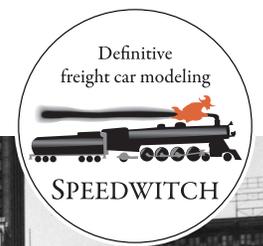


## Gulf, Mobile & Ohio Single Sheathed 1932 ARA Box Cars



A rare glimpse at one of the GM&N cars (far right) as painted after the merger that created the Gulf, Mobile & Ohio. The top image is the complete photo while the bottom provides a cropped closeup of GM&O 6476. Jack Delano, May, 1943, "Chicago, Illinois. General view of part of the South Water Street freight depot of the Illinois Central Railroad." FSA- OWI Collection, Library of Congress, LC-USW3-026680-D.

### History

The Gulf, Mobile & Northern exercised an option available to railroads by purchasing box cars built to the 1932 American Railway Association standard design, but using single sheathed construction for the sides. Options like this were allowed by the ARA to encourage adoption of the standard design. The cars were constructed by American Car & Foundry under Lot 1347 in October, 1934. There were 150 cars assigned to series 6400-6549.

As delivered, the cars were painted freight car red on the sides, roof, and running boards while the ends, doors, underframe, and trucks were black. They were simply stenciled for the GM&N as illustrated in the builder's photos. In 1940, the Mobile & Ohio and GM&N merged to form the Gulf, Mobile & Ohio. When repainted, the reporting marks were updated to GM&O and the cars were painted freight car red on all surfaces. Specialties included Universal power hand brakes, Youngstown doors with Creco ball-bearing or Camel Roller Lift fixtures, Murphy rectangular panel roofs, 4/4 square corner Dreadnaught ends, standard ARA underframes, and wood running boards. It does appear that the Universal hand brakes were replaced over time, which was not uncommon for cars that were equipped with early types of Universal power hand brakes (on many railroads; not just the GM&O.)

### 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 a 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.]

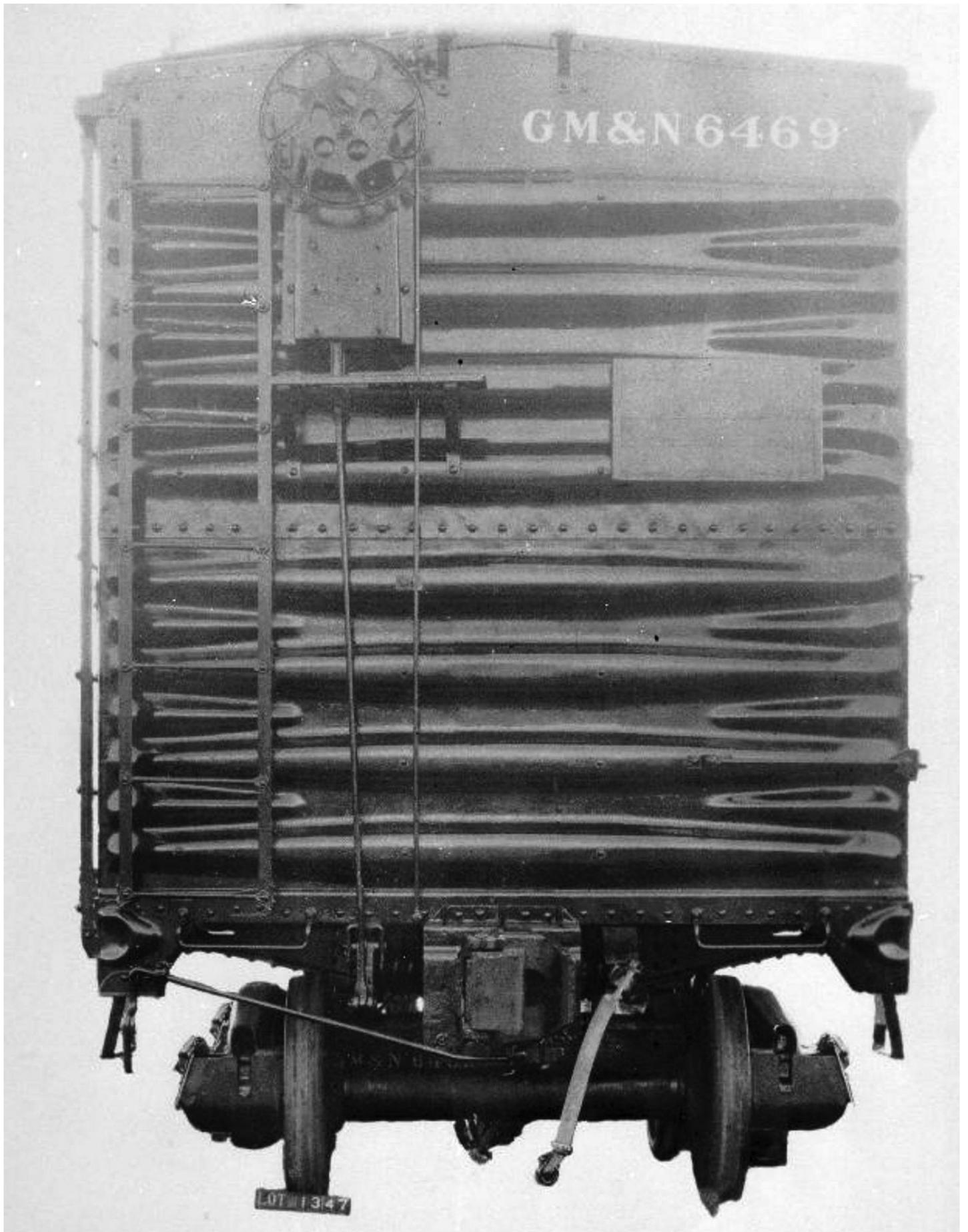
*Important* note about working with the etched metal parts... many of the etched metal parts have half-etched "score" lines. These are to be used to aid in folding the parts. *Unless specifically instructed to fold "away" from the score line*, always fold *into* the score lines, meaning that the angle 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"



Merrilees Collection, National Archives of Canada, Negative Number PA 188166



GM&O 6446 was repainted at the ex-GM&N Frascati Car Shops in Mobile, Alabama, in July, 1949. Bob's Photo, courtesy of Bill Welch



American Car & Foundry photo



Merrilees Collection, National Archives of Canada, Negative Number PA 188167

in terms of what you are cutting, but there are extra parts and 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 AB brake set
- Moloco angle cock/air hose, pair
- Etchings
- 0.008" wire - 1
- 0.010" wire - 3
- 0.012" wire - 2
- 0.015" wire (small piece)
- 0.020" wire - 1
- Screws (2-56)

Extra Parts and other optional items (not included):

- Couplers
- Kadee Universal power hand brake
- Intermountain Universal hand wheel
- Tangent Scale Models 50-ton ASF cast steel sideframe with spring plank trucks
- 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 one of the first one-piece body projects I have ever cast, I ended up trying different ways to skin this cat and this project was also cast by me and three other parties to try to get it across the finish line! There are different thicknesses to the sides and different sizes of vents. Depending upon their size, you can either snip them off or (as I did on the pilot model) or use a razor saw to saw between them and the inside of the car body before snipping them off. You will need to ensure that the underframe is correctly oriented to the car body. The "B" end of the underframe has a "B" scratched into the surface of the "pad" where the draft gear (coupler pocket) is to be mounted and the B end of the car body has a small, flat, raised surface at the top of the end, where the pressure retainer valve will be mounted. Take care to keep things straight and square, particularly at the corners. At the ends, the "pads" for the draft gear (coupler pockets) should be level with the bottom of the car body at the ends, where the end sill braces jut out slightly from

the ends, at the center of the bottom of the ends. Once satisfied with the fit, continue, but do not glue the floor into the car body just yet. *Again, note that there are distinct A and B ends on the car body.* 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 through the appropriate crossbearers, 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, crossbearers, and crossties 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 does not pass through the center sills in the middle of the car, but rather closer to the B end of the car. 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.

◇ 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. Once you are certain that the floor casting placement is good, you can begin to glue the floor in place. I started by flowing some ACC into the end/side junctions with the floor 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, 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 applied with an [ultrafine applicator](#); 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 tissue paper or paper towel on hand that are twisted into "points" to wick away any unwanted thin ACC, should it go places I don't want it to be.

◇ First, tack the draft gear boxes in place, again using a contact cement (I like Barge cement mixed 50/50 with a solvent such as MEK.) The goal is to carefully adjust the draft gear so that it fits nicely below and in line with the end sill detail (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.

◇ You can do so now or later, but at some point, drill the draft gear boxes and lids for screws. I use 0-80 screws. Screw in far enough for the lid to be completely secure, but not too tightly

as you could make the "post" in the box bulge, inhibiting free coupler movement.

◇ Add the bolster cover plates. These are resin parts. You need four and there are extras. I used the following technique: use the truck screw hole in each bolster and cover plate to center the parts. Tack them in place at the truck mounting location using a contact cement such as Barge cement (which I thin 50% to make it possible to brush it in place without the annoying "strings.") Secure further with ACC. Then, if necessary, shorten the end(s) of the cover plate(s) by trimming with sprue nippers, like those from P-B-L or a Godhand nipper. Glue in place using ACC, matching the contours of the bolsters and also secure at the ends where the bolsters meet the side bolster tabs.

◇ Add the crossties. The angles formed by the "C" shape face towards the ends of the car. Drill holes in the crossties that the train pipe will pass through. Unfortunately, due to the various fits and starts in the production of the model, some parts incorporated changed over time. In this instance, you need to either shorten the crossties (I did not choose this option) or carefully remove material from behind the side sill support tabs to allow the crossties to fit. I chose this latter option and carefully "chiseled" away material a little bit at a time, until I had removed enough to allow the crossties to fit. You could also do a little of each technique. Glue in place with sparing amounts of ACC at the center sills and side sill supports 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. Note that where the train pipe passes between the center sills, it "skirts" but does not pass through those crossties. You might also see 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 brake cylinder bracket. It is a resin part. I chose to tack the cylinder bracket in place nested into the center sill with contact cement and then added ACC to further secure the part. Note the orientation: the "flat" portion faces down toward the rails and is the "platform" that the brake cylinder is attached to while the angles formed by the brackets face towards the floor boards. The "notches" on the side flanges of the bracket are there to provide some clearance for the train pipe.

◇ Assemble the brake cylinder from parts AB-3 and AB-9, plus the resin pressure head with integral lever bracket, using liquid solvent cement for the styrene parts and ACC for the resin to styrene joint. Ensure that the lever bracket on the resin portion is oriented so that the brake lever, once inserted, will be level relative to the rails once the car is on the rails. When 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 drilled an opening and used 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.

◇ 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.

◇ Add the etched metal mounting apparatuses for the reservoirs and AB valve. The parts that support the lugs of the reservoirs must be bent as shown; one attached to the bottom face of the crossbearer cover plate the other attaches to the face of the crosstie adjacent to the reservoirs. Tack in place for now then secure further with ACC once the reservoirs have been placed and you are satisfied with how you have located them. Add the "platform" for the AB valve as well, as shown, which is bent from an etching, as well.

◇ 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.

◇ 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. 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. 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. 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 flat brackets at the top that attach to the flange of the upper side. First, I attached these "plates" to the top of the ladder stiles using the holes in both and securing with the Plastruct styrene rod. I then rested the "plates" over the flange at the top of the side and marked holes to be drilled that would pass through the top ladder rung and stiles to pin the entire ladder assembly to the car body. I added 0.010" wire into these holes and glued *just the wire* in place with ACC (do not glue the ladder in place yet!) Thread the ladder stiles over the wire and then mark and drill corresponding holes in the bottom to add wire to pin the bottom of the ladder stiles, too. Again, glue just the wire in place with ACC. Slide the ladder stiles over all four pieces of wire. I then tacked the ladder angle brackets to the lower portion of the stiles using the Barge/MEK mixture and then solidified further with ACC. Once dry, I added some of the MEK/Barge mix to the faces of the brackets that would be glued to the car sides and slid the lower stiles "down" the wire pins until the brackets touched the car. The Barge mix served to hold the magainst the car and I added ACC to fully secure the brackets to the car. Next, add the top and bottom rungs by sliding them over the wire until resting against the faces of the stiles and secure with ACC. Lastly, I trimmed the wire to leave only what was necessary to hold things together. 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. Repeat for the other side ladder.

◇ Add the end sill grab irons. Drill holes below the bolt heads. These are drop grab irons. I bent mine from 0.008" wire to match the fineness of the ladder rungs. However, you can substitute commercial grab irons, such as Tichy, if you prefer. Note that the right grab is offset from the end sill... I erred and mounted them flush against the end sill. Heed and avoid my mistake!

◇ Add the end ladders. The process is similar, except the top of the end ladders do not attach to a flange 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 top and bottom plus the bottom right ladder rung holes; the left bottom rung was attached to the stile using just styrene rod, but no pin. There are many photos from numerous different angles that illustrate the attachment of the ladders.

◇ Add the brake step to the B end. The step is comprised of an etched step plus two etched brackets, all requiring bending. I used 0.010" wire "pins" to attach the brackets and then added the step. Note that the flange on the "front" of the step faces "down" to the rails while the flange on the "back" (with the cutout for the hand brake rod) angles upward towards the top of the end. Again, photos are your friend!

◇ Add the power hand brake housing. Full disclosure: my model uses a Kadee Universal power hand brake and an Intermountain Universal hand wheel. It would be nearly impossible for me to secure the hand wheels, as Intermountain does not offer them as a part so I made the decision to simply provide the Tichy Ajax parts. The hand brakes on these cars were replaced on many cars (perhaps) all as the very early Universal vertical wheel power hand brakes were either difficult to maintain, not durable or some combination of both, meaning most were replaced (in general, not just on these GM&O cars.) I did use the original housing bracket, which is a rather long and solid etching that must be bent. I retained the Kadee chain and rod as well as the bell crank, but given that this model is quite a bit shorter than the model that the part is intended for, I trimmed the bell crank and added an etched clvis to simulate that feature on the prototype. I modified the bell crank to fit into a bell crank bracket that is included in the etched parts. This bracket can be used with any brand of bell crank (such as the Tichy one - part 22 on the Tichy brake sprue.) If using a different brake housing, such as the Tichy, you can use the styrene chain on the sprue or add small chain, which is not provided, but is available from several sources, including now from Tichy. I would use 40 links/inch.

◇ Add the pressure retainer valve and pipe. The retainer valve is a resin part. Drill a small hole in the bottom of the pressure retainer valve using a no. 80 drill (or slightly larger if you are not comfortable with an 80 or you only have a no. 78 or 79.) 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, 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 valve 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 the angles that are part of the running board supports. The angles are etched parts and must be bent. The holes in them should also be cleaned out a little, but with nothing larger than a no. 80 drill bit. Add these angles to the bottom of the running boards, with the angles "facing" outward away from the ends and the holes on the "downward" flange that "hangs" from the bottom of the boards. See photos! Secure by tacking in place with contact cement followed by sparing amounts of ACC. 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 angles on the underside of the running board using 0.010" wire. When this assembly dried, attach the running board to the roof. I recommend tacking the boards to several of the roof "saddles" using contact cement and then securing at all saddles with ACC. 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. Finally, drill holes in the appropriate locations to pin the lower portion of the support straps to the upper portion of the car ends. I used 0.010" wire for the pins.

◇ Add the latitudinal running boards. The trickiest part of this is bending and securing the support straps. They should be bent as shown in the photos. The process is to bend along the long half-etched score line in the part and continue until the part has folded back onto itself. Take pliers to complete this bend. Then (and this is one of those instances where you will be "away" from the half-etched score line, but it's the only way I could conceive to make this part!) bend the short legs that will "follow" the angle of the roof eaves. This fold will likely create a "fault" in that edge. It did on mine. I filled it with ACC and filed it to hide that fault. There are holes that are used to pin the supports into the outer face of the roof panel, just above the top of the side (and above where the side ladders terminate.) When the latitudinal boards are attached, they will "sit" in the support straps in the areas that have only a single thickness of the straps. Please, please consult the photos for clarity. As the photos illustrate, I found it best

to attach one strap (the one closest to the end) completely and then glue the boards on top of it and then add the second strap. I employed the technique of tacking in place with the Barge/MEK mix followed by ACC to attach all of these parts. I added the corner grabs to the latitudinals after adding the latitudinals to the car. There are eye bolts on the etching sheet for these corner grabs or you can use half of one of the extra ladder rungs as an eye bolt. 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 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. The door rests against the upper door track (part of the body casting) and against the door hardware along the left edge of the door post. 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 in place with ACC.

◇ Create and add the lower door tracks. These are etchings and must be bent and the usual guidance applies, including using a tool and the strong recommendation to use [this one](#). I bent the tracks and then test fitted them under the doors, between the rollers and door posts. The angle created by the track should face down towards the rails and the angle is "hidden" e.g. if you are looking at the car from the side, you will see one "face" of the angle door track. I glued the leg to the bottom of the doors using the Barge cement/MEK 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 are bits of HO scale 2x4 strip styrene to simulate the prototype's supports. 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. They attach to the face of a structural member and strengthen the door track assembly.

◇ Attach the four placard boards, one to each end and one to each main door. These are cast resin details. Add the rout cars boards to each door. They are also resin parts.

◇ Add the side grab irons. I bent mine from 0.008" wire although you could use commercial grabs, such as those from Tichy – I believe Tichy makes 22" or 24" grabs that will work. Add a bracket grab iron to each end. These are created from two brackets plus a long "grab." I found it easiest to attach the right

bracket – this is the one that is mounted on the side of the corner and angles around to the end. I pinned it in place with 0.010" in holes drilled into the corner. I then glued the right grab leg into the bracket with 0.010 styrene rod. With the right portion of the grab in place, but still moveable, I 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 quite different. The right right bracket is an angle while the left is a traditional bracket grab "bracket." Both must be bent to shape. Take care! Repeat for the other end.

◇ 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, ream the hole to accept the size of wire you choose (I used 0.010") and bend the part to shape. Beading pliers are ideal for creating uncoupling levers. Consult the photos for guidance. Attach the bracket just below the push pole pocket at the lower left corner of the end. I used Barge/MEK followed by ACC. Once you have bent wire to create the uncoupler, slide it through the hole in bracket, into place, and secure with ACC. Consult photos for guidance!

◇ Add the brake wheel to the hand brake housing.

◇ Add the angle cock/air hose brackets to the bottom of the ends, adjacent to the draft gear/coupler pockets. I pinned them into place using 0.010" wire. Slide the rubberized angle cock/air hose parts through the brackets. I then added u-shaped 0.006" (not provided, but 0.008" wire works well, too) through the holes in the bracket, "trapping" the angle cock/air hose in the "U" and secured with ACC.

◇ Add the sill steps. These are etched parts. I pinned mine to the car using 0.010 wire. You must drill holes to the underside of the "tabs" at the corners as shown for the leg of the sill step that is closer to the center of the car. I used a no. 74 drill bit. Take care to ensure that the bit drills into the bottom and doesn't wander to "come out" through the side. I secured the steps with ACC.

◇ Construction is complete! *The sill steps 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, I 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.

◇ I highly recommend painting using an airbrush. Prime the model with your choice of primer. 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 GM&O 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, my 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!

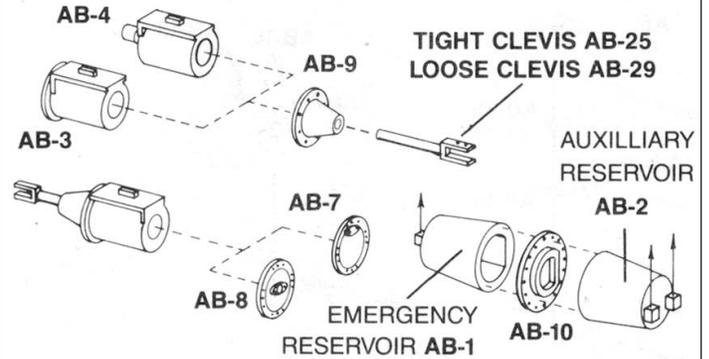
Thank you to:

- ▶ Aaron Gjermundson
- ▶ Ron de Pierre
- ▶ Jon Cagle
- ▶ [Moloco Trains](#)
- ▶ [PPD](#)
- ▶ [Tichy Train Group](#)

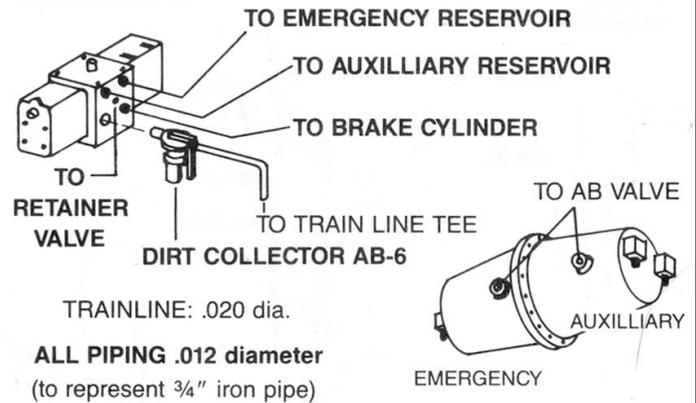
## TYPE "AB" BRAKE SYSTEM PART #3013

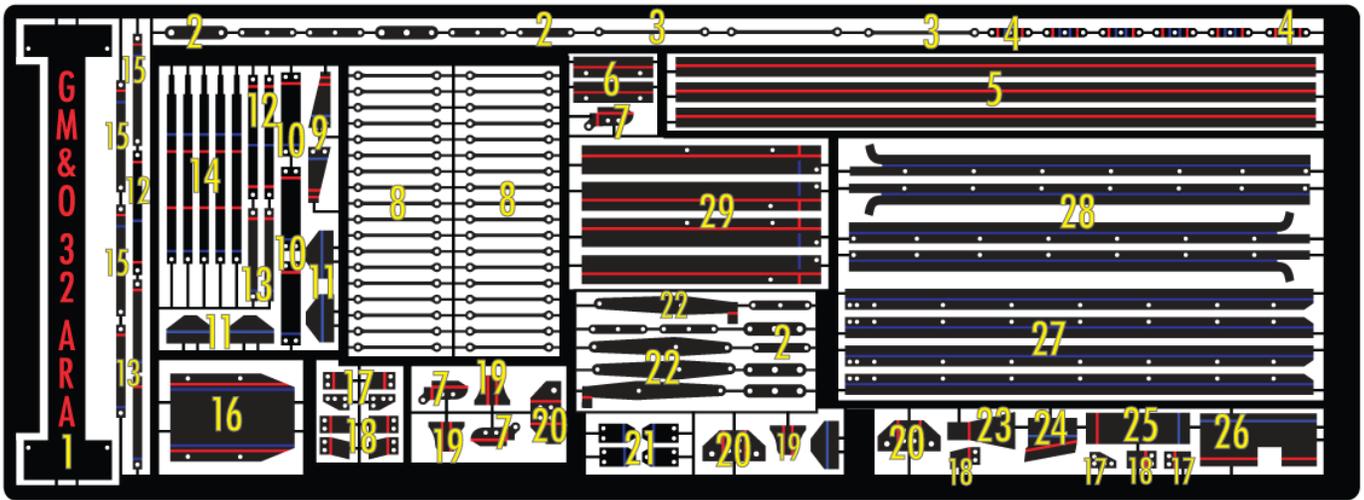
The major components are provided as multi-part assemblies to best represent the detail of the prototype, as well as allow you options to suit your specific application. The illustrations are a guideline only — refer to drawings and photos for your prototype. Several parts are included that are unique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



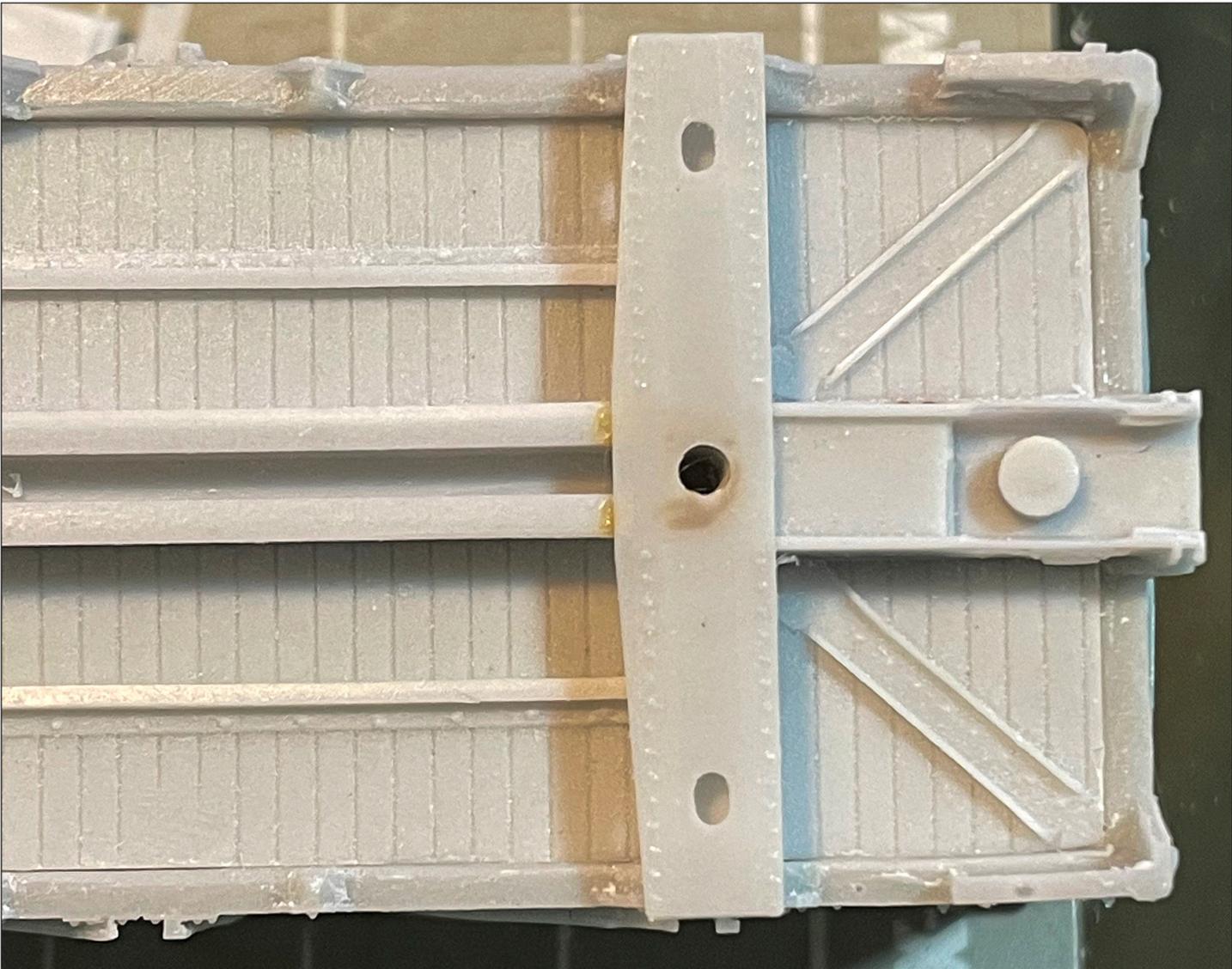
### AB VALVE AB-5



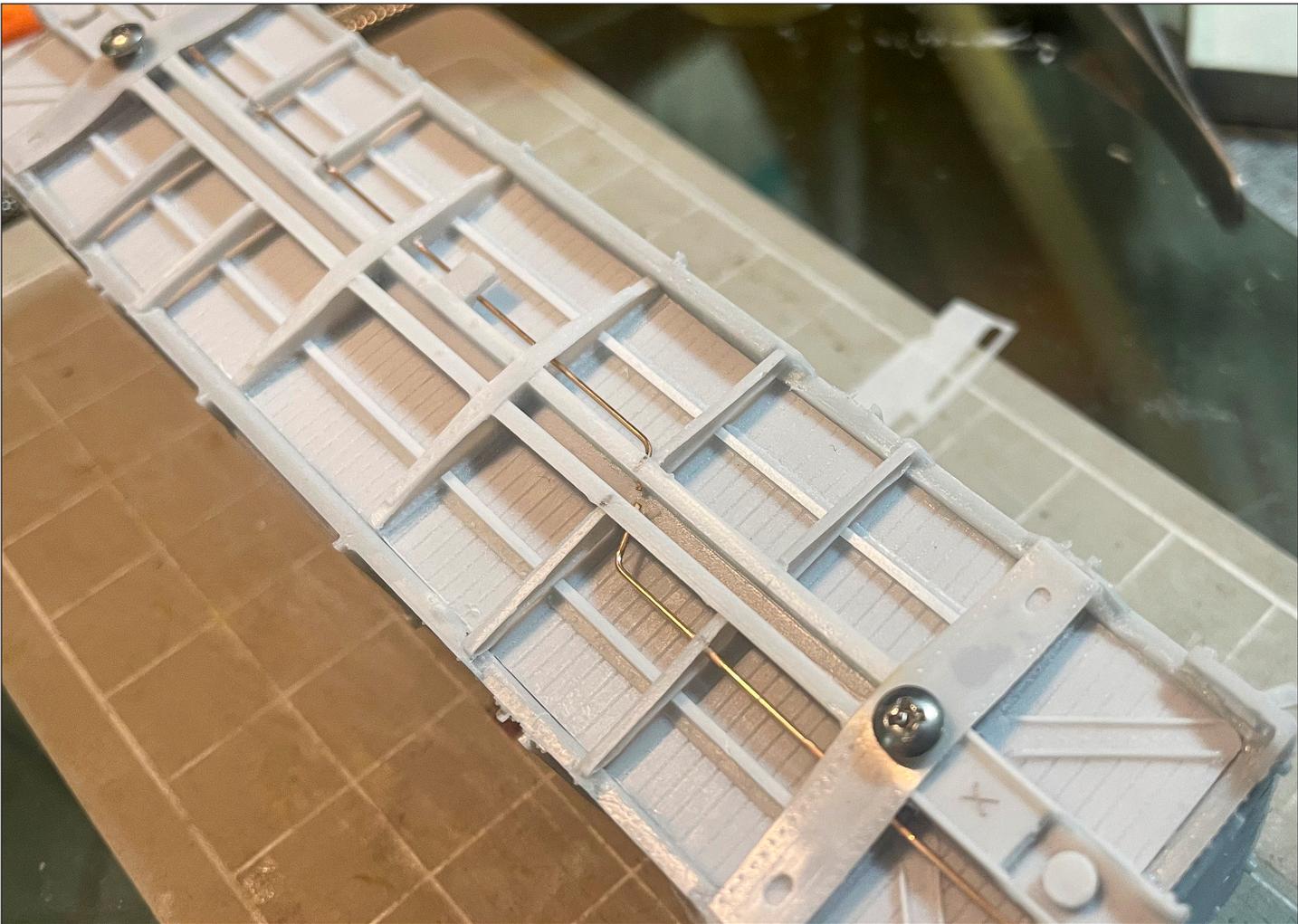


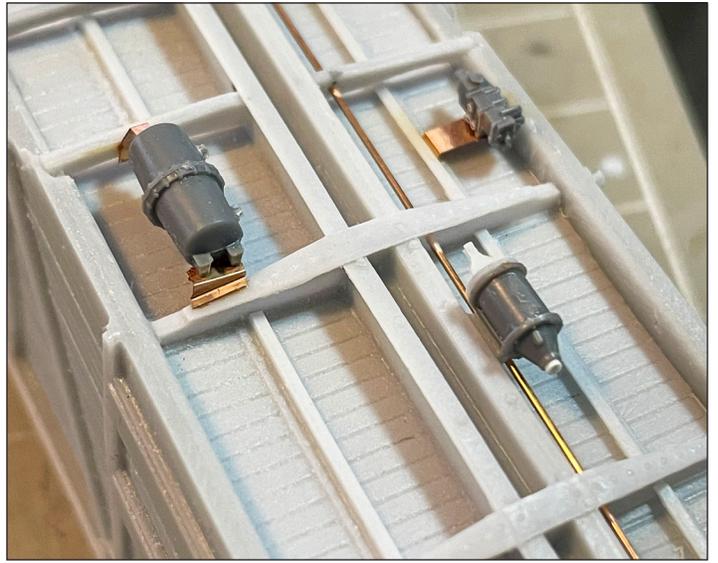
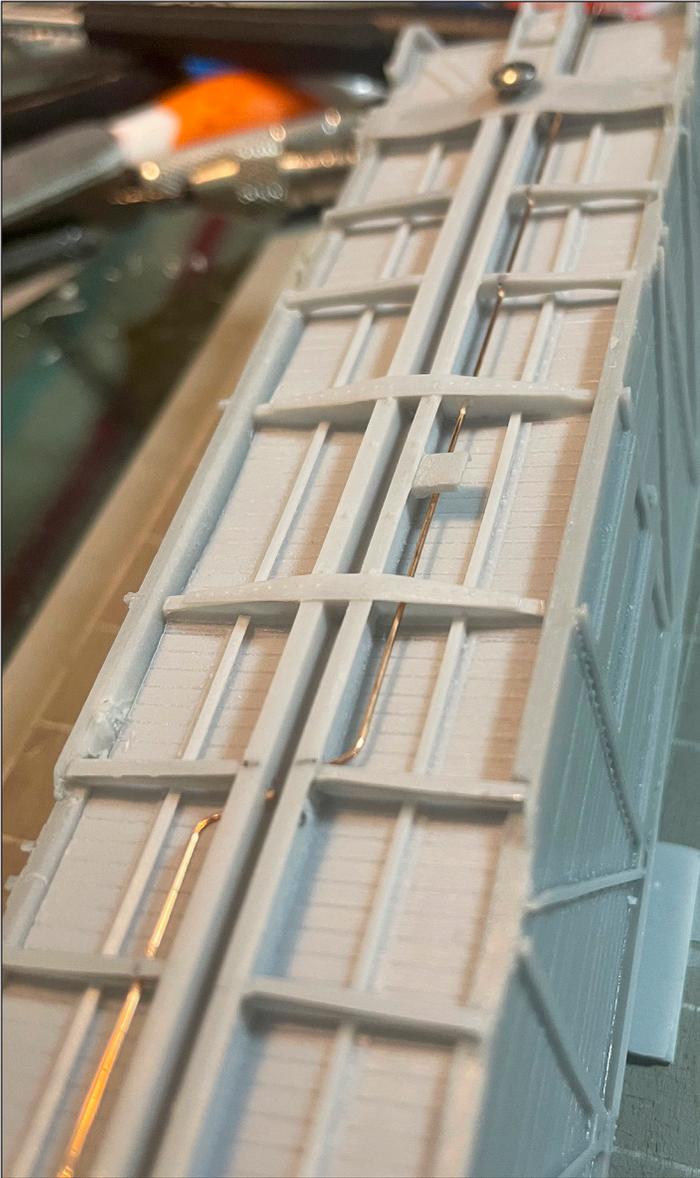
- |                                   |   |
|-----------------------------------|---|
| 1 – Ladder assembly jig           | 16 – Hand brake housing bracket         |
| 2 – Clevises                      | 17 – Side ladder mounting brackets      |
| 3 – End bracket grab              | 18 – End ladder mounting brackets       |
| 4 – End bracket grab left bracket | 19 – Lower door stops                   |
| 5 – Door tracks                   | 20 – Bell crank bracket                 |
| 6 – Running board support angles  | 21 – Right end (corner) grab bracket    |
| 7 – Uncoupling rod bracket        | 22 – Brake levers                       |
| 8 – Ladder treads (rungs)         | 23 – Brake reservoir bracket A          |
| 9 – Hand brake rod carrier        | 24 – Brake reservoir bracket B          |
| 10 – Angle cock/air hose brackets | 25 – AB valve bracket                   |
| 11 – Side sill support tabs       | 26 – Brake step                         |
| 12 – Brake step supports          | 27 – Side ladder stiles                 |
| 13 – Running board support straps | 28 – End ladder stiles                  |
| 14 – Sill steps                   | 29 – Latitudinal running board supports |
| 15 – Brake housing bracket straps |   |

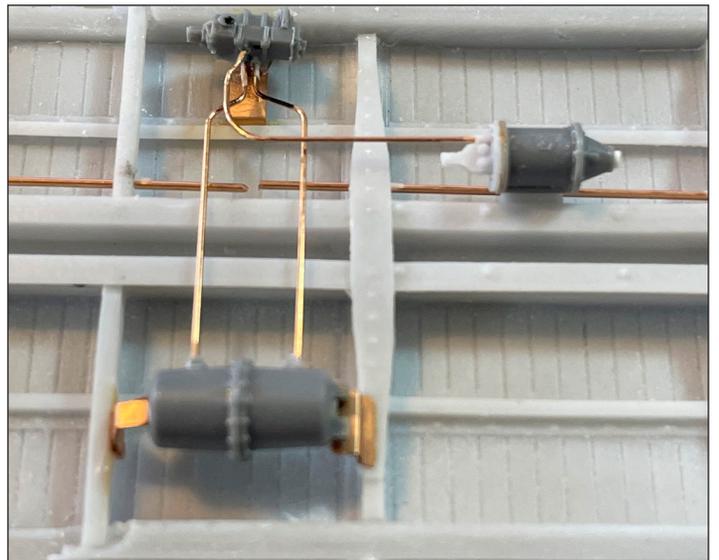
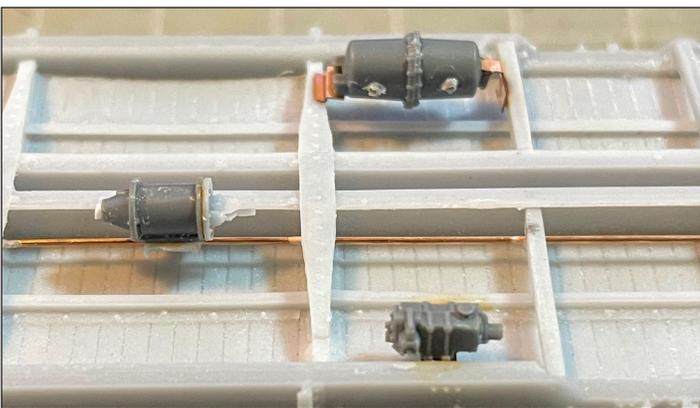
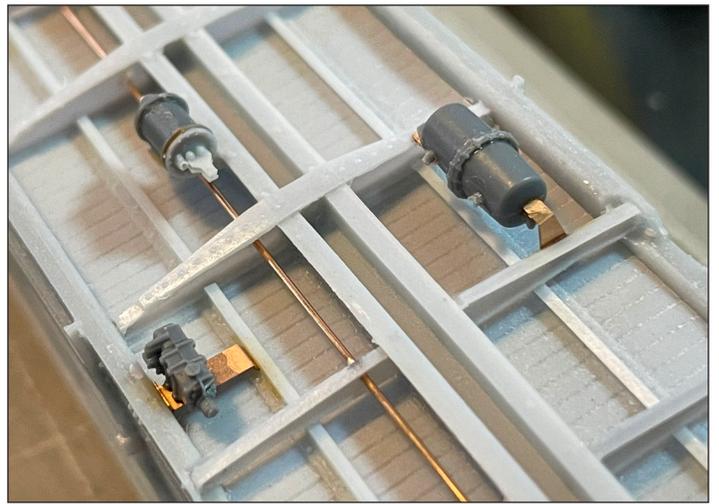
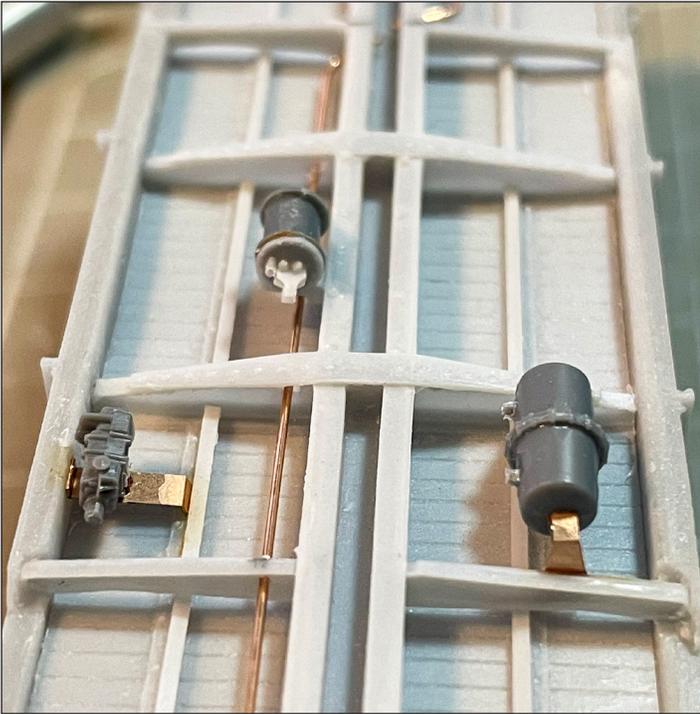
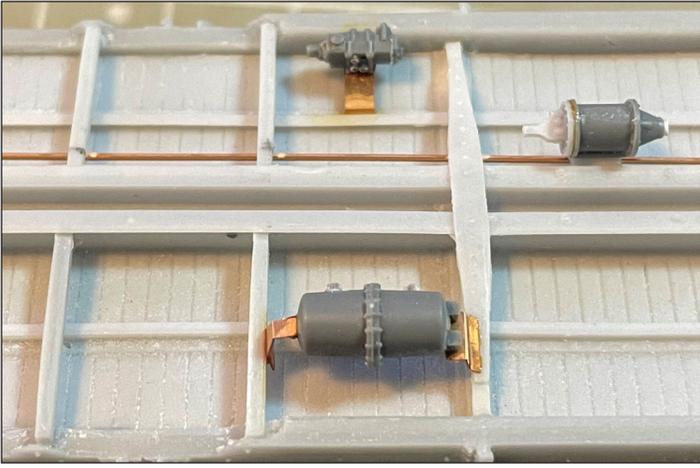


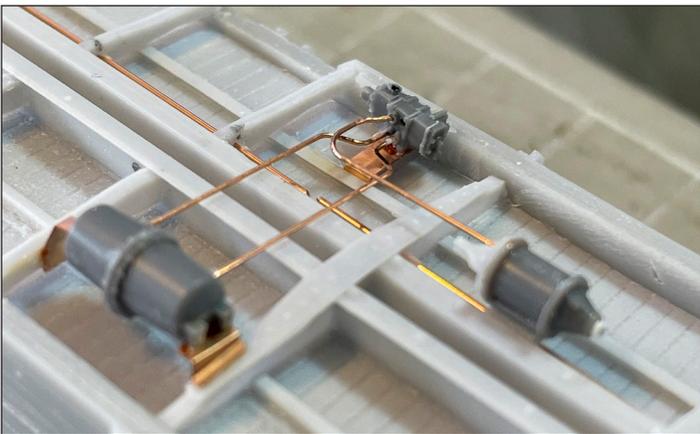
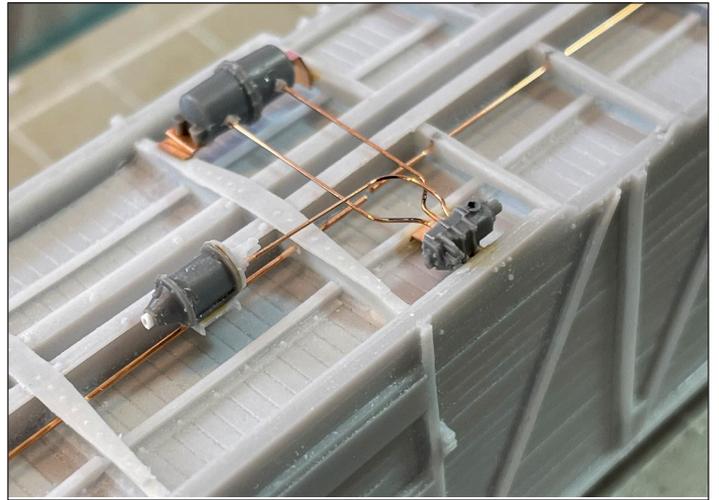
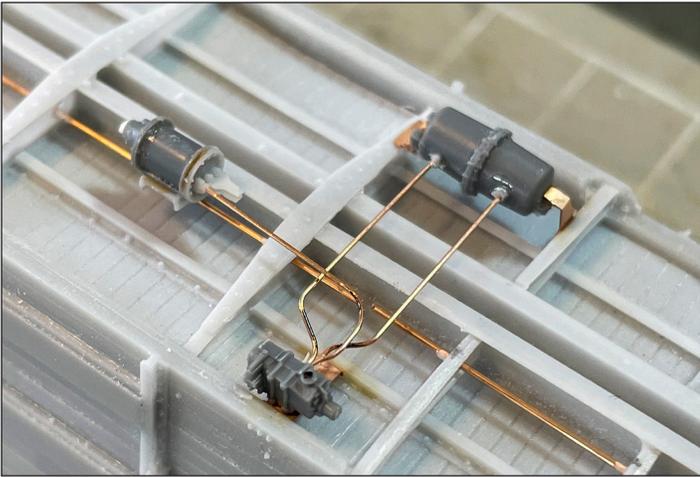
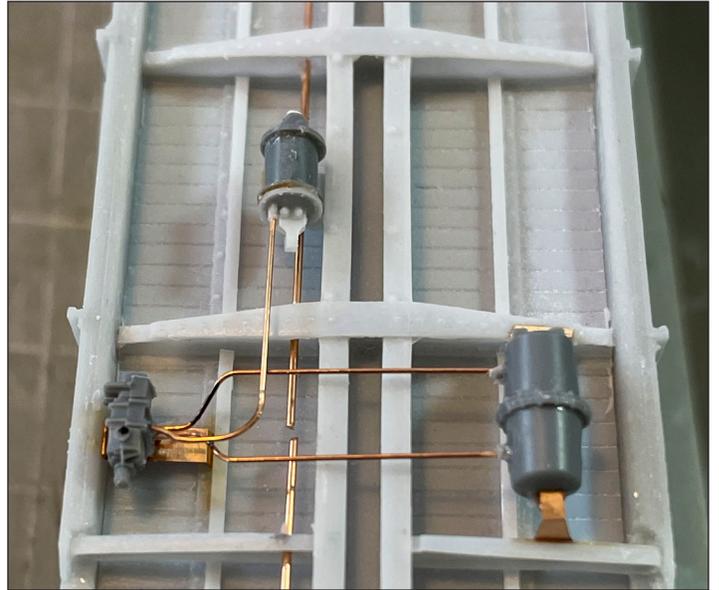
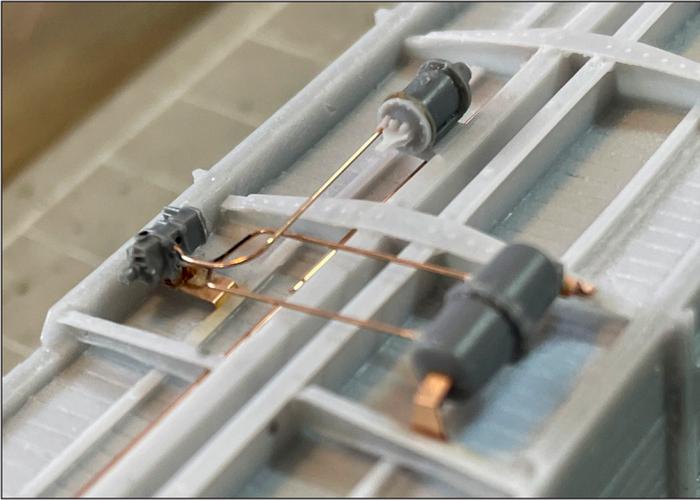


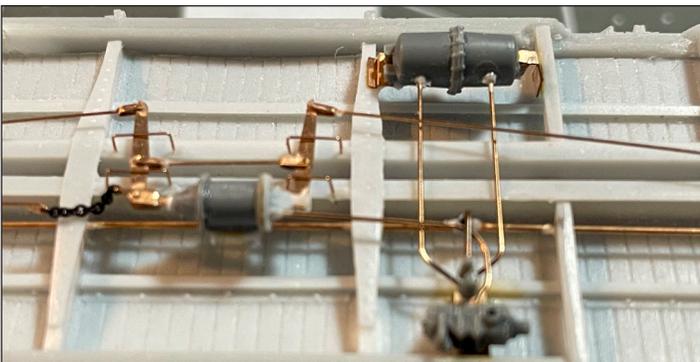
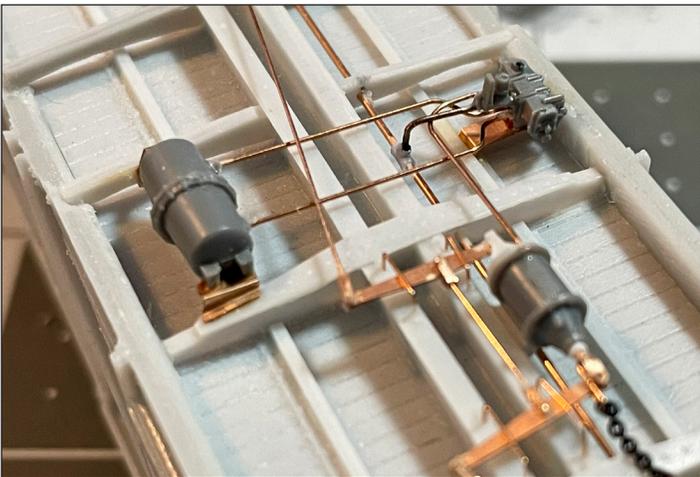
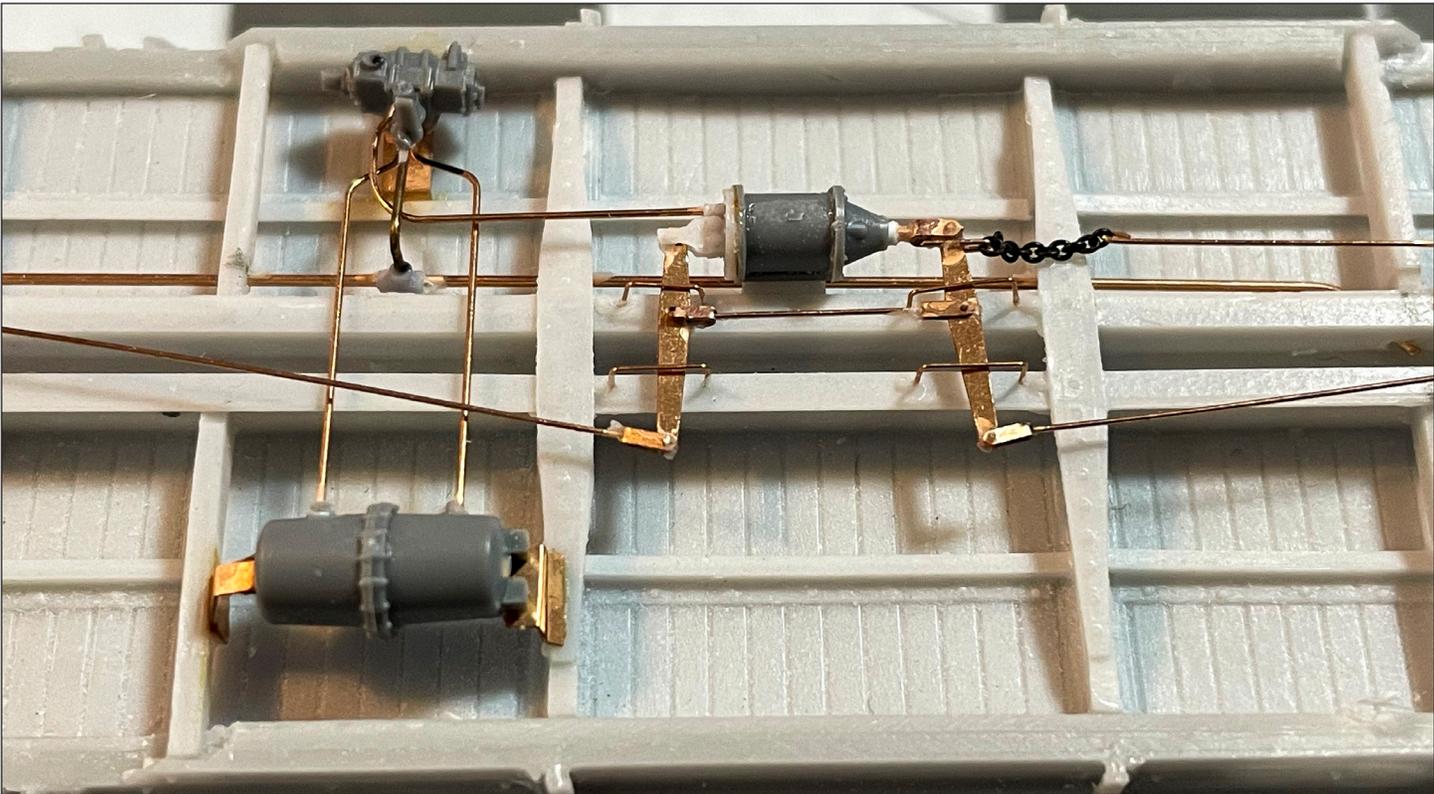




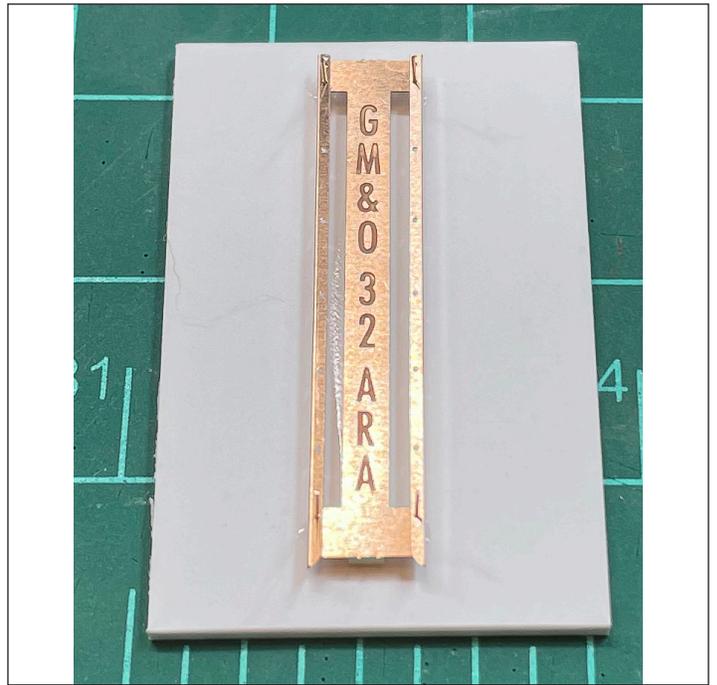
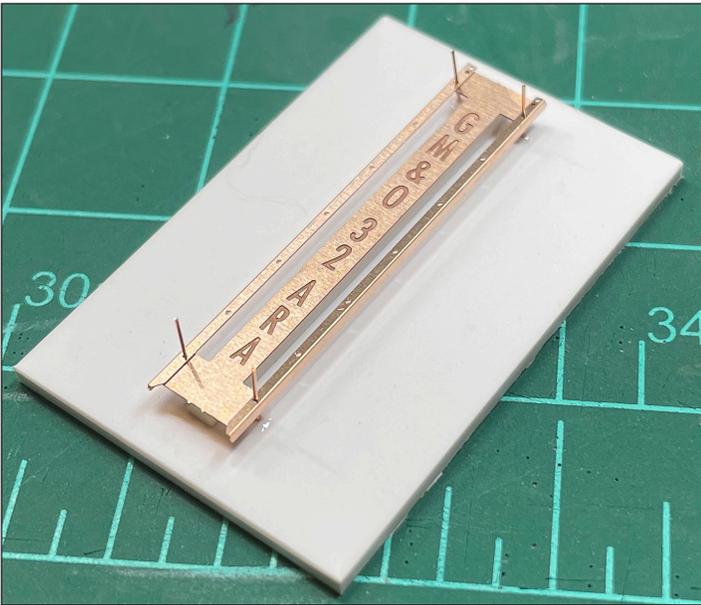
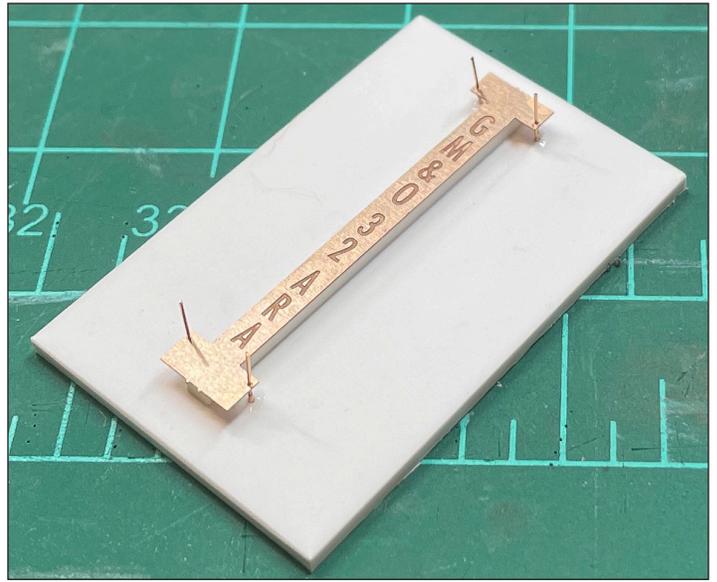
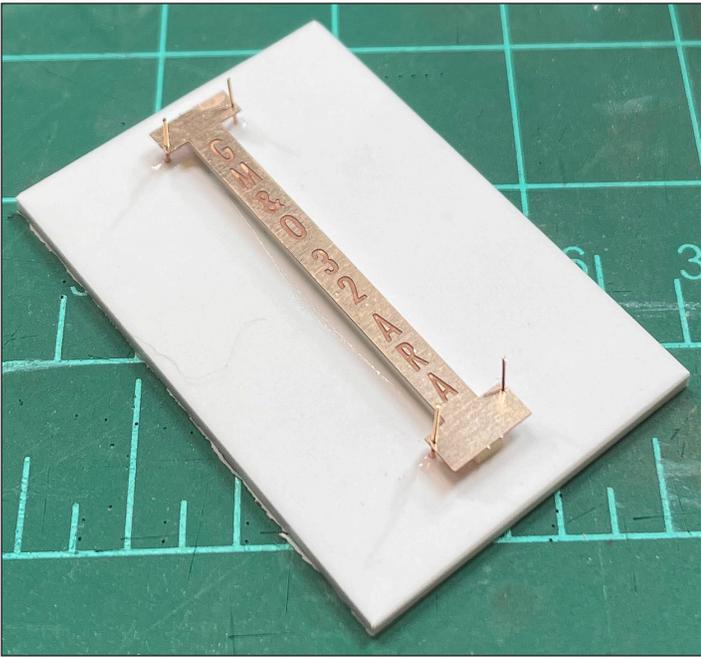














While the jig at left is from a different kit, it illustrates the technique of adding and securing all but the top and bottom rungs, while using the holes for the top and bottom rungs to hold the stiles in the jig.



