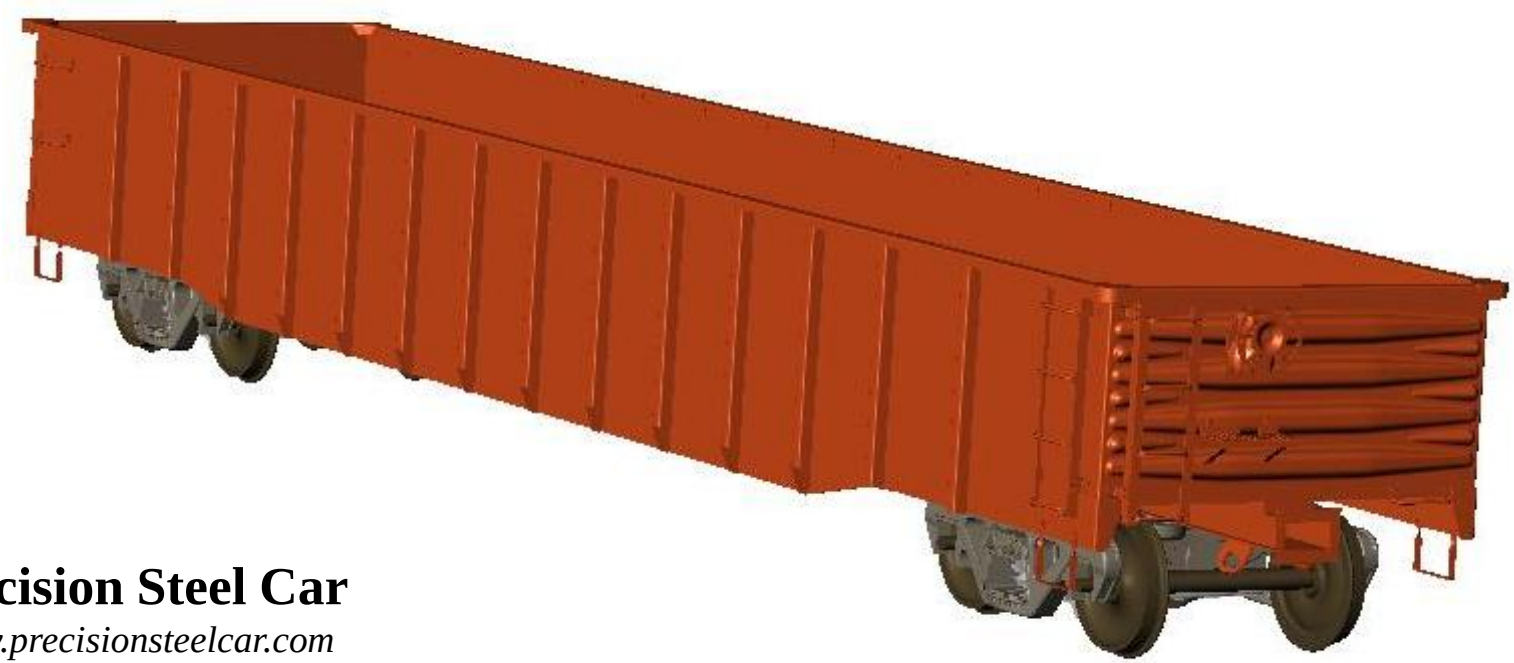
Precision Steel Car's
53-1/2 ft. Gondola



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Contents of Kit

Main Frame	2	Side Panel	2	Lower Corner Piece A	2
Cross Member	5	Inner End Panel	2	Lower Corner Piece B	2
Coupler Plate	2	Outer End Panel	2	Ladder 1	4
Bolster Frame	4	Side Rail	2	Ladder 2	4
Bottom Frame Strip	1	End Rail	2	Ladder Bracket 1	8
Coupler Filler Plate	2	Corner Piece	4	Ladder Bracket 2	8
Coupler End Plate	2	Corner Piece Lip	4	Grab Iron D Style 2”	16
Side Bearing Plate	4	Brakewheel Housing Kit	1	Grab Iron A Style 2 1/2”	4
Open Bottom Rib	8	Brake Walkway	1	Grab Iron A Style 2 ”	2
Closed Bottom Rib	20	Brake Walkway Support	2	Stirrup Step A	4
Floor	1				

127 Total Parts

Recommended Assembly Techniques

- Follow the Instructions!
- Go make a photocopy of the instructions so that when they catch fire from the welding sparks you will have a back up copy.
- Dry fit all the parts together first to get an overall understanding of how the kit goes together.
- Tack weld to start, it's easier to undo a tack than a full weld.
- Plan your welds, 95% of the welds can be hidden.
- Skip weld, continuous welding will cause extreme warping and twisting.
- Keep the assembly square when welding.
- Be sure to clamp parts together firmly before welding. C-clamps, several styles of vise grips and a couple of furniture clamps will greatly help in holding parts in place during welding.
- Add any extras, such as provisions for safety chains, truck mounts, and couplers as early as possible. It's easier to modify a piece before it is welded to the assembly.
- Enjoy building this kit, it will produce a car of which you can be proud.
- If you have any questions, contact PSC, we have made most of the mistakes already.

Items to be Supplied by Buyer

Tools Needed

- Welder
- Welding Clamps, Vise Grips, C-Clamps
- #4-40 Taps
- #43 Drill Bit
- Cordless Drill (suggested)
- 1/16” Allen Key

Fasteners Needed

- 4-40 x 1/8” Button Head Cap Screws Qty. 102 (1/16” Allen Key)
- 4-40 x 3/4” Button Head Cap Screws Qty. 8 (1/16” Allen Key)

Other screws with different head styles may be substituted at the customer’s preference. Rivets may also be used but tight assembly clearances may make it difficult to squeeze the rivets.

Couplers and Trucks are not included with this kit.

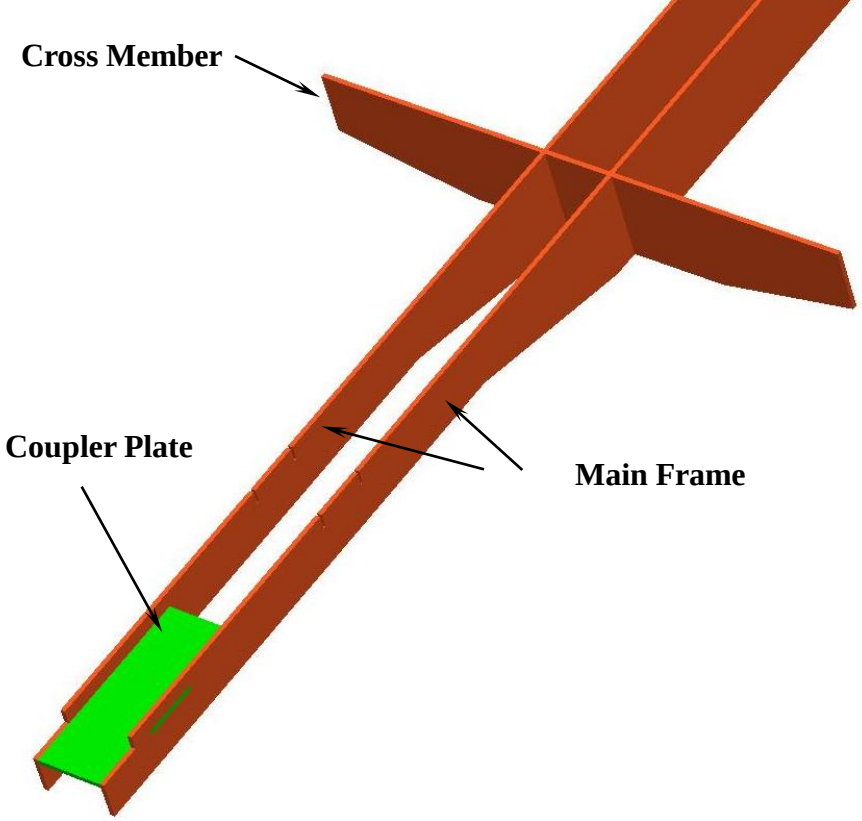
Mounting of the trucks is to be determined by the buyer. This includes making adapter plates for mounting the trucks. The buyer is responsible for creating any additional parts needed to mount trucks or couplers. When creating these parts the buyer must calculate and modify the adapters, trucks, or kit for side bearing heights and coupler heights.

Precision Steel Car is not responsible for defects resulting from poor assembly or careless handling. Replacement parts may be available for purchase.

Step 1

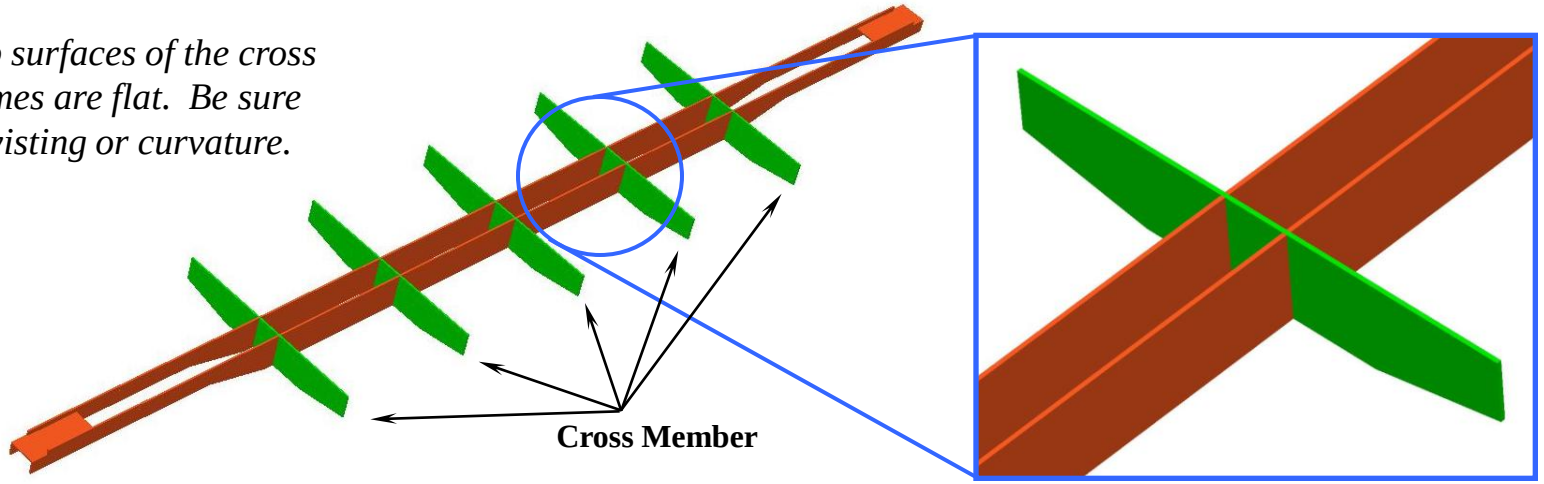
First we begin by constructing the main car frame. Slide the tabs on the **Coupler Plate** into the slots in the **Main Frame** pieces and weld in place. Be careful not to make the welds too large as to interfere with the coupler later on. Be sure to keep Main Tube Side Frames parallel and square. Use several of the **Cross Members** to keep the Main Frames parallel. This forms the top half of the coupler mounting pocket.

Repeat this step at the other end.



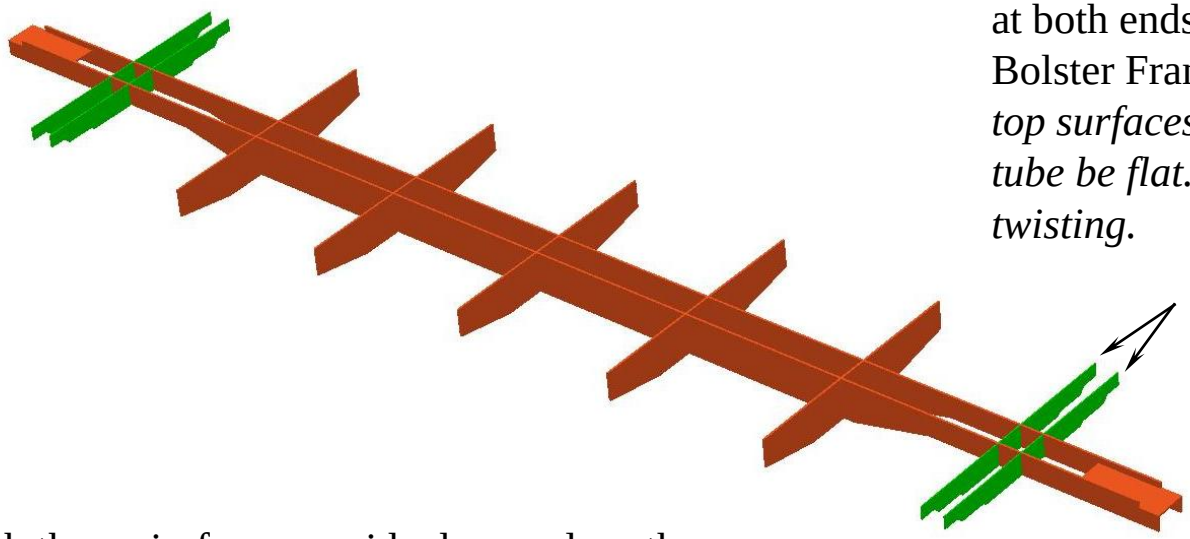
Next, slide all (5) **Cross Members** into the center 5 slots in both **Main Frame** pieces. There will be two smaller slots at each end that will be used later. Place the entire assembly with the flat side of the Cross Members on a flat surface and **TACK** weld in place. All the tack welds can be placed in between the Main Frames. Place tacks welds at both the top and bottom of the Cross Members.

It is critical that the top surfaces of the cross members and main frames are flat. Be sure to straighten out any twisting or curvature.



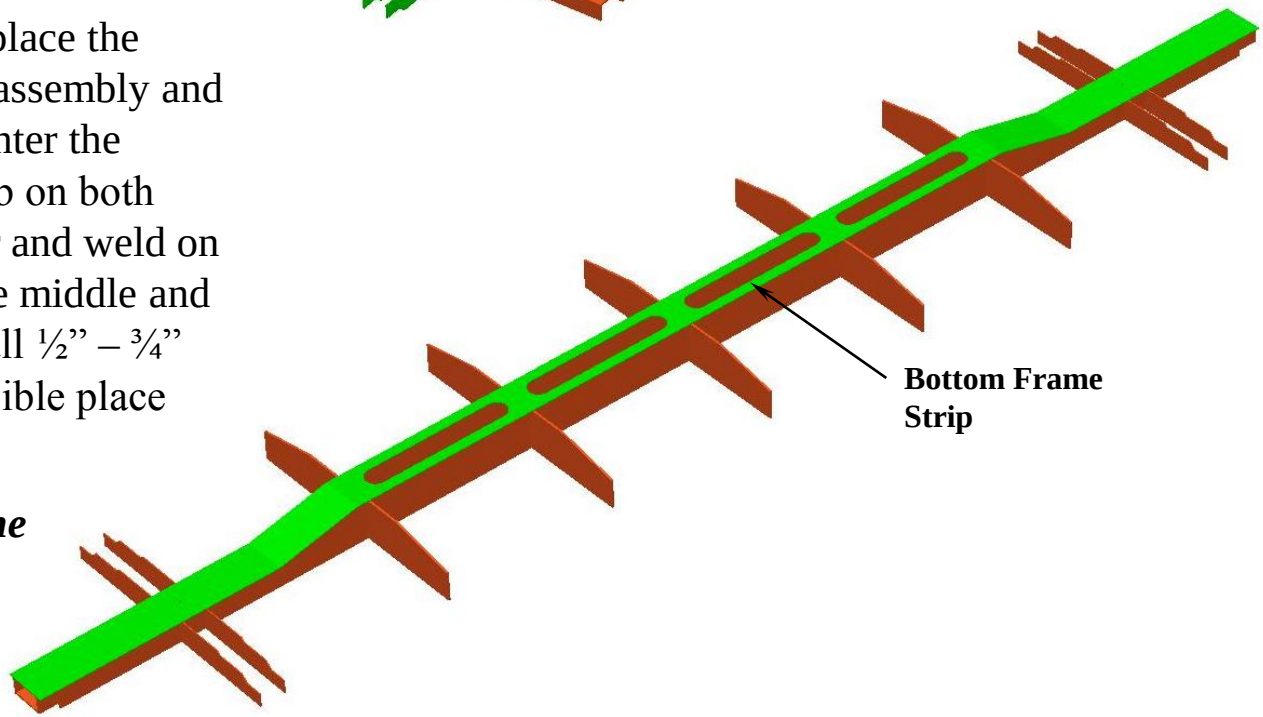
Step 2

Slide the two **Bolster Frames** into the slots at both ends of the car. Tack weld the Bolster Frames in place. *It is critical that the top surfaces of the cross members and main tube be flat. Be sure to straighten out any twisting.*

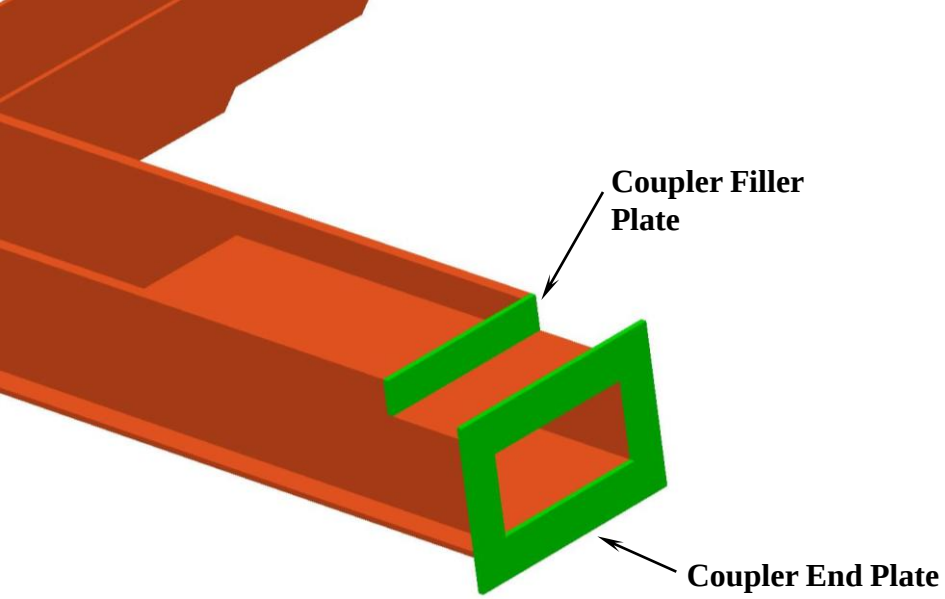


With the main frame upside down, place the **Bottom Frame Strip** on the frame assembly and clamp both ends and the center. Center the frame strip side to side with a ¼" tab on both sides. Flip the frame assembly over and weld on the Bottom Frame Strip. Start in the middle and work towards both ends. Make small ½" – ¾" long skip welds 4"-5" apart. If possible place the welds inside the main frame.

At this point go back and weld in the Crossmembers and bolster frames.



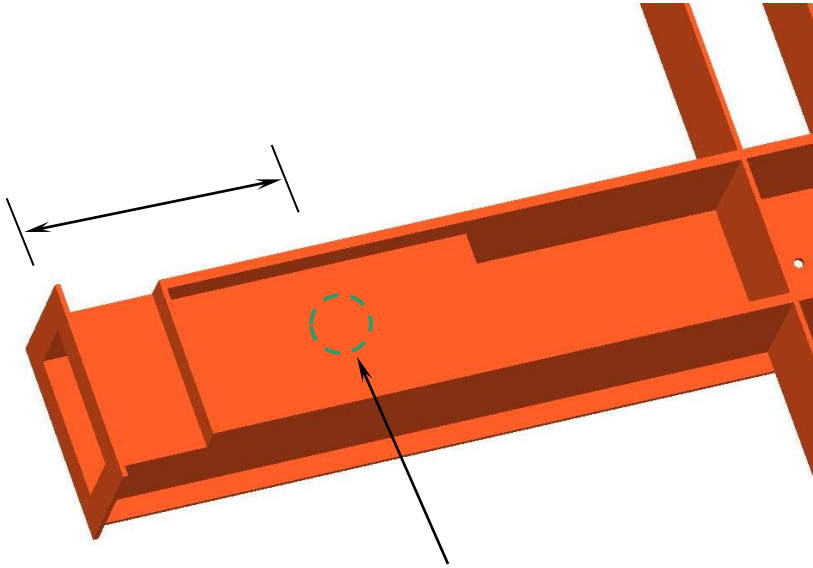
Step 3



Position the **Coupler Filler Plate** and weld in place on the side towards the middle of the car. Line up the **Coupler End Plate** and tack in place. Try to make the welds as small as possible and hide one underneath as this area will be visible.

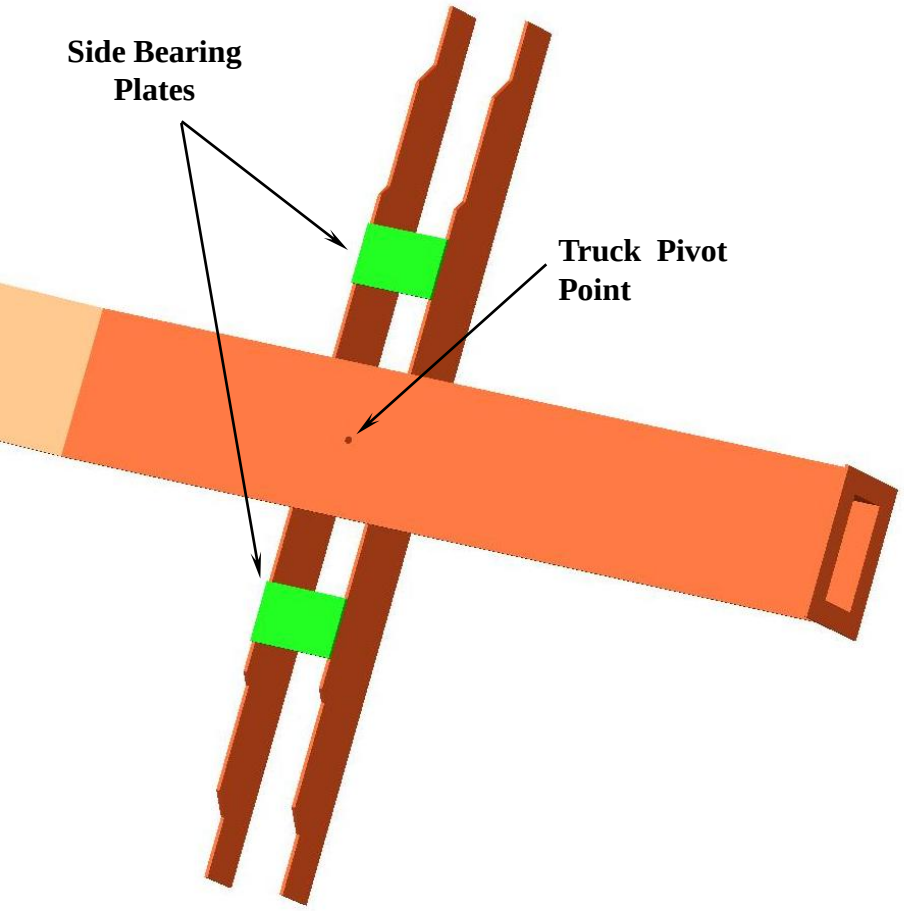
*Repeat this step at the other end***.**

At this time you should make provisions for mounting your couplers. We recommend measuring in from the end of the car to provide maximum swing for the particular coupler brand and drill a thru hole for a bolt. Then weld a nut on the top of the coupler plate so that a bolt can be threaded in from the bottom. Note that the area above the coupler will be covered by other parts and will not be accessible. If you plan to use a different mounting method, please examine the remaining steps so that problems do not arise later.



PSC cannot be held responsible for problems arising from customized coupler mounting methods

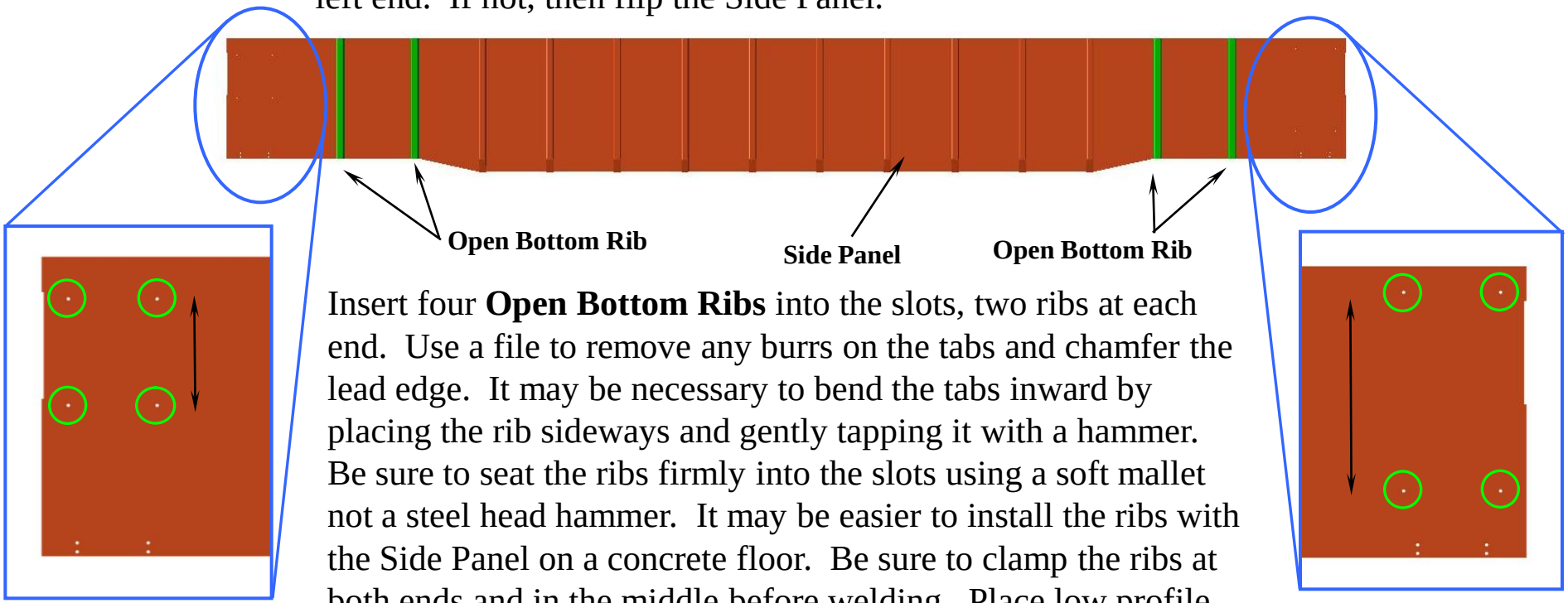
Step 4



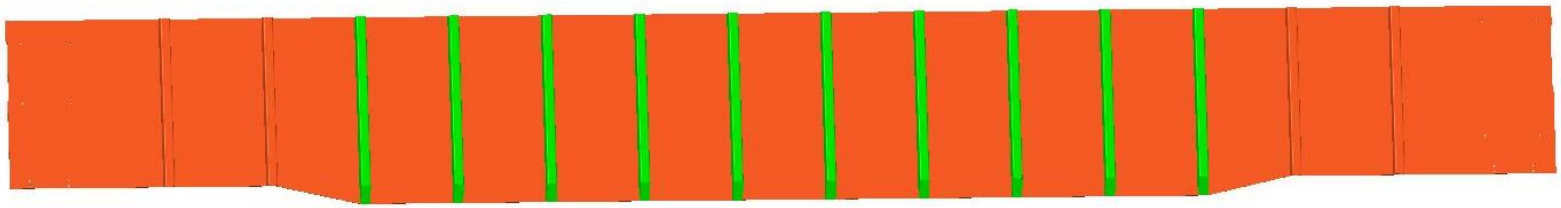
The last step on the main frame assembly is to make provisions to mount your trucks. The truck pivot point is located by a small hole in the bottom frame strip and centered between the bolster frames. When the car is finished you will not have access inside the main frame tube. The **Side Bearing Plates** can be welded anywhere along the bolster frame. Blocks may have to be added to the trucks or thicker side bearing plates may be needed to set the right amount of side play depending on the particular brand of truck. Tom Bee trucks can be mounted by welding a 2”x8”x3/8” bar as the bolster frame with a hole tapped for a shoulder bolt. Other brands will require different spacing to achieve the 4-7/16” coupler height.

Step 5

Next we will assemble the body starting with the side panels. It is critical that the **Side Panel** be oriented correctly before installing the ribs. Look at the holes at each end, the holes on the right side should be spaced further apart than the ones on the left end. If not, then flip the Side Panel.

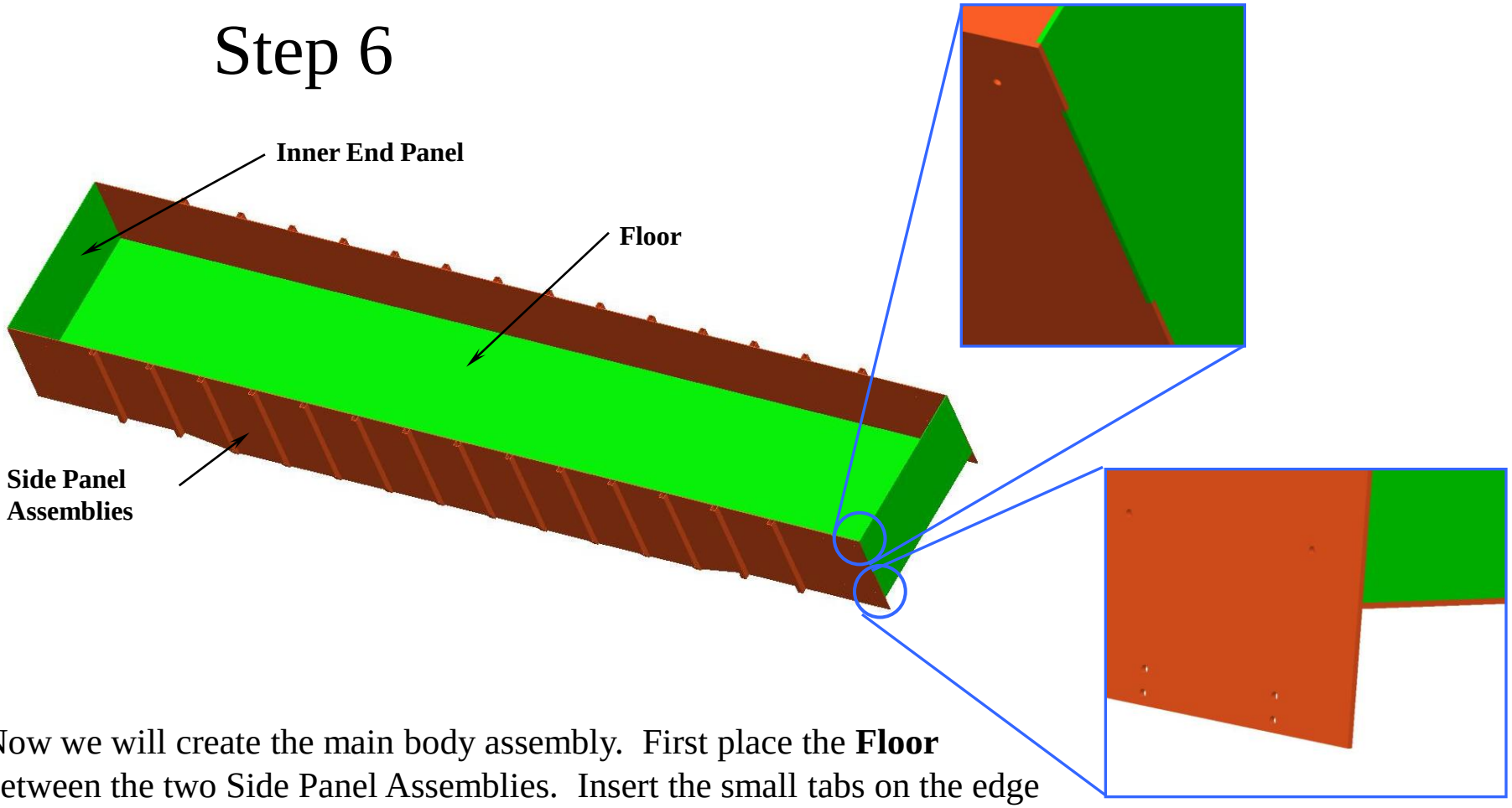


Insert four **Open Bottom Ribs** into the slots, two ribs at each end. Use a file to remove any burrs on the tabs and chamfer the lead edge. It may be necessary to bend the tabs inward by placing the rib sideways and gently tapping it with a hammer. Be sure to seat the ribs firmly into the slots using a soft mallet not a steel head hammer. It may be easier to install the ribs with the Side Panel on a concrete floor. Be sure to clamp the ribs at both ends and in the middle before welding. Place low profile tack welds over each of the tabs on the inside surface. Then go back and sand down the welds to minimize there appearance.



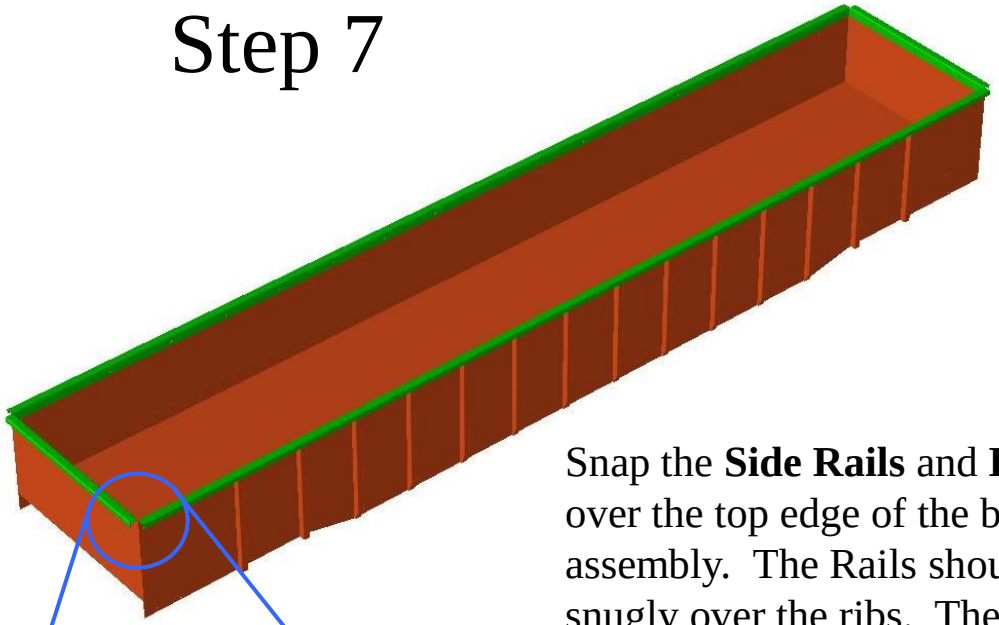
Next, install (10) **Closed Bottom Ribs** in the center section of slots. Be sure to keep the ribs clamped firmly during welding especially along the top edge. *Repeat this step for the second Side Panel*

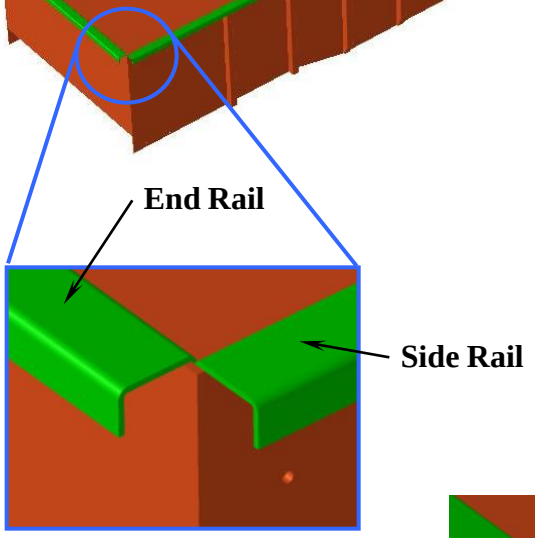
Step 6



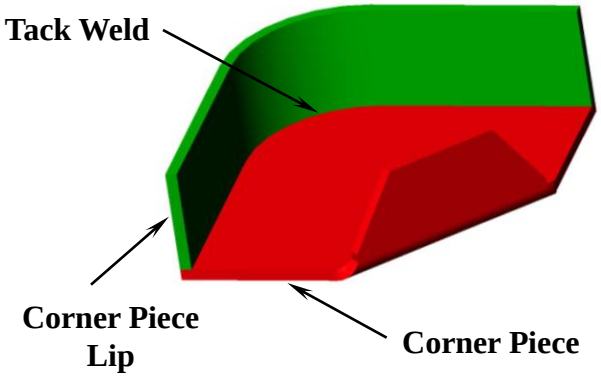
Now we will create the main body assembly. First place the **Floor** between the two Side Panel Assemblies. Insert the small tabs on the edge of the Floor into the slots in the Side Panels. Temporarily tack weld the floor in place from the bottom side. This will help hold everything together but make the welds very small so they can be removed if needed. Next, insert the **Inner End Panels** making sure the corners tab together as shown. The Inner End Panels should sit on top of the floor as shown. We recommend using large furniture clamps that reach across the width of the car. Weld the Floor to the Side Panels from underneath the car. Neatly weld the Inner End Panels from the inside of the car.

Step 7

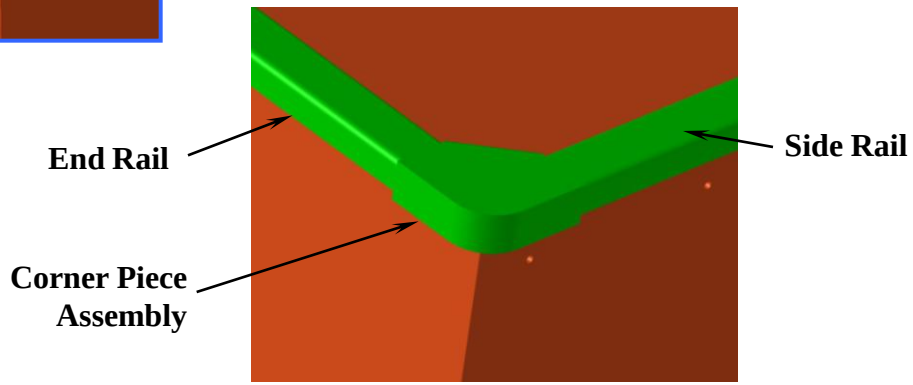




Snap the **Side Rails** and **End Rails** over the top edge of the body assembly. The Rails should fit snugly over the ribs. The corners should fit together as shown. Plug weld the line of holes along the inside lip. Fill the holes with a weld bead and then grind smooth.



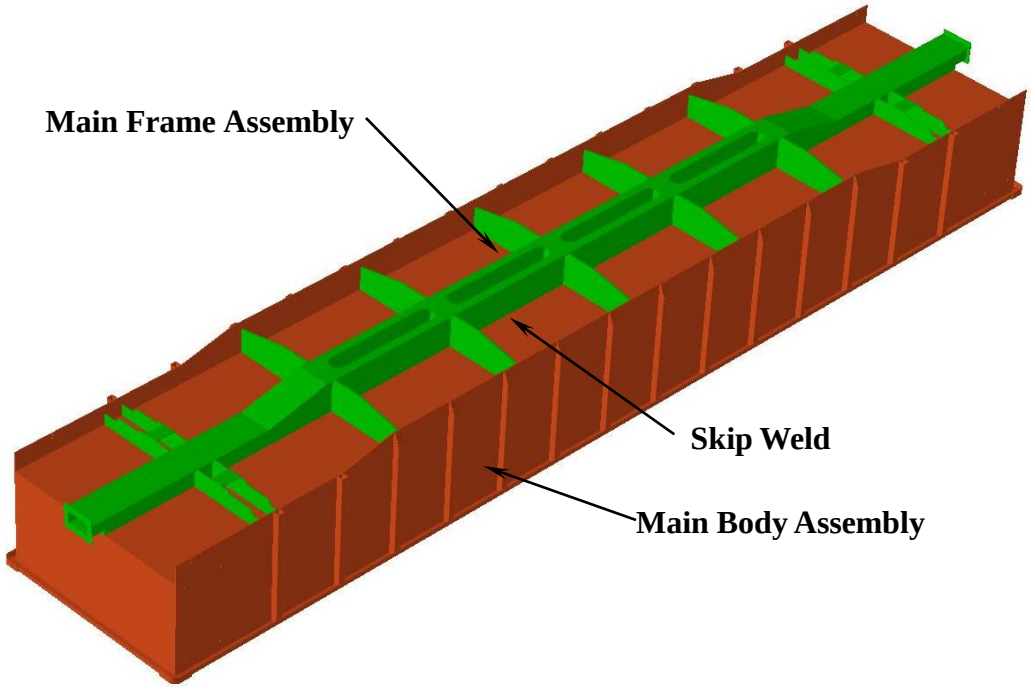
The next step is to create four corner assemblies. Tack weld the **Corner Piece Lip** to the **Corner Piece** as shown in the curved portion only. *Repeat step to create (4) assemblies*

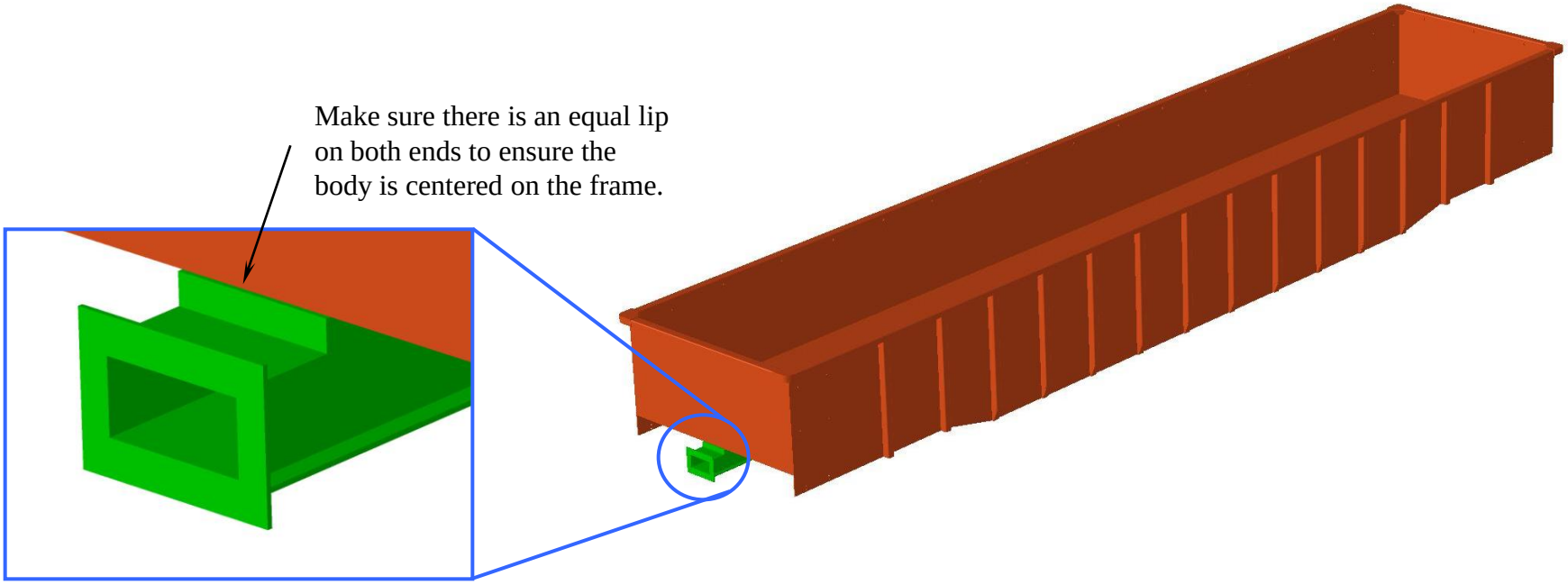


Next place a **Corner Piece Assembly** on each corner over the Side Rail and End Rail. Tack weld in place from the bottom side. We recommend breaking all sharp corners and edges along the top rail to prevent scratches.

Step 8

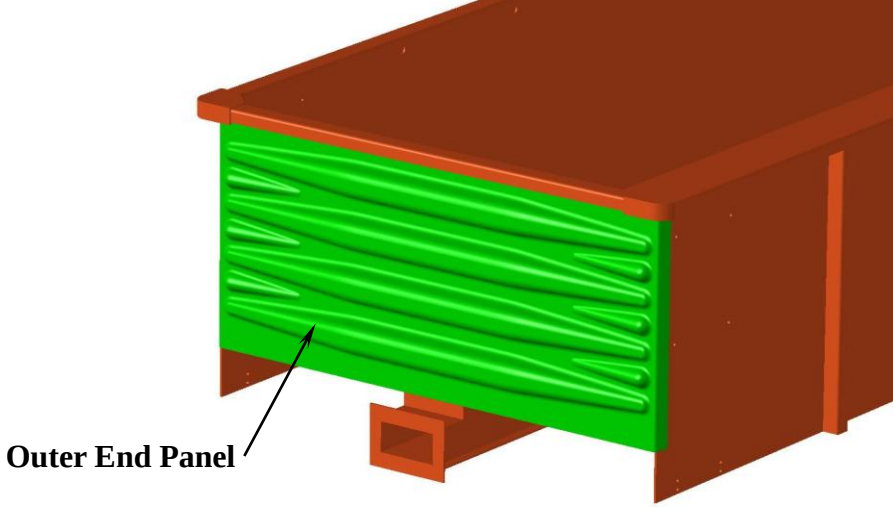
Next we will mate the **Main Body Assembly** to the **Main Frame Assembly**. Turn the body assembly upside down and drop the frame in between the sides. Then center the frame end to end as shown. Be sure to firmly clamp the frame to the floor before welding. Some blocks and large clamps may help with the clamping. Apply skip welds along the length of the frame and place a couple along each crossmember and bolster frame.



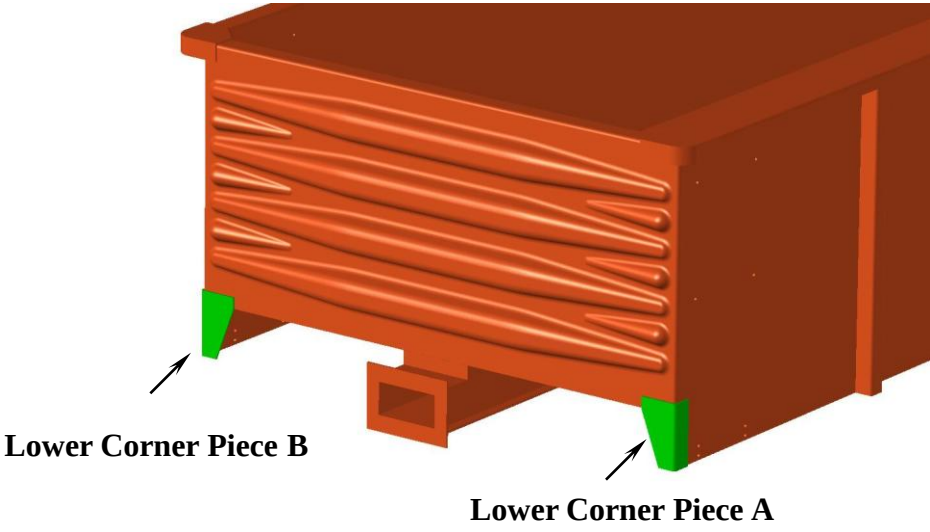


Step 9

Now it is time to finish off the body by adding the detail parts. First fit the stamped **Outer End Panel** over the end of the car. It may take a little tapping and filing to get a good fit. Apply a small amount of JB Weld 2-part epoxy in each corner and a couple of places in the middle to attach the Outer End Panel. Clamp and let harden as per manufacturer's instructions. *Repeat at other end.*



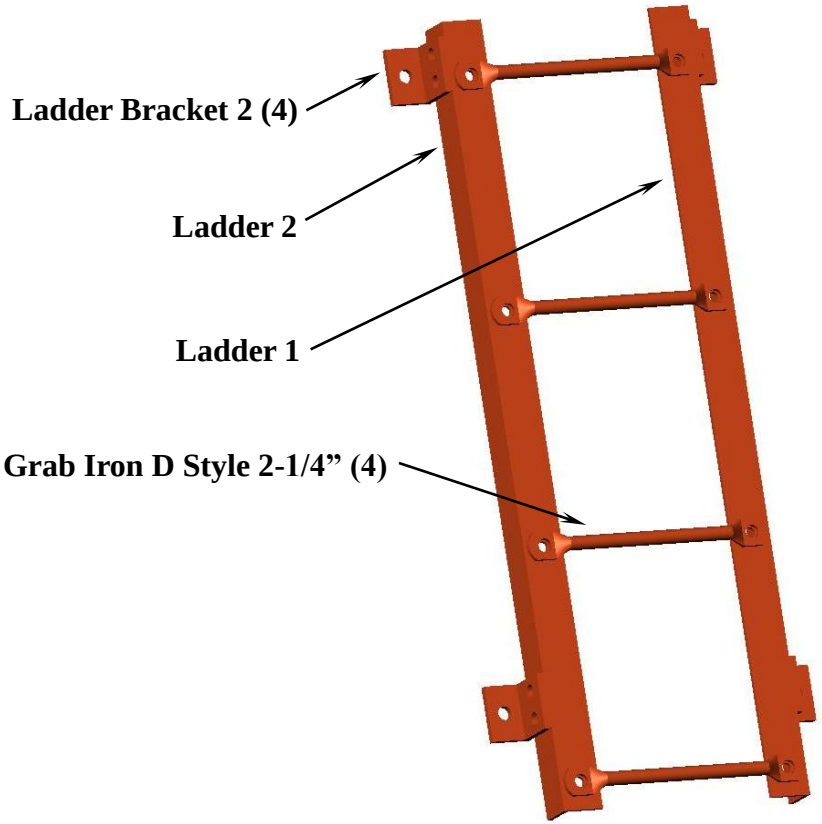
Next, position both **Lower Corner Pieces A&B** as shown and weld in place from the backside. They will overlap the Outer End Panel. *Repeat at other end.*

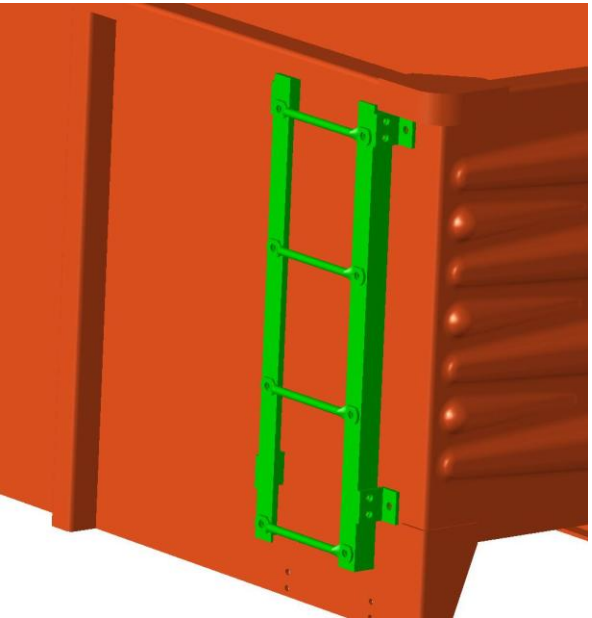


Step 10

Assemble two **Side Ladder Assemblies** as shown to the right. 3/32” dia. holes have been punched in both ladder rails for the grab irons and mounting brackets. We recommend using either #4-40 machine screws or 3/32 dia. rivets.

Side Ladder Assembly





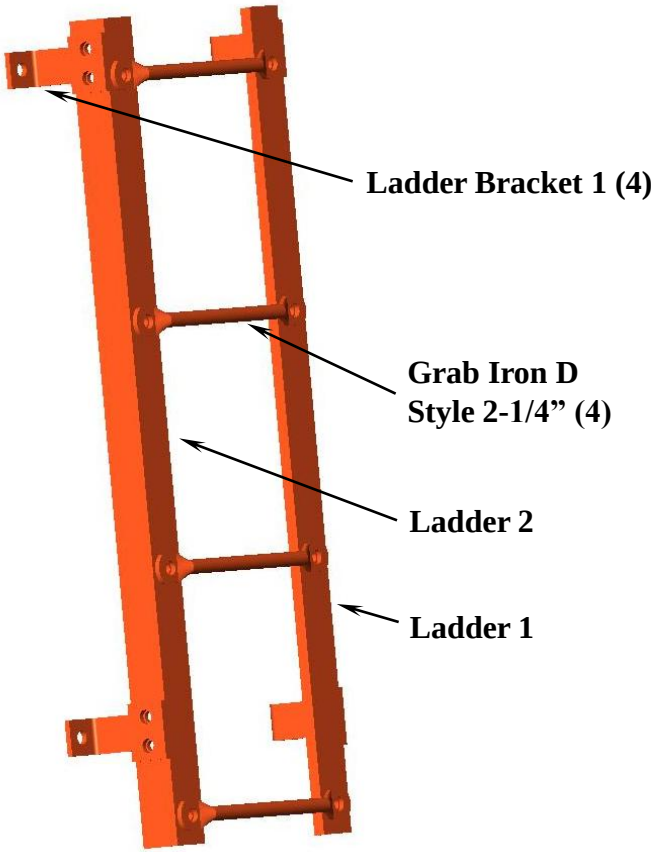
Attach the Side Ladder Assembly to the car side using the predrilled holes.

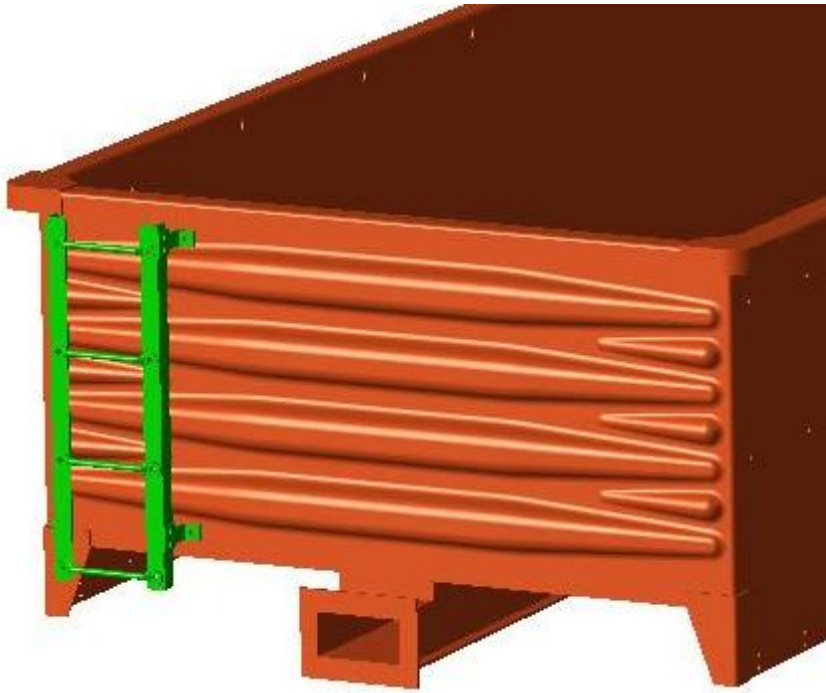
Repeat this step on the opposite side

Step 11

Assemble two **End Ladder Assemblies** as shown to the left. 3/32” dia. holes have been punched in both ladder rails for the grab irons and mounting brackets. We recommend using either #4-40 machine screws or 3/32 dia. rivets.

End Ladder Assembly

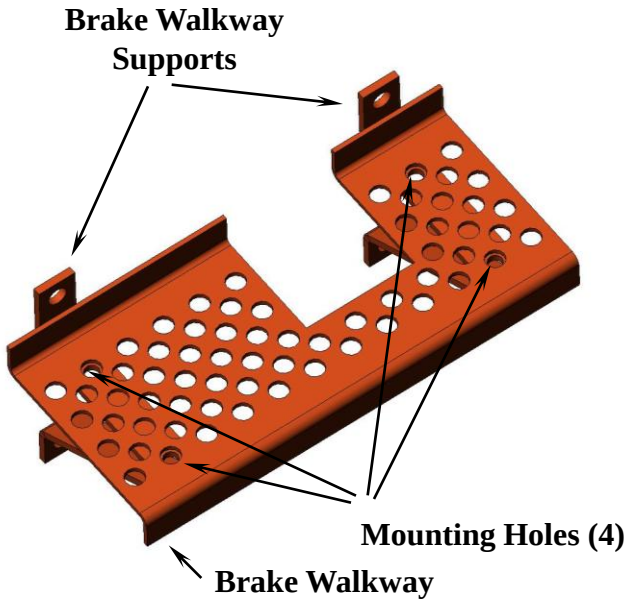




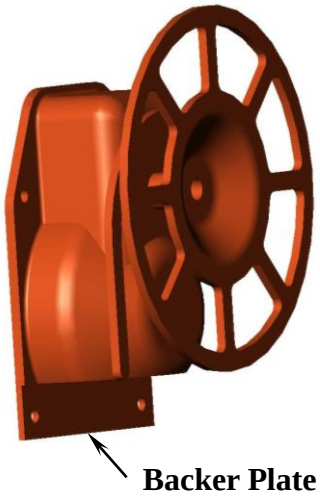
Attach the End Ladder Assembly to the End Panel on the flat area above and below the rib sections. Postion the ladder approximately ¼” from the edge. Drill mounting holes in the end panel all the way through the inner panel. The ladder can be mounted by either tapping the mounting hole or using a through bolt and nut.

Repeat this step on the opposite end.

Step 12

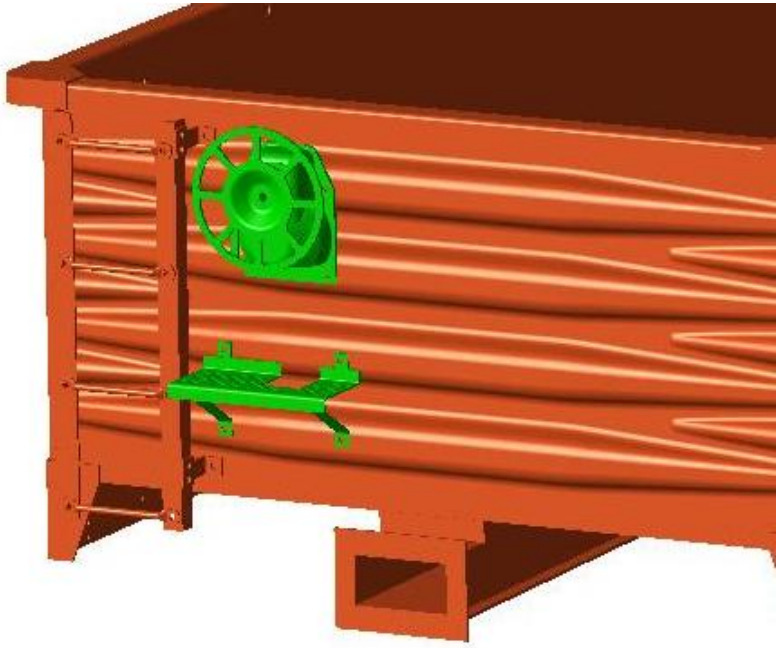


Bolt the **Brake Walkway** onto the **Brake Walkway Supports**. Drill four mounting holes in the supports to hold the walkway. We recommend drilling and tapping for a #4-40 machine screw.

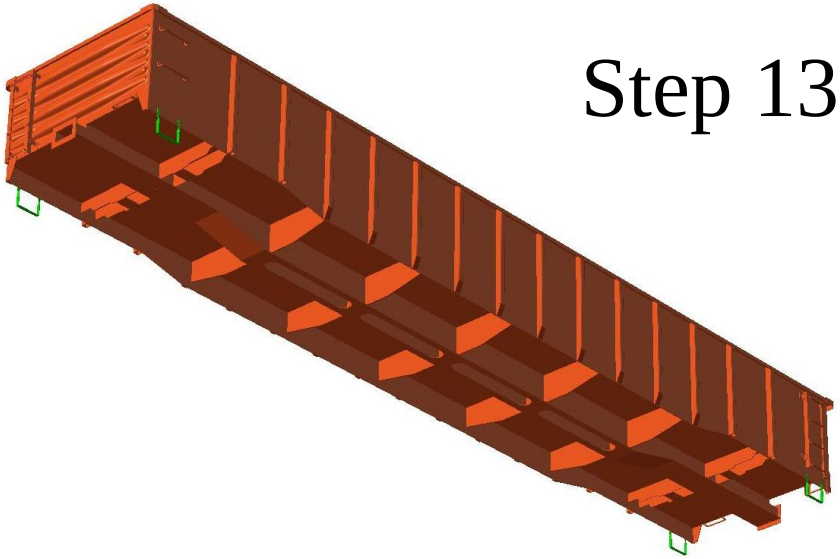


Assemble the Brakewheel Housing as shown. Install the ¼" spacer behind the brakewheel and connect the chain under the release lever bolt. The hex nuts should be on the outside. Do not install the Backer Plate now.

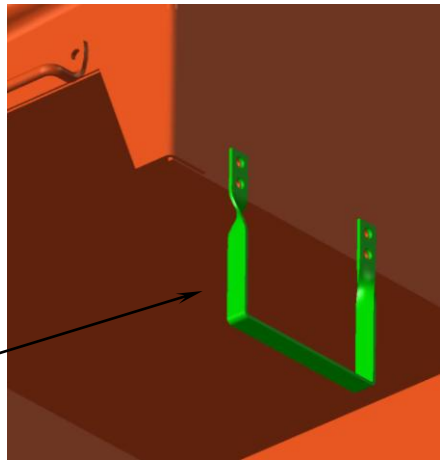
Next, position the **Brakewheel Housing Subassembly** and the **Brake Walkway Subassembly** on one end of the car as shown. Be sure the chain falls through the cutout in the Brake Walkway *(chain not shown)*. Now mark the four mounting holes for each assembly with a felt tip marker or metal scribe. Be sure to include the **Brakewheel Housing Backer** plate now. Since the End Panel is very thin, we recommend drilling all the way through the Inner Panel and running a long #4-40 screw into the inside of the car with a nut. This will make it easy to remove both assemblies for painting or in the event of a catastrophic derailment.

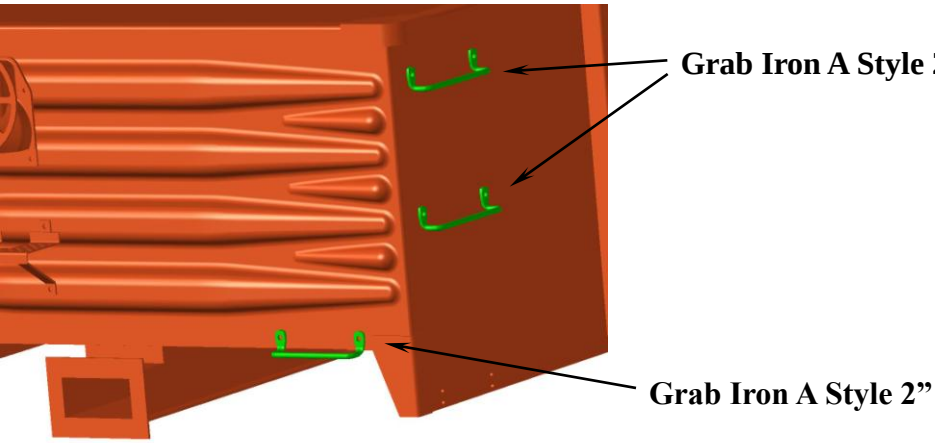


Step 13



Finally, attach (4) **Stirrup A** on each corner of the car using the sets of precut holes.





Install two **Grab Irons A Style 2-1/2”** on the car side using the precut holes. Install one **Grab Iron A Style 2”** on the end of the car as shown. Mounting holes will need to be cut in the End Panel to mount the grab iron.

*Repeat at other end***.**

At this time go back through the assembly steps and make sure that each piece is properly welded. Tighten all of the bolts but be careful to not strip out the threads. After all the welding is completed, clean up the visible welds with a die grinder or sand paper. Paint magnifies any surface defects so it is worthwhile to spend a little extra time sanding and cleaning up before painting.