



Instructions: Pullman-Standard PS-3 Coal Hopper Kit

Tangent Part Numbers: 15000-01 through 15001-01

10/2015



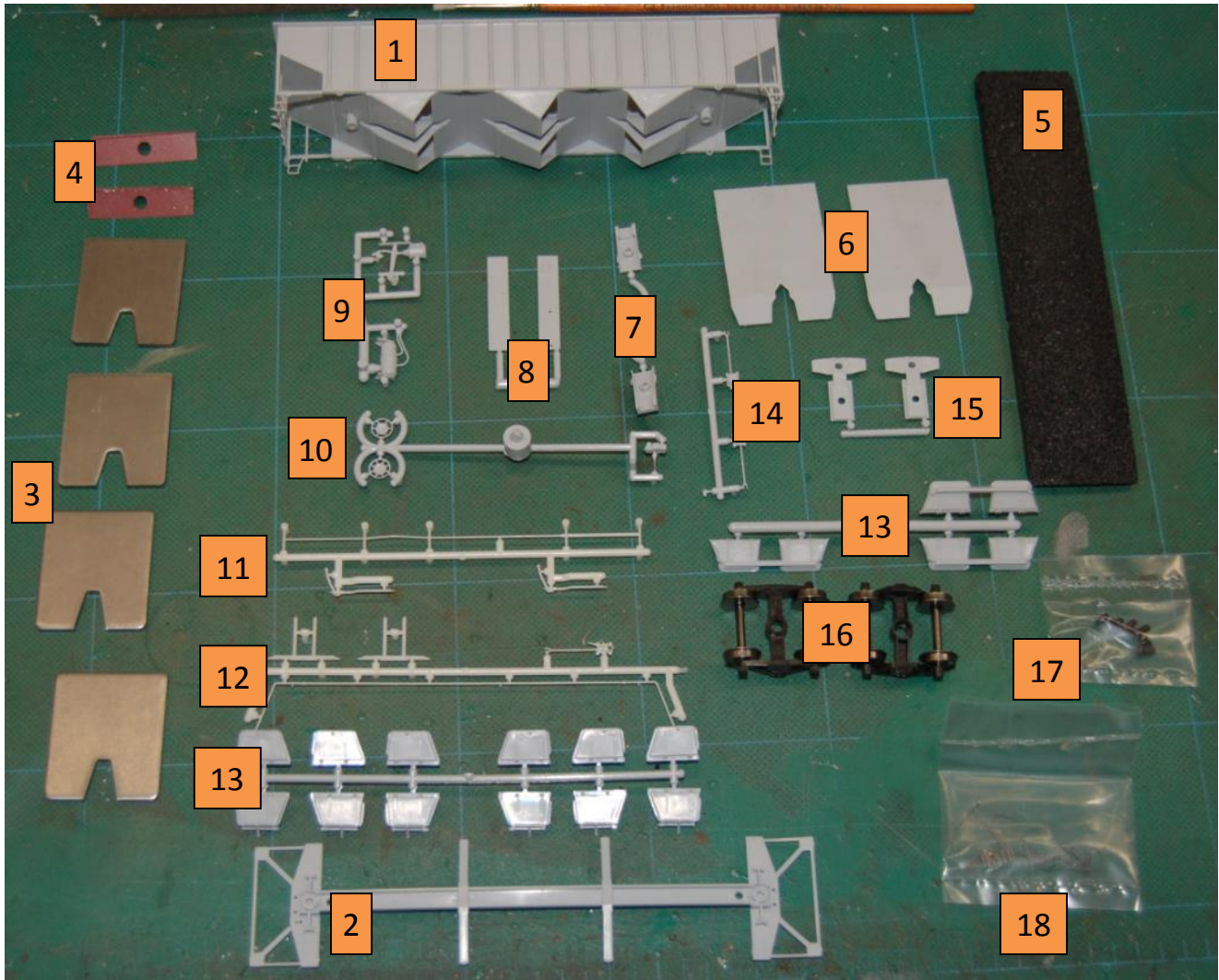
Thank you for purchasing the Tangent Scale Models Pullman-Standard PS-3 Coal Hopper Kit! A few quick notes before starting:

- **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 – Hopper Body (2 versions – with heap shields of without heap shields)
- Part 2 – Underframe
- Part 3 – Car Weights – on top of slope sheet
- Part 4 – Car Weights – between bolster and body
- Part 5 – Tangent Coal Load

Part sprues included:

- Sprue #6 contains slope sheets
- Sprue #7 contains coupler boxes
- Sprue #8 contains the two vertical end sheets
- Sprue #9 contains brake parts
- Sprue #10 contains brakewheels and brake reservoir
- Sprue #11 contains the underbody air line and end of car air hoses

- Sprue #12 contains side of car train air line and end of car brake housings
- Sprue #13 contains 3 different types of bottom outlet gates (times 3 of each design)
- Sprue #14 contains 2 more end of car brake housings (different designs)
- Sprue #15 contains the truck bolsters and coupler box lids
- Sprue #16 contains Tangent's 70-ton ASF ride Control Plain Bearing trucks with 33" CNC-machined wheelsets

Parts bags included:

- Bag #17 contains all of the screws necessary to build this kit
- Bag #18 contains all wire parts, and the etched metal "see-through" brake step

Parts needed/recommended:

- Couplers. The coupler boxes for this car 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

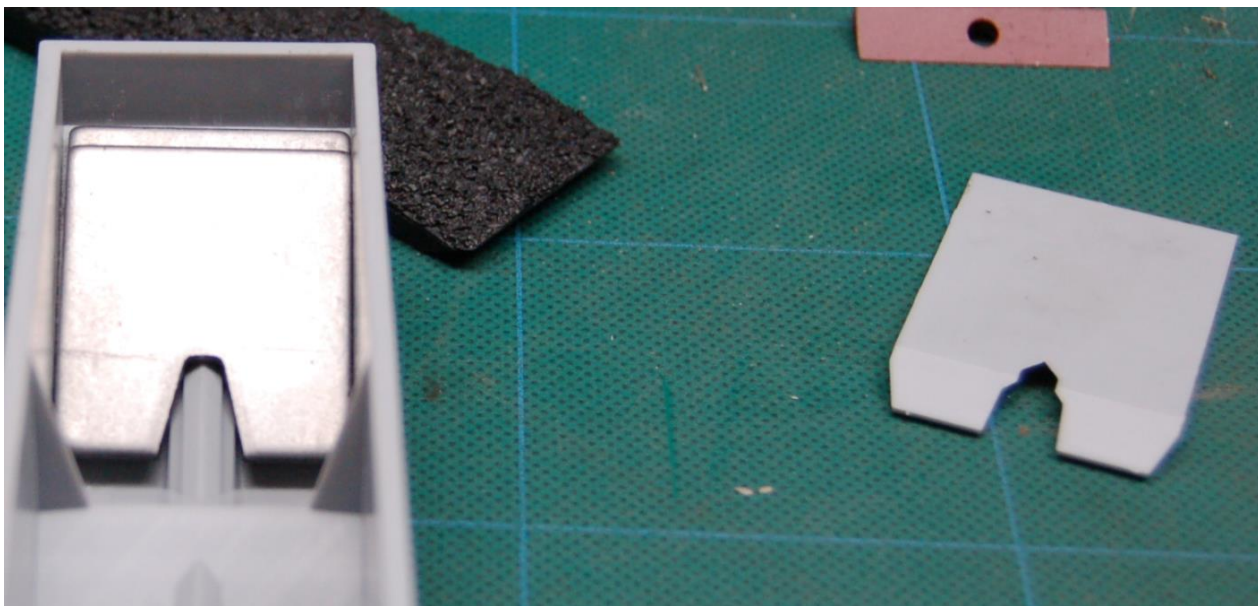
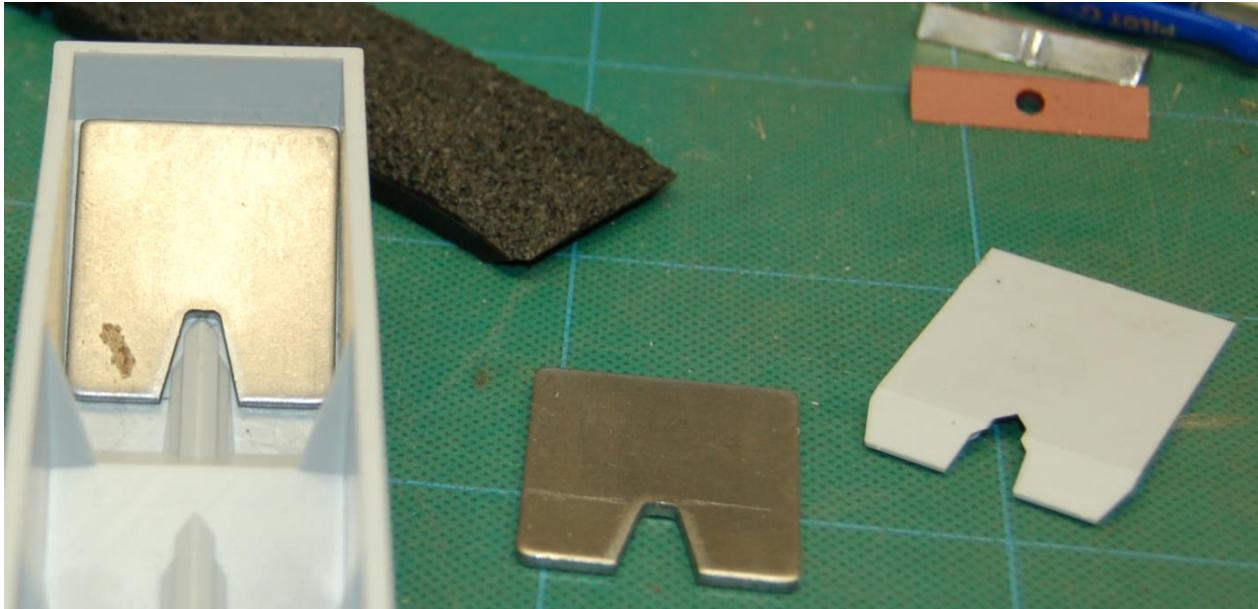
PREAMBLE – THINGS YOU SHOULD KNOW

- **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 access to multiple parts 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 2 different prototype-based configurations to choose from – a body with heap shields or a body without heap shields. If you want to change the configuration of your kit, you can order all of our parts here: <http://www.tangentscalemodels.com/product-category/parts/parts-pullman-standard-ps-3-coal-hopper-parts/> or simply go to www.tangentscalemodels.com and click on "View & Buy Models" and then "Parts."

Body Assembly:

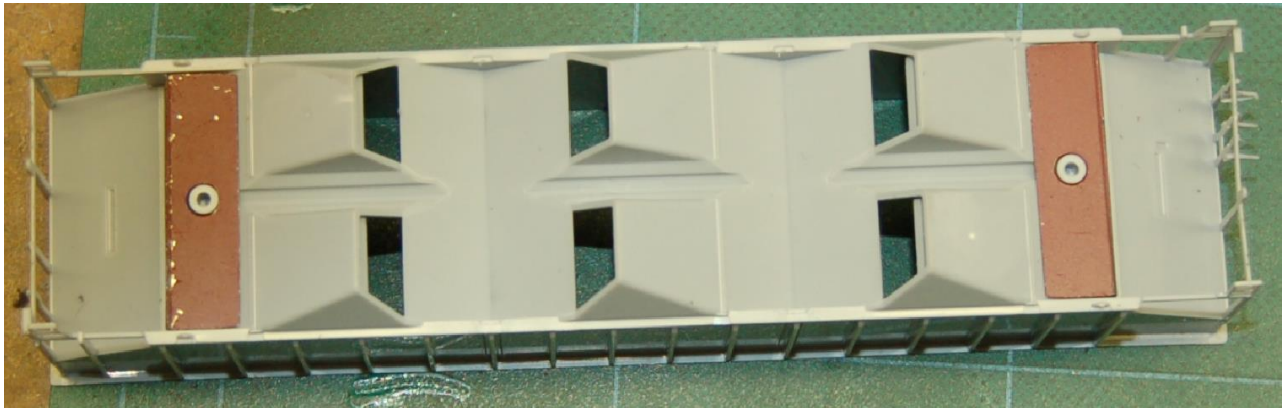
1. **Install the weights to the carbody.** There are two weights on each of the ends of the car. These should be installed into the interior of the car and covered with the slope sheets. The first weight goes in flat against the slope and rests on the center sill of the car. The second weight rests on top of the first, but it is pushed up so that the top edge of the weight

contacts the end of the car. Secure both with CA (or some form of plastic-safe epoxy glue). Repeat with the other two weights on the other end of the car. Install the slope sheets by putting the notch over the center sill and resting the sheet on the weights just installed. Push slope sheet up until the top edge makes contact with the end of the car and it is sitting flat on the weights. Glue in place.





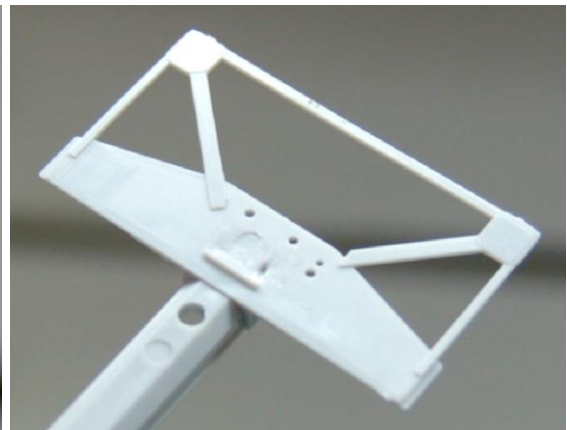
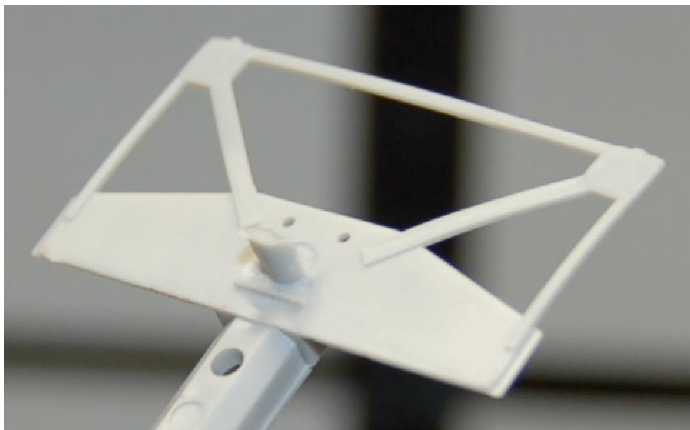
2. **Add the two smaller weights to the bottom of the carbody.** The other two weights with the one hole in each go on the underside of the car. Orient the weights so that the flat vertical face is toward the end of the car. Secure with CA.



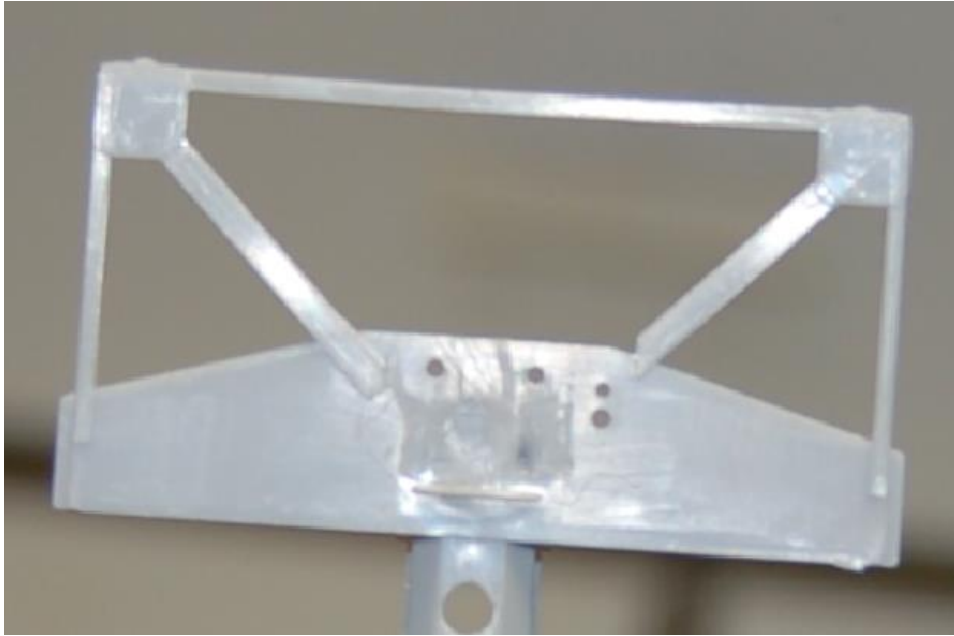
3. **Add the vertical end sheets.** The one that has two raised castings and two mounting holes is for the B end (brakewheel end) of the car. Orient this panel so that the raised castings are toward the left side as you are looking at the end of the car (there is also a beveled edge on these parts to ensure correct placement). The top edge of these parts fits flush against the inside edge of a raised ridge at the base of the slope sheet. Glue in place making sure that they are both vertical.



4. **Remove the mold pins from the underframe.** There are two mold release pins on the underframe casting that need to be removed, one on each end. Be careful not to damage the raised rail next to these pins when removing them, and make sure that the surface is flat when you're done.



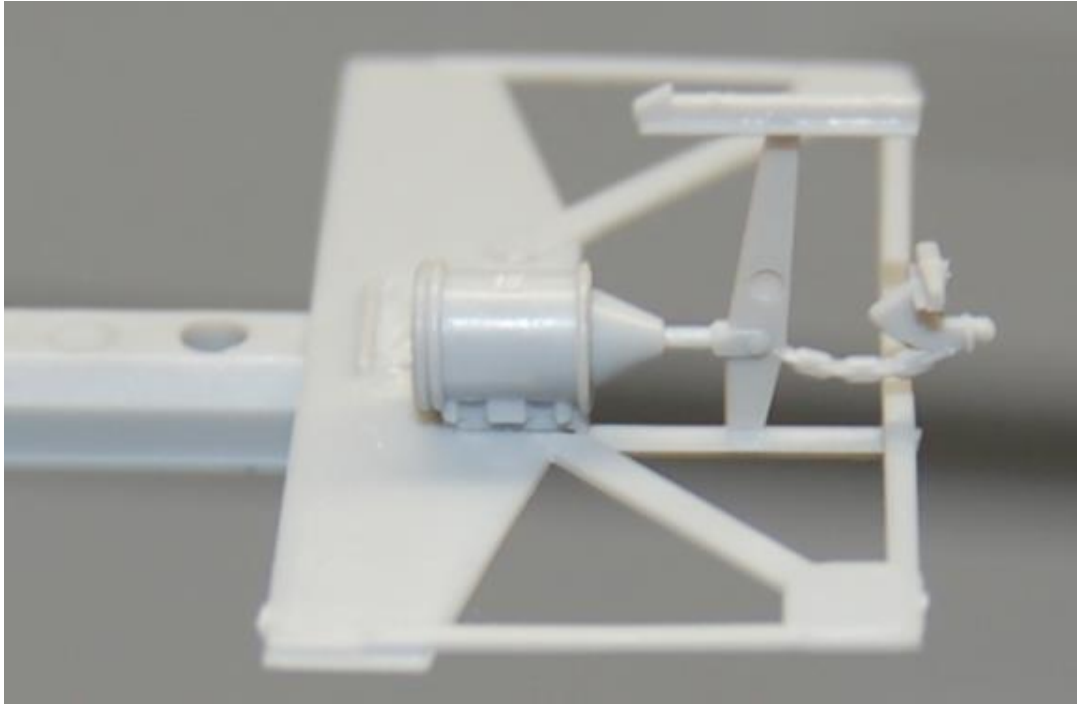
5. **Orient the underframe so you know which end is the B end.** One side of the underframe has four mounting holes on it and the other end has two. The one with four holes is the brakewheel end.



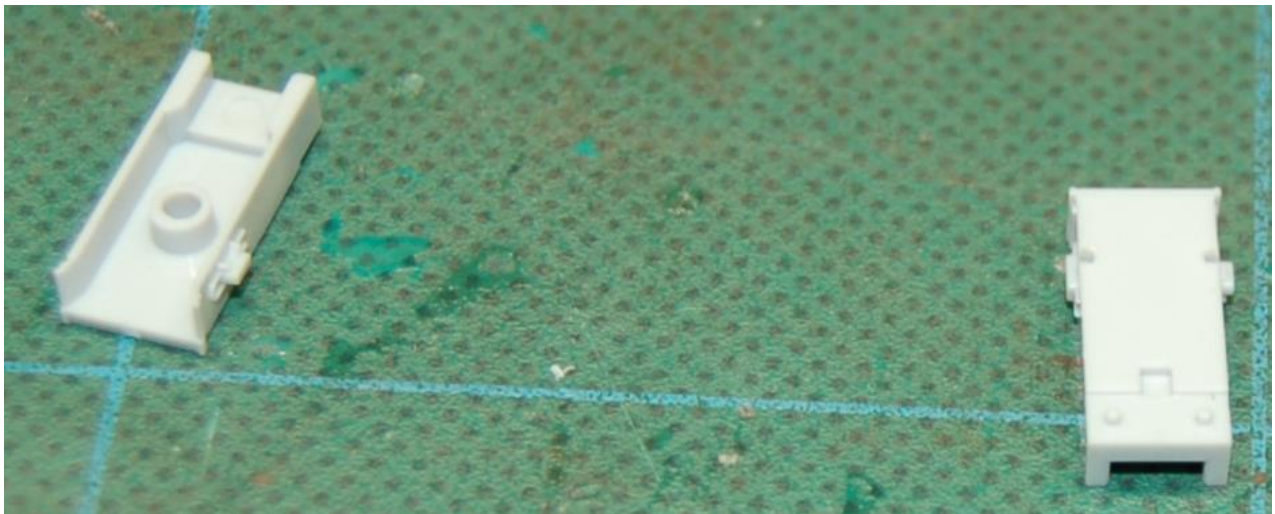
6. **Prepare the brake parts for assembly.** Remove the triple valve, cylinder assembly, and reservoir from the sprues, while also removing all mold release pins in the process. When done, the parts should look like this.

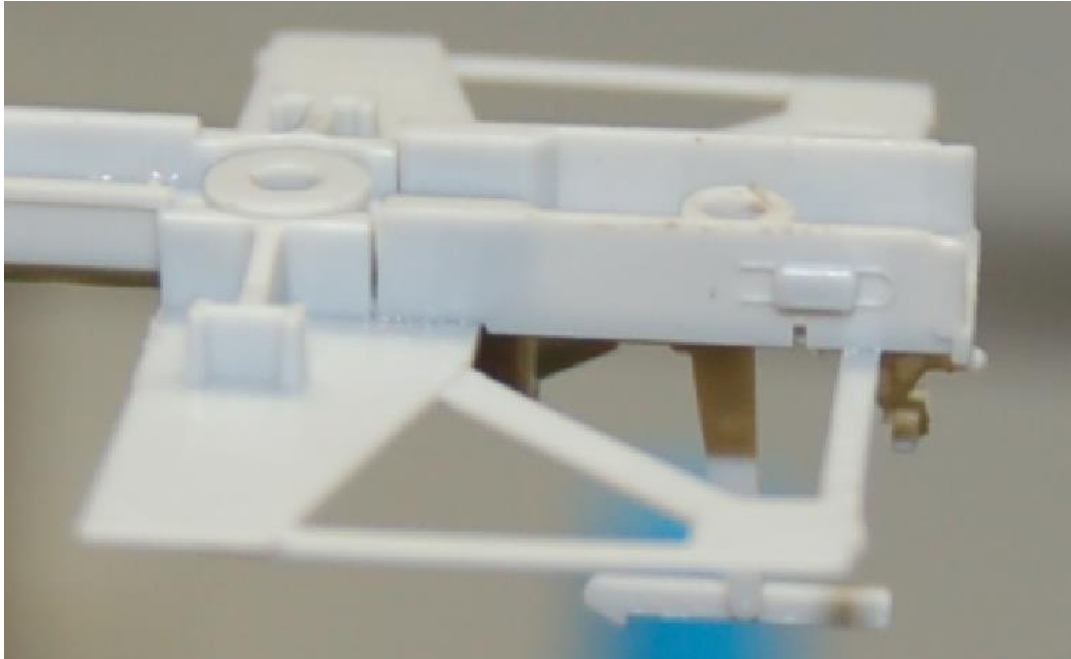


7. **Glue the cylinder assembly in place.** Make sure that the lower strut goes below the end rail. Locate the wire part that goes from the cylinder to the triple valve. It looks like a "C" for the most part. Orient it so that the longer leg of the part goes into the back of the cylinder and the shorter goes toward the triple valve. Glue in place.



8. **Install the coupler pockets.** The pocket that goes on the B end of the car has a small indentation for the triple valve. Glue both coupler pockets in place.





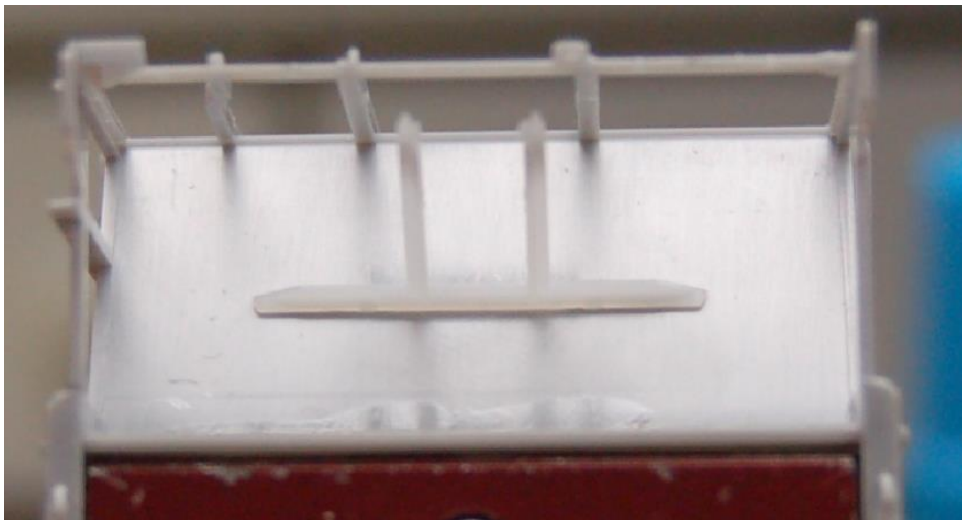
9. **Add the triple valve.** Orient it so that the dirt collector pipe is on the right hand side as you face the end of the car.



10. **Install the brake reservoir.** Finally, install the reservoir, gluing the two pipes to the triple valve. Let everything dry for a bit before proceeding.

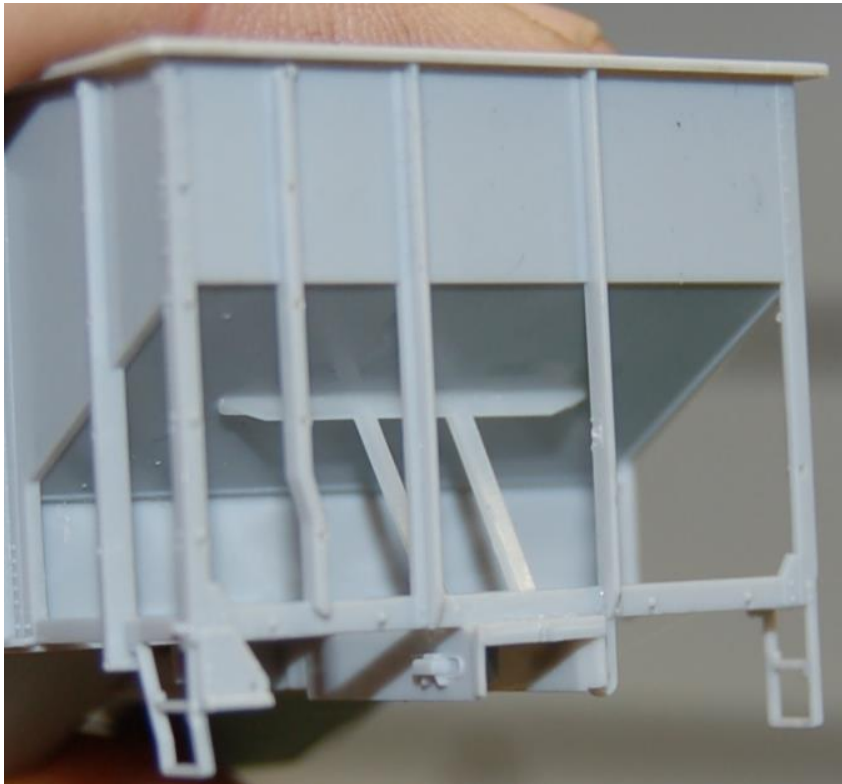
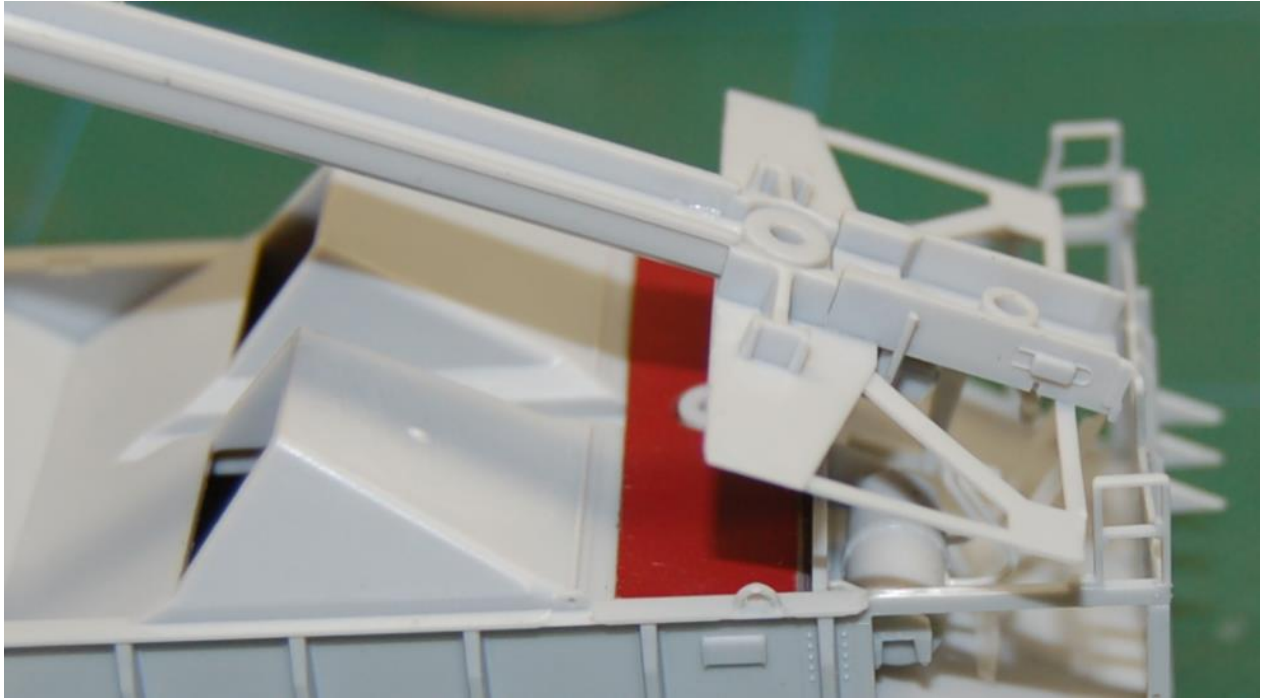


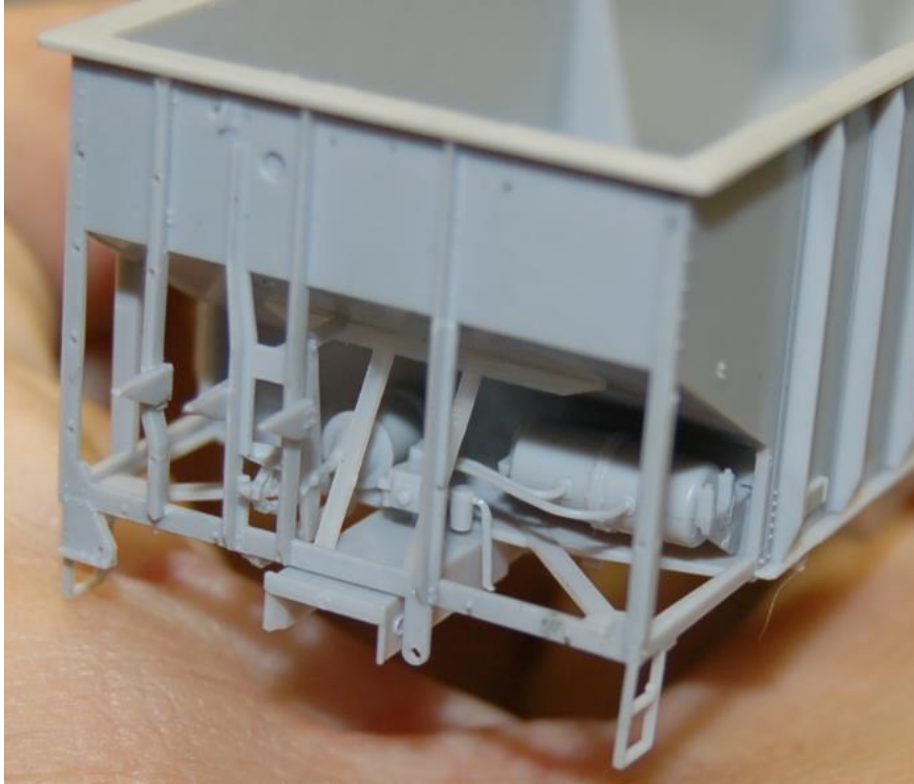
11. **Glue the slope sheet supports in place.** The next step is to install the slope sheet supports. This part is basically three L-angles assembled into a T shape. When installing it into the carbody, orient it so that the back side of the channel (the flat side) faces up, or toward the top of the car. See photo for clarity. The casting has a locating tab that fits into a slot in the carbody. Glue in place.



12. **Install underframe assembly into the body.** This will take a bit of fiddling on the B end since there are some things that need to be maneuvered around to get it installed properly. The best way to install it is to feed it into the B end by angling the frame slightly as you put it into

position, then drop it into the channel in the carbody. The most crucial part is to make sure the fulcrum clears the end sill. After the underframe is in place, make sure that the fulcrum fits into the slot in the two vertical end channels. Also insert the slope sheet supports into the locating holes on the coupler pockets. Glue all in place.





13. **Install the retainer valve.** We will now begin the carbody detail. Locate the retainer valve. It is the very small casting on the sprue that has the brakewheel housing/chain parts. It has a small pin for locating on the car end. Orient it so that the two small pins on the casting are upright. Glue in place.

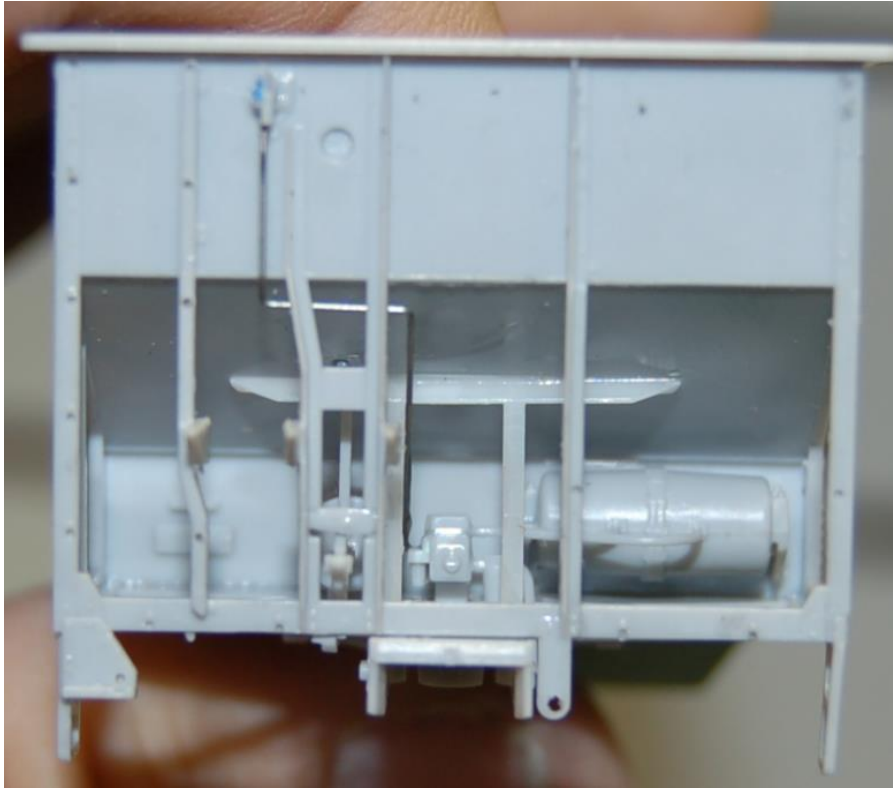


14. **Install the retainer pipe.** Locate the retainer pipe in the wire parts bag. It is the largest wire part and has several bends in it – as seen in this photo:

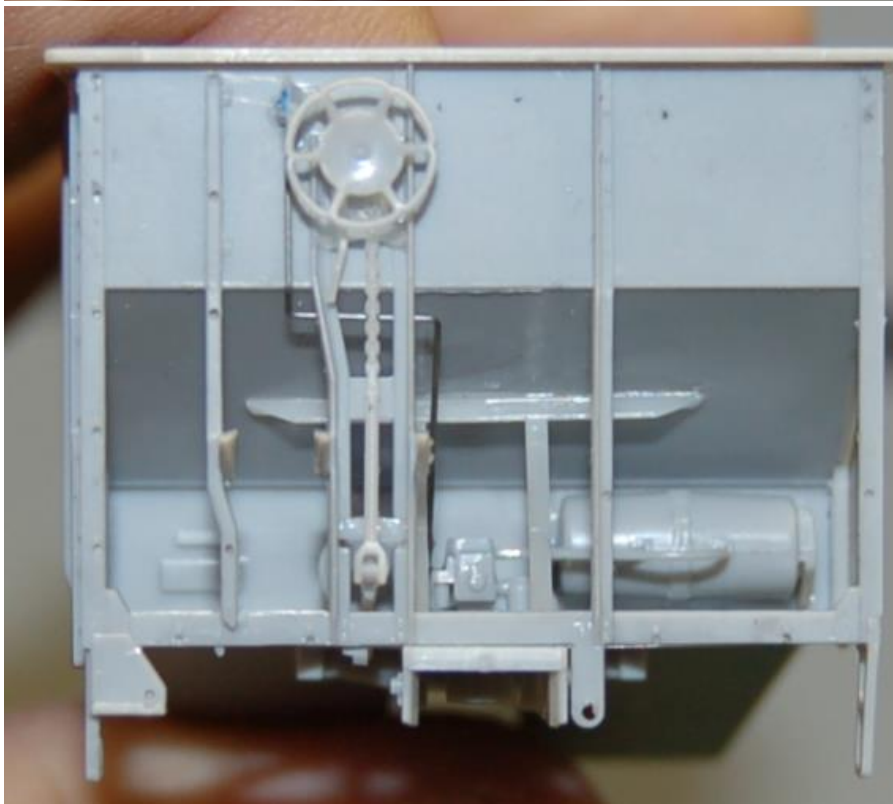
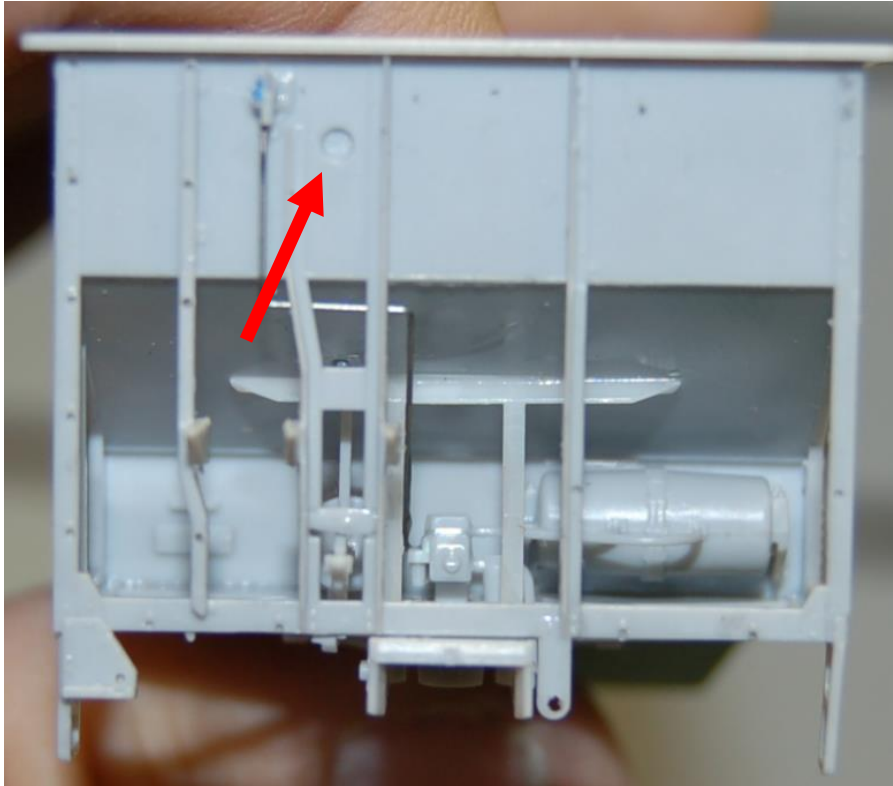


The shorter "leg" of this part goes into the retainer valve and the longer one with the small bend at the end goes toward the triple valve. This part is a bit tricky to maneuver in place, but be patient and it should fit in with no problem. It needs to fit behind the two vertical end supports and above the brake lever bracket, then to the triple valve. Feed the longer leg in from just below the retainer and maneuver it into final position with the top end fitting into a small notch under the retainer. Secure at both ends with CA.



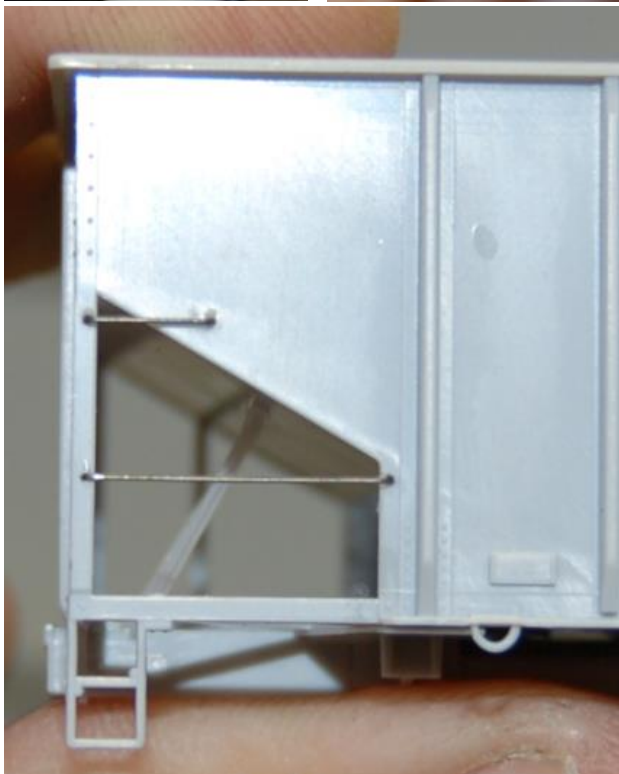
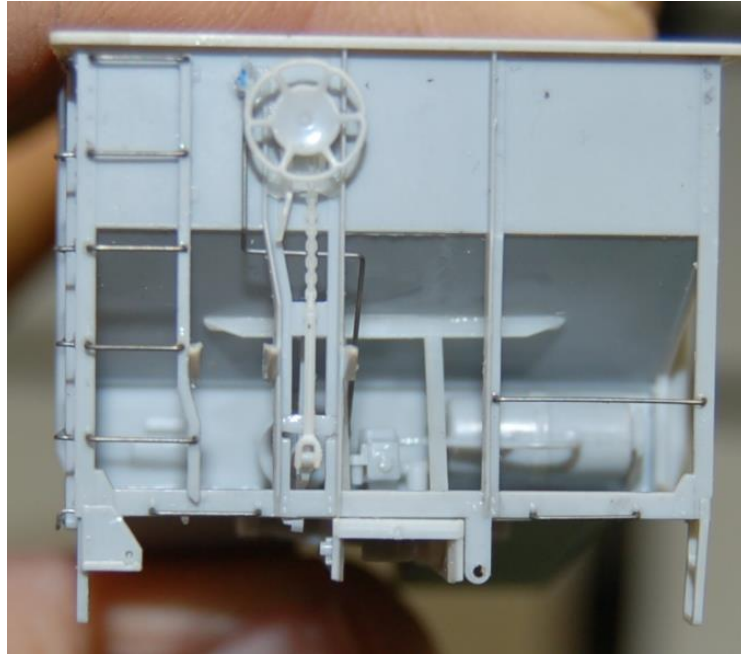


15. **Install the brakewheel housing.** There are three types of brakewheel housing castings provided. Consult photos of your prototype to determine which one to use. There are also two different brakewheels provided as well. Install the brakewheel into the brakewheel housing. The end of the brakewheel pin will be used to locate the housing assembly to the carbody. Glue the assembly in place and also glue the end of the chain/rod to the fulcrum.

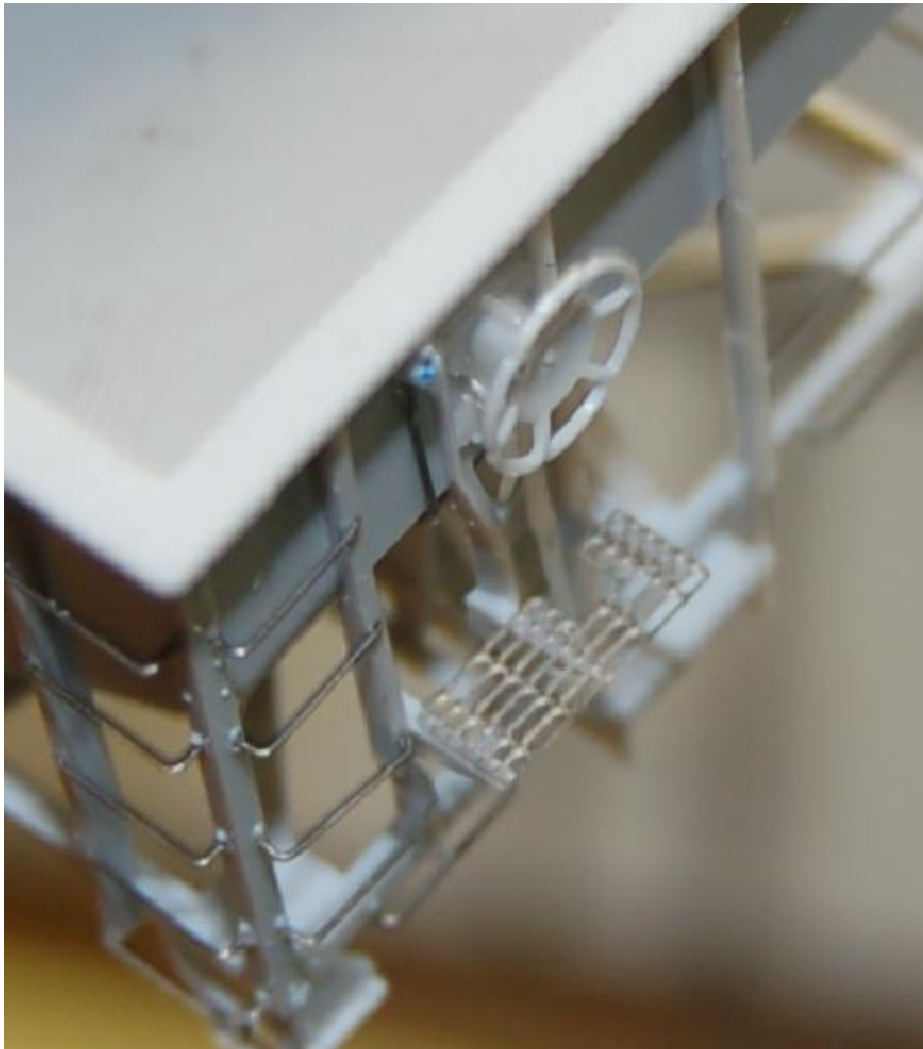


16. **Install the ladder grab irons to the side and ends of the car.** Empty the remaining contents of the wire parts and set aside the etched metal brake platform, wire cut levers, and

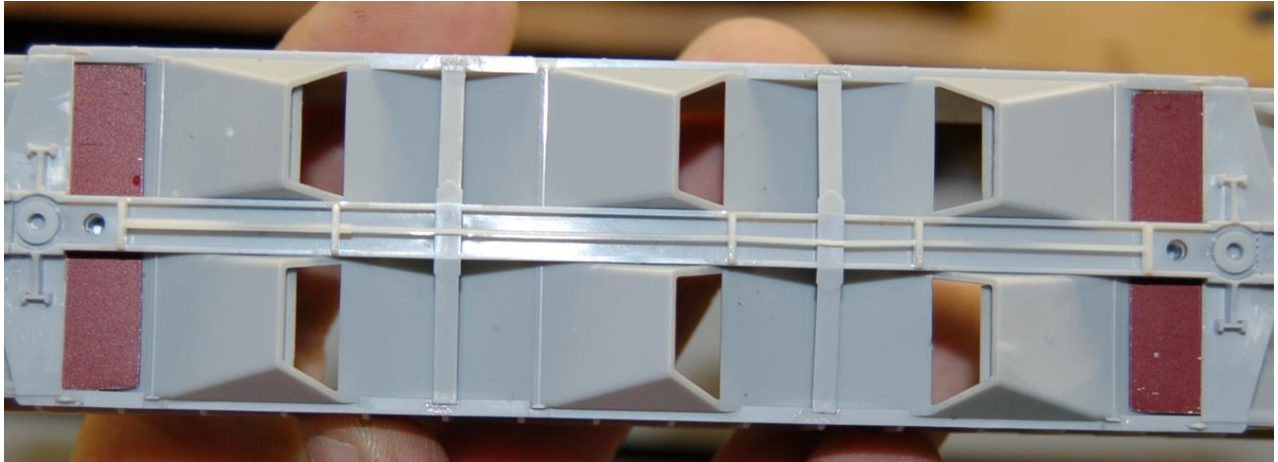
eyebolts. There are several different sizes of grabirons so separate them into different piles to make it easier to install on the car. The grabs for the ladders all have a long leg and a short leg. When installing these, the long leg always goes in the corner and the short leg goes inward. The four grabs that go on the end sill have legs of the same length, so make sure you identify them before installing. Also, the bottom rung on the car sides has one drop side and one straight side. The top four rungs of the end ladders are shorter than the rest as well. Glue all grabs in place with CA.



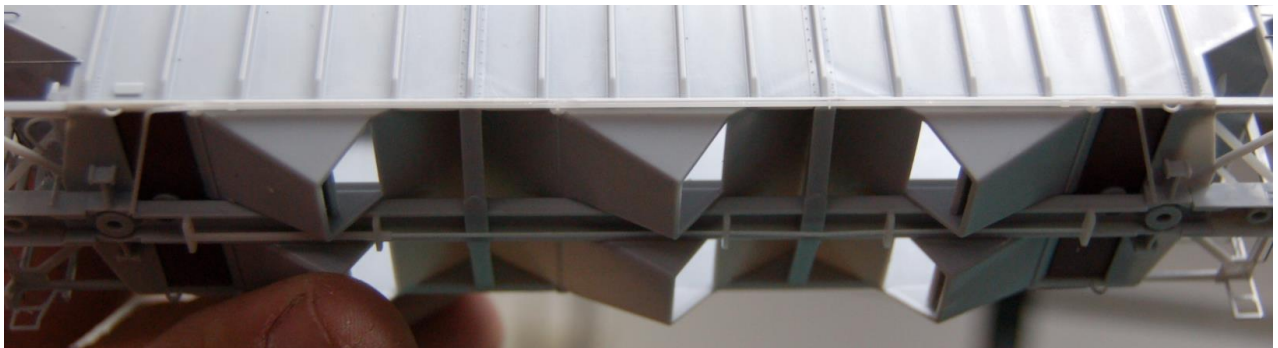
17. **Install the brake platform** to the end of the car. Secure with CA.



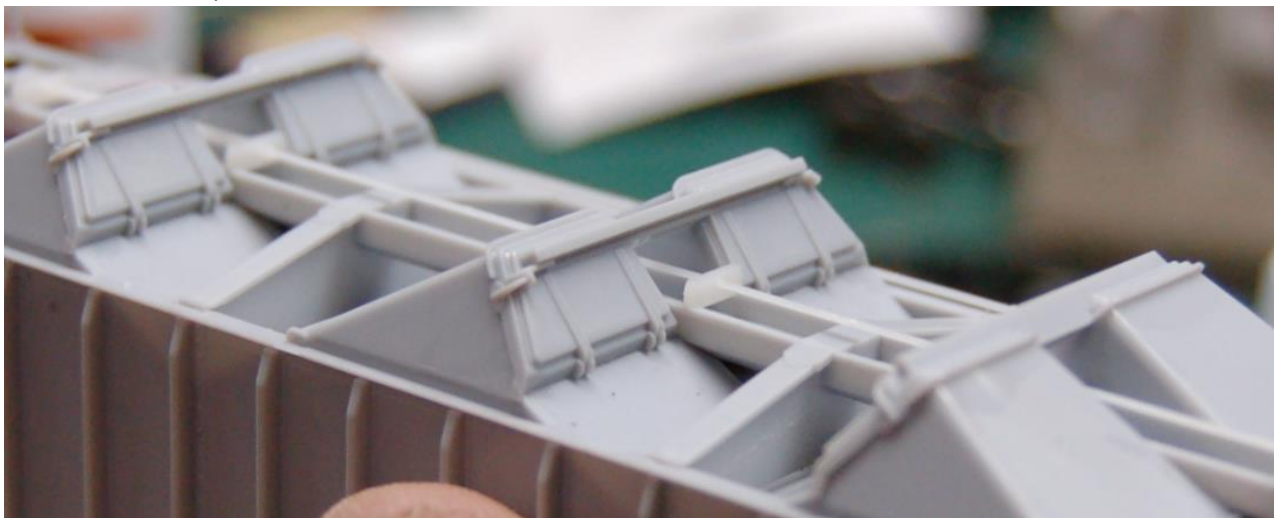
18. **Install the train line to the bottom of the underframe.** Carefully de-sprue the train line. The straight part has a "cylinder" on one end that goes toward the B end of the car. It also has small ridges on one side of the support castings that fit between the center sill of the car to aid in positioning. Locate and glue in place.



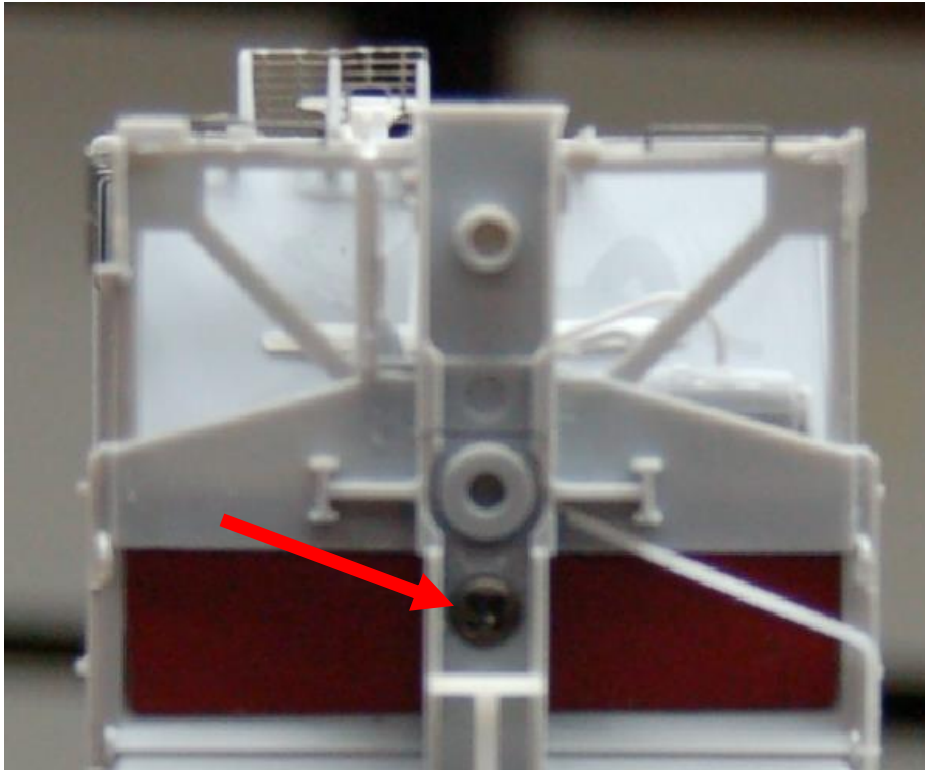
19. **Install the train air line to the side of the carbody.** The angled part has three locating pins that fit into small holes below the side sill of the car. Insert and glue in place.



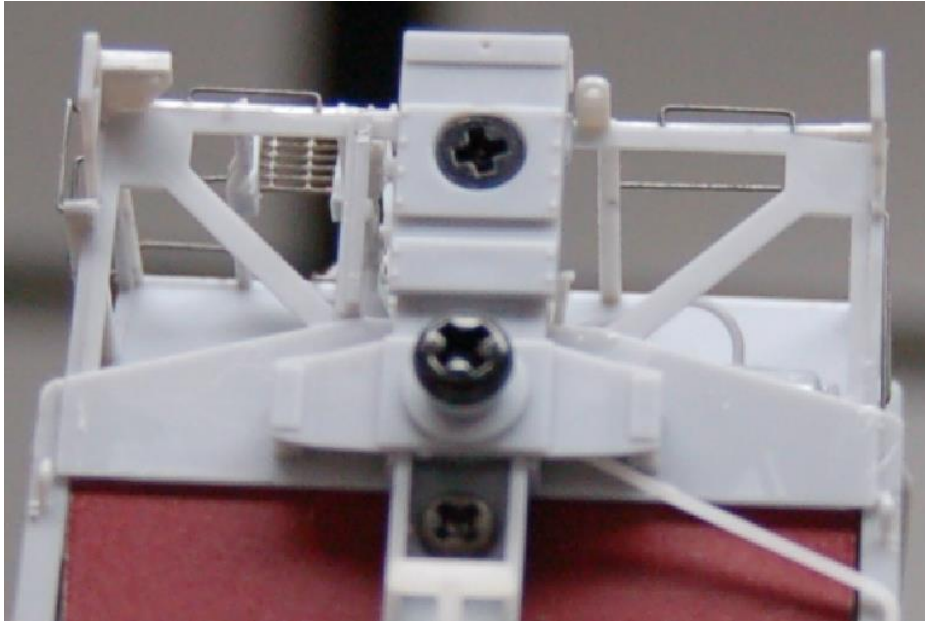
20. **Install the outlet gats to the bottom of the hopper body.** There are three different types of hopper gates provided. Again, consult photos of your prototype to determine which you need. Glue in place.



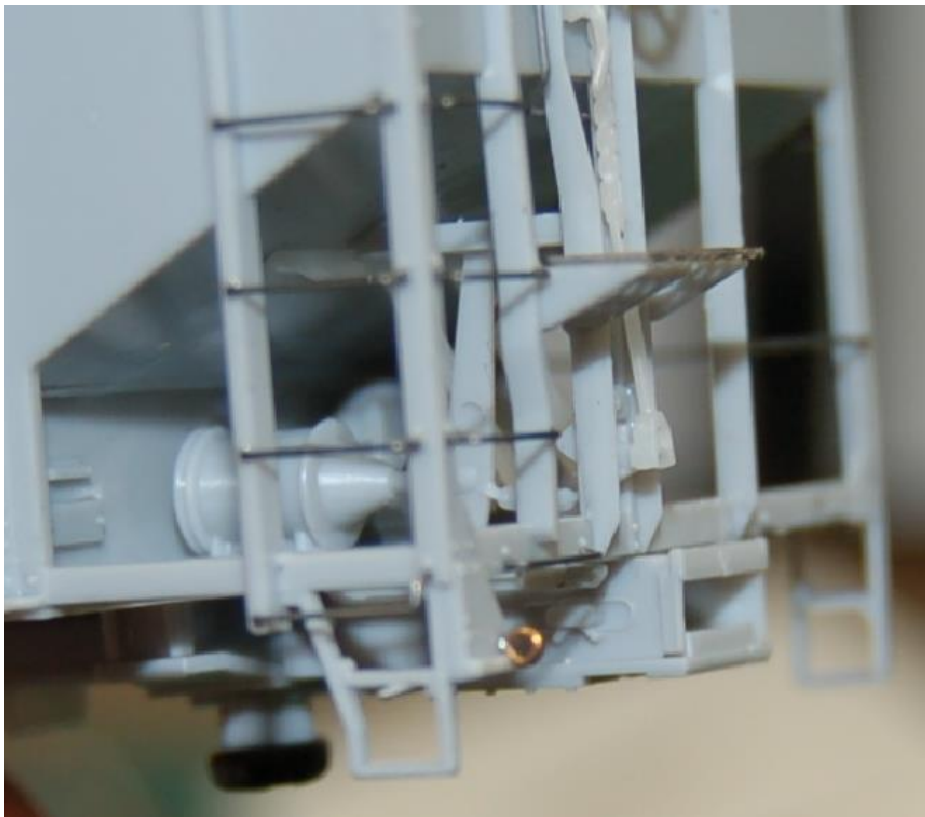
21. **Install the screws to attach the underframe to the hopper body.** Open the bag of screws. You will find three pairs of screws; one long, one short, and one in between. The shortest pair is for the coupler pockets, the middle pair is to secure the underframe to the car body, and the longest ones are for the trucks. Insert the middle size screws into the furthest inboard holes of the center sill and secure.

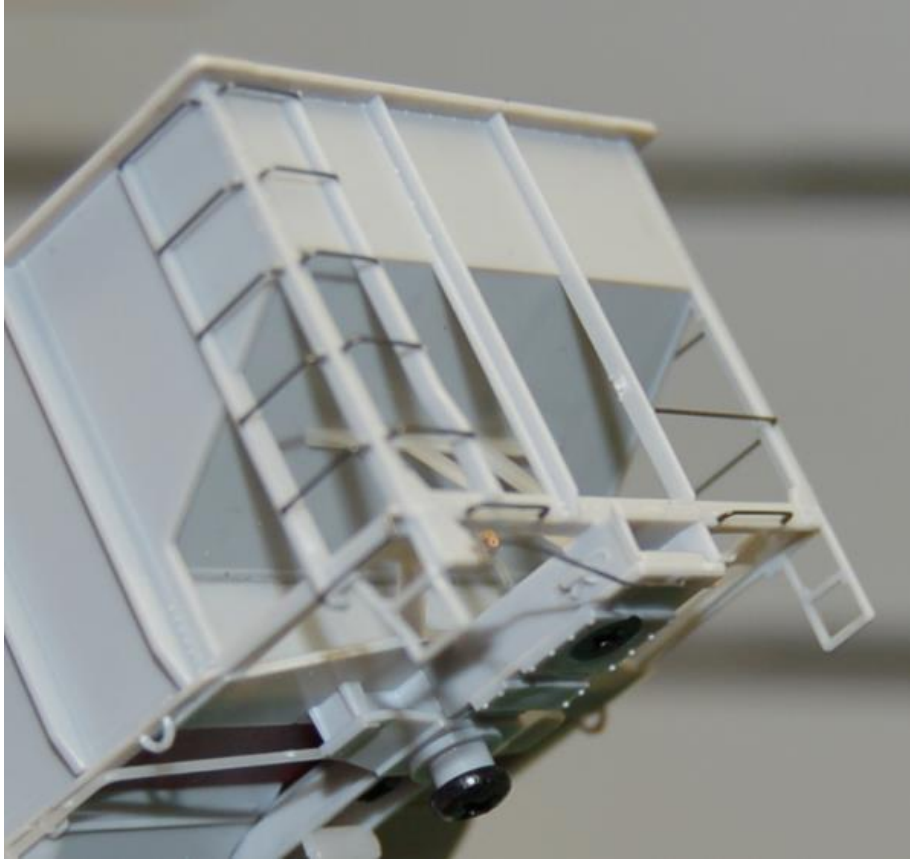


22. **Install the coupler box screws.** Install the bolster cap/coupler cover plate with the remaining screws (do not glue this part), but we typically recommend that you wait to install the trucks and couplers until after painting.

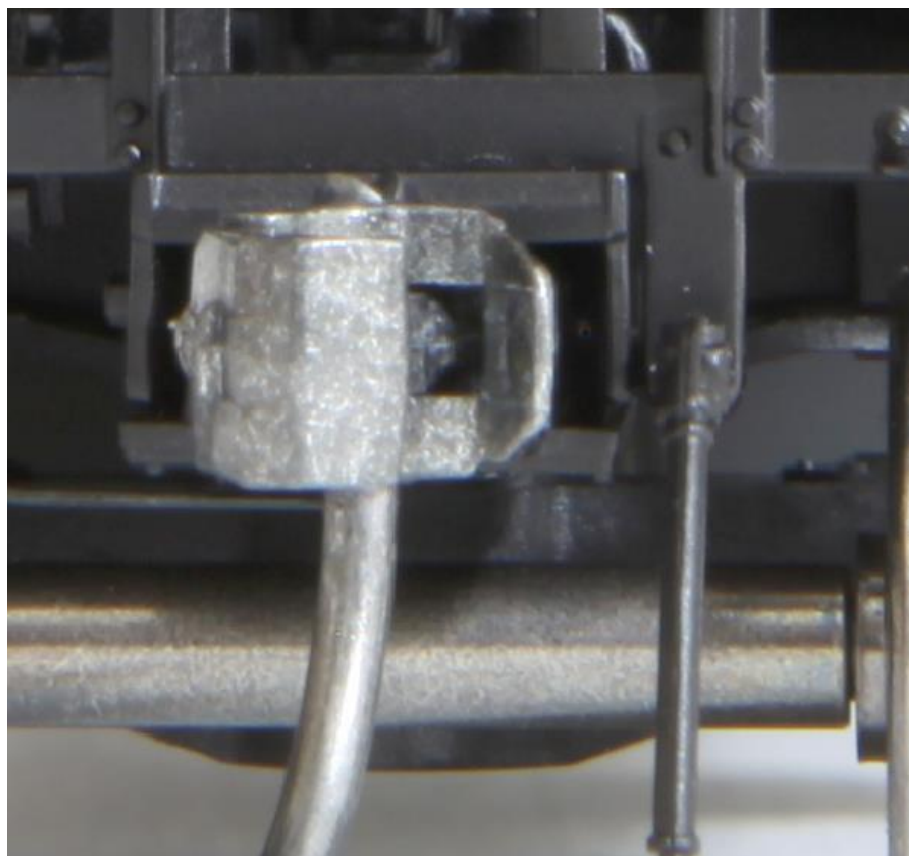


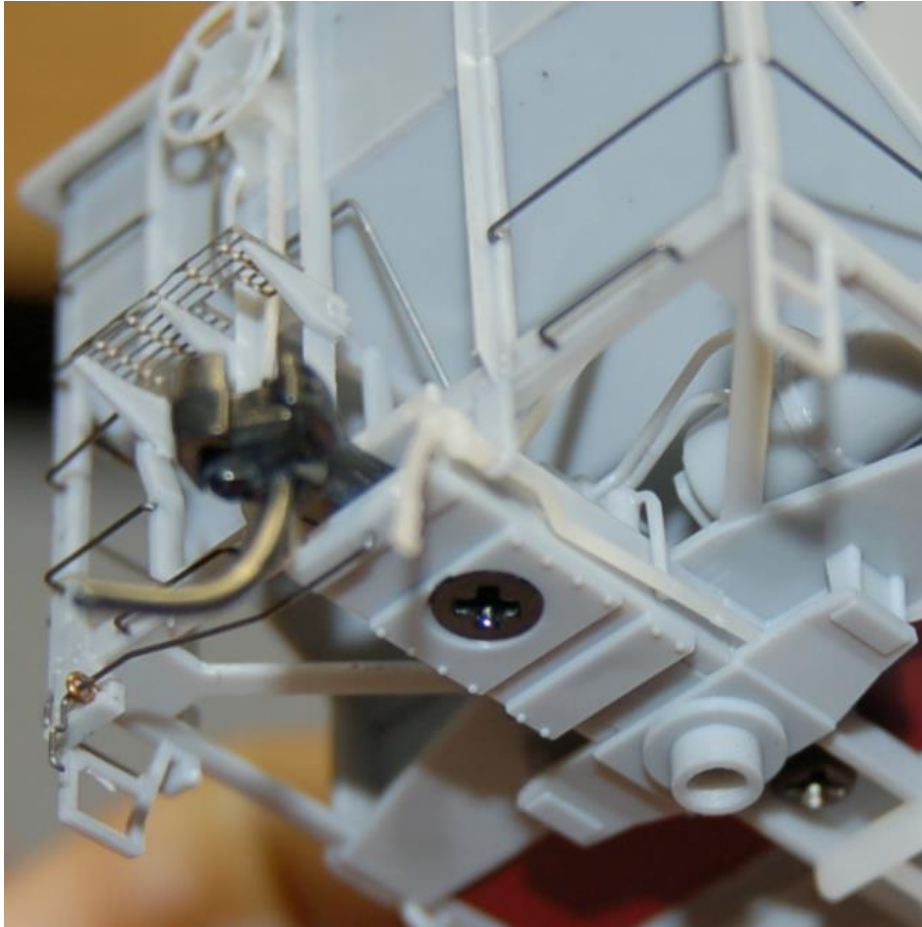
23. **Install the wire eyebolts for the coupler lift bars.** Insert the eyebolts into the coupler cut lever brackets on the car ends. Fish the cut levers through the eyebolts and glue the end into the locating hole on the bottom side of the coupler box cover. Leave the end by the eyebolt floating so that you can remove the coupler cover to insert the couplers after painting.





24. **Install the air hoses to the carbody.** Add the air hoses to the carbody by inserting the long, unobstructed end, into the mounting hole on the carbody end.





FINISHING UP:

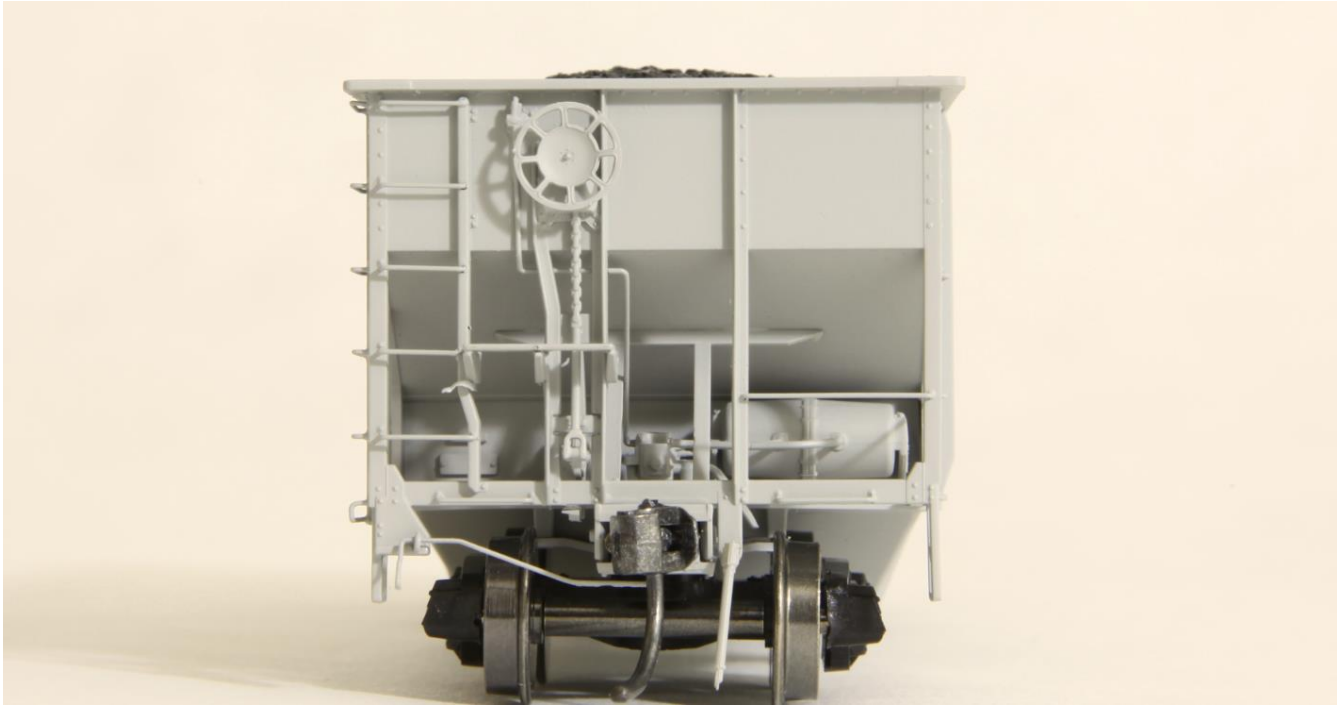
25. **Paint the car.** Refer to prototype photos for the exact car color. And don't forget: if you added couplers already, mask them off so they will not get "sticky" from the paint.
26. **Install couplers and trucks with screws provided.** As noted at the beginning of this document, the couplers needed are Kadee Whisker type.

This concludes the assembly of your kit. We hope you have enjoyed building our PS-3 hopper kit, and we thank you for your support of 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.





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