

## Before Starting

**PREPARING BRASS** The easiest way to remove the brass parts from the sheet they are produced on, is to use rail nippers. The brass is soft and won't affect their future cutting ability. This will reduce or eliminate the amount of filing to smooth the edge. The next best way is with small sharp diagonal cutters that will fit into the small areas between the part and the sheet holding them. *You should always use a file to remove the balance of the tie. This will ensure a perfect fit.*

**GLUING BRASS** Instant super glues, Cyanoacrylate, CA for short, are very prominent in model building today. They will work perfectly with brass, and they are instant. We recommend a thick CA glue such as "Zap-A-Gap" from Pacer Technology. As I have also been building R/C airplanes for over 33 years, I have many airplanes built entirely with CA glue and I can tell you that the wood will break before the glue joint. So it is great stuff! Besides being almost instant, thick CA glues will help create a small fillet and fill small gaps when applied to the inside of joints. Using a toothpick to apply the CA glue works really well for getting the glue into the interior areas and controlling the amount of glue used.

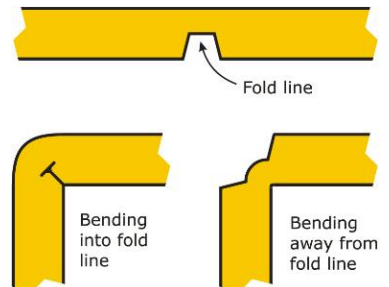
**PAINTING BRASS** Wash your completed assembly in warm soapy water. If it is really messed up with flux etc. you can clean it with a lacquer thinner first. *Do NOT bake the model if you used CA glue for construction.* This will set the paint to the brass as well as allowing you to paint over parts of it without the first coat dissolving as you spread on the second coat. One nice thing about painting on brass, if you don't like the paint job you can use paint remover to get rid of it and start again without hurting the brass.

## BENDING BRASS

To control where a fold will be, we have put a Fold or Bend line into the design. This line is a small slot that has been etched half-way through the brass sheet at the point of the bend.

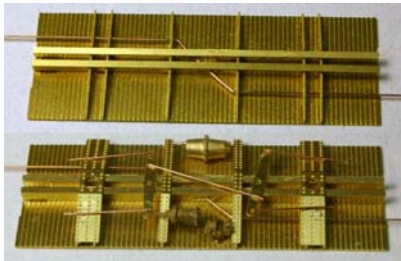
Normally, you fold into a bend line when the bend is less than 135 degrees. Notice how bend into the line creates a nice corner and the metal pinches together at the bend line.

For bends of 135 to 180 degrees, you must bend against the bend line otherwise the two pieces of metal can not lay flat at the bend due to pinching each other. Other times, you bend outward for better positioning of the piece or better display. The ladder on this Caboose build is bent outward to expose and "pop out" the rungs.



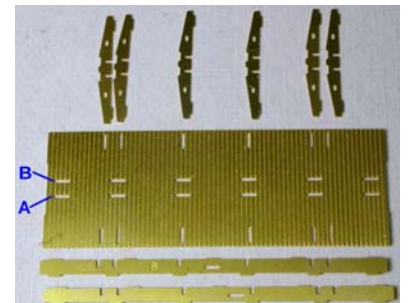
## Step #1 – Building the Undercarriage Frame

First place the Outer Floor with the detail facing up. Get together all of the other components; I-Beam Webs (A & B), I-Beam Cap Strips, Bolster Ribs & Plates, Air Line. Secure the two I-Beam Webs to the center of the Outer Floor. Bend the Air Hose in a "Z" bend to fit the angle in the I-Beam Webs. Install the Air Line.



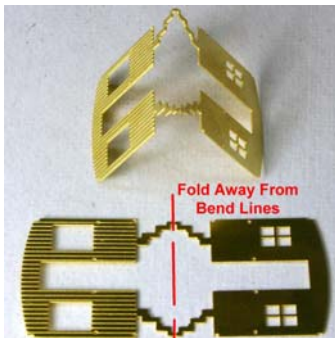
Add the Bolster Ribs by sliding the slots in the Ribs into the slots in the I-Beam Web. Secure the Ribs to the Outer Floor.

Next goes the I-Beam Cap Strips. The Cap Strips have slots on the underside and the Webs have notches. Once Secure, add the Bolster Plates over the Bolster Ribs. Included in the kit will be Air Reservoir, Brake Actuator and Selector Valve with .008 brass wire for the plumbing.



## Step #2 – Building the Body Shell

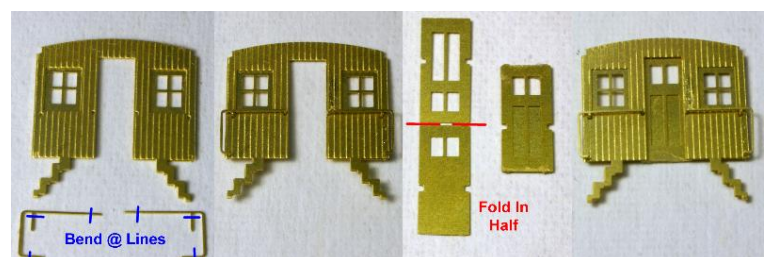
Remove the basic shell sections; Sides, Ends and Inner Floor. The Sides & Ends fold with a solid back and a half-etched detail outer layer. Each Side and End has a bend line that separates the two end halves. Begin by folding the Sides along the bend line. Here, you will be bending *away* from the bend line. The width of the interior of the Sides are .020" smaller than the Exterior. This is to allow the Ends to fit into the channel that is created. Ensure that all holes are aligned and secure the two halves



together ensuring no glue or solder is in the channel for the Sides. Each Side has two curved Safety Rails. Bend the Railings at the indicated location *into* the bend lines. Insert the bent Railing sections into the holes. With the Railings raised off the Sides (.010" - .020"), secure the Railing from the back. Using a jewelers file, file off all extra pieces of the Railing and excess glue from the back of the Side.

Fold the Ends along the bend line at the bottom of the Step Supports. Here, you will be bending *away* from the bend line. The width of the interior of the End is .020" smaller than the exterior. This is to allow the Sides to fit into the channel that is created. Ensure that all holes are aligned and secure the two halves together

ensuring no glue or solder is in the channel for the Sides. Each End has two "J" shaped Safety Rails. Bend the Railings at the indicated location *into* the bend lines. Insert the bent Railing sections into the holes. With the Railings raised off the Sides (.010" - .020"), secure the Railing from the back. Using a jewelers file, file off all extra

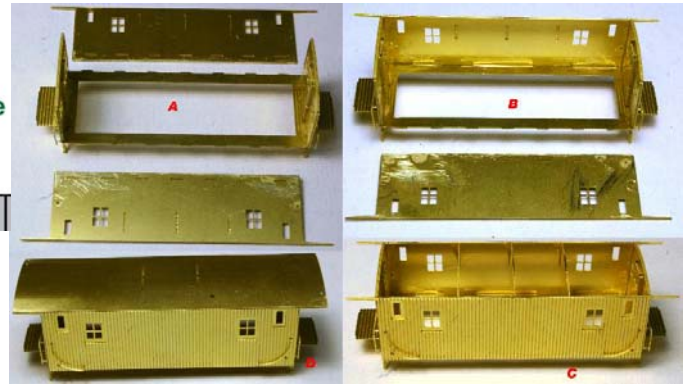
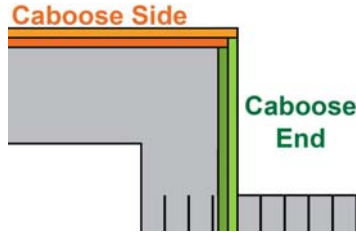


ensuring no glue or solder is in the channel for the Sides. Each End has two "J" shaped Safety Rails. Bend the Railings at the indicated location *into* the bend lines. Insert the bent Railing sections into the holes. With the Railings raised off the Sides (.010" - .020"), secure the Railing from the back. Using a jewelers file, file off all extra

pieces of the Railing and excess glue from the back of the Side. The Door is also folded in half *away* from the bend line to create a multiple layer Door. Secure the Door to the interior of the End.

The Inner Floor has two notches on either side of the Landing to allow the Step Supports to extend below the Inner Floor. The Inner Floor also has tabs that go into slots on the back of the Sides. **A)** Being sure the wood plank detail on the Landings is facing up, position an End on to the Inner Floor and position a Side using the tabs on the Inner Floor and the slots on the Side. Notice in the diagram how the Side and End mesh together at the corner. Secure the End to the Inner Floor. Repeat for the other End. **B)**

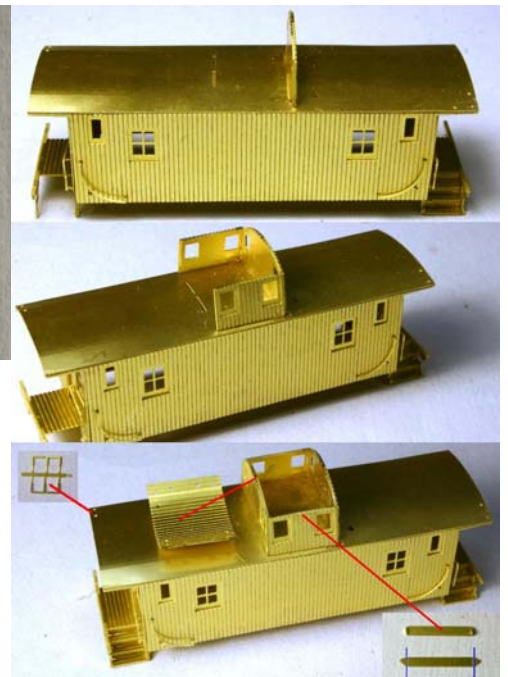
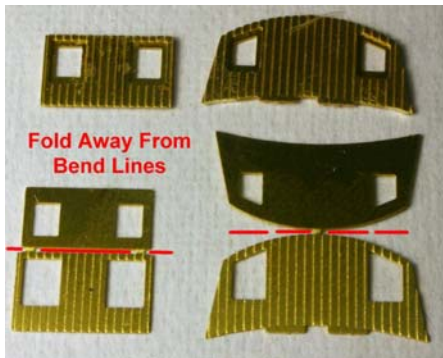
Reposition the Side and secure it to the Ends and the Inner Floor. **C)** Install the second side ensuring that all corners are properly connected. To support the Roof, install the three Roof Supports by inserting their tabs into the slots in the Sides. **D)** The Roof has been half etched to make it flexible allowing it to be bent to the correct curvature. A 3/16" tube (I used a cheap smooth plastic pen) rolled over the smooth non-etched side of the Roof will aid in getting the Roof to curve. Test fit during the rolling process until correct. Install the Roof ensuring it is centered in all directions.



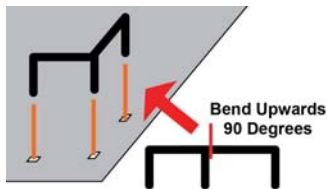
### Step #3 – Attaching the Cupola

It does not matter if you are building the Offset Cupola or Centered Cupola version as the steps are the same. Only the names have been changed to protect the innocent.

Begin by removing all four Cupola Ends and Sides from the kit sprue. Use care in cleaning up the tie remnants on the Cupola Ends so you do not detach the interior and exterior sheets from themselves. The Cupola Sides & Cupola Ends fold with a solid back and a half-etched detail outer layer. Each Side and End has a bend line that separates the two end halves. Begin by folding the Sides & Ends along the bend line. Here, you will be bending *away* from the bend line. The width of the interior of the Sides & Ends are .020" smaller than the Exterior. This is to allow the Sides & Ends to fit into the channel in the same manner as was done for the Car Body Sides & Ends. Ensure that all common edges are aligned and secure the two halves together ensuring no glue or solder is in the channel.



Test fit both Cupola Ends into the slots in the Roof with the wood strip detail to the exterior. Using a jewelers file, ensure a good fit. Secure one Cupola End to the Roof ensure it is both perpendicular to the Roof and is also centered from the sides of the Roof. Secure the Cupola Sides to the End using the other Cupola End to ensure the Sides are properly aligned. Secure the last Cupola End to the assembly.



The Roof has been half etched to make it flexible allowing it to be bent to the correct curvature. A 3/16" tube (I used a cheap smooth plastic pen) rolled over the smooth non-etched side of the Roof will aid in getting the Roof to curve. Test fit during the rolling process until correct. Bend the "L" Grab Iron as shown and install at each of the four corners of the Cupola Roof. Install the Roof ensuring it is centered in all directions. Bend the angled sides of the Sunshade *into* the bend lines and mount them over the Windows of the Cupola.

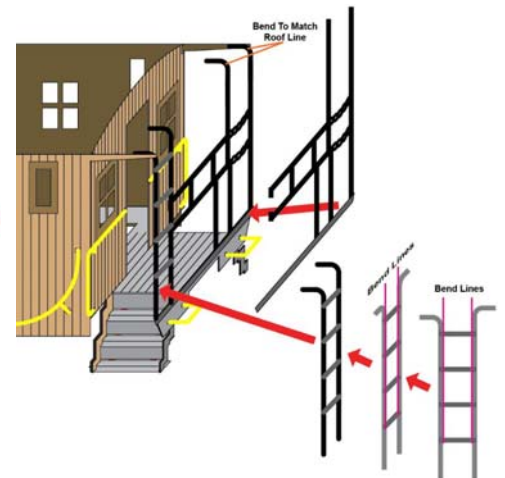
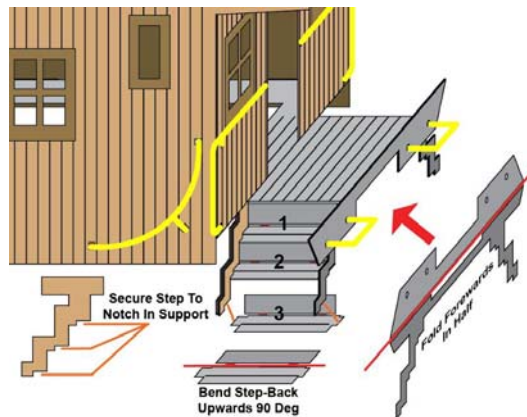
#### Important Note:

*If you are going add glazing, lighting, painting the interior or just want access to the interior of the Cupola, you may want to omit securing the Roof so that can be lifted off. The means to create a holding latch for the Roof is left to the builder.*

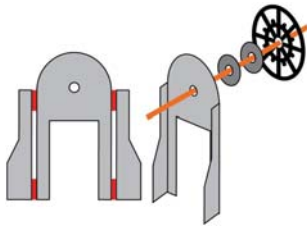
### Step #4 – Detailing the Caboose Ends

The top half of the End Sill must be folded over the rear Step Support. Secure the halves together and add the Grab Irons. Using a jewelers file, file off all extra pieces of the Grab Iron and excess glue from the back of the End Sill. Test fit then secure the End Sill to the End Landing. The tab on the end of the Landing goes into the slot that was created at the top of the End Sill during folding. It helps to have the caboose on a flat surface to ensure the Step Supports are properly aligned.

Each Step is handed. There are tabs on the sides of the Steps. The larger tab will be secured to the Step Support of the Cabin End. The smaller tab will be secured to the Step Support of the End Sill. Remove the Steps to be installed one at a time. They are easy to lose! The top of the Step has a etched line to simulate multiple plans of wood. Bend the Step Back upwards 90 degrees into the bend lines. Secure the Step to the notch in the bottom of the Step Support as shown in the image. Start with the upper Step at the Landing working your way down. Finish securing all Steps

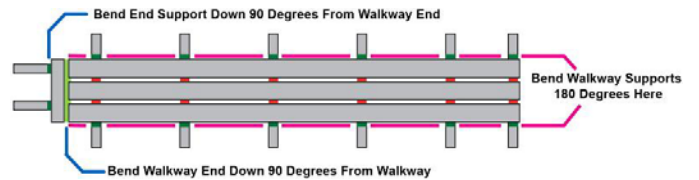


The End Railing is actually two pieces. The main End Railing and the Ladder. Position the End Railing to match the top of the End Sill above the End Grabs. Bend the two Uprights to match the height of the Roof underside. Secure the End Railing to the End Sill. Bend the side rails of the Ladder AWAY from the etched bend lines to "pop out" the rungs. After bending, install the Ladder to the End Railing and the End Sill. Secure the Uprights and Ladders to the Roof. Add the single Grab Iron to the Roof



Bend the Brake Wheel Support as shown *into* the bend lines. Using a small piece of the supplied wire, add the Brake Wheel and Spacers as shown. Secure the Brake Wheel Support to the Landing.

The Roofwalks have three groups of bends to be done before attaching them to the caboose. 1) Bend the walkway Supports 180 degrees back under the Walkway to compensate for the curvature of the Roof. Ensure they are flat against the underside of the

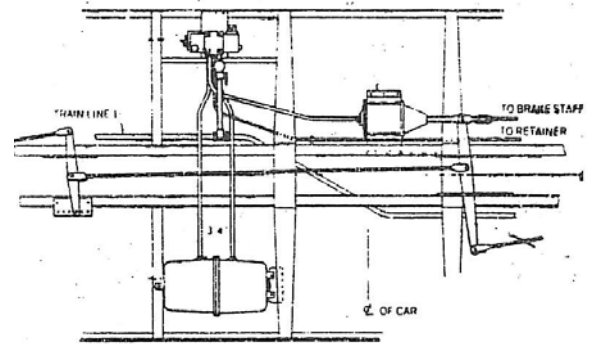


Walkway. 2) Bend the Walkway End downward 90 degrees relative to the Walkway. 3) Bend the End Supports an additional 90 degrees. The End Supports will be secured to the underside of the Roof. Secure the Walkways to the Roof.

### Step #5 – Detailing the Undercarriage

Test fit the Undercarriage trimming the Air Lines to the end of the Landings.

Using the supplied castings, etched brass arms and .008 brass wire, install the Brake System using the diagram. The Reservoir, Brake Actuator and Selector Valve are castings. The actuator Arms are etched brass.



BOTTOM VIEW  
WEST, "AB" TYPE BRAKE GEAR ARRANGEMENT  
FOR BOX & REFRIGERATOR CARS  
(Standard Gauge)

The Coupler plates are mounted under the End Landing. Secure the Z-Scale coupler to the Coupler Plate after it has been secured to the Caboose.

The Trucks are mounted to the bolster using a kingpin provided by the builder. The supplied Bolster hole will accommodate either a Atlas or Micro-Trains plastic Kingpin. The user may have to drill through the I-Beam Cap Strips for the Kingpin.

Secure the Outer Floor with details to the Inner Floor of the caboose.



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