RESIN CAR WORKS
RCW
P.O. BOX 42
BYRON, IL 61010
Freight Cars of Every Description

Kit #19.2
PM/C&O 1930
40' Steel Auto Cars

Introduction

Thank you for your interest in Resin Car Works and this kit. Resin Car Works is not a business in the traditional sense. Its purpose is to share in the fun of prototype railroad freight car modeling and their operations with others by providing unique and different equipment that is not readily available. Several friends assist with various production phases, so it is not quite a one-man operation. To list a few who helped with the production of this kit I would like to thank Tom Madden for the gorgeous castings; Ryan of National Scale Car for the decals; Jerry Hamsmith for the instructions and to Eric Hansmann the keeper of the website and blog.

This is a "CRAFTSMAN" level resin kit and its construction should not be attempted by anyone who has not built similar types of models. The kit consists of a one-piece resin body, floor and detail parts; Tahoe Models double truss side frames; various Tichy parts; and decals. The modeler will have to supply all other parts to create a finished model such as couplers, grabs, stirrups, wire and wheels. See the Resin Car Works website (www.resincarworks.com) for kit extras, including more prototype information and photos.

Warranty

All sales are final. There will be no exchanges or returns. Resin Car Works will replace any part(s) found to be defective due to manufacturing or shipping to the original purchaser within the first 30 days after shipment. The damaged part(s) must be sent back with your request for replacement. As these are limited production kits, do not ask for replacement of parts that you damage or lose after the 30-day period.

Liability

Resin Car works will not be responsible or held liable for any and all personal injury and/or health problems, short and/or long term, which may result from the use and/or misuse of tools, adhesives, materials, castings, paints or any other product(s) used to construct and/or contained in this kit. This kit contains polyurethane castings. Although non-toxic in its cured state, dust is created during filing, sanding and drilling. Your workspace should have air circulation and/or ventilation. Always work in a well-ventilated room. Wear a dust mask or respirator and safety glasses for protection. Always wash your hands when you are finished working.

History

The Pere Marquette ordered 2000 steel automobile cars in 1930. Some were constructed by Pullman Car & Manufacturing Company (1500 cars) and placed in series 90350-91849. The remainder (500 cars) were built by Pressed Steel Car Company and placed in series 91850-92349. The PSC cars were equipped with end doors and Chicago-Cleveland radial roofs. The Pullman cars lacked end doors and had Hutchins roofs. This kit creates a model of the Pullman car. In 1947 the Pere Marquette was merged into the Chesapeake & Ohio. PM cars that were relettered C&O were also renumbered by putting a "2" in front of the original PM number.

Instructions

General

It's recommended that before you start construction that you familiarize yourself with the additional information and photos on the Resin Car Works website www.resincarworks.com that pertain to this kit. You should also read the entire set of instructions to familiarize yourself with all the steps needed.

- **First, give the resin parts a good cleaning with Dawn and a toothbrush to remove any mold-releasing agents. A light sanding of joints also helps parts to bond.**

- **The cast parts are best attached with ACC. When the term "cement" is used in these instructions, it refers to ACC. ACC is a strong adhesive which dries quickly. It can easily attach a part where it is not supposed to be. It will glue skin. Be careful. Place a few drops on a plate of glass and use a wire or pin to transfer small amounts of ACC to the area to be joined. Always wear safety glasses. ACC debonder is a useful tool for removing smudges of ACC from surfaces where it should not be. Place a drop on the offending spot and wipe up.**

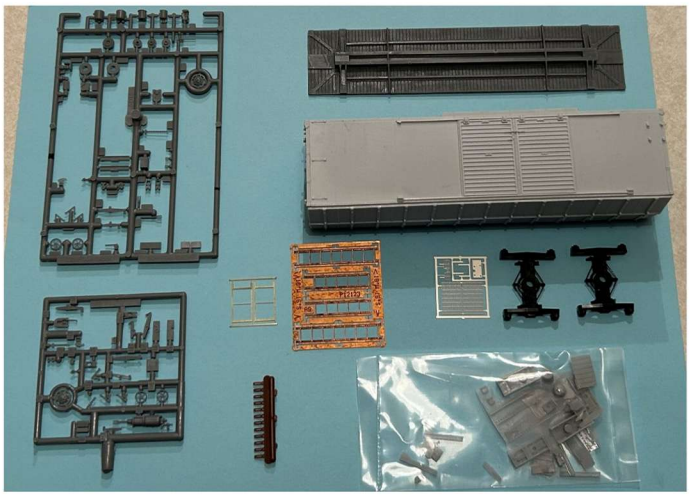
- **GOO or other such products are not recommended for construction except in small quantities, as it will soften the casting material.**

- **When a measurement is given, it is in prototype feet and inches.**

- **When the word "scrap" is used, it is referring to an item that the modeler is to supply.**

Kit Contents

RCW kit #19.2



The RCW parts for the kit include (starting at the upper right and going clockwise):

- Floor/underframe
- One piece body
- Metal laterals, supports, ladders, brake step, and end running board supports
- Tahoe truck frames
- Bag of resin detail parts
- Tichy turnbuckles
- Tichy K brake set
- Tichy AB brake set

Not shown are the decals for the car and the metal running board.

RCW kit #19.2

The flash on the detail parts is quite thin. As such, some of what is shown here could be still attached together and others not.

The parts should be self-identifying. There are four cross ties to be added to the center sill as well as covers for the bolsters and cross bearers. There are parts to create the brake components and a cylinder support. There are both large and small tack boards. There are multiple retainer valves and a dirt collector. There is a power brake housing with handle. Finally, there are a pair of coupler boxes.

Construction

Underframe

After cleaning the resin and removing the gates from the body shell, sand the floor and inside the car body ensure a good fit. Add approximately 3 oz. of weight to the floor. Use whatever is your favorite type of items from the scrap box. Steel washers or nuts, flat lead strips, or tire weights are possible choices.

Clean up the coupler pockets provided and narrow the lids as necessary to fit. *(If using a different coupler box/coupler, adjust appropriately for those parts.)* Then attach the pockets to the underframe and drill and tap holes for 2-56 screws for the trucks and 0-80 screws for the couplers. The kit supplied coupler boxes will accept only Kadee No. 158 semi-scale Whisker couplers.

A #50 bit was used for the bolsters and a #56 for the coupler boxes.

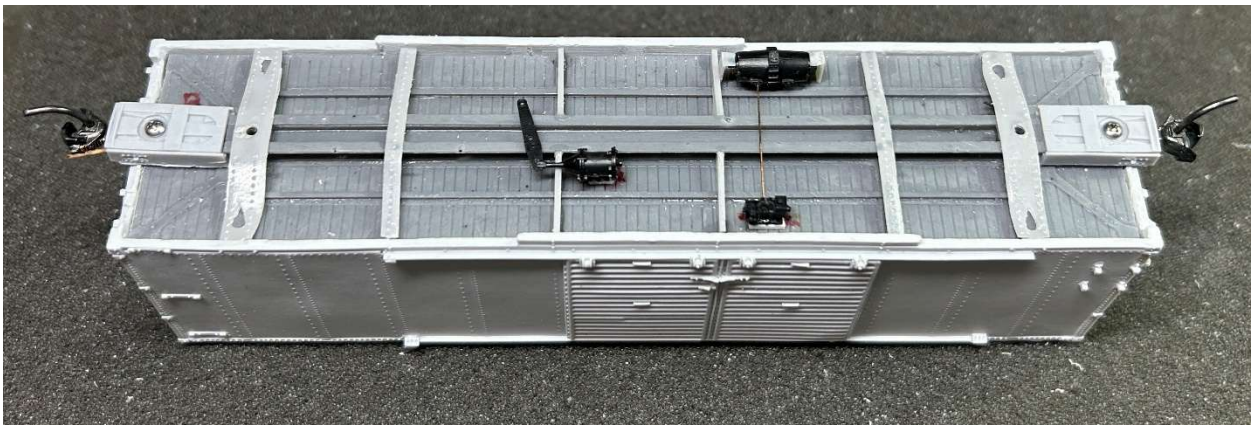
Refer to the photo below and determine the location of the cross-ties and brake components. Fit and cement the bolster covers and the major crossbearer cover plates. The bolster covers could extend over the center sill or you may decide to make separate pieces for each side. In any event, trim all caps as necessary. Test the coupler height with the Tahoe trucks provided in the kit. Attach the washers provided on the Tichy sprue over the bolster holes you have drilled if necessary.

Fit and cement 4 minor cross-ties to the center sill. They are placed with the protrusions under the center sill flange with the channels facing outwards towards each end of the car. If adding the train line to the car, do so while placing the cross-ties to make the drilling of the holes easier. Test fit the floor to the body and modify as necessary for a good fit.

Photo shows the couplers, cross-ties and bearer and bolster caps. The B end has been marked.

Moving on to the brake components, there are three sets provided – two AB sets and one K brake set. You can use the cast resin items or those on either of the Tichy sprues. First, detach the parts and then drill out all the holes needed for piping. *(If you decide to use a different group of brake components, prepare them instead)*. A CalScale AB set was used for the AB system illustrated below.

Create supports for the reservoir and the control valve. The reservoir height from the floor should be determined by the ability to have the pipe connects just clear the center sill. The control valve should sit directly across from the reservoir. Create the brake cylinder from the parts provided. Add a long brake lever to the piston. Care should taken in the alignment to be sure the lever is parallel to the floor. Note that there is a third lever in the brake configuration. (See photos below). Also be sure to drill out the hole for the cylinder to triple valve pipe on the rear of the cylinder. Once complete, cement it to a bracket of your choice. Now install all the connecting piping using 0.010" wire. The dirt collector (Tichy sprue or resin part) can also be added to the control valve if desired.



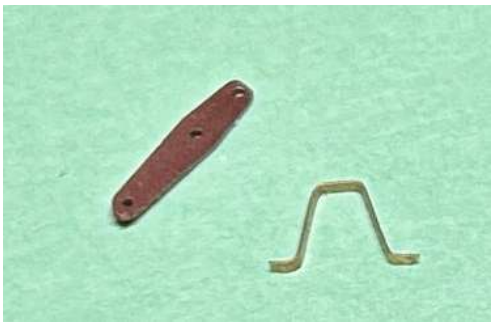
Illustrated are the positions of the basic brake components and the cylinder/lever combination.

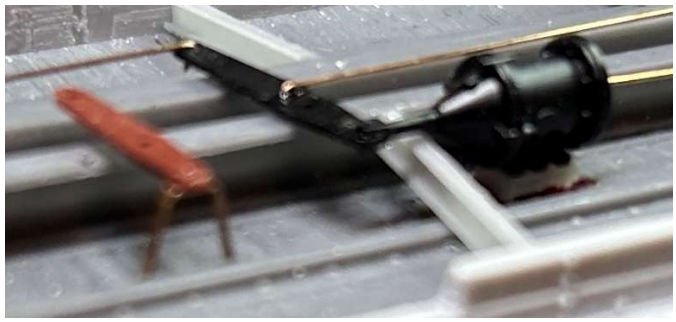
This particular prototype had both a slack adjuster and a third brake lever that augmented the torque created by turning the vertical staff brake wheel. The photos below show the creation and the placement of those items.

The overall finished brake system showing pipes, rods, slack adjuster, and extra brake lever.

The slack adjuster is a Yarmouth part but could be created from scrap styrene. This image corrects an earlier instruction that showed an improper installation. This photo shows the correct orientation

A short brake lever was used for the slack adjuster. The slack adjuster here is a Yarmouth (#508) part, but can be made by glueing 2” x 4” bits approximately 14” apart onto the center sill and then a 4” x 18” cover of 0.010” styrene over the top of the bits and glueing the lever at a slight angle inside. Holes can be made in the styrene cover with a pin if desired, but the detail cannot be seen when the car is in service.





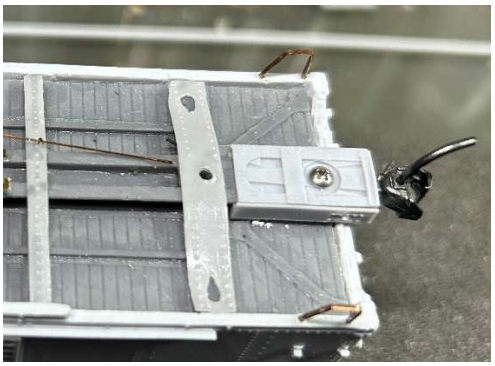
The parts used to create the augmenter are a long lever and a section of 0.010” x “0.030 brass.

The third lever was another long one from a second CalScale AB set. The lever needs to be at the same height as the lever off of the piston. In the build shown, that was 15” from the car floor. A piece of 0.010 x 0.030 brass strip was bent to an A shape as per the prototype and glued to the car floor just inside the stringer. The lever was then glued to the A frame. A length of chain was run from one lever to the other. The distance between the two levers is just short of two feet. Chain was cut slightly longer than the distance and glued to each lever.

Add the brake rods with 0.0125” wire. If desired, use the Tichy turnbuckles with one end removed as clevises. Also attach the brake cylinder lever to the third lever with a short section of 40 links to the inch chain (Builders in Scale #250). Add the lever guards with 18” grab iron material. This completes the underframe.

Body

As this is a one-piece body kit, most of the hard work has been done in creating the basic car shell. Clean the resin parts of any flash and drill the holes for the various parts. Use a #78 or #79 drill for all the grabs and brackets, and #76 for the sill steps. You can insert the floor into the body at this time or wait until painting. Please note that the body does have a designated B end – where the brake step stations are cast onto the shell.



The sill steps should now be marked and added using A-Line Stirrups Type B (#29001). Brass strip could be used instead if preferred.

Remove the kit provided ladders from the fret and carefully bend the stiles. Before bending, the holes at the bottom of the end ladder stiles should be slightly enlarged with a #78 drill bit for the addition of the drop grabs that will serve as the lowest rung. The ladders are slightly too long compared to the prototype as each rung is 16" distance from the others. On the prototype, the last two rungs are 16" apart but all others are 15 1/8" apart. Other than building your own ladder, the provided ones are the closest to be found.

The side ladders were attached to the car by cutting off the "pins" but leaving the bump at the top and bottom of the ladder and then drilling holes for the center pins astride the cast on supports. Those pins go into the holes and the bumps rest against the car body. The pins could be left on the ladders and six holes drilled instead. The ladders were affixed with AMMO Ultra Glue – like Canopy glue.

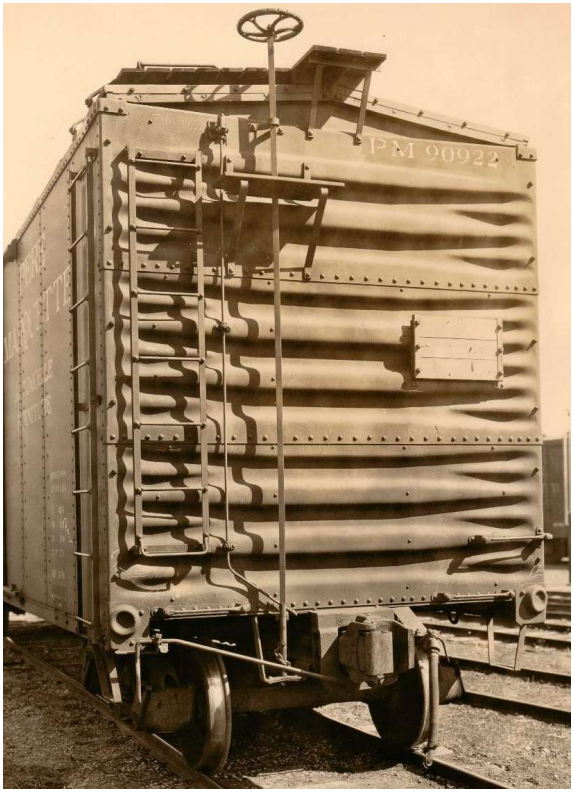
The above photos also show alternative ways of addressing the bracket grab irons on the car side. The cast on nubs can be used to simulate the brackets and holes drilled in them to accept brass (or plastic) rungs. Another option would be to remove the casting and replace with commercially available 18" bracket grabs. Kadee (#2250) bracket grabs are shown above.
The tow loops should be added at this point by drilling holes just outside the bolsters and bending brass wire to match the prototype. In the photos above and below , the loops were created from 0.010" PBW wrapped around the handle of a file. The resulting loop ends were inserted into #78 holes drilled into the side sill.

The photo above also shows the tack boards added to finish off the side detail. The kit tack boards were thinned and applied to the door per prototype photos of cars that did not yet have the tack boards lowered. Using prototype photos, determine whether you are doing a car with lowered tack boards and, if so, locate them appropriately.

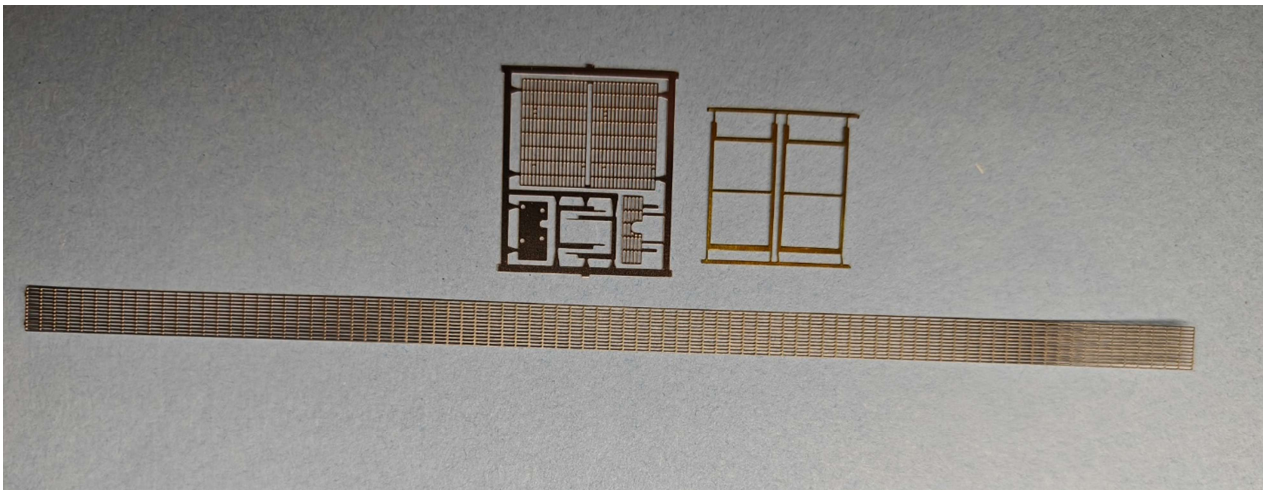
The end ladders were attached similarly to the side ladders by using the bottom pins but cutting back the top. Decide what is best for you and attached them to the ends. Add the drop grab as the lowest rung. (See the prototype photos below.) Again, the tack board from the kit is attached in the photo above at the original location. The sill grabs on the ends can be used as is by drilling into the casting and inserting brass rungs. Or, they can be altered as desired. The

upper grab shown is an altered bracket grab with one end removed, turned 90-degrees, and reused. The cut lever anchor was scratch built from styrene, however a commercial part, such as Yarmouth (#507), could be used.

After completing the “A” and “B” end common items, finish the “B” end details of the body casting. Determine if you will be using the resin parts or the Tichy parts provided (or your own favorite detail parts). Referring to the prototype builder photos below, note location of the retainer line and valve, the high mounted brake step, the bottom operated lift bar, and the boot shape for the vertical brake staff. Also, the running board does have an end saddle and that does not exist on the model. The builder photos show a car with the original wood running boards.

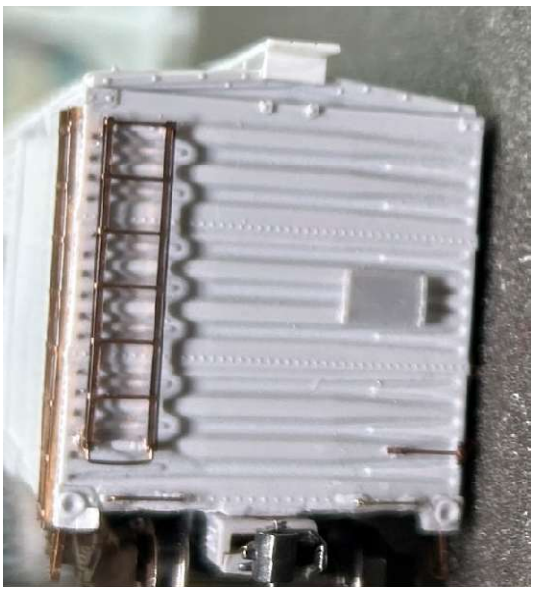


The above partial photo of C&O 291644 (taken circa 1955) shows that everything stayed the same over the years except for the running board. The wood was replaced by metal (Apex) for some cars beginning in the 1940s. However, no real program for change was carried out by the railroads, so a prototype picture is needed to determine which cars had which.



The kit provided parts for the Ajax running board choice. The Ajax brake step is included.

First attach the retainer valve and line. The retainer valve on the model shown above rests on a styrene pad of 0.005" for a better alignment with the retainer line. Run 0.008" wire from the retainer valve to the bottom of the car end. If desired, eyebolts can be used to represent the retainer line anchors. The boot for the brake staff was located based on the prototype and a part from the AB Tichy sprue (#24) was used to represent it. Bending one from brass bar would also be an option.

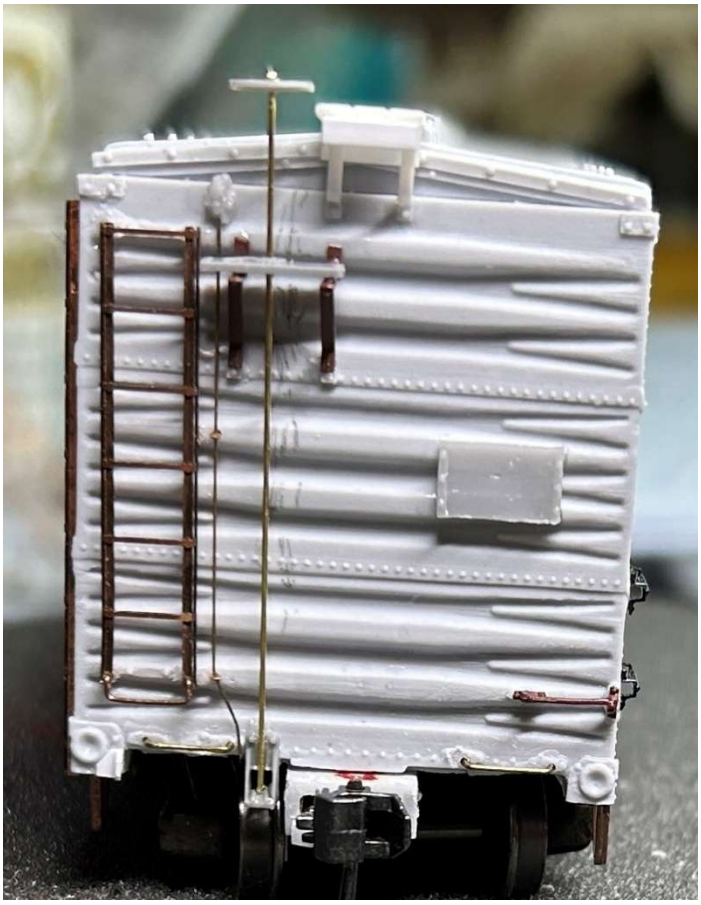


The running boards (wood or metal) can be added now or following the completion of the B end detail.

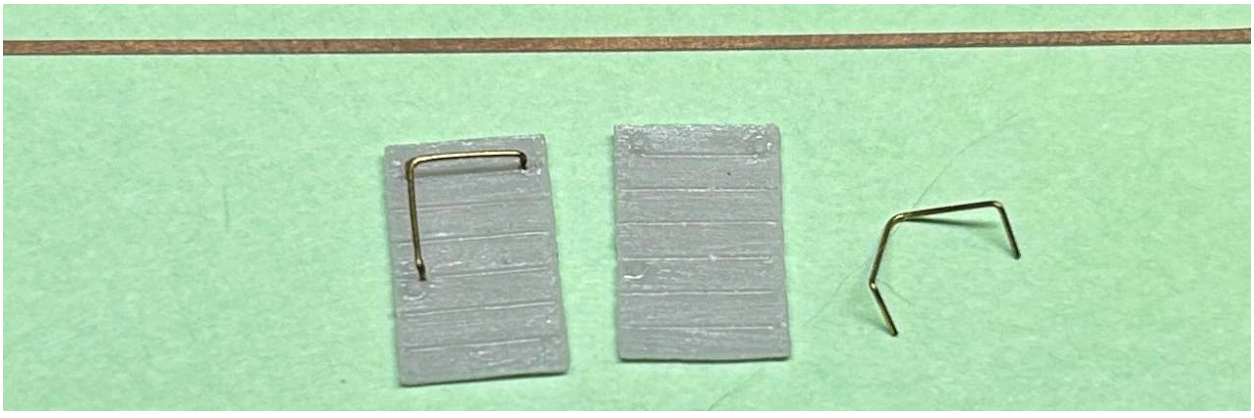
The photos above show the addition of a wooden running board. A 42’ 9” wood running board was found in the parts box and glued to the saddles atop the car with AMMO Ultra Glue. Once dry, an end saddle was added to each end with an 18” long section of 2” x 8”. This was first attached to the end of the car with the Ultra Glue and then, when in proper position, ACC’d to the running board. When the Ultra Glue had set, more ACC was added to make the joint stronger. If you choose the Ajax metal running board provided in the kit instead, adding it now will simplify the fitting of all B end details.

Next, add the brake step supports. The Tichy supports could be used but they are not large enough to match the prototype. In the photos below, Intermountain supports from the parts box were modified slightly and used instead. Before adding the supports, the main running board end support was added. This detail would be hard to reach behind the brake step, staff, and wheel. A 0.040” x 0.040” angle was used as the brace under the running boards. Short lengths of .010” x 0.030” were run from the brace to the cast on lugs on the car end and glued in place with ACC.

The brake staff is 0.015 PBW and was cut to a scale 12’ 3” length. The brake wheel is from the AB sprue and is part #33. The hole in the brake wheel was slightly enlarged and the wheel attached. A very small length of the staff was allowed to set above the wheel to represent the nut-bolt-washer. Various brake steps were tried attempting to match the hole in the step to the boot at the bottom of the end. Part #11 from the Tichy K brake sprue was used. You could modify other steps if desired. The kit parts provided also have the brake step and supports for the Ajax option.

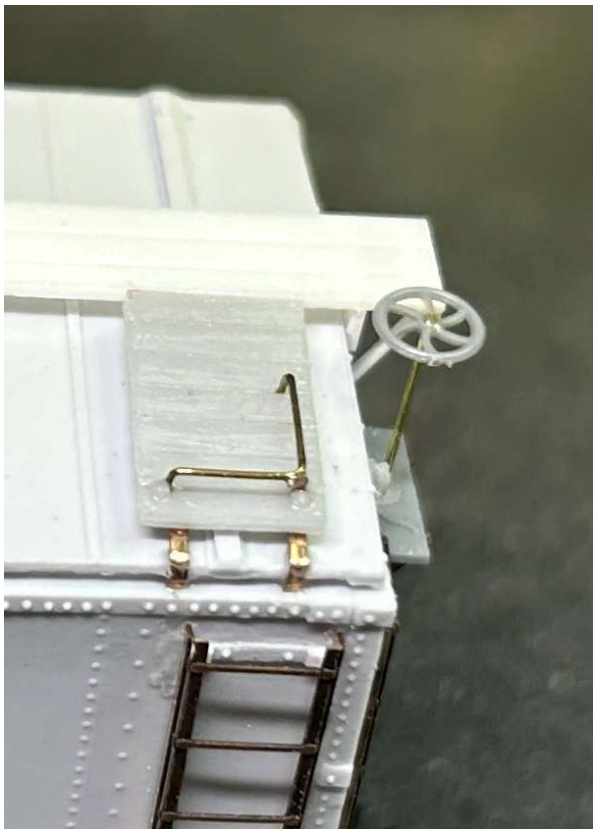


The hole in the brake step was slightly enlarged to allow for the easy passage of the staff. It was then slid onto the staff from the bottom and the combined items placed into the boot slot and centered on the brake step supports. Once a perfect vertical was achieved, the step was attached to the supports and then the staff glued to the boot.



Again, following along with the wood running board option, the laterals had seven boards. These were also found in the parts box. In addition, corner grabs from Westerfield and a 0.010” x 0.020” piece of brass bar were used. Drill #78 holes into the resin for the corner grab, glue the

grab in place, and trim the excess brass material off the back. A short section of 0.010” wire glued to the grab and to the lateral can serve as the connection in the corner of the grab.



Bend short pieces of the brass bar to a 90-degree angle and place according to prototype photos along the edge of the roof. These can initially be held in place with the Ultra Glue or Canopy glue. The length is not necessarily important, but the length here is about ½ the way toward the main running board. Leave the pieces purposely away from the roof surface. Glue a very small scrap of styrene under the main running board edge to allow that end of the lateral to have purchase. Strengthen the brass bar connection to the edge of the roof by adding ACC to those spots. Then spread ACC onto the tops of the brass bar and press the lateral into place. Along with the small styrene piece at the main running board, the result should be a slightly raised from the roof lateral. Repeat this process for the second lateral.

The cars had bottom operated cut levers. Form cut levers from 0.0125” wire, using the prototype photos to determine the shape, and attach to car. The air hose bracket on the model shown is from Yarmouth (#506) and the air hose is Moloco #0307. You could use these or substitute with your normal parts.

Painting and Lettering

When new, these auto box cars were painted Freight Car Red on the sides, ends, and roofs. The underframe and trucks were black. Car stenciling was white with both Furniture and Automobile shown on the right-hand portion of the sides. The cars quickly lost the Furniture stencil and many had AUTOMOBILE become AUTO. As the C&O repainted the cars, cars often would have the trucks the same color as the body. Cars with loaders had the appropriate stencils on the doors while the loaders were operable. Starting in 1948, some C&O cars had the road name moved from the right set of panels to the left side, centered over the C&O and car number. A C&O for Progress logo was added to the right set of panels along with a "smoke" line. The monogram was changed circa 1955 from the squiggly smoke line to a straight line. In 1959, the road name was removed from the car entirely and the livery changed to a block-letter style.

Before painting, wash the car again with Dawn, rinse and let dry. As for the color and types of paint, that's an individual choice. The finished models below were painted with a rich oxide brown color. TruColor offers paint labeled Chesapeake & Ohio Freight Car Red 1945-1950s. It is number TCP-219. Vallejo also makes a German Red Brown (#RAL 8012).

Once the initial coat of paint is dry, add a gloss finish and then decal with the accompanying set, referencing prototype photos. Once the decals have set, seal the car with a flat glaze. Weather to taste.

The model shown here is by Ed Rethwisch. Modeling 1955, he chose to model a car that had been relettered for the C&O. The prototype car still had a wood running board, an older livery style, but had its tack boards lowered.

See the "kit extras" pages for additional prototype photos and a more complete history of the cars.

C&O 290517 was photographed in the mid-1950s by Col. Chet McCoid. Bob's Photo.