



Instructions: Southern Pacific PS/SP 40' Boxcar

Tangent Part Number: 23100-01

11/2023



Thank you for purchasing the Tangent Scale Models PRR Sam Rea Shops X58 Class Box Car Kit! A few quick notes before starting:

- **Instructions have many large images:** Because some model builders are visually oriented, while others prefer written instructions, we have included *both* text and photos within these instructions. As you can see, many of the images are rather large, to aid in your model building.
- **There are more images at the end:** If you want to see more views of a completed model as a reference for your building, scroll to the end of this document. This is another advantage of a “digital download” over a printed instruction sheet.
- **Modeling from computer screen is ideal:** If possible we recommend modeling from your monitor. You can then enlarge the images as you see fit, and you save ink and paper at the same time.
- **There are several ways to complete your kit:** While there are multiple sequence steps possible to build this car, we believe the sequence included here yields the best results.
- **Prototype photos:** While you likely have your own sources of prototype photos, please recall that for each RTR scheme that Tangent releases, we include a prototype photo on our website. You can use these as references in addition to your own sources.

- **We want feedback:** If you find something missing from our text instructions, or an error within these instructions, please let us know by submitting a comment to us on our website or sending an email to support@tangentscalemodels.com. Thank you!
- **This kit is meant for adults:** While we applaud bringing younger modelers into our hobby, this model includes many small parts, some of which are sharp and/or delicate. Therefore, this kit is recommended for those 14 years of age and older.
- **We offer semi-scale wheels separately:** We offer semi-scale wheels separately in 12 or 100 axle packs – in either 33" or 36" diameters - to fit all of our trucks – and those from other brands!



Overview of this kit's contents:



Standalone parts included:

- Part 1 – Boxcar Floor, Underframe, Trucks and weight
- Part 2 – Body Shell
- Part 3 – Underframe Details
- Part 4 – Roof Walks (two different Apex and one Morton version)

Parts bags included:

- Bag 5 contains detail parts including ladders, brake appliances, etc
- Bag 6 contains Doors (5 and 7 panel Superior and two different Youngstown versions)
- Bag 7 contains wire and etched parts
- Bag 8 contains coupler pocket screws

Parts needed/recommended:

- Couplers. Our draft sills are designed for Kadee “whisker” shank couplers - #158.

Tools needed/recommended:

- Liquid styrene cement
- CA-type cement or cyanpoxy – for wire to plastic joins
- Canopy cement – for running board to plastic roof joins (made by Pacer and other brands)
- Hobby knives - #11 and #17 are ideal
- #78/#79 drill bit in a pin vise is useful, although a #11 blade can be used gingerly
- Small Phillips head screwdrivers
- Tweezers

PREAMBLE – THINGS YOU SHOULD KNOW

- **This kit is NOT recommended for children aged 14 and under.**
- **Small parts:** there are many very small parts included in this kit. The assembly sequence requires you to have several bags open at a time, so we recommend a clean and open work surface so that you can keep all of the parts in the open and accessible. Let's get started!
- **Kit variations:** When you ordered this kit, there were 3 different prototype-based configurations to choose from. If you want to change the configuration of your kit, you can order all of our parts here: <https://www.tangentscalemodels.com/parts/> or simply go to www.tangentscalemodels.com and click on “View & Buy Models” and then “Parts”.

Box Car Construction:

Before we begin there are a few things about this kit to point out:

1. First, there are multiple styles of certain parts included that will allow you to build several variations of these cars. You will find three running boards (two Apex and one Morton), four different door variants (5 and 7 panel Superior and two different Youngstown), three lower door track versions, multiple power handbrake and brakewheel types, 7 and 8 rung ladders, and two different brake platforms (Apex and Morton). For this reason you will see comments in the directions stating “refer to prototype photos” to ensure accuracy.
2. Second, for the reasons stated above you will end up with multiple unused parts after completing the build. Add them to your parts bin for future projects!

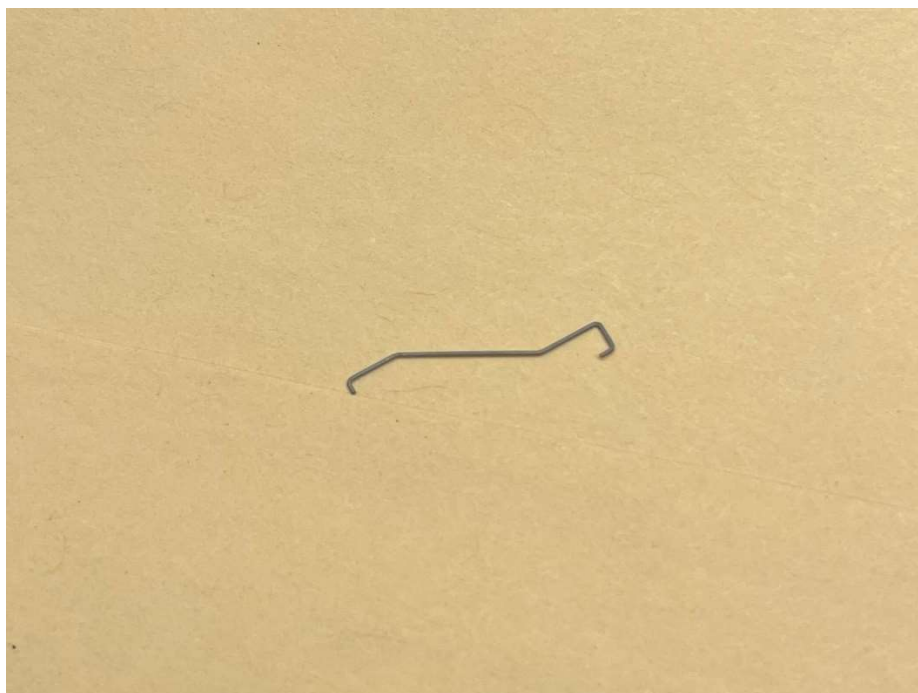
3. As is the case with our other kits, the car is basically two subassemblies - the underframe and the body. You can build either one first, as they are not joined together until the final step. Our only suggestion is that you complete one before starting on the other to simplify the construction process.

Underframe Assembly:

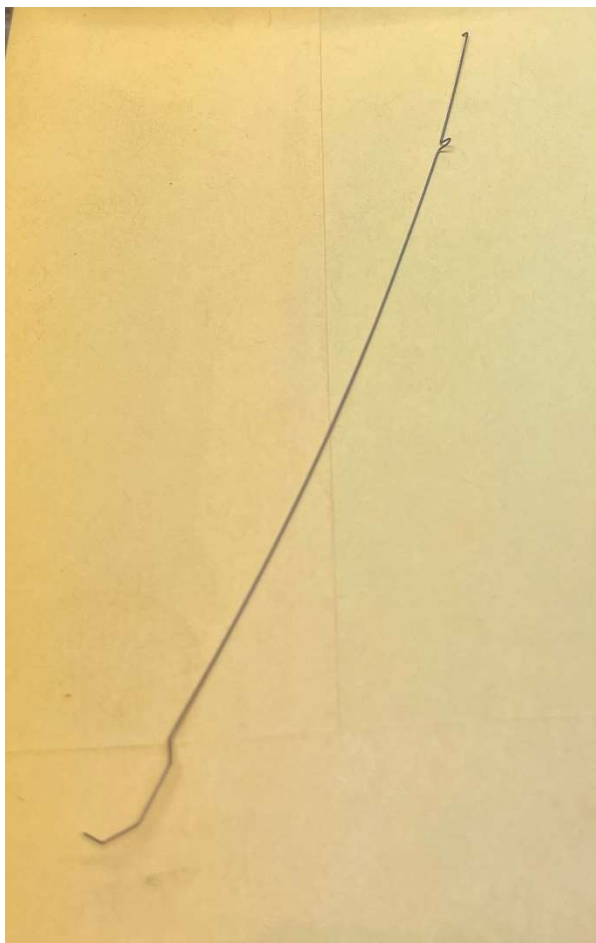
1. **Remove Floor from Body and Remove Trucks:** When you remove the car from the packaging you will find the floor installed in the body with the trucks installed (as well as the weights). The parts for the kit are inside the carbody so begin by removing the floor from the car. Also, remove the trucks and set them off to the side. Remember which screws attached the trucks. You do not need to remove the weight.
2. **Remove Underframe:** Remove the underframe from the floor and flip it over so that you are looking at the "top" (the side that rests on the floor).
3. **Locate Retainer Line and Bleed Rods:** From the wire parts bag locate the retainer line (the longest wire part), and the two halves of the bleed rod (see photos). The two bleed rod pieces are different and it matters which goes where. The part that has a "C" shape is the one that goes toward the AB valve which is the same side as the bracket that holds the cylinder.



Bleed Rod Opposite Side of AB Valve

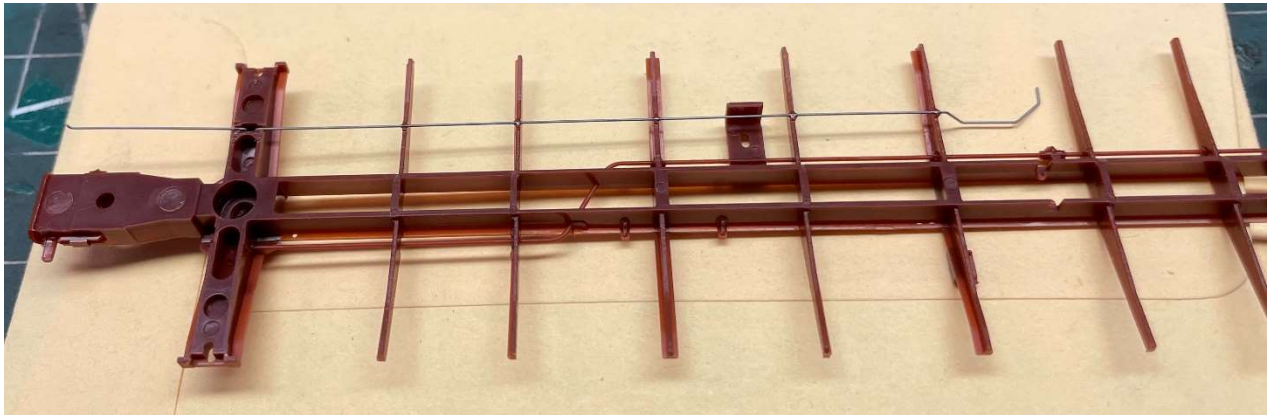


Bleed Rod for AB valve side

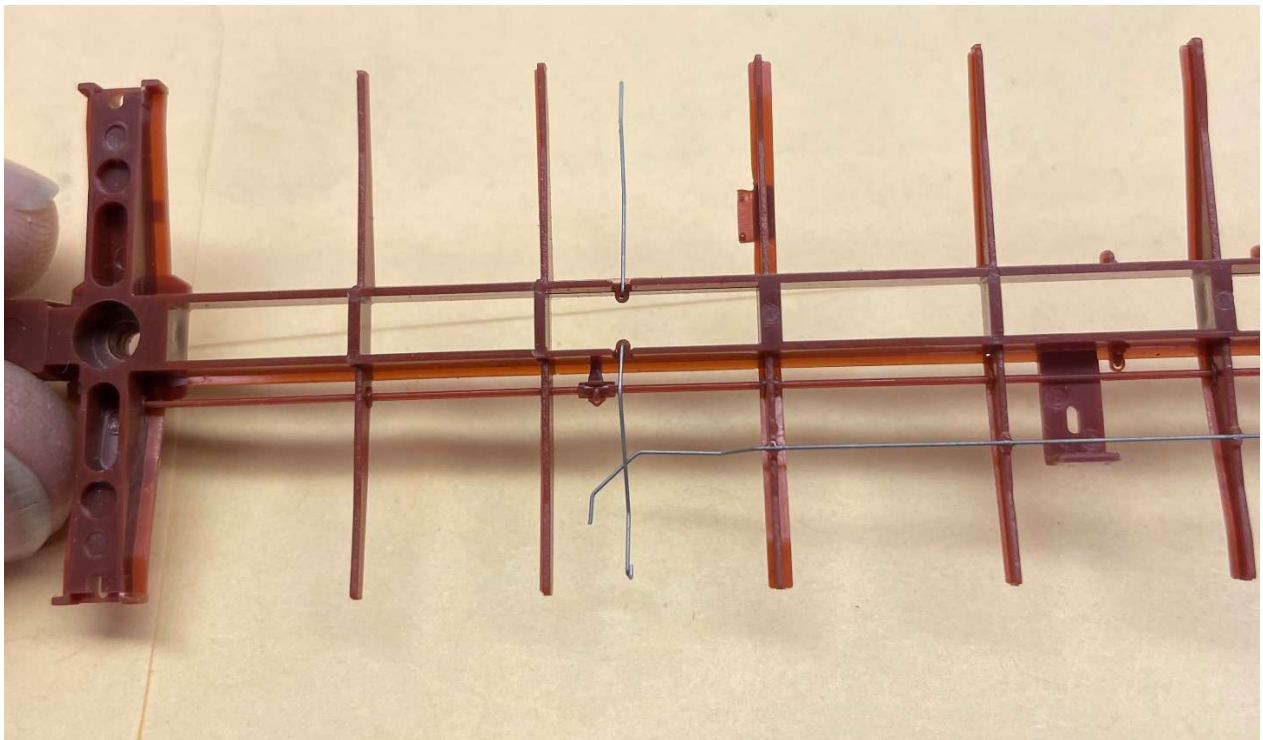


Retainer Line

4. **Install Retainer Line:** The retainer line has a small loop in it that fits in a slot in the bolster. The rest of the line fits in small notches in the stringers. Position the retainer line and secure with CA.



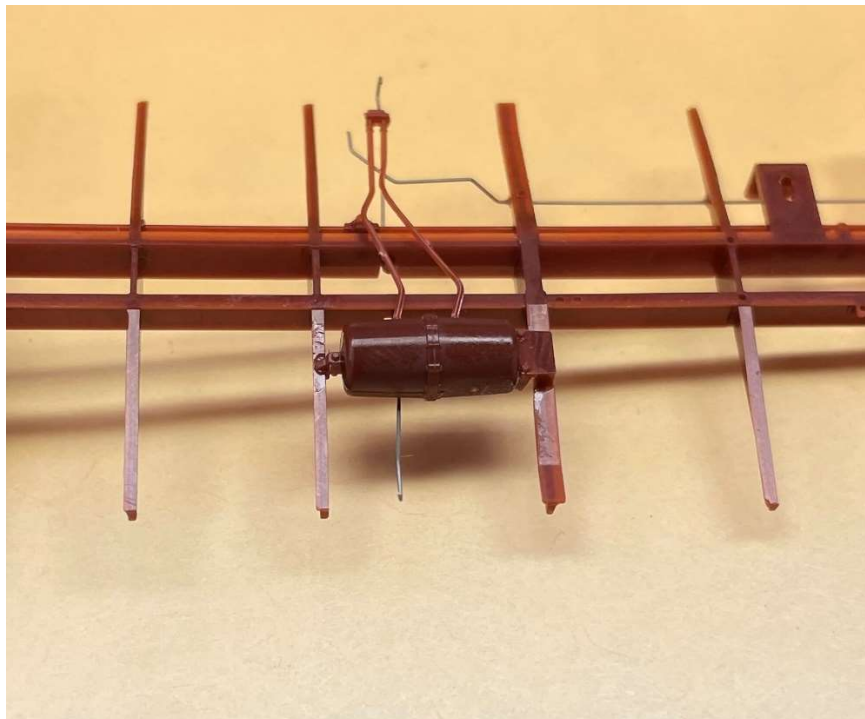
5. **Install Bleed Rods:** There are two notches and mounting holes in the center sill where the bleed rod sits. Insert the two halves into the holes and secure both with CA (the other part of the bleed rod has an offset bent into it with a longer and shorter leg on either side of the bend-the longer side goes toward the center sill). The thing you want to make sure of is that the end of the retainer line that goes into the AB valve goes over the bleed rod.



6. There is a small vertical post that the bleed rod rests in. It goes into a hole at the edge of the floor, and the cradle that the bleed rod sits in is offset from the post - this offset goes toward the center of the car. Insert the post in the hole and glue in place.
7. **Install AB Valve:** The AB valve sits in two slots that are directly opposite the small post on the floor. Position the AB valve with the holes and slots facing the center sill and glue in place.



8. **Install Air Reservoir:** For the next step, flip the underframe over. The reservoir sits between two stringers and is located directly across from the AB valve. The side that has the single connection point rests on top of the stringer and the side with the two connection points attaches to a plate on the other stringer from the bottom. Maneuver the casting in position and glue in place with the two lines resting on top of the center sill.



9. **Attach Underframe to Floor:** You can now attach the underframe to the floor. Orient so that the side of the sill that has the cylinder bracket is on the same side as the AB valve. The lines coming from the reservoir fit in the slot on the bottom of the AB valve, and the retainer line fits in the right hand hole. Insert the wire but do not glue yet to make sure you don't block the other slot or other hole.

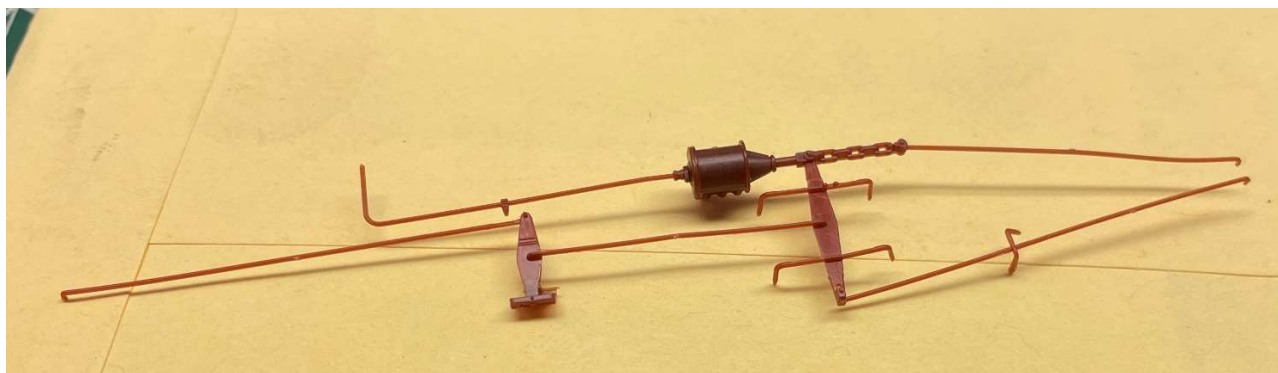


10. **Install Dirt Collector Line:** The dirt collector fits into the top slot of the AB valve and into a hole in the train line.



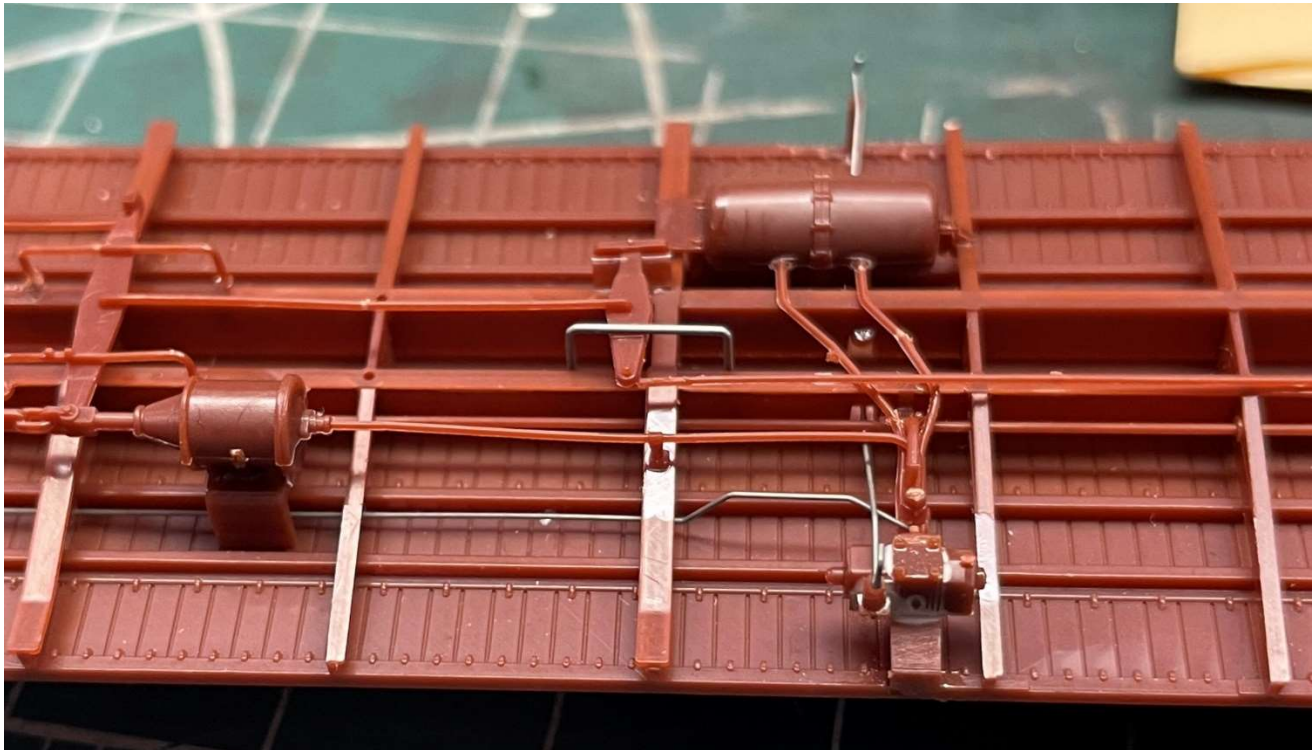


11. **Install Cylinder/Dead Lever Assembly:** The cylinder/dead lever assembly is installed onto the underframe and is keyed so it can only fit one way. Clean up any flash (carefully!) and position the assembly. The line coming from the back of the cylinder goes into the left-hand hole of the AB valve, and the lines from the dead levers go into holes by the bolsters. When the assembly is in position glue in place.

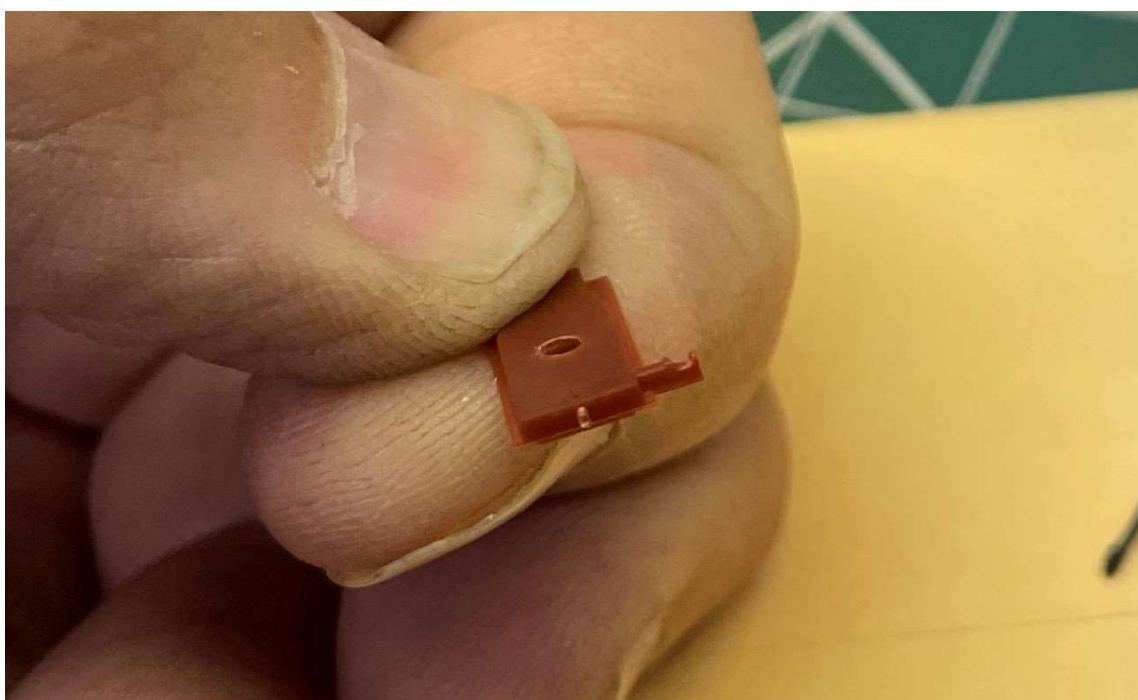


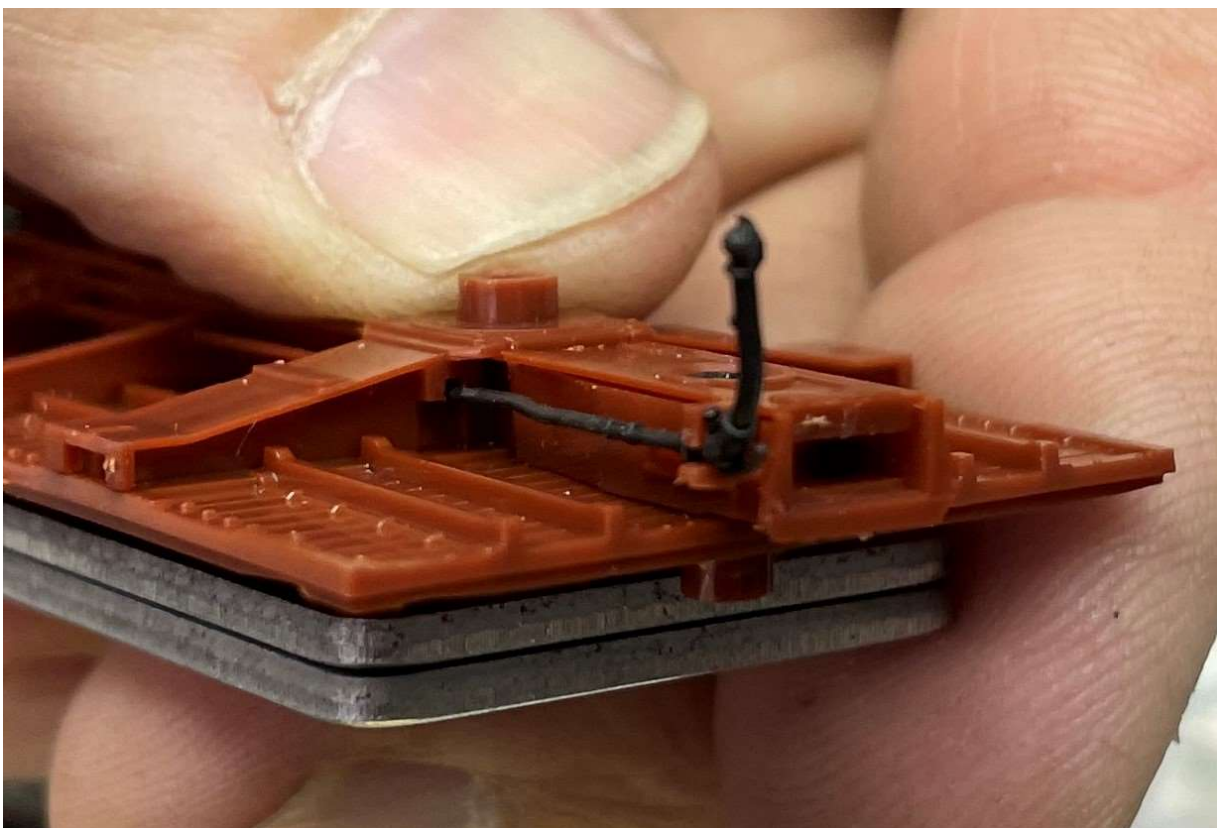


12. **Install Dead Lever Guard:** There is a large U-shaped part in the wire parts bag that fits over the dead lever that is toward the A end of the car. There are two mounting holes in between the center sill that the part fits into. Position and secure with CA.



13. **Install Coupler Box Covers and Air Hoses:** Locate the coupler box covers and air hoses. The hoses fit in a small cradle that sticks out from the side of the cover. They have a collar behind the angle cock that fits in the cradle and the end of the air hose has a small knob that fits in a notch that is under the bolster. Position the air hose using the photo as a guide and secure with CA. Install the cover and maneuver the end of the air hose into the cradle by the bolster. Using the two screws provided secure the covers to the coupler boxes. ***we suggest not installing couplers until after all paint and weathering is complete. This will ensure proper operation of the couplers**







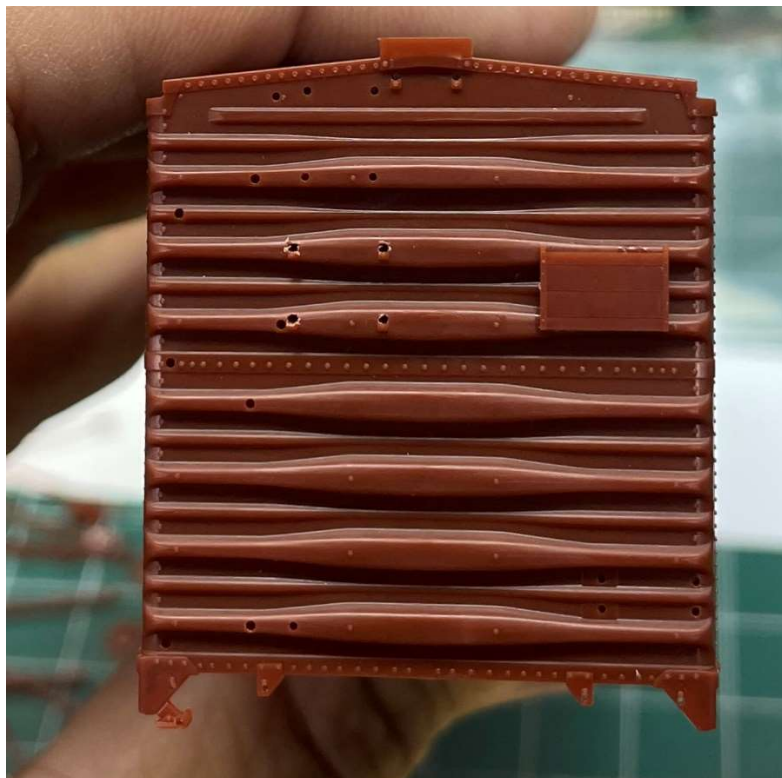
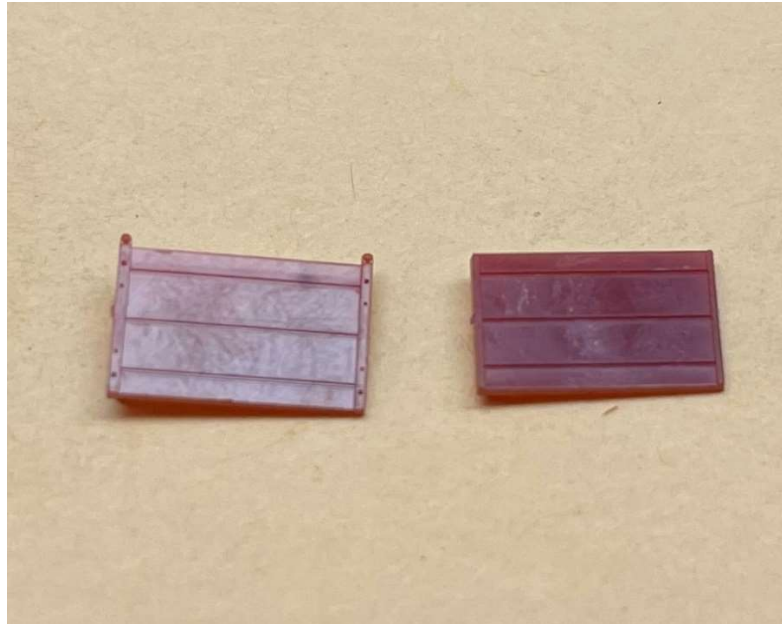
14. **Install Brake Fulcrum:** The fulcrum fits into a cradle that is next to the coupler pocket and the other end fits in a hole in the bolster. Put into position and glue in place.



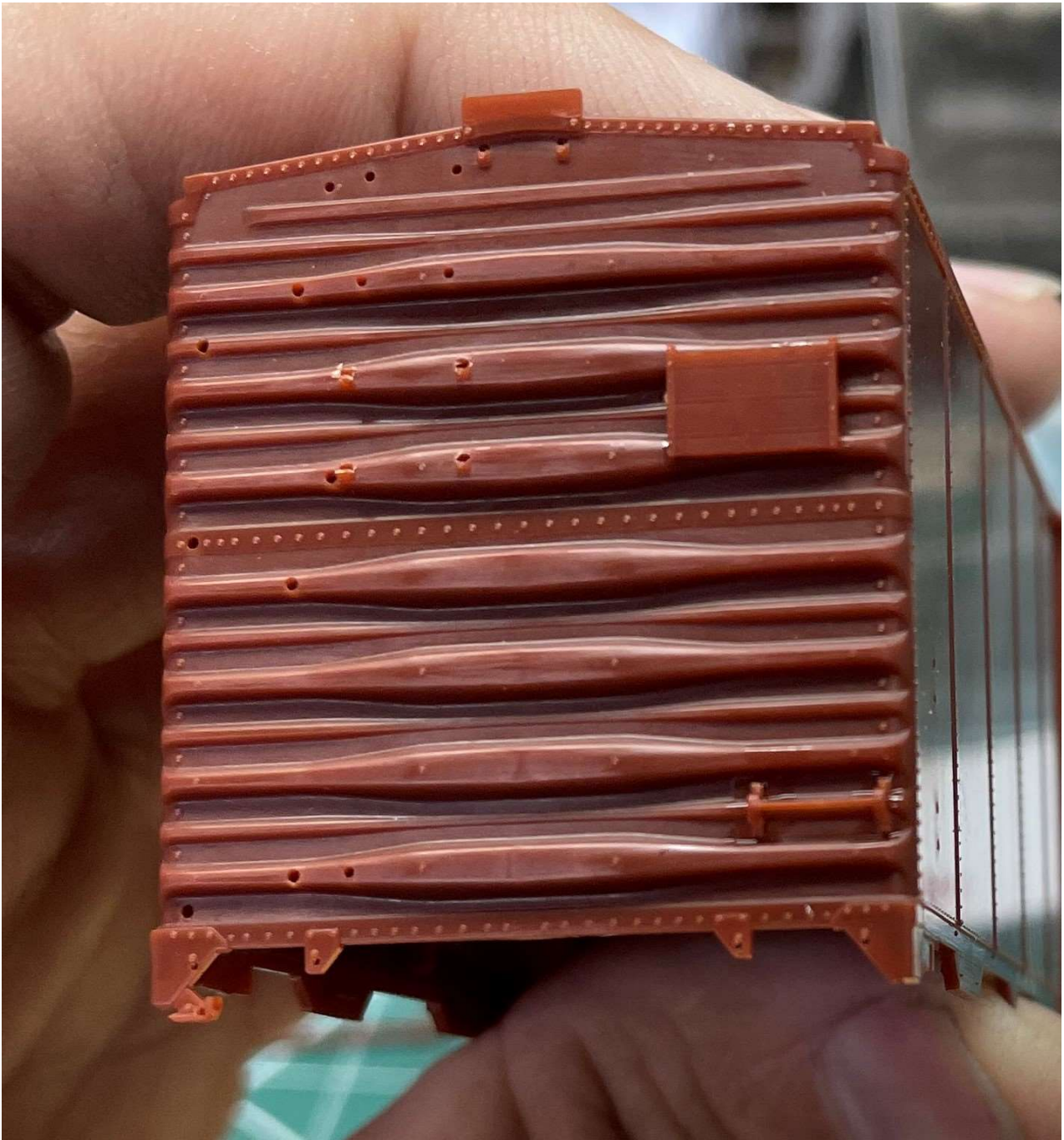
This completes the underframe. Set it aside until final assembly.

B End Body Assembly: We will begin the body detailing with the B (brakewheel) end.

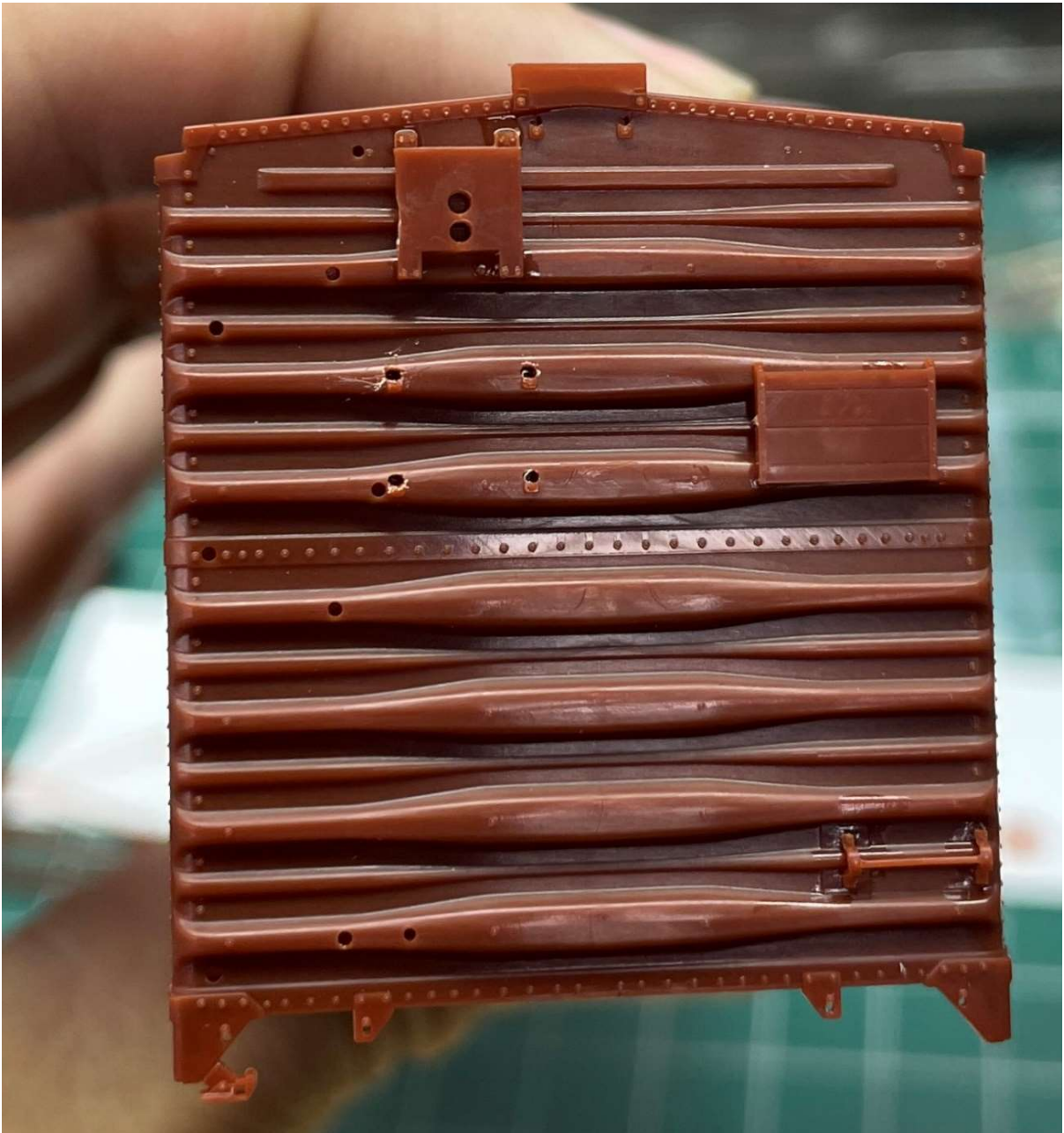
15. **Install Large Tackboards:** From the plastic parts bag locate the large tackboards. There are two different styles, and the one you want is the one that has two tabs that extend above the top edge (see photo). It has two mounting pins on the backside that aid in locating. Position the tack board so that the two tabs are facing up and glue in place.



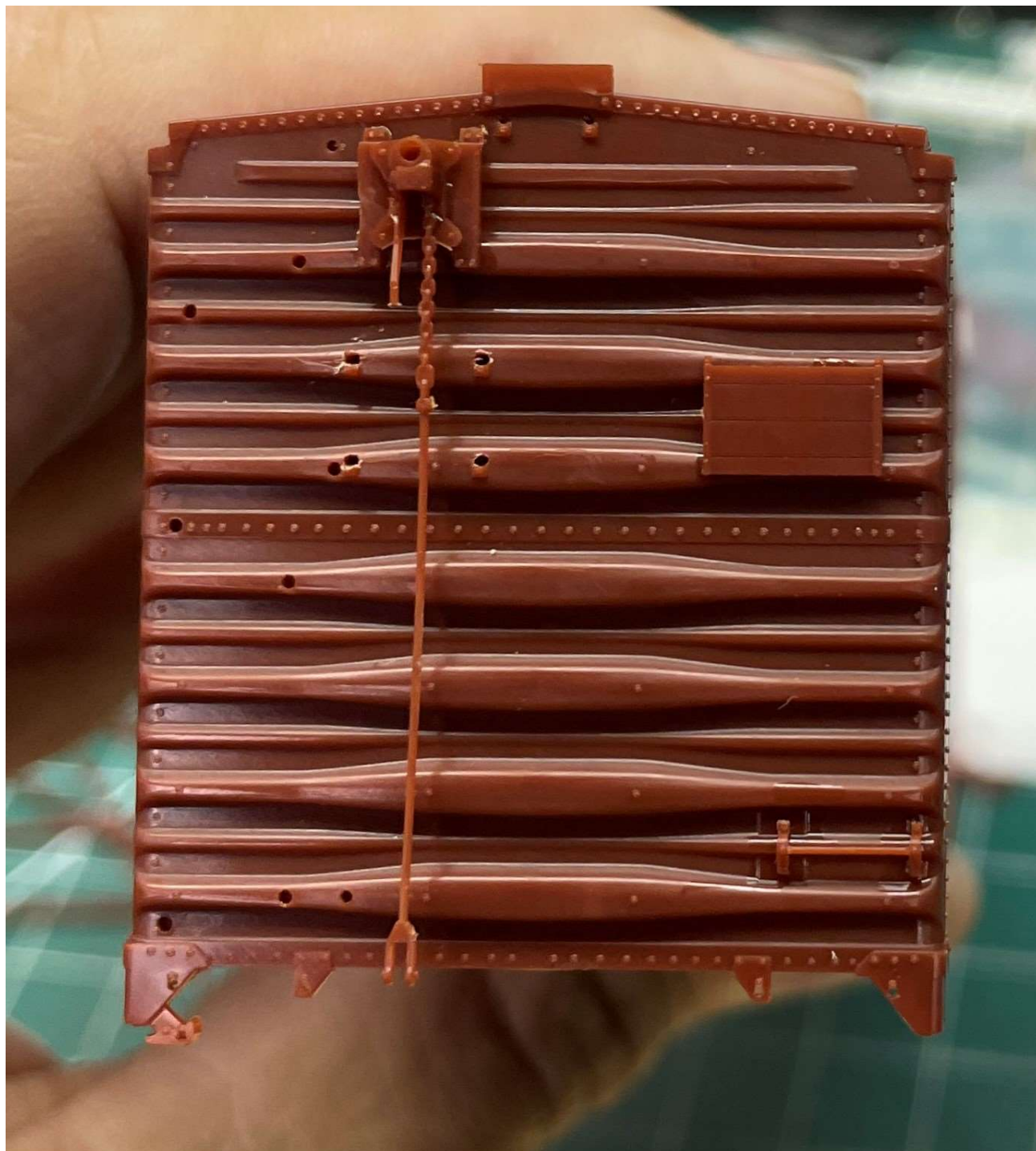
16. **Install Bracket Grab:** Install a bracket grab in the holes located on the lower right side of the car end. Glue in place.



17. **Choose and Install Power Handbrake Mounting Plate:** There are several power handbrake mounting plates included in the kit (one for each of the different handbrakes) and they are all the same. It is mounted into two holes to the left of the end running board support and the other end rests on the top rib. Insert and glue.



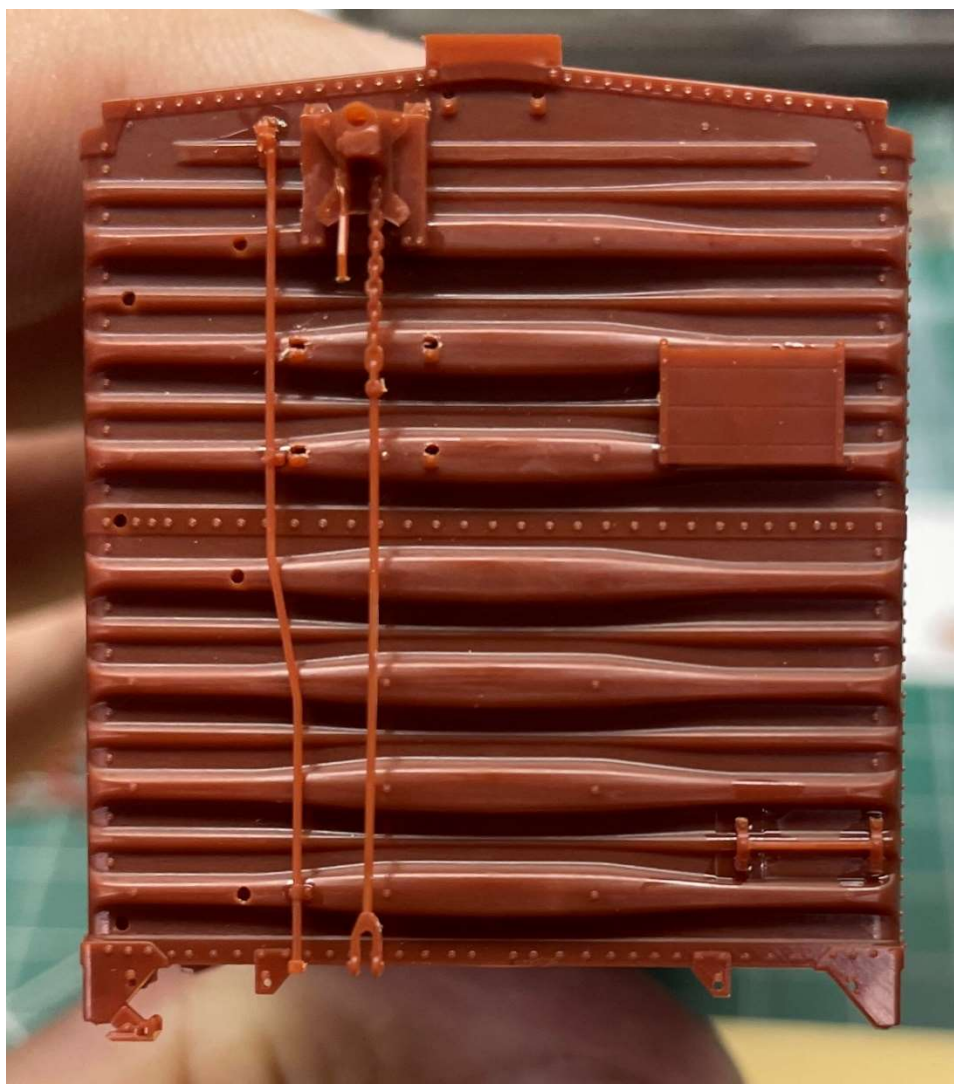
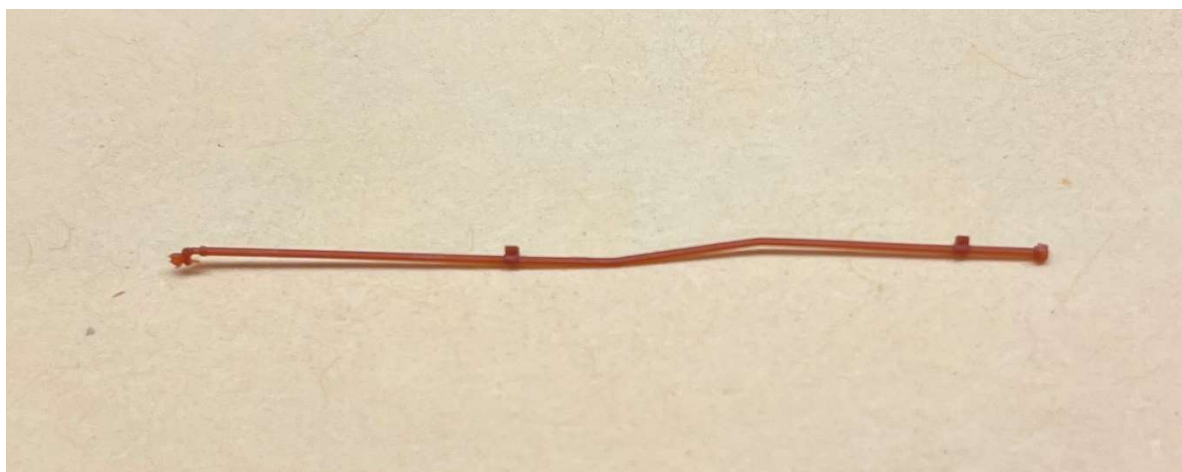
18. **Choose and Install Power Handbrake:** There are multiple power handbrakes included in the kit. This is where you will need to **refer to prototype photos** to determine which version suits your needs. Whichever you choose, insert the mounting pins into the holes of the mounting plate and glue.



19. **Install Retainer Valve Bracket:** The retainer valve bracket is the smallest part in the parts bag. It has a mounting pin that fits in the hole next to the upper left corner of the handbrake mounting plate. Carefully set it in position and glue in place.



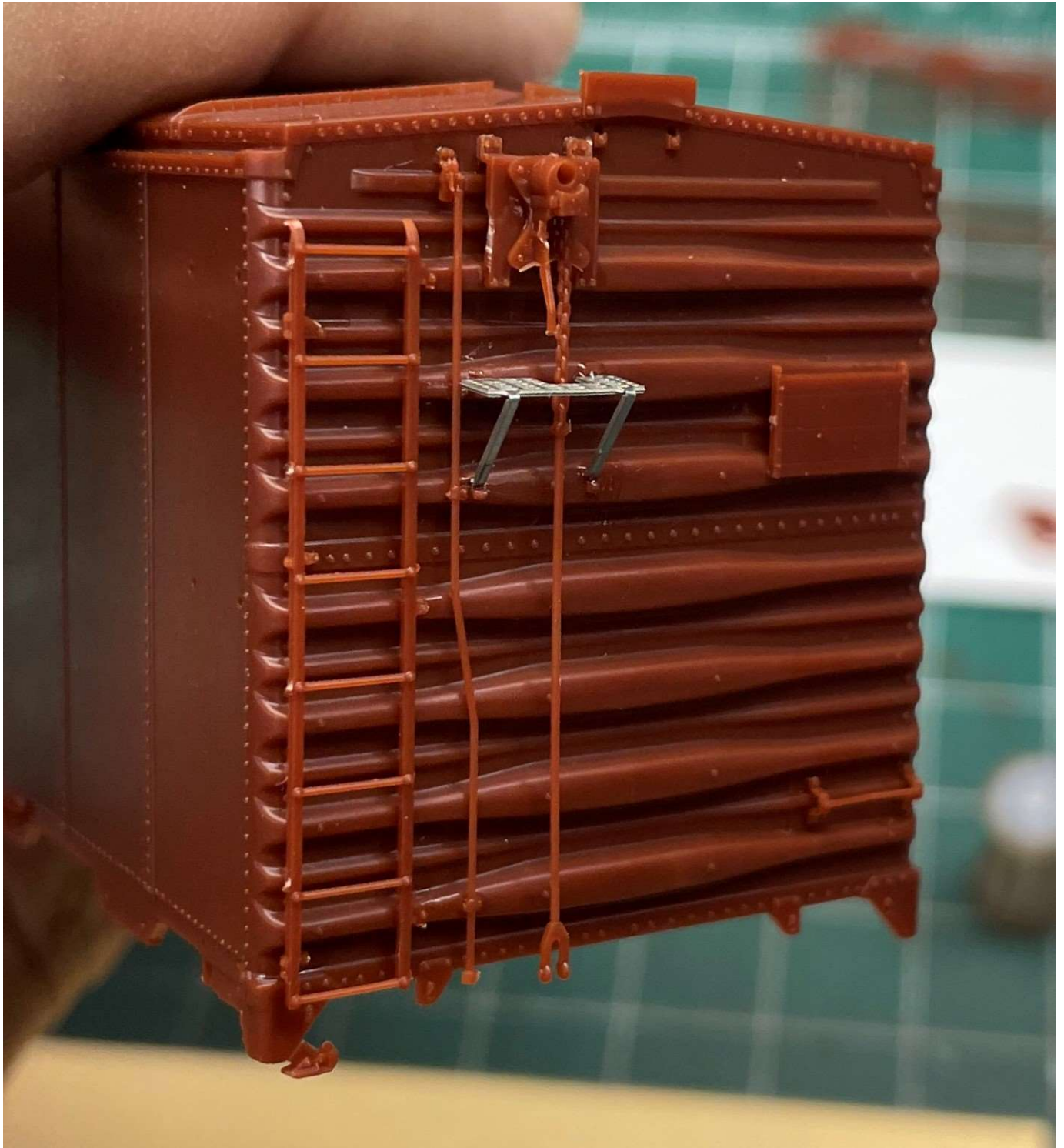
20. **Install Retainer Pipe:** The retainer pipe has three mounting tabs that ensure it will only fit one way. Position the part and glue in place.



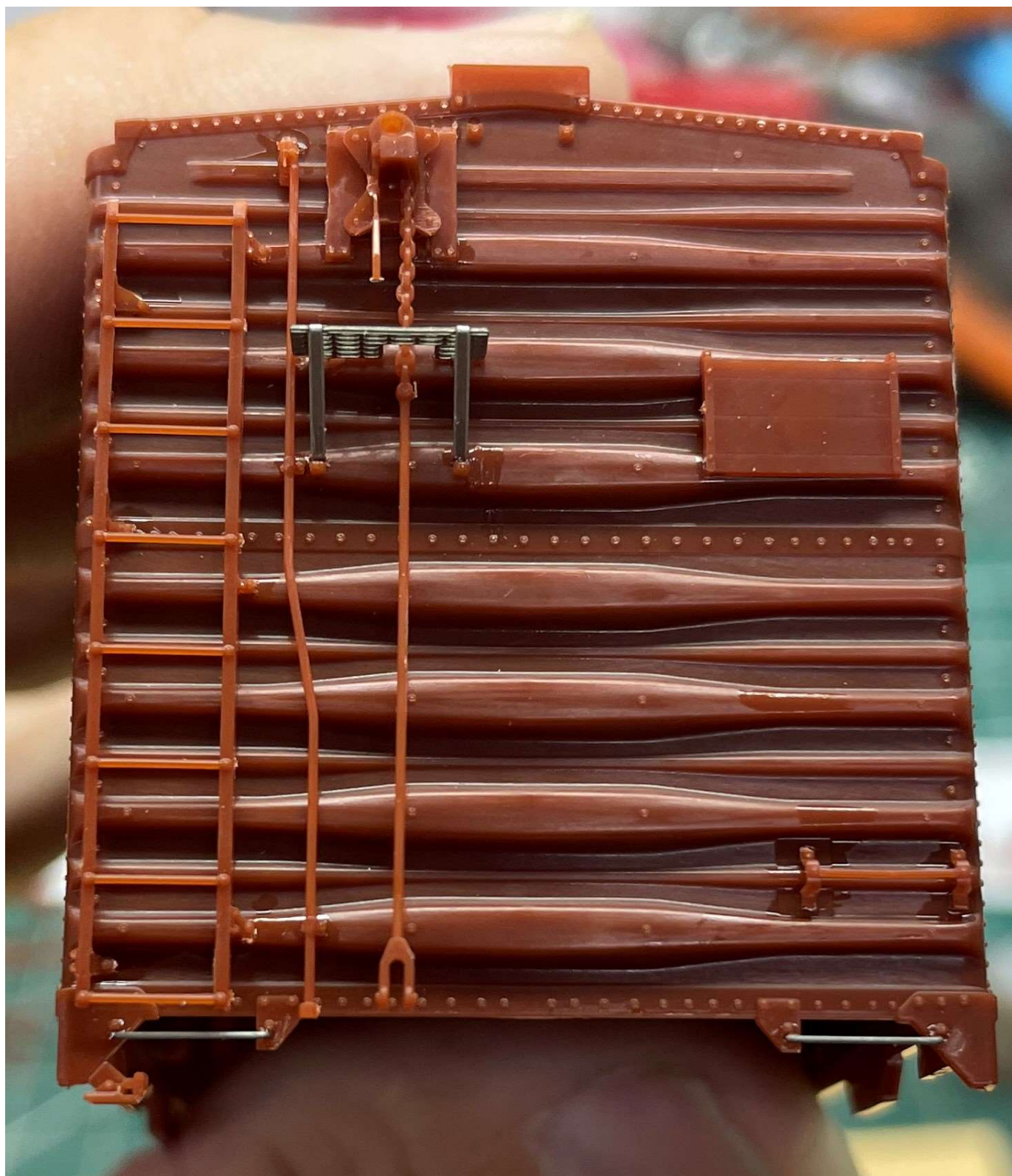
21. **Choose and Install End Ladder:** The kit provides 7 and 8 rung ladders. Again, **refer to prototype photos** to determine the correct version. The end ladders have their mounting pins/brackets offset to the right of the stiles. Set into position and glue in place.



22. **Choose and Install Brake Platform:** There are two different styles of brake platform in the wire parts bag. **Refer to prototype photos** to determine which is appropriate for your build. Insert into the mounting holes below the brake housing and secure with CA. (the “legs” of the part may have to be adjusted for a proper fit)



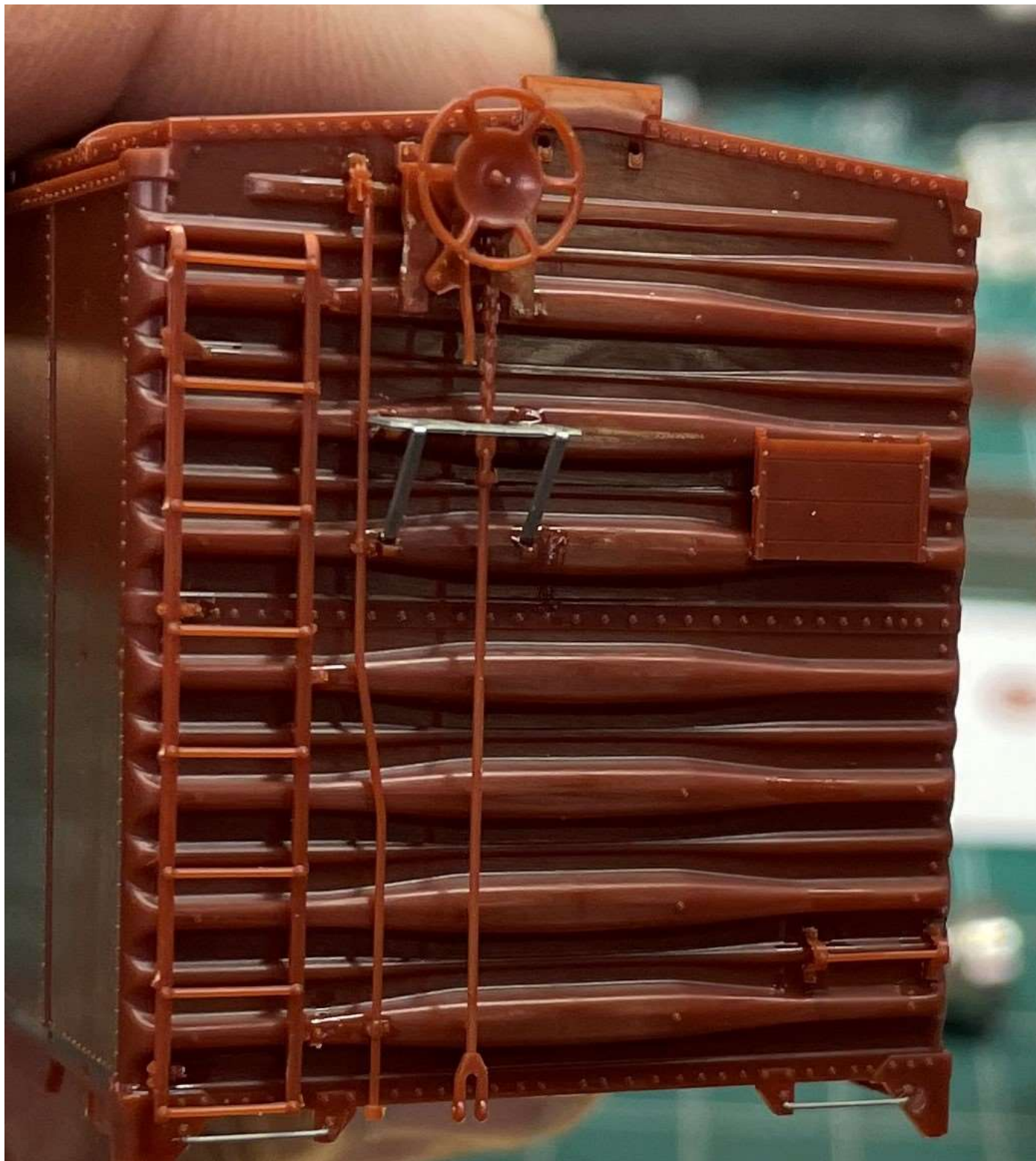
23. **Install End Grabs:** There are two straight grab irons(wire parts) that get installed in each corner of the end sill. Secure with CA.



24. **Install Cut Lever Eyelets:** There are two sizes of eyelets in the wire parts bag. The smaller of the two are for the cut levers. They get inserted into the hole in the cut lever bracket located at the lower left corner of the car end. Secure with CA being careful not to block the opening in the eyelet.



25. **Install Brakewheel:** Again, **referring to prototype photos**, install the brakewheel of choice into the brakewheel housing and glue in place.



A End Body Assembly: Repeat the same steps for the A end of the car except for the brake hardware.

Body Side Assembly: all steps referring to the car sides will be repeated for both sides of the car.

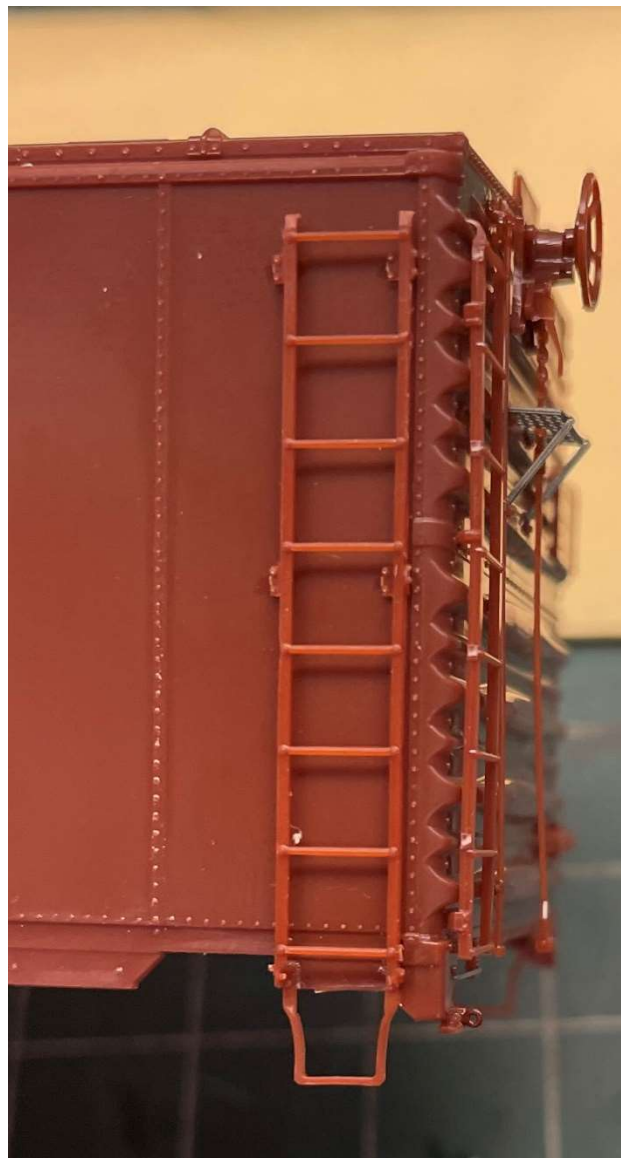
26. **Install Bracket Grabs:** To begin work on the car sides install two bracket grabs in the mounting holes on the left side of body. Glue in place.



27. **Install Stirrups.:** The stirrups are slightly different so it matters where they are installed. When you look at them attached to the sprue you will notice that one of the legs is straight and one has a slight curve to it. The leg with the curve goes on the corner of the car body. Install all four and glue. From this point forward be very careful to not damage the stirrups as they are very fragile.



28. **Install side Ladder:** Set into position and glue in place.



29. **Choose and Install Lower Door Guide:** There are three different types of lower door guide. **Refer to prototype photos** to determine the correct version for your build. Position the door guide by inserting the mounting pins in the holes along the side sill and glue in place.



30. **Choose and Install Door:** There are four different doors to choose from. **Refer to prototype photos** to determine the correct version for your build. Glue in place:
- a. 5 panel Superior
 - b. 7 panel Superior
 - c. Youngstown with tack board mounting holes
 - d. Youngstown without tack board mounting holes (to be used for cars that have had the tack boards lowered)
31. **Install Tack Boards:** Install the tack boards (large and small) using the mounting pins to position and glue in place.



32. **Choose and Install Running Boards:** There are Apex and Morton running boards included in the kit. **Refer to prototype photos,** Choose the appropriate version and glue in place.



33. **Install Running Board Ends:** Install the running board end supports and glue in place



34. **Install Corner Grabs:** Install the large eyelets into the corner holes of the laterals of the running board with CA orienting them at a 45 degree angle to the corner of the lateral. Insert the corner grabs through the eyelet and into the mounting holes and secure with CA.



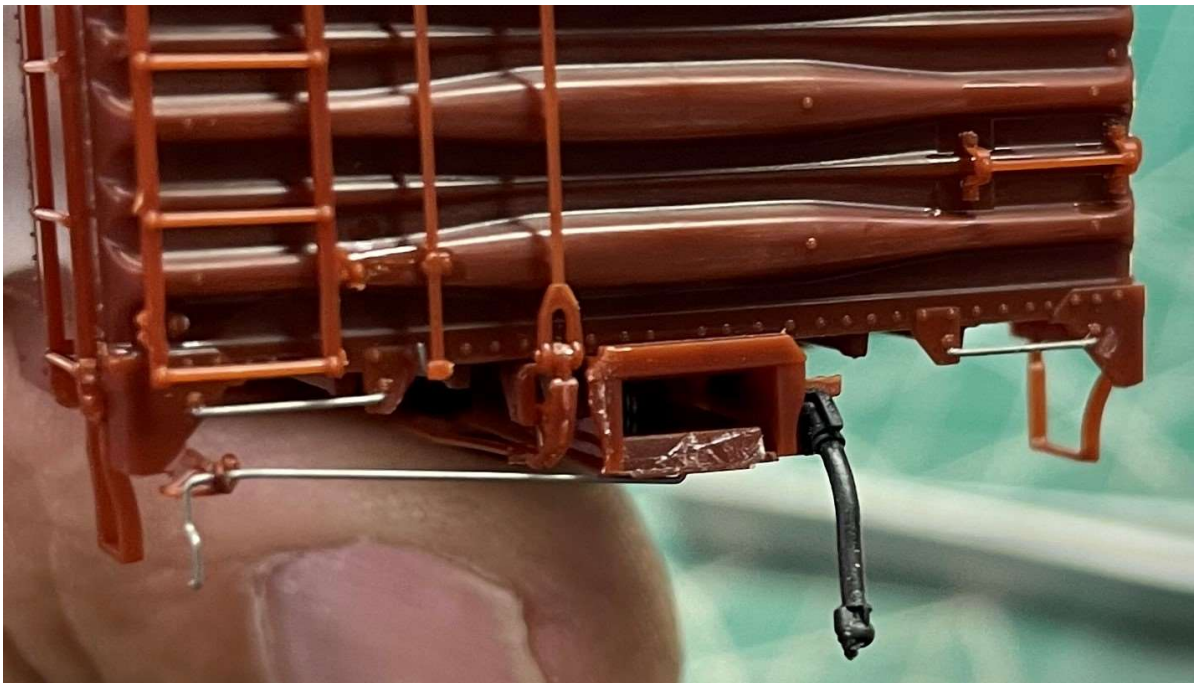
This Completes the Body Assembly

Finishing Up:

35. **Install Floor:** Install the underframe into the car body with the cylinder pointing toward the B end.
36. **Install Cut Levers:** Insert the cut levers through the eyelets in the cut lever brackets and insert the other end into the holes on the coupler pocket cover. Tack the cut lever at the coupler pocket only at this time to allow the installation of couplers after completion of paint and weathering.



37. **Attach Brake Staff to Fulcrum:** The last step is to place the clevis of the brake staff over the fulcrum. When satisfied, glue in place.



38. **Paint the car.** Refer to prototype photos for the exact car color. And don't forget: if you added couplers already, mask them off so they will not get "sticky" from the paint.
39. **Install couplers and trucks with screws provided.** When all painting is complete, add couplers if necessary. The couplers needed are Kadee Whisker type. Install the trucks with the screws you removed in step 1.

This concludes the assembly of your kit.

Thank you again for buying this car from Tangent Scale Models. Your hard-earned dollars allow us to continue to bring you more models in the future.

Want to share your creation with the world? Please feel free to upload an image of your customized Tangent model to: <http://tangentscalemodels.com/share/>

More images of finished cars are below and on the following pages.







