

Miniatures from the North CGR/CNR 36 Foot General Service Gondola Kit

Introduction (PLEASE READ THIS BEFORE DOING ANYTHING ELSE)

Thank you for buying this kit.

This is a new form of a limited run kit which is almost entirely 3D printed out of resin. When you finish, you will have a unique model that is extremely fine and accurate.

In this kit, the main body is printed using a curing selective shape methodology using UV light. In other words, the resin printed parts are sensitive to UV lights even when fully cured. The resin used for the main body has minimal shrinkage property and less tendency to warp. However, it is still printed with supports to maintain its shape and to allow it to be properly wrapped in the kit box. It is highly recommended to prime the main body to effectively shield it from any UV lights within a couple of days once the supports are removed.

The parts are **DELICATE** and **BRITTLE**. When you build this kit, it is suggested to do it over a piece of carpet or other soft surface in case something is dropped. When this material lands on a hard floor, it tends to crack or shatter.

The prototype for this model was built between September and December 1918 for the Canadian Government Railway as CGR 102000-102399 and became 126950-127349 when the CGR was incorporated into the CNR around 1921.

This kit comes with either an as-built K type brake system or the later Ajax brake system. Both systems are custom printed so that you only have to do as little extra piping as possible. Some the Ajax systems had their Ajax brake wheels replaced with the Universal style. As well, some of the Ajax systems retained the stem winder type of wheel system. It is best to have a picture of the prototype you wish to model if you wish to be accurate but failing that, just do whatever pleases you.

This kit does not include couplers but does include Bettendorf style trucks; Archbar with Simplex bolster upon request can be substituted. The truck side frames and bolsters are also 3D printed.

Be very patient. This is a craftsman kit. Enjoy it. It should give you 24 hours of building enjoyment.

Acknowledgements

Thanks to Brian Nicholson for helping measure the prototype at EXPO Rail museum. Thanks to Andrew Malette for writing most of the instructions and review.

All artwork and printing were done by Miniatures from the North. So you can blame them for any shortcomings.

Kit Contents

CNR 36' GS Gondola		
Parts		Quantity
Car body 3D print		1
Floor 3D print		1
Car end interior brace 3D print		2
Drop bottom door hand grabs		4
Grab irons straight		18
Grab irons drop		14
Brake wheel 5 rungs 3D print		1
Brake wheel Ajax 3D print		1
Brake wheel Universal 3D print		1
Brake vertical shaft support 3D print		1
Brake shaft base for Ajax housing 3D print		2
Brake vertical shaft base 3D print		2
Brake retainer valve 3D prints		1
Ajax brake wheel housing 3D print		1
Foot platform for Ajax style 3D print		1
Foot platform for vertical brake shaft		1
AB brake cylinder 3D print		1
AB triple valve 3D print		1
AB Air tank		1
K brake cylinder/tank 3D print		1
Brass strips for steps		1
0.032" brass wire, 5"		1
0.012" brass wire, 2.5"		1
0.015" Brass wire, 8"		2
Styrene 0.030" square 7"		2
Car weight		1
Steps forming tool 3D print		1
Bettendorf truck PR		1
Screws for trucks		2
Decal set		1

Recommended Items for Assembly

Fine side cutters or sprue cutters

Xacto knife with number 11 blade

Olfa utility knife

Double sided sanding disk in rotary tool (Use the sander mandrill and place two pieces back to back so that you can sand from both sides.)

Fine files

Fine sandpaper

Thin viscosity ACC

Small applicator for ACC

Number 76 and number 80 drill bits

1/16" drill bit to drill out holes for truck mounting screws

Optional: 1/32" O.D. Brass Tube - K&S SKU Number SKU: 815035 to provide an extension to the number 76 drill.

Light filler primer such as Sandable Primer from Dupli-color

Preparation

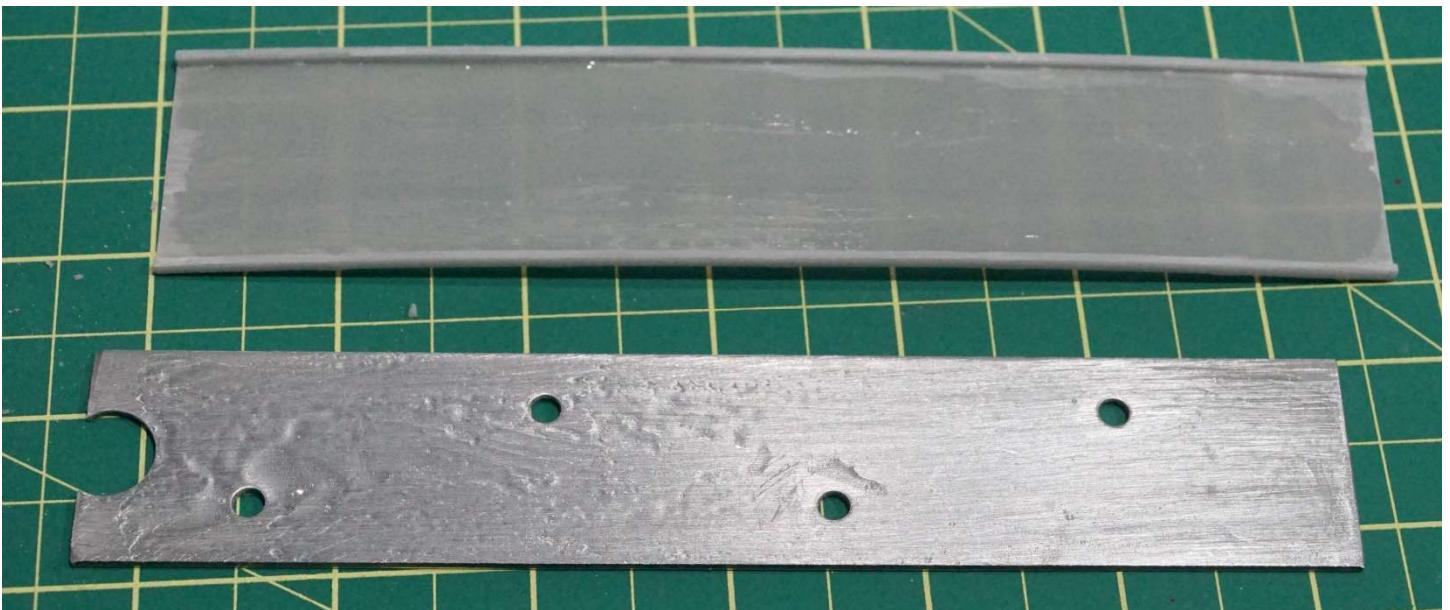
PLEASE READ through the instructions to familiarize yourself with all the parts. The main 3D printed parts are printed with supports. These supports have been left on the parts in order to protect them until assembly of this kit. They will need to be carefully removed in order to build the kit. Consider this process similar to cutting styrene parts from sprues. Please check all the pictures to make certain what you should cut away because once you cut, you can't go back.

Open the box and carefully unwrap the parts. Check to see if all is in order.

Assembly

The Floor

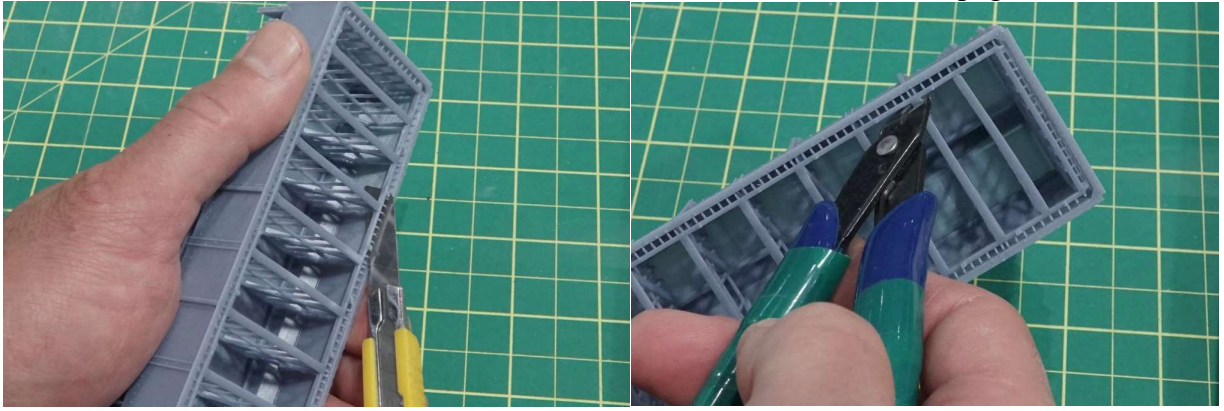
To start, I use 5 minute epoxy to glue the floor to the supplied car weight. Carefully centre the steel plate over the smooth side of the floor and add weight to ensure a tight bond. The weight should be well glued by the time we install the floor inside the car body.



The Body

This is what the body starts out as. It is printed with internal bracings, connected to the car side and ends at rivet head locations. Before starting to cut out the bracing, note that the body is brittle and cutting out the braces in the order as described is important to not damage the part, especially at the corners.

Start by cutting the side supports as shown. Do not attempt to cut the ends just yet, the pressure created by the blade could damage the car end. Then cut the cross braces using a flush cutter. Here do not cut the end brace; the pressure from the cutter blade would break the car end.



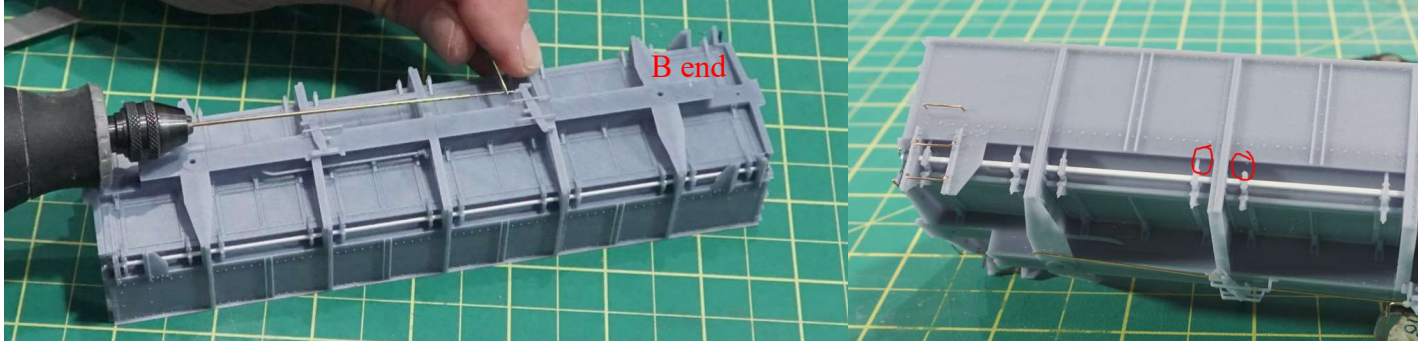
Then carefully remove the cross supports by breaking them out

Once the interior cross braces are taken out, you can carefully finish to remove the end bracing. Additional supports need to be shaved off on the car underbody, using a sharp Xacto knife and flush cutter. A light sanding might be needed to completely remove the scare. I use a sand paper glued over a piece of wood block to sand the top of the car sides.



From this point on, the main body side walls are unsupported. If you think you will not finish the assembly of the kit within a couple of days, It is highly recommended to prime the car body at this step or any from this point on to effectively shield it from potential UV light exposure if plan to put it aside for completion. This car prototype has thin wall sides and could easily warp if left unprotected. I recommend Sandable Primer from Dupli-color. It has a light filling property that helps hiding printing lines and light scratches without hiding details and provide a very good base for final color coating.

Drill out the body for adding brake rods and hand grabs. There are pilot holes everywhere. For the brake rods, use a #77. It could be difficult to drill out the holes in the brake levers because of the low angle. I use a 1 mm brass tube from K&S metric series, sku # 9830 and ACC a number 77 inside the tube at one end. If you are comfortable to use a motor tool instead of a pin vise, you can use a small piece of brass to hold and align the drill.

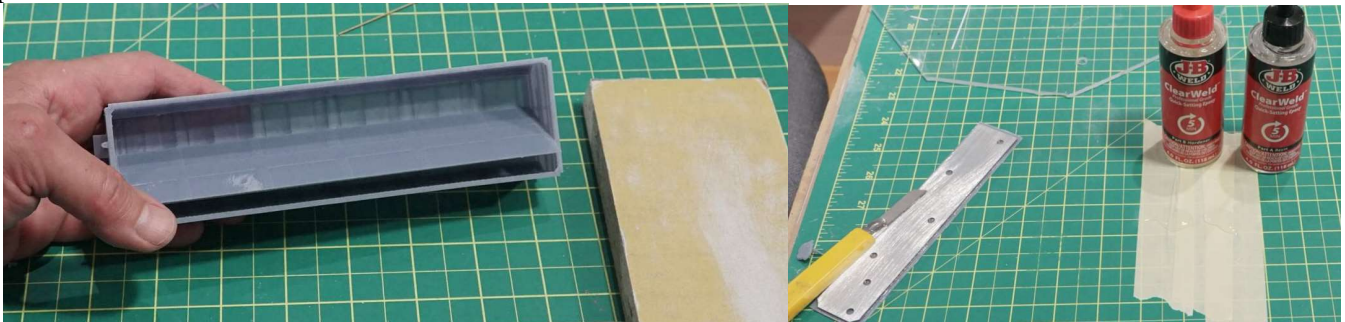


For the hand rail, you can use a #79 drill. See photo of finished model at the end to locate.

At this point you can also slip through the 0.030" styrene rods on each side. Here, it is recommended you acc the rod in place only at one brace, at the center of the car. The reason to eliminate the risk of having the styrene rod to curl because of the expansion variation between the resin body and styrene. Do not cut flush the rod and leave about 1/16" on each ends to later on add the handles. Once the rod in place, you can also remove the tinny supports between the car sides and the door expanding locks

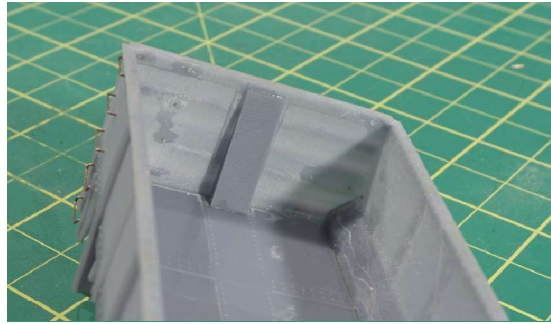
Install the floor

The floor and the weight assembly should be ready. You can add the floor just before you stop for lunch or supper.



Test-fit the floor inside the car body and do a light sanding if required.

Mix another bath of 5min epoxy, apply a thin coat on the other side of the car weight then put in place inside the car body. Once the epoxy has set, you can add the end bracing



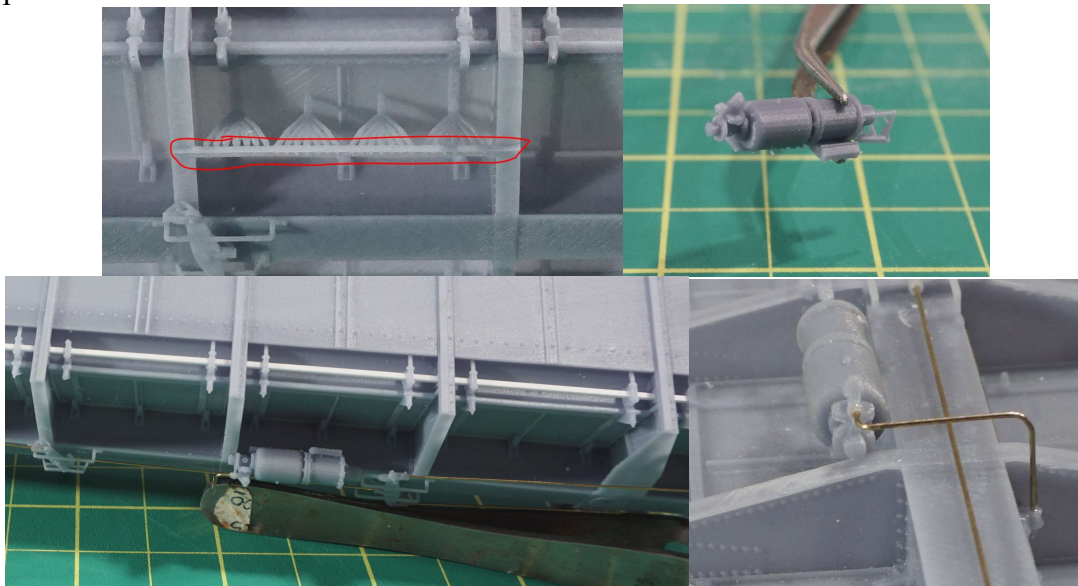
Adding the details

At this point you should decide which version of the car you want to build.
The 3 options are:

- 1- Original K brakes with vertical shaft for brake wheel
- 2- AB brake with vertical shaft for break wheel
- 3- AB and Ajax housing for brake wheel

Original K brake gear

The only car underbody modification that needs to be done to accept the K brake is to remove the printed angle brace that supports the AB air tank

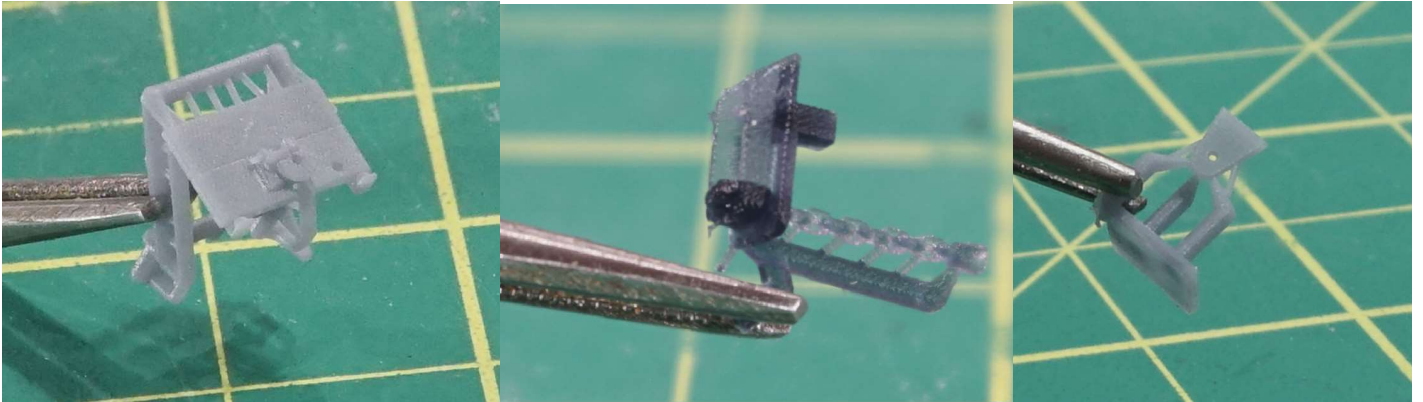


Use the photos to locate the K brake details and use a piece of 0.016" wire to connect the brake cylinder to the printed T of the main air line

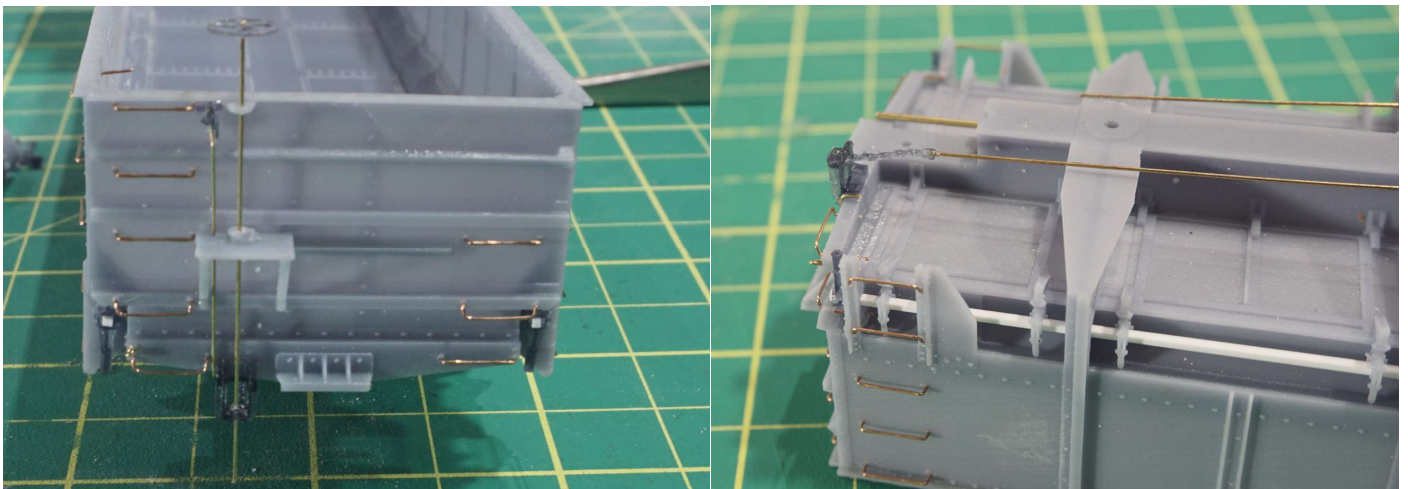
Vertical brake shaft

Important: The brake wheels (Ajax or vertical) are located on the B end of the car. The B end can be determined by looking at the brake levers on the car underbody. It will be on the same side where the brake lever has 4 clevises.

Locate the in the detail parts bag, the wooden brake platform, the shaft base and the top shaft holder.

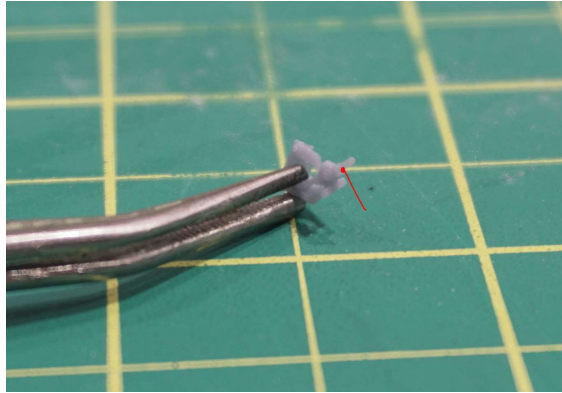


It is recommended to leave the supports on the parts to use as a handle to glue them on the car body. Once set, the supports can be taken out and scars removed with a small blade and nail polishing file. First drill out the holes for the brake wheel shaft with no 77 drill. The shaft base also have a printed on chain, drill (not completely through) with number 77 the clevis at the end of the chain. Start by gluing in place the platform, use the photo to find the location. Then, using a piece of 0.016" (same to be used for the brake wheel) align the top and bottom shaft supports, glue in place. Do not glue the shaft at this time since it will be inconvenient to manipulate the car during the construction.



At this point, you can add the brake rods (0.016") and air line (0.032"). Use the photos in the AB brake description to locate where these go.

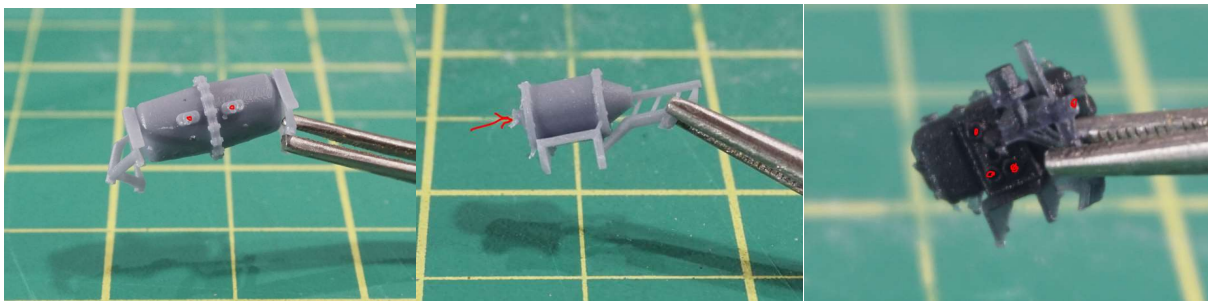
The brake retainer valve was located on the left (looking at the car) with the wood deck. Use a no 79 drill and open up the pipe fitting at the bottom of the valve. Glue the 0.012" wire before installing on the car. Use photo above to locate.



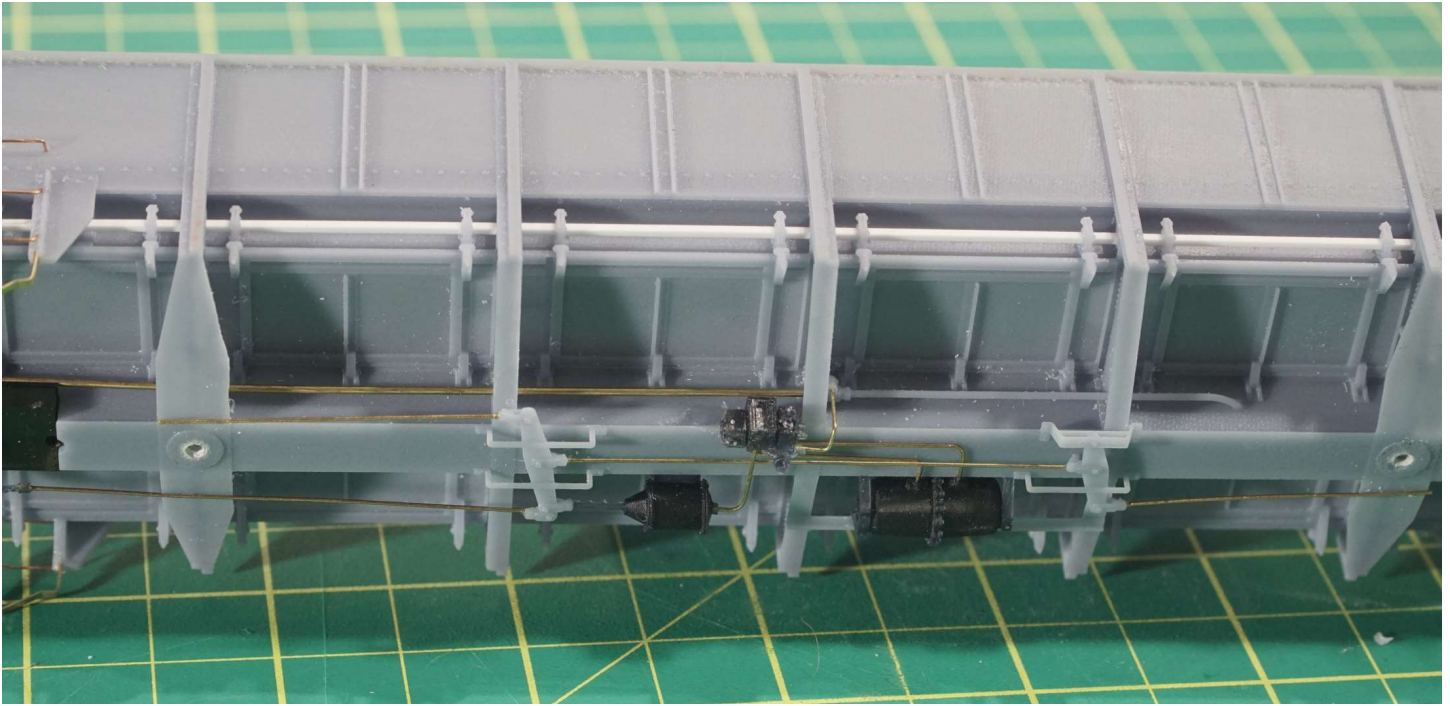
AB Brake

The cars were upgraded at some point with AB brakes, some may have kept the vertical break wheel for some time. Probably anytime in the 40's thru early 50s'.

The AB brake system consists of 3 parts to be added on the car underbody. The air tank, brake cylinder and the triple valve. Use the photos to identify them and locate in the detail part bag. The photo shows in red the place where the holes should be opened up with a drill no 77.

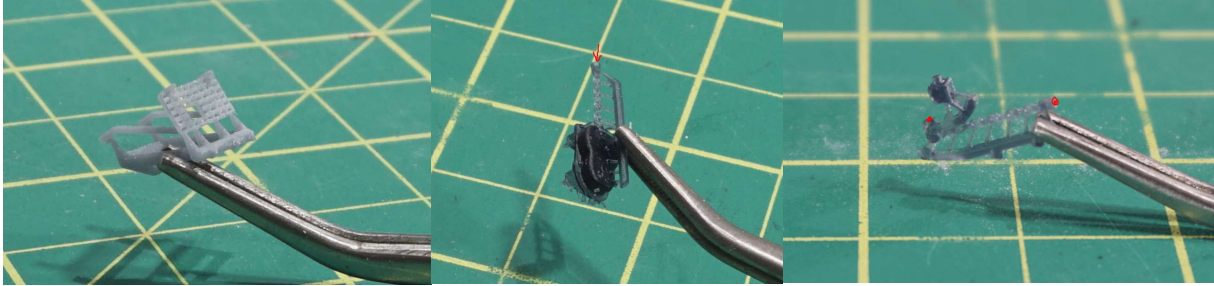


The next photo shows where to glue the AB parts with piping arrangement as well as the brake rods between the levers. Except for the air line, which uses a 0.032" rod, all other use 0.016" rod.



Attach pieces of **0.016" Rod** to the **Brake Levers** and the **Bolsters** with ACC. Shape the **0.016" Rod** to form the **Pipes** that go from the **Triple Valve** to the **Air Reservoir** and the **Brake Cylinder**. The pipes going to the **Air Reservoir** are in the two holes closest to the frame of the **Triple Valve**. Check the photo above to see where these pipes go. Glue these in place. Finally glue a piece of **0.016" Rod** between the **Brake Levers**.

Ajax Brake Wheel Housing



Locate in the detail parts, the open grid foot platform, the Ajax brake housing and the bell crank. Open up the holes in the clevis at the end of the chain and the bell crank with a no 77 drill.

The Brake End Details

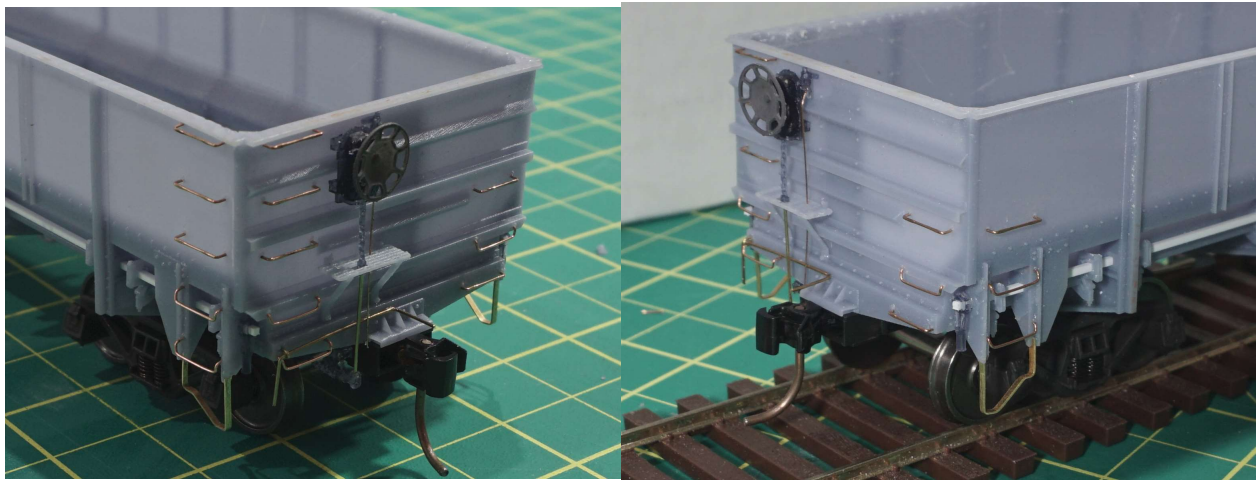
The next photo shows the location of the end details. Start by gluing in place the platform. You will have to file off a couple of rivet heads where the bottom brackets are attached to the car. Next, align the Ajax housing with the clevis going through the platform and glue in place. Next, add the bottom lever with the rods (0.016"). This photo shows the Ajax system with the Universal brake wheel, The Ajax break wheel is also included in the kit.



The Grab Irons

Tilt the body so that you view it from the bottom. Look at the ends of the sides and you will see Small **Bolt Heads** where the **Steps** are. Beneath these **Bolt Heads** are **Small Indentations** where you will need to drill number **79 – 80 holes**. These can be difficult to see. An Opti-Visor or some other magnifying device helps greatly to locate these indentations. Use a number **78 – 80** drill bit to drill out the holes for the grab irons where these indentations are. If you let the drill do the work and not force it, it should not break. Do the ends in the same way.

The **Drop Grab Irons** are always located in the **Lower Two Sets of Holes**. Place the **Drop Grab Irons** in two sets of the **Lower Holes** in the **Steps** and on the **Ends**. ACC in place. Place the **Straight Grab Irons** into the **Holes** above the **Drop Grabs** and ACC in place. They should protrude out about 4 scale inches.

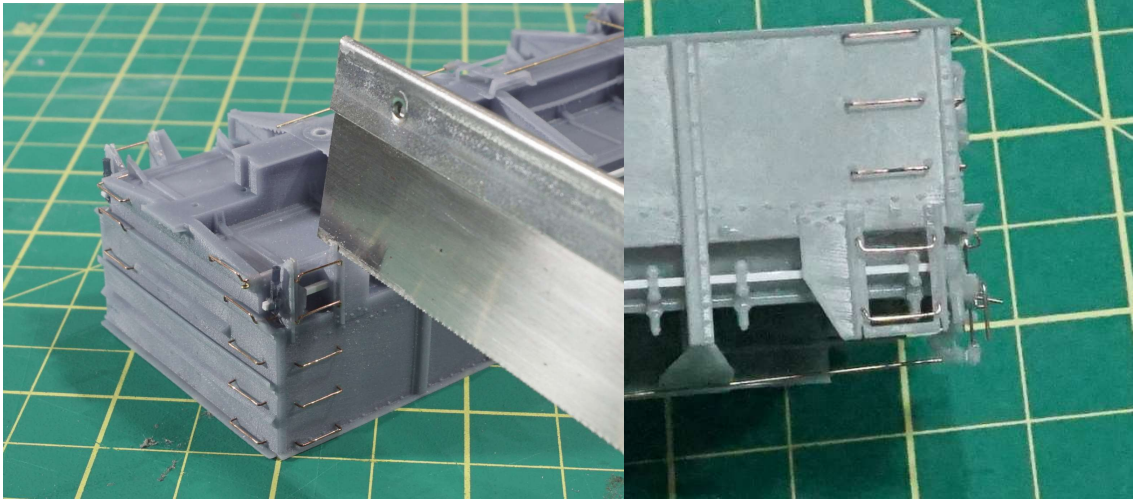


Cut the **Extra Wire** from the **Hand Grabs** that protrudes into the inside of the **Body** using side cutters or a rail snipper. In some cases you may wish to leave a small nub to represent a rivet head.

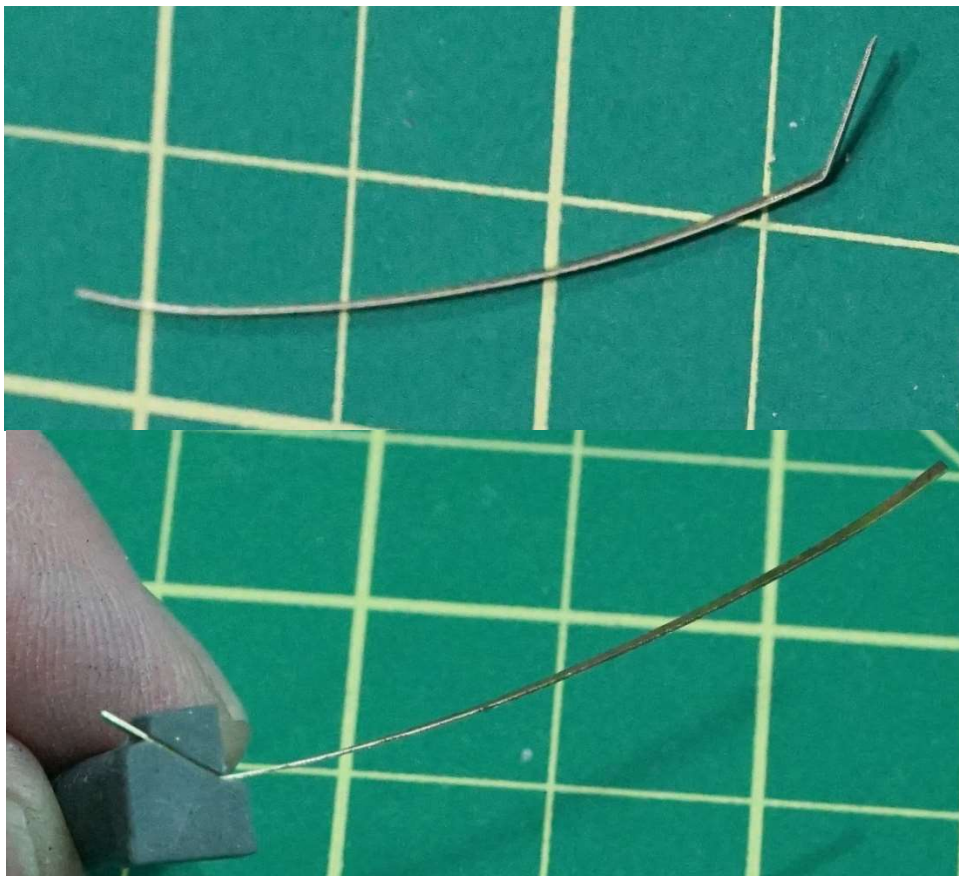


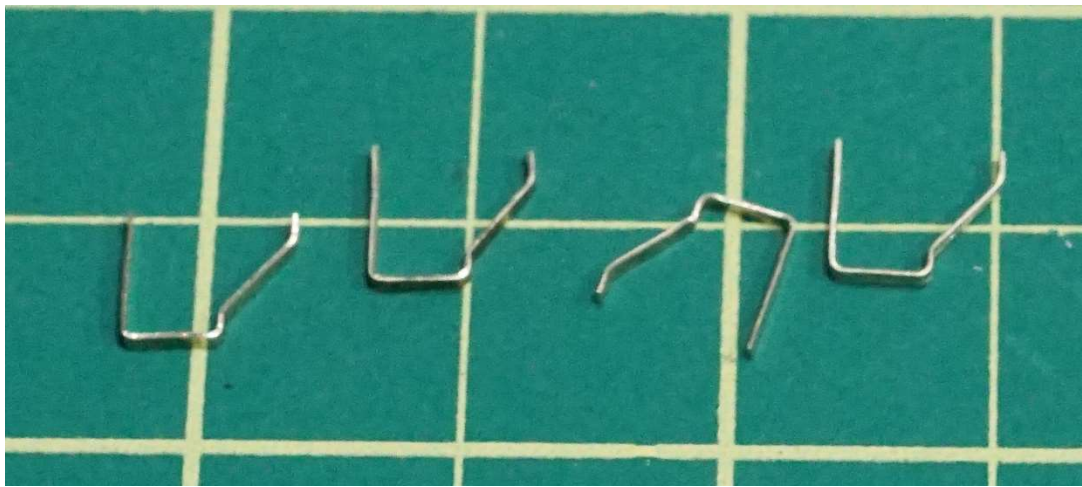
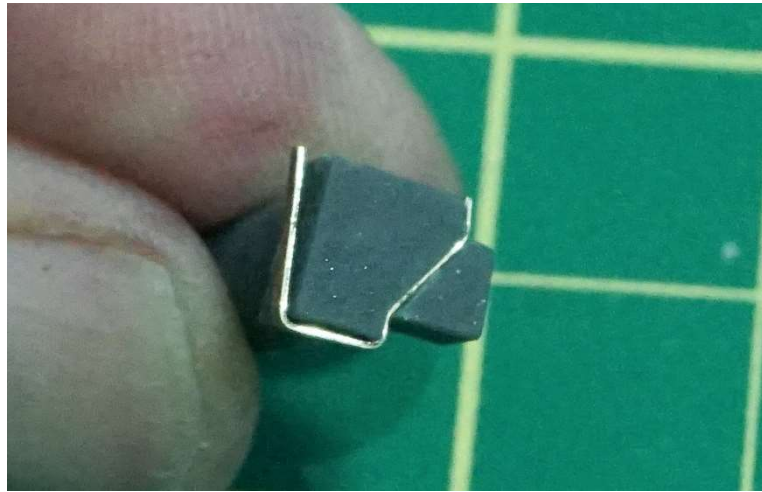
The Steps

Very carefully and gently, draw a **Razor Saw** across the **Lower Step Frames** as shown in Figure 20. You can use your thumbnail as a brace behind the **Step Frame**. You should end up with slots as shown in the picture on the right. These slots will be for the **Stirrup Steps**.

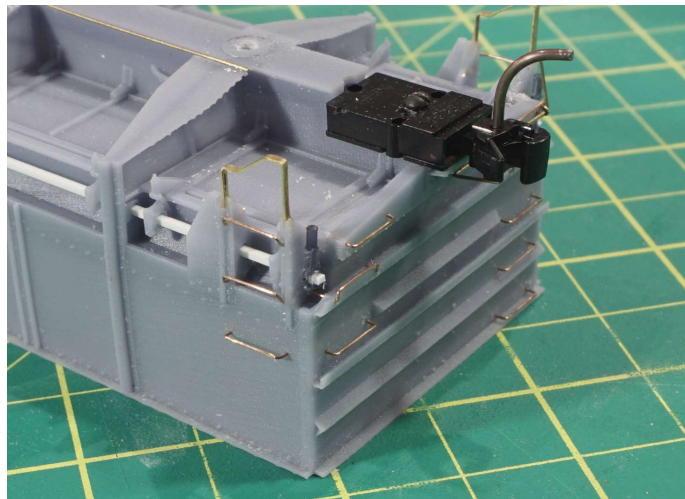


Each **Strip of 0.010"** brass should be long enough to result in **2 Stirrup Steps**. Form the **Stirrup Steps** using the included **Fixture** leaving about 4 scale inches more than is needed. Start by making a small bend and inserting the strip into the fixture. Then work your way around the fixture. You will need four of them.





ACC the four **Stirrup Steps** into the **Slots** you made in the previous step. Note that the angled part of the Stirrup Step faces into the middle.



Photos of the finished models

K brake and vertical shaft brake wheel (with optional Archbar trucks)



AB Brake with Ajax housing and Universal wheel

