



## Instructions: NP/SP&S/BN ICC Wide Vision Caboose

Tangent Part Numbers: 60300-XX through 60303-XX  
10/2023



Thank you for purchasing the Tangent Scale Models NP/SP&S/BN ICC Wide Vision Caboose 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 a 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](mailto: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 our trucks – and those from other brands!



Overview of this kit's contents:



**Standalone parts included:**

- Caboose Body

**Parts bags included:**

- Bag #1 contains the Center Sill, Roof Walks, and Interior Ceiling
- Bag #2 contains the Metal Underframe and Interior Floor
- Bag #3 contains the Side Windows
- Bag #4 contains the End Frames
- Bag #5 contains the Brake Wheels, Air Hoses/Angle Cocks, Cupola Chairs, Cupola Railings, Brake Fulcrums/Chains, End Platform Lights, Roof Walk End Supports, Cut Lever Brackets, and Brakewheel Housings
- Bag #6 contains the Upper Bunk, Center Sill Spring, AB Valve Support, Tables, Small Chairs, Crossmember Caps, Water Fill Pipe Housings, and Generator Axle Cap
- Bag #7 contains the Cupola, Cupola Roof, Interior Stairs, Wash Basin, and Bathroom
- Bag #8 contains the Train Line, Cylinder/Lever Assembly, Cupola Corner Grabs, End Railing Grabs, Dirt Collector Pipe, Release Rod Pivot Bracket, Generator Pipe, and Retainer Pipes.
- Bag #9 contains the AB Valve, Coupler Covers, Body End Boxes, Generator/Axle Assembly, Air Reservoir, Smokejack and Support, Vertical Cushioning Springs and Cover, Retainer Valves, End Platforms, Oil Filler Cap, and Oil Heater Vent Pipe
- Bag #10 contains the Lower Bunks, Large Chairs, Vapor Caban Oil Heater, and Fuel Tank
- Bag #11 contains the Clear Windows for the Ends and Cupola
- Bag #12 contains the Trucks
- Bag #13 contains all the Wire and Metal Parts including the Firecracker Antenna and Waste Reservoir
- Bag #14 contains all the Etched Parts including Screens, Steps and Marker Flags
- Bag #15 contains the 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

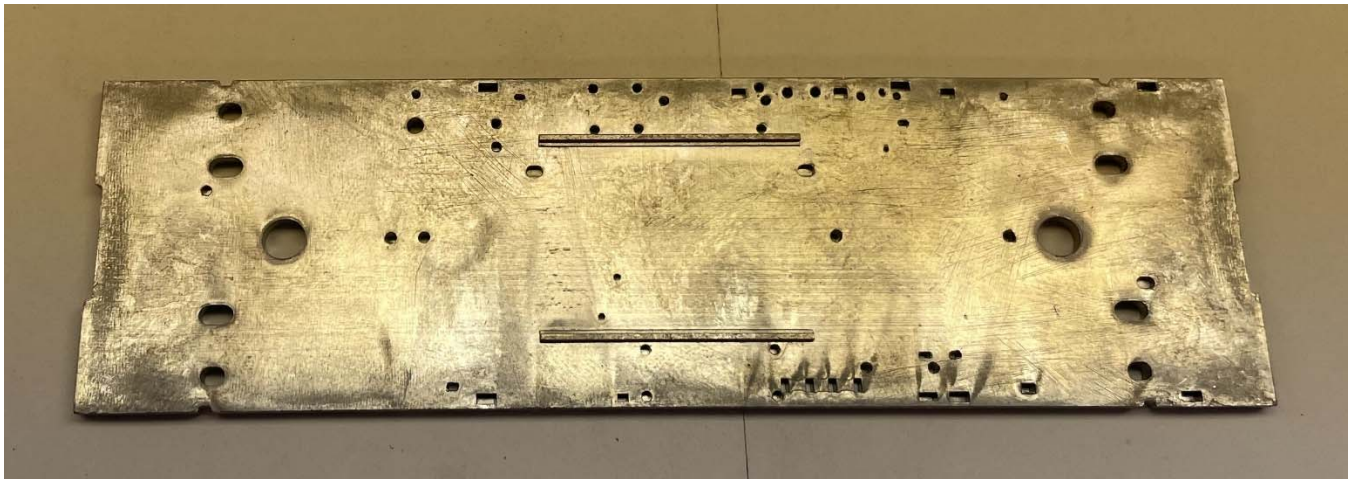


## PREAMBLE – THINGS YOU SHOULD KNOW

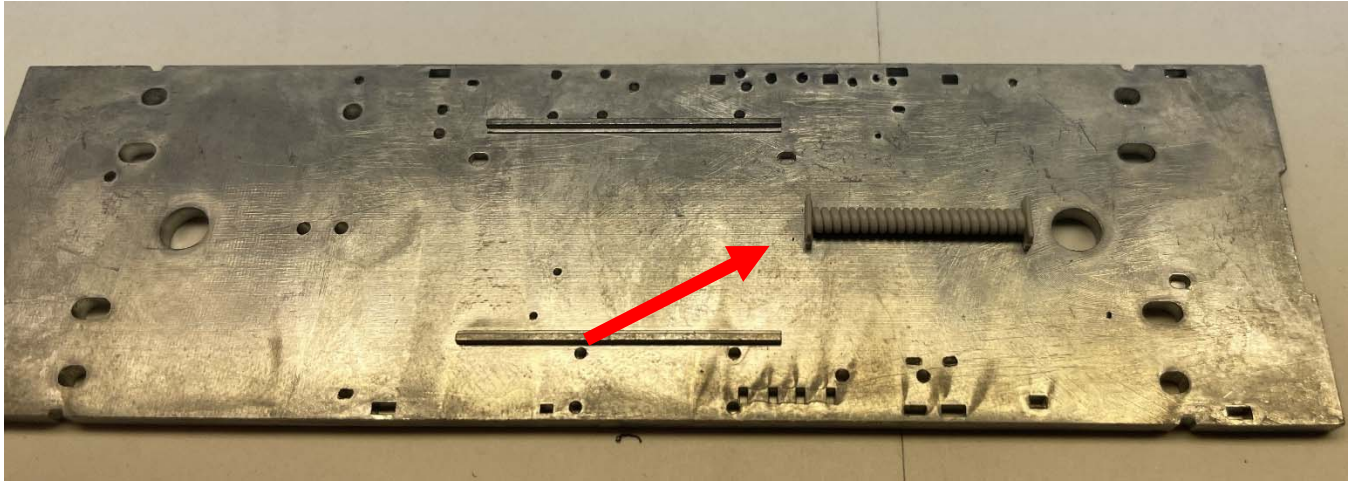
- **This kit is NOT recommended for children aged 14 and under.**
- **Kit variations:** There are multiple versions of this caboose that can be built so you will end up with extra parts after completion of the kit. There are a total of 10 different kits.
- **Multiple Bags:** The assembly sequence presented requires that you use parts from multiple parts bags simultaneously. Our suggestion is that you retrieve only the parts required from each bag and leave or return the rest so as to not lose any (some are very small)
- **Use the Pictures:** Since some of the steps in the building process are a bit difficult to describe in the text, there are photos of virtually every step in the assembly process. Use them to assist placement of the parts while building.
- **Subassemblies:** There are basically three subassemblies to the kit; the underframe, the interior/sub floor, and the car body. You can assemble them in any order you choose since they are not joined together until the final steps. These instructions will present them in the above order.

## Underframe Construction:

1. **Locate Underframe:** Begin by locating the metal underframe. It is one of the two parts that make up the floor/weight. Place it on your work surface with the side that has two ridges facing up. The grooves are for the lighting wires which are not included in this kit.

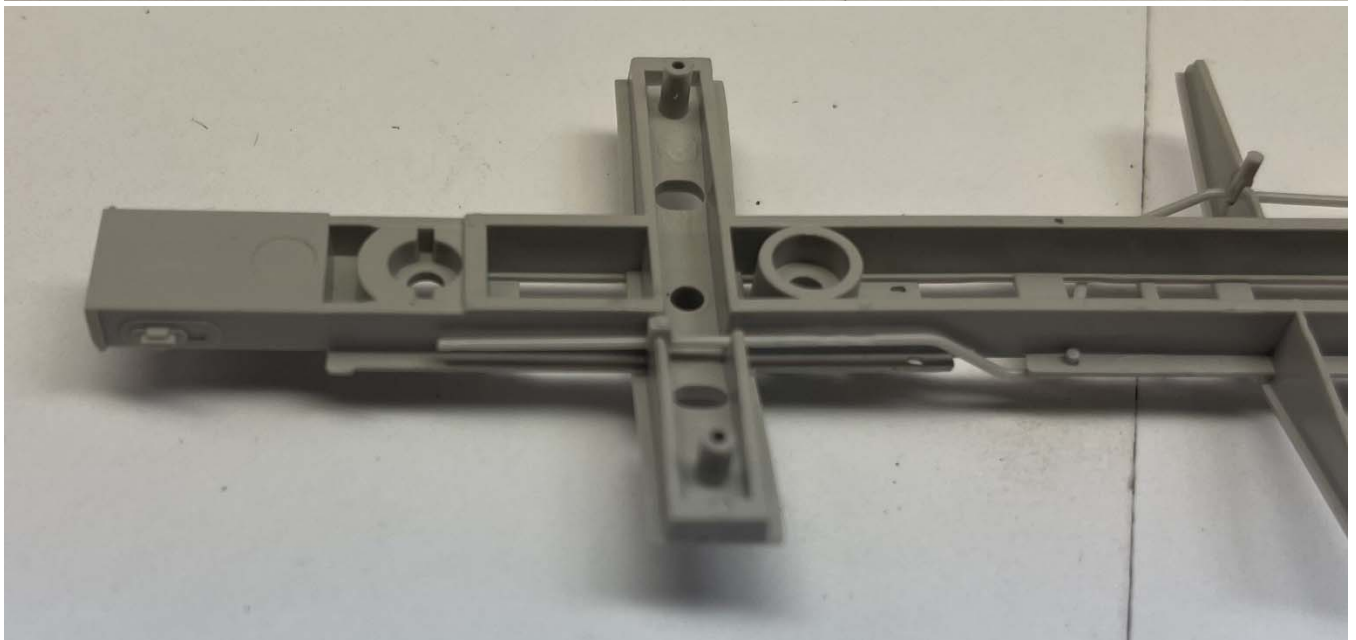
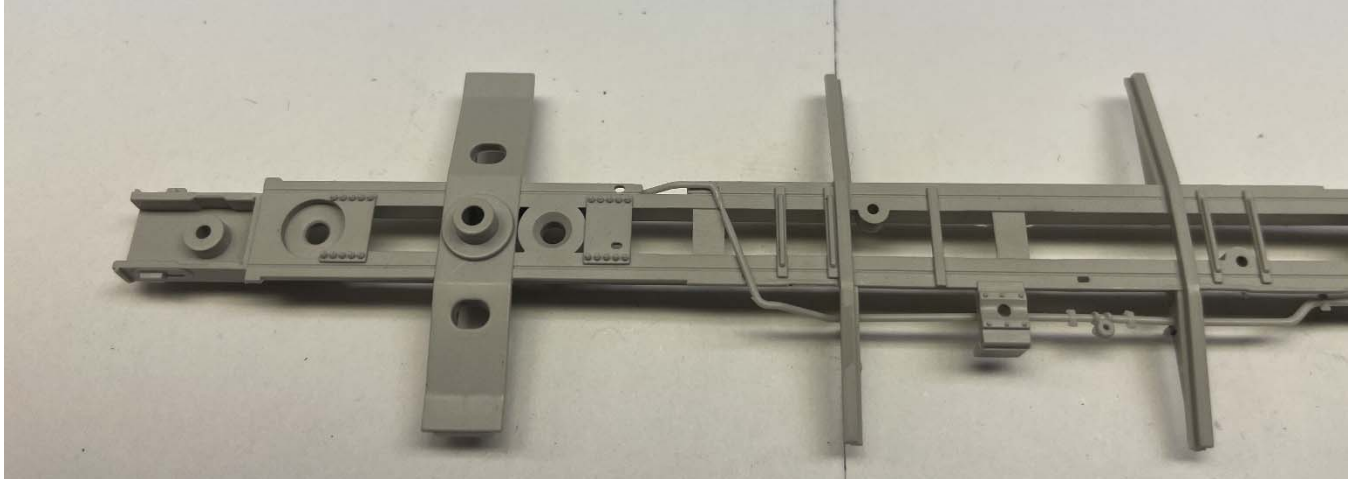


2. **Install Cushioning Spring:** Retrieve the cushioning spring (Bag 6). It has two tabs that fit into holes in the underframe (see photo). Secure with CA.



3. **Install Train Line on Center Sill:** Locate the two pieces of the train line (bag 8). It will fit in slots in the cross members and bolsters. Place the sill on your work surface so that you are looking at the underside (the side that sits against the floor). Position the longer piece so that the coupling for the dirt collector is next to the cylinder bracket and is facing toward your work surface. Glue in place. For the shorter piece, fit the tab in the bolster and position the other side over the center sill inserting the locating pins into the locating holes in the sill. (refer to the photos for clarity)



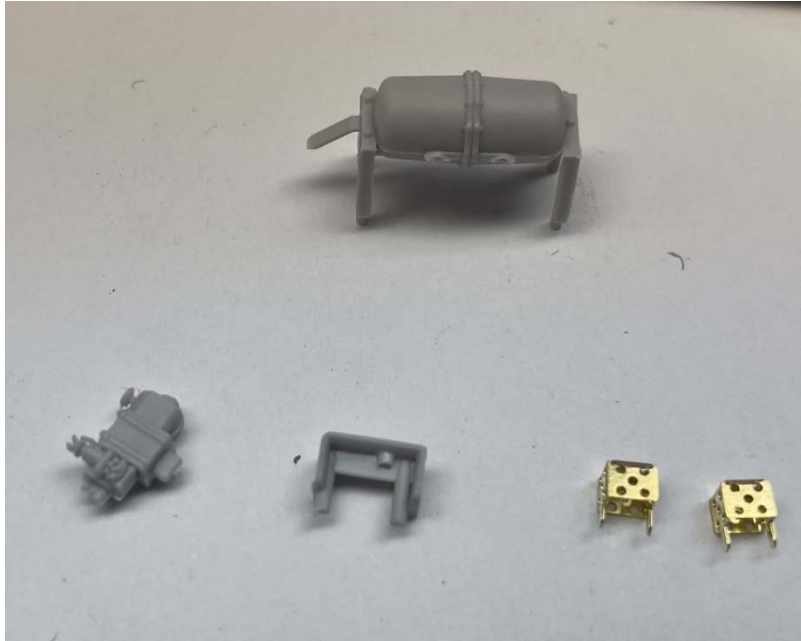


4. **Orient Center Sill:** The center sill needs to be properly oriented for assembly. For clarity we will position the underframe so that the cushioning spring is facing to the left. Position the underframe so that the cylinder bracket is towards you. When the underframe and sub floor are joined in a future step the sill will be permanently attached. For now, you can let it float or tack it in place with CA.



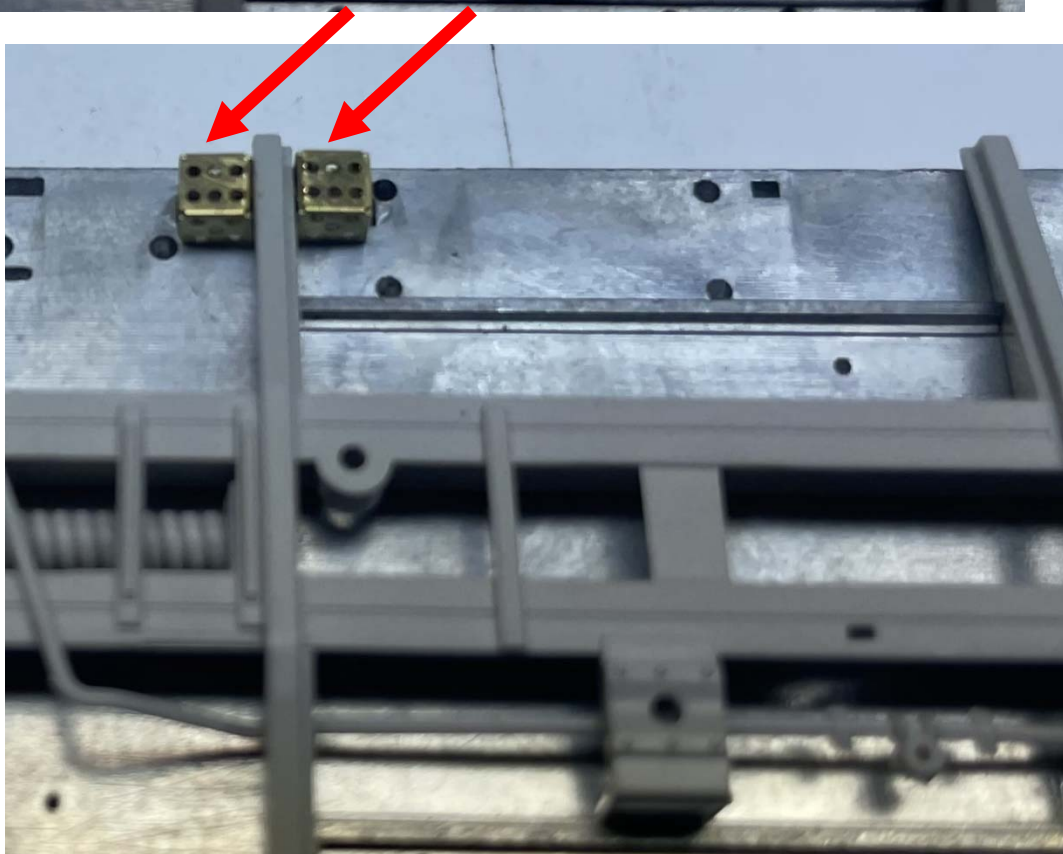
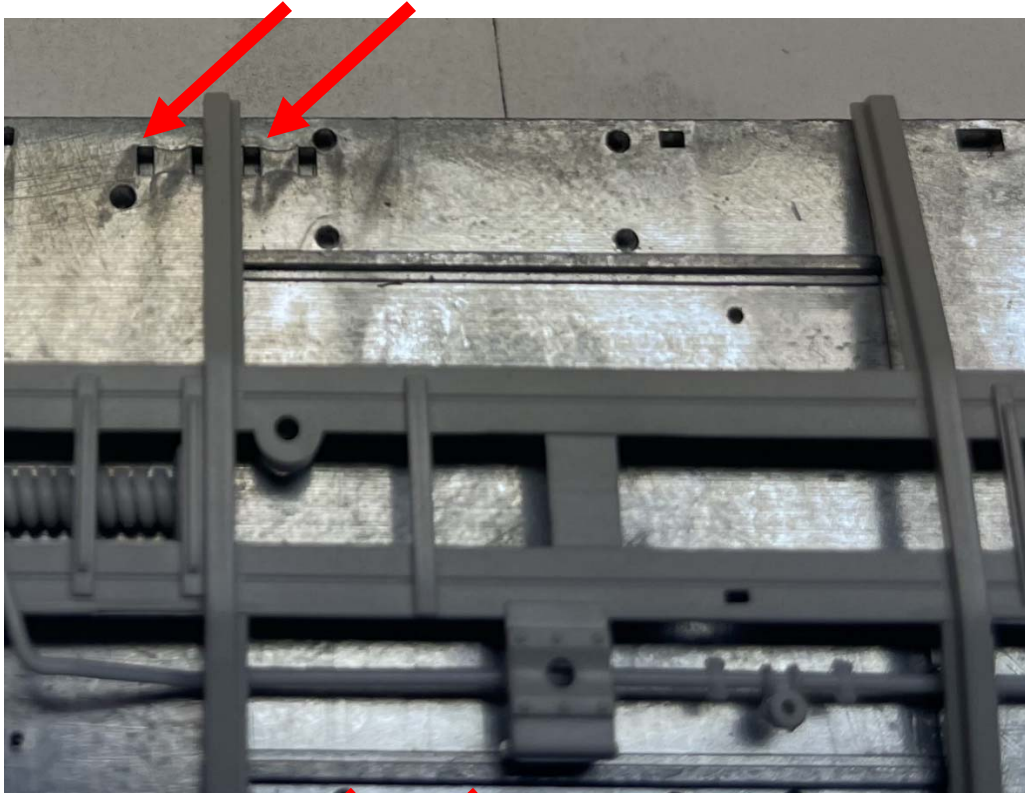
The next steps will require parts from three different bags:

- Bag 09 has the AB valve and reservoir
- Bag 06 has the AB valve bracket
- Bag 14 has the Vapor heater breather blocks



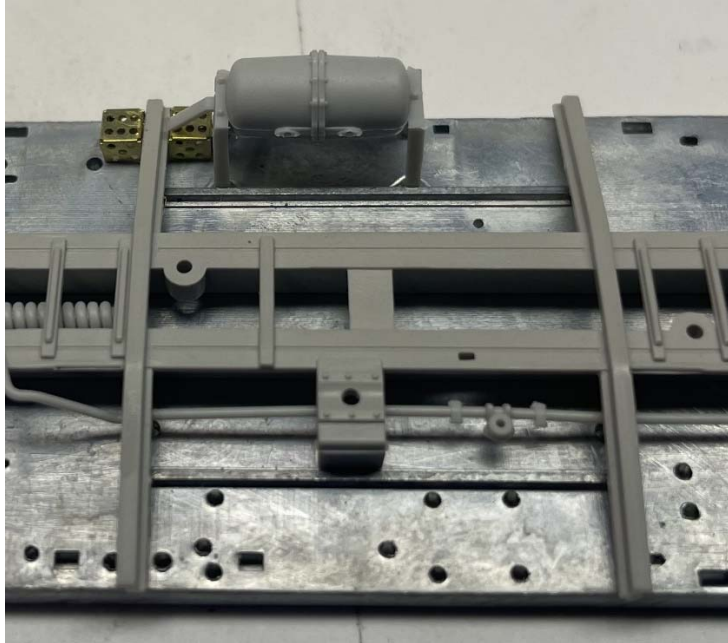
5. **Install Vapor heater breather blocks:** The reservoir is located directly across from the cylinder. Installing the Vapor heater breather blocks first will ease in the assembly sequence. There are small rectangular openings on either side of one of the cross members that the tabs on the Vapor heater breather blocks fit into. Secure each one with CA.



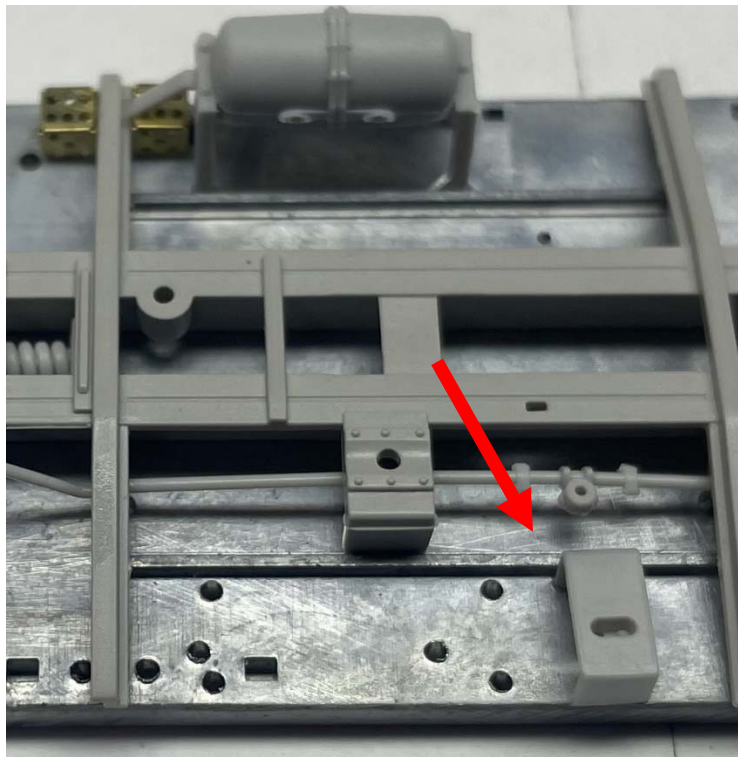




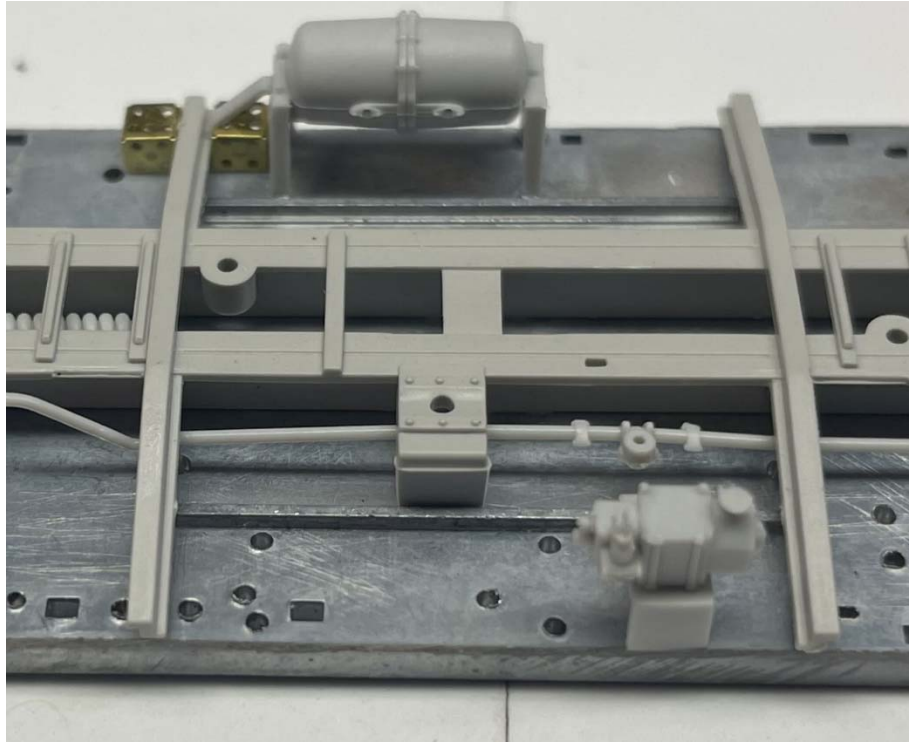
6. **Install Air Reservoir:** Install the reservoir into the floor with the holes for the piping facing the center sill. Secure with CA.



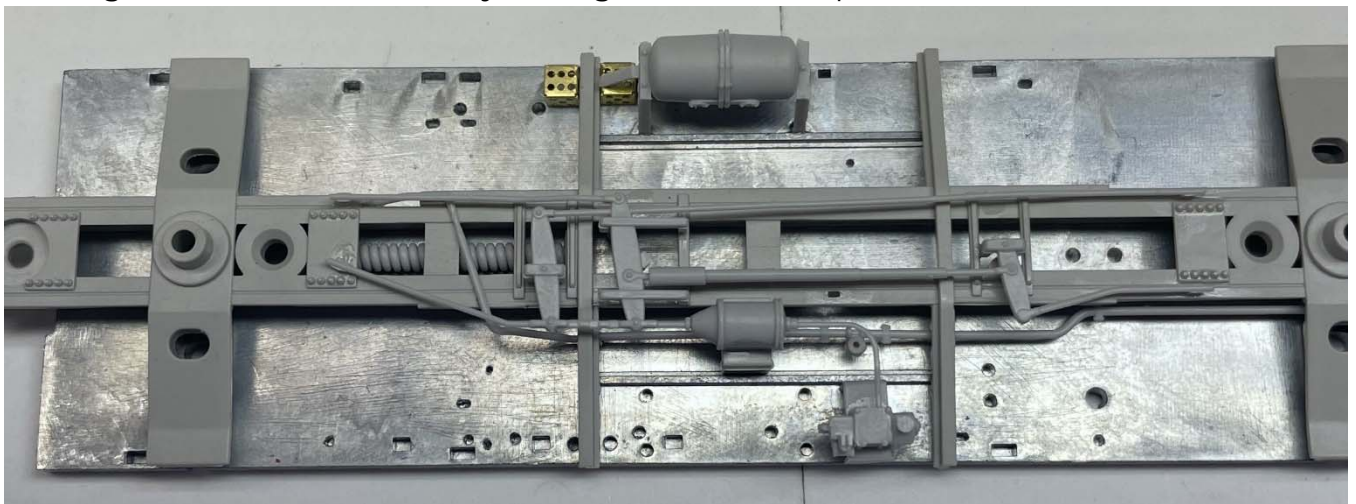
7. **Install AB Valve Support:** To the right of the cylinder bracket there are four holes in the floor. The AB bracket goes into the right most pair (next to the cross member). Position it so that the slot in the bracket goes toward the edge of the floor and secure with CA.



8. **Install AB Valve:** Mount the AB valve to the bracket so that it sits parallel to the edge of the frame with the holes for the piping facing the center sill. Secure with CA.



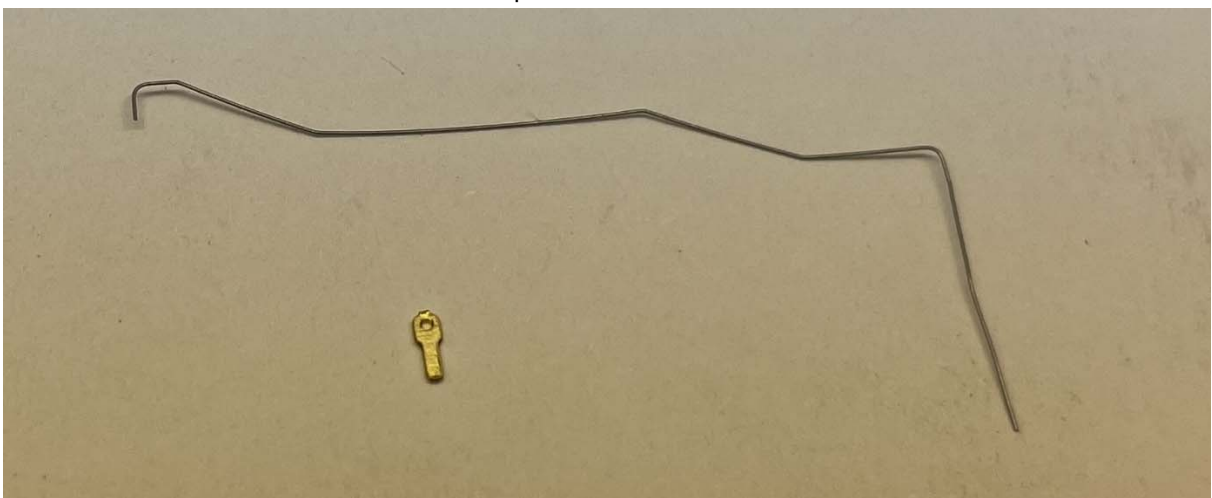
9. **Install Cylinder/Lever Assembly:** The cylinder/lever assembly (bag 8) fits on top of the center sill and is keyed so it can only fit one way. Set it into position so that the mounting pins fit into the mounting holes in the sill and glue in place. The line coming from the back of the cylinder goes into the top left hole in the AB valve.



10. **Install Large Bleed Rod Support.** There are two small posts (bag 14) that the bleed rod fits into. The larger of the two fits into a hole in the floor next to the reservoir, and the smaller one fits into a hole in the center sill. Install the larger one and secure with CA. The smaller post will be addressed in the next step.



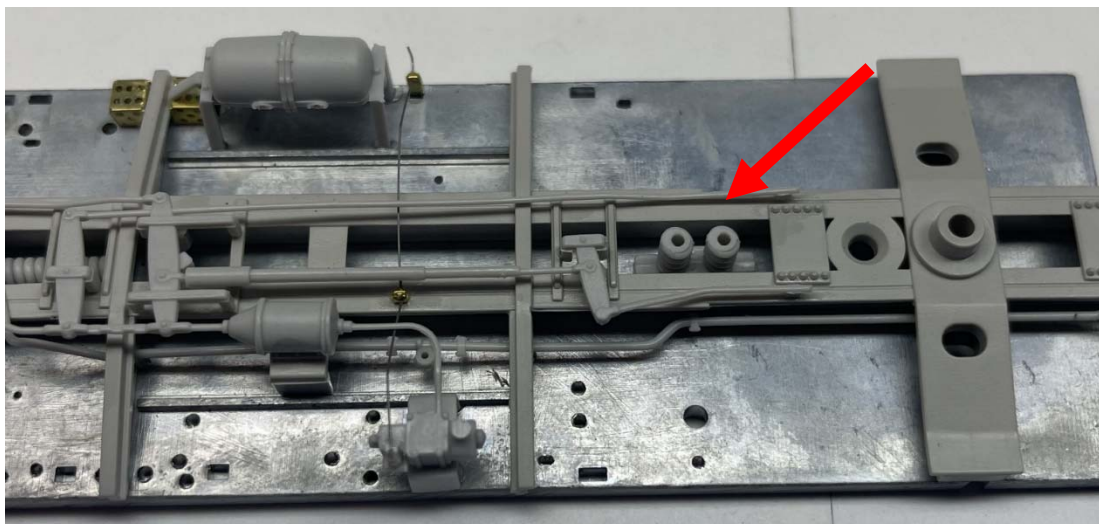
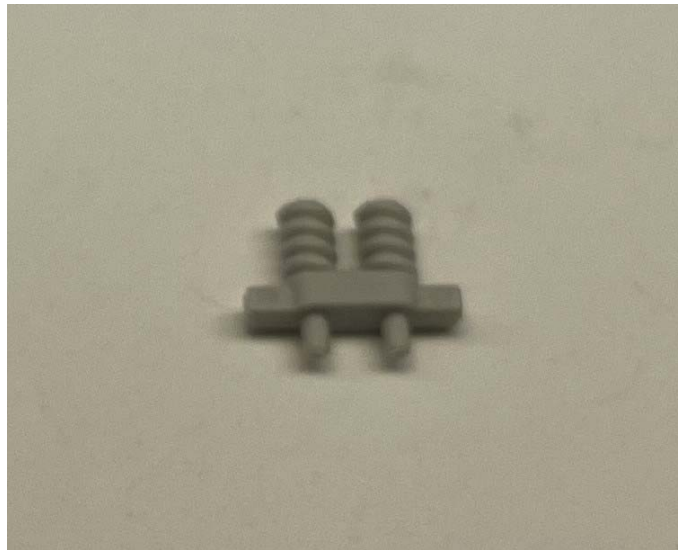
11. **Install Bleed Rod and Other Support:** Locate the bleed rod (bag 13). One leg of the rod is longer than the other. This side goes toward the AB valve and needs to be shortened so that it matches the other leg. Fish the smaller post onto the bleed rod. Insert the end that goes toward the AB valve through the longer post and fish it under the brake piping so that the end rests in the notch on the AB valve. Position the smaller post in the hole in the center sill and secure with CA. Now secure the bleed rod at all contact points with CA.





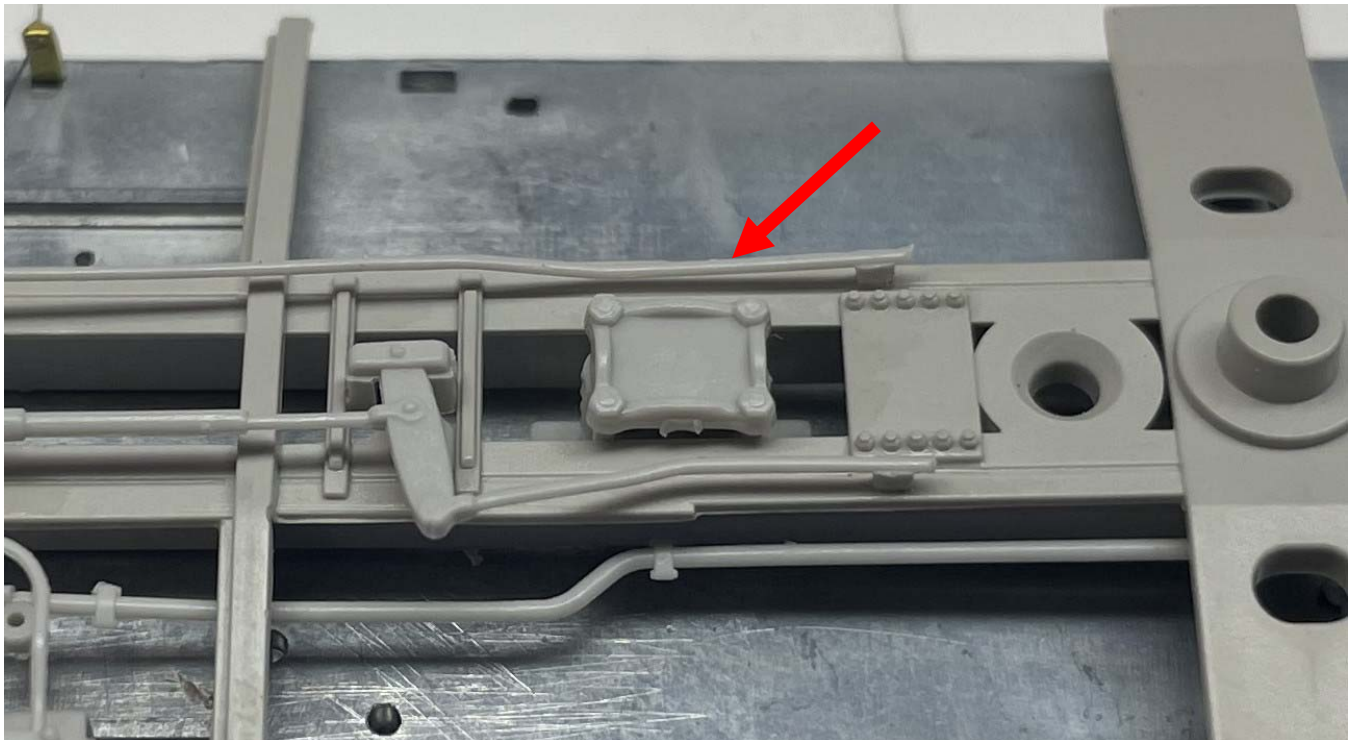


12. **Install Vertical Cushioning Spring:** Locate the vertical cushioning springs and cover (bag 09). The spring fits into holes in between the center sill next to the bolster. Secure with CA

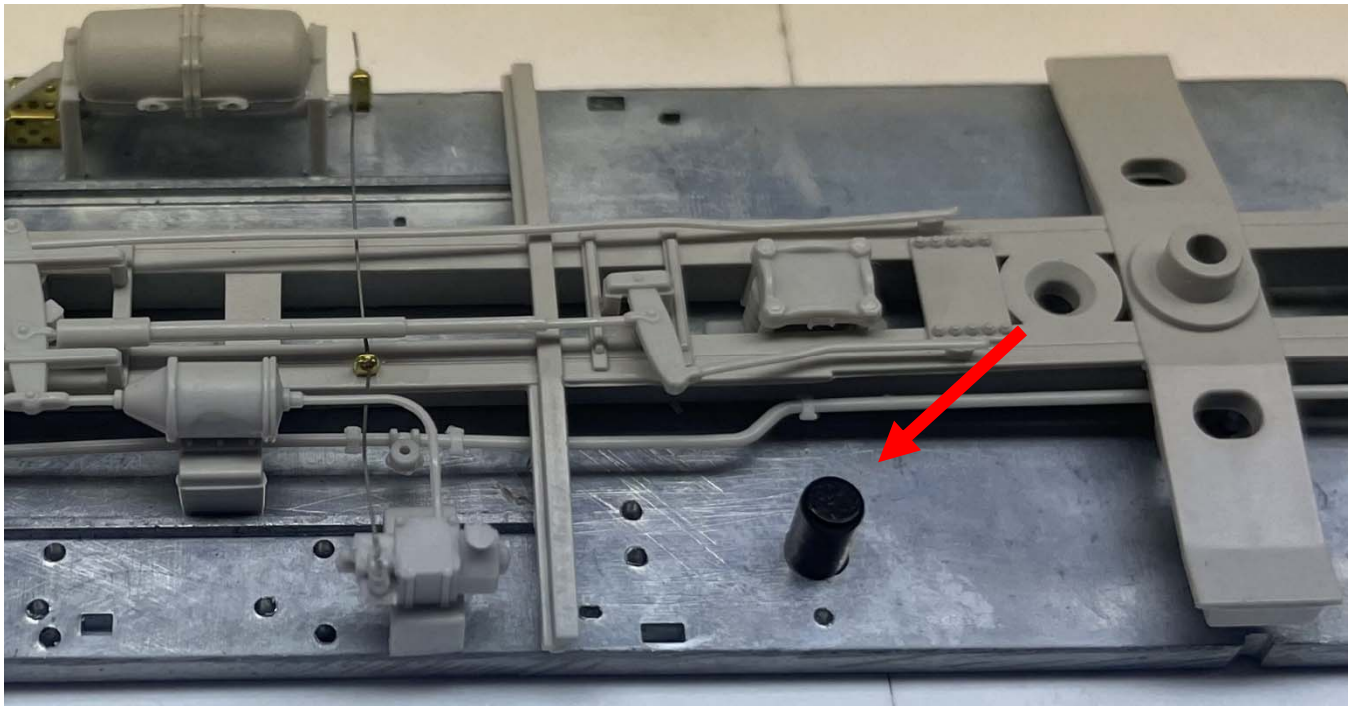


13.

14. **Install Spring Cover:** The cover fits into the holes on top of the springs. Insert and glue in place

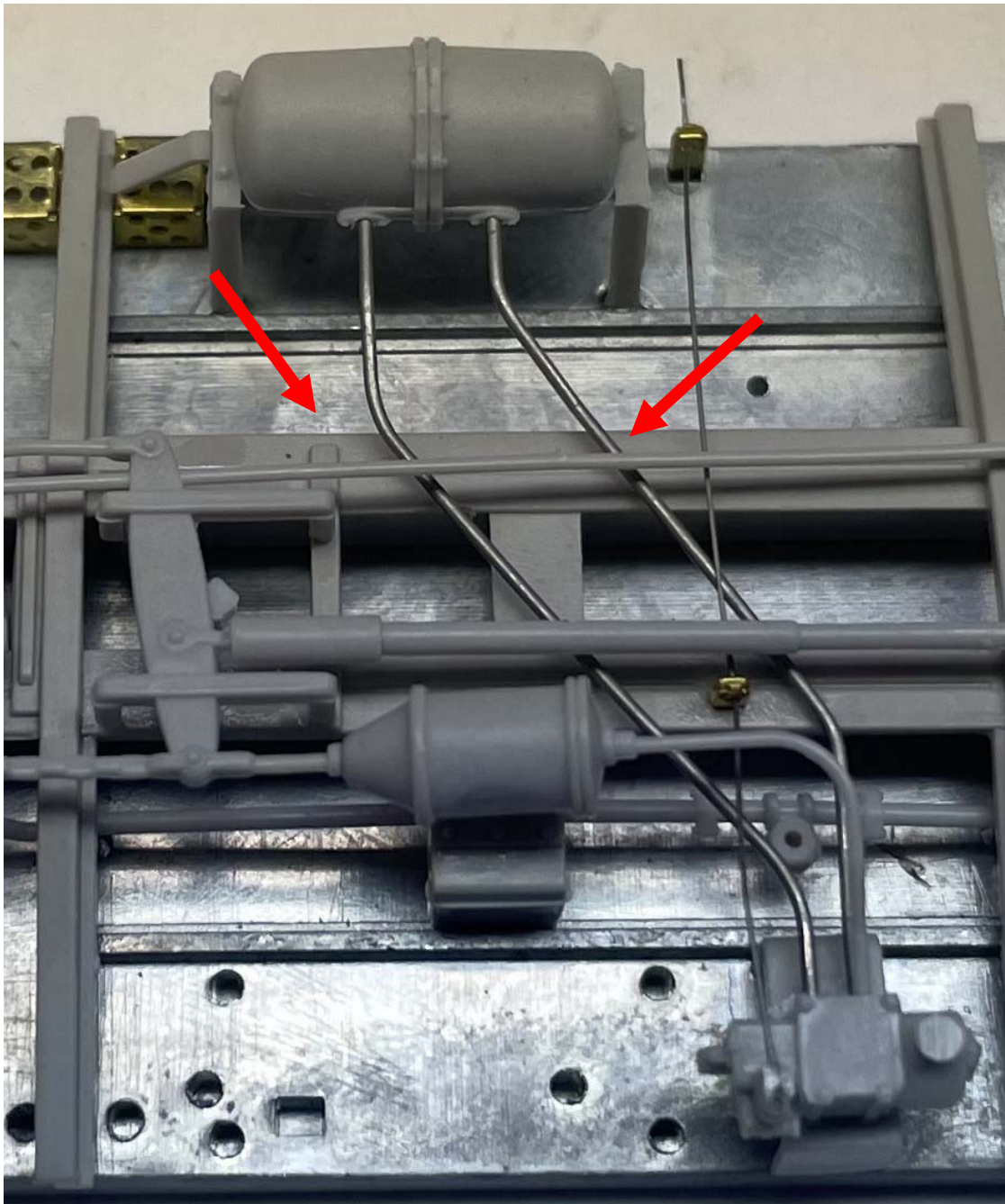


15. **Install Toilet Dump Pipe:** The toilet dump pipe (bag 13) is a small black cylinder. It fits into the large hole to the right of the AB valve. Secure with CA.

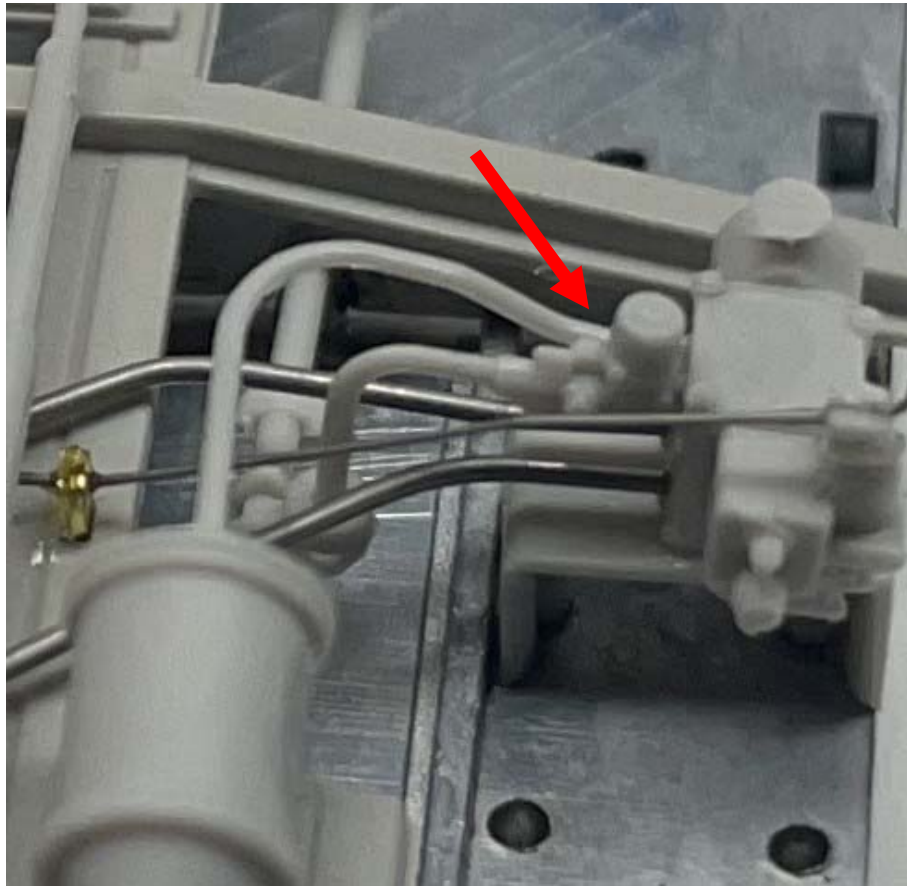




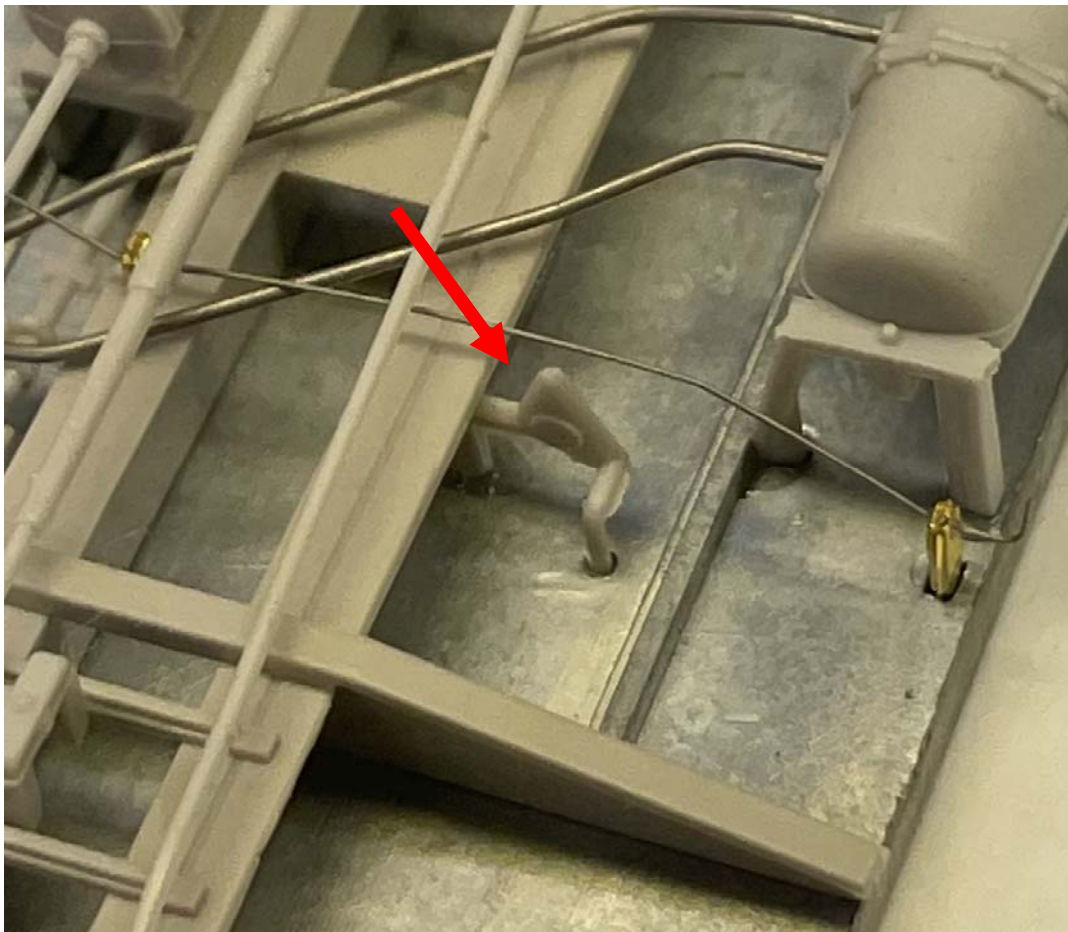
16. **Install Reservoir Air Pipes:** Locate the reservoir pipes (bag 13). You will notice that on both parts one leg is shorter than the other, and that one has a slight offset. The side with the offset goes toward the AB valve. Using the photo as a guide, maneuver the wires under the brake piping and insert the ends of the wires into the reservoir and the two lower holes in the AB valve. The wires may need to be shortened slightly to ease in the installation. Secure at the reservoir with CA but do not glue at the AB valve yet.



17. **Install Dirt Collector Pipe:** Locate the dirt collector pipe (bag 8). The small pin goes into the last hole in the AB valve and the other end goes into the coupling in the train line. When in final position, secure all parts going into the AB valve.

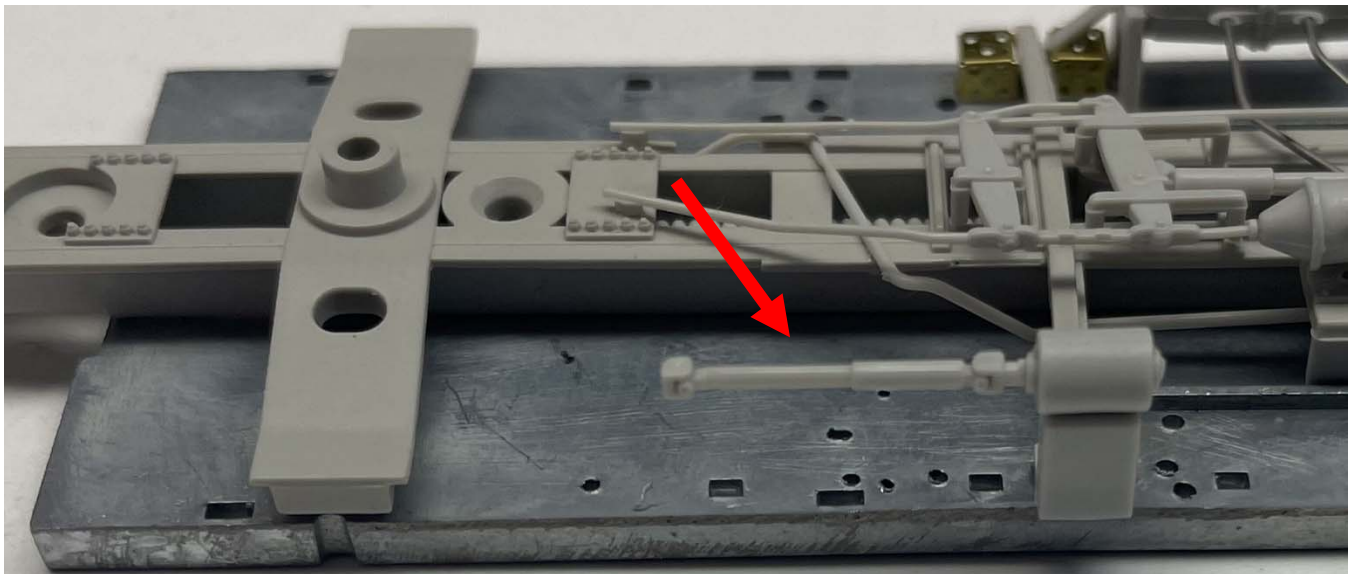
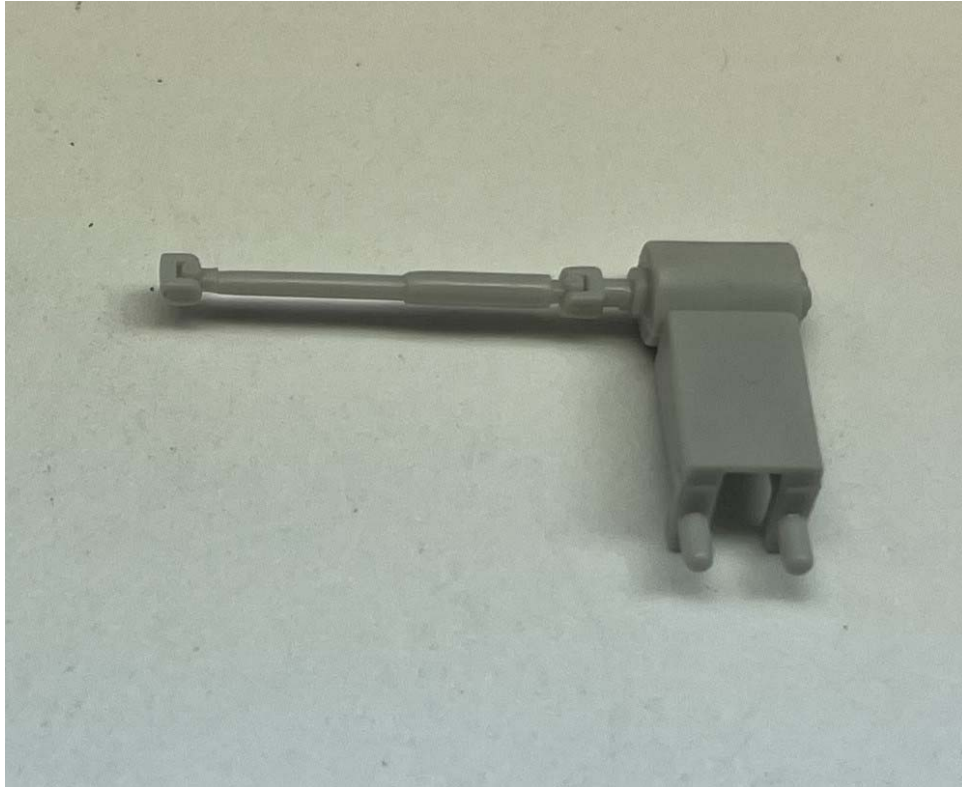


18. **Install Release Rod Pivot Bracket:** Locate the release rod pivot bracket (bag 8). It fits into two holes in the floor next to the center sill by the reservoir. To ease the installation, shorten one of the mounting pins slightly. Secure with CA.

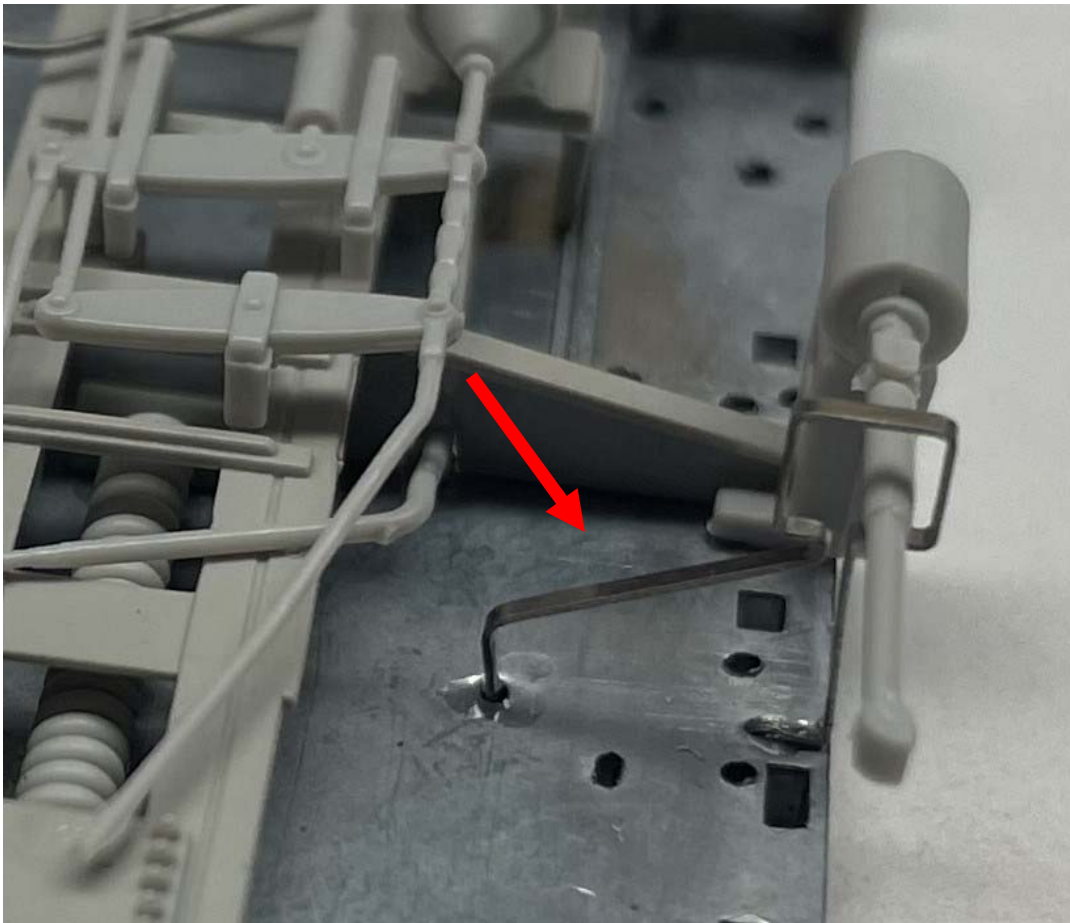




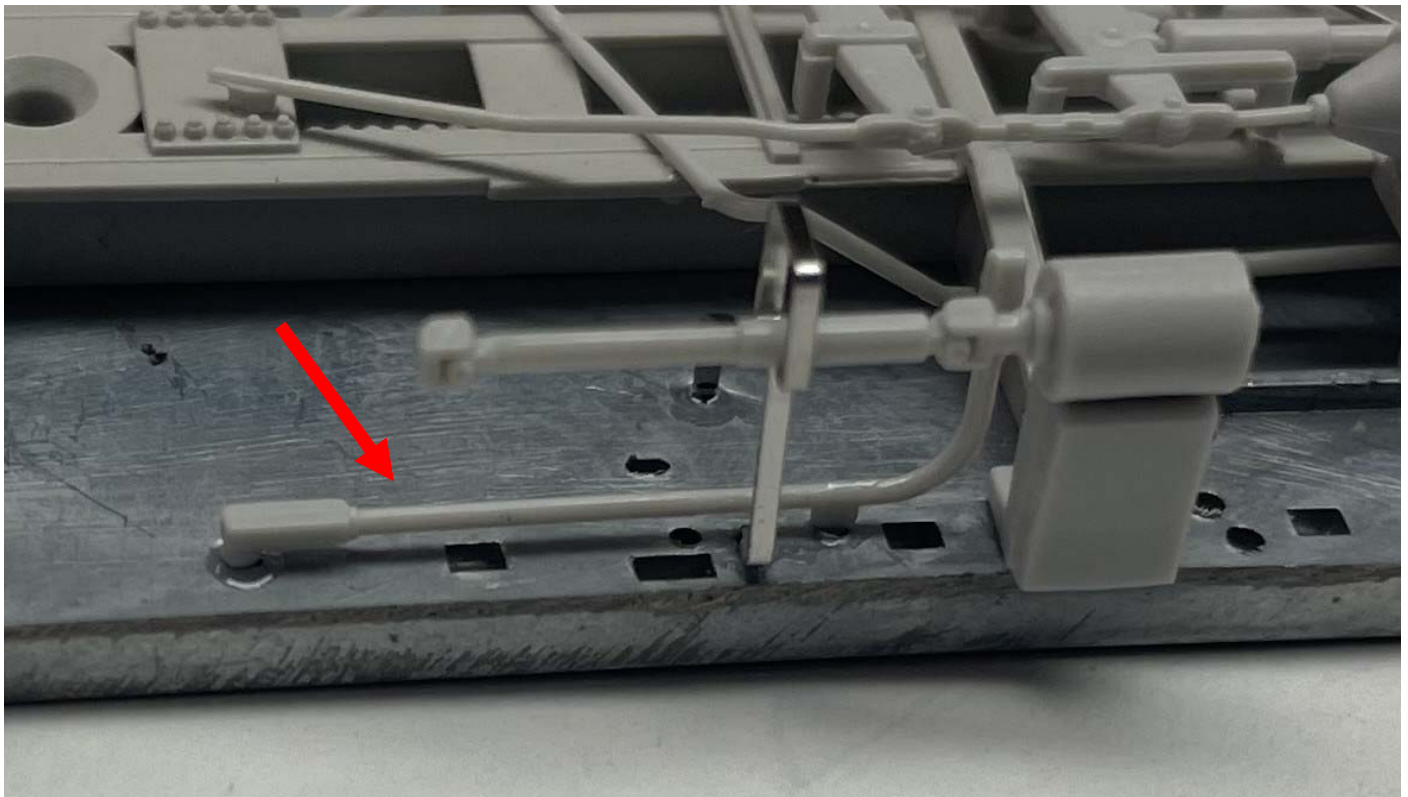
19. **Install Generator Assembly:** Locate the generator/axle/bracket assembly (bag 9). It fits into holes that straddle one of the cross members at the edge of the floor. Position and make sure that the shaft is parallel to the cylinder. Secure with CA.



20. **Install Generator Axle Shaft Guide:** Locate the shaft guide (bag 14). Slip it over the generator shaft and insert ends into holes in the floor and secure with CA.

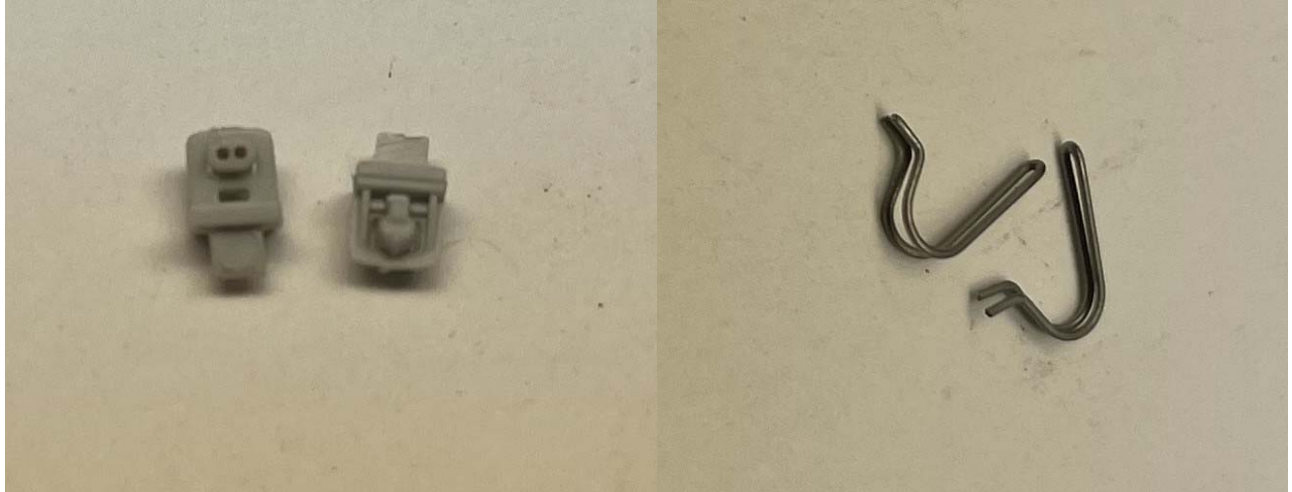


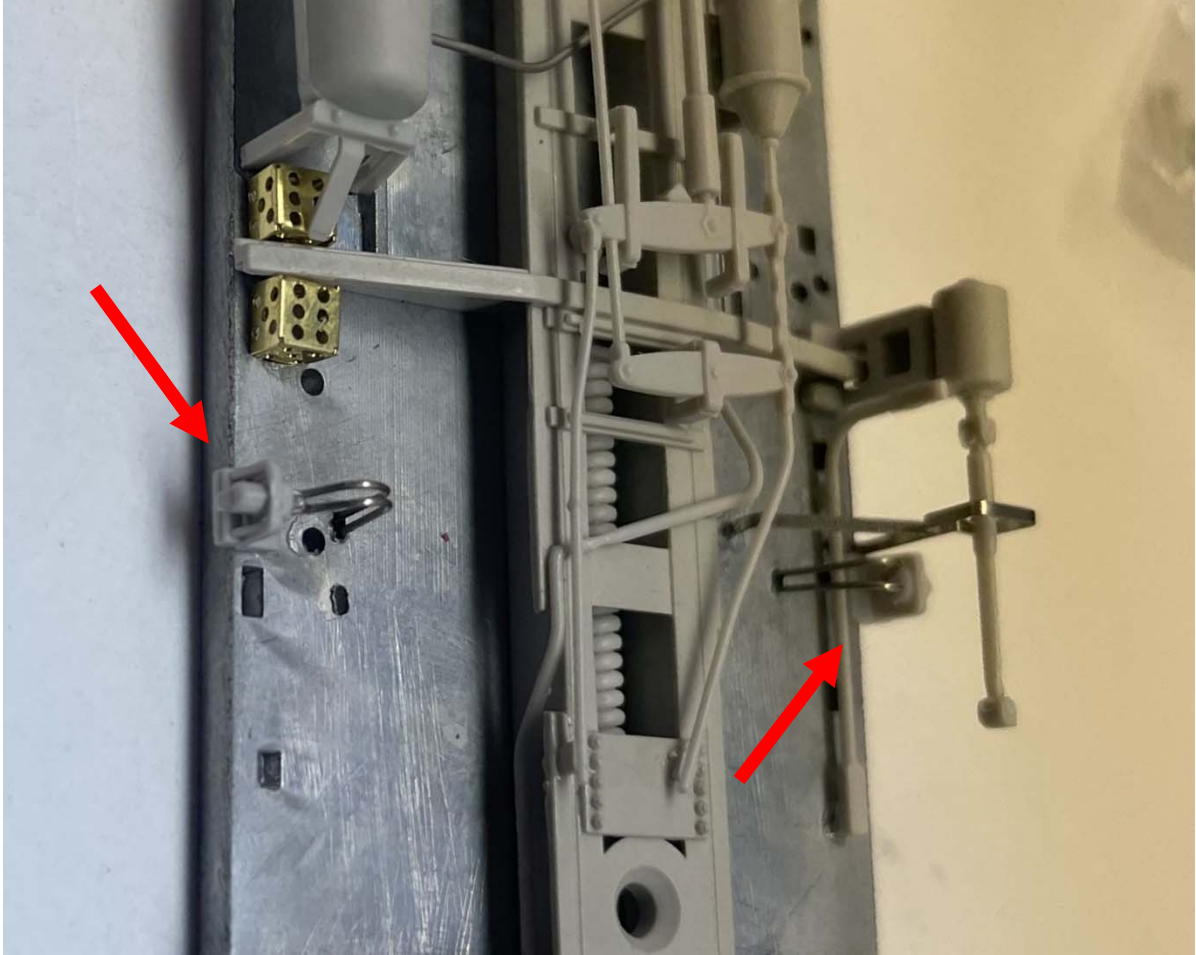
21. **Install Generator Electrical Connection Pipe:** Locate the generator electrical connection pipe (bag 8). It fits into holes in the floor that parallel the generator shaft. Insert and secure with CA.



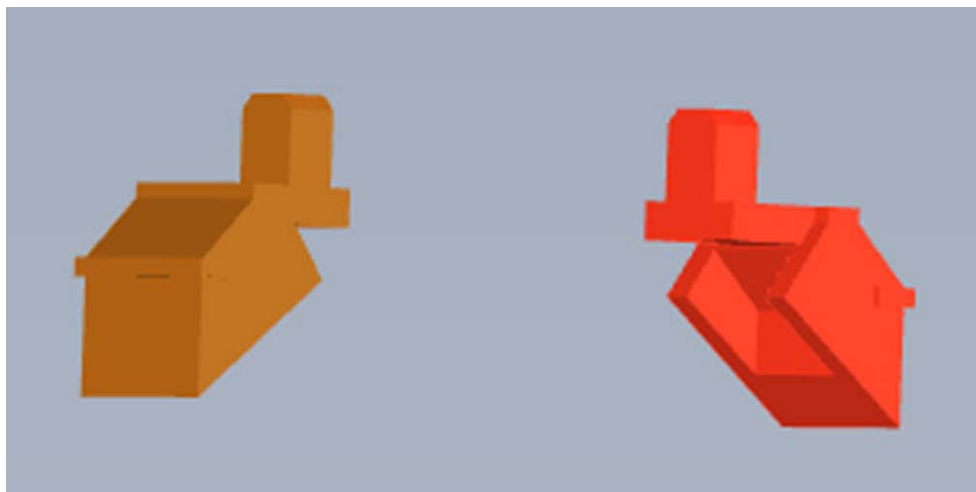


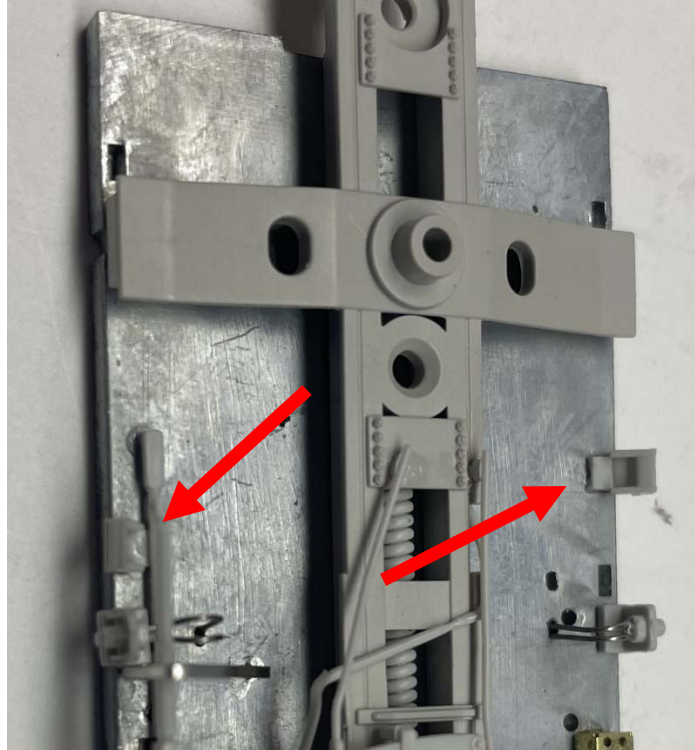
22. **Install Battery Charging Plugs:** Locate the two battery charging plugs (bag 9) and the wires (bag 13). Insert the ends of the wires into the holes in the back side of the plug using the photo for reference. Insert the plugs into the holes at the edges of the floor, and the ends of the wires in the corresponding holes and secure everything with CA. See photo.



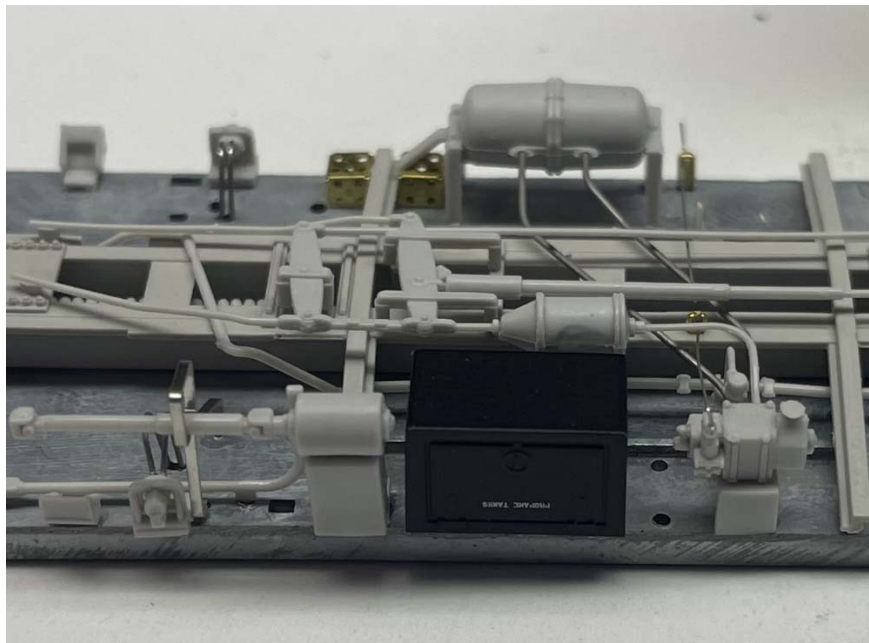


23. **Install Water Fill Pipe Housings:** Locate the two water fill pipe housings (bag 6). These are mounted into holes at the edge of the floor next to the battery charging plugs. Secure with CA.





24. **Install the Propane Tank Locker:** The last part to be installed is the propane tank locker. It fits into holes in between the AB valve and the generator. Insert and secure with CA.



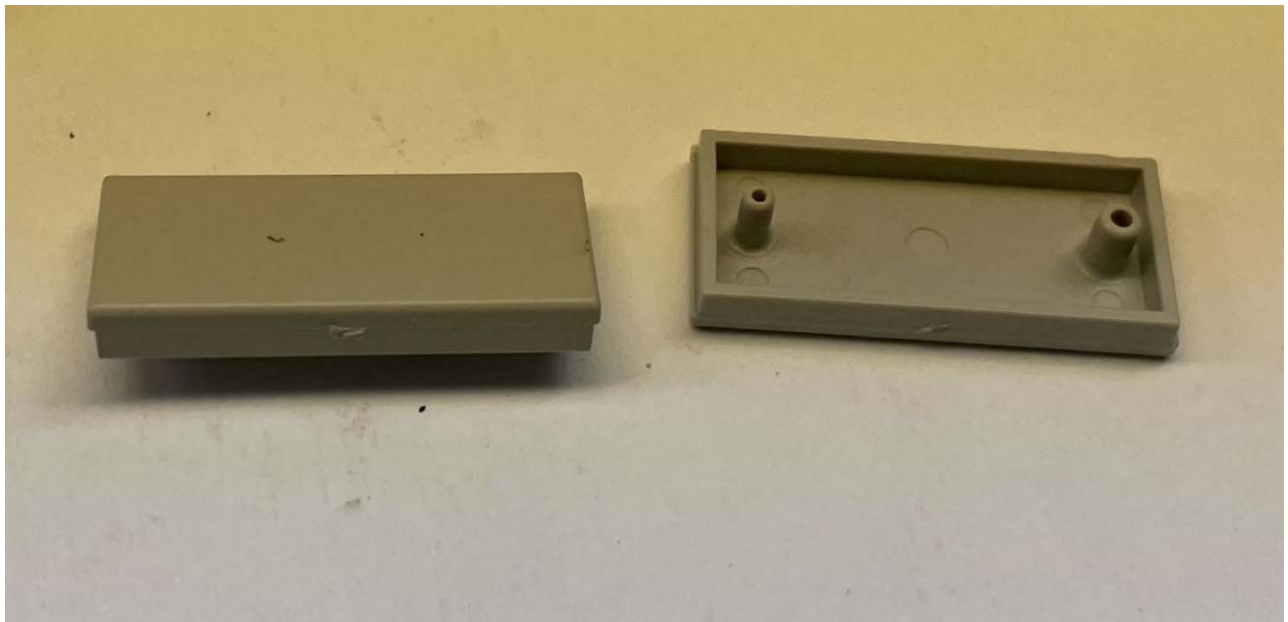
**This completes the underframe assembly. Set it aside until final assembly.**



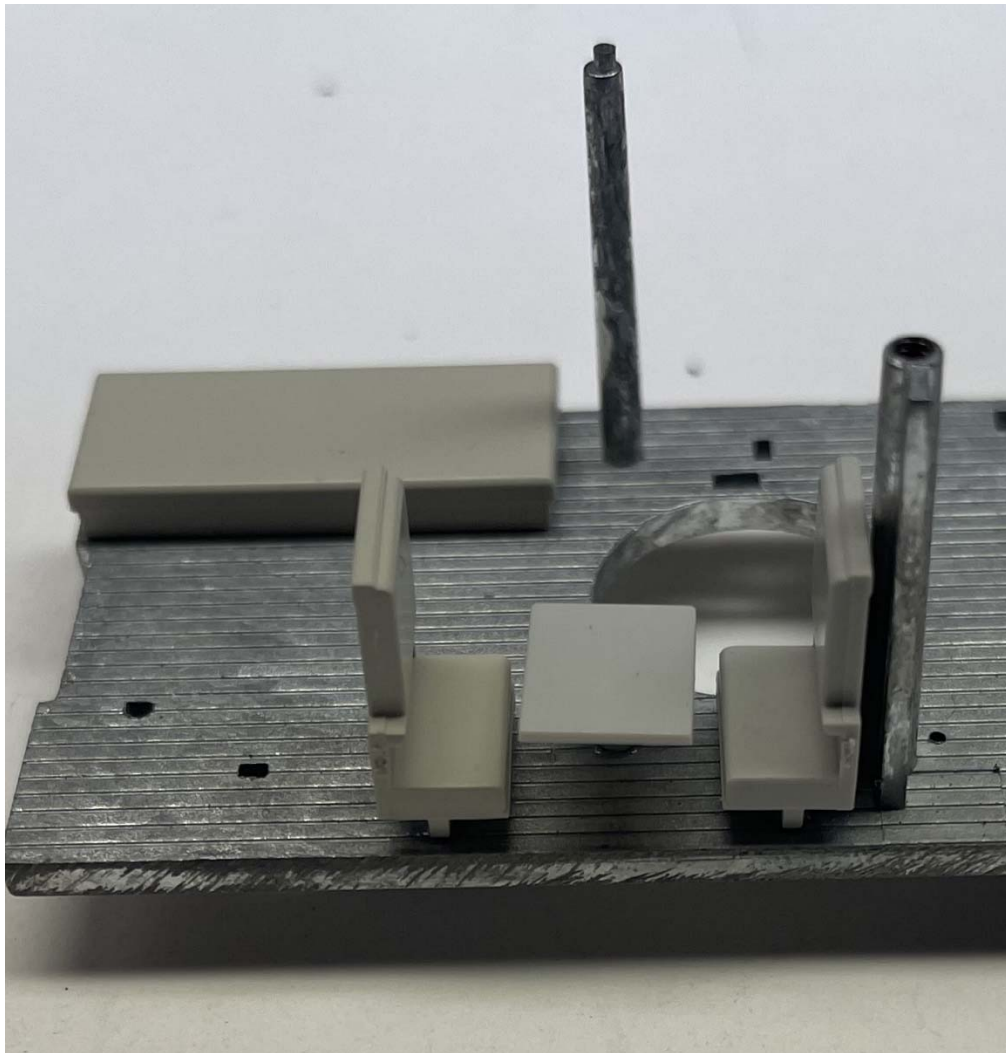
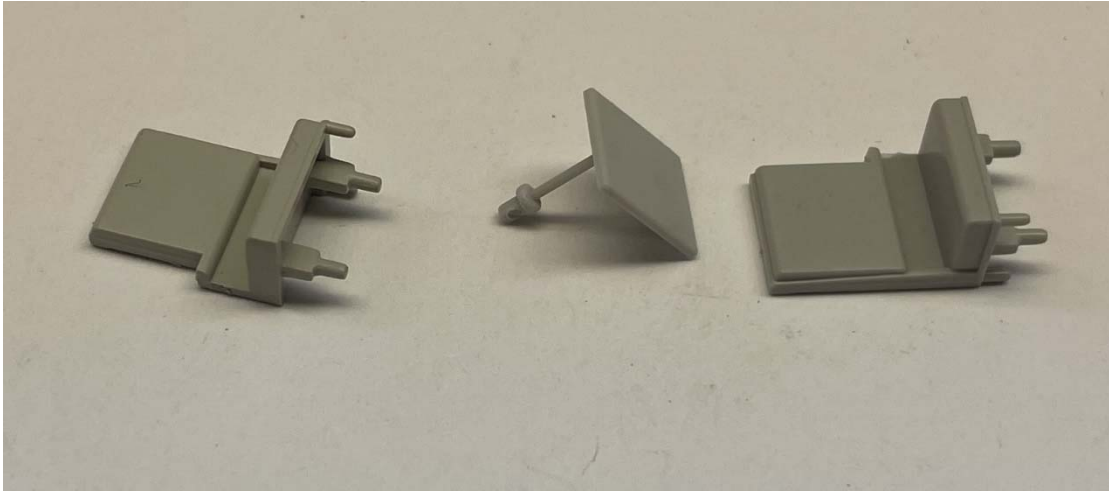
## Interior Assembly:

**Notes about Interior Assembly:** The interior components when complete will consist of several different colors so it would be beneficial to paint all the individual parts before assembly.

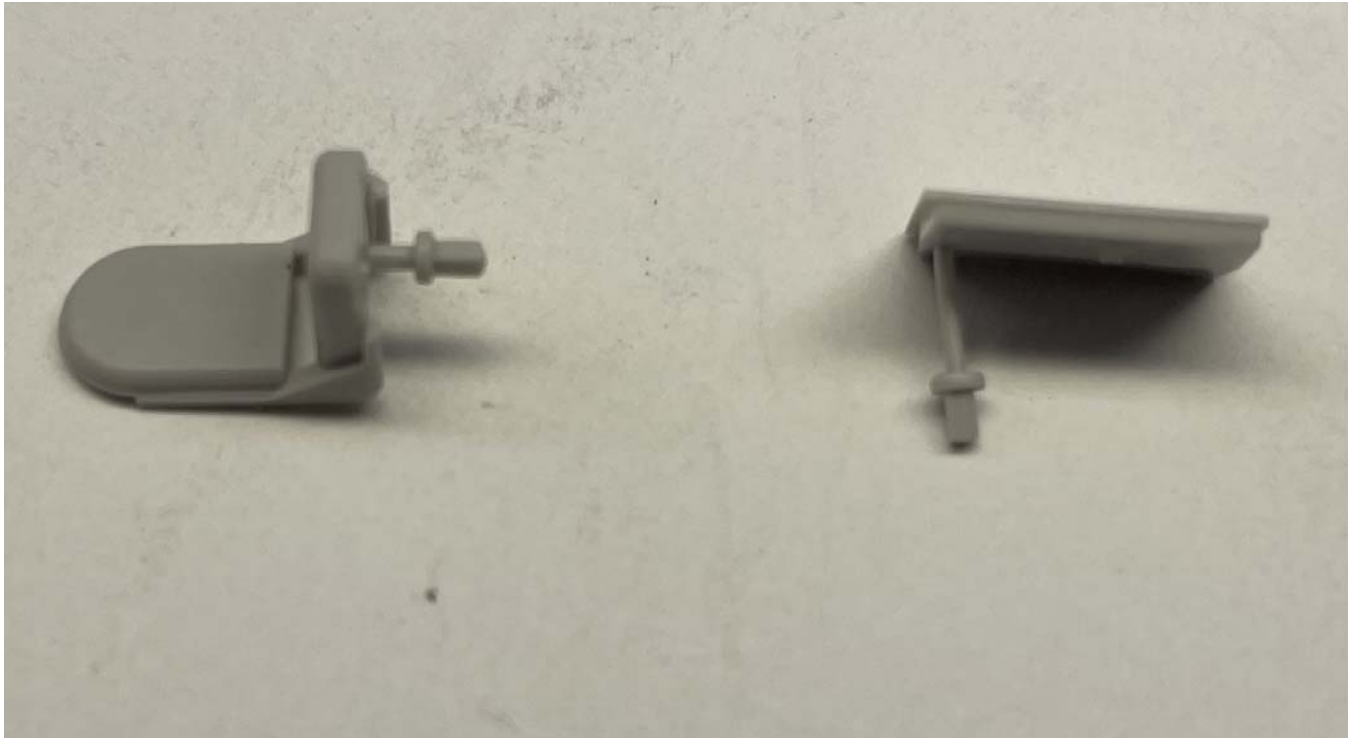
1. **Locate Interior Floor:** Begin by locating the metal interior floor. It is the other of the two parts that make up the floor/weight. Set it on your work surface with the two posts and large hole set to the right.
2. **Install Lower Bunks:** Locate the two lower bunks (bag 10). They go in the opposing corners of the sub floor and are keyed so they only fit in one way. Set in place and secure with CA.



3. **Install Table and Chairs:** Locate the two larger chairs (bag 10) and smaller table (bag 6). They go next to the post with the hole on top. Insert into the mounting holes and glue in place with CA.

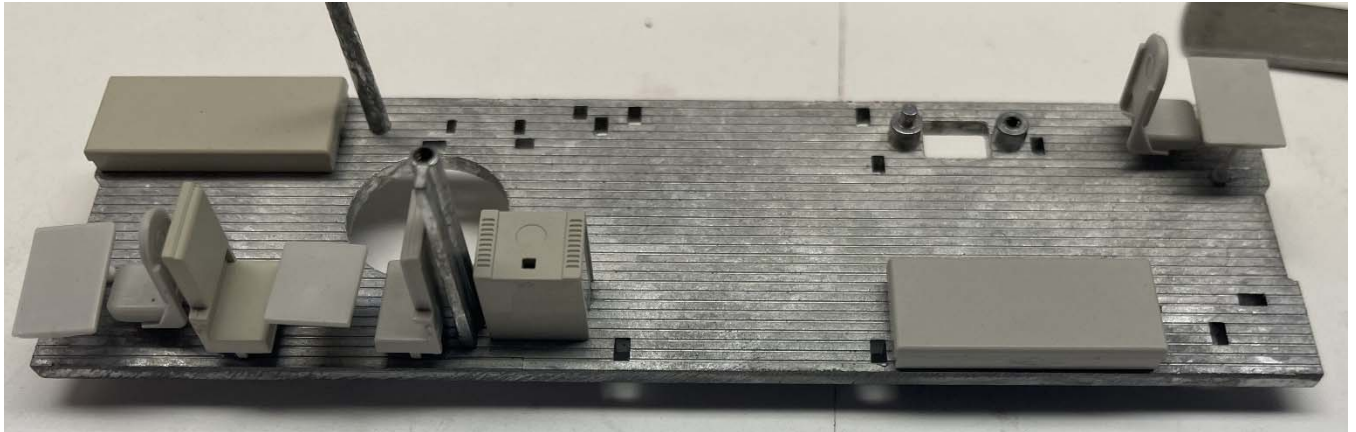


4. **Install End Table and Chairs:** Locate the two smaller chairs and larger tables (bag 6). These go in the opposite corners of the floor. Insert and secure with CA.

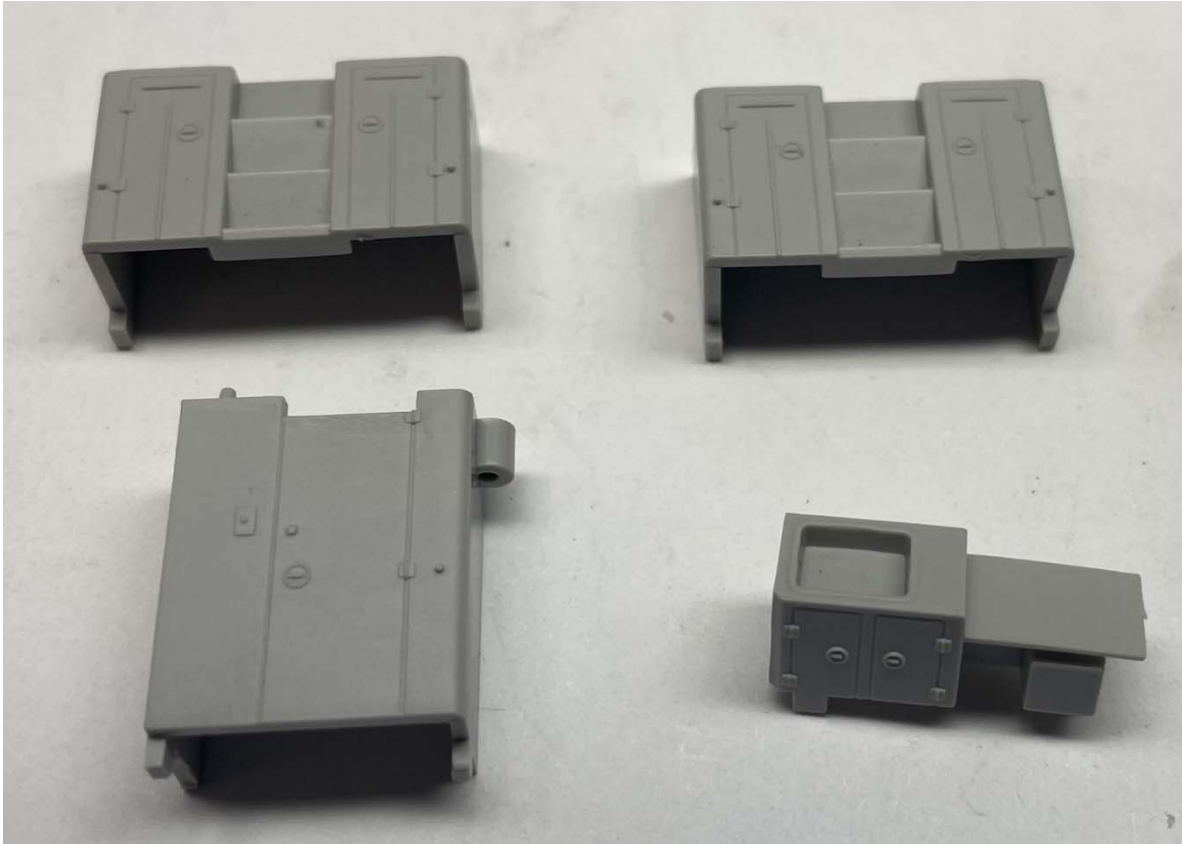




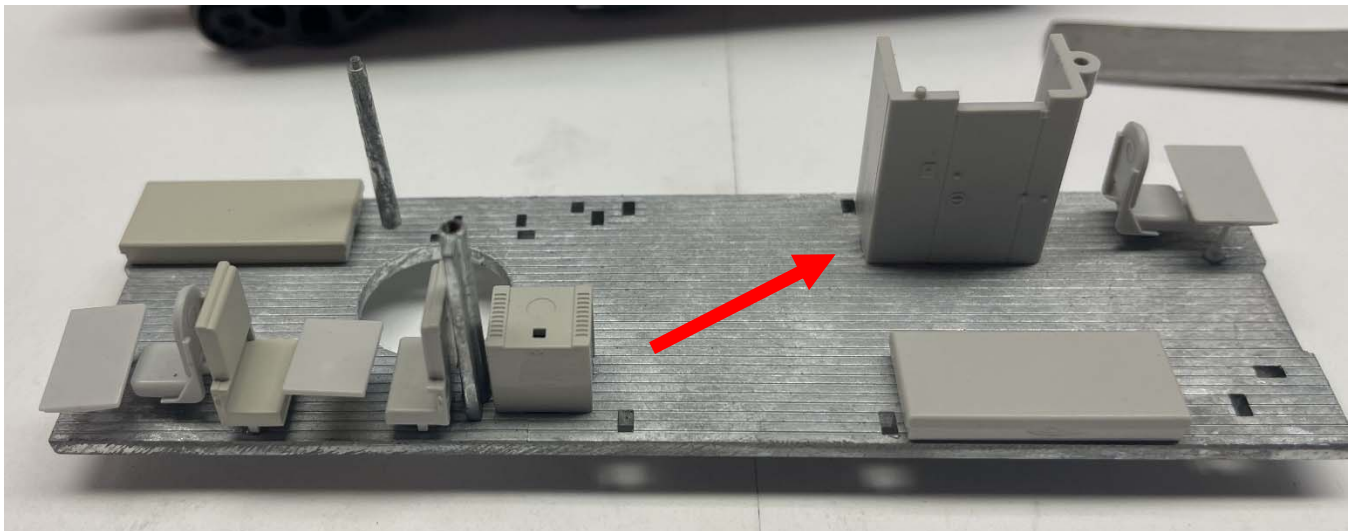
5. **Install Vapor Caban Oil Heater:** The heater (bag 10) is located next to the larger chair on the opposite side of the post. Orient so that the hole in the top of the stove is towards the outer edge of the floor. Secure with CA.



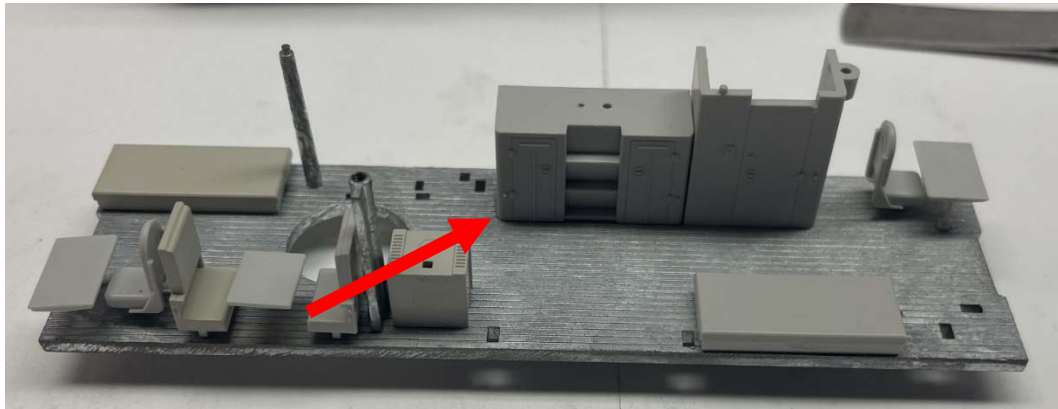
6. **Locate Interior Parts:** Bag 07 contains the stairs, wash basin, and bathroom.



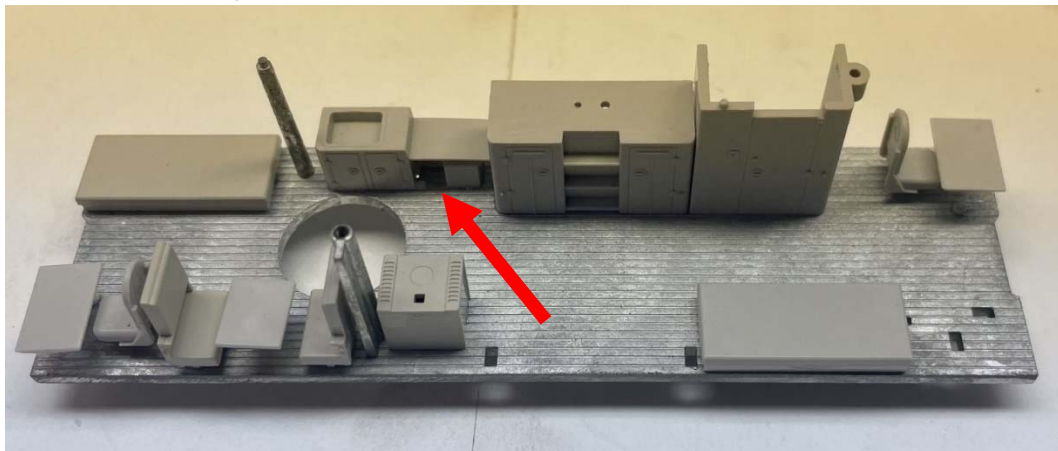
7. **Install Bathroom Enclosure:** Install the bathroom over the square opening in the floor and secure with CA



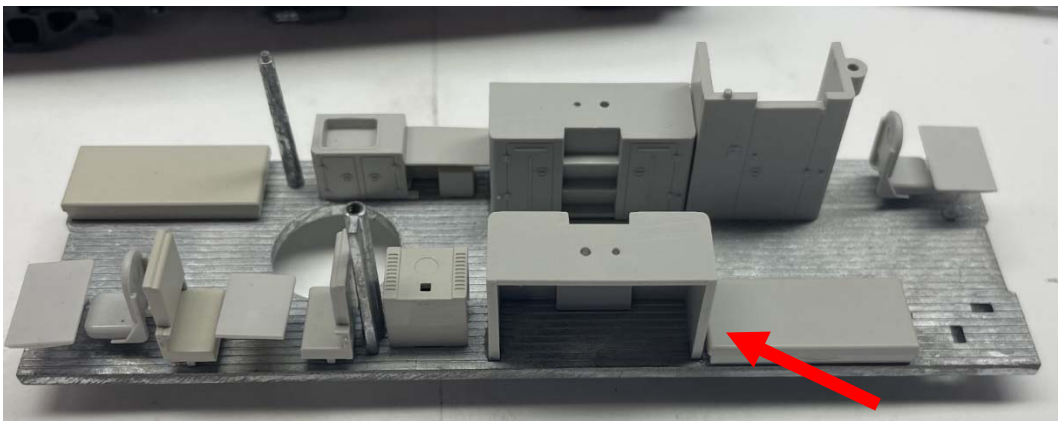
8. **Install Steps:** Install one of the step wells next to the bathroom. Insert and secure with CA.



9. **Install Wash Basin:** Install the wash basin next to the step well with the sink positioned next to the post. Secure with CA.

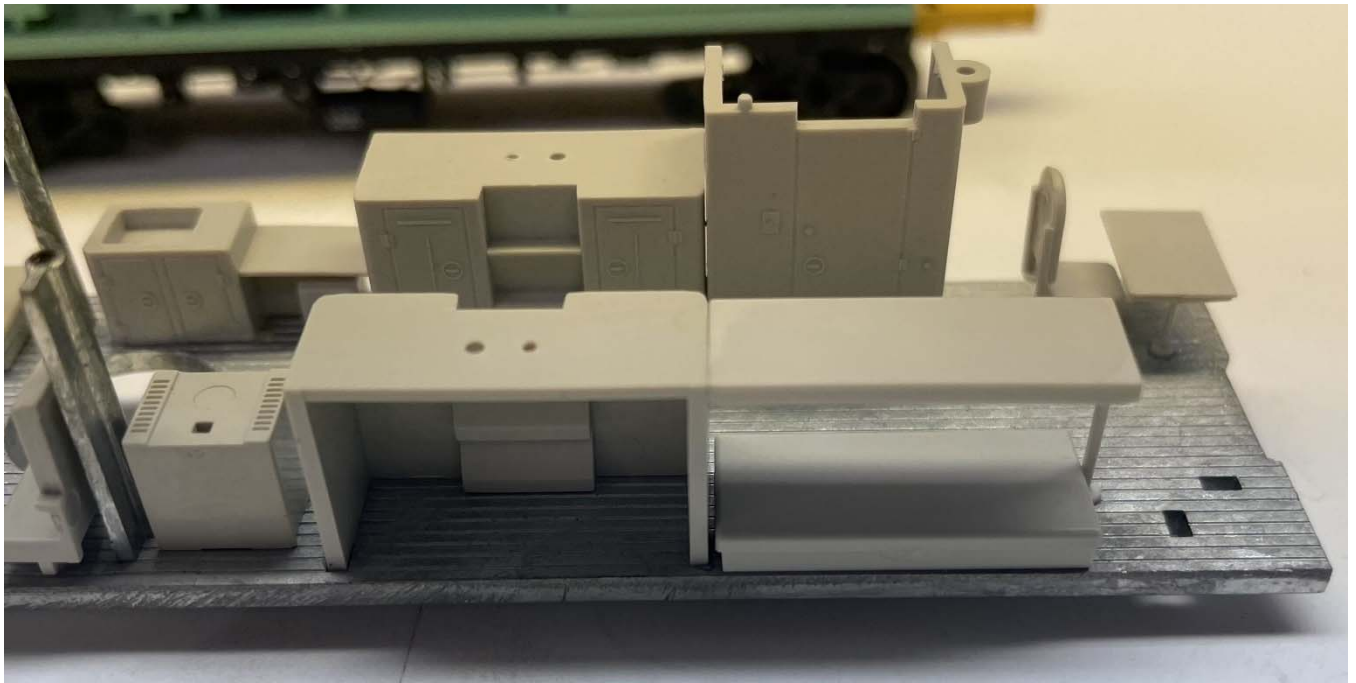


10. **Install Opposite Steps:** Install the other step well opposite the first one. Secure with CA.

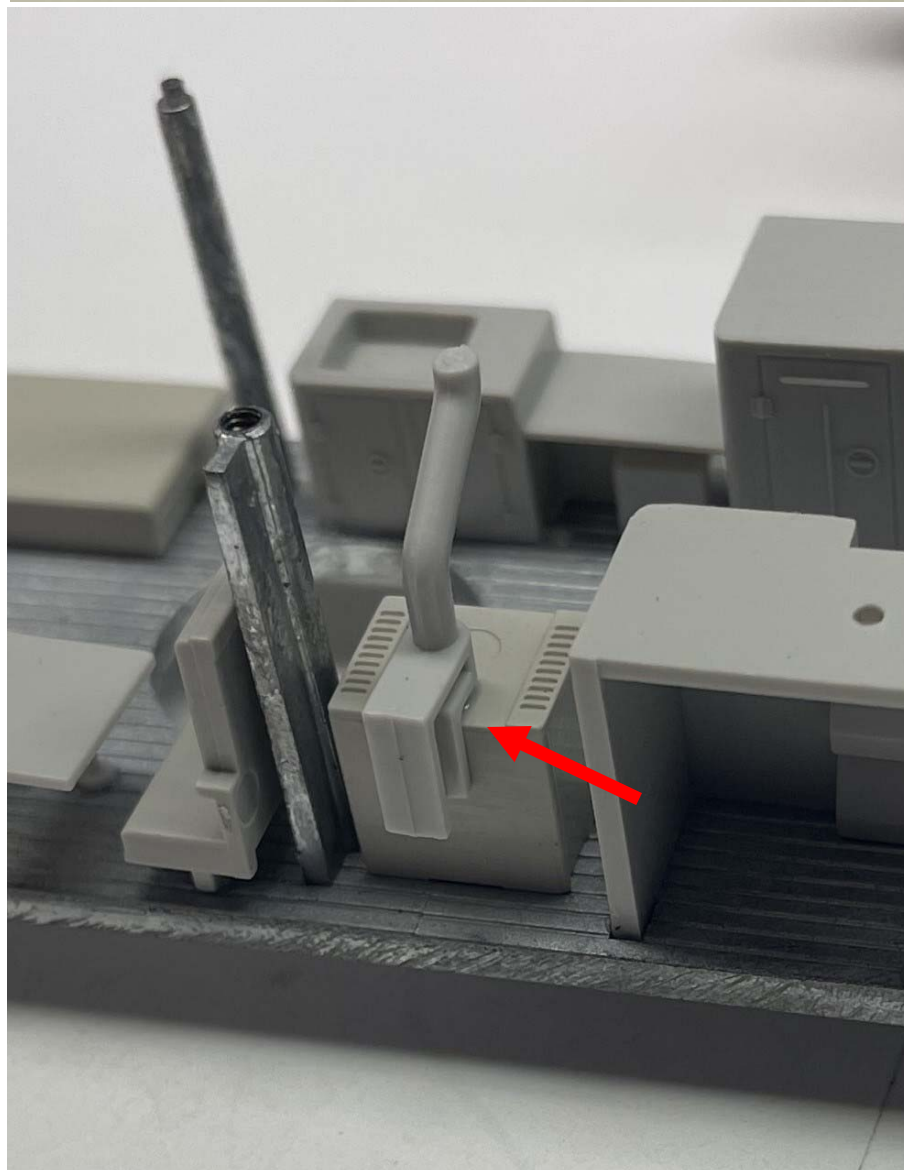




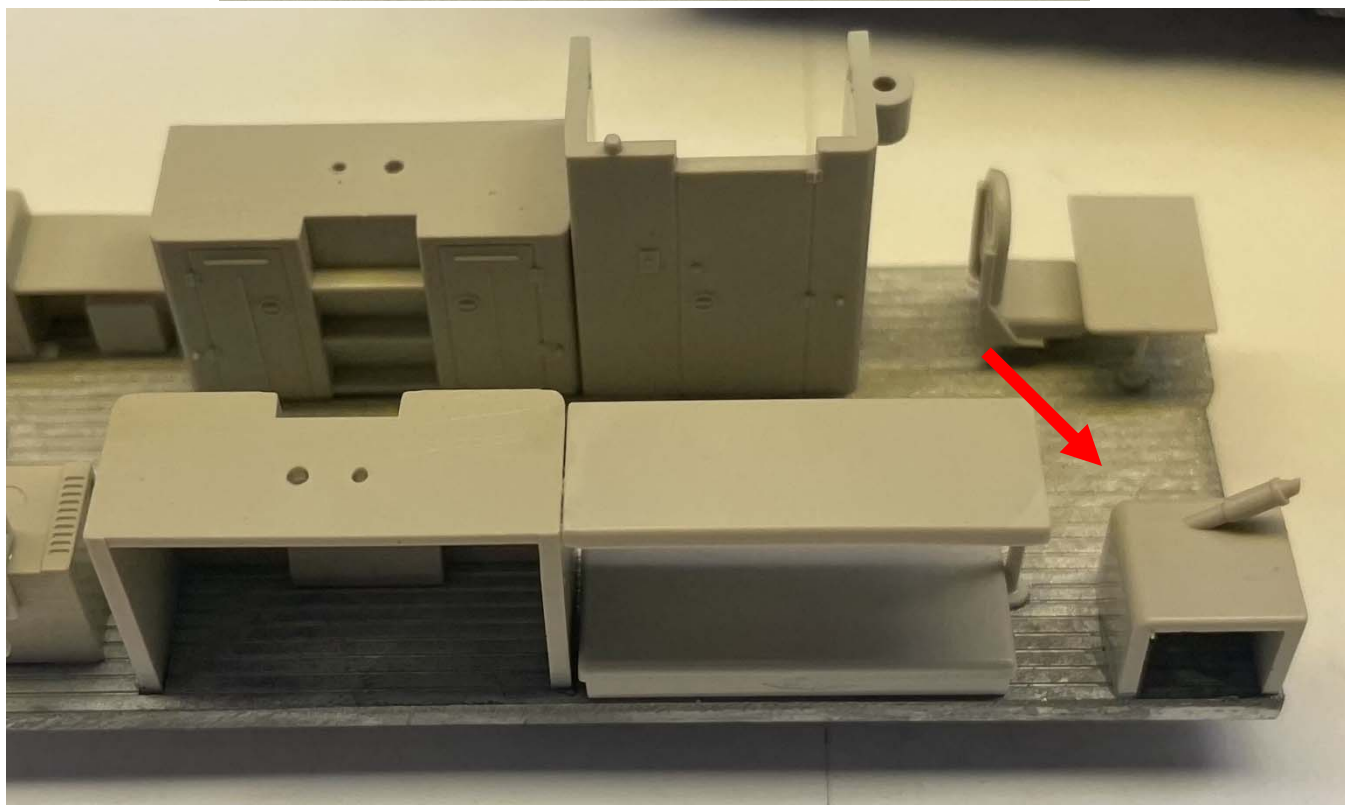
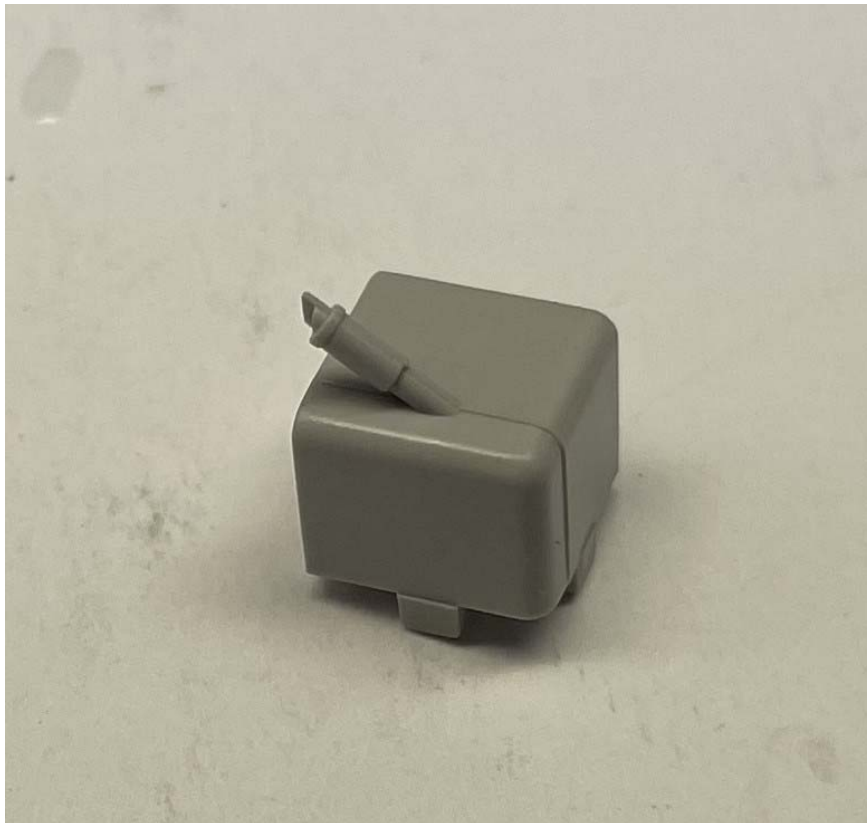
11. **Install Upper Bunk:** The upper bunk (bag 6) goes over the lower bunk next to the step well, and it has a locating pin that fits into the step well. Position and secure both at the floor and step well.



12. **Install Heater Vent Pipe:** Locate the heater vent pipe (bag 9). Position so the pipe is slanted toward the center of the car. Glue in place.

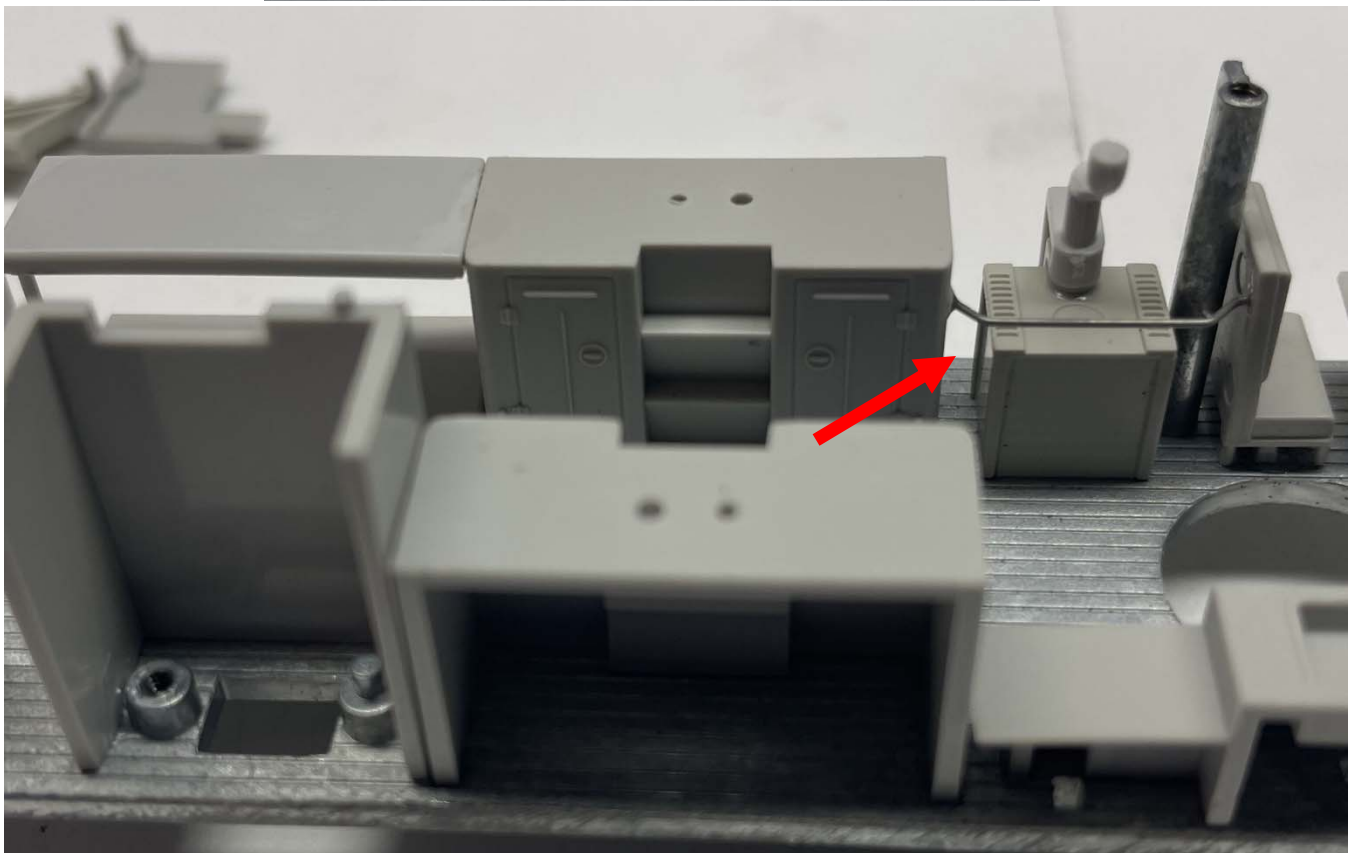


13. **Install Fuel Tank:** The fuel tank (bag 10) goes next to the bunk beds with the filler pipe facing the end of the frame. Secure with CA.

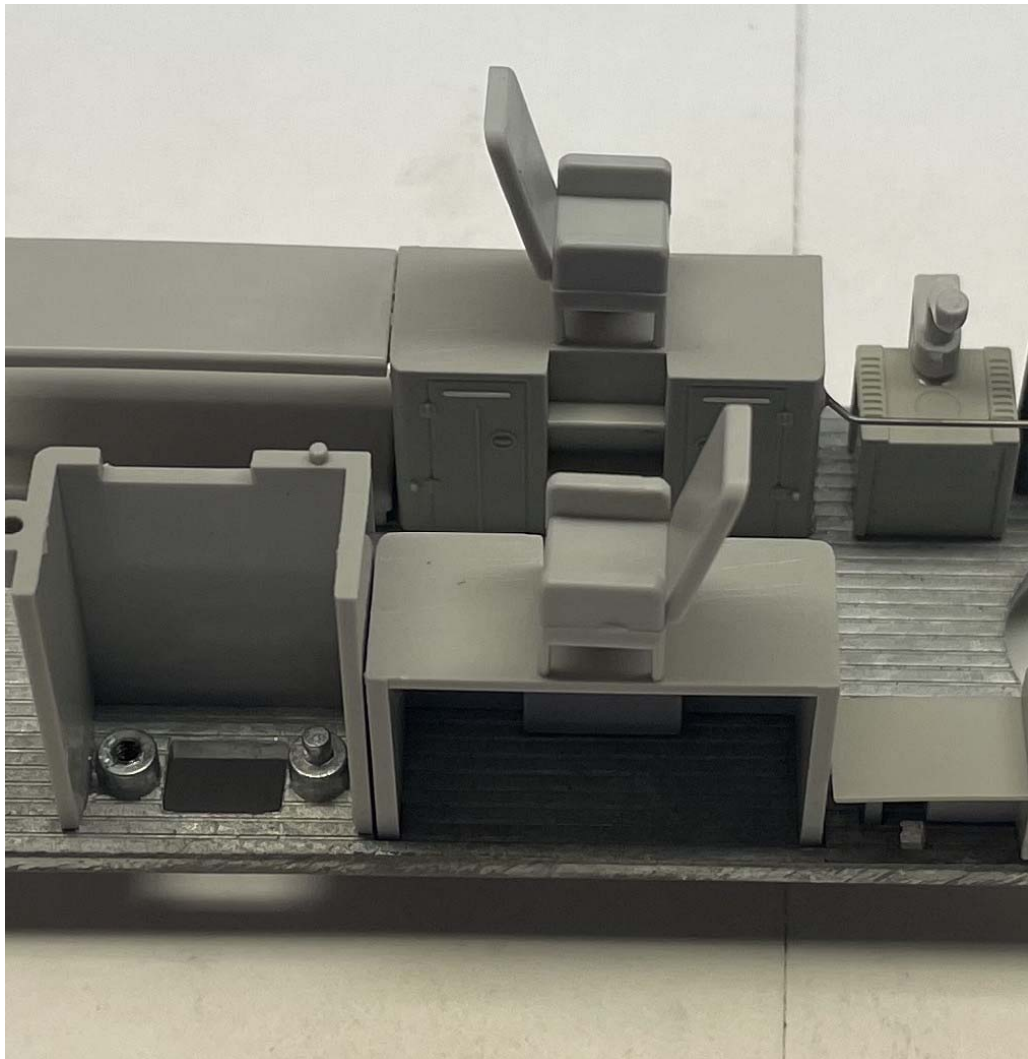
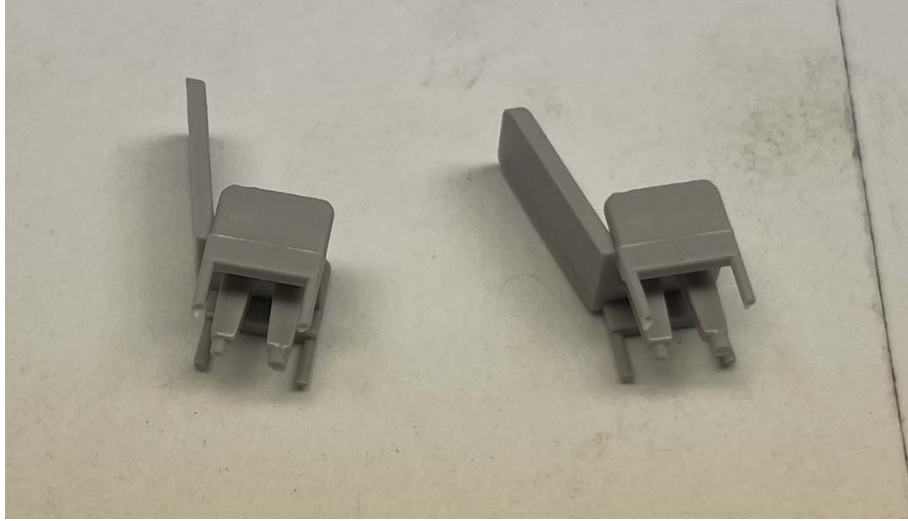




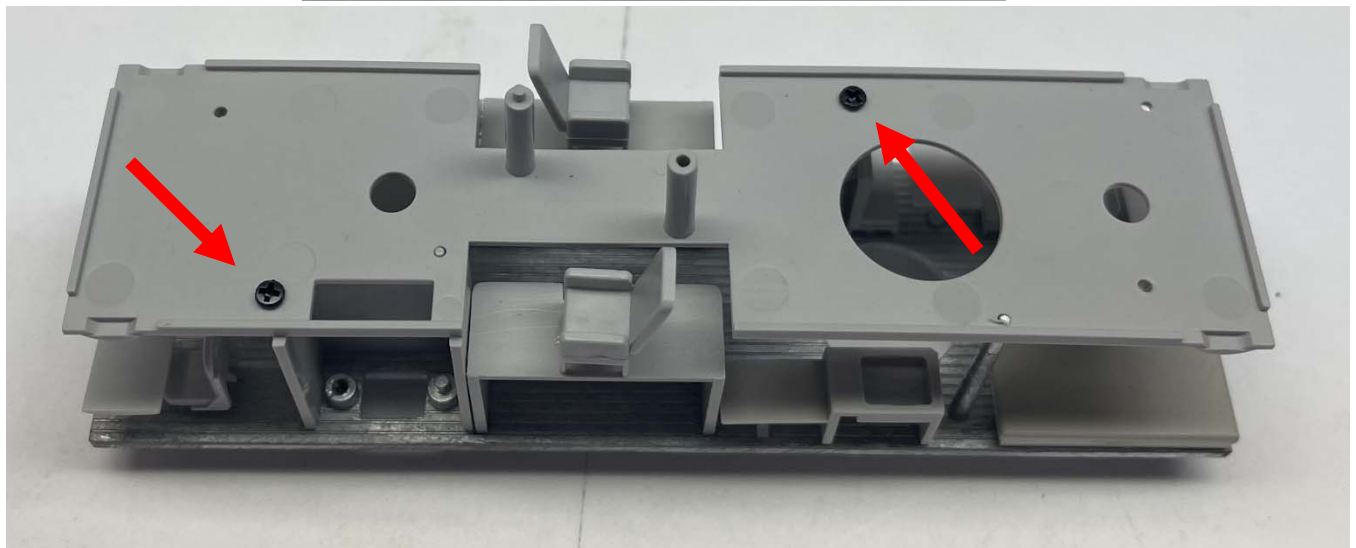
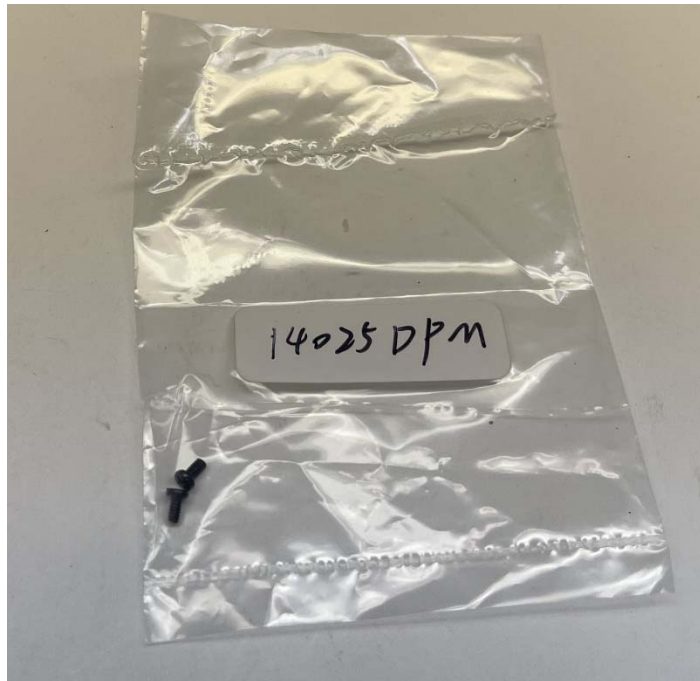
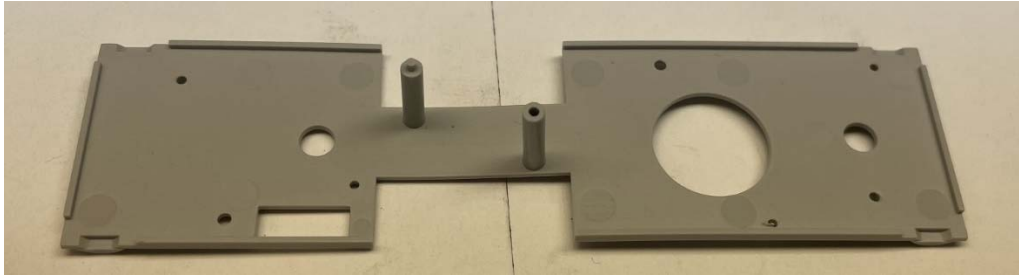
14. **Install Heater Safety Rail:** Locate the wire safety rail (bag 13). It fits between the back of the large chair next to the post and the step well and is above the heater. Insert the wire into the mounting holes and orient as is shown in the photo. Secure with CA.



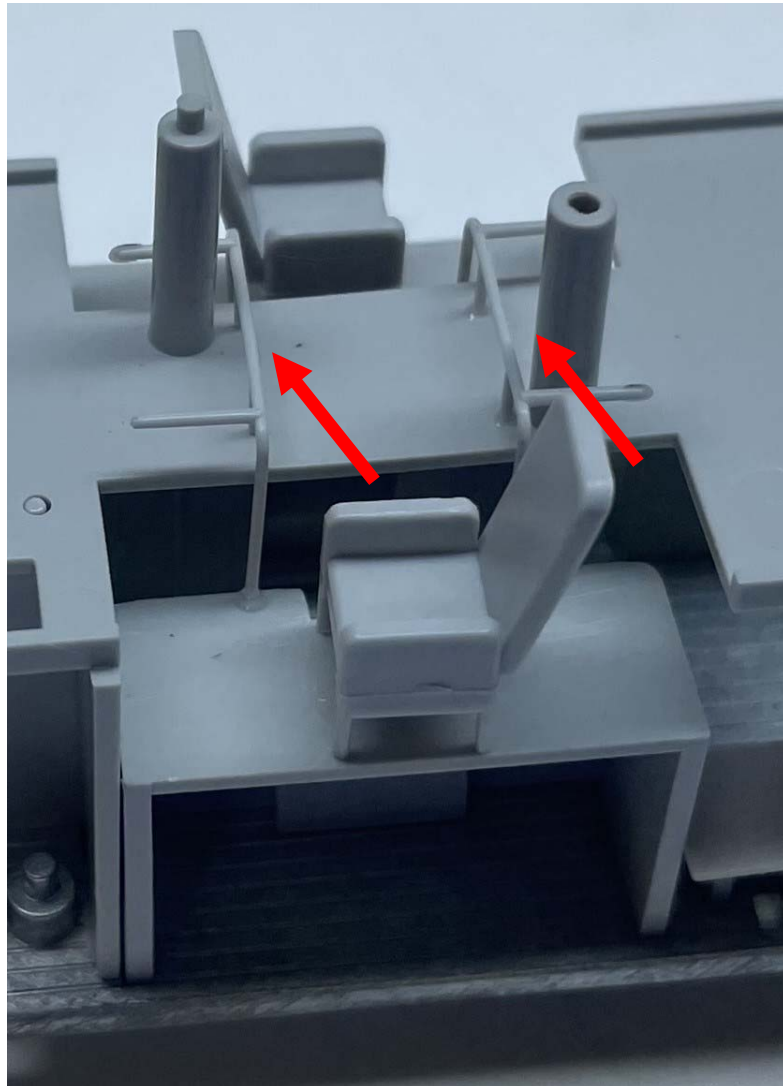
15. **Install Cupola Seats:** Locate the cupola seats (bag 5). The cupola seats are keyed so they can only fit in one place. Set in position and glue in place.



16. **Install Interior Roof:** The interior roof is oriented with the posts facing up towards the roof and the large hole lines up with the hole in the floor. The small bag marked 14025DPM (bag 15) has the screws that hold the interior roof to the interior. Position the roof and set in place with the screws.

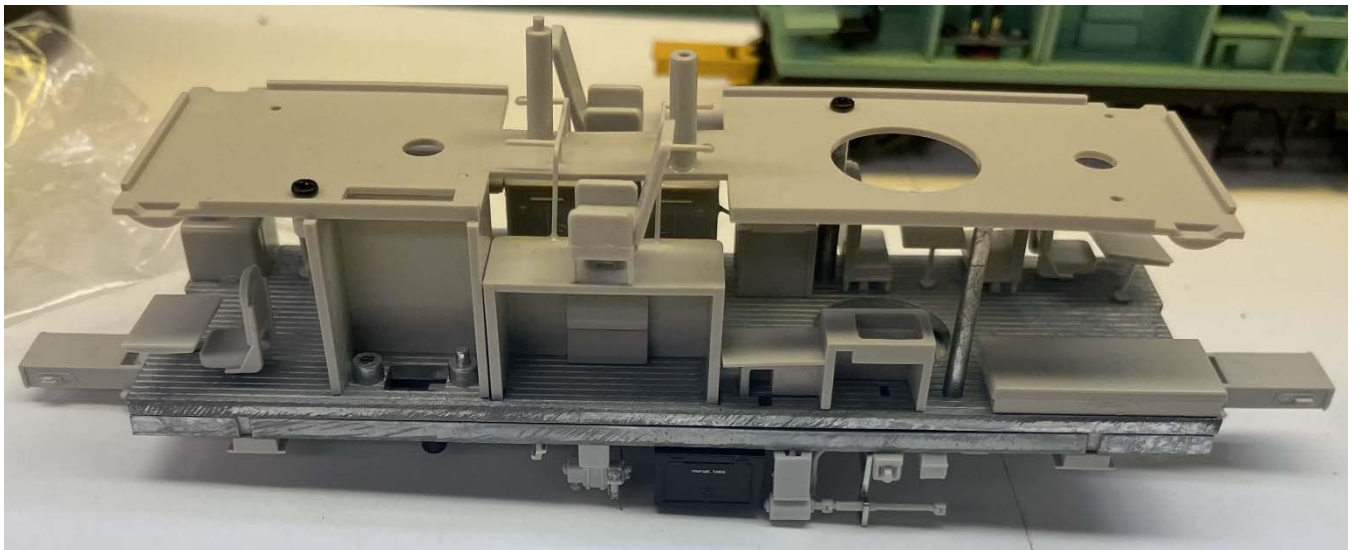


17. **Install Cupola Railings:** The cupola railings (bag 5) sit in locating holes in a circuit board for the lighting in decorated models. Since the kit does not include this board, you need to position it manually. Set it in place so that the posts rest on top of the step wells and interior roof. Refer to the photo and glue in place when in position.





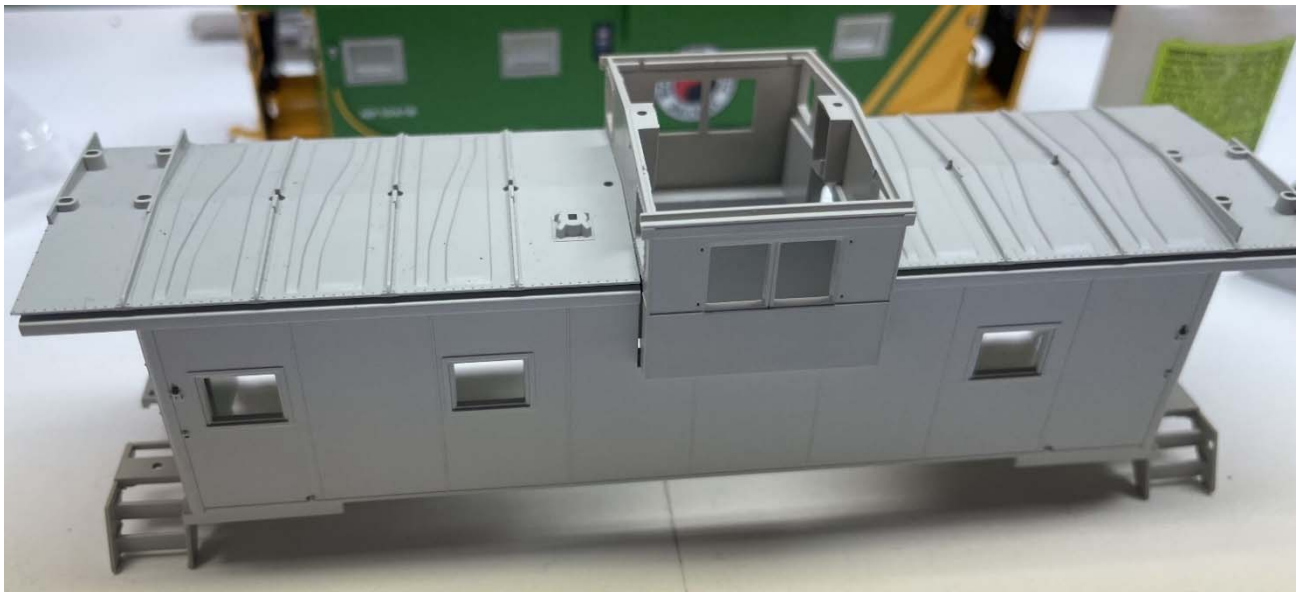
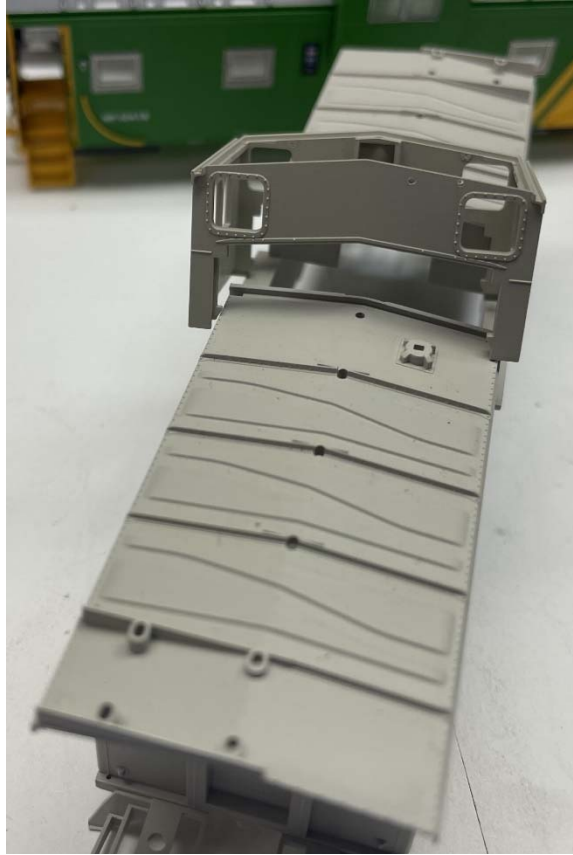
18. **Attach Underframe to Interior:** Join the underframe to the interior. The sub floor has a small rectangular hole that lines up with one on the underframe. Join the two assemblies together and secure them with screws from bag 17040DFM (bag 15).



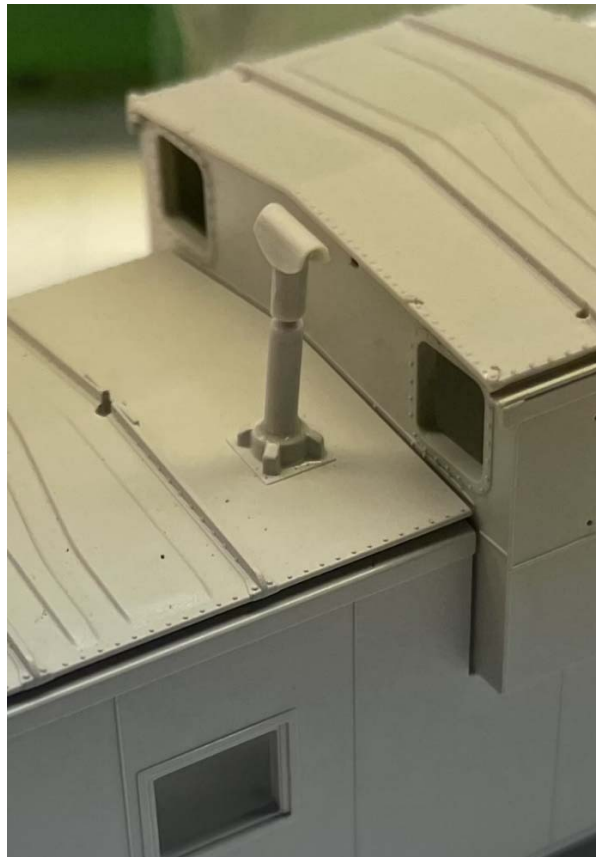
**Put the assembly aside.**

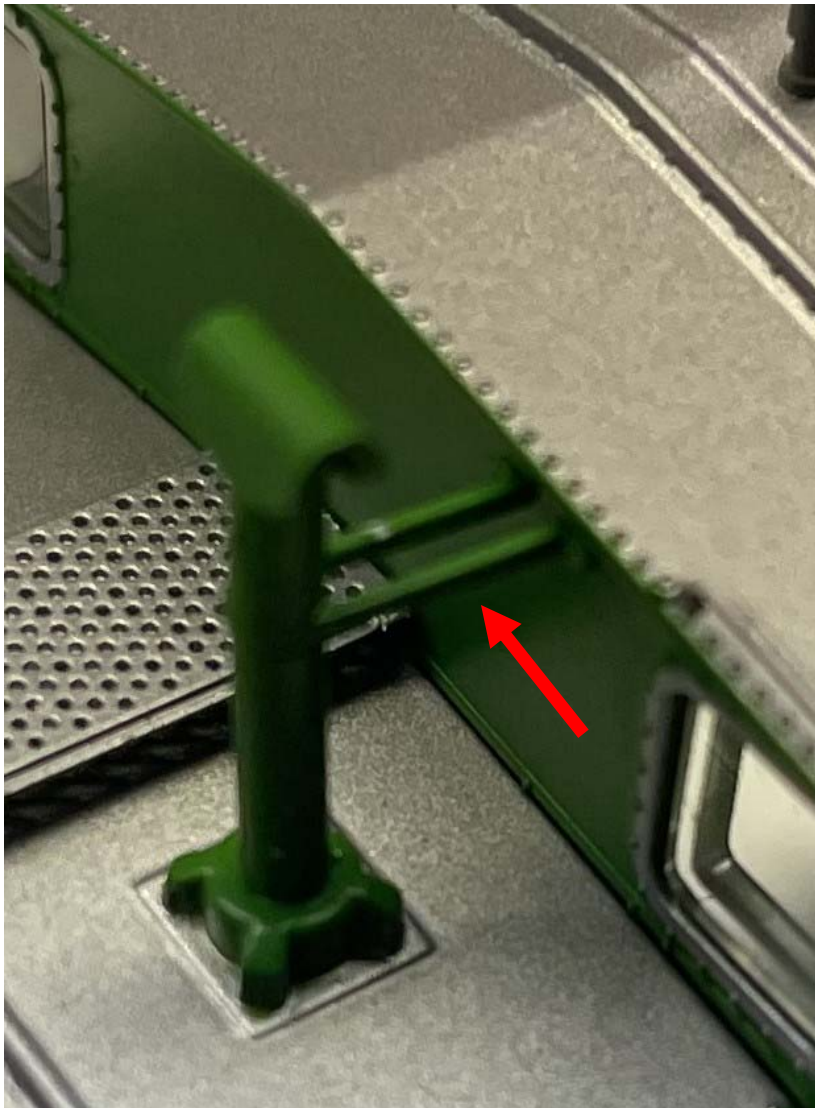
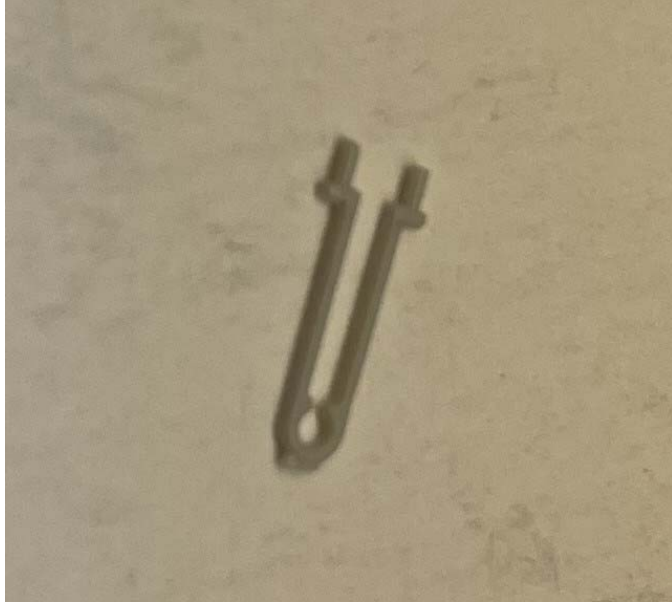
## Carbody Assembly:

19. **Install Cupola:** Locate the cupola (bag 7). Orient the cupola on the car body so that the side of the cupola that has two holes faces the side of the roof that has the base for the smoke jack. Slide the cupola in the grooves in the car body and push down until it snaps in place.



20. **Install Cupola Roof:** The cupola roof (bag 7) is keyed and can only be applied one way. Set in place and glue. You may want to leave the roof unattached until final painting and assembly.
21. **Install Smoke Jack and Support:** Locate the smoke jack and support (bag 9). Insert into the base and glue in place. The support bracket fits into the notch on the smoke jack and into the holes in the end of the cupola. Glue in place.



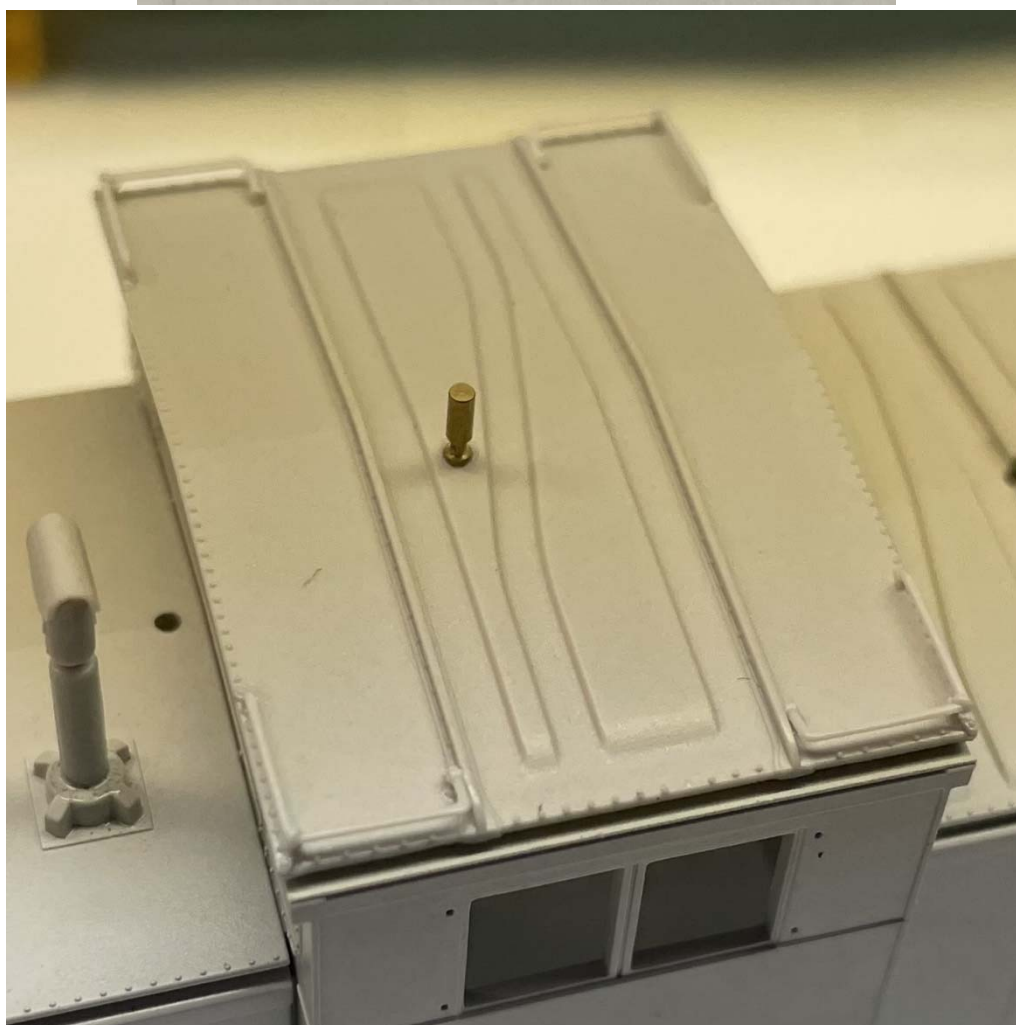




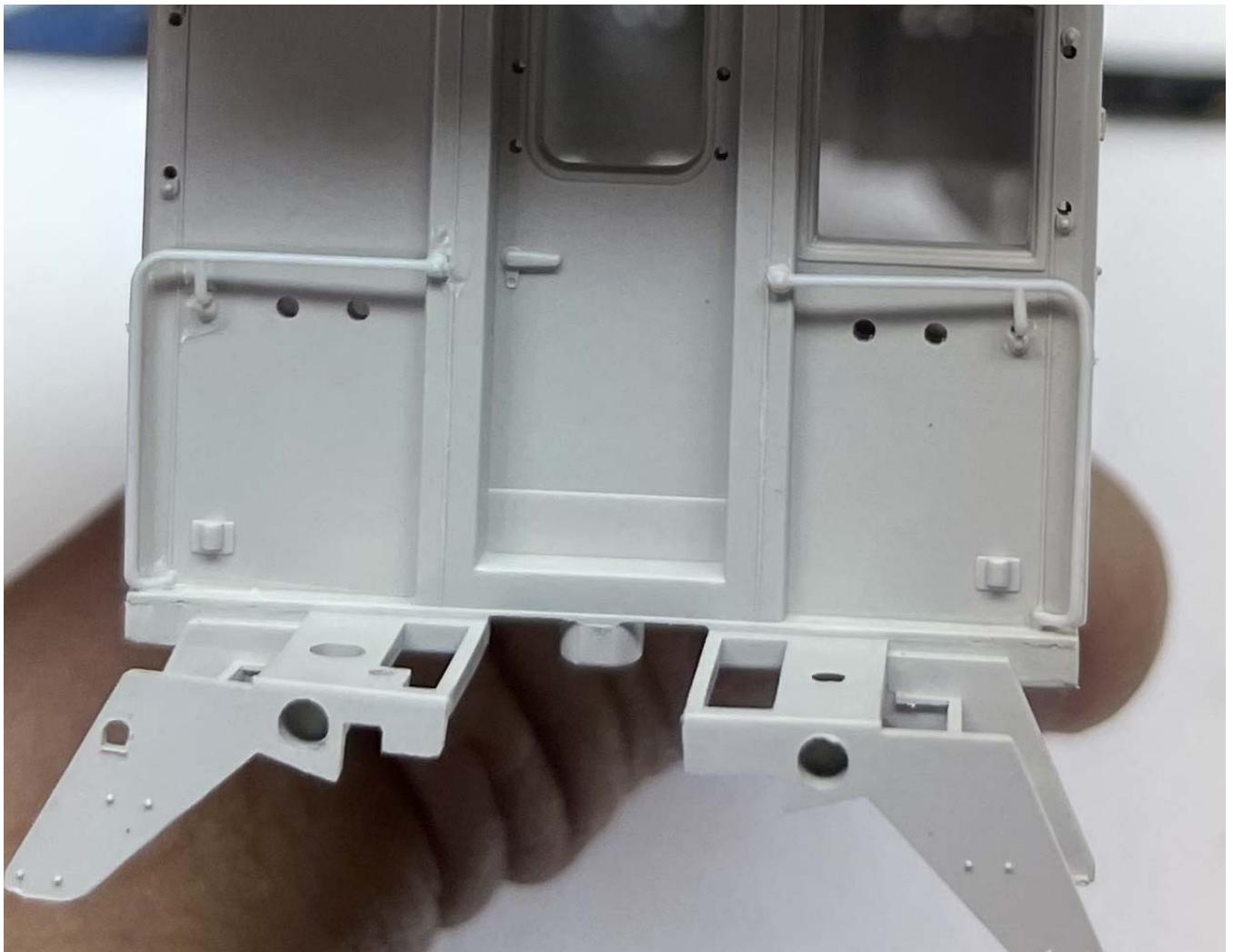
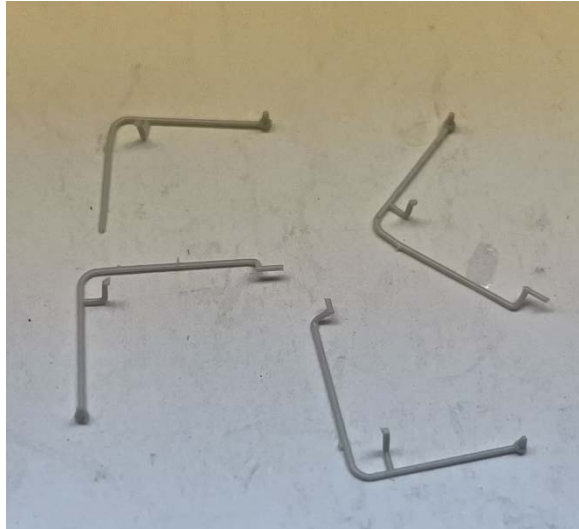
22. **Install Firecracker Antenna:** Insert the firecracker antenna into the hole in the cupola roof and secure with CA.



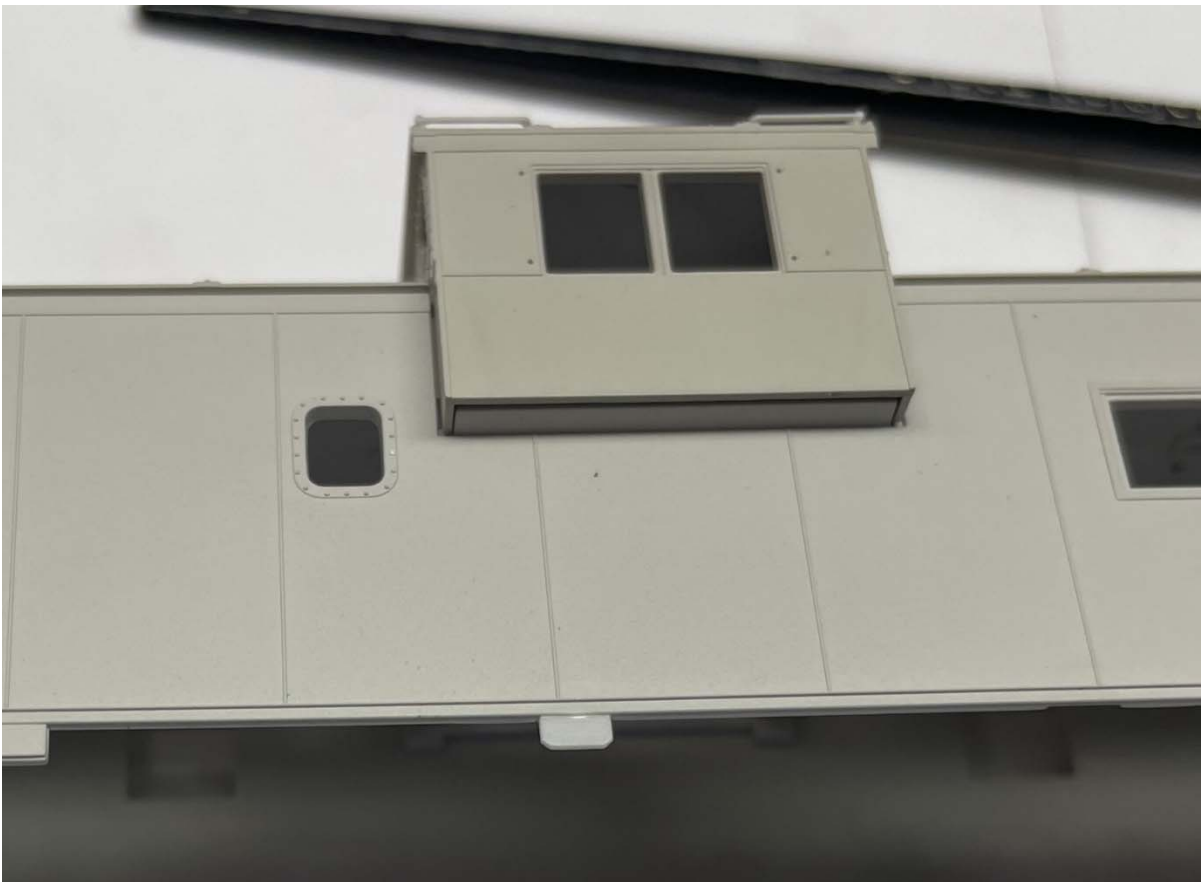
23. **Install Cupola Roof Grabs:** Locate the four cupola corner grabs (bag 8). Set in place and glue.



24. **Install End Railings:** Locate the four end railings (bag 8). There are a left and a right side so they will only fit one way. Set in place and glue.



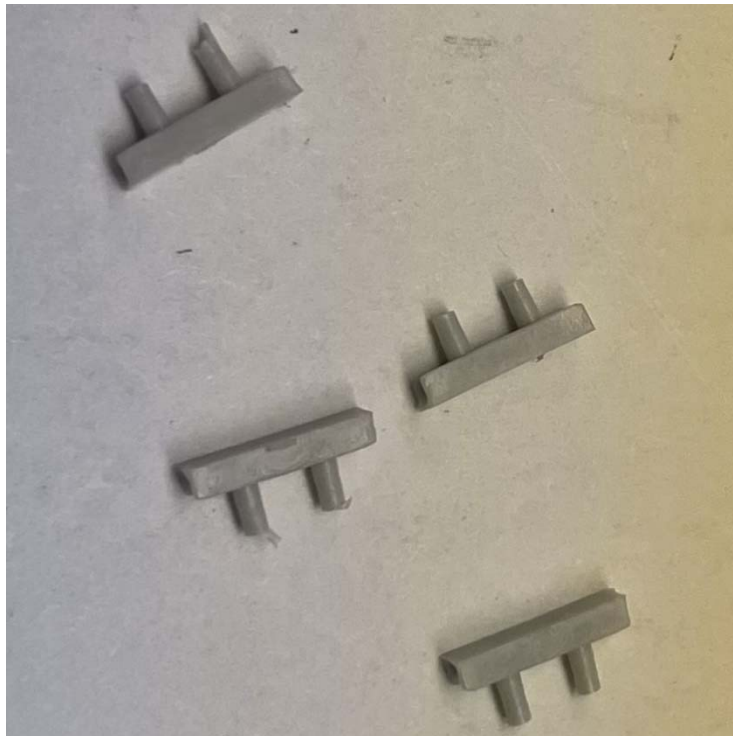
25. **Install Cross Member Caps:** Locate the cross-member caps (bag 6). There are three to install - two go on the side of the car with three windows and one goes on the other side. They have tabs that fit into slots on the inside of the carbody's lower side sill. The single cover goes into the slot that is located under the small oval window. Set in place and glue.

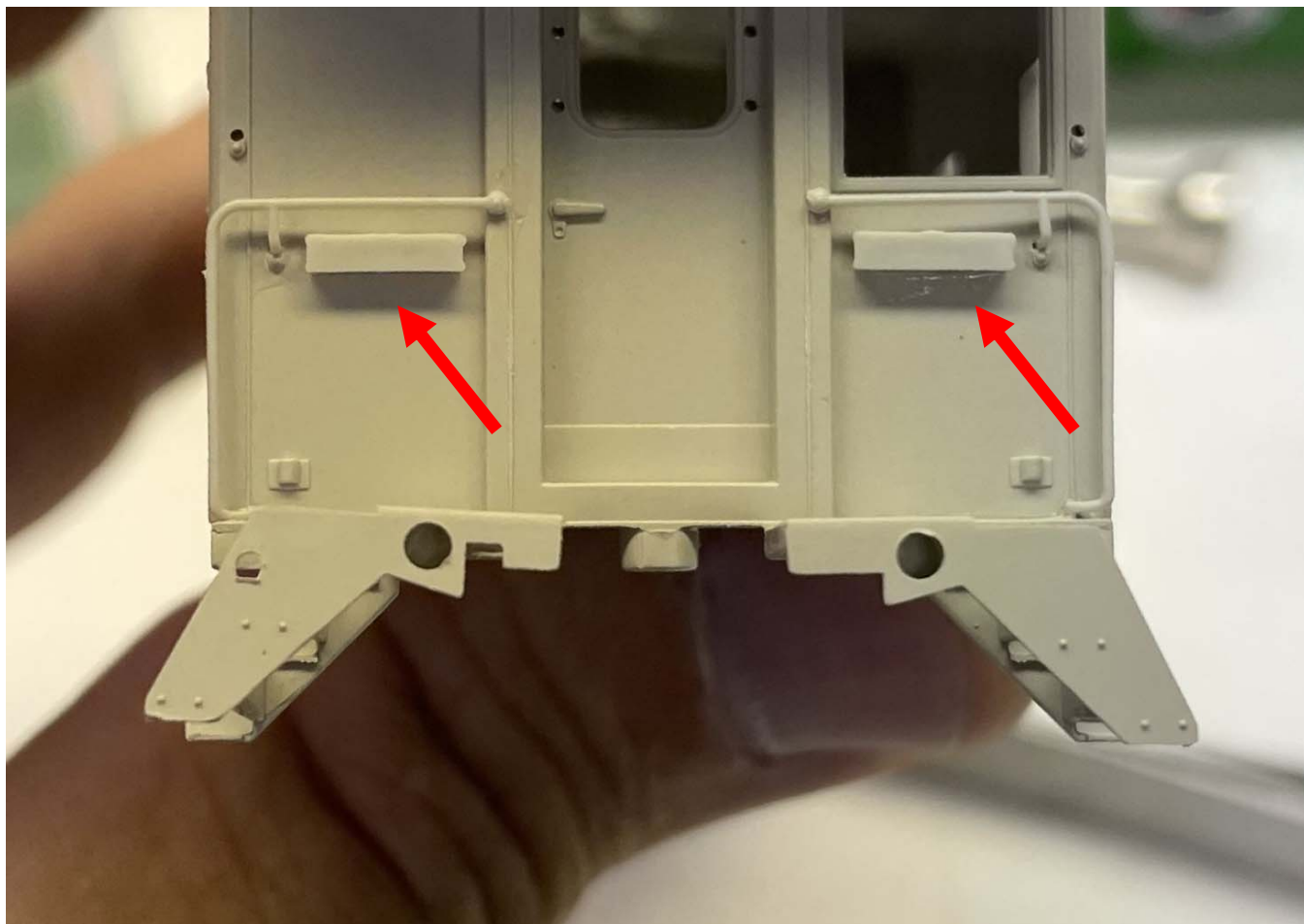






26. **Install Body End Box Feature:** Locate the four parts (bag 9) and install into the mounting holes about midway up both sides of the end doors. Set in position and glue.



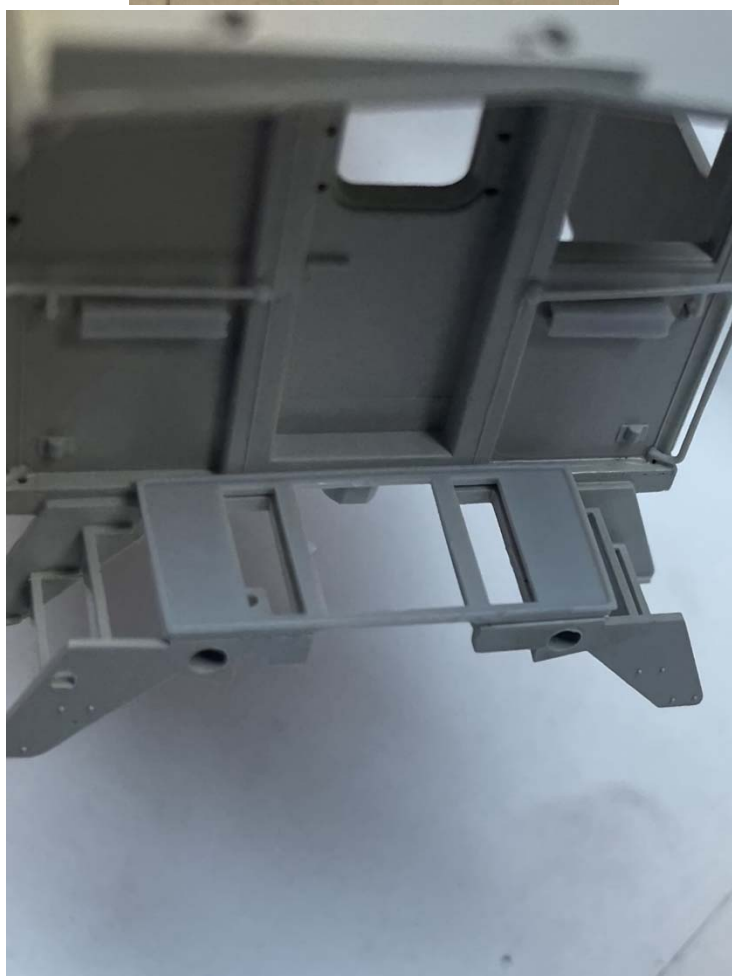
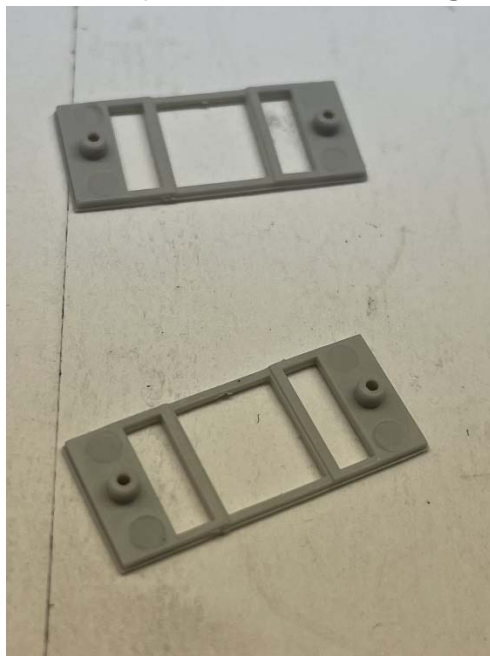


27. **Install Bathroom Vent:** The bathroom vent (bag 9) goes into the mounting hole on the opposite side of the cupola from the smoke jack. Set in place and glue.





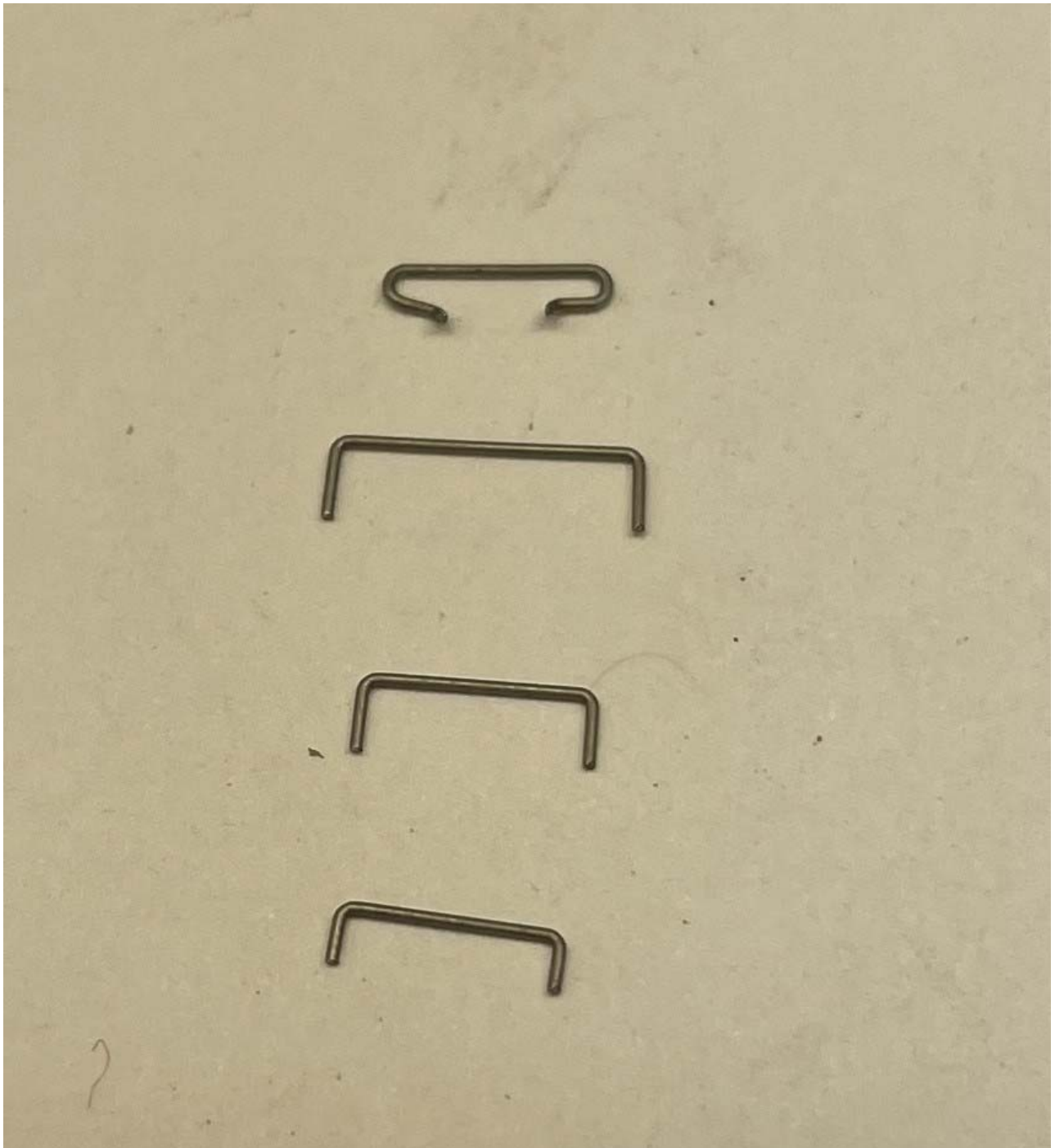
28. **Install End Platform Frames:** The end platforms (bag 9) have locating pins that set them into position between the steps. When located, glue in place.





29. **Identify Grab Irons:** There are several different sizes of grab iron (bag 13):

- 2 small curved that are for the cut lever bracket
- 6 Large straight grabs that go across the door windows
- 10 Small grabs with longer legs that go above and to the side of the end windows and in the lower right side of the end sill
- 12 Small grabs with shorter legs that go into the ladder stiles
- 4 large curved grabs that go on the four corners of the car sides



30. **Install Grab Irons:** Using the photos as a guide, set all grab irons in position and secure with CA.

**\*the end sill grab irons and ladder stiles will be added in a later step**



31. **Install the oil filler:** Locate the Oil Filler. This is probably the smallest part in the kit so be very careful with it. It fits into the recessed opening in the carbody end. Set in place and glue.

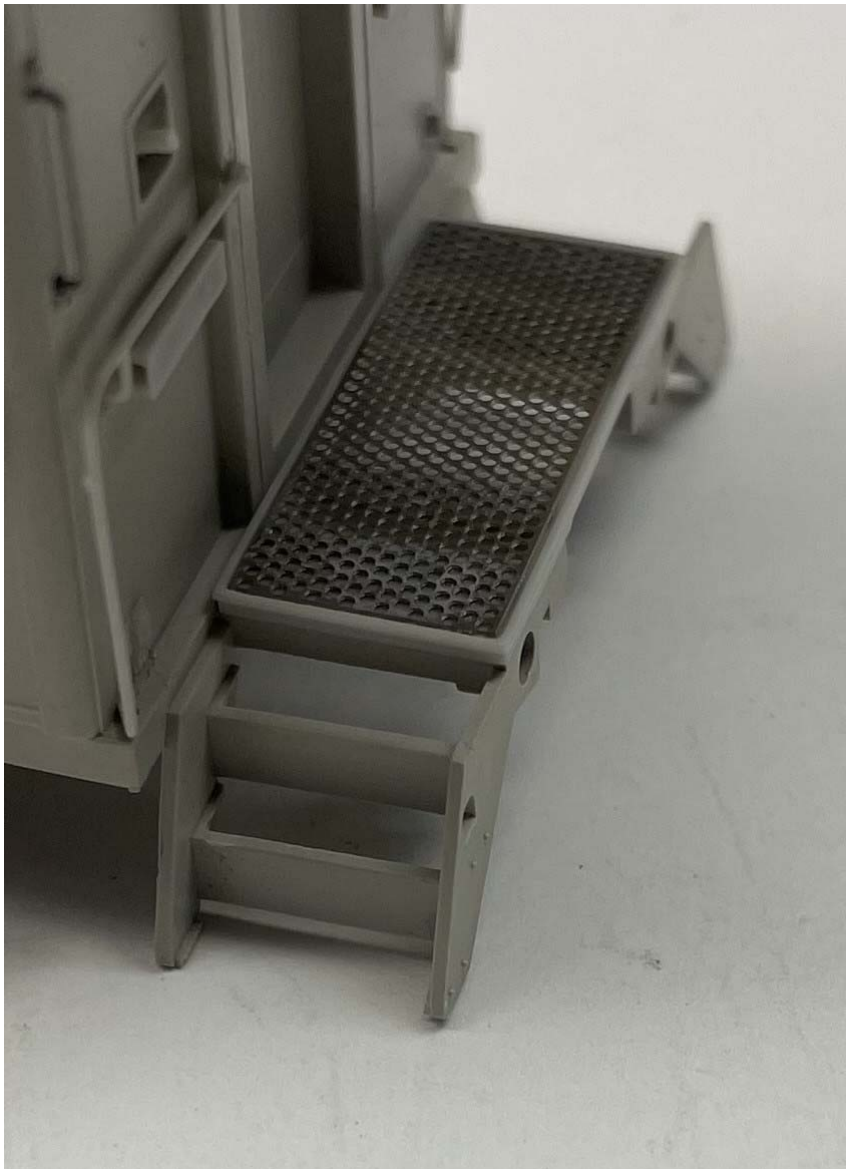
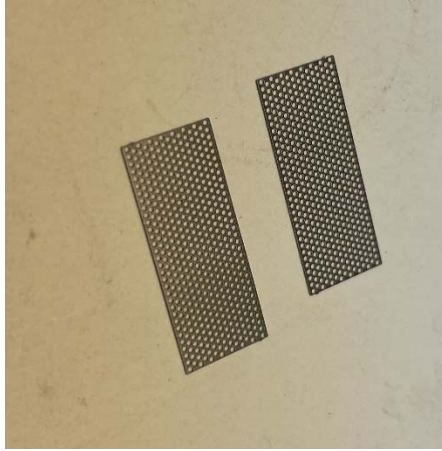


32. **Install Platform Lights:** Locate the end platform lights (bag 5). These go into holes in the upper right corners of the carbody ends. Set in place so that they are positioned vertically and glue.

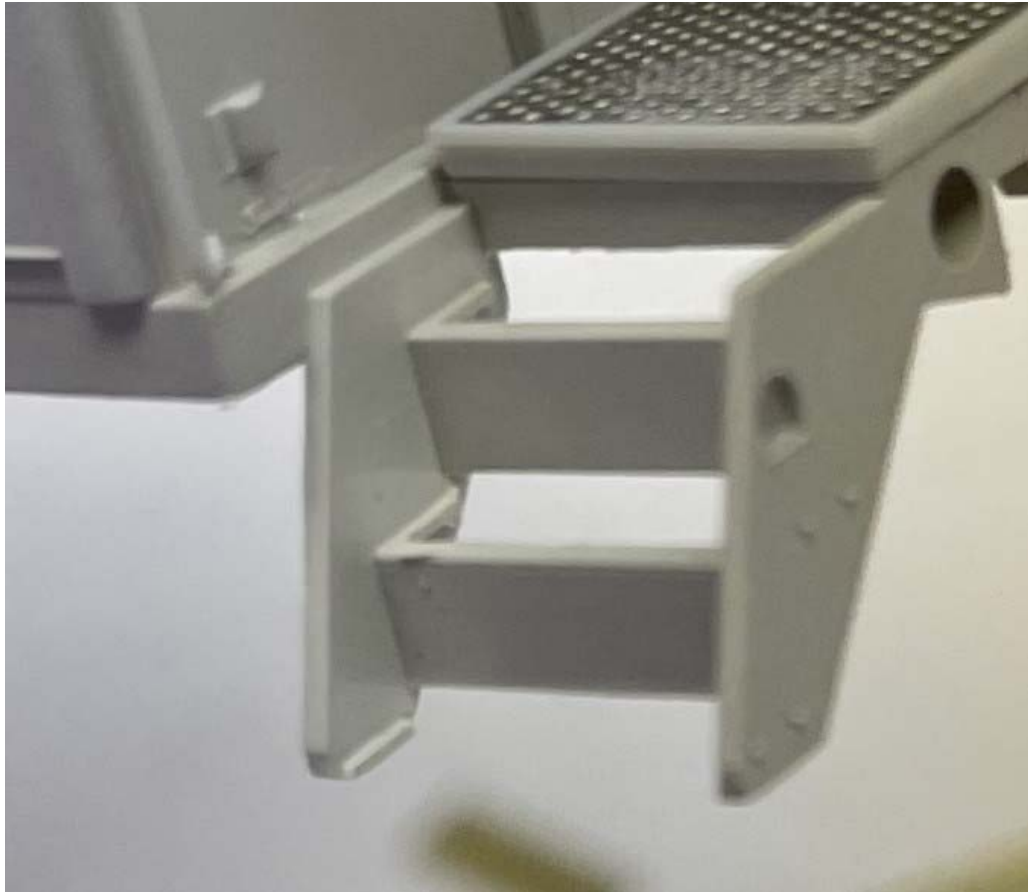
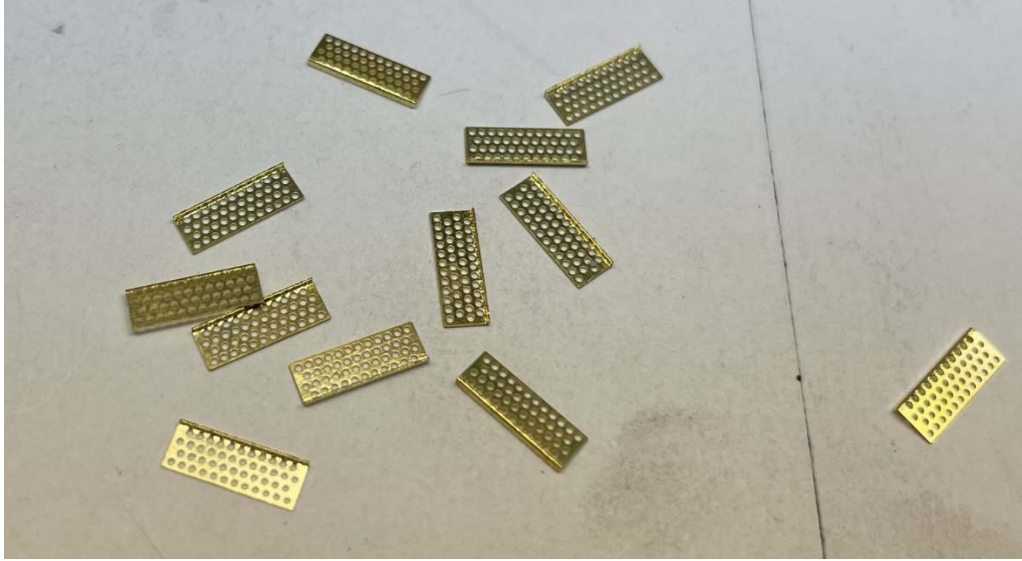




33. **Install End Platform Treads:** The end platform treads (bag 14) fit into recesses in the end platforms. Set in position and secure with CA.

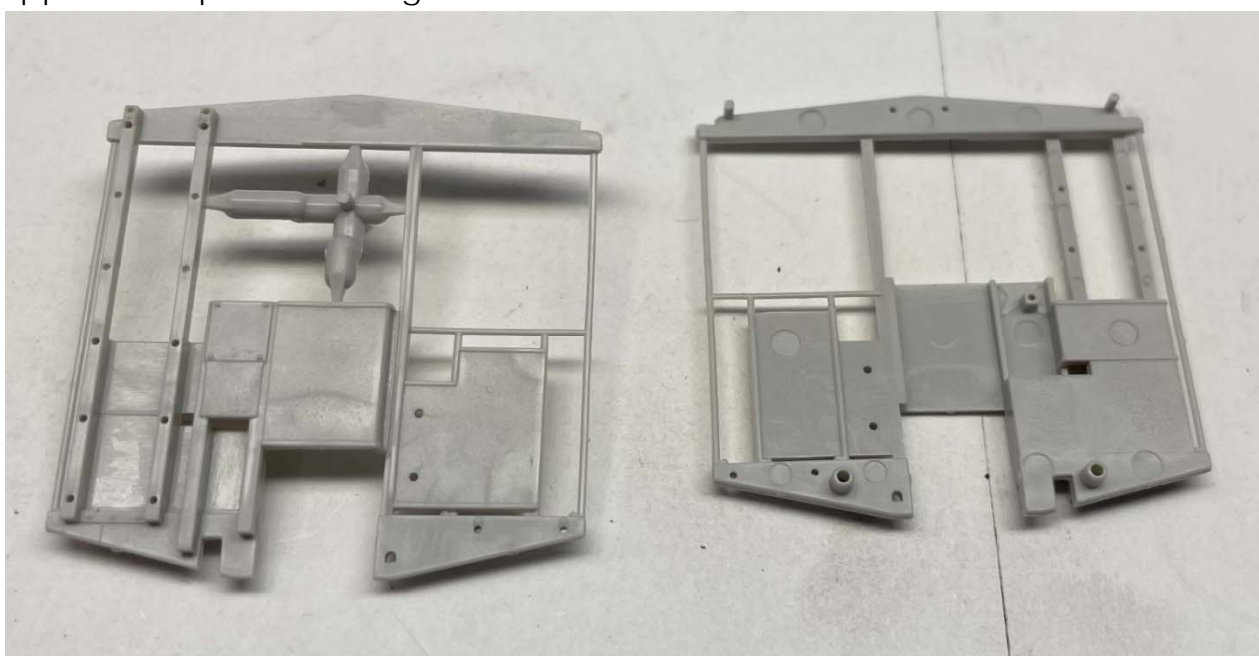


34. **Install Step Treads:** The 12 step treads (bag 14) fit on small ridges cast into the step wells. Orient so that the front edge of the tread (the part that has the 90 degree bend) fits flush against the mounting ridges and the tread sits flat on top of the ridges. Secure all with CA.

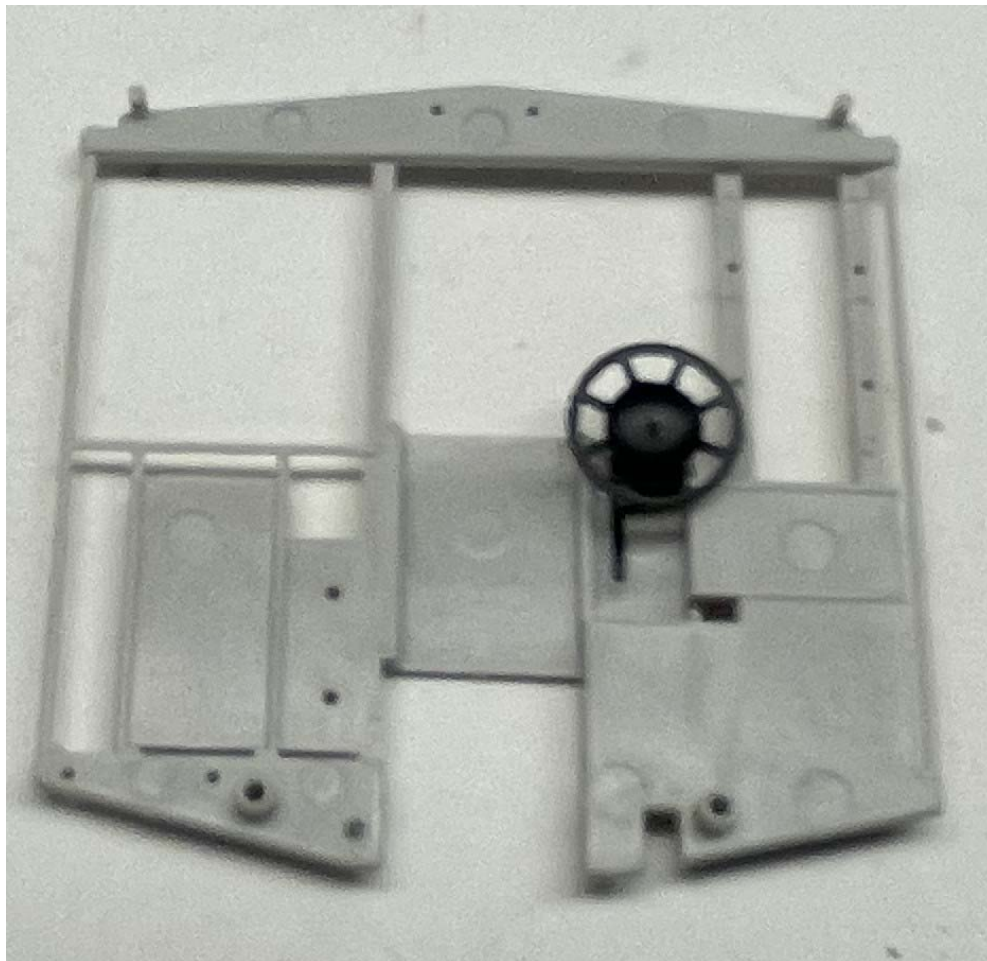
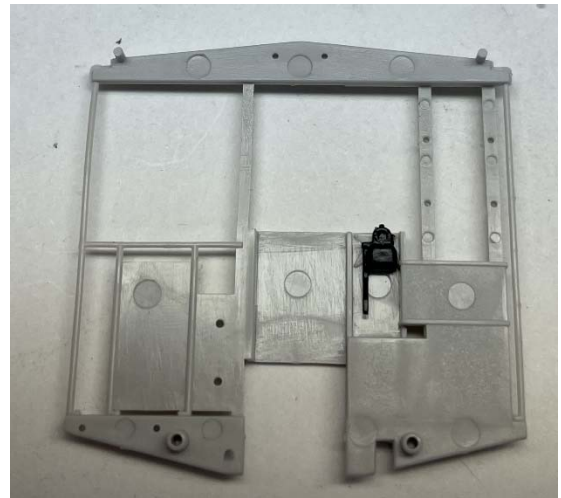
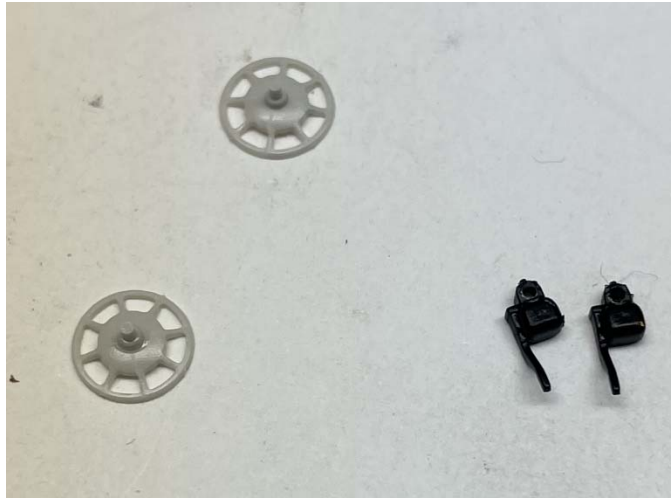




35. **Prep End Frames:** Locate the two end cages (bag 4). Remove the molding supports and place the cage face down.

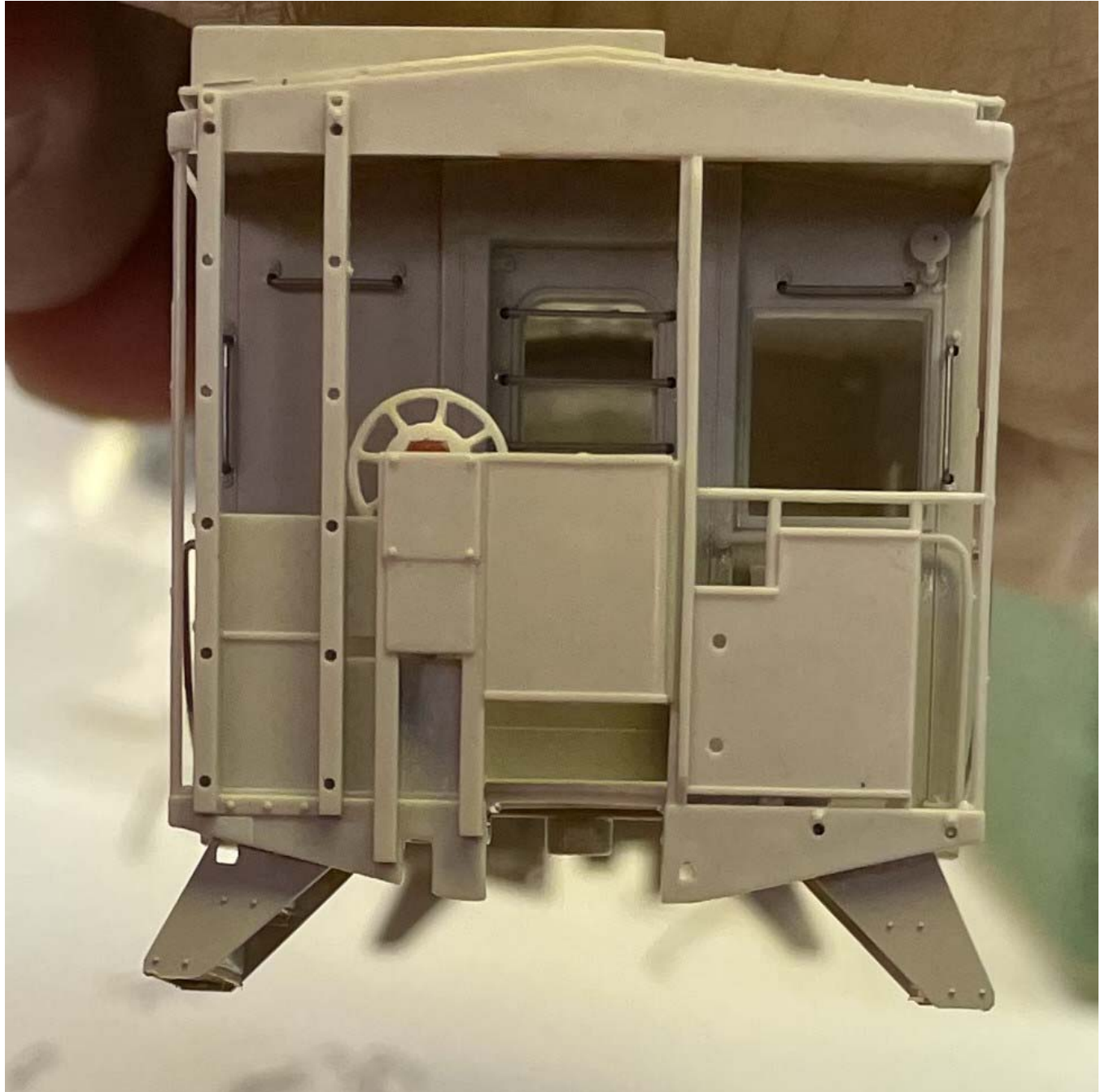


36. **Install Brakewheel Housings and Wheels:** Locate the brakewheel housings and brakewheels (bag 5). Set the housing over the mounting tab on the end cage and glue. Insert the brakewheel mounting pin into the hole in the housing and glue. Repeat for the other end cage.

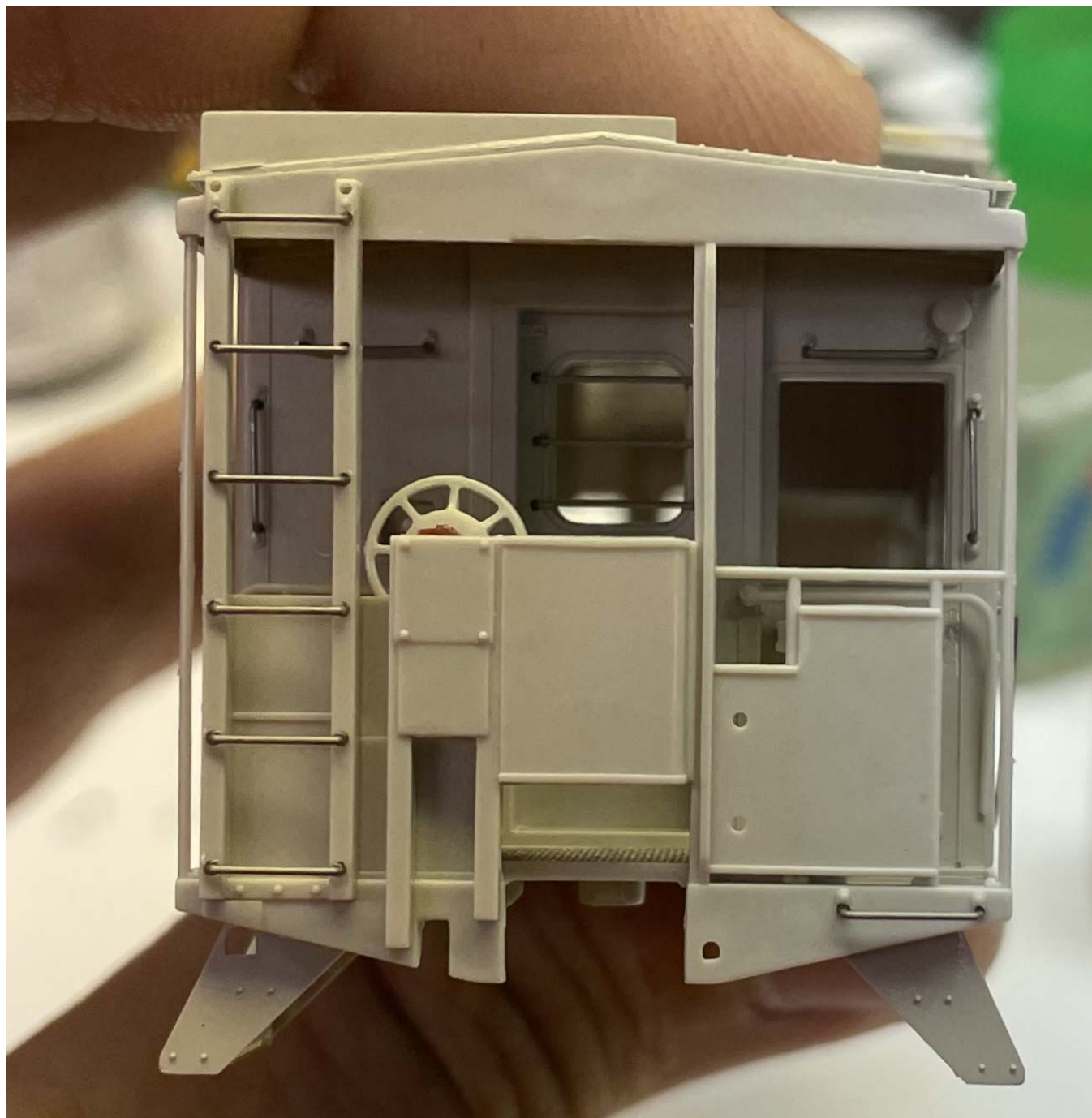




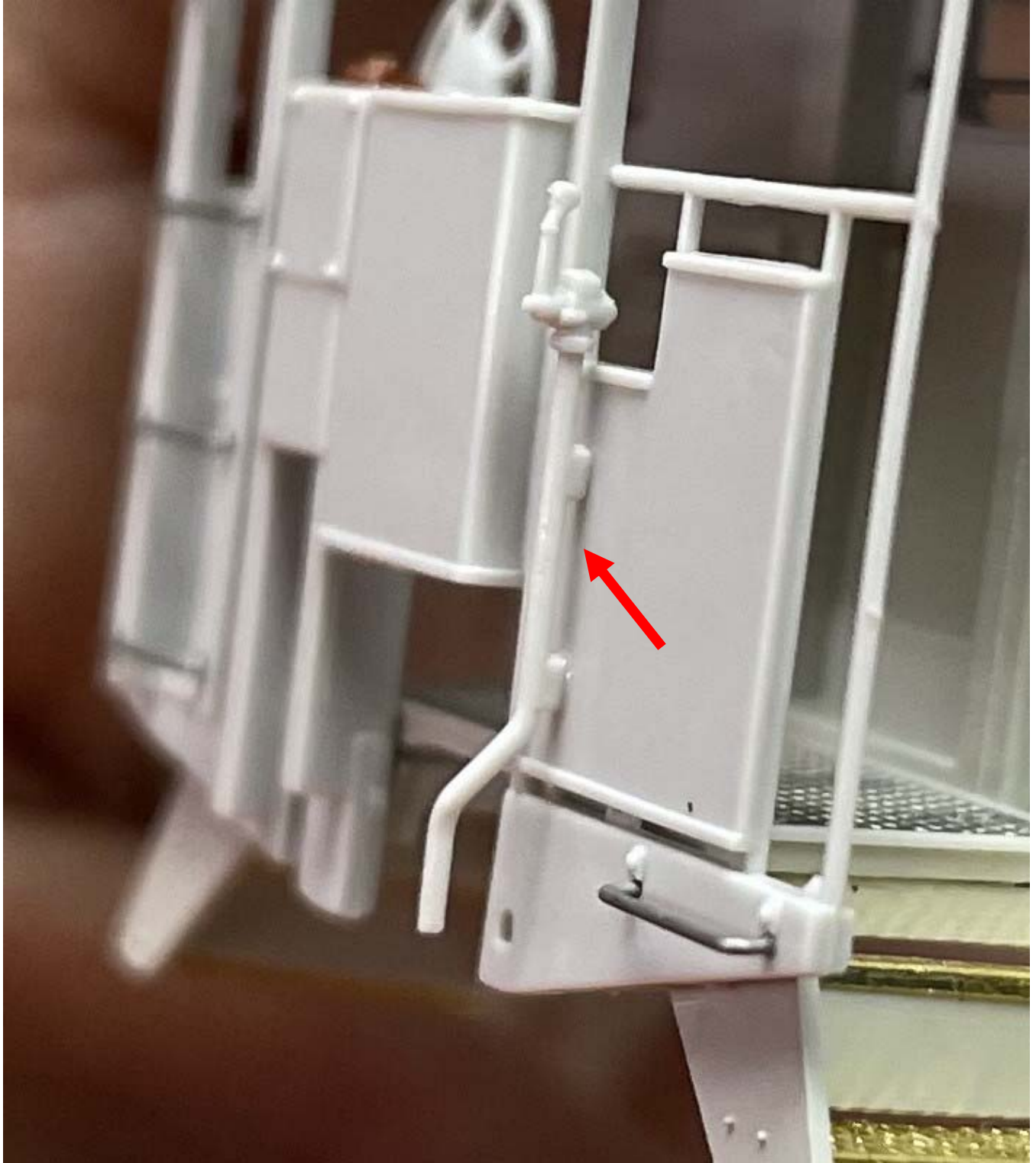
37. **Install End Cages:** Install the end cages on the carbody. There are two small pins on the top corners of the cage that fit into holes on the edge of the roof. There are two larger pins on the lower part of the cage that fit into holes in the end sill. Set in place and glue.



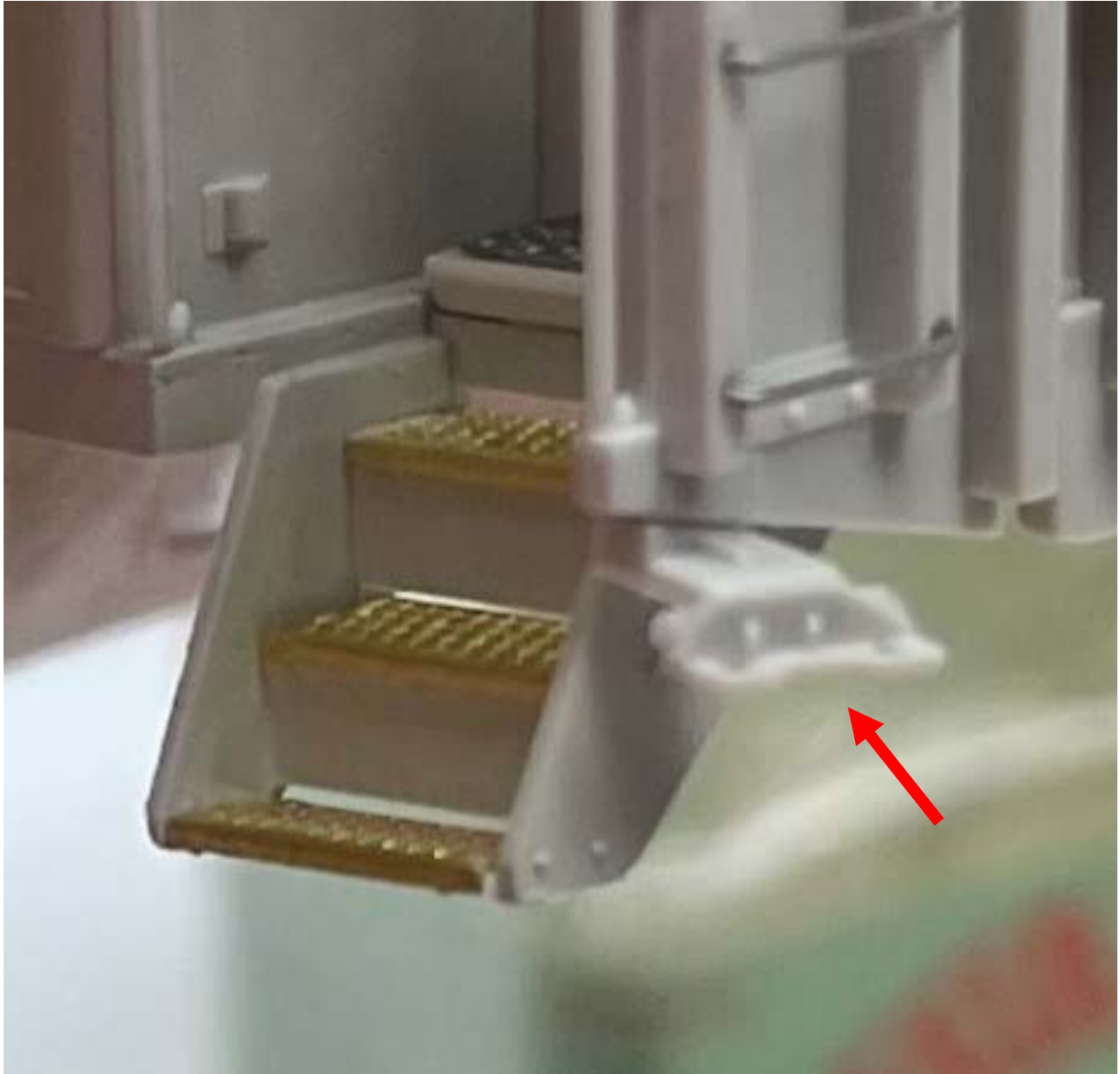
38. **Install End Frame Grab Irons:** Take one of the two remaining grab irons with the longer legs and install it into the mounting holes in the lower right corner of the end sill. Secure with CA. Repeat for the other side.
39. Install the 12 remaining grab irons into the holes in the ladder stiles. Secure with CA.



40. **Install End Whistle and Air Pipe:** Locate the end whistle and air pipe (bag 8). Orient them so that the offset in the pipe is facing down and glue in place.

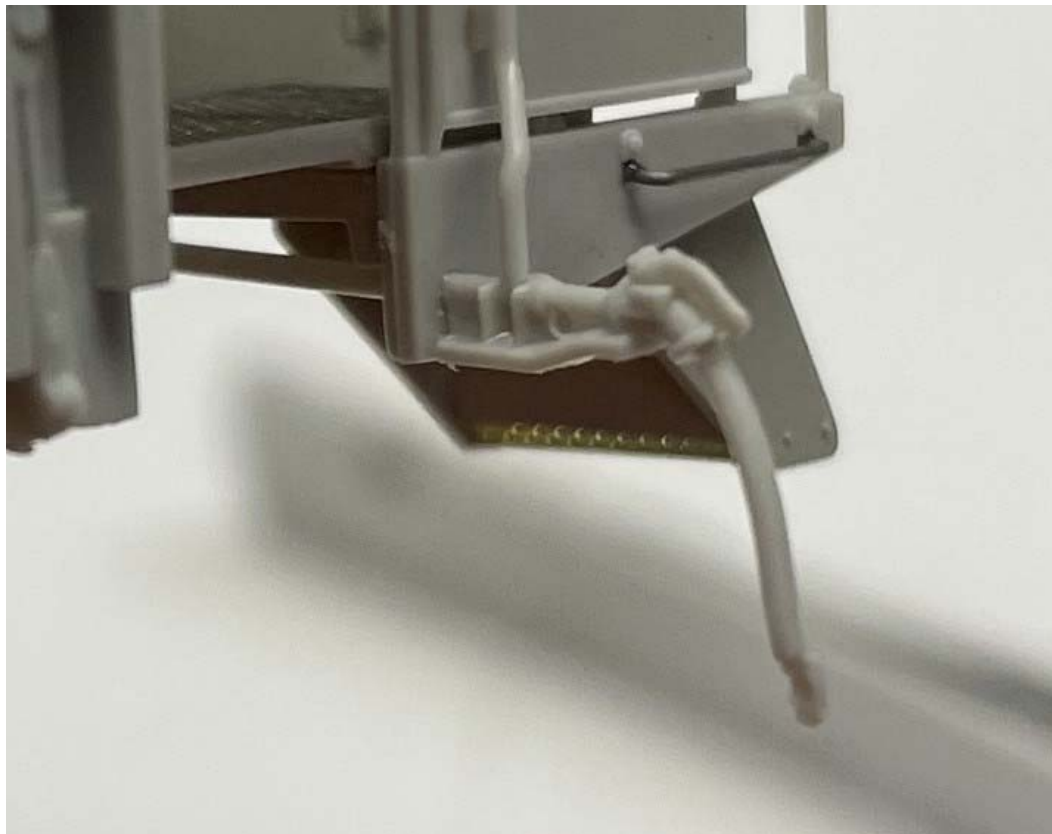


41. **Install Cut Lever Brackets:** Locate the cut lever brackets (bag 5). They have mounting tabs that fit into holes in the corners of the end sills. Insert and glue in place.

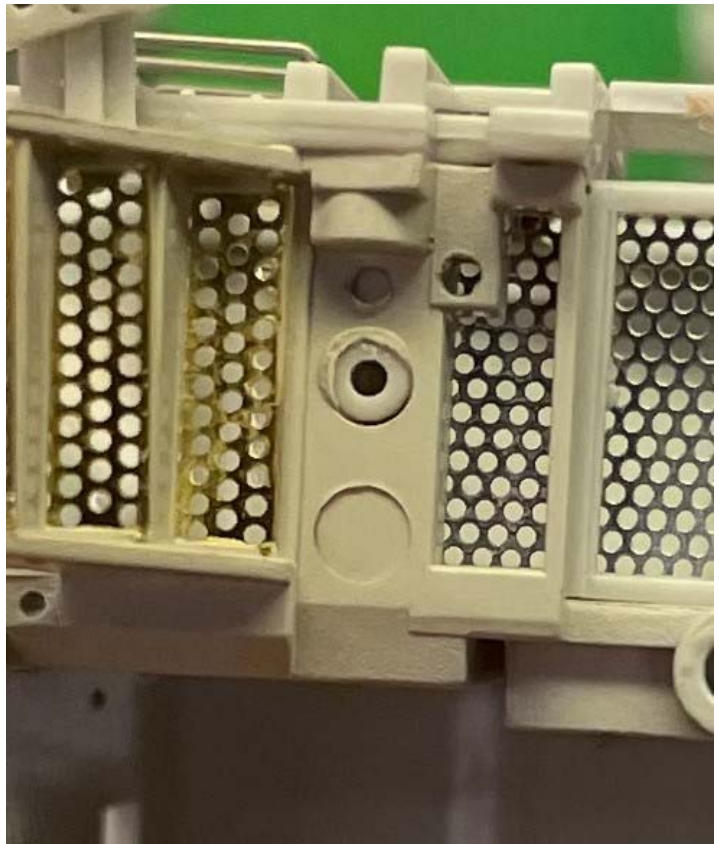
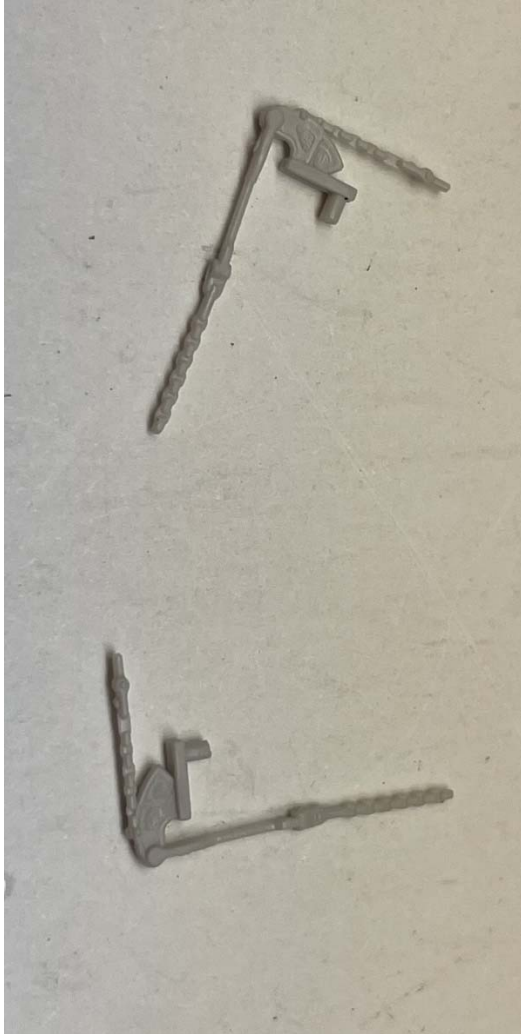




42. **Install Air Hoses:** The air hose/angle cock (bag 5) fits into a hole to the right of the coupler opening on the end sill, and the offset end of the end whistle and pipe fits into a slot behind the angle cock. Insert into the hole and slide all the way in until it bottoms out. The end whistle and pipe should be aligned with the slot. Glue in place. Repeat for the other side.



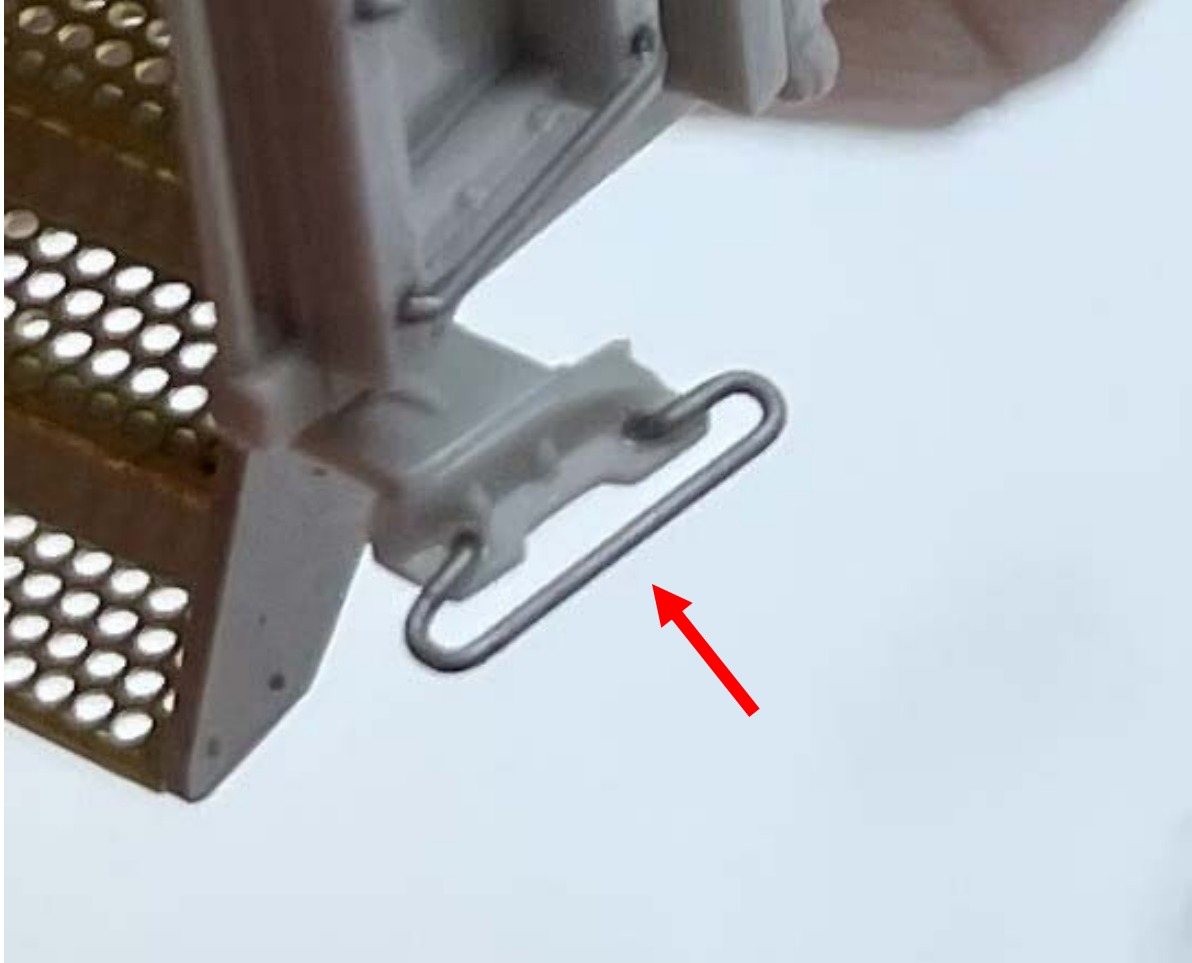
43. **Install Brake Fulcrum/Chain:** The fulcrum/chain (bag 5) has a small pin above the fulcrum that fits into a mounting hole on the underside of the end platform, and the other end fits behind the plate that the brakewheel sits on. Insert the part from below making sure that the side that fits behind the plate is oriented properly. Glue in place.



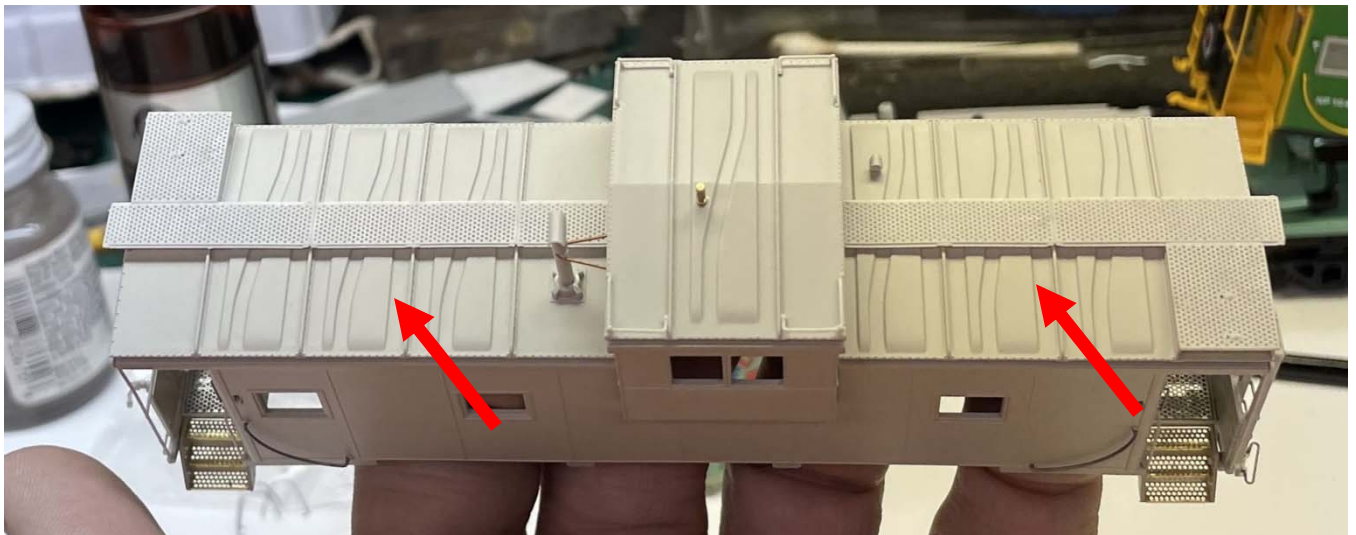


44. **Install Cut Lever Anchors:** The two small cut lever anchors (bag 13) fit into the holes in the cut lever bracket and are inserted from the top side. Set in place and secure with CA.



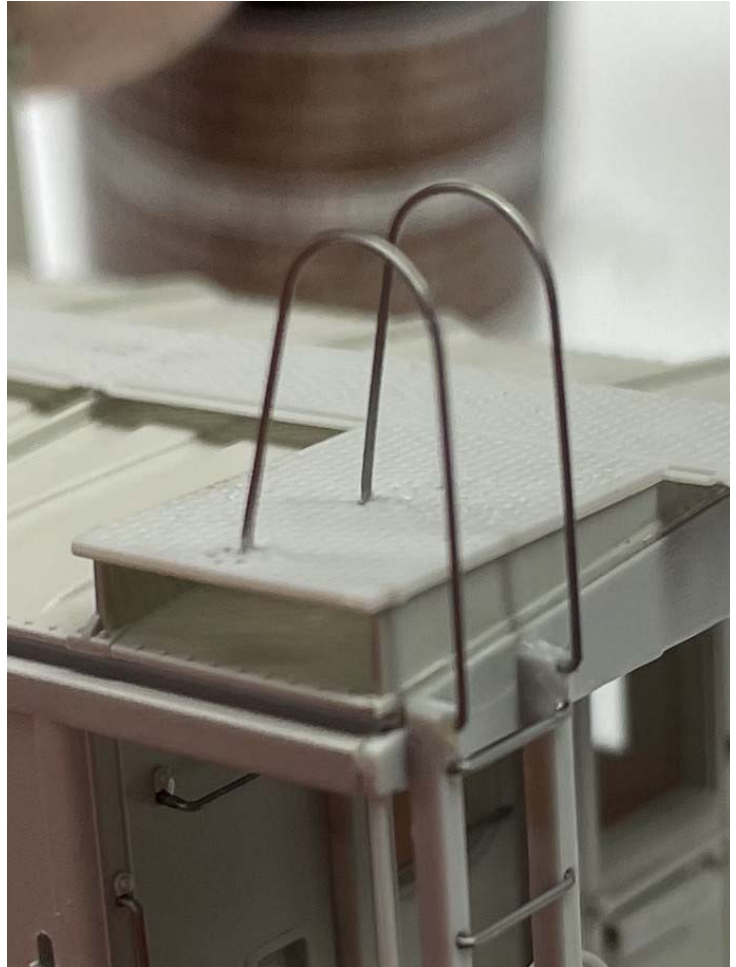
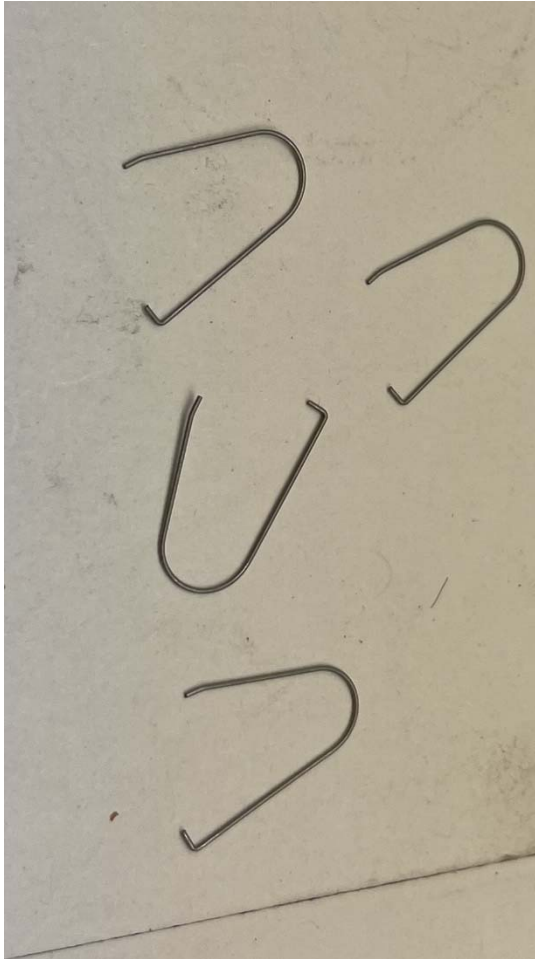


45. **Install Running Boards:** There are two parts to the running board (bag 1). Set them in place and glue.

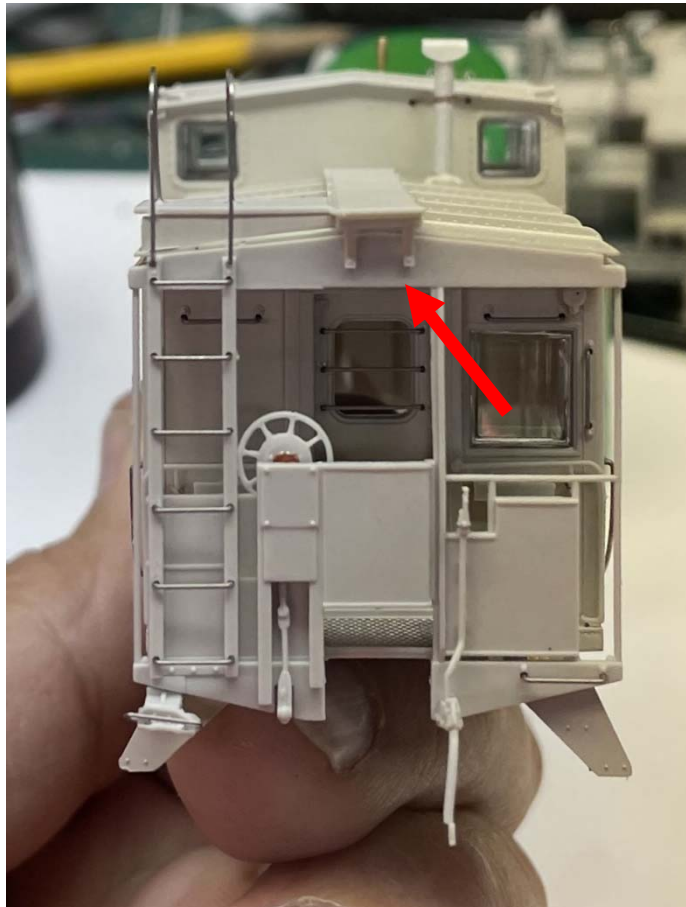
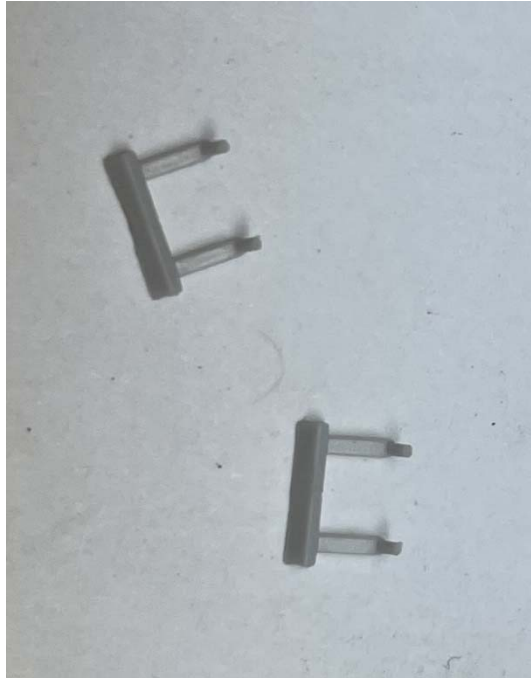




46. **Install Upper Ladder Railings:** The curved ladder railings (bag 13) fit into small holes in the tops of the ladder stiles and in the running board laterals. Set in place making sure that they are parallel and secure with CA.



47. **Install Running Board End Supports:** The running board end supports (bag 5) have a small amount of flash that needs to be removed to ensure it sits flat against the bottom of the running board end. Set in place and glue.

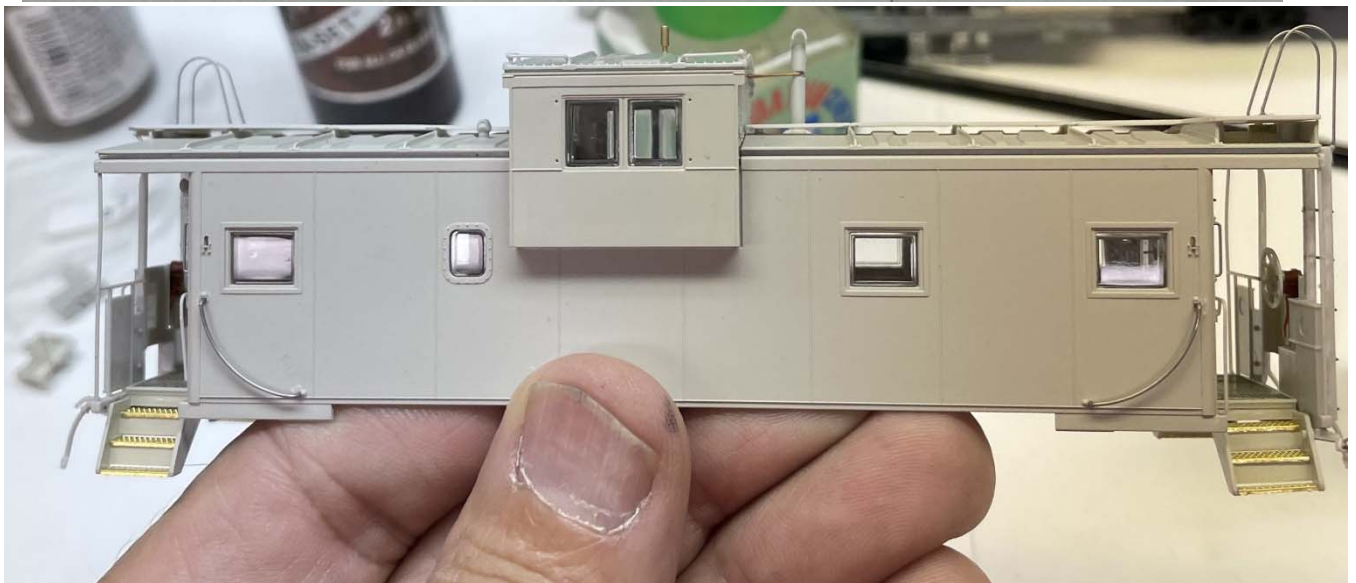
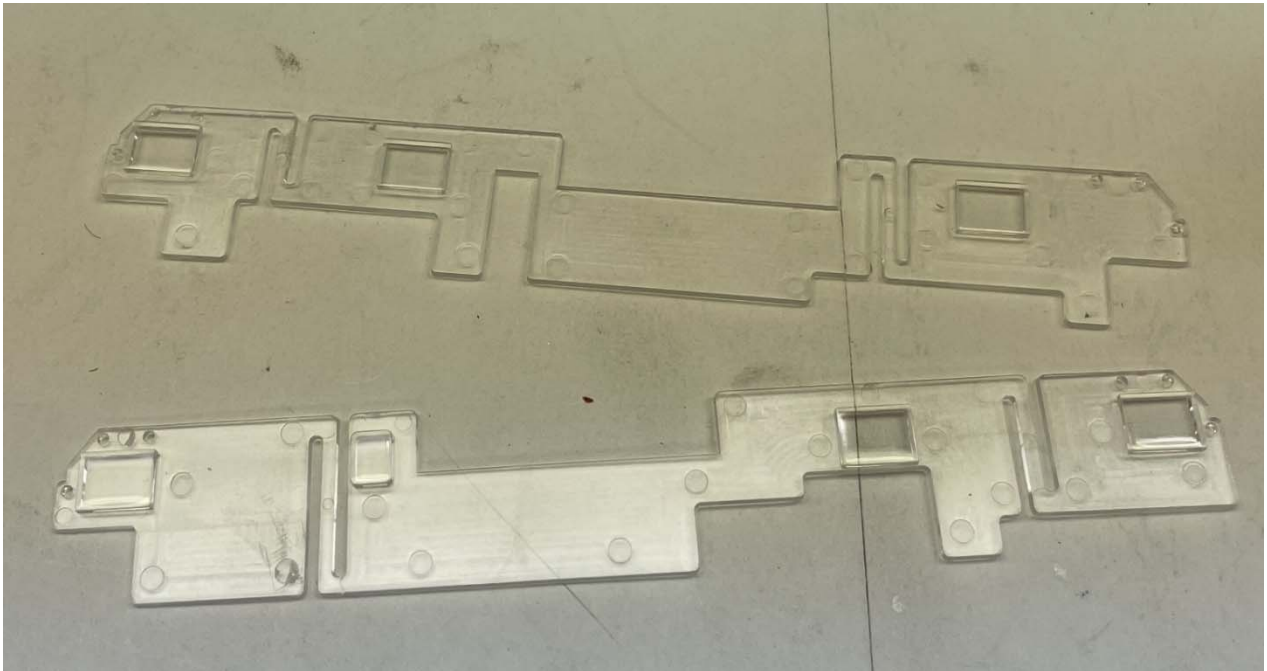


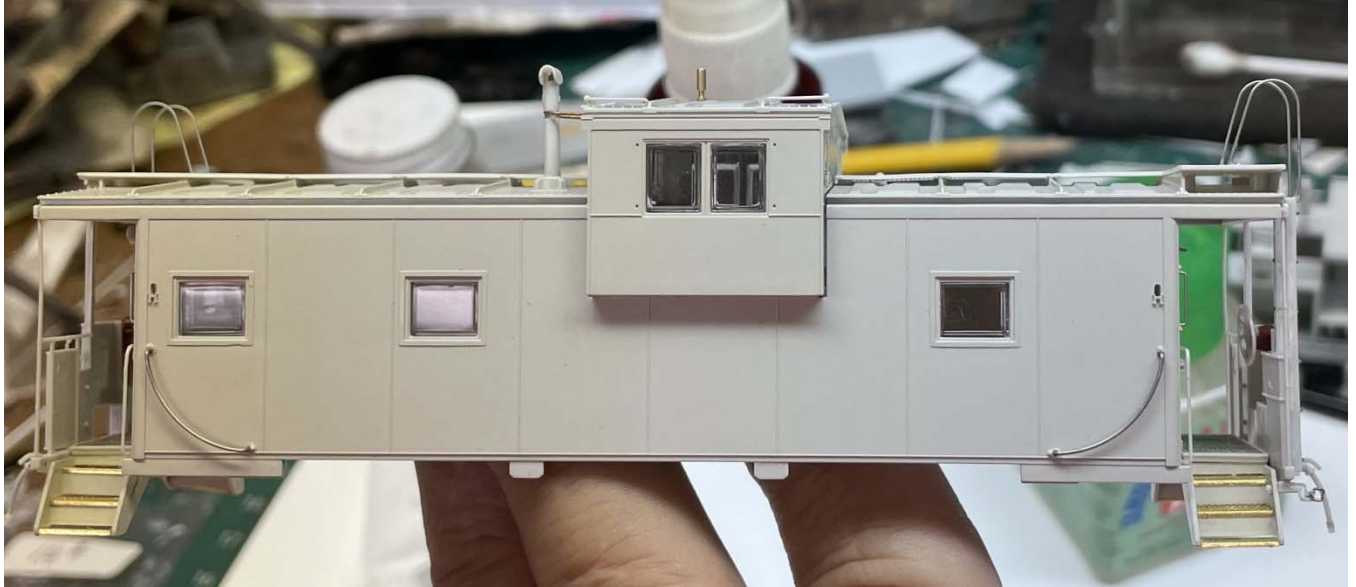
\*at this point you may want to paint the carbody. It will be easier before the window glass is installed and the frame assembly is married to the body.

## Final Assembly:

48. **Locate Windows:** The side window glass is in bag 03 and the end and cupola windows are in bag 11

49. **Install Side Windows:** Insert the appropriate windows and set in place with canopy glue to make sure the plastic doesn't get fogged by CA.



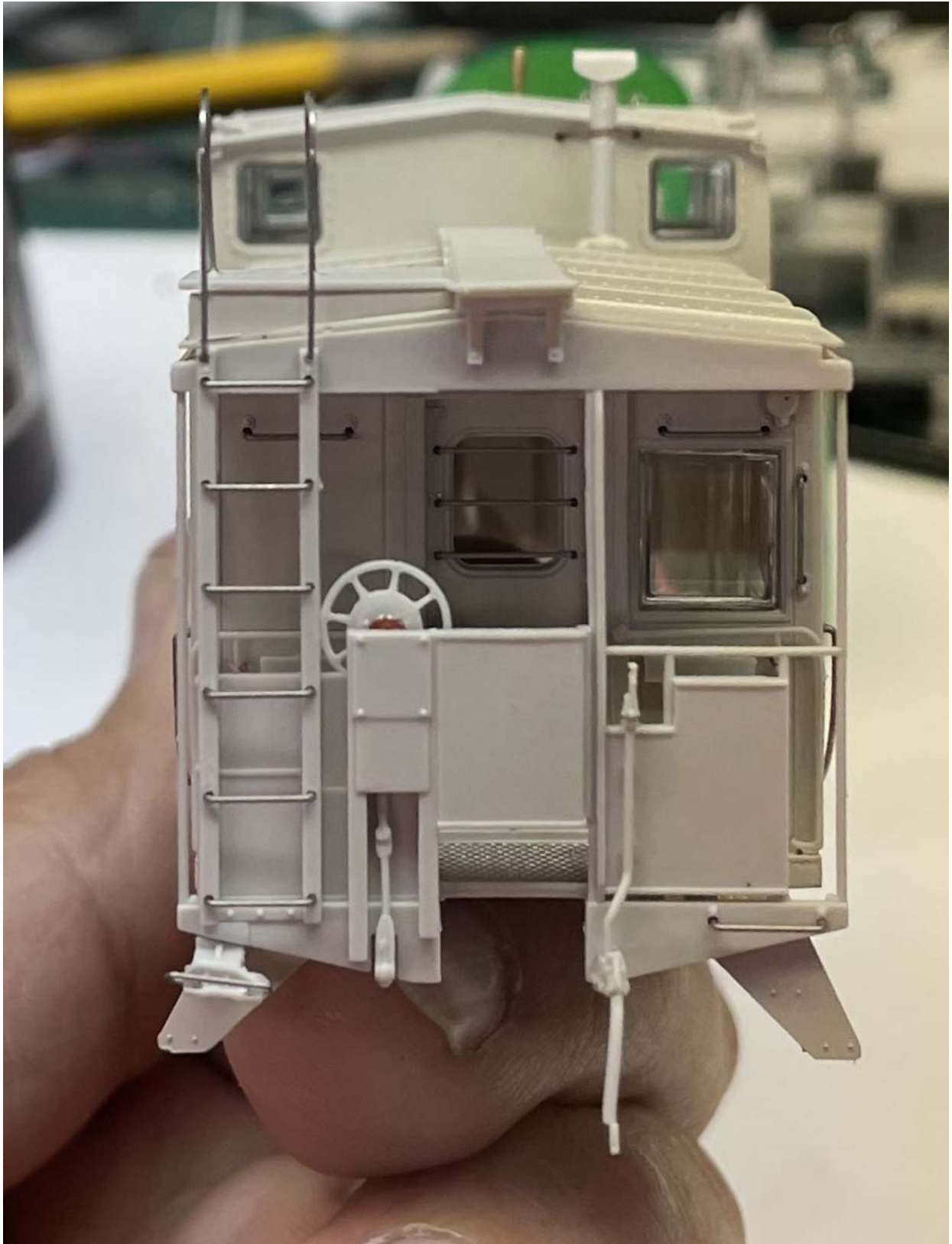


50. **Identify End and Cupola Windows:** The rest of the windows are in bag 11:

- End Windows
- Side Cupola Windows
- cupola ends (these have angled corners that go toward the roof so it matters where they go)

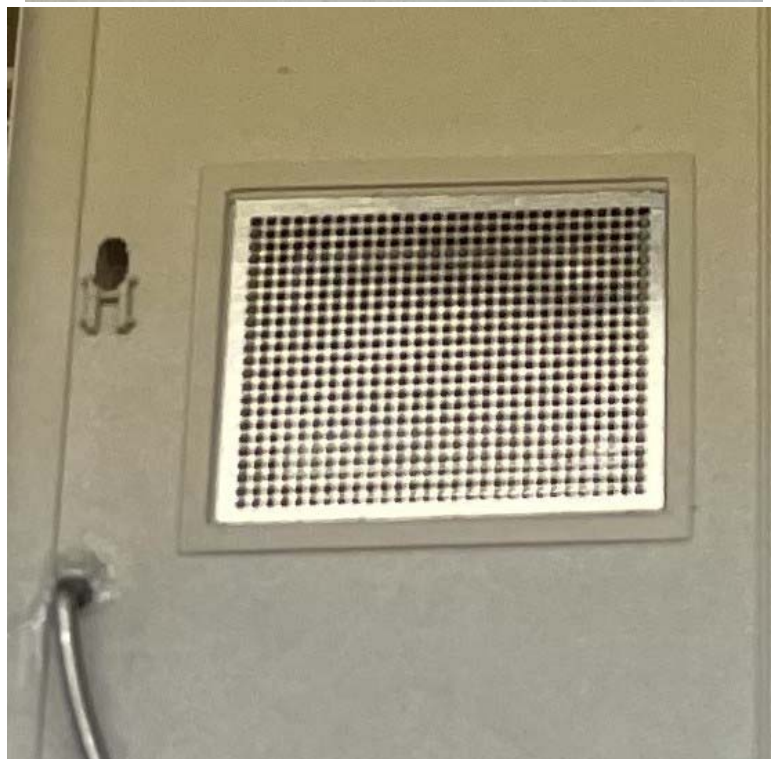
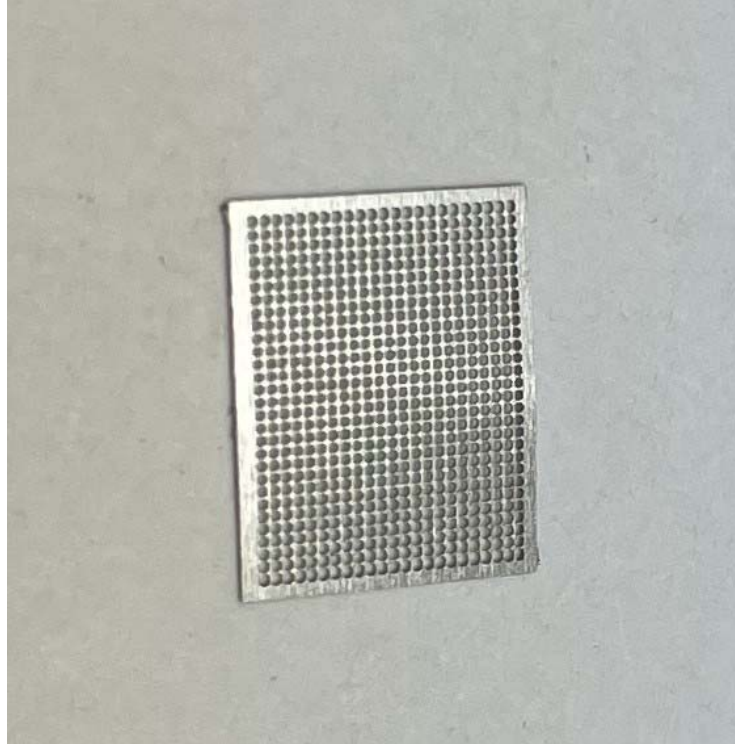
51. **Install Windows:** Set all windows in place and secure with canopy glue





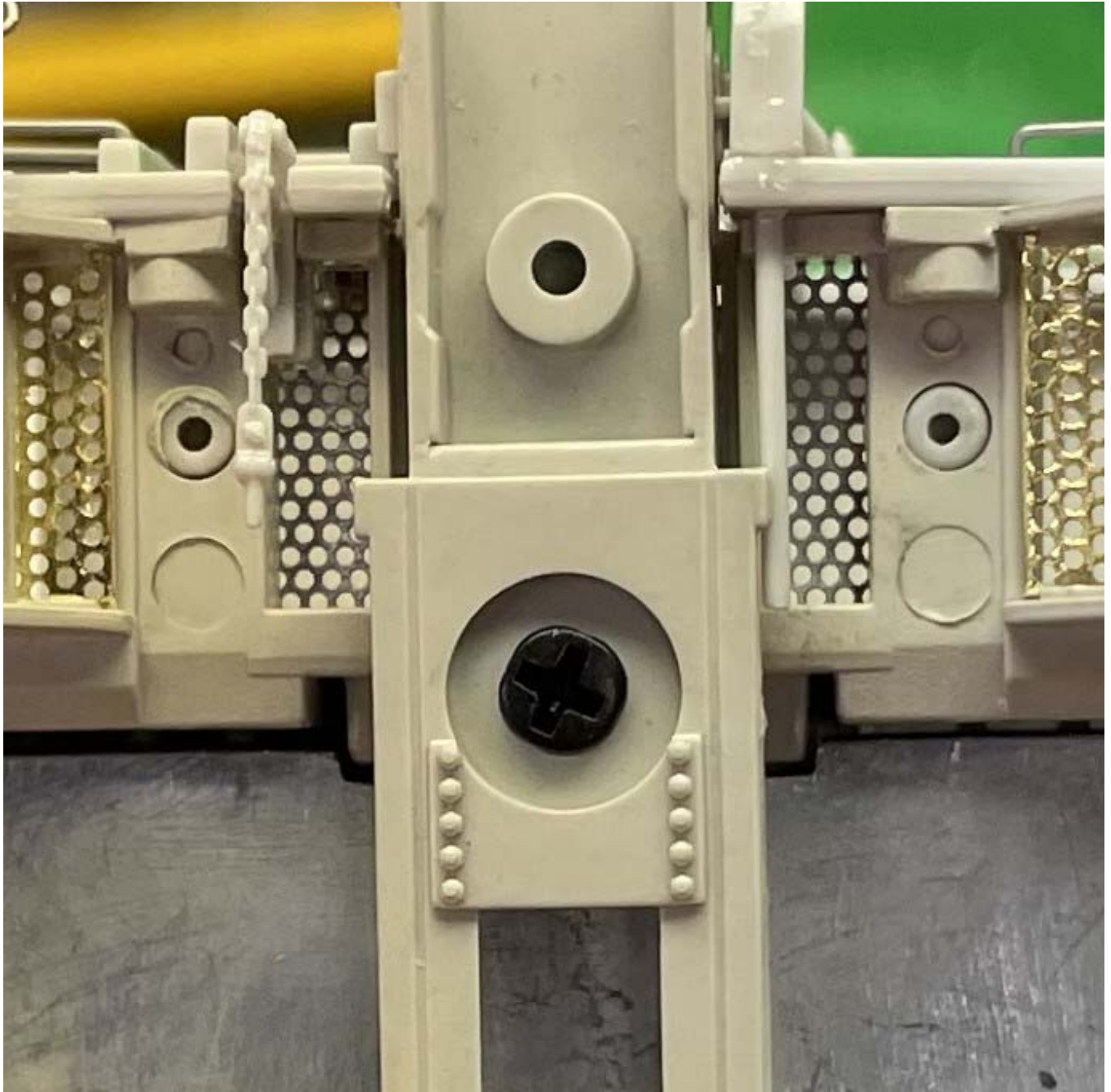


52. **Install Screens, if Necessary:** Refer to prototype photos to determine if you will install window screens. If so, they fit into a recess around the windows. You may need to remove small remnants of tabs on the edges of the screens. A few passes along the edge with a file should suffice. Set in place and glue.





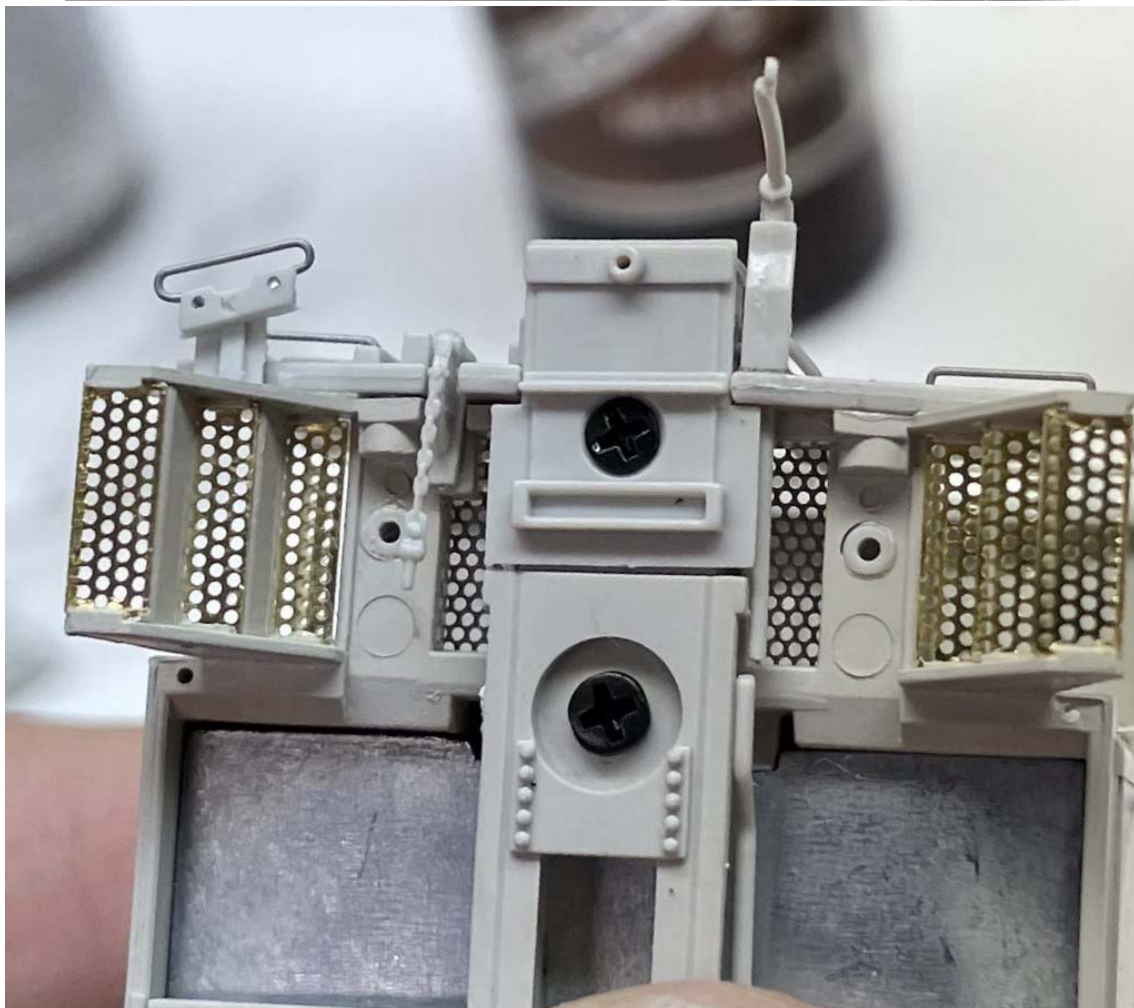
53. **Attach Body to Underframe:** You can now join the underframe/interior with the car body. Orient it so that the side of the interior that has the fuel tank lines up with the fuel filler on the car end. Once the two assemblies are joined use the screws in bag 17030DPB (bag 15) to secure them. The screws are inserted into the recessed holes behind the coupler boxes.





\*if you have not painted the carbody yet you may want to wait to install the couplers until after completion. This way you will insure that the couplers will not become “sticky” and perform properly

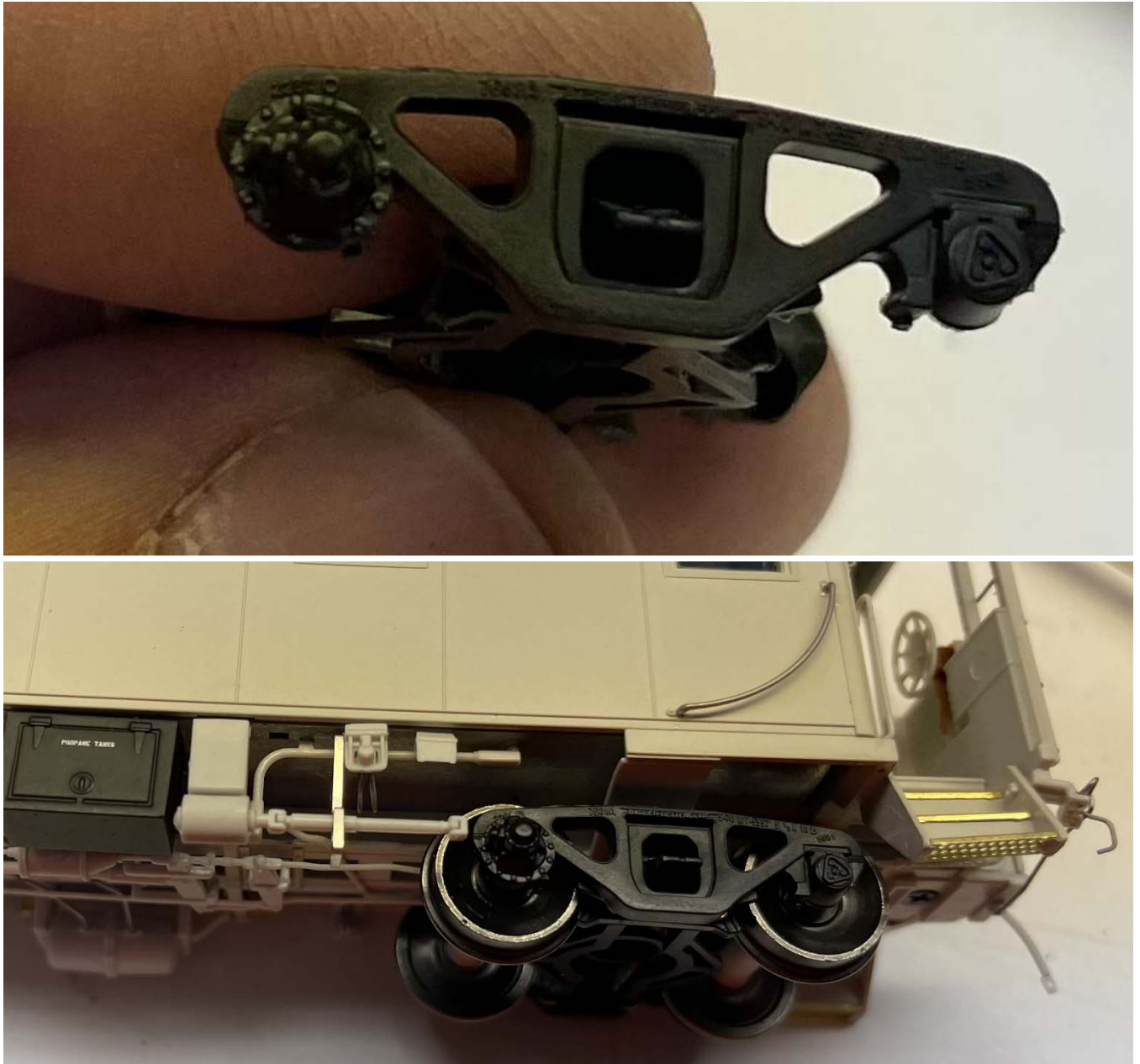
54. **Install Coupler Box Covers:** Locate the coupler box covers (bag 9), and the small screws in bag 14030DFB (bag 15). Install the covers and secure with the screws.



55. **Install Cut Levers:** Locate the cut levers (bag 13). The end that goes at the corner of the car is fished over the wire in the cut lever bracket, and the other end goes into the small mounting hole in the coupler box cover. Tack the end in the cover but let the other end rest at the bracket to allow removal of the cover.



56. **Install Generator Truck Cap:** The trucks are in bag 12. One truck has the generator cap (bag 6), so it needs to go where the generator is located.



57. The marker lights are in bag 11. The marker flags are in bag 14. Refer to prototype photos to determine which are appropriate for your build and install in the holes on the upper corners of the car sides.

**This concludes the assembly of your kit.**











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