

# Instructions: Greenville 86' High Cube Double Plug Door Box Car Kit

9/26/2020



Thank you for purchasing the Tangent Scale Models Greenville 86' High Cube Double Plug Door Box Car Kit! We have tooled seven different configurations of our Greenville box cars so far. These kits are all very similar to each other! Here are a few quick notes before starting:

- Do not download or print these instructions until you actually are ready to build. Why? We update the instructions frequently, so If you saved this file or printed it for later use, please understand that we may have updated the instructions since then. Please check our website to see if this document has been updated before starting your build. We date the document and only show the most current version on our website.
- 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.
- 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.
- > Extra parts are available online: They are on our website under "Parts for Cars"

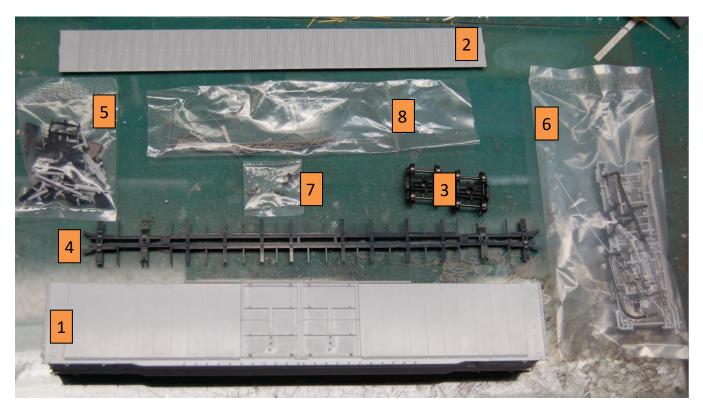
- Prototype photos: While you likely have your own sources of prototype photos, please recall that for each RTR scheme that Tangent releases, we include a prototype photo on our website. You can use these as references in addition to your own sources.
- This kit is meant for adults: While we applaud bringing younger modelers into our hobby, this model includes more than 60 small parts, many of which are sharp and/or delicate. Therefore, this kit is recommended for those 14 years of age and older.
- We offer our trucks separately: Our gorgeous 70-Ton Barber S-2A Roller Bearing Trucks and 100-Ton "Low Profile" Barber S-2-C Roller Bearing Trucks (with "rotating" roller bearing caps) are available separately, with your choice of blackened RP25, blackened Semi-Scale tread, or nickel-plated Semi-Scale tread free-rolling all-metal wheels! Each of those truck and wheel combinations are also available with your choice of three different roller bearing caps. Separate brake detail included!



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!



We want feedback: If you find something missing from our text instructions, or you believe there is an error within these kit instructions, please let us know by submitting a comment to us on our website or sending an email to support@tangentscalemodels.com Thank you! Overview of this kit's contents:

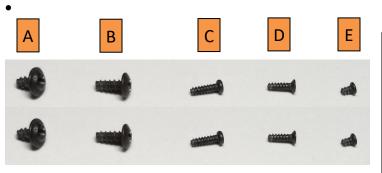


## Standalone parts included:

- Part 1 Carbody
- Part 2 Roof
- Part 3 Trucks
- Part 4 Underframe

## Parts bags included:

- Item 5 Small parts bag parts not on sprues
- Item 6 Larger parts bag parts on sprues
- Item 7 Wire parts bag
- Item 8 Screw bag



# Screw Identification:

- A) Weight Screws x 2 (Washer Head 4.75mm)
- B) Truck Screws x 2 (Truss Head 6mm)
- C) Rear Coupler Box Screw x 2 (Pan Head 5.8mm)
- D) Coupler Box Screw x 2 (Flat Head 5mm)
- E) Coupler Lid Screw x 2 (Flat Head 2.7mm)

## Parts needed/recommended:

 Couplers. Our draft sills for COCC cars (SKUs 25000-01, 25001-01, 25002-01, 25004-01) are designed for Kadee "whisker" shank couplers - #158. Our draft sills for EOCC-equipped cars (SKUs 25003-01, 25005-01, 25006-01) are designed for Kadee "long whisker" shank couplers - #156.

## Tools needed/recommended:

- Liquid styrene cement to bond plastic to plastic parts
- CA-type cement or cyanpoxy for wire to plastic joins
- 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
- A foam cradle to rest the model on as you work. An inexpensive offering is here: <u>https://www.micromark.com/Foam-Cradle</u>

#### PREAMBLE – THINGS YOU SHOULD KNOW

- This kit is NOT recommended for children aged 14 and under.
- Small parts: there are many very small parts included in this kit. The assembly sequence requires you to have several bags open at a time, so we recommend a clean and open work surface so that you can keep all of the parts in the open and accessible. Let's get started!
- Overview of the build: This kit will start with the underframe assembly first, meaning everything underneath the carbody including the draft gear ("coupler boxes"). The next step will be to finish the parts that affix to the body. This sequence is best because it is easier to protect the details of the car as you "build up."
- Underframe and brake system and end detail variations: The instructions for this kit cover the 25000-02 version of the Greenville box car, however all versions are very similar to each other and we recommend good photos of the prototype car you are building. We provide many photos in this document and there are extra photos at the end of this document provided for reference. Additionally, within the instructions to follow we have included a special reference section to cover the different underframe versions to help simplify your kit construction. Let's get started, and enjoy your build!

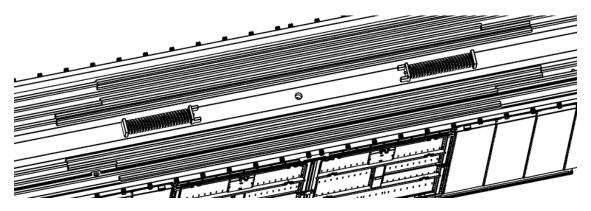
## UNDERFRAME CONSTRUCTION:

- Locate the underframe. The underframe is shipped from the factory installed onto the carbody to ensure that nothing gets damaged in transit. Please see the special note on page one of this document if you are building EOCC-equipped cars (SKUs 25003-01, 25005-01, and/or 25006-01), because these SKUs require a replacement underframe part. Remove the underframe from the carbody and set it off to the side for now.
- 2. Weight is pre-installed. Please note that the weight is pre-installed.
- 3. **Open the small parts bag and note extra parts.** There are many very small parts in this bag so be careful to make sure that they all stay together as they can be easily lost. Also note that there are many parts that will not be used. We have included all brake parts for the three different versions of the underframe that can be built. We have included multiple brake stand options.

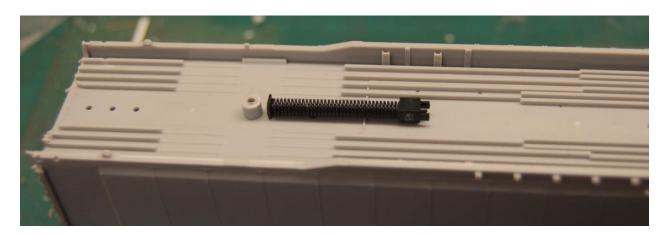
For COCC cars (SKUs 25000-01, 25001-01, 25002-01, 25004-01), follow steps 4-26 below. For EOCC-equipped cars (SKUs 25003-01, 25005-01, 25006-01), please follow steps 26-45.

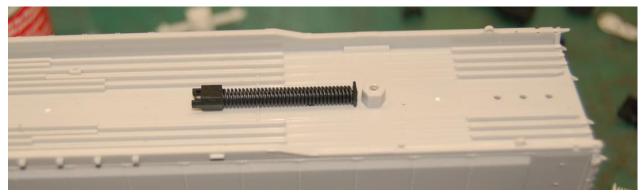
You will find additional helpful photos at the end of this document – we show various underframe examples to assist in part and location identification.

4. There are two versions of COCC cushioning springs. Version 1 is the common Keystone (and similar) style that are in the center of the car. Locate the two shorter cushion springs. There are two locating holes that are towards the center of the car under the door area that accept the pins on the springs. Install both springs, but do not glue in place so they can be maneuvered into position when you reinstall the underframe.

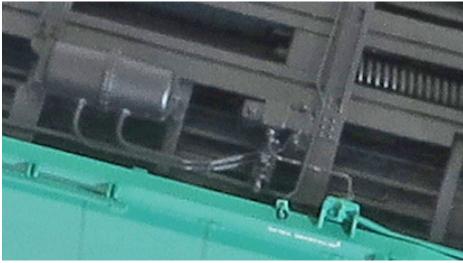


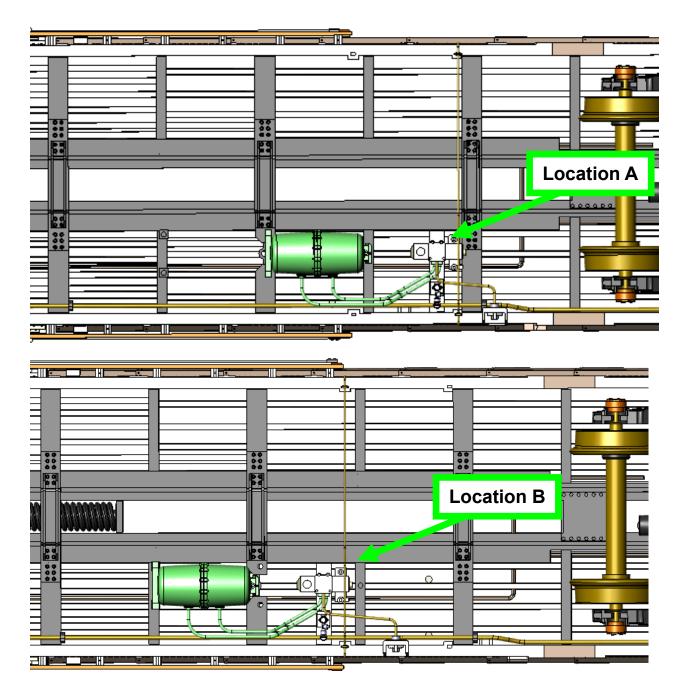
5. Alternate COCC cushioning springs. A second style used on some 1965-built cars is the Hydra-Cushion version. If you want model a Hydra-Cushion car, locate the two long black cushion springs. There are two locating holes that are towards the center of the car next to the bolsters that accept the pins on the springs. Install both springs, but do not glue in place so they can be maneuvered into position when you reinstall the underframe.





6. Locate the AB valve and bracket assembly. Note there are two locations for the COCC cars. (Same part, different locator holes.) Location A is typical for 1964-1966 COCC production – Tangent Undecorated kits 25000, 25001. Location B is typical for the 1968-1970 COCC cars– Tangent Undecorated kits 25002, 25004. It should be installed into the two small locating holes. Orient it so the AB valve is toward the center of the car. Glue in place.

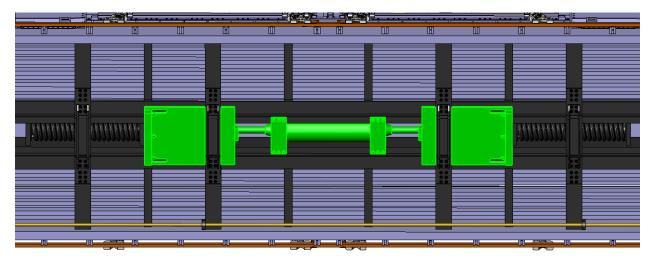




7. **Reinstall the underframe.** The underframe is keyed (one bolster pin is round and one is hexagonal), so when you reinstall it please pay attention to this to ensure proper mating of the parts. Carefully fit the underframe over the two springs and the AB valve. The underframe will be held in place by the truck and coupler pocket screws, so there is no need to glue the underframe to the body shell, however you can glue it if you choose to.



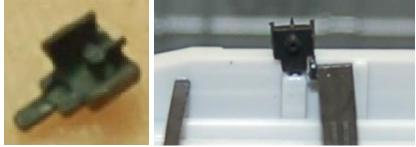
8. **Install the center cushioning device details.** If the shorter springs were used above in Step 4, then install the Keystone cushioning details (piston assembly, 2 small plates and 2 large plates) as shown:



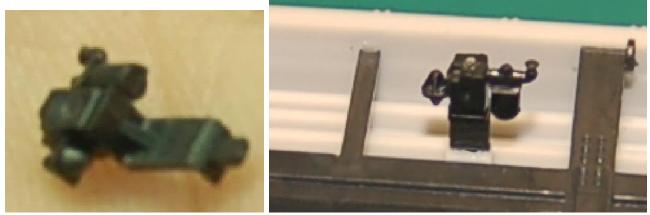
9. Optional: Install the "Hydra-Cushion" center cushioning device. If the Hydra-Cushion springs were installed in Step 5, then install the Hydra-Cushion center cushioning device. (This is installed instead of the Keystone parts in the step above.) Look for the large, light colored casting with the distinctive "cylinder" underneath it. The part may have a small amount of flash on the center mounting pin that will need to be trimmed off. Test fit the part into the center slot of the underframe and glue in place. Not all prototype cars had this part, so consult your prototype photos for this.



10. **Install the retainer valve**. The retainer valve is a small black casting that is a C channel shape with a lever in the front and a small hole in the back. It gets installed into the small channel in the side sill between the AB valve and the bolster. Glue in place.



11. **Install the brakepipe reduction valve.** The brakepipe reduction valve valve will need to be installed into an oval slot in the body floor. Orient it so that the small hole in the casting is facing toward the outside of the car and glue in place.

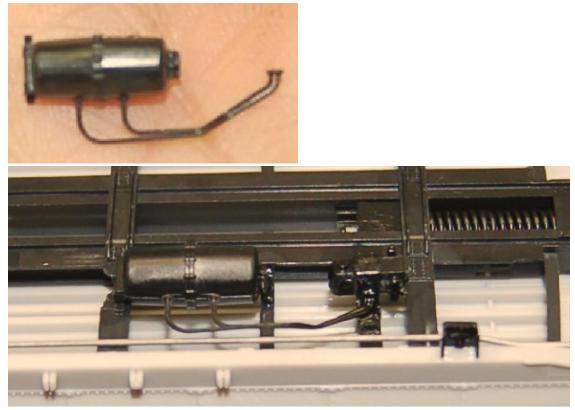


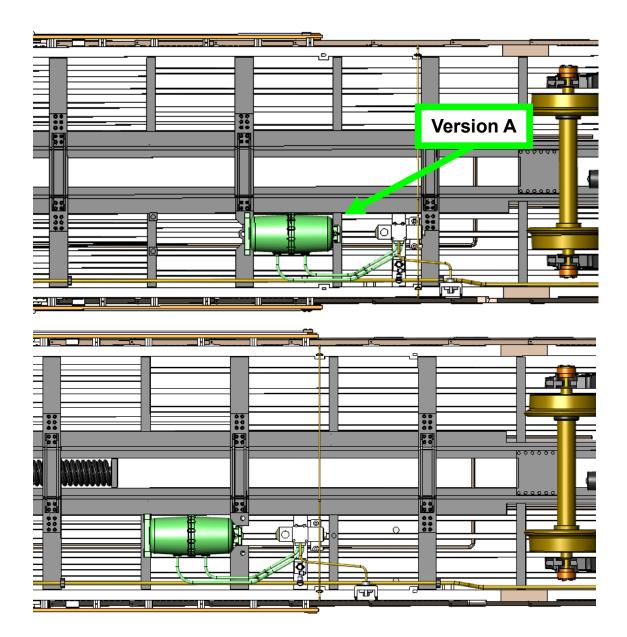
12. **Install the train line.** Open the wire parts bag and locate the two sections of the train line. The first section has an S shaped bend in it where it goes from one side of the car body to the other, and the second section is relatively straight. There are small mounting clips on the cross members of the underframe and mounting holes on the bolsters. Install both sections and secure with CA.



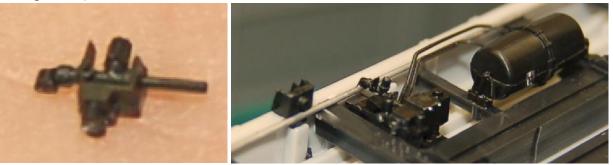


13. Install the air reservoir. There are locating pins next to the AB valve that the reservoir fits into. Glue in place. Note there are two locations for the COCC cars. (Same part, different locator holes.) Location A is typical for 1964-1966 COCC production – Tangent Undecorated kits 25000, 25001. Location B is typical for the 1968-1970 COCC cars– Tangent Undecorated kits 25002, 25004.





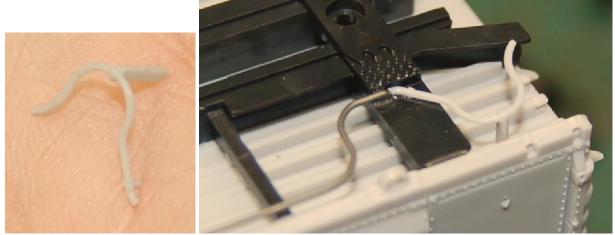
14. **Install the dirt collector pipe.** From the small bag, the dirt collector pipe fits into a slot on top of the AB valve bracket. Orient so that the larger side of the pipe rests on the train line and glue in place.



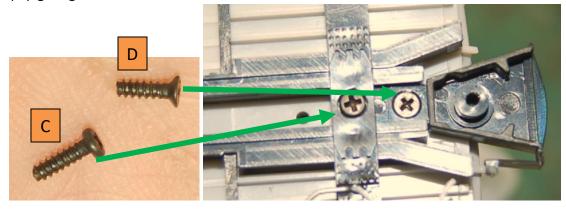
15. Install the chain support/brake chain assembly. The chain support/brake chain assembly installs into the slot in front of the bolster, and into the small hole in the center sill. Glue in place.



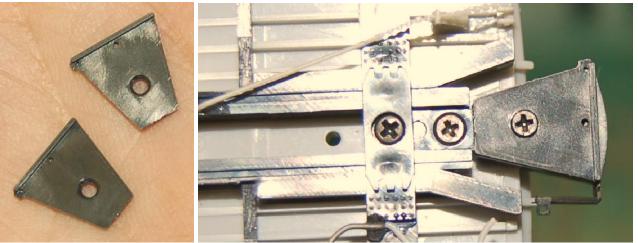
16. **Complete the train line.** There are two C-shaped plastic "pipe" pieces that complete the train line. They fit into a slot on the floor and a hole in the bolster. Install one on each end of the car and glue in place.



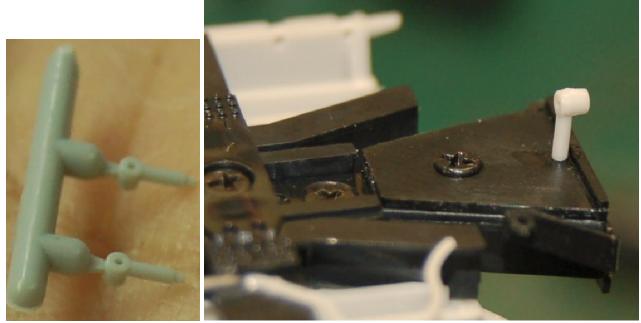
17. **Install the coupler box top.** Choose the appropriate coupler box for the version of car you are building. Also locate the mounting screws from the screw bag. (Screws C and D from Page 3) Screw C is a 5.8mm pan head and Screw D is a 5mm flat head. Insert the coupler box into the slot in the center sill and secure with the two screws, with the pan head screw (C) going into the hole closest to the bolster.



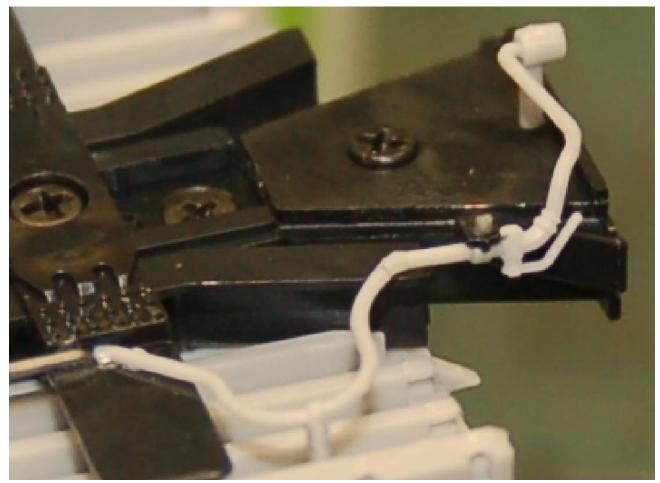
18. Install the coupler box cover. Locate the coupler box cover (the bottom part when the car is sitting on rails) appropriate for the coupler box used. Also locate the small screws (F) that secures the cover to the box. You can install the couplers of your choice now if you wish however we typically suggest waiting until after painting to prevent the couplers from sticking.



19. Install the air hose brackets. Refer to the photo and locate the air hose brackets. These fit in the small hole in the coupler box cover located in the center. The longer side of the end of the bracket faces toward the end of the car. Glue in place.



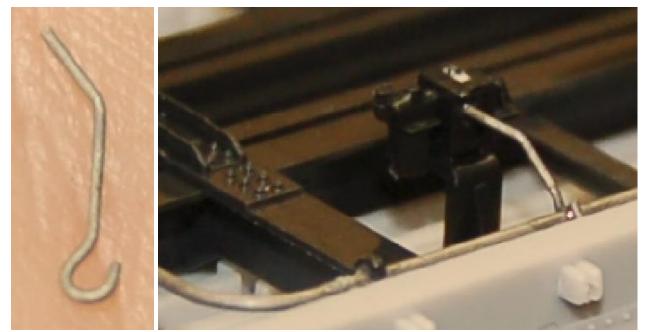
20. **Install the angle cock part.** The angle cock assembly has to be maneuvered in place so that all three anchoring points can be secured. There is a pin under the actual angle cock that fits into the hole in the bracket on the side of the coupler box where it is glued in place. The back end of the "pipe" is butt glued to the end of the train line, and the other end gets inserted into the back of the bracket on the coupler box cover. When the assembly is positioned properly, glue in place.



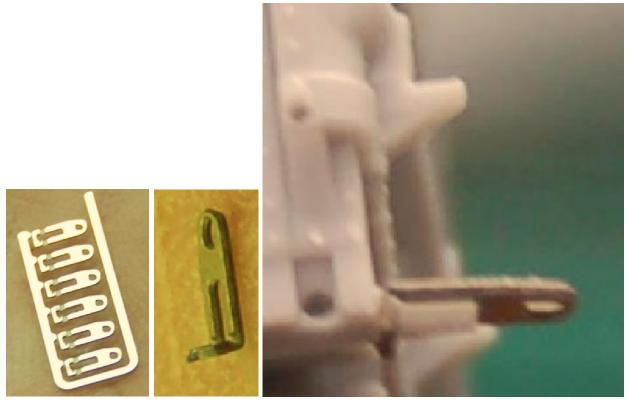
21. **Install the air hoses.** The air hoses are the two small rubber parts from the parts bag. They are inserted into the air hose brackets and secured with CA.



22. **Install train line junction part.** There is a small wire part with a hook bent into one end that goes into the hole in the back of the brakepipe reduction valve and loops around the train line. Insert the end of the wire into the hole in the casting and place the looped end around the train line and secure both ends with CA.



23. **Prepare and install the coupler lift bar brackets.** There is a small tab on the bottom edge of the car end that the cut lift bar bracket fits on. Locate the bracket and fold at the break line forming a 90-degree angle. Slide it over the tab on the end of the car, left side, and secure with CA.

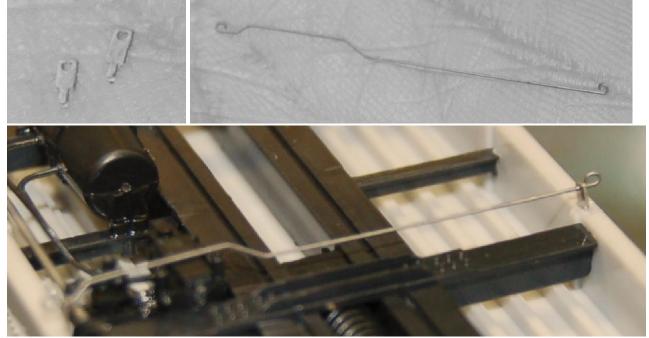


24. **Install the coupler lift bar brackets.** Locate the two coupler lift bar parts. There are two bends that will need to be made and both have break lines to aid in this task. The first bend is the top "loop" that needs to be bent down 90 degrees. The second is the lifter handle which also gets a 90 degree bend. When both bends are complete, fish the handle through the bracket and position the other end so the pin fits into the hole at the corner of the coupler box cover. Secure with CA.



25. **Install the release rod brackets and rods.** Locate the release rod from the wire parts bag. It is the wire that has loops on both ends and a few bends in it. Also locate the two small

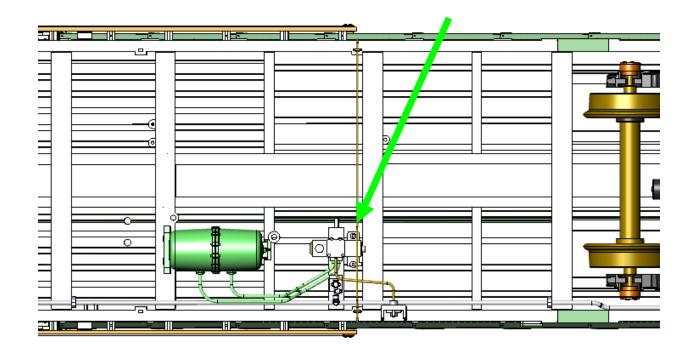
release rod brackets that are used to support the wire part. You will note that one of the brackets is slightly longer than the other. The longer one will be installed on the car body closest to the AB valve. You will need to drill two #80 holes in the car body to allow these parts to be installed. Refer to the photo to get the location. Slightly open one of the loops of the wire part and fish the brackets on the wire making sure that the longer of the two goes toward the end of the wire that has the offset bent into it. Insert one of the brackets into the holes you drilled and secure with CA, then do the same with the other bracket. When the brackets are in place, position the wire so that the loops are facing down (towards the track if the car was upright) and secure it with CA.



26. Optional but recommended: Install the trucks. At this point, to help protect the details of the underframe, it is recommended that you install the trucks at this point of the assembly using the large screws -- Screws B (See Page 3, 6mm Truss Head) Skip to step 45.

# ALTERNATE EOCC UNDERFRAME ASSEMBLY INSTRUCTIONS

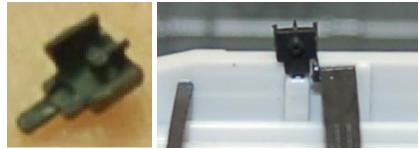
27. Locate the AB valve and bracket assembly. It should be installed into the two small locating holes towards the B end of the car. Orient it so the AB valve is toward the center of the car. Glue in place.



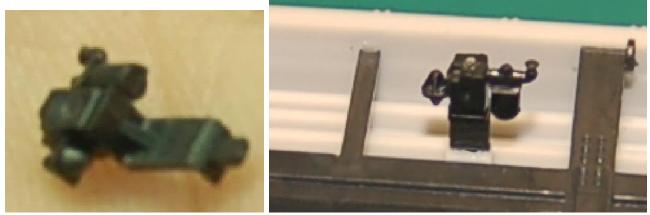
28. **Reinstall the underframe.** The underframe is keyed (one bolster pin is round and one is hexagonal), so when you reinstall it please pay attention to this to ensure proper mating of the parts. Carefully fit the underframe over the two springs and the AB valve. The underframe will be held in place by the truck and coupler pocket screws, so there is no need to glue the underframe to the body shell, however you can glue it if you choose to.



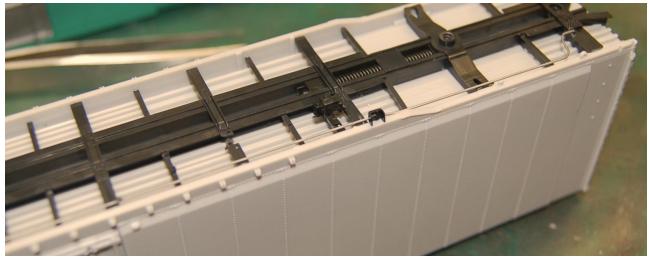
29. **Install the retainer valve.** The retainer valve is a small black casting that is a C channel shape with a lever in the front and a small hole in the back. It gets installed into the small channel in the side sill between the AB valve and the bolster. Glue in place.

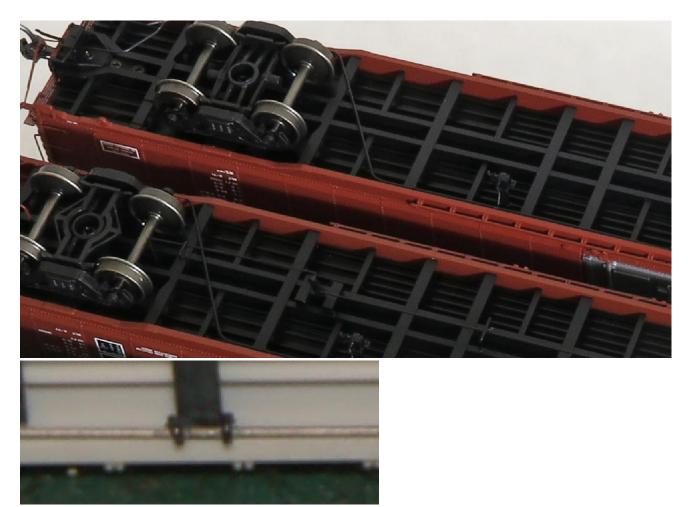


30. **Install the brakepipe reduction valve.** The brakepipe reduction valve will need to be installed into an oval slot in the body floor. Orient it so that the small hole in the casting is facing toward the outside of the car and glue in place.

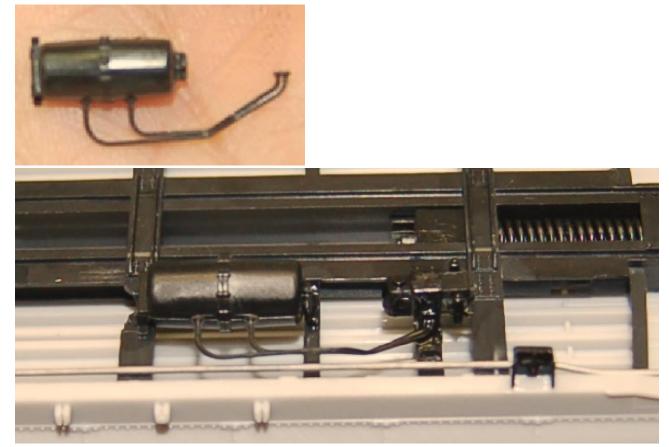


31. **Install the train line.** Open the wire parts bag and locate the two sections of the train line. The first section has an S shaped bend in it where it goes from one side of the car body to the other, and the second section is relatively straight. There are small mounting clips on the cross members of the underframe and mounting holes on the bolsters. Install both sections and secure with CA.

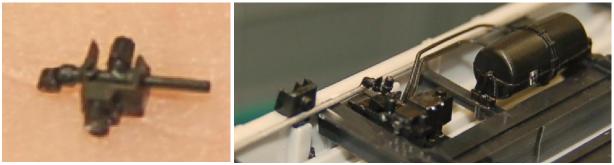


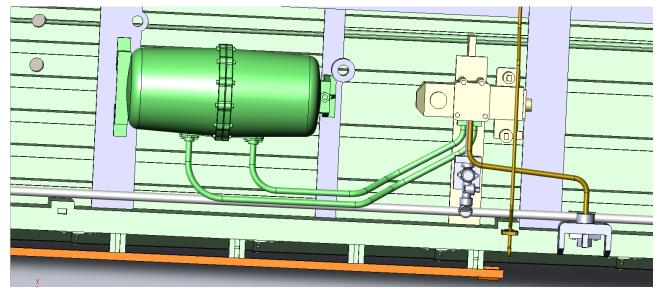


32. **Install the air reservoir.** There are locating pins next to the AB valve that the reservoir fits into. Glue in place.



33. **Install the dirt collector pipe.** From the small bag, the dirt collector pipe fits into a slot on top of the AB valve bracket. Orient so that the larger side of the pipe rests on the train line and glue in place.

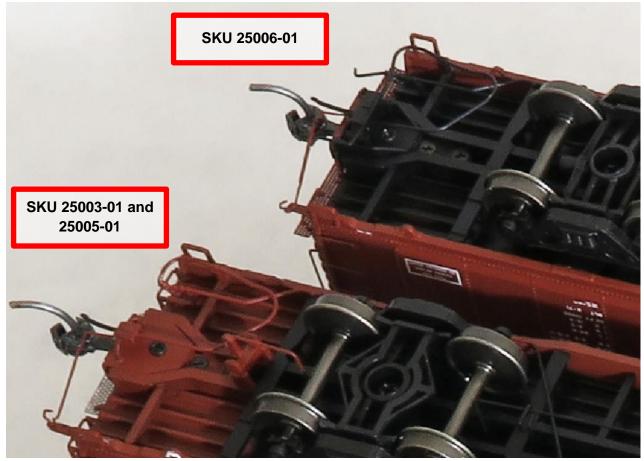




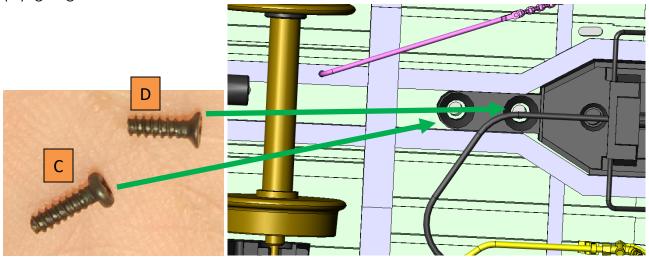
34. Install the chain support/brake chain assembly. The chain support/brake chain assembly installs into the slot in front of the bolster, and into the small hole in the center sill. Glue in place.



35. **Complete the train line.** There are two plastic "pipe" pieces that complete the train line. They fit into a slot on the floor and a hole in the bolster. Install one on each end of the car and glue in place. NOTE: You may want to wait until **after coupler installation** before gluing these parts in place.

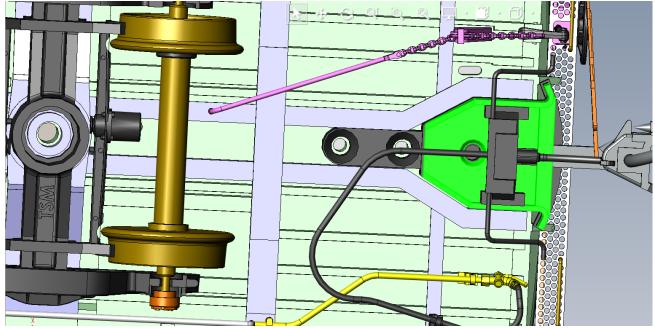


36. **Install the coupler box top.** Choose the appropriate coupler box for the version of car you are building. Also locate the mounting screws from the screw bag. (Screws C and D from Page 3) Screw C is a 5.8mm pan head and Screw D is a 5mm flat head. Insert the coupler box into the slot in the center sill and secure with the two screws, with the pan head screw (C), going into the hole closest to the bolster.

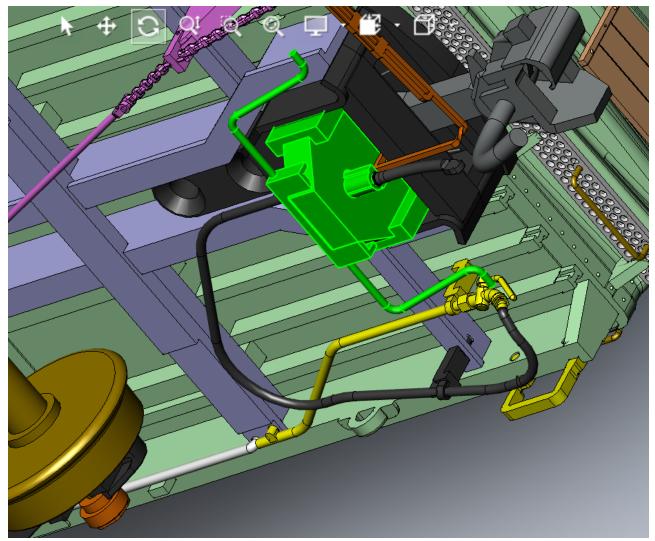


37. Install the coupler box cover. Locate the coupler box cover (the bottom part when the car is sitting on rails) appropriate for the coupler box used. Also locate the small screws (E)

that secures the cover to the box. You can install the couplers of your choice now if you wish however we typically suggest waiting until after painting to prevent the couplers from sticking.



38. **Install the air hose brackets.** Refer to the photo and locate the air hose brackets. These fit in the small hole in the coupler box cover located in the center. The longer side of the end of the bracket faces toward the end of the car. Glue in place.

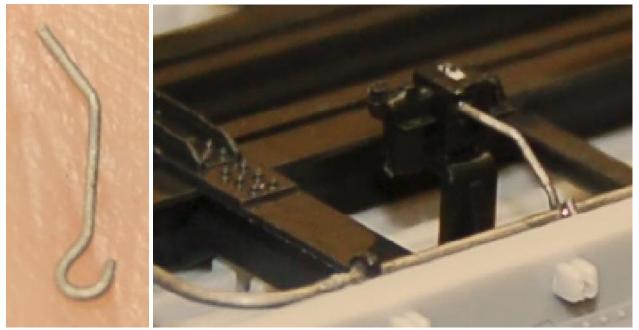


39. Install the air hoses. The air hoses are the two small rubber parts from the parts bag. They are inserted into the air hose brackets and secured with CA.



40. **Install train line junction part.** There is a small wire part with a hook bent into one end that goes into the hole in the back of the brakepipe reduction valve and loops around the train

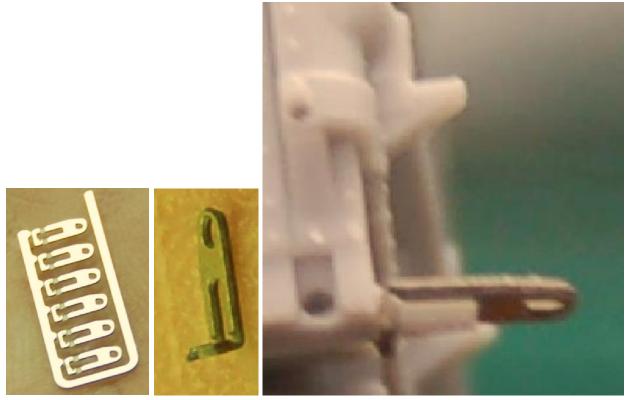
line. Insert the end of the wire into the hole in the casting and place the looped end around the train line and secure both ends with CA.



41. **Install the air cylinder assembly.** For cars with body mounted brake systems, mount the air cylinder assembly to the underframe.

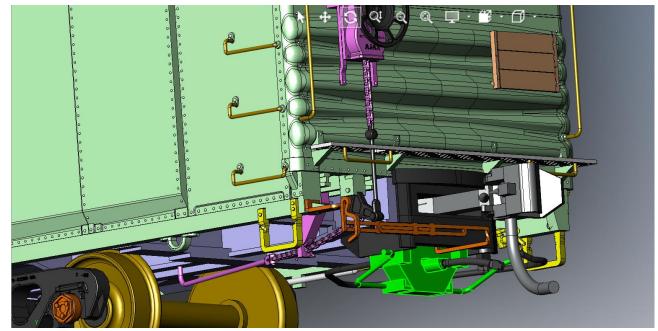


42. **Prepare and install the coupler lift bar brackets.** There is a small tab on the bottom edge of the car end that the cut lift bar bracket fits on. Locate the bracket and fold at the break line forming a 90-degree angle. Slide it over the tab on the end of the car, left side, and secure with CA.

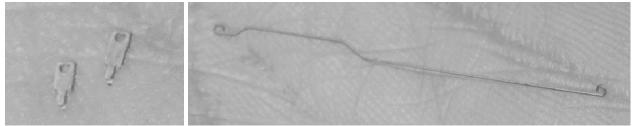


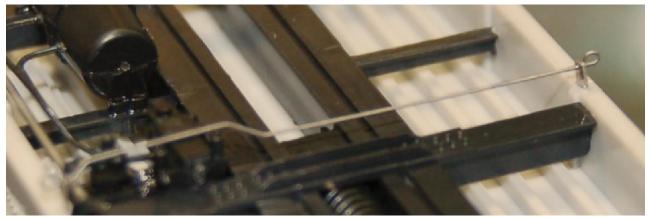
43. **Install the coupler lift bar brackets.** Locate the two coupler lift bar parts. There are two bends that will need to be made and both have break lines to aid in this task. The first bend is the top "loop" that needs to be bent down 90 degrees. The second is the lifter handle which also gets a 90 degree bend. When both bends are complete, fish the handle through the bracket and position the other end so the pin fits into the hole at the corner of the coupler box cover. Secure with CA.





44. **Install the release rod brackets and rods.** Locate the release rod from the wire parts bag. It is the wire that has loops on both ends and a few bends in it. Also locate the two small release rod brackets that are used to support the wire part. You will note that one of the brackets is slightly longer than the other. The longer one will be installed on the car body closest to the AB valve. You will need to drill two #80 holes in the car body to allow these parts to be installed. Refer to the photo to get the location. Slightly open one of the loops of the wire part and fish the brackets on the wire making sure that the longer of the two goes toward the end of the wire that has the offset bent into it. Insert one of the brackets into the holes you drilled and secure with CA, then do the same with the other bracket. When the brackets are in place, position the wire so that the loops are facing down (towards the track if the car was upright) and secure it with CA.



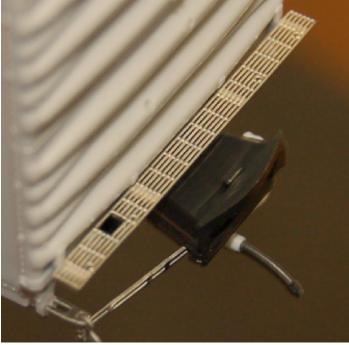


45. **Optional but recommended:** Install the trucks. At this point, to help protect the details of the underframe, it is recommended that you install the trucks at this point of the assembly using the large screws. Screws B (See Page 3, 6mm Truss Head)

This completes the underframe assembly for EOCC-equipped cars.

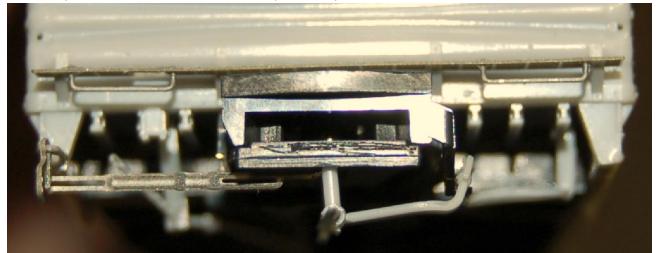
## CARBODY CONSTRUCTION:

46. **Install the crossover platforms.** Locate the etched metal crossover platform parts, and note there are several variations to choose from. The version that has the square hole in it will be installed on the B end of the car, whereas the "sister" part without the square hole will be installed on the A end of the car. Insert the platforms into the holes above the brackets cast into the car end and secure with CA. Repeat for the other end of the car.



47. Install the grab irons onto the underside of the crossover platforms. There are four straight grab irons with equal length legs that will be installed into the holes in the crossover

platforms. Insert the grab irons from the bottom of the crossover platform and make sure that they do not extend above the top of the platform. Secure all four with CA.

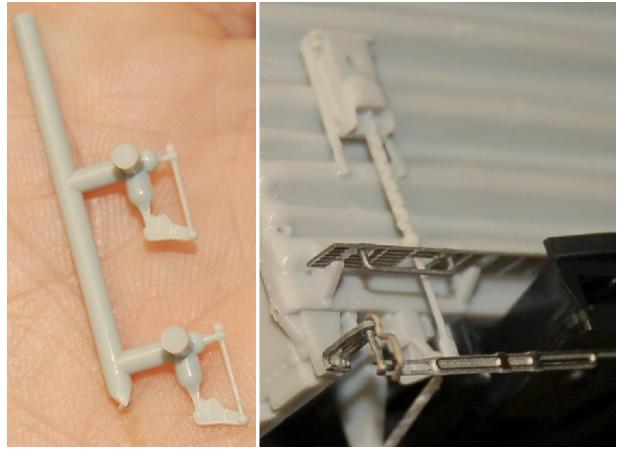


48. **Install the handbrake housing and chain part.** Select the handbrake ("brakewheel") housing with chain assembly that matches your prototype. Thread the chain through the opening of the crossover platform and insert the housing into the pre-drilled locator holes in the car end. Glue in place.



49. **Install the fulcrum.** The rod has a small round "ball" on the end of the casting. This will fit into the slot on the end of the chain coming from the brake wheel housing, and the

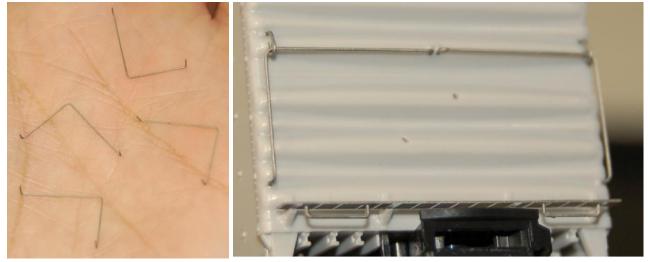
fulcrum fits into the slot on the floor of the car. After this is installed, glue all contact points. Also glue the chain from the chain support installed earlier to the back of the fulcrum.

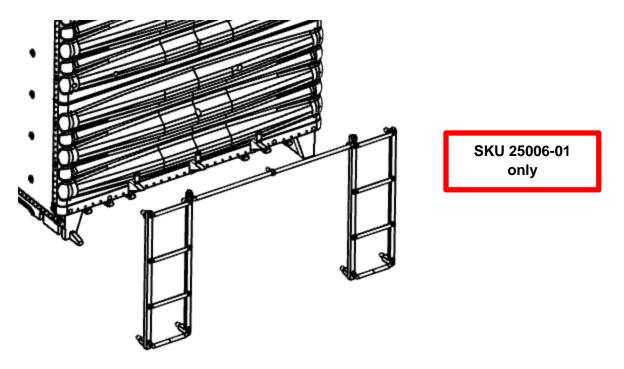


- 50. Install the brake wheel. Glue the brake wheel into the brake wheel housing.
- 51. **Install the four small corner brackets.** (Ignore this step for Tangent Undecorated Kit #25006-01) Locate the corner bracket parts. The small corner brackets are wire parts that have a loop on one end and are bent at a 45 degree angle. Insert the four bracket parts into the holes in the car ends and secure with CA.

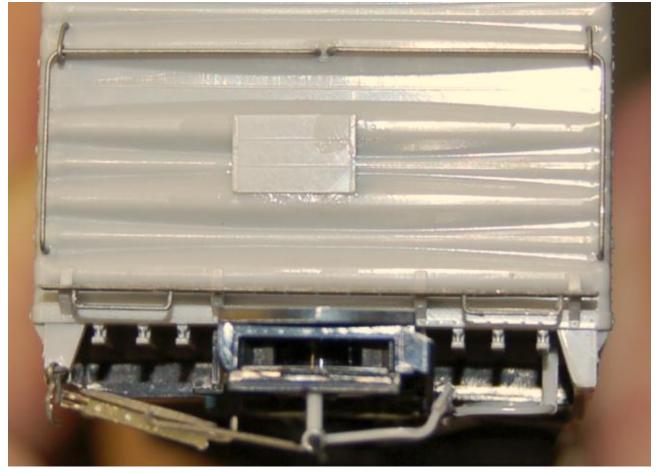


52. **Install the four end railings.** There are four end railings, one left and one right on each end. They are L shaped with one leg slightly longer than the other. The shorter leg is the vertical side. Thread the end railings through the corner bracket loops in the brackets and insert the ends of the wires in the holes in the car ends. Secure with CA. Alternatively, for Tangent undecorated kit #25006-01, install the plastic end ladder pats.

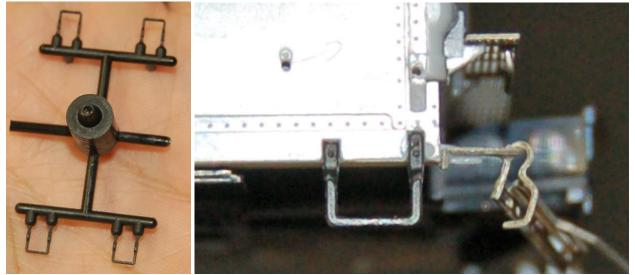




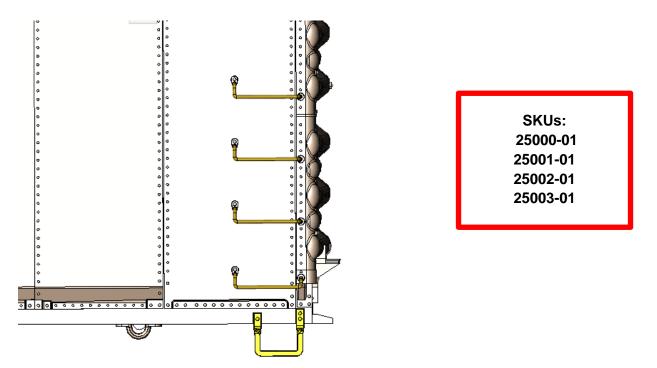
53. **Install the end tack boards.** Using the locator pin on the back of the end tack board parts, test fit the tack board and then glue the tack board part to the end of the car.

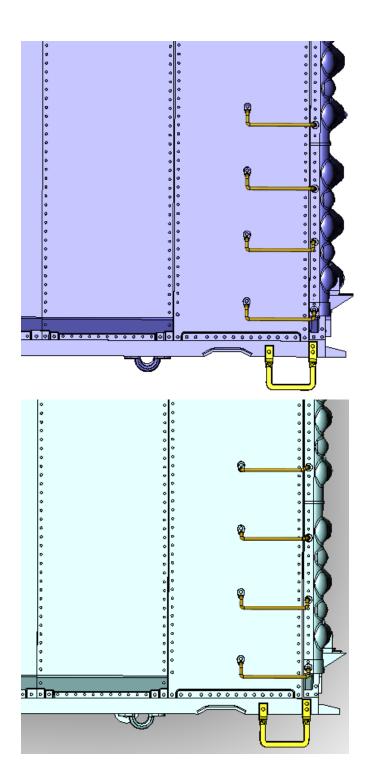


54. **Install the side corner stirrups in place.** Moving to the side of the car, the first parts to install here are the side corner stirrup parts. The stirrups have pins that fit into holes and the vertical legs fit in slots in the side sill. One leg of the stirrup is longer than the other with the longer leg going toward the end of the car. Insert all four and secure with CA.



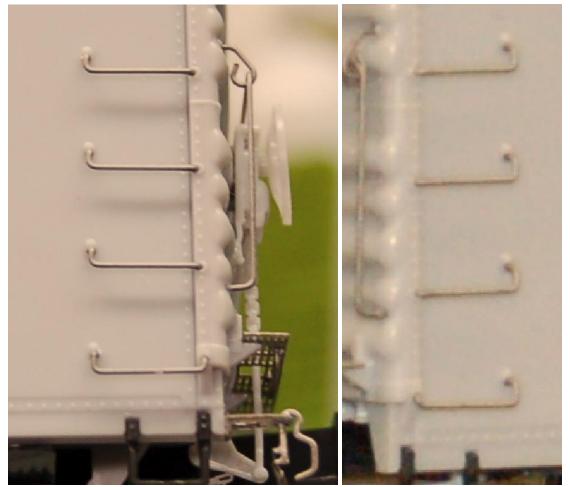
55. **Install the side grab irons.** There are multiple configurations and combinations of the wire side grab irons. Carefully inspect the wire parts and identify the correct grab irons for your kit build. To assist, look closely at the diagrams below for each version of the Undecorated kit. There are different grab irons for the left and right sides of the car. Secure all with CA.





SKU: 25004-01

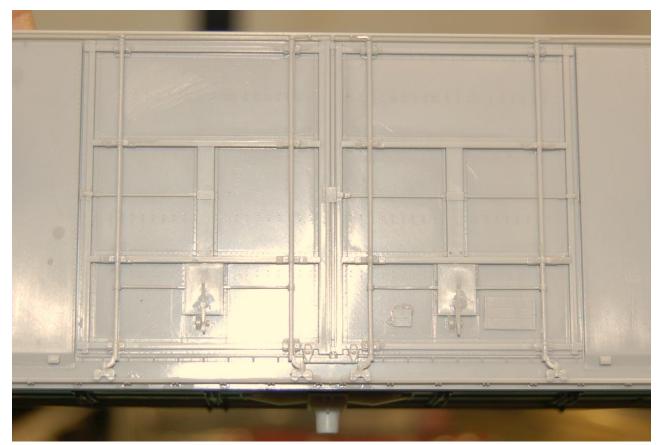
SKUs: 25005-01 25006-01



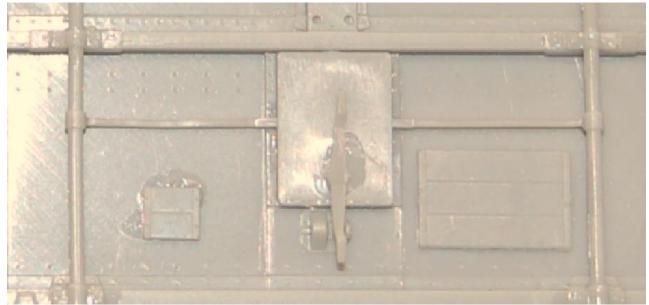
56. **Install the door tracks below the doors.** The lower door tracks have two triangular tabs in the center of the casting that will face upward when installed on the car. There are small pins on the back of the casting that fit into holes in the small standoffs on the car side. Start at one end and work your way to the other inserting the pins into the holes and gluing as you go.



57. **Install the door rods onto the doors.** You may want to hold off on this step if you plan to mask the doors for painting (most doors were unpainted aluminum although some railroads elected to paint them, especially during repaints). Be very careful when de-spruing the door rod assemblies as they are very fragile. They are keyed on the car body so position them and glue in place.



58. **Install the side tack boards.** Our kit includes several tack board part options. Validate which configuration of tack board is best for your prototype from photos, and then butt-join the parts to the sides of the carbody with liquid plastic cement.



59. Install the door handles. Glue the door handles in place on the doors.



- 60. **Install the roof to the carbody.** At this point you can install the roof, but you may want to wait until after the car is painted. All of these cars had galvanized roofs from Greenville, and many railroads when repainting the cars elected not to paint the roofs.
- 61. Install the journal caps to the axles. Install the journal caps onto the ends of the wheel axles.

This concludes the assembly.

# FINISHING UP:

62. **Paint the car.** We only have two suggestions for painting this car. The first we have already mentioned: wait until the car is painted before installing the couplers. Painting couplers could make them very "sticky" and not perform at their best. If you have had success in the past in painting couplers then disregard this suggestion! If the couplers are not installed, we recommend you stuff a small piece of paper towel into the coupler pocket to keep paint from getting inside. This is not absolutely necessary, but it will allow couplers to operate more freely.

This completes the assembly of our kit. After decaling and a bit of weathering, install trucks and couplers and enjoy your work!

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

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More images of finished cars are on the following pages.







