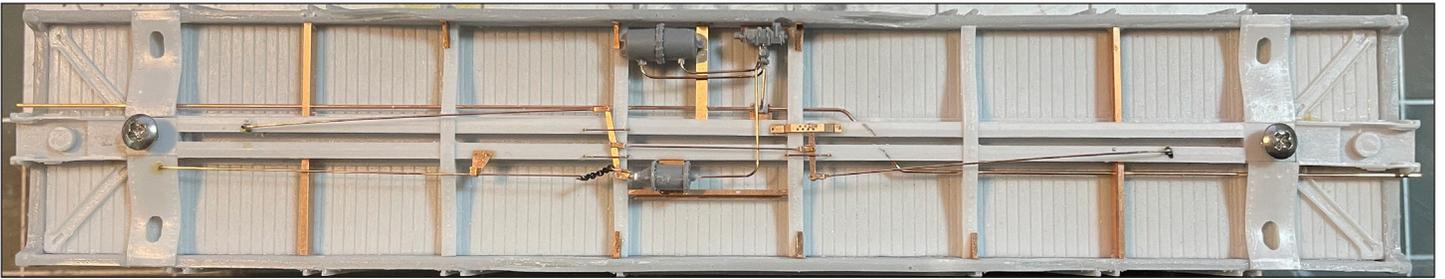


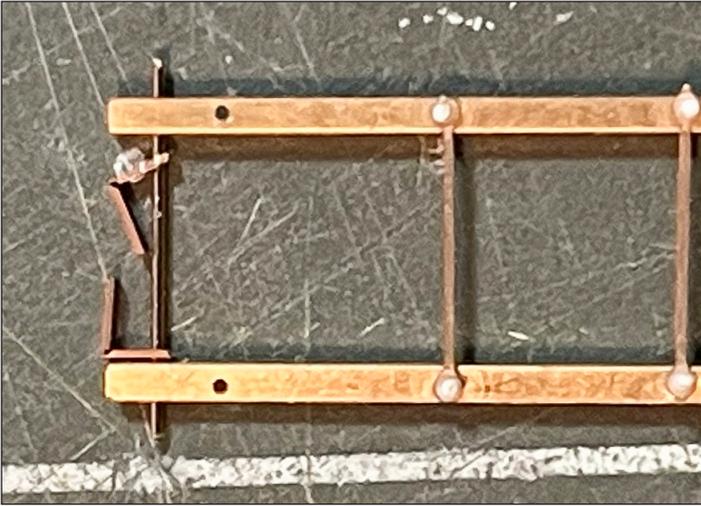


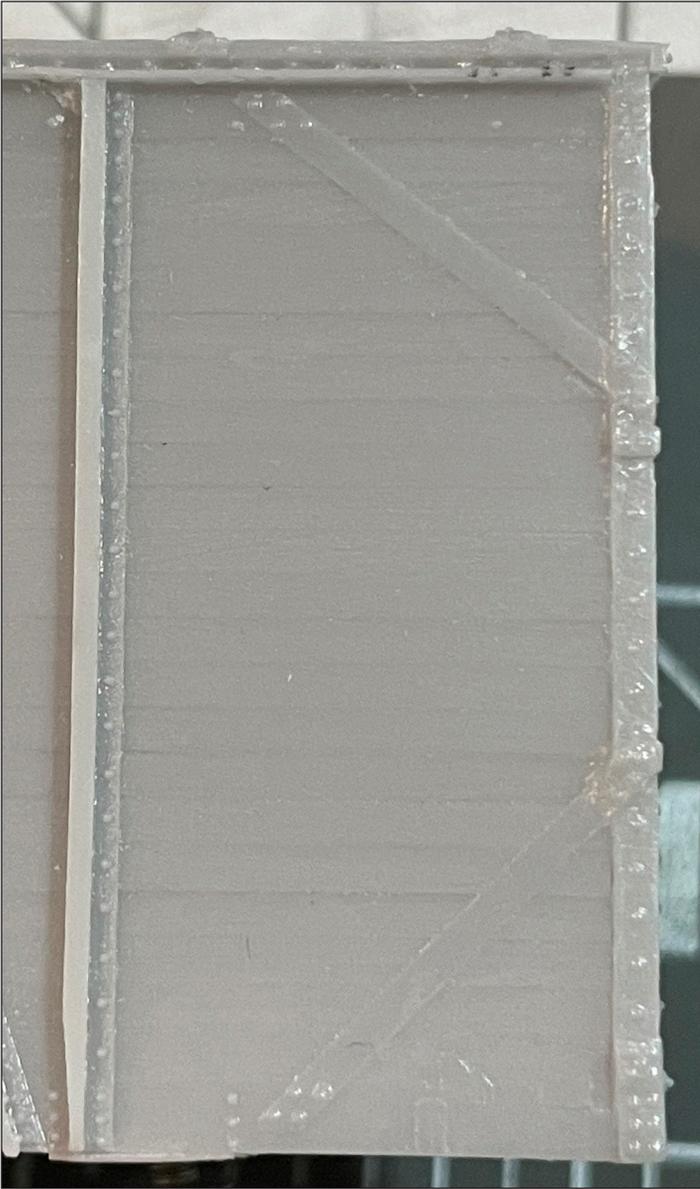


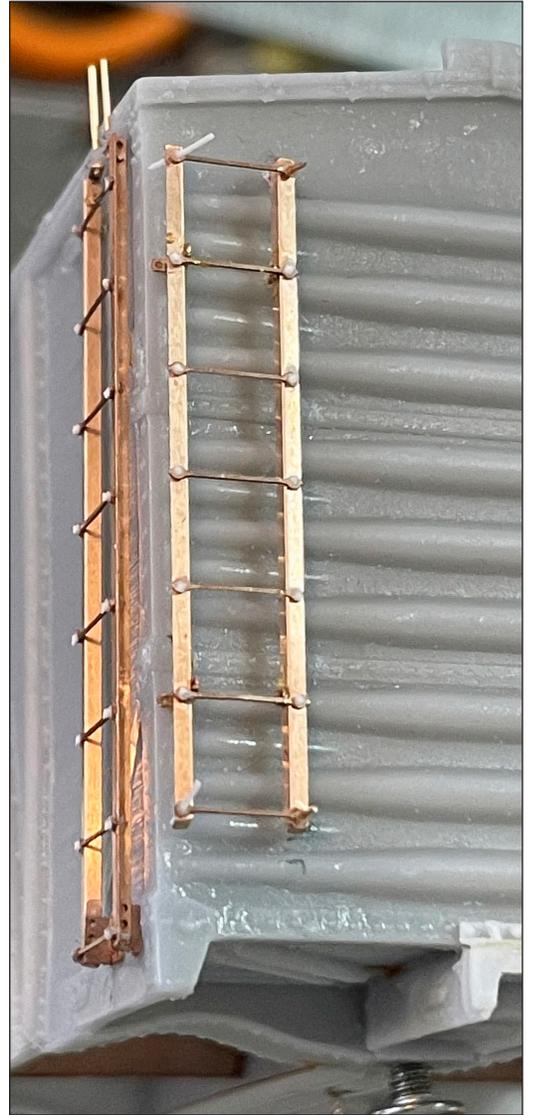
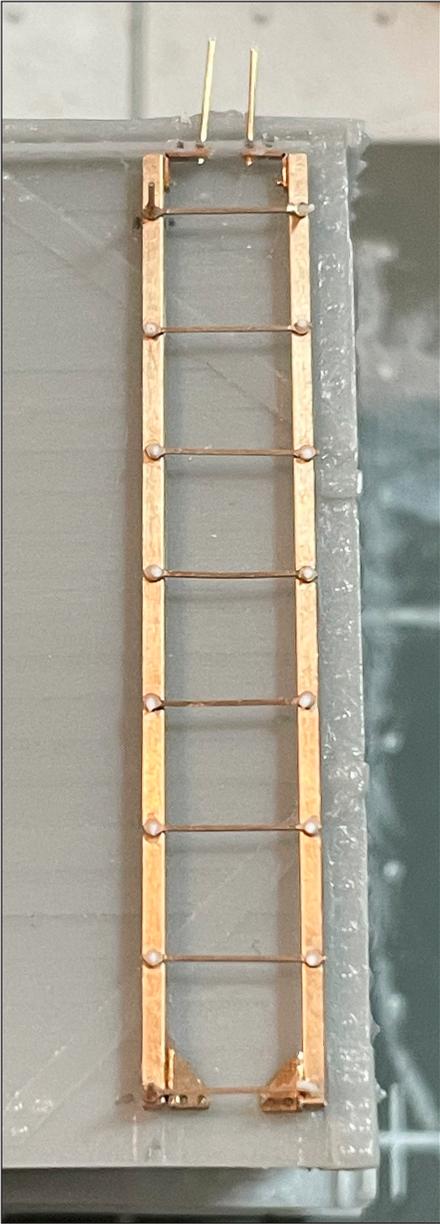


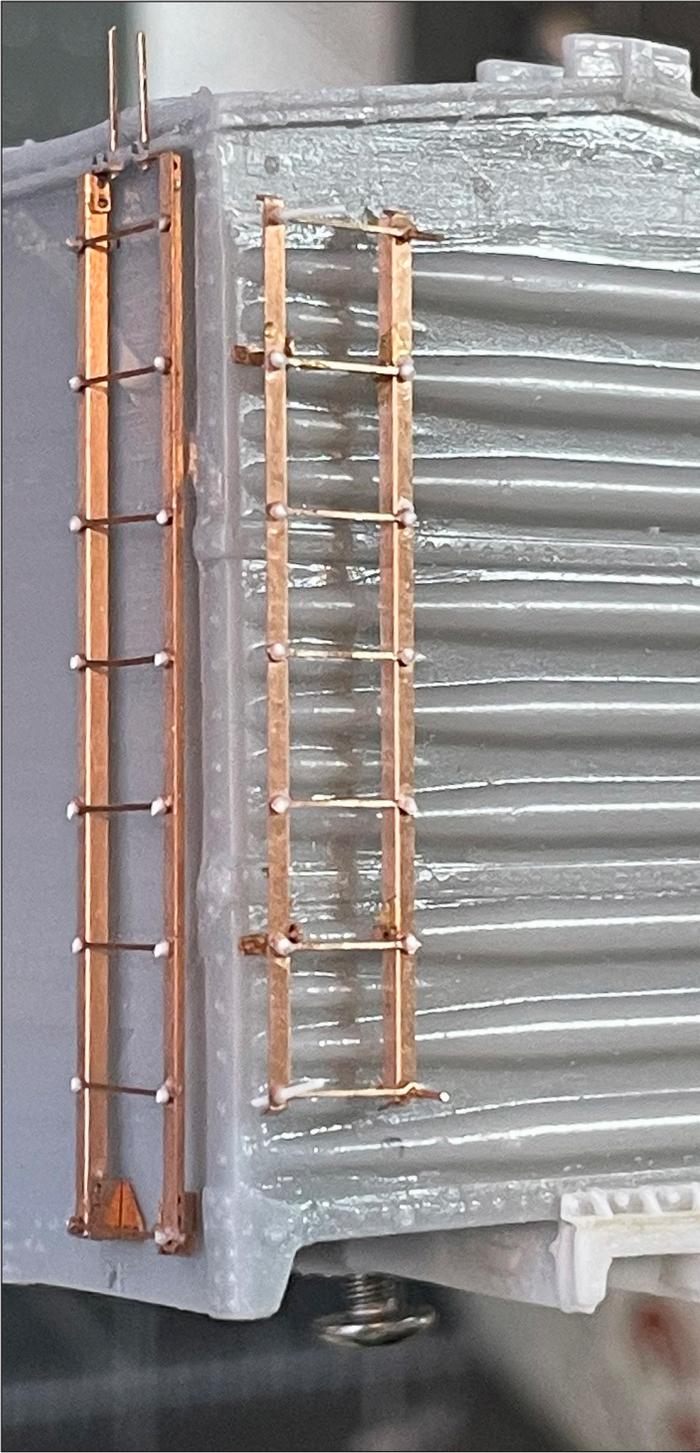


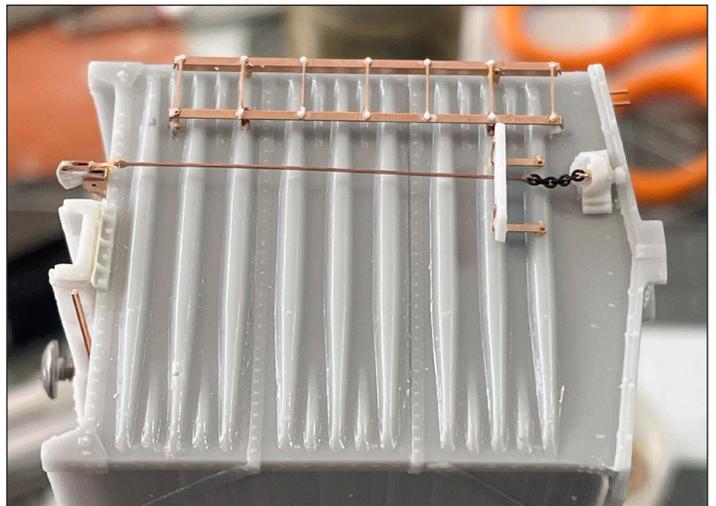
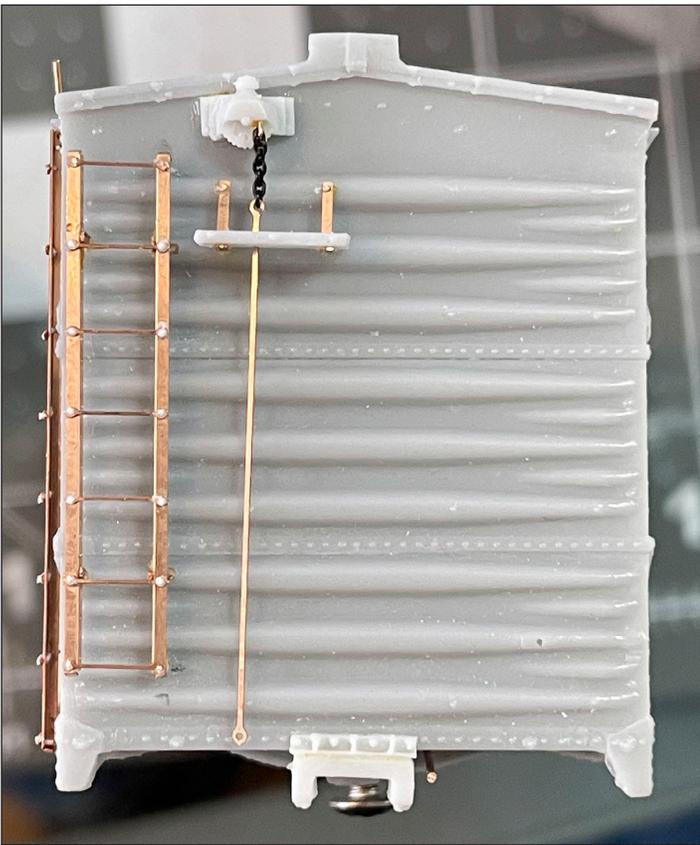
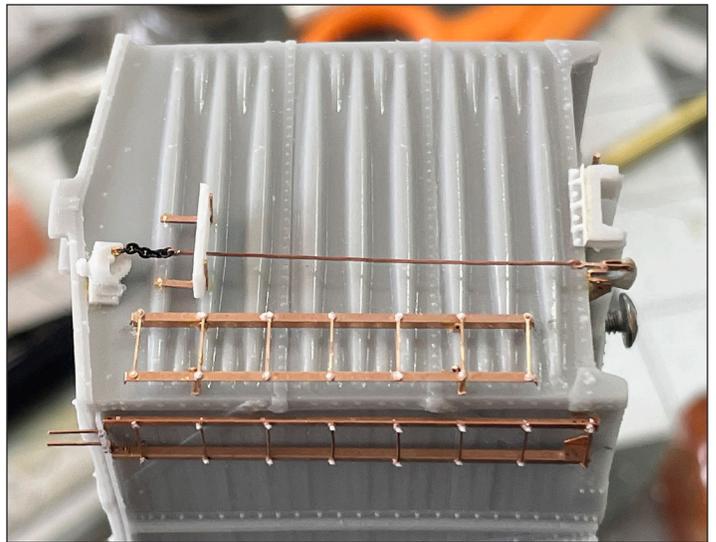
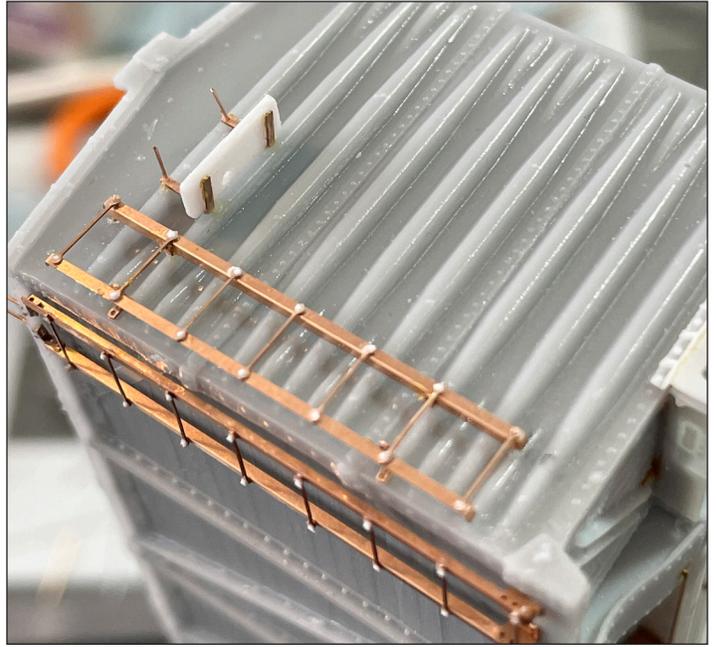
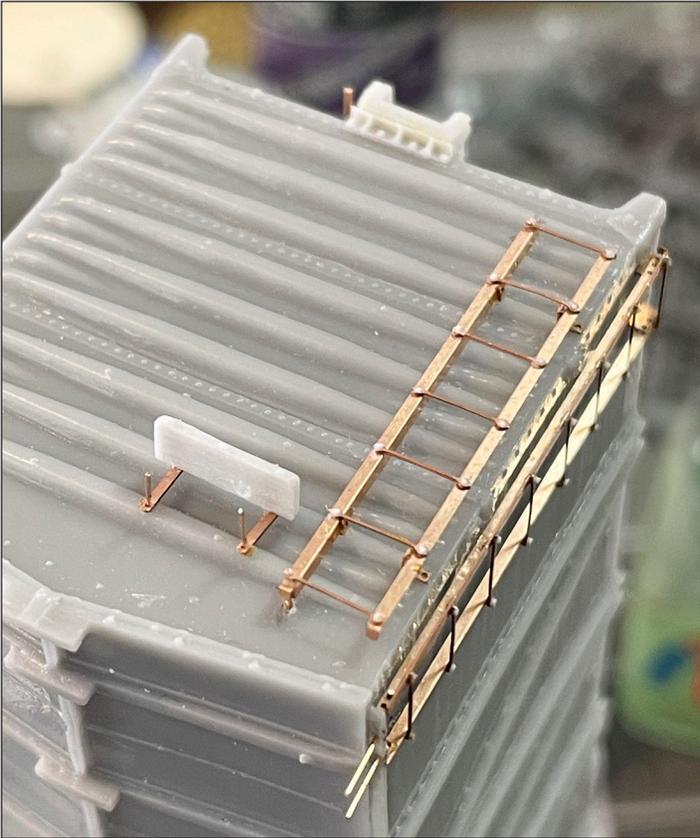


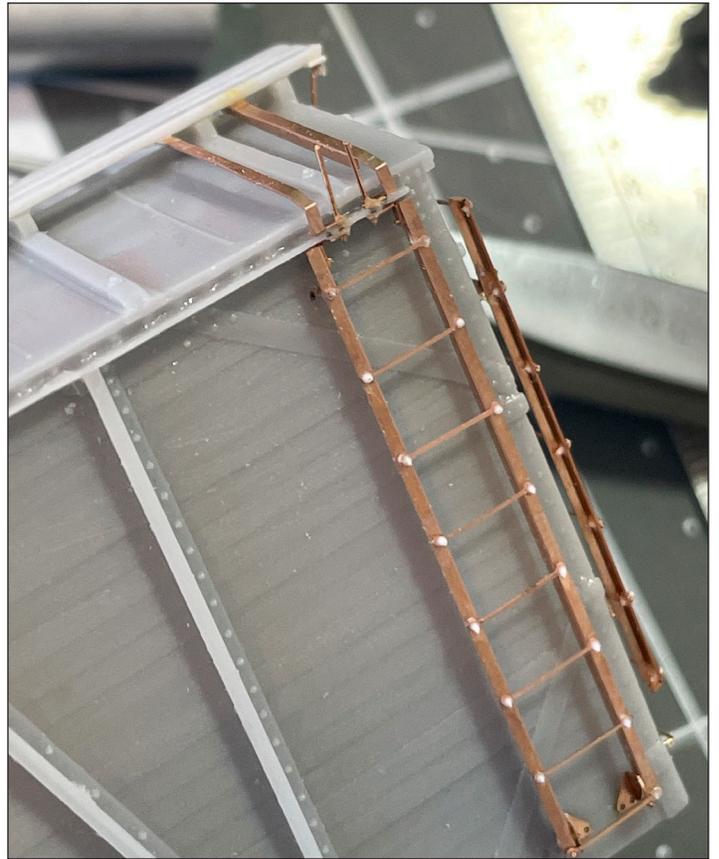
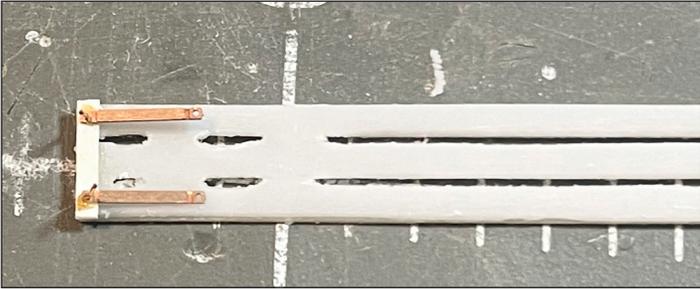
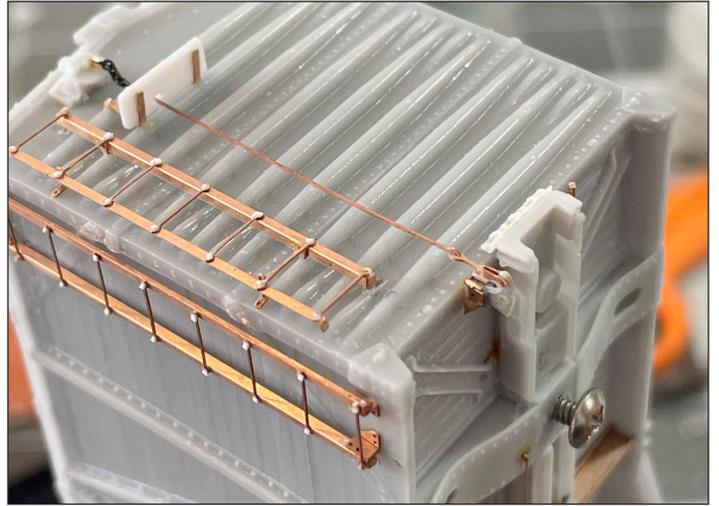


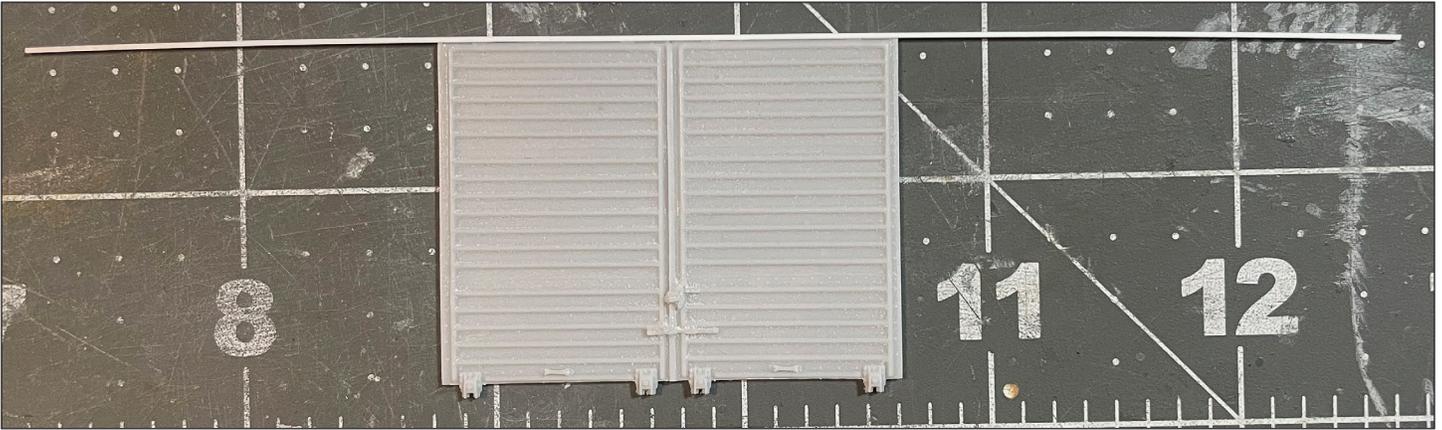
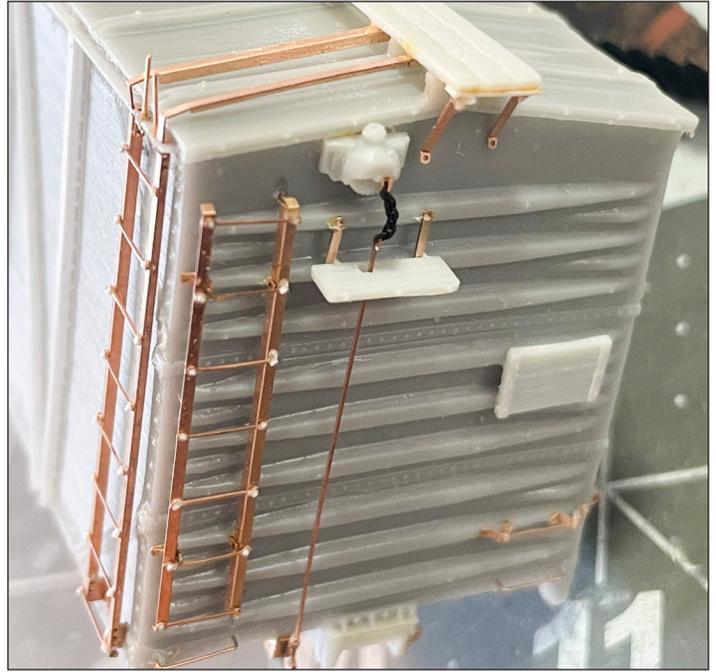


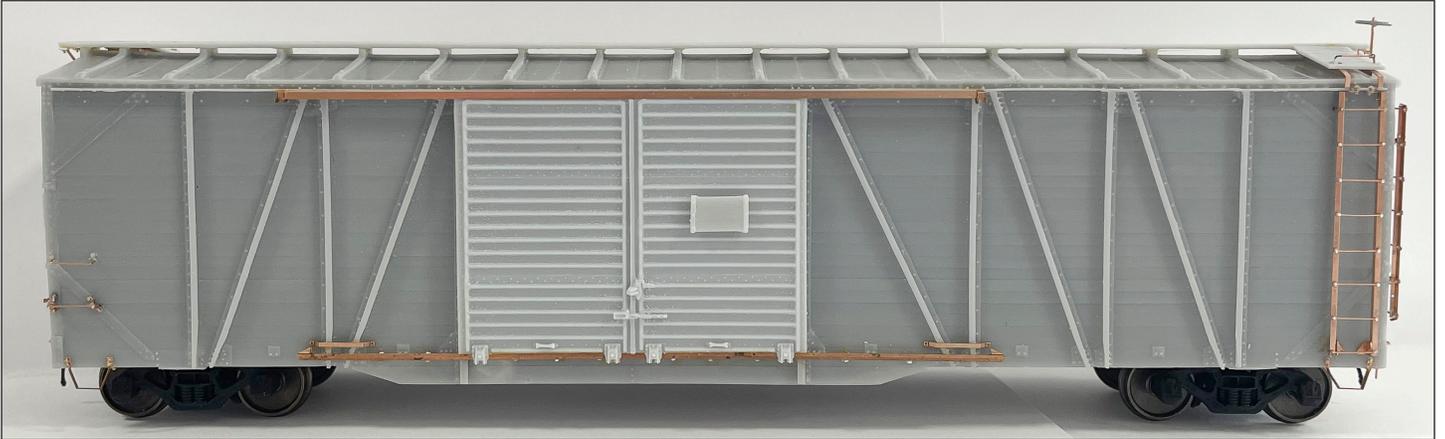


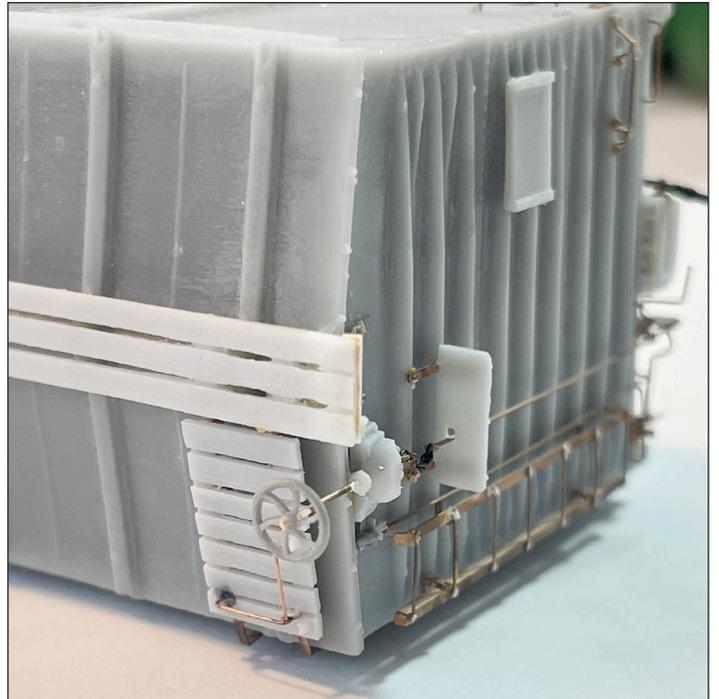
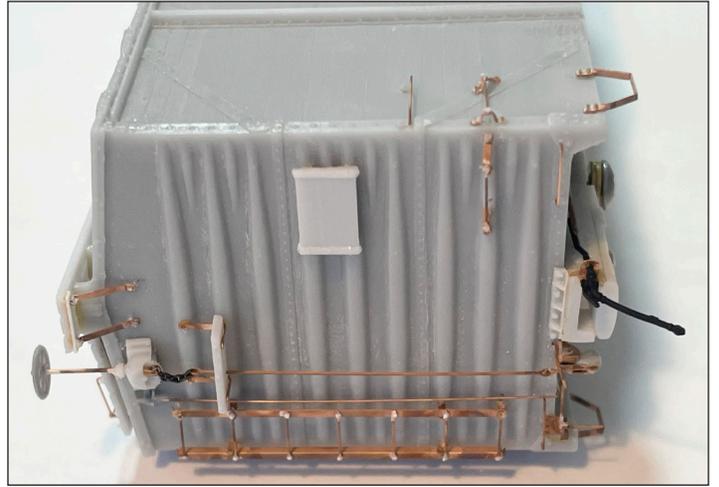


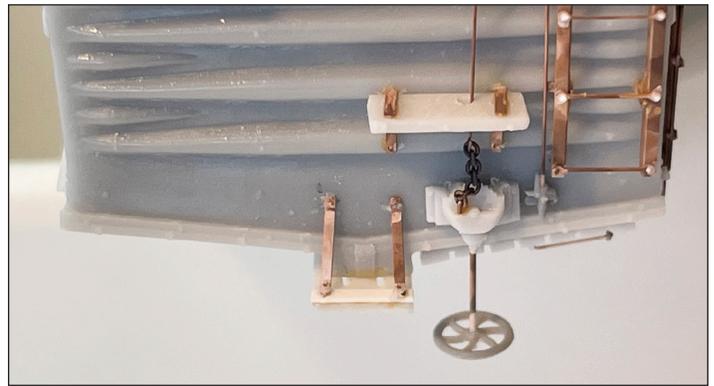
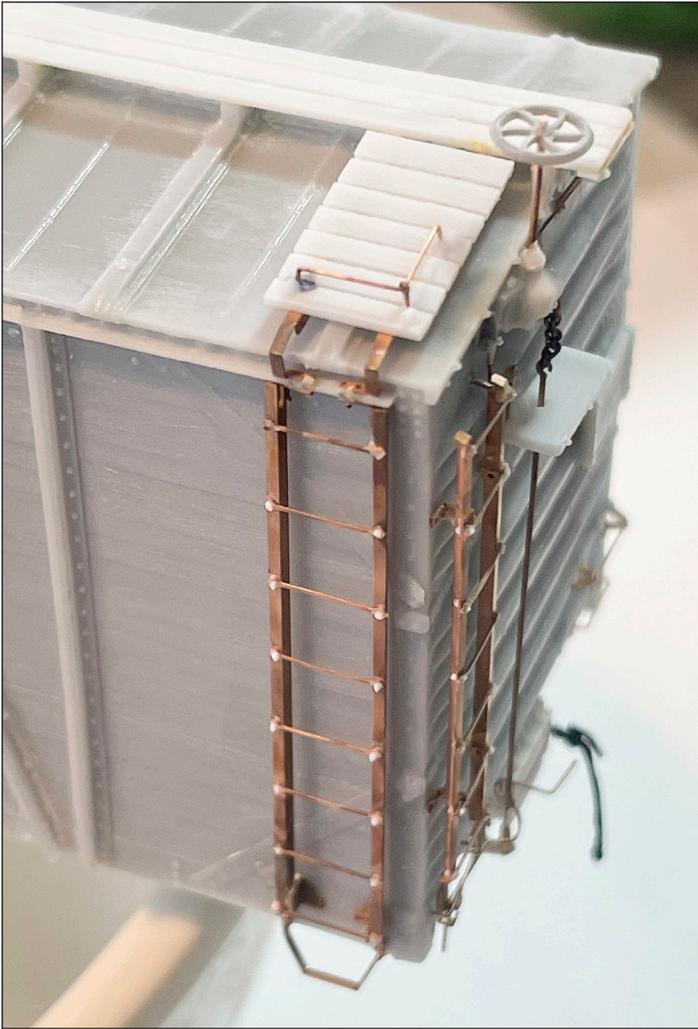


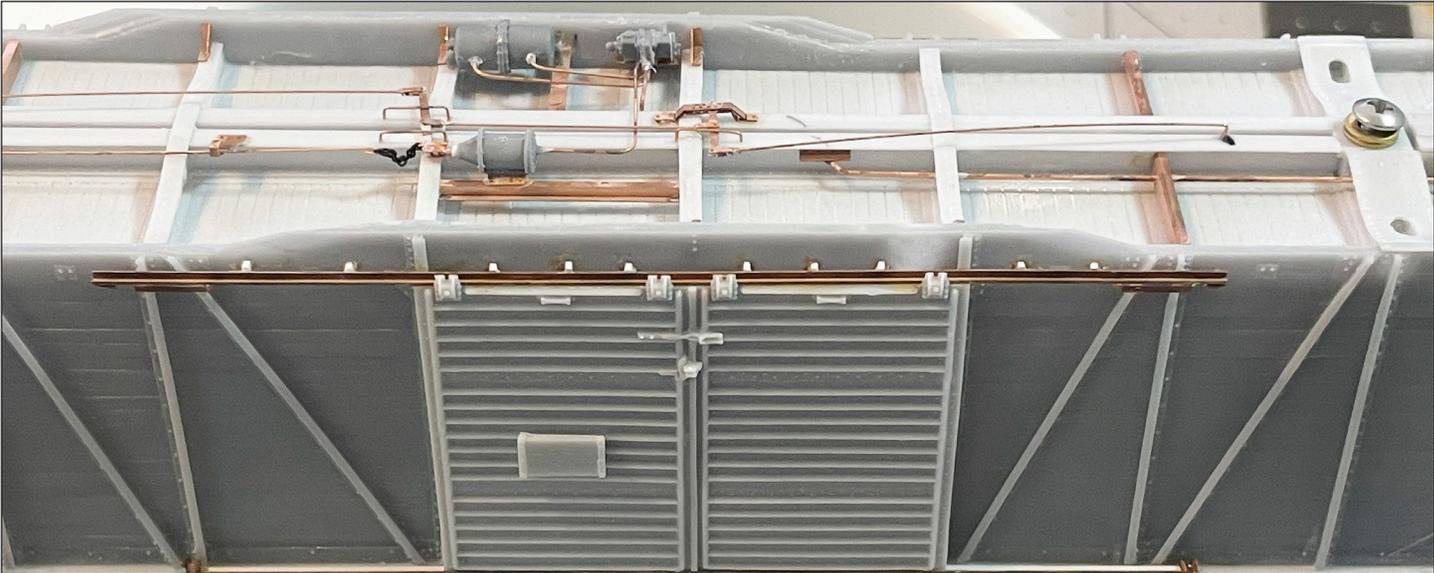


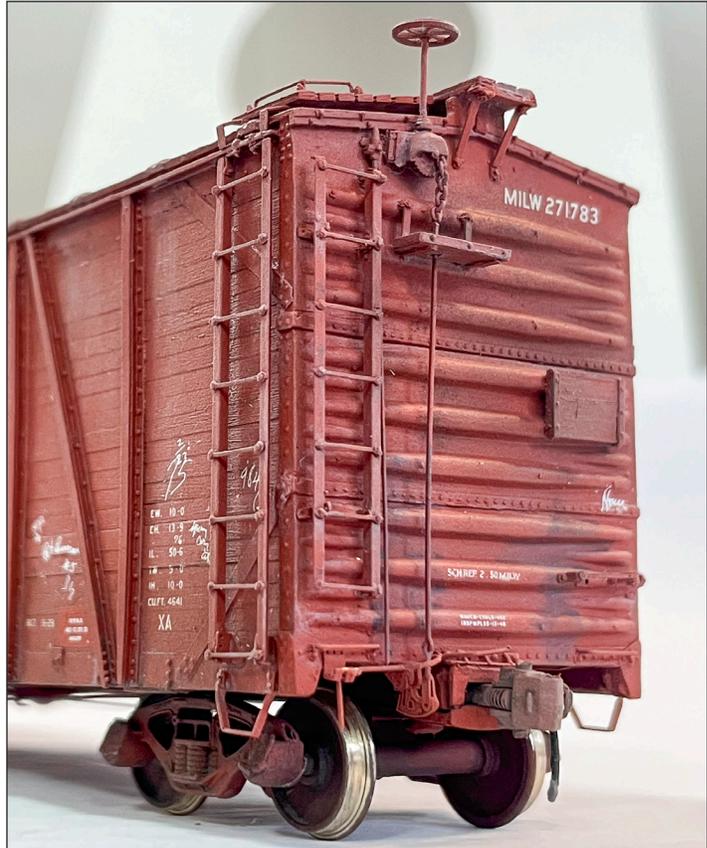














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CAPY. 100000
LDLMT 112600
LTWT. 56400
TA 4-50

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570

B
EW 10-0
EM 12-0
LL 1000
LP 3-0
HT 10-0
CLFT 4641
XA

BLT 9-29