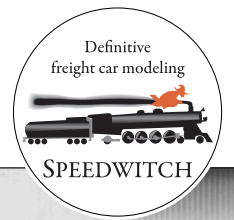


Parts Set P128 - Pacific Fruit Express R-40-25 Refrigerator Cars



PFE photo

Note

Before starting construction, inspect the castings carefully. The surface may have some "slick" areas that are residual mold release. This can be removed by washing with dishwashing detergent. If the floor casting is not entirely flat, the following technique can be employed to flatten it: heat an oven to 175 degrees Fahrenheit and then turn the oven off. Place the part on a flat surface such as a piece of glass (flat side down and detail up.) After 15 minutes remove the casting from the oven and let cool completely. It should have flattened. If there are any bubbles in the casting, they should be on the "back" surface of the casting and will not be visible once the model is assembled. If you wish, you can fill them with ACC or putty and sand smooth. If there are any castings that are defective or cannot be used, please contact us for a replacement.

History

In 1946-1947 Pacific Fruit Express, (mostly) free from the wartime constraints on materials, added 5,000 refrigerator cars in the R-40-23 class. They were the largest class of ice-cooled all-steel cars PFE owned. Details included improved Dreadnaught ends (three main corrugations in each panel,) Murphy rectangular panel roofs, Equipco integral hatch covers, air circulating fans, and welded underframes based upon a Union Pacific design. Specialties for hand brakes and running boards featured parts from several suppliers. In 1949, PFE drew heavily upon the R-40-23 design to create the R-40-25. Changes included a modified version of the improved Dreadnaught end, Murphy diagonal panel roofs, and side ladders with integral sill steps. These were also the first and only cars built new to incorporate the black and white version of the '1946' UP medallion. The cars were also constructed in PFE shops instead of at commercial freight car builders.

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.) Not to sugarcoat it, this was a difficult model for me to build and I designed it! I am already streamlining future kits to improve the experience, but maintain the fidelity to detail. 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. One other note: when I created the patterns for this model, some of the things that are used in it now, particularly the etchings, were not even in my dreams. That means that in some instances, the castings must be modified to suit these parts. I will mention those things as the build progresses.

The instructions contain many images to aid in assembly. 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.

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



PFE photo, courtesy of Tony Thompson



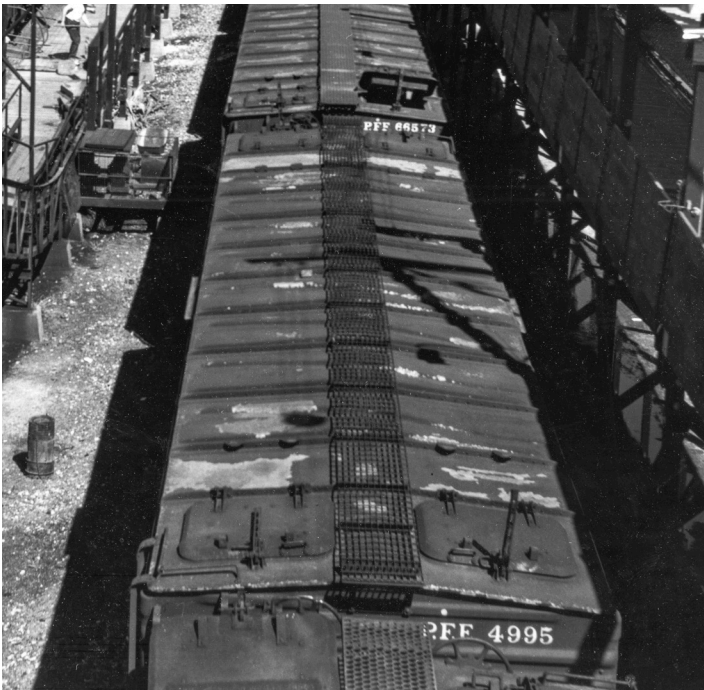
Youngstown Steel Door Company photo, Railroad Museum of Pennsylvania



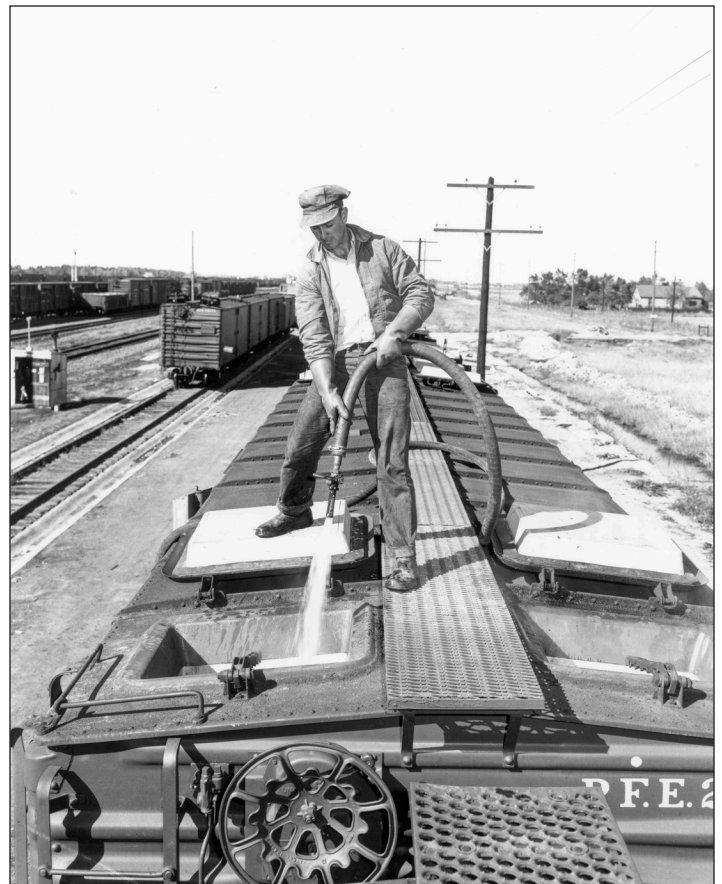
PFE photo, courtesy of Paul Koehler



J. P. Barger Collection



J. P. Barger Collection



J. P. Barger Collection



above and left - Wayneport, New York, December 14, 1950, New York Central System Historical Society

Specialties confirmed via photo (hand brake, running board/brake step):

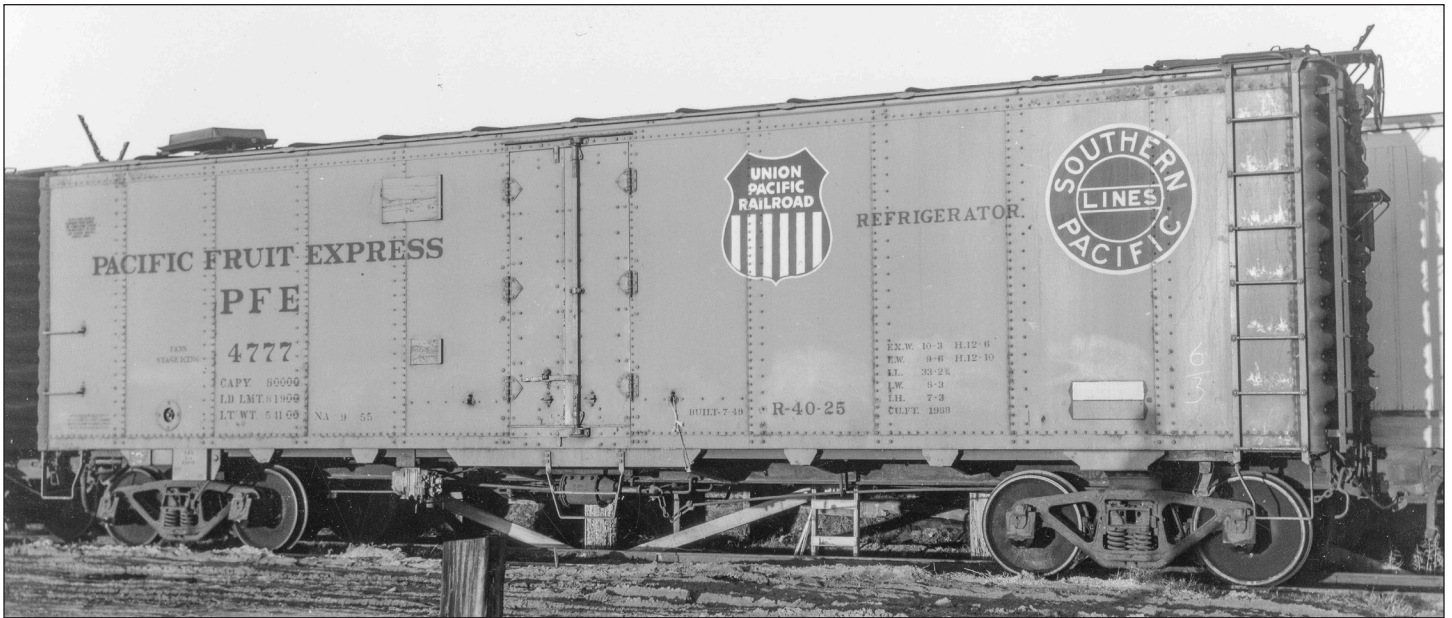
- PFE 2001: Ajax, Morton Open Grip
- PFE 2029: Ajax, Morton Open Grip
- PFE 2139: Ajax, Gypsum expanded metal
- PFE 232?: Ajax, Gypsum expanded metal
- PFE 2558: Ajax, Morton Open Grip
- PFE 4246: Klasing, n/a
- PFE 4350: n/a, Apex Tri-Lok
- PFE 4580: Miner; indeterminate
- PFE 4638: n/a, Apex Tri-Lok
- PFE 4777: Miner, indeterminate
- PFE 4995: n/a, Apex Tri-Lok

Trucks

- ASF A-3: 2001-3270, 3351-4000, 4759-4838
- Barber S-2-A: 3271-3350, 4001-4758, 4839-5000
- Nut-bolt-washer (NBW)



Ft. Worth, Texas, ca. 1960, Jay Williams/Big Four Graphics



National City, Calif., March 1957, Col. Chet McCoid photo, Bob's Photo



J. P. Barger Collection

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 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 [the 195mm Piranha](#), 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. Yes, it's expensive, but I use it all the time!



J. P. Barger Collection

Parts List:

- Resin castings (floor/underframe, detail castings)
- Decals
- Etchings

Extra Parts and other optional items (not included):

- 0.008" wire
- 0.010" wire
- 0.012" wire
- 0.015" wire
- 0.020" wire
- Retainer valve
- Screws
- Washers (if necessary)
- Tichy AB brake sets (or similar)
- Kadee couplers, pair (or your preferred option)
- Coupler pockets (draft gear)
- Moloco angle cock/air hose, pair
- Chain
- Nut-bolt-washer (NBW)
- [Plastruct 0.010" styrene rod](#)
- Details West Equipco hatch covers
- Paint
- Weathering media
- Chalk mark decals
- ... and, of course, an Intermountain/Amarillo R-40-25 kit (I am unsure if undecorated kits were ever marketed so you may have to strip a decorated model) or an Intermountain R-40-23 plus diagonal panel roof from an R-40-25 or sourced from a different kit/model (Accurail has a nice version, but it must be removed from their reefer car body.)

Assembly Sequence

◇ Begin by removing the cross members from the underframe/center sill. I trimmed them using GodHand sprue nippers and then carefully removed the remainder using a chisel blade. The material "under" the flange of the center sills at the crossbearer and crosstie locations should be removed entirely, leaving "smooth" center sill faces.. The remaining material should be only

the center sills and bolsters (and coupler "boxes" if you choose to retain them.) Test fit the part into the underbody, noting that there is a correct orientation that employs pins for assembly. Before gluing the center sills/bolsters to the underbody, remove all of the brake mounting "lugs" from the floor. Again, I used a combination of the GodHand nippers and chisel blade. Should you wish to, you can fill the holes with styrene rod. Drill the center sills for the train line, if you are adding that detail. The holes should be oriented diagonally, matching the angle of the plastic train line from the kit. Do not add the train line at this point.

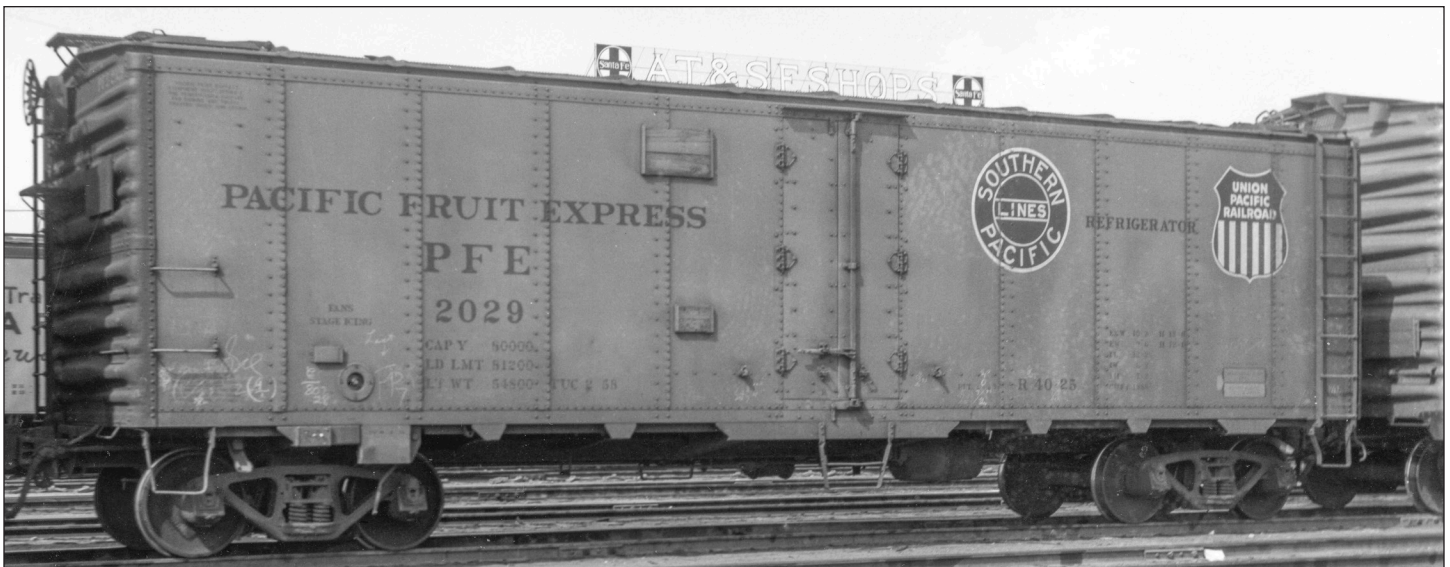
◇ Remove the side sill tab sections, including under the door. For this, I again used the God Hand nippers and removed by cutting parallel to the faces of the tabs, removing the tab sections, but leaving the small sections behind them that bridge to the outer stringers in place (see photo.) The crossbearers and crosstie pieces that you add will nest into these small sections when you add them.

◇ Clear the areas in the underframe stringers where the crossbearers and crossties will "nest" into the stringers. The crossbearers nest into both stringers and the crossbearers *do not* touch floor boards when installed. The crossties only nest into the outer stringers so only create notches in the outer stringers.

◇ Add the truck screws. I replaced those in the kit with 2-56 screws. For me, they were self-tapping in the existing 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 inside of the car body.

◇ Glue the center sills/bolsters to the floor. Use liquid solvent cement. Again, note that there are two "pins" that aid in alignment. If necessary, you can clamp the parts until they are set.

◇ Glue the floor into the car body. I inserted the roof for handling stability, but did not glue it in place at this time. You may have to work in a couple places separately or clamp the floor in place until the glue sets. I do not recommend wrapping the body with rubber bands to hold the floor in place as the styrene in this kits is quite soft and the lower side sill may deform from the pressure (ask me how I know.) Now is also a goos time to fill the holes in the center sills as they will not be used (these can be



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seen as white circles in the photos of the model.)

◇ Add the ends. These are resin parts. Carefully slide the parts on a piece of sandpaper that is on a flat surface (a counter top or a piece of glass works) until the "flash" at the edges is thin enough to easily peel away. Try to do this from different positions, rotating the part, so that you remove material evenly. Once ready to add the ends, I used very sparing amounts of the Barge cement/MEK mix to tack the ends in place. When tacking them in place, it is best to have the roof inside the car body, too. This will allow you to gently push the ends up against the underside of the roof. The ends are a "perfect" fit to the car body, meaning they are exactly wide enough. If you want to fudge a little to one side, then it is suggested you have more overhang of the end/side at the corners without the ladders. On the corners with the ladders, the ladders hide the joint entirely. Once the ends are tacked in place, remove the roof, taking care to not move the ends (if you do, repeat the process to realign everything.) You can add ACC through the holes in the sub-ends that are inside the car body. I used thin ACC applied *very* sparingly. If you add too much, it will flow right to the edges and start leaking out, creating a mess. Once the ACC had secured the ends to the body, I added more thin ACC, drop by drop, from the bottom of the car body and the top (remember that the roof is not in place.) Use fine tip applicators for thin ACC and have tissue twisted to a fine point to wick away any excess ACC if necessary.

◇ If adding other draft gear (coupler pockets,) add them at this time. Secure as you choose (we glued and used 0-80 screws.

◇ *The following several steps should be addressed concurrently for best results. It is recommended that you add the corresponding side sill support sections and tabs as you add the corresponding crossies and crossbearers to ensure the fit of all parts.* Add the crossbearers to the underframe. These are created by folding the four etched pieces with two 90 degree bends in each part. They nest in the gaps in the stringers and the notch in each crossbearer fits in the adjacent flange of the center sills. On my model, these were affixed with a 50/50 mix of Barge cement and MEK followed

by sparing amounts of ACC. *Be sure that before you glue these crossbearers in place that they do not extend past the side sill* (they should extend past the stringers, however.) If anything, they should be about 0.010" (or a thousandth or two) inset from the side sill. You may have to file the etching(s) back a little to achieve this. Also, be sure to not push down on the crossbearers (and crossies in the following step) as the flanges of the etched side sill support tabs will nest *under* the tabs. Add the resin splice plates across the bottom of the center sills and tying into each crossbearer. These are grey parts in the images.

◇ Add the four crossies that have holes in them for the train line. There are two on each end of the car on opposite sides of the center sills. Note the location of the train line in the photos and use that as a guide for placement. Again, they should be slightly

◇ Add the train line (if doing so) using 0.020" wire in two pieces, one on either side of the center sills. Also, if adding a branch pipe tee, you can harvest this from the styrene train line included in the Intermountain kit. Drill through the main part of the tee with a no. 74 drill bit and then through the leg of the tee using a no. 76 drill bit. Bend the wire to simulate its passing through the center sills. Test for fit. Remove the wire and thread it through the crossmembers, adding the branch pipe tee so that it is "trapped" between the appropriate crossbearer and crossie (where the AB valve will be located.) Secure the train line pieces with ACC. Add the other four (non-train line) crossies.

◇ Add the side sill support sections and tabs and bolster tabs. These are etchings. Consult both the prototype and model photos for location. The bolster tabs that abut the fan controls (left bolster on each side) should be added in conjunction with the fan control boxes included in the kit. Also, the side sill tab immediately to the right of the left bolster on each side is shaped slightly differently, with a shallower angle on its left edge. Once you see it in the photos of the prototype, you will never fail to "see" that detail! I added these etchings (after creating the bends) by tacking in place with Barge/MEK followed by ACC from behind. Note that the bolster tabs are channels, meaning they

have "flanges" at top and bottom. I nested some styrene in there to secure them against the faces of the bolsters. I believe I used 0.020" x 0.060" although it may have been 0.030" x 0.060". Note that because these were welded underframes, there are no rivets on the faces of the tabs or channels.

◇ Assemble the brake components (if using Tichy brake parts.) When dry, drill the rear of the cylinder, two nipples on the reservoirs and three holes on the AB valve using a no. 79 drill bit.

◇ The cylinder is attached using four etched parts. Due to limitations in HO scale, I found it necessary to add a bit of styrene strip to the mounting face of the cylinder, extending approximately 0.015" past the mounting face of the cylinder on each side. First, bend to create a 90 degree angle segment that attaches to the face of the crossbearer (see photos.) Next create two longer angles and attach them to the cylinder (again, see photos.) Tack the cylinder in place, with the two angles attached to the cylinder tacked into the angle that you mounted to the face of the crossbearer. To this "loose" assembly add the front "sloped" channel piece that abuts the adjacent face of the center sill and supports the angles under the cylinder. I tacked all of these in place with the Barge cement/MEK mix followed by sparing amounts of ACC.

◇ The mounting brackets for the reservoirs may have to be adjusted depending upon your choice of AB brake gear. For Tichy parts, I actually had to add a bit of styrene to span the distance between the crossbearer and crosstie. On a different model with Detail Associates/Grandt Line reservoirs, I actually had to trim the parts to accommodate the reservoirs. Test fit! I tacked everything in place with the Barge cement/MEK mix, which allowed me to make slight alterations in the placement, before securing things further with ACC in key locations.

◇ The mount for the AB valve is composed of a long narrow angle that must be bent from an etching and a wider strap that must also be bent. There are two small angles that simulate the mounting angles to mount the long narrow angle to the adjacent crossbearer and crosstie, although these could be left off with little visual impact if the long narrow angle fits snugly between the crossbearer and crosstie. These were secured with both the solvent-Goo/Barge cement mix as well as ACC. As before, I found the best method was to use the Barge/MEK mix to position things by tacking in place and then securing with drops of ACC applied with a pin. See photos.

◇ Adding piping between the brake parts not only improves realism, but it also helps to strengthen that attachment of all the parts. Use 0.012" for the piping between the cylinder and reservoirs to the AB valve. The bends are as they appear on the PFE brake arrangement. Secure with ACC.

◇ Add the dirt collector and pipe between it and the branch pipe tee. Tichy and Detail Associates/Grandt Line include very nice replicas of the dirt collector. The end must be drilled to accept wire "pipe" before attaching the dirt collector to the AB valve. I used a no. 77 drill bit. The wire "pipe" is 0.015" wire, bent as shown.

◇ The brake levers are etched parts. The main lever can be

attached to the cylinder using the clevis on the cylinder of the Tichy or Detail Associates/Grandt Line parts (Cal Scale and Bowser have similar clevises on their cylinder parts, as well.) I used some spare etched ones and turnbuckles and wire can also be used to simulate clevises by trimming off one end of the turnbuckle to create an "open" slot. The dead lever includes etchings to mount it to the center sills, as on the prototype. The photos illustrate how I mounted the bottom "bracket" first, added a piece of 0.010" wire, added the lever, and then sandwiched the lever between the second "perforated" piece to complete the assembly. The second piece must be bent at the ends to be positioned over the lever and abut the portion of the bracket that was attached to the center sills. This effectively creates an "open" box around the lever, with the lever "pinned" in place by the wire. See photos. Complete the brake rods using 0.010" between the levers and also between the trucks (simulated by terminating near the axles of the truck wheel, as shown on the model.) Also add the rod between the two levers. The main rod terminates at the truck bolster, simulating the rod to the hand brake bell crank. I added some chain where the main rod connect to the cylinder, as shown in the photos. I used 40 links per inch chain for this.

◇ To complete the brake arrangement, I added the lever hangers. These are essentially grab irons. I did add some half-round styrene to the inside face of the center sills to anchor two of these hangers. The other hanger on the main lever was bent like a drop grab and actually mounts under the flange of the center sill, although a "straight" grab mounted directly to the flange would look just as good. The hanger for the dead lever is also shaped a "straight" grab. I used 0.008" wire for these, although 0.010" or 0.012" could be used, as well. That completes the underframe.

◇ I next turned my attention to the roof. If you are replacing the angles on the roof that support the hatch covers when they are open, I recommend removing the detail that is on the roof now. These are four pairs of wedge-shaped details on the second seam cap from the ends of the roof. These details will be replaced with etchings.

◇ Glue the roof in place. If you are adding weight to the model and haven't done so, do it now! Most of the roof to body joint is styrene to styrene so liquid cement will work. At the ends, you can add ACC to the underside of the ends of the roof, allowing it to flow into the roof/end joint. I added the ACC with a pin.

◇ The first seam cap from each end of the car has four holes (two on either side of the roof peak center line) for some rather large "hooks" for the hinged portions of the hatch covers. I used these to fill the holes, but removed these details entirely as they are quite oversized. I carefully shaped the leftover material to match the seam caps. You can either use the kit's hatch covers or substitute Details West parts as I did. The first details I added were the small holds that are between the running board and supports. Each hatch cover has one. They are oversized styrene on the kit's covers. I used 0.008" wire to simulate them. They were essentially very small grab irons used to lift the hatch up or lower it down.

◇ Replacement hatch cover hinges and the brackets that attach

them to the closest face of the adjacent roof seam cap have been provided via etched metal parts. I did not use these on my model so I have no visual aid for their use. However, if you use the kit's Equipco hatch covers, the etchings may be a more delicate option. The choice is yours. For reference, they are parts 1 and 2 on the etching sheet(s) and can be located by using the numbered parts layout included several pages after this.

◇ I added the hatch covers to the roof at this time. They are glued in place using styrene solvent cement. Next, I added the hatch supports. These consist of brackets plus the supports. These parts must be bent before adding. Consult the photos. I added the supports to the brackets, carefully threading 0.010" wire through both parts. I then added the brackets and supports to the roof, adjacent to the hatches as shown. I secured them in place with Barge/MEK followed by ACC. The wire that passed through the bracket and support was also secured with ACC and once dry, trimmed to length.

◇ If adding the "open" triangular parts that prevented damage to the hatch cover itself when it was flipped open, you must first remove the two "nubs" on top of the hatch covers (on either the kit or Details West parts.) These supports are simulated by two etchings per hatch cover. I removed these nubs and drilled and added the lifts for the hatch covers before gluing the hatch covers to the roof. The order you choose is up to your discretion. I also removed the hatch support bracket detail from the Details West parts, as shown in the photos. The triangular supports were added by making the bends in the parts and then attaching the first leg by pinning it to the hatch cover using 0.010". I allowed that to dry and then trimmed it close to flush using fine wire nippers. I then secured the second leg in the same manner. You will note that you cannot secure both at the same time (or at least, not easily) because the part folds "back" over the first leg. Secure all eight of these.

◇ Turn your attention to the ladders. You have a couple choices to make in this step. The ladders are an exact match to those of the R-40-25 in terms of stile details and tread (rung) width and spacing. There are jigs to aid in assembly of the ladders. We use the following technique, although you may find that you work better with another. At the end of this section, we also offer a couple suggestions should you wish to pursue a different avenue. Ensure that the holes in the jig are free and clear. We use a drill bit for that: I recommend [this specific one](#) to have on hand to "ream" holes in etchings in case you find one that is not etched completely. Then glue a strip of styrene (0.060" x 0.080" is what we used, but something similar that you have on hand will work, too) using the solvent-Goo/Barge cement mix followed by ACC. Then glue that assembly to a piece of sheet styrene with your favorite solvent cement, e.g., Testors, Tamiya, Tenax, MEK, etc. Add 0.010" wire into the four holes (top and bottom on each stile = four total) and secure these wire segments in place with ACC. Leave about 1/8" wire extending from the face of the jig. Ensure that the holes in the ladder stiles and treads (rungs) are free and clear, as described above. Trim a pair of opposing stiles free from the fret and bend along the score line ([a bending tool](#)

[like this one](#) will make this job infinitely easier and the bends will be more square and true.) Thread the stiles over the pieces of the wire in the jig, with the "leg" formed by the angle in the stile facing out and "over" the edge of the jig, with the two stiles forming mirror images of each other. 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.* If you choose, you can use wire grabs, either from a commercial source or bent by you. Know that if they are not exactly the same size as the rungs used for the side ladders, it will impact the attachment of the side ladder at the top and bottom, as these incorporate brackets at the top and integrated sill steps at bottom. You can also assemble the ladders by soldering them together using 0.010" wire instead of styrene rod. Obviously, that requires a skill and capability with soldering.

◇ Add the sill steps to the bottom of the side ladders. These must be carefully bent and attached to the ladders using brackets. All of these pieces have holes that are engineered to achieve a perfect fit. Take your time, follow the photos (both model and prototype) and you will be rewarded with exceptionally detailed ladders that match the prototype and are more durable than styrene details. Pay particular attention to the four photos of the final assembled side ladders with steps and upper brackets in place.

◇ Add the upper brackets to the ladder stiles. These are attached to the stiles via holes at the top of the stiles. They should be bent as shown on the model. I again used the 0.010" styrene rod to hold things in place followed by ACC.

◇ You have a choice. You can simply secure the side ladders to the roof eaves and under the side sills or you can also "pin" them to the sides by having wire pass through the rung and stile into the car body. If you choose the former, then you need to add the final upper and lower rungs to the stiles and only drill holes into the roof eaves and under the side sills. To locate the placement of these holes, you can place the assembled ladder against the side, with the step and bracket below the side sill and brackets at the top "over" the roof eaves. There should be enough play in this assembly that it sits in place. Mark the hole locations at top and bottom. I drilled oversized holes using a no. 77 drill bit to provide a little play so that the ladders could be shifted to match the placement on the prototype. Note that the right portion of

the ladders actually covers the side/end joint. If you choose the latter, you will follow the previous process, but not add the rungs until you add the ladders to the side. When you mark the upper and lower holes, also mark to drill holes in the side for as many "pins" as you want to add for the ladders (you can pin all four rung holes or one rung hole for each rung.) I again encourage using larger holes to provide a little play. To pin a ladder, you add the wire to the side, slide the stiles (using the holes) over the wire and then slide the rung over the wire. The stiles and the rungs are then glued to the wire pins using ACC.

◇ Add the etched brackets for the uncoupling devices. These (actually!) have a triangular web that is included in the etching sheet and can be added to the back of the bracket for realism (and a little stability) although it is hard to see. I secured the brackets with 0.010" pins that employed holes in the end sills and were glued to the ends with Barge cement/MEK followed by ACC.

◇ The end ladders are similar but only mount to the ends. Assemble the same was using the jig. Once done, be sure to have secured the rungs with ACC, both front and back and then trim the excess styrene rod. I chose to pin both the upper and lower rungs, so I drilled holes in the ends for pins. I laid the ladder on the end while holding the car body and used a click Sharpie to mark hole locations that I drilled with a no. 77 drill. The pins are again 0.010". You also need to carefully create the rounded tops of the stiles. I do this by carefully holding the stile between thumb and forefinger above where the top rung is attached (remember that the top and bottom rungs haven't been added at this point) and bend using beading pliers. Slide the stiles over the pins. You may need to slightly bend the pins one way or another to improve the placement of the ladder, e.g. orientation. When satisfied, you can slide the rungs over the stiles and secure with ACC.

◇ Detail the B end. Add the brake step supports. These are etched parts. Bend to shape and drill holes in the appropriate locations on the end ribs. Pin the brackets to the end using 0.010" and secure with ACC. There are etchings provided for the hand brake housing. These must also be bent to shape. They are attached to the ends and may need to be adjusted depending upon the type of hand brake you use and which manufacturer produced the part (e.g. Tichy, Tangent, Kadee, etc.) We chose a prototype with an Ajax power hand brake and used the Tichy housing and a Kadee wheel. Unfortunately, as noted in the prototype info, we do not have definitive info about which parts were used on which series of cars. We collectively are dependent upon photo evidence for that info. I added a segment of 40 links per inch chain to the bottom of the hand brake housing and then looped a piece of 0.012" wire into the other end of the chain to simulate the hand brake rod. The housing assembly and the brackets were attached to the car end using Barge/MEK followed by ACC. At that moment, the bottom of rod was still loose. I added the Tichy bell crank to the bottom of the end and secured in place with ACC. I added an etched clevis over the wire (a modified turnbuckle works well for this, too.) I slid that over the bell crank and marked where the wire needed to be trimmed. I trimmed

the wire and secured the "clevis" over the bell crank with ACC. Lastly, I added the retainer valve and pipe simulated with 0.008" wire. The retainer is mounted just to the left of the hand brake housing. The wire was bent to match the prototype.

◇ Add the placard and route card boards to the car body. The placard boards on the end use etched brackets. Note that on the side, there are three boards: a large one high up on the car side to the left of the door, a smaller one below that and then a third one (even smaller) at the left bolster tab. These boards are all resin parts.

◇ Add the grab irons. Add two grab irons to each side and three to each end. I bent all from 0.008" wire although you could create your own from different sized wire or use commercial parts. The holes for the grabs in the end sills should be drilled at the very extreme bottom of the ends and at a slight upward angle, as those grabs were angled downward on the prototype. The grabs on the side straddle the corner and side on the prototype while on the model they are only on the side. I filled the holes and drilled new ones to reflect the accurate location. All of these were secured with ACC.

◇ Detail the end sills. Add the uncoupling devices to the brackets that were added previously. The brackets are etchings and should be bent to match the photos. They were pinned with 0.010" wire and glued in place with Barge/MEK followed by ACC. The actual uncoupling device rods were bent from 0.012" and threaded through the holes in the brackets and glued in place with ACC. On the other side of the draft gear, I added angle cock/air hose parts. The brackets are etchings, pinned to the end sills in the same manner as the previous etched parts. The angle cock/air hoses are Moloco parts and were secured to the brackets with loops of 0.006" flexible wire that was glued in place with ACC.

◇ The running board type varied by car number series and again, that data is not available so we are beholden to photos. The car I modeled used a Morton Open Grip running board and brake step. I represented this with a Plano etched metal part. The board was secured to the roof saddles with Barge cement/MEK followed by ACC to provide a flexible, yet strong joint. The angles under the ends of the running board plus the diagonal supports are etchings. I again employed pinning with 0.010" to secure these in place.

◇ The roof corner grab irons were bent from 0.008" to match the prototype, as shown. The corner eye bolt is actually an extra ladder rung that was cut in half; one eye for each corner.

◇ The left lower sill steps must be bent and secured to the bottom of the side sill. If you have the smaller etched add-on sheet, use the steps on it. If not, use those from the large sheet. These do fold over on themselves at the top, where they mount to the bottom of the side sills, so please make your bends accordingly. They were attached by drilling no. 77 holes in the underside of the sills and adding 0.010" that the steps were slid over. The pins were trimmed close to flush once everything had dried. ACC was used for the glue.

◇ The double rung center sill steps are etched metal parts and

are bent and attached as shown. They are delicate and that is why they are the last step in construction. You may even decide it is better to leave them off until the model is weathered. They were assembled by bending the parts to the approximate shape and then threading 0.010" styrene rod through the appropriate holes. The parts were held firmly with tweezers while the ACC set, gluing and holding each side of the inner step separately, in two steps. The upper part of the steps, with the pair of holes, must be twisted 90 degrees. To effect this, I held the etching in flat-nosed pliers, just below the second hole and then using another set of pliers, grasped the etching close to the other pliers, and twisted. This works surprisingly well and is easier than I imagined. I attached the double rung sill step to the center side sill support using 0.010" through the holes.

◇ The prototype used two different trucks: Barber S-2-A stabilized trucks or ASF A-3 Ride Control trucks. The Barber trucks are available from Tangent and ASF A-3 trucks are available from Kato, Moloco or Kadec.

◇ It is highly recommended that you brush on a coat of Future, Quick Shine or a similar protective coating besides paint to ensure that any rivets or similar details that you may have added are not accidentally flicked off at some point.

◇ Construction is complete! 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 was primed with yellow/tan primer from the Badger Stynylres line. The sides, including hardware, and the sill steps at the corners were painted a custom mix of orange noted [here](#), although Daylight Orange is the actual color and is available from many sources. The ends and roof were painted an oxide color that matches SP oxide red, again available from many sources, including [Star Brand from p-b-1](#). The underframe (as well as trucks) plus side sill support tabs and sections and the end details *below* the end sill were painted 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 decal 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!

◇ I have written up the finishing of my model at my blog: [Prototype Railroad Topics](#)

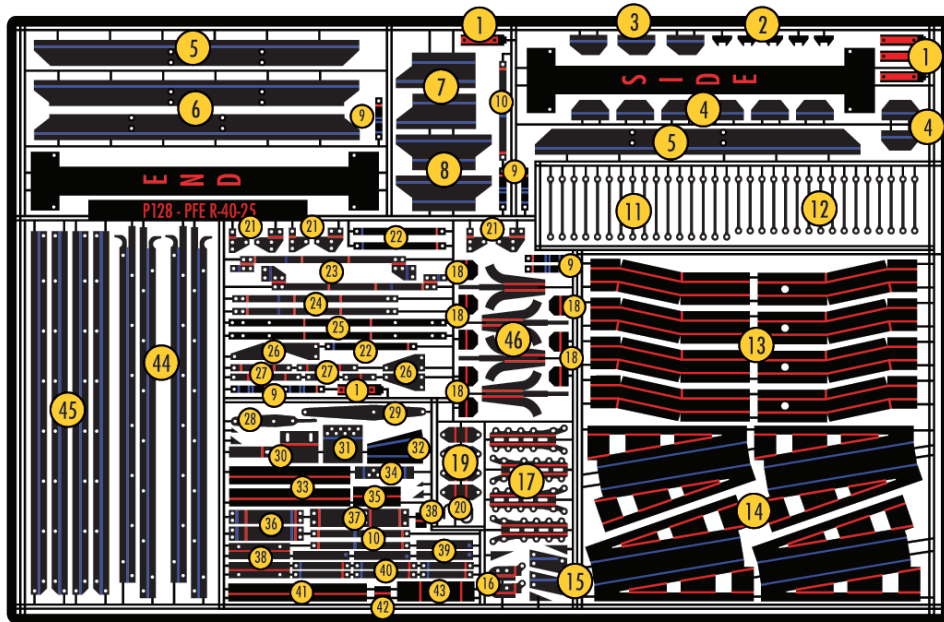
This effort would not be a success without the aid and efforts of others. Thank you to:

- ▶ Ron de Pierre for casting of the original patterns
- ▶ [National Scale Car](#)/Ryan Mendell for decals

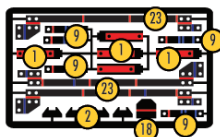
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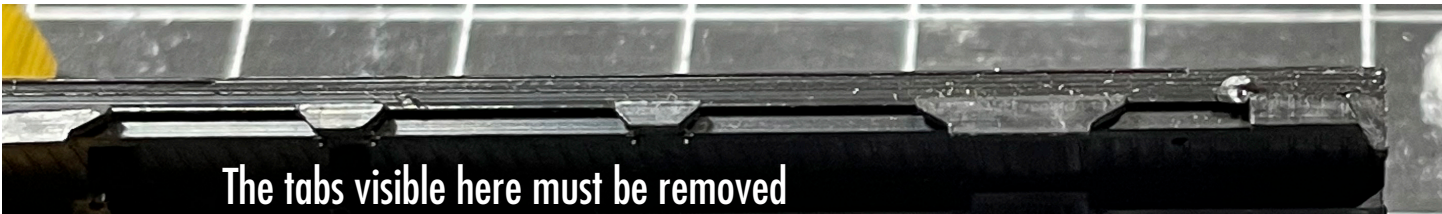
- ▶ Dick Harley's [smugmug site](#)
- ▶ [Southern Pacific Freight Car Painting and Lettering Guide](#), Harley and Thompson [note: the information for the as-delivered cars is incorrect; on as-delivered cars, the UP medallion was black and white, *not* red/white/blue. This will be updated in future.]
- ▶ *Pacific Fruit Express*, Second Ed., Thompson, Church, and Jones, Signature Press

TYPE "AB" BRAKE SYSTEM PART #3013	
<p>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.</p>	
<p>Choose either FLANGED AB-3 or CAST AB-4 (modern) BRAKE CYLINDER</p>	
<p>AB VALVE AB-5</p> <p>TRAINLINE: .020 dia. ALL PIPING .012 diameter (to represent 3/4" iron pipe)</p>	

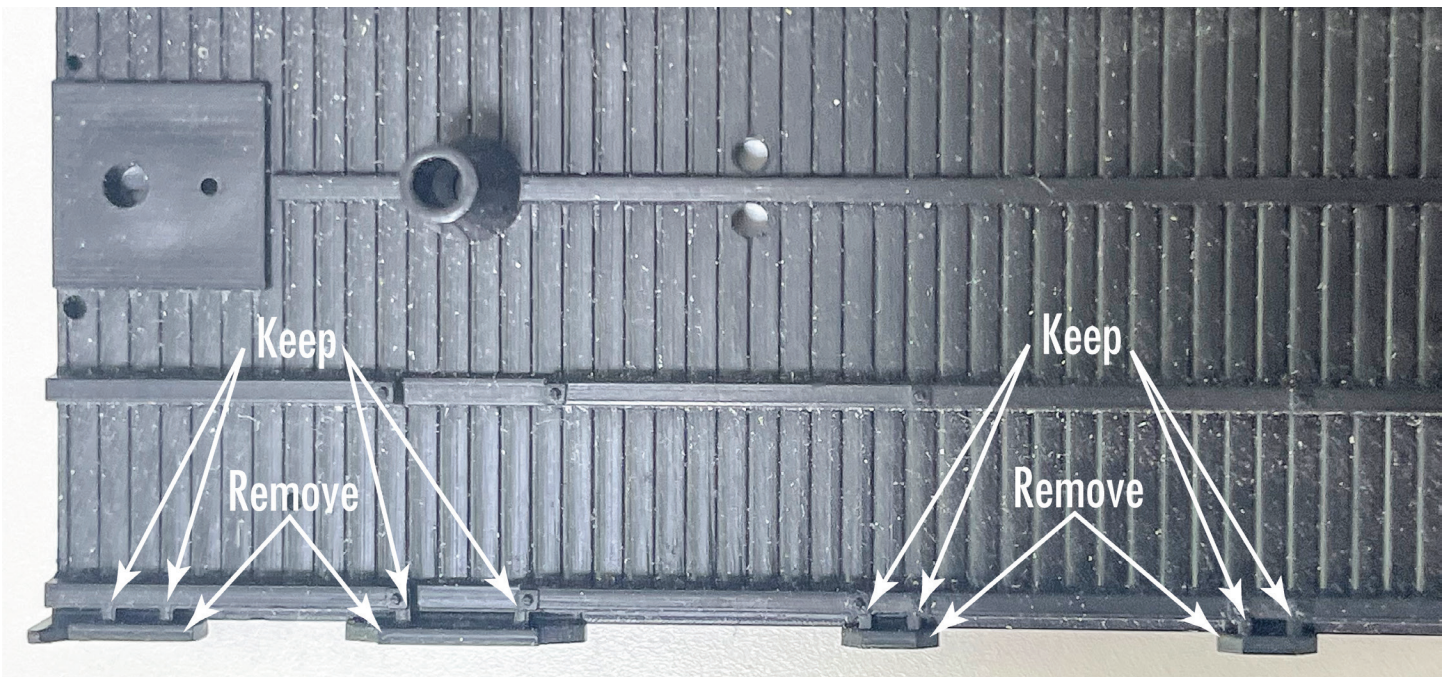


- | | |
|------------------------------------|---|
| 1 Hatch cover hinge | 24 Center sill steps |
| 2 Hatch cover hinge bracket | 25 Right sill steps (integral with ladders) |
| 3 Left side sill support tab | 26 Upper ladder brackets |
| 4 Side sill support tab | 27 End ladder brackets |
| 5 Side sill support, non-notched | 28 Dead lever |
| 6 Side sill support, notched | 29 Main brake lever |
| 7 Left bolster tab | 30 Reservoir brackets |
| 8 Right bolster tab | 31 Dead lever bracket - part 1 |
| 9 Hatch cover triangular support | 32 Cylinder bracket "front" |
| 10 Brake step support | 33 Cylinder bracket angles |
| 11 Side ladder rungs | 34 Dead lever bracket - part 2 |
| 12 End ladder rungs | 35 Cylinder bracket support angle |
| 13 Crossties | 36 Hand brake housing brackets |
| 14 Crossbearers | 37 Angle cock/air hose brackets |
| 15 Uncoupling device brackets | 38 AB valve bracket end support angle (adjacent to crosstie) |
| 16 Uncoupling devices | 39 End placard board brackets |
| 17 Hatch cover supports | 40 Running board support straps |
| 18 Hatch cover roof seam cap rests | 41 AB valve bracket support angle |
| 19 Hatch cover support brackets | 42 AB valve bracket end support angle (adjacent to crossbearer) |
| 20 Hatch cover hinge | 43 AB valve bracket |
| 21 Side ladder brackets | 44 End ladder stiles |
| 22 Center sill step second rung | 45 Side ladder stiles |
| 23 Left sill steps | 46 Bunker drain spouts |

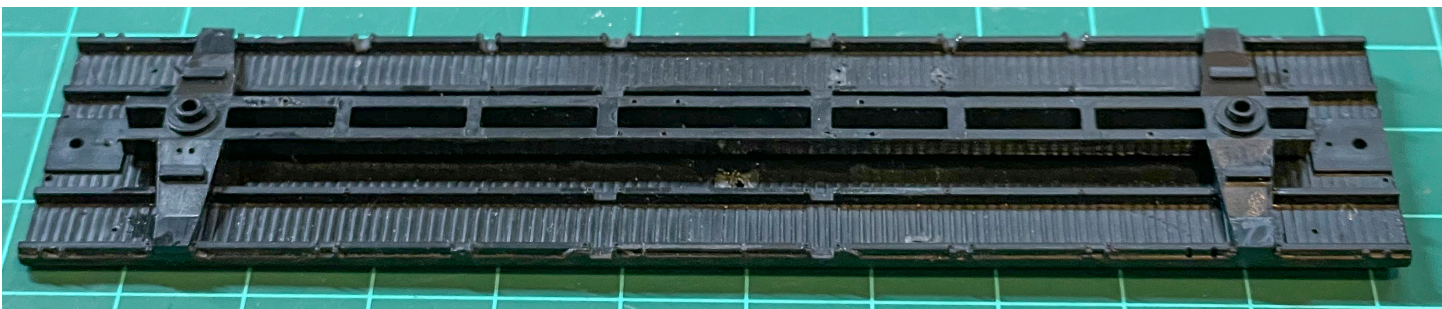




The tabs visible here must be removed

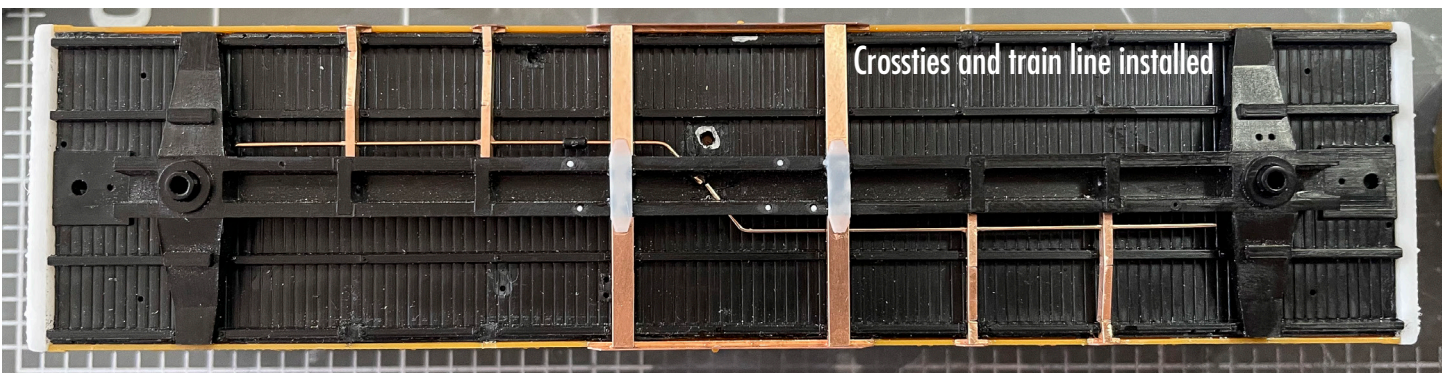
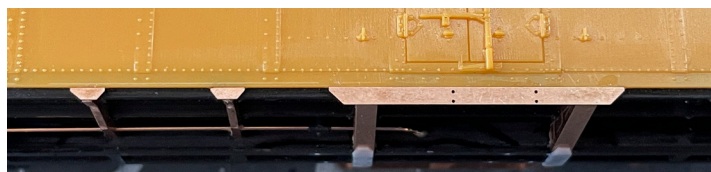
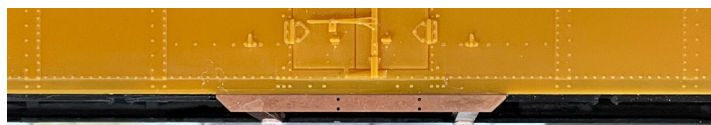
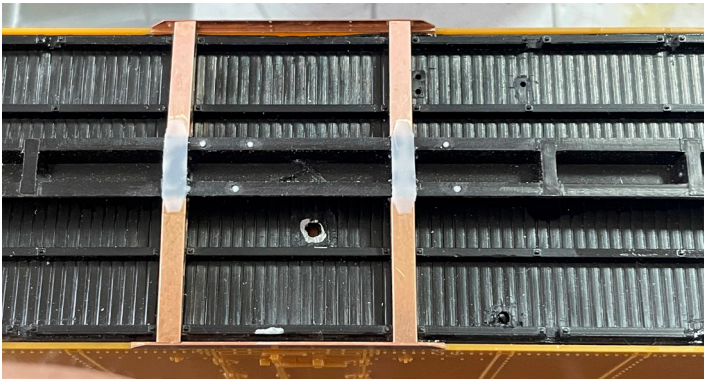
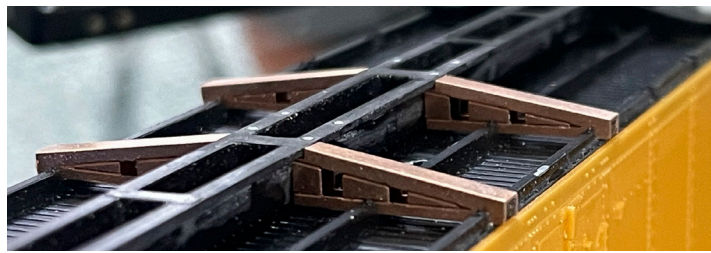
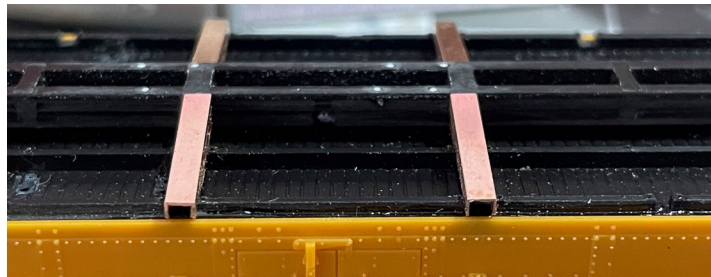
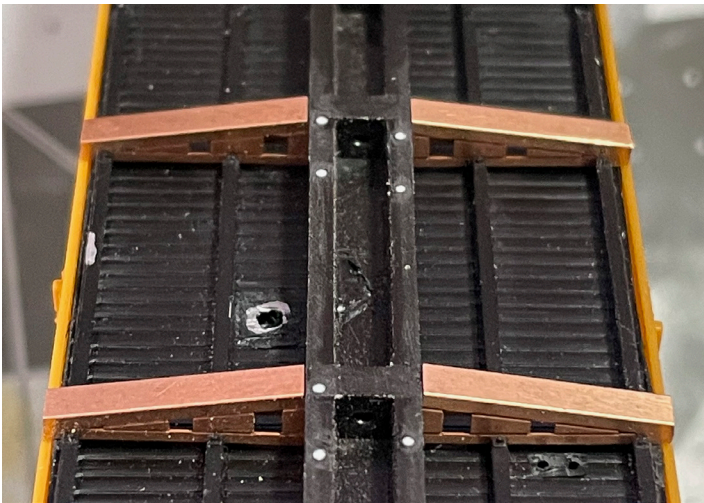


These two images illustrate the center sills with crossbearers and crossies removed





Notches cleared in floor for crossbearers and crossties (this is a different floor on a second model!)



Crossties and train line installed

