



## Instructions: General American 4180 Airslide Hopper Kit

Tangent Part Numbers: 16000-01 through 16002-01

2/2016



Thank you for purchasing the Tangent Scale Models General American 4180 Airslide Hopper Kit! A few quick notes before starting:

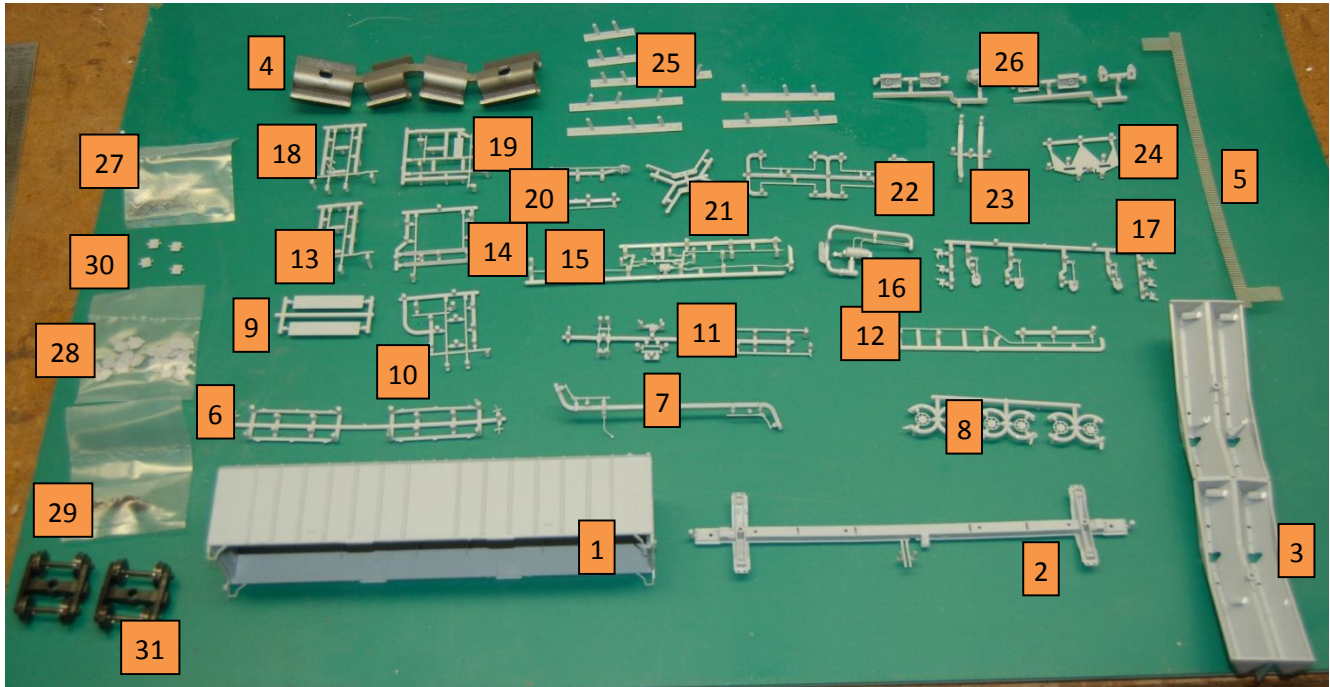
- **Instructions have many large images:** Because some model builders are visually oriented, while others prefer written instructions, we have included *both* text and photos within these instructions. As you can see, many of the images are rather large, to aid in your model building.
- **There are 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](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 of our trucks – and those from other brands!



## Overview of this kit's contents:

Below you will find a photo with corresponding descriptions for each part in our kit. Please note that this kit includes many EXTRA parts that will not be needed for your assembly; we have included all parts to build any era of kit, with the exception of the body shell which is era specific.



### Standalone parts included:

- Part 1 – Hopper Body (3 possible versions depending on which kit you purchased)
- Part 2 – Underframe
- Part 3 – Hopper Bays
- Part 4 – Car Weights
- Part 5 – Running Board

### Part sprues included:

- #6 Sprue contains end slope sheet supports
- #7 Sprue contains air hoses, the pipe for the dirt collector
- #8 Sprue contains brakewheels (extras for your parts bin!)
- #9 Sprue contains the bolster support plates
- #10 Sprue contains the end frame detail for the 1967/1968 version A end
- #11 Sprue contains the roofwalk end supports, car end supports, and dirt collector
- #12 Sprue contains the train air line
- #13 Sprue contains the end frame detail for the 1965/1966 version A end
- #14 Sprue contains the end frame detail for the 1970+ version A/B end
- #15 Sprue contains the cylinder/brake rod assembly
- #16 Sprue contains the air reservoir

- #17 Sprue contains brakewheel housings and brake fulcrums (plus extras for your parts bin!)
- #18 Sprue contains the end frame detail for the 1965/1966 version B end
- #19 Sprue contains the end frame detail for the 1967/1968 version B end
- #20 Sprue contains the high brakewheel housings for the 1965/1966 version cars
- #21 Sprue contains the end supports
- #22 Sprue contains the outlet gate piping
- #23 Sprue contains the center support sheet cover plate
- #24 Sprue contains the center support sheet
- #25 Sprue contains the four long and four short slope braces
- #26 Sprue contains the coupler box covers with side key detail

#### **Parts bags included:**

- #27 Bag contains all of the etched parts and wire parts
- #28 Bag contains the roof hatches
- #29 Bag contains all of the screws

#### **Standalone parts included:**

- #30 Roof hatch top parts
- #31 Tangent's 100-ton Roller Bearing trucks with 36" CNC-machined wheelsets

#### **Parts needed/recommended:**

- Couplers. The coupler boxes for this car are designed for Kadee "whisker" shank couplers - #158.

#### **Tools needed/recommended:**

- Liquid styrene cement for plastic to plastic bonds (Tamiya green bottle, Testors Liquid Styrene Cement are two example products)
- CA-type cement or cyanpoxy – for wire to plastic joins (sold in hobby shops, or in hardware store as "super glue" under various brands in the small squeeze tubes) – best applied with a piece of scrap wire
- Canopy cement – for running board to plastic roof joins (made by Pacer and other brands) (Also Pliobond is a good substitute) – see step 35 for more details
- Hobby knives - #11 and #17 are ideal
- Small Phillips head screwdrivers
- Tweezers

#### **PREAMBLE – THINGS YOU SHOULD KNOW**

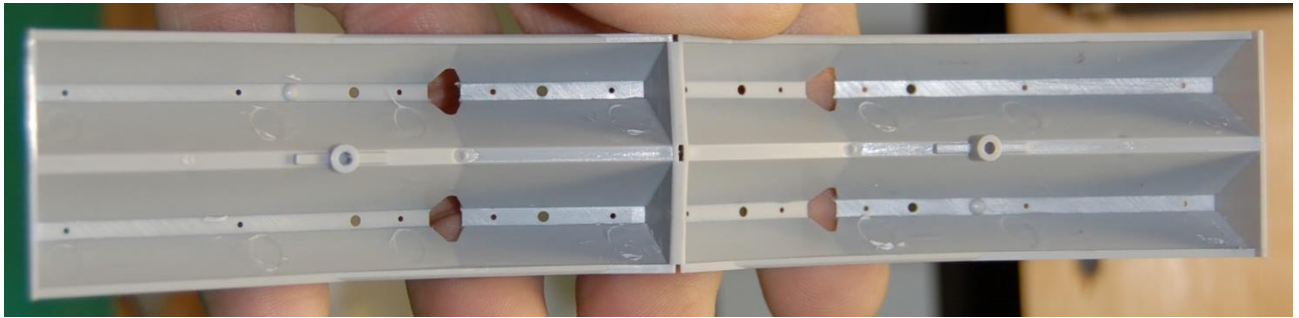
- **This kit is NOT recommended for children aged 14 and under.**
- **Small parts:** there are many very small parts included in this kit. The assembly sequence requires you to have access to multiple parts at a time, so we recommend a clean and open work surface so that you can keep all of the parts in the open and accessible. Let's get started!
- **Kit variations:** When you ordered this kit, there were 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: <http://www.tangentscalemodels.com/parts/> or simply



go to [www.tangentscalemodels.com](http://www.tangentscalemodels.com) and click on "View & Buy Models" and then "Parts."

### Underframe Assembly:

1. **Install weight.** There are 8 mold release pins in the hopper casting that need to be removed before the weight will fit.



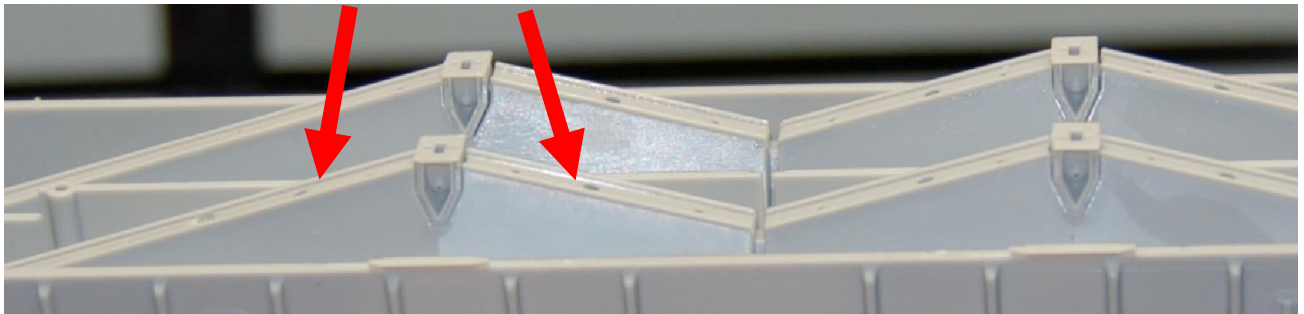
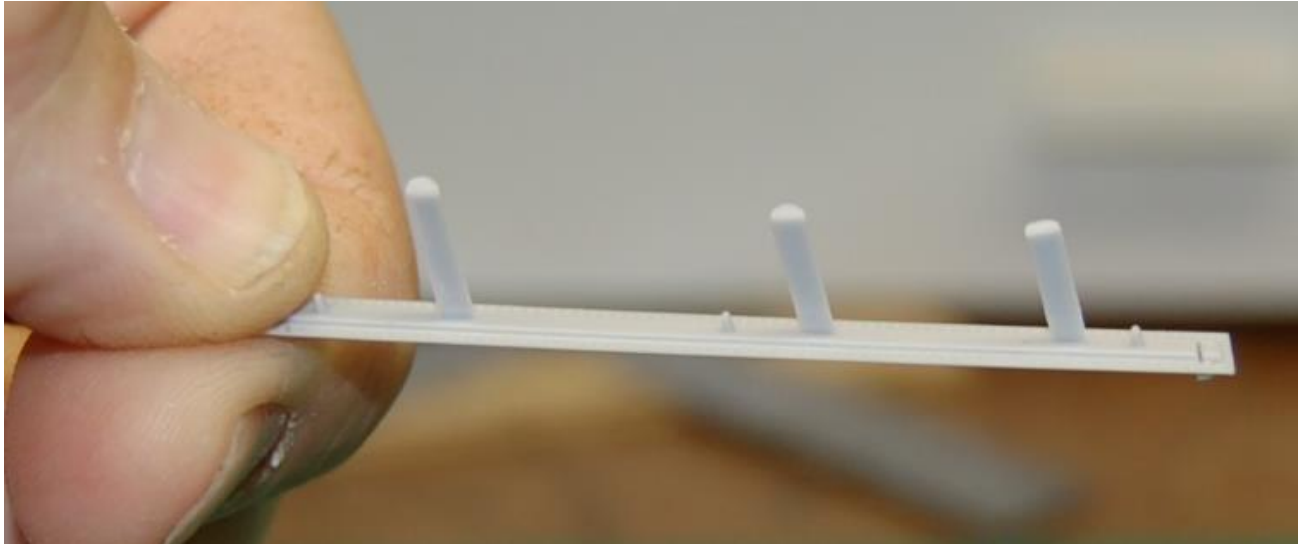
Once they are removed, insert weight into the hopper bay casting. It is secured with the two largest screws. They take a bit of coaxing to get them started in the holes, but once started they are self-tapping and go in smoothly.



2. **Install the hopper bays into the carbody.** It snaps into place, and orientation does not matter (end to end).



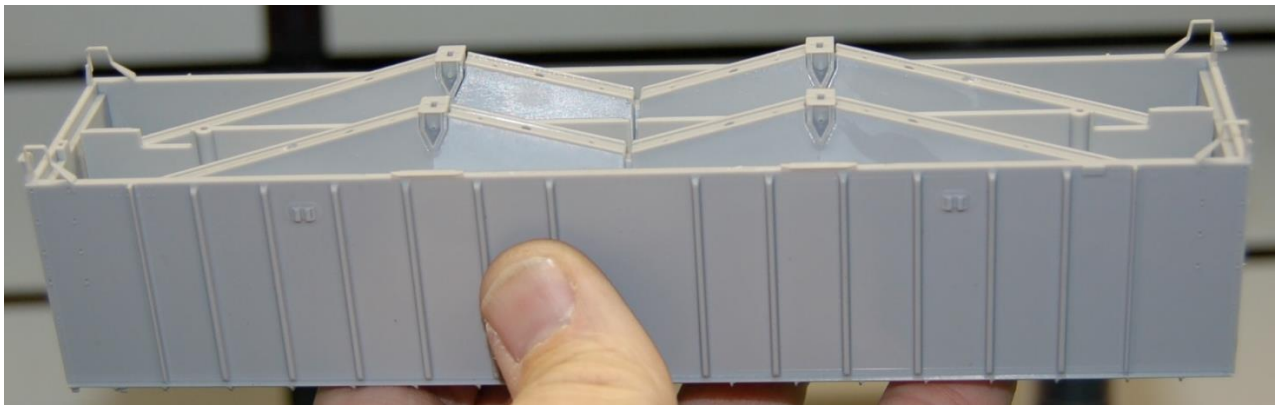
3. **Install the four long and four short slope braces.** These have mounting pins that assist in placement, and there is a hole in the castings that go toward the hopper outlets. Remove the mold pins on the castings and glue in place.



4. **Install the hopper outlets.** There are four hopper outlets, one for each bay.



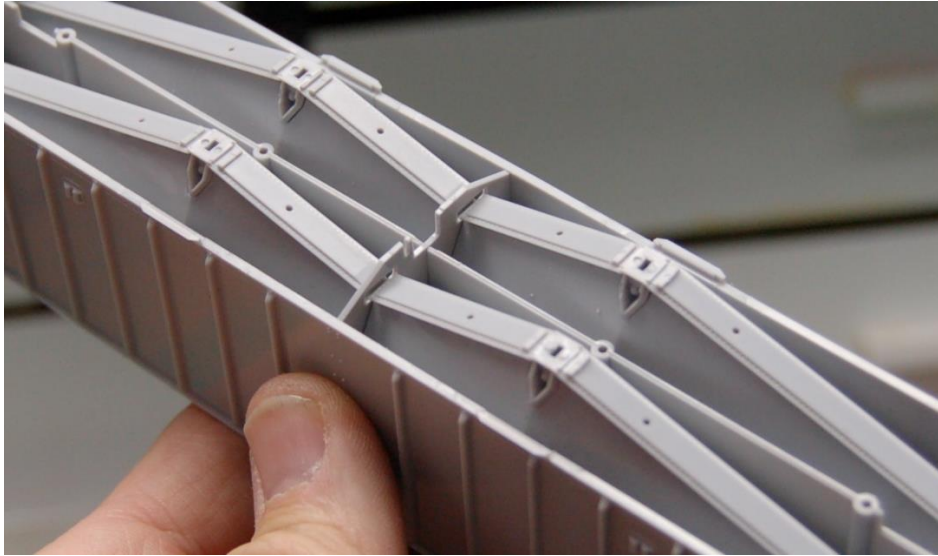
There is a small hole on one side. This will face outward, toward the car side, when installed. These parts snap in place and are a bit of a snug fit, so a little bit of pressure will be needed to get them in place.



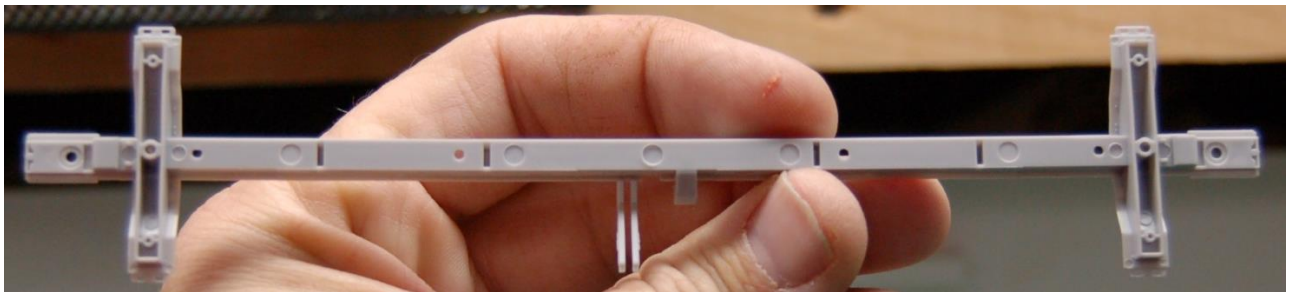
5. **Install the center support sheet.** Clean up all of the mold release pins from the center support sheet. This plastic part looks like a large “W”.



You will notice a small raised portion on this part. When you install it, this needs to face the B (brakewheel) end of the carbody. Insert it into the carbody, and it will snap in place.

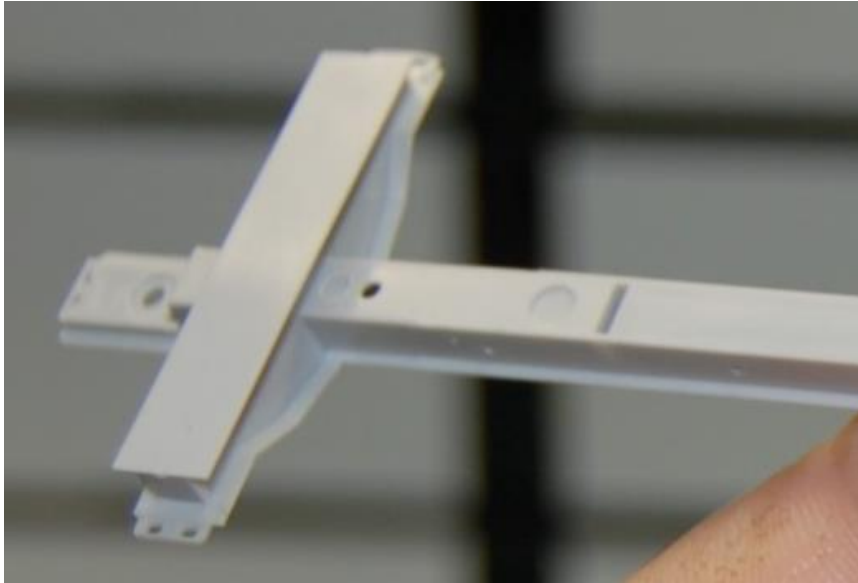


6. **Begin the center sill assembly.** There are a few parts that need to be applied to the center sill before it gets installed into the hopper floor. Begin by cleaning up all of the mold release pins from the center sill.

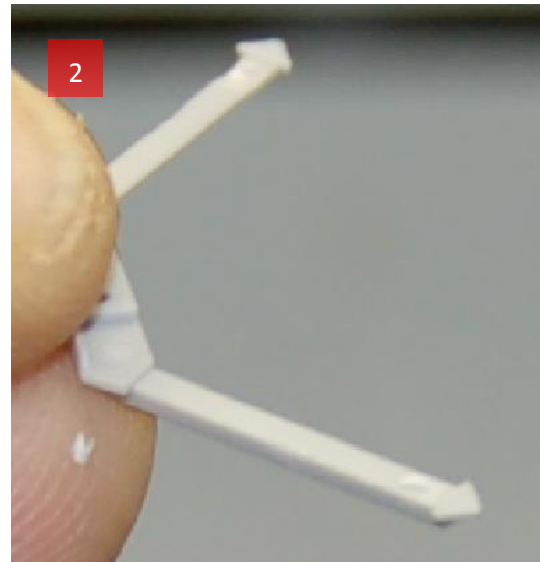
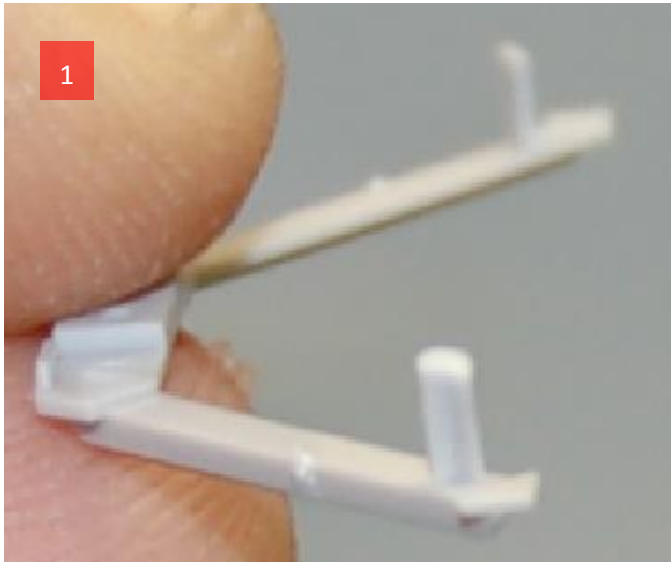


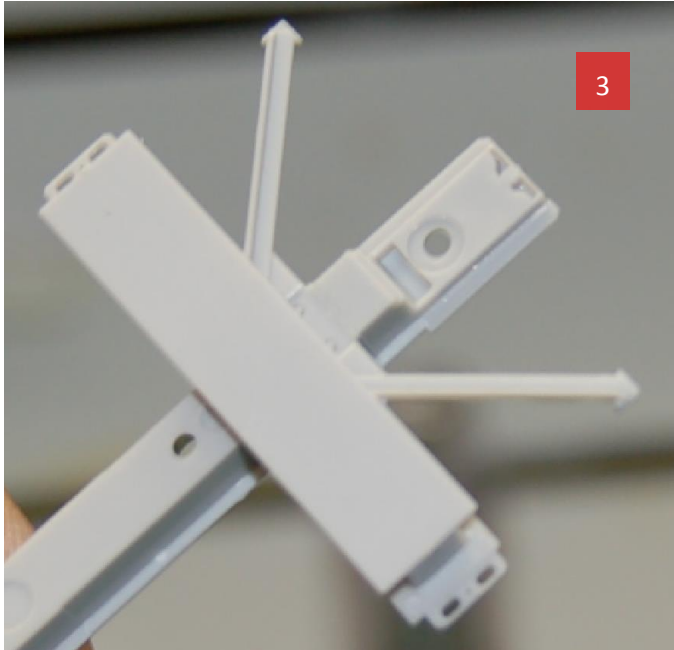
7. **Install the bolster support plates.** These have two small pins on the back that fit into holes on the top of the bolsters. Glue in place.



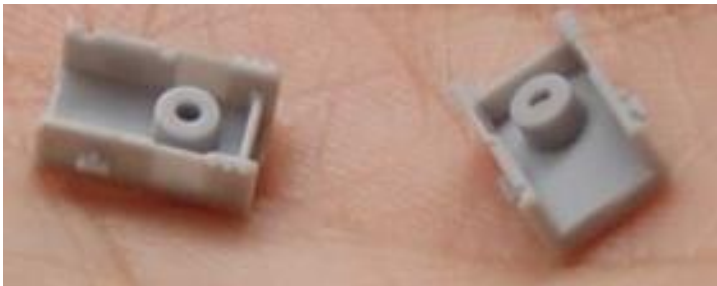


8. **Attach the end supports.** Remove the mold release pins from the end supports. These fit into notches on the end of the center sill. Glue in place.

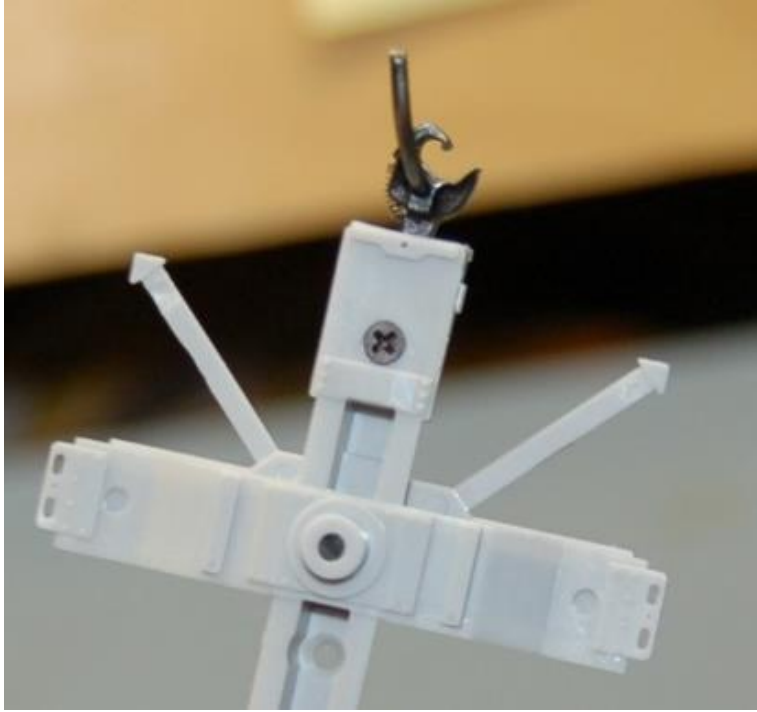




9. **Install the couplers.** The couplers will need to be installed at this time. Clean the mold pins off of the coupler pocket castings.



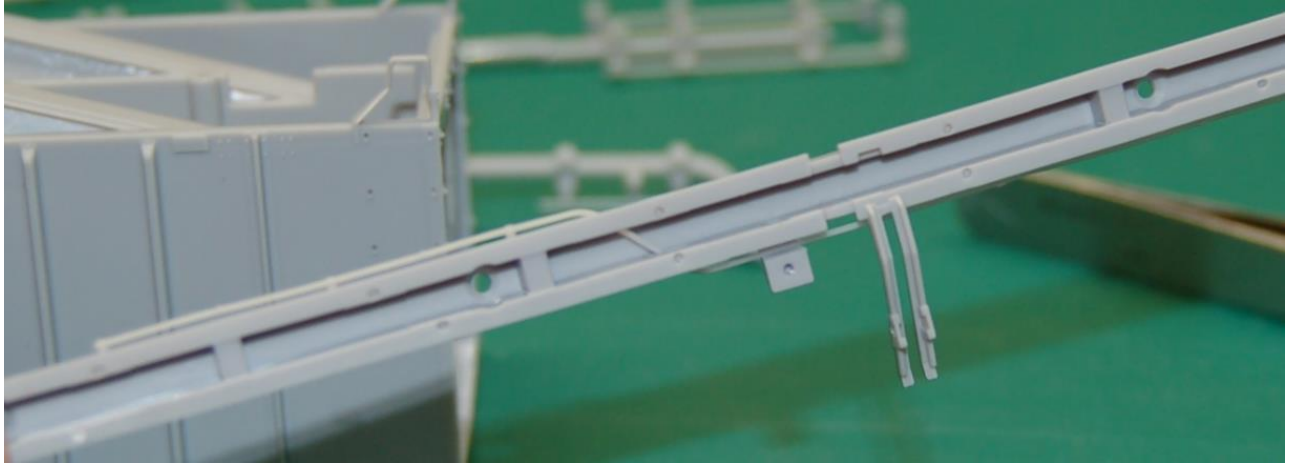
These pockets are designed to accept Kadee #158 Whisker couplers. Insert the coupler into the pocket and position onto the center sill. Secure with the small screws.



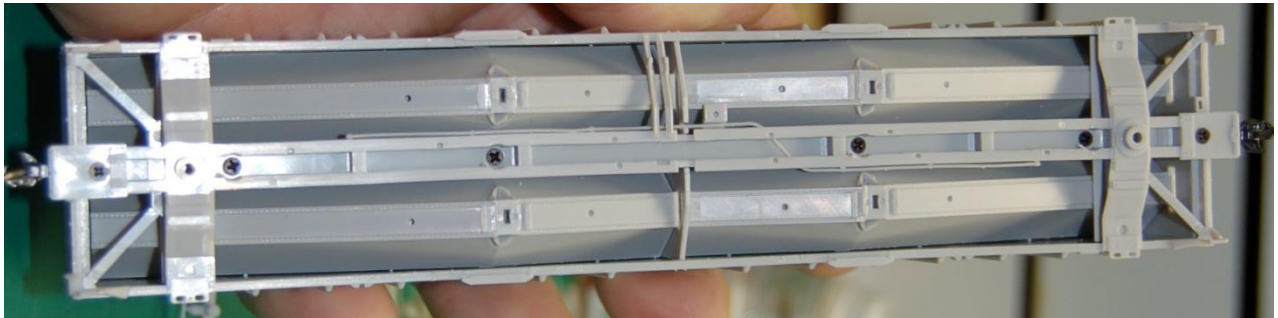
10. **De-sprue the train air line.** It has small mounting pins that will fit into holes in the center sill when installed. After you de-sprue it, it should look like this:



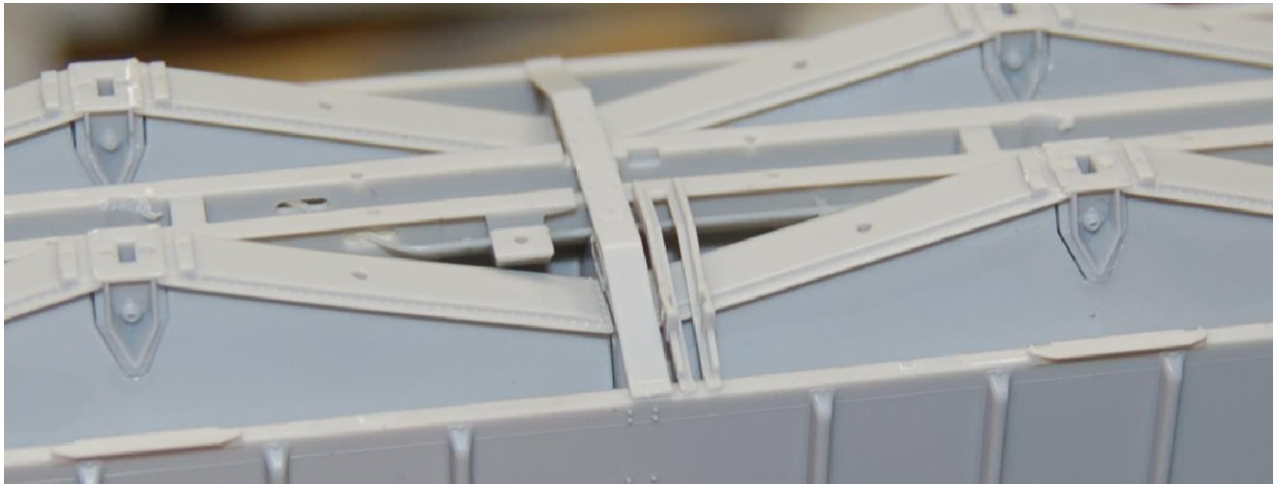
11. **Install the train air line.** The train air line is shorter on one side of the bend than the other. The short side goes toward the B end of the car. Insert the train line through the slots in the center sill. It takes a bit of maneuvering to feed it through due to the mounting pins, but we've discovered that after you insert it through the first slot, rotating the entire part 180 degrees will allow it to fit through the slot on the other side of the center sill. As you continue to insert it, rotate it again when you get to the next tab and repeat this process until you have the entire part through the sill. Be careful, and work slowly, and it will get through the sill. When it is in position, insert the tabs into the holes and glue in place. Make sure that the train line fits into the slot next to the mounting pad for the cylinder.



12. **Install the center sill assembly into the hopper bay.** Orient it so that the two small "arms" for the triple valve are toward the A end of the car, and the mounting pad for the cylinder is toward the B end. Secure the center sill with the 4 screws provided.

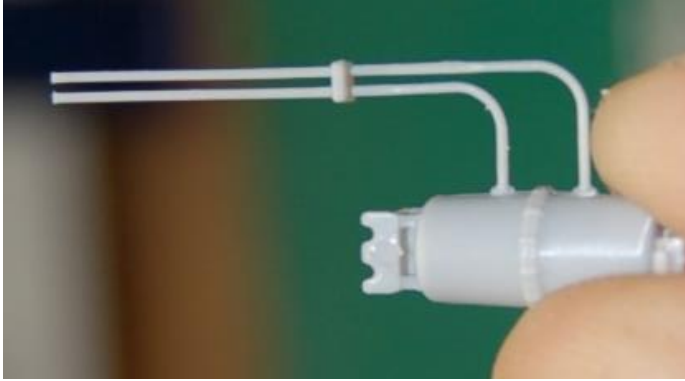


13. **Glue the center support sheet cover plate** in place.

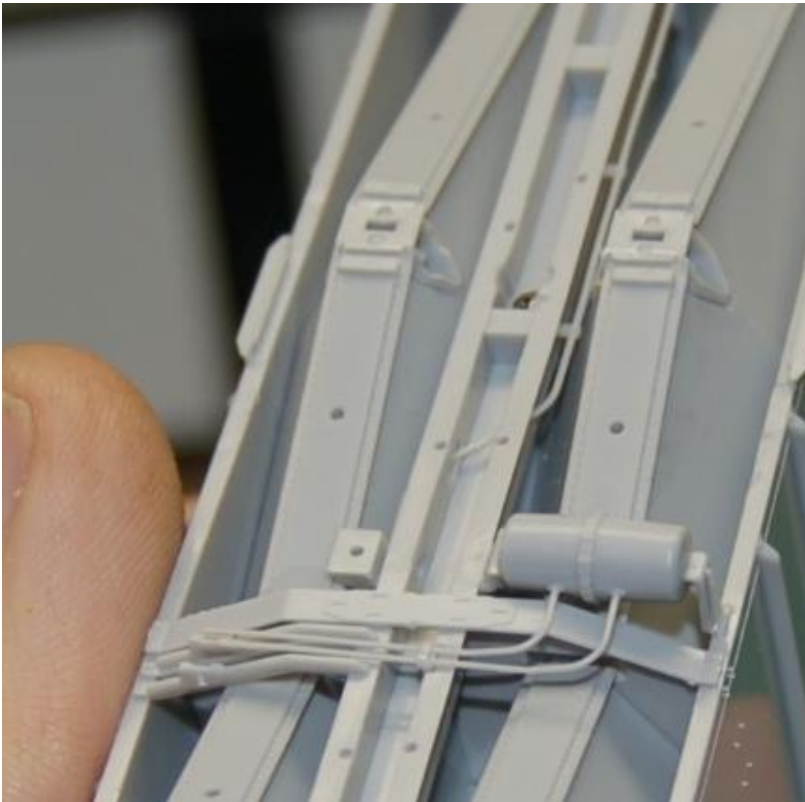


14. **Locate the air reservoir.** This will be installed just on the B side of the center support sheet.

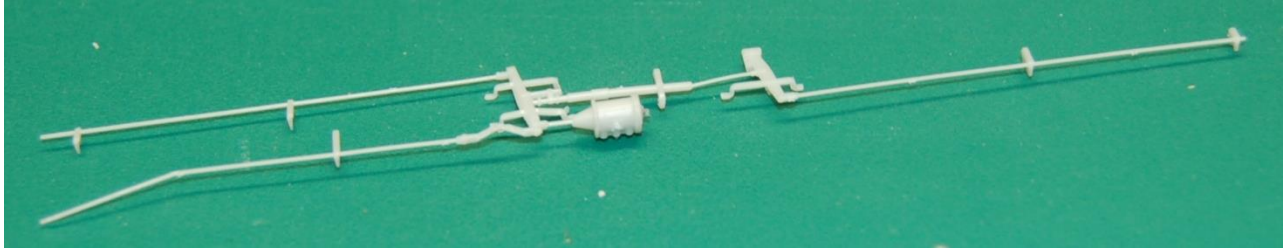




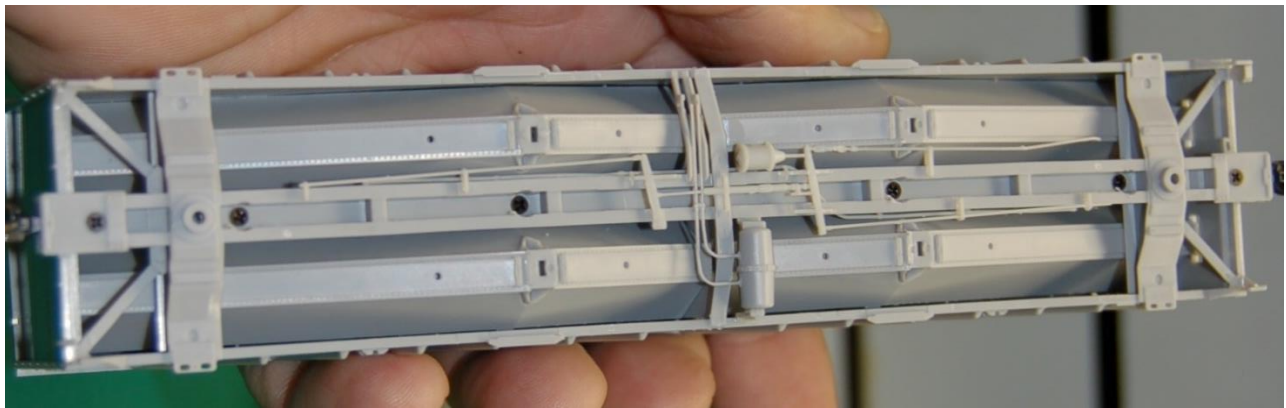
One side attaches to the car side sill, and the other to the center sill. You will notice that the side that attaches to the center sill has small notches, and that the center sill has tabs on the underside of the flange that are used for positioning. Maneuver this part in position and glue in place. When positioned properly, it will basically be a snap fit.



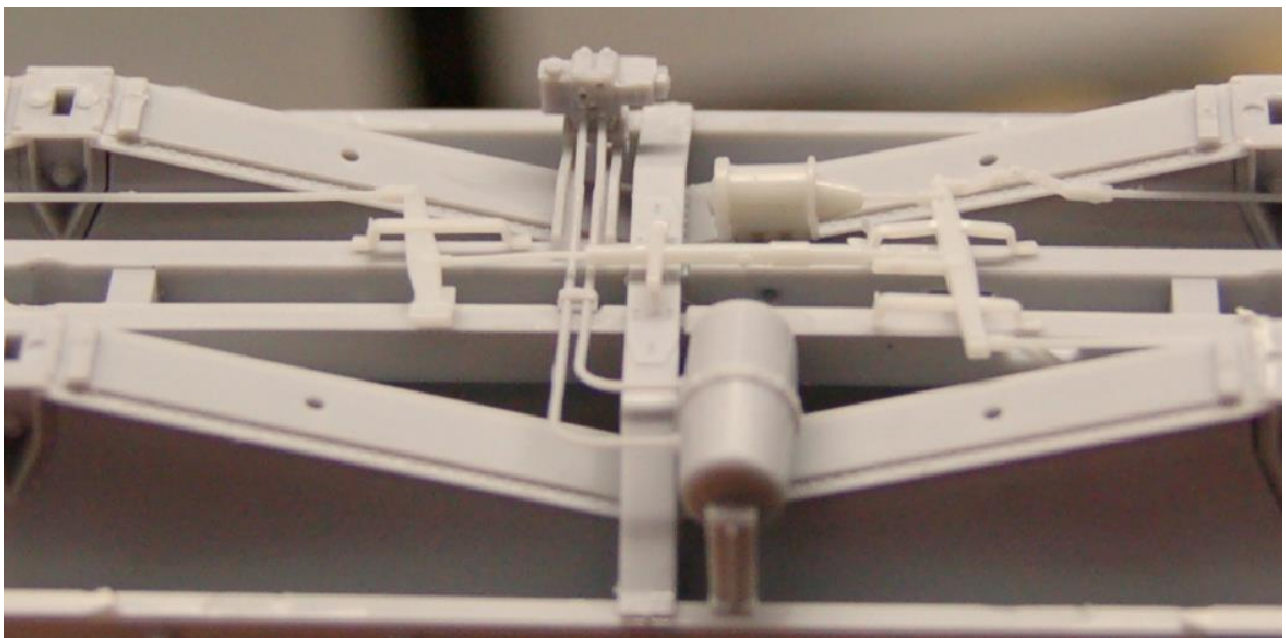
15. **De-sprue the cylinder/brake rod assembly.** Be very careful when doing so as the rodding is very fragile and can break easily.



16. **Install the cylinder/brake rod assembly.** The sill has mounting holes that will only allow this to fit one way. Position on the sill and glue in place.



17. **Glue the triple valve in place** on the two small arms that go from the center sill to the side sill. There is a mounting pad that the valve fits onto. Position it so that the holes face the center sill. The two pipes that come from the reservoir fit into the two holes at the bottom of the triple valve. Be careful when fitting these in since they can break very easily.



18. **Prepare and install the retainer valve bracket.** The retainer valve bracket is an etched metal part in the parts bag and needs to be formed before installation.



You will notice a small raised portion around the hole in the part. When you form this part, it will basically look like a "U". The raised part needs to be inside the "U". Using a small pair of needle nose pliers, form the part by gently bending the two sides 90 degrees. In the end, all three sides should be the same length. After shaped, bend the two small "ears" in to form the mounting tab.



After finishing the bending process, glue it with CA to the side sill just to the side of the triple valve as shown.

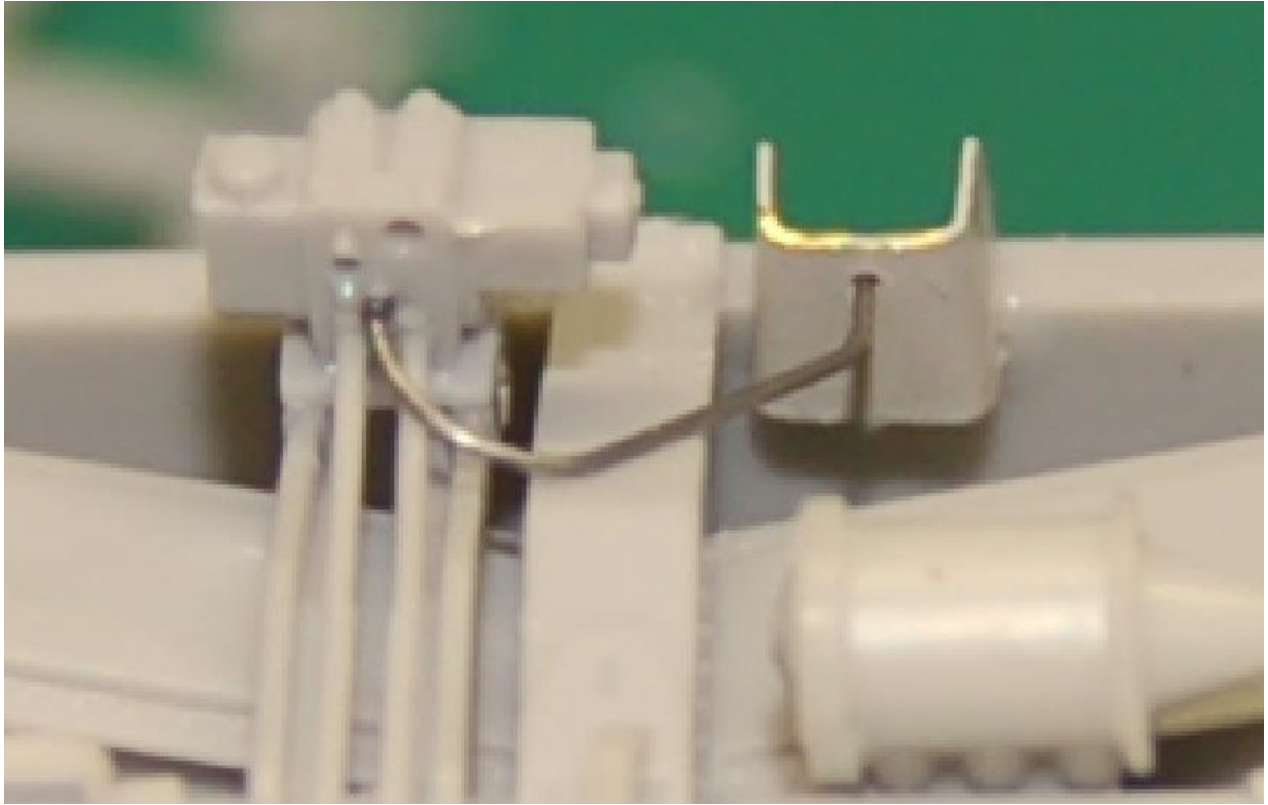


19. **Install the retainer valve release rod.** In the wire parts bag, locate the curved wire that looks like a misshapen "C".



Insert the short straight leg into the hole in the retainer bracket and the curved leg into the hole in the center of the triple valve. Let the wire protrude just slightly through the hole in the bracket to allow mounting of the retainer lever. Install the lever on the tip of the wire and glue in place.





20. **Install cylinder to triple valve piping.** Locate the “L” shaped wire in the parts bag.



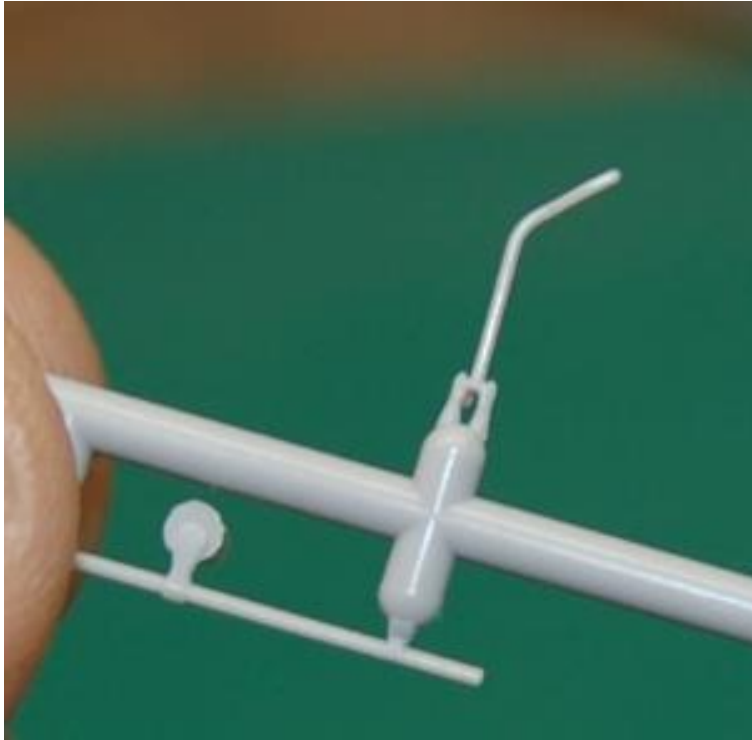
You'll notice that one leg has a slight offset bent into it. This side goes into the cylinder, and the other end goes into the upper left hole of the triple valve. Secure both ends with CA making sure you don't fill the remaining hole in the triple valve.



21. **Install the dirt collector and pipe.** Locate the dirt collector.



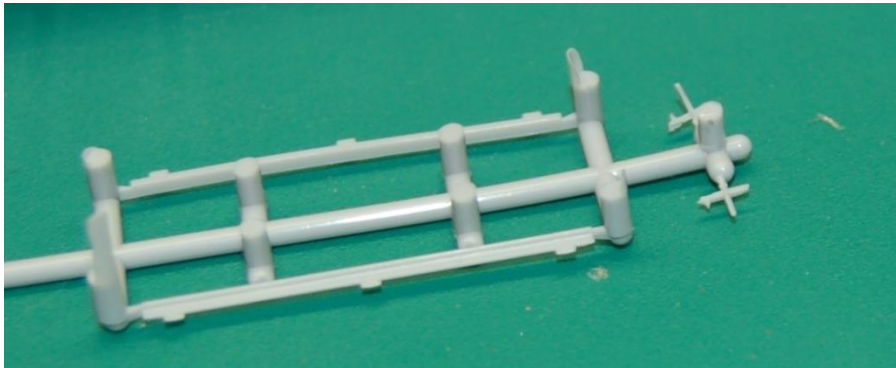
Locate the corresponding pipe.



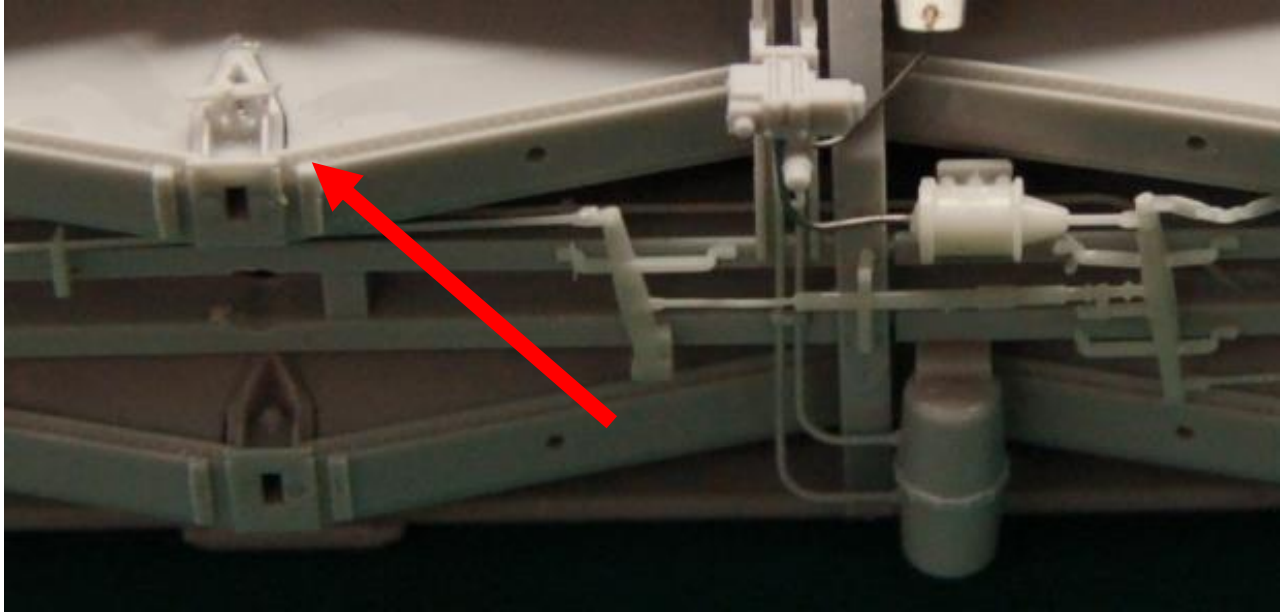
The dirt collector is a very small casting that has a hole in it for the pipe, and a tab to mount into the triple valve. Mount the dirt collector so that the longer side of the casting will face down toward the ground when the car is on the track. The collector pipe has a small U shaped casting on one end that fits over the train line. Maneuver the notched end of the pipe between the mounting arms for the triple valve and fit the notch over the train line. Insert the end of the pipe into the hole in the dirt collector and glue in place. It may aid in positioning for you to tack the notched end to the train line as you fit this part in place.



22. **Add hopper gate detail.** The last part of the underframe assembly is to detail the hopper gates. Begin by installing the outlet release levers. These are very small castings that look like "T's", and one side of the T has a small tab on it. This tab will go toward the center of the car when installed. There is also a left and right side to these parts. Orient as shown in the photos and glue in place.



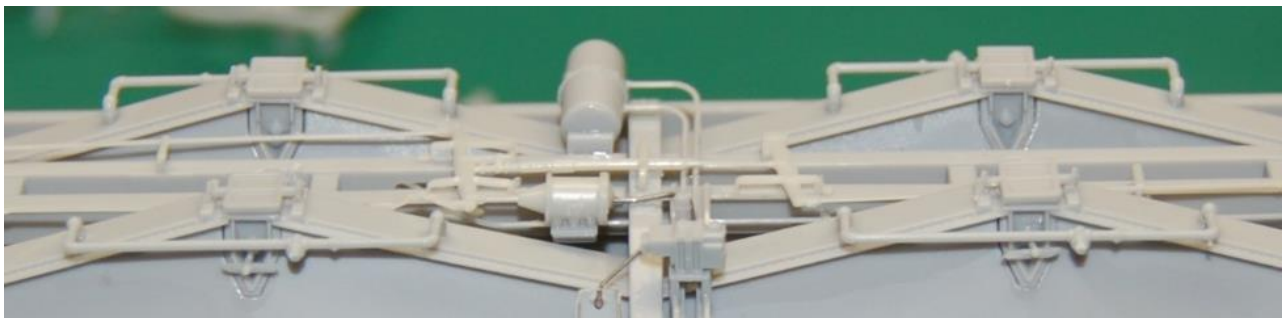




23. **Glue the outlet gate covers in place.**



24. **Glue the outlet gate piping in place.**

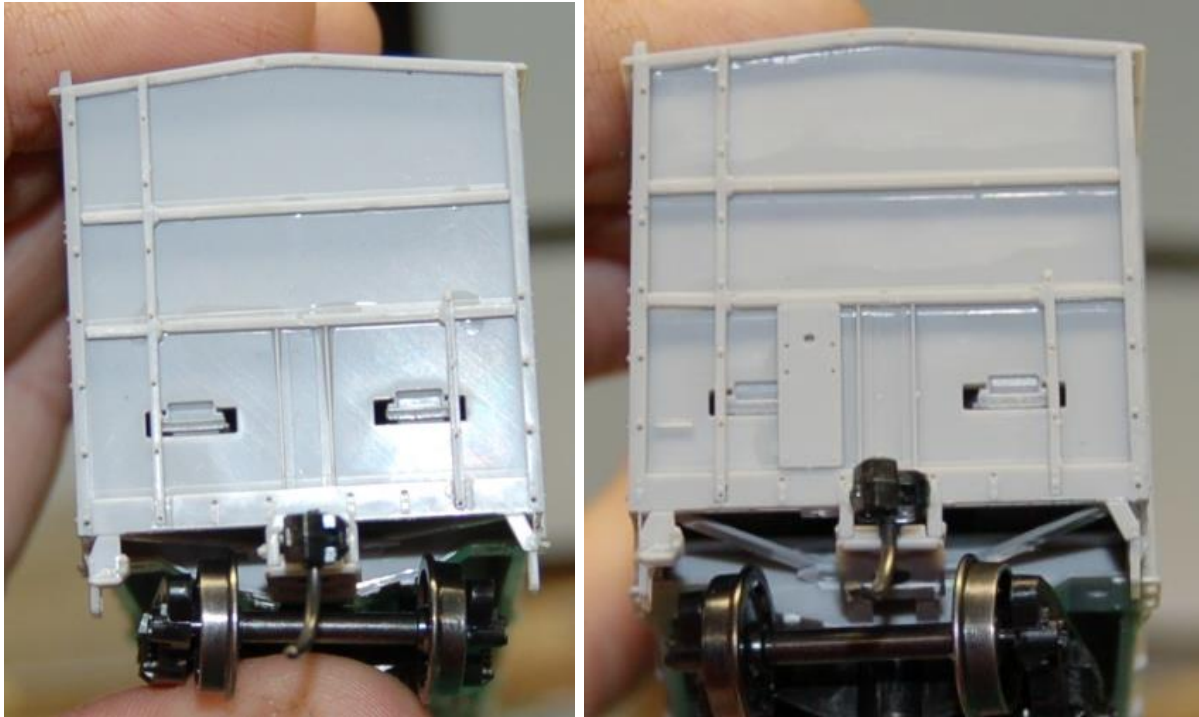


25. **Install the trucks into the underframe.** The previous step. Before starting on the body, install the trucks to protect the underframe detail as well as the stirrups during the body work.

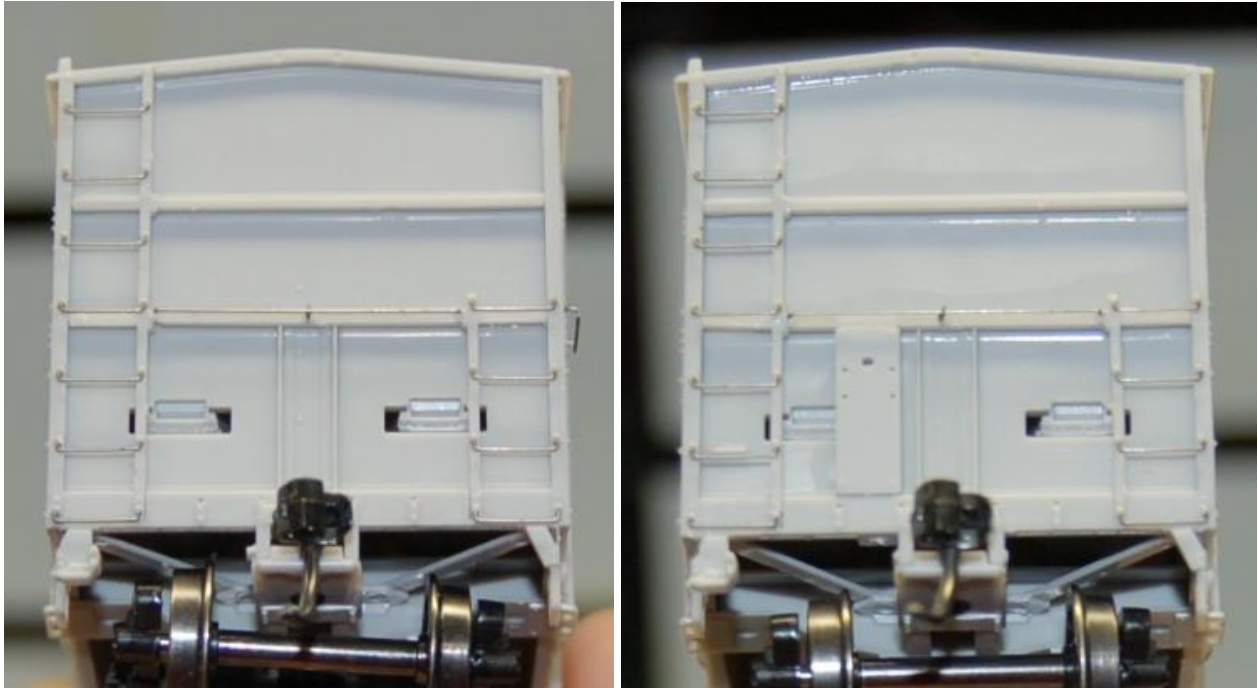
### 4180 Airslide Body Assembly:

The parts you use will depend on which of the three versions you are building. The photos here represent the low brakewheel version, 1967-1968 production.

26. **Install the end slope sheet supports.** Starting on either end (A or B), install the end slope sheet supports.



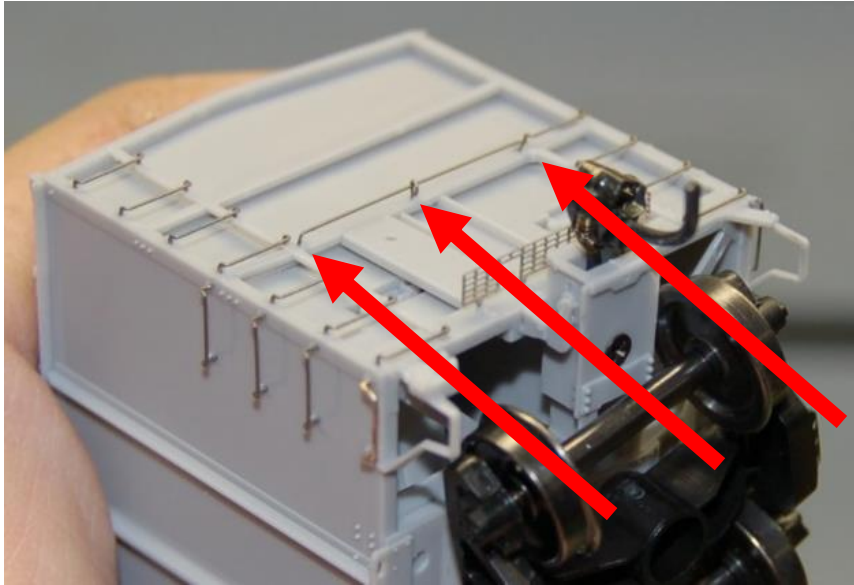
27. **Install the grab irons.** You will notice that they have one leg that is slightly longer than the other. On the ends of the car, the longer leg goes into the hole that is on the corner post. All of the drop grabs are the same size, so orient and glue in place with CA.



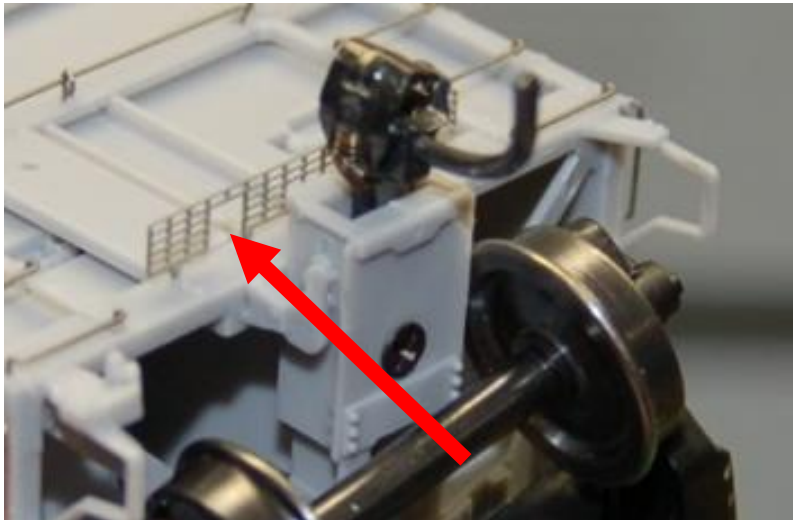
28. **Install the side grabirons.** These will be oriented opposite of the end grabs in that the longer leg of the grab iron will go inboard, and the shorter leg will go into the corner post. Glue all in place.



29. **Install the small eyebolts into the car end to support the handrail.** Locate the small eyebolts in the parts bag. Glue these in place in the center hole on the cross arm on the end. Locate the railings in the bag. You will notice that the ends of these parts are angled slightly. Orient these so that when inserted in the mounting holes, the rail will angle downward slightly. Insert it through the eyelet, insert into the mounting holes, and glue in place with CA.

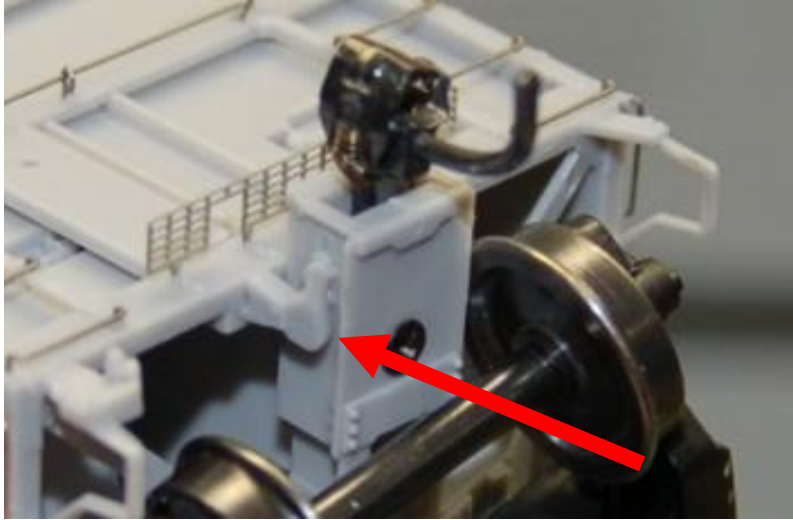


30. **Install the etched metal crossover platforms.** One of them has a notch in it to allow the brake rod to pass through. Glue both of these in place with CA.



31. **Install the brake fulcrum** in the hole in the end sill and glue in place.

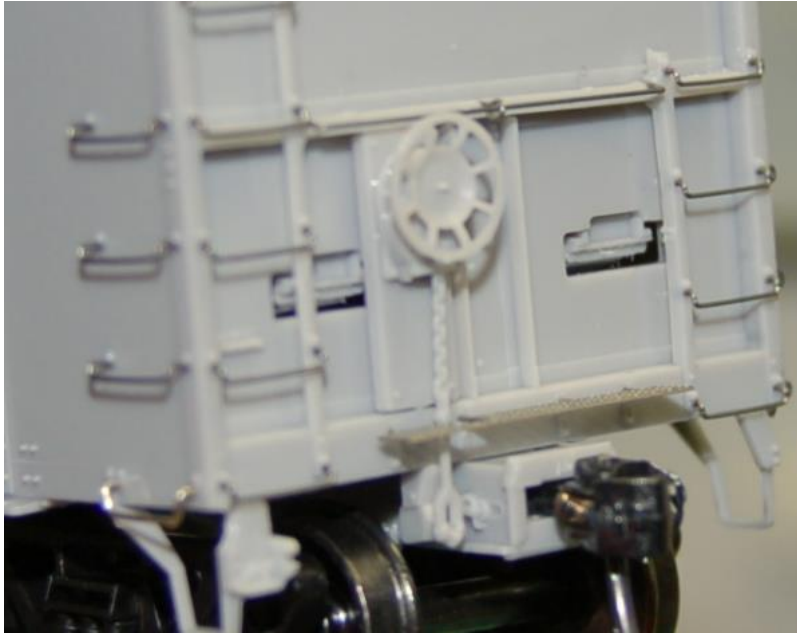




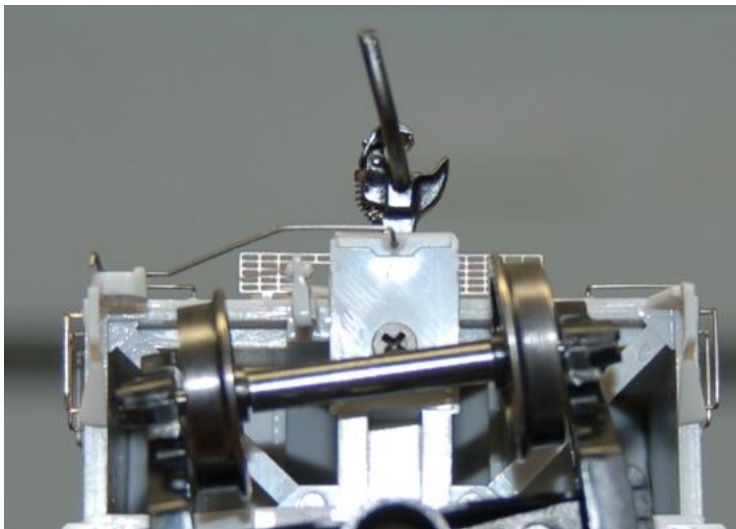
32. **Install the brakewheel housing.** The kit provides multiple brakewheel housings and brakewheels. Choose the one that fits your prototype and glue in place. Be sure to glue the end of the brake rod to the fulcrum.



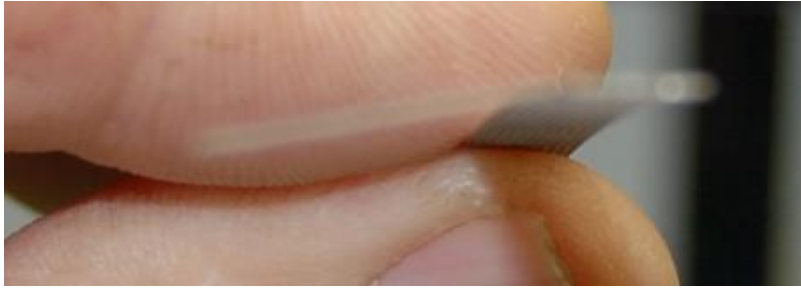
33. **Glue the brakewheel in place.**



34. **Install the wire cut levers.** These wire parts fit into a notch in the corner bracket and a small hole in the bottom of the coupler pocket. Insert the wire into the hole on the coupler pocket first to ensure correct positioning of the cut lever. Slip the other end into notch in corner bracket and glue both ends with CA.

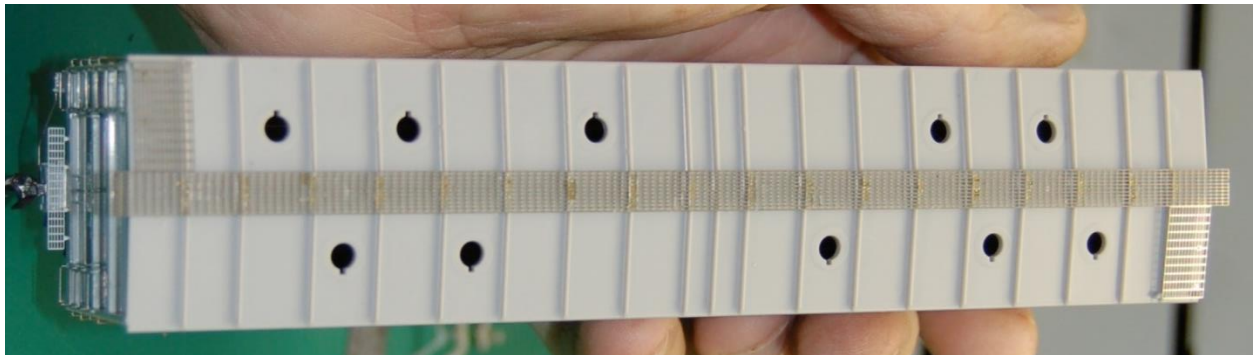


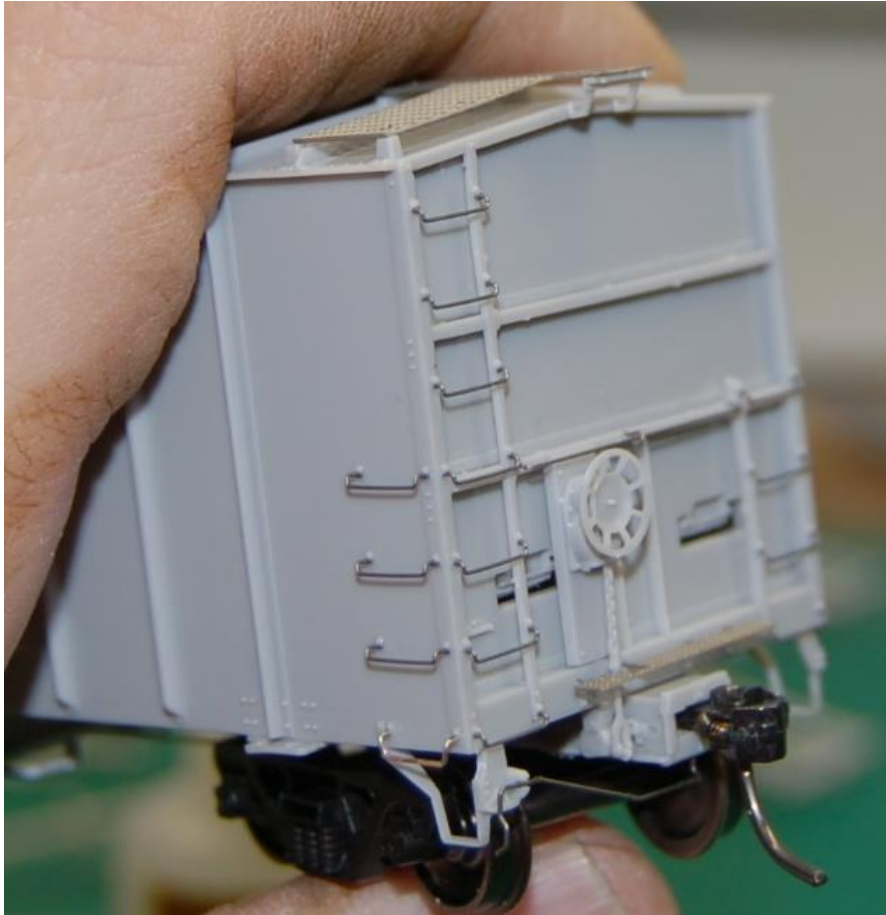
35. **Install the roofwalk.** To prepare the roofwalk for installation, the corner steps of the running board need to be bent downward slightly to match the slope of the roof.



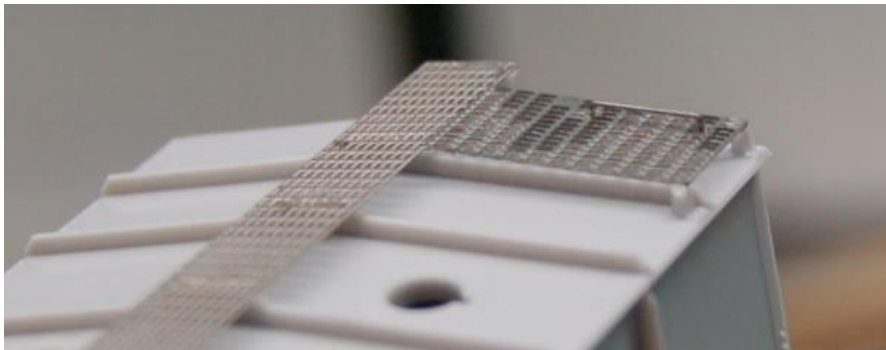
There are several ways to secure the running board to the roof. We recommend one of two adhesives: first is to use canopy cement, which is available from hobby shops and is a somewhat flexible glue that dries clear, meant for airplane canopies. The other recommended product is called Pliobond which is a contact cement that you can purchase at independent hardware stores or the internet (ie Amazon). Both of these adhesives are very flexible when cured which allows the two materials to move with environmental changes and still stay attached when applied sparingly with a piece of scrap wire. You may use CA but it does not flex at all, so if the running board expands or contracts with climate changes, it will most likely buckle or pop off.

Glue running board in place.





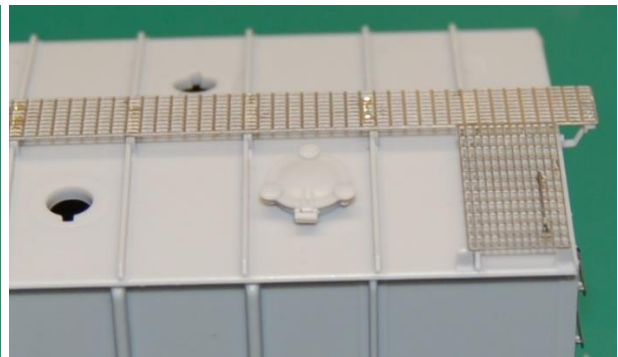
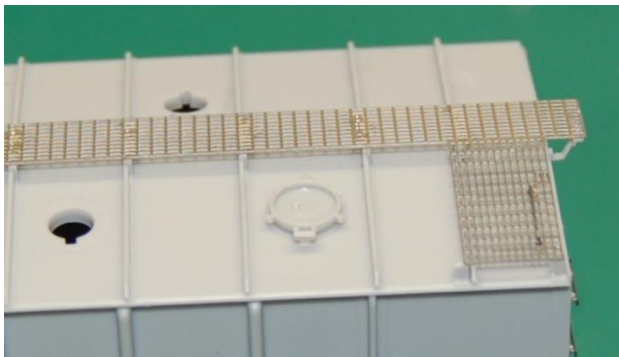
36. **Install the corner wire grab irons** (the last two grabs from the wire parts) in the corner steps of the running board.



37. **Insert and glue the plastic roofwalk end** supports in place.

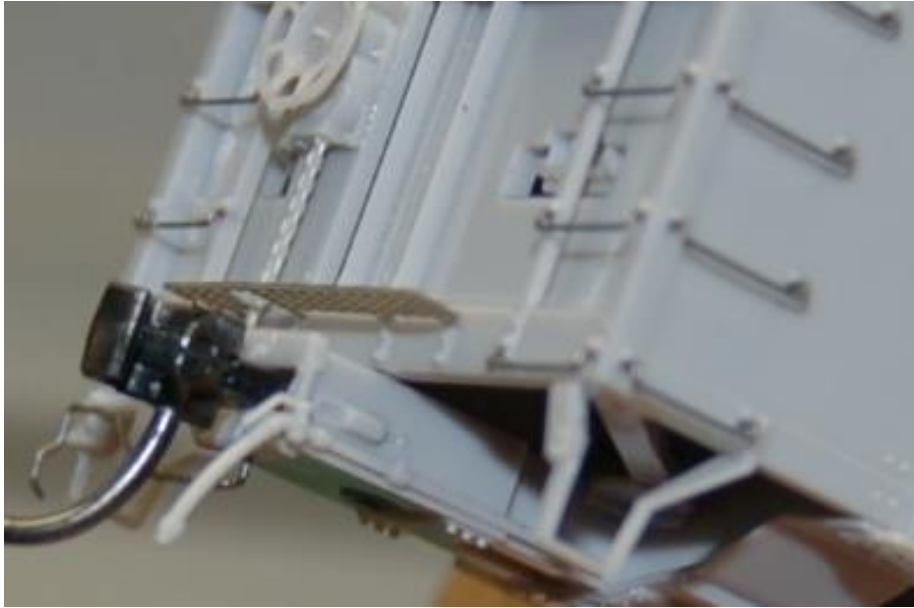


38. **Install the roof hatches.** The roof hatches consist of two parts, a base and a cover. Both parts are keyed, so glue the base parts on the roof, then glue the covers to the bases.



39. **Install the air hoses to the coupler pockets.** There are two small pins on the hoses that fit into holes on the pockets. Glue in place.





This concludes the construction phase.

#### **FINISHING UP:**

40. **Paint the car.** Refer to prototype photos for the exact car color you need. And don't forget to mask the couplers so they will not get "sticky" from the paint.

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 on the following pages.



