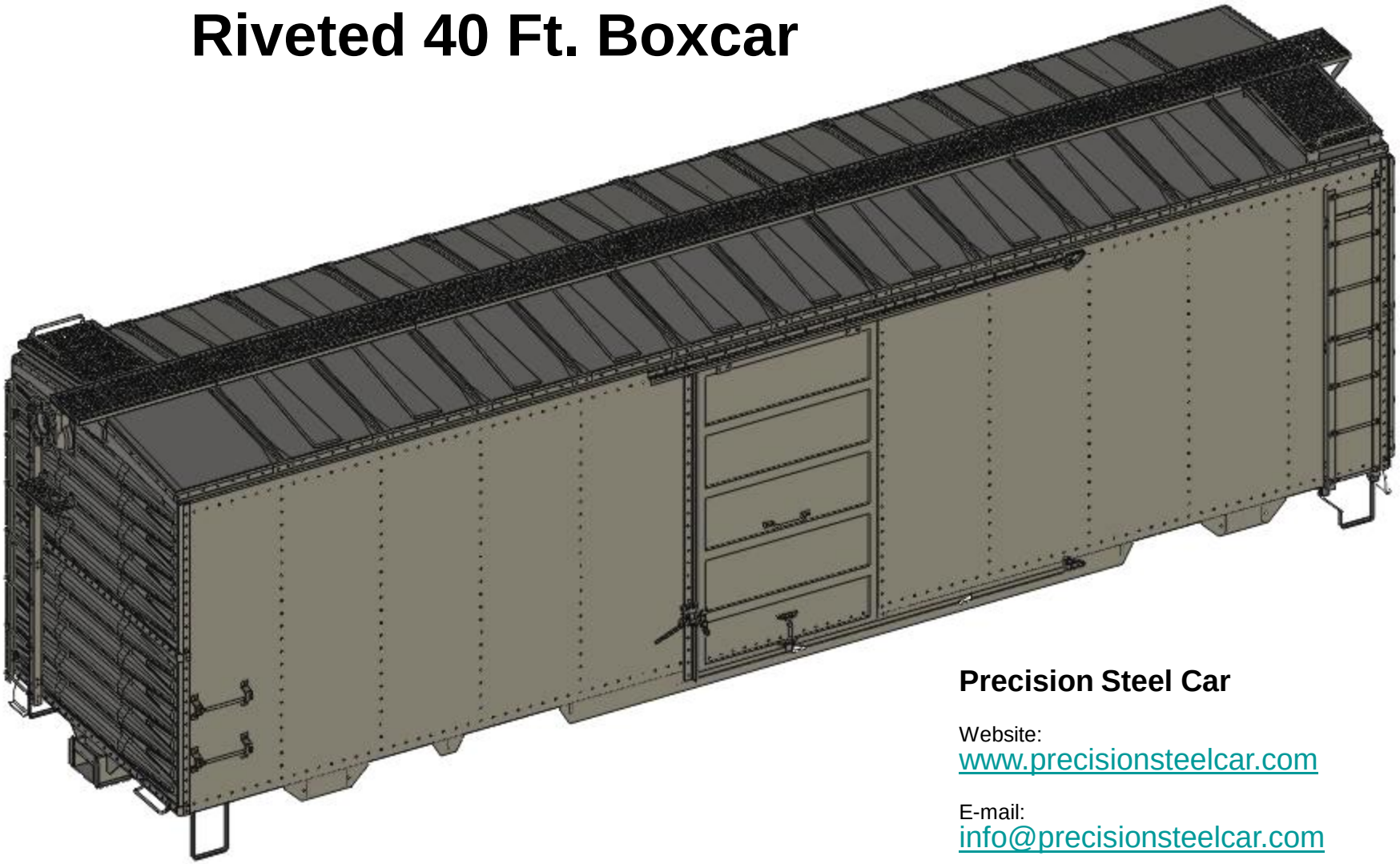
Precision Steel Car's
Riveted 40 Ft. Boxcar



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Precision Steel Car

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PSC Riveted 40 ft. Boxcar Kit: Parts List

Body	Qty.	Material
Riveted Side 6ft Door	2	Steel
Top Door Track 6ft	2	Steel
Bottom Door Track 6ft	2	Steel
Door Vertical Frame	2	Steel
Door Opening Brace	4	Steel
Dreadnaught End Backer	2	Steel
Dreadnaught Top Stamping	2	Steel
Dreadnaught Bottom Stamping	2	Steel
Floor Sheet	1	Steel
Square Stirrup Step	2	Steel
Uncoupling Plate	2	Steel
Grab Iron Bracket	8	Steel
Grab Iron 2.25" A	2	Alum
Grab Iron 2.5" D	4	Alum
Grab Iron 2.75" C	2	Alum
Door Catch Left	2	Steel
Door Catch Right	2	Steel
Brake Wheel Housing Kit	1	Pkg
Modern Brake Wheel	1	Steel
Brake Wheel Platform Kit	1	Pkg
Standoff 3/8" Long	4	Alum
Bell Crank	1	Brass
Bell Crank Mount	1	Steel
Boxcar Door Latch Kit	2	Pkg
Boxcar Door Stop Top	2	Brass
Boxcar Door Stop Bottom	2	Brass
Triple Valve Mount	1	Steel
Brake Cylinder Mount	1	Steel
Reservoir Mount	1	Steel
Roof Brace	2	Steel

Ladders	Qty.	Material
Ladder Upright S1	2	Alum
Ladder Upright S2	2	Alum
Ladder Upright E1	2	Alum
Ladder Upright E2	2	Alum
Ladder Bracket	10	Steel
Ladder Bottom Mounts	4	Steel
Angled Stirrup Step	2	Steel
Grab Iron 2.25" D	28	Alum

Frame	Qty.	Material
Main Frame	2	Steel
Major Cross Beam	2	Steel
Minor Cross Beam	5	Steel
Bolster Frame	4	Steel
Frame End	2	Steel
Frame Bottom	1	Steel
Cross Beam Bottom	2	Steel
Coupler Plate	2	Steel

Door	Qty.	Material
6ft Youngstown Door Backer	2	Steel
6ft Youngstown Door Frame	2	Steel
Door Catch Mount	4	Steel
Door Catch Handle	2	Steel
Youngstown Door Detail	4	Steel
Grab Iron 2" C	2	Steel

Roof	Qty.	Material
Roof Panel Bowtie	1	Steel
Roof Bowtie	10	Steel
Roof Hat Sections	11	Steel
Walkway Middle Bracket	6	Steel
Walkway Side Bracket	4	Steel
Walkway End Bracket	2	Steel
Punched Walkway 2.5"x10"	5	Alum
Punched Walkway 2.5"x6.875"	2	Alum
Punched Walkway 3.5"x5.625"	2	Alum
Grab Iron 2.5" A	4	Alum
Total Parts	198	

Recommended Assembly Techniques

- Follow Instruction Steps.
- We suggest buying Clecos, they are great temporary fastening devices used in riveting, get them at Aircraft Tool Supply Company. (www.aircraft-tool.com)
- Always test fit pieces without riveting or welding, to see how the kit goes together.
- Do not over squeeze/set rivets in the aluminum extrusion, it as soft as the aluminum rivets and will bow and twist.
- Refer to the PSC website for pictures of an assembled car.
- **Tack weld, when applying the final welds the longer pieces will shrink over the entire length.** Finish welding from one end to the other to avoid warping.
- It is easier to undo a tack weld than a bead.
- Plan your welds, most of the welds can be hidden.
- Skip weld every 4-6 inches, continuous welding will cause extreme warping and twisting.
- Add any extras, such as provisions for safety chains, as early as possible. It's easier to modify a piece before it is welded to the assembly.

Items to be Supplied by Buyer

Recommended Tools

- Welder
- Welding Clamps, C-clamps, Visegrip
- Rivet Gun/Rivet Squeezer
- Cordless Drill with #42 Drill bit
- Cleco Pliers/Clamps

Fasteners

- 3/32" Dia. Rivets Lengths:
  ~1200, 3/16"
  ~250, 1/4"
  ~150, 5/16"
- 1/8" Dia. Rivets Lengths:
  ~10, 3/16"
- 3-48 Hex Head Screws or per customer preference
- Epoxy for bonding metal (Loctite 330 Depend Adhesive recommended)

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. Couplers and Trucks should be mounted at Step 7

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

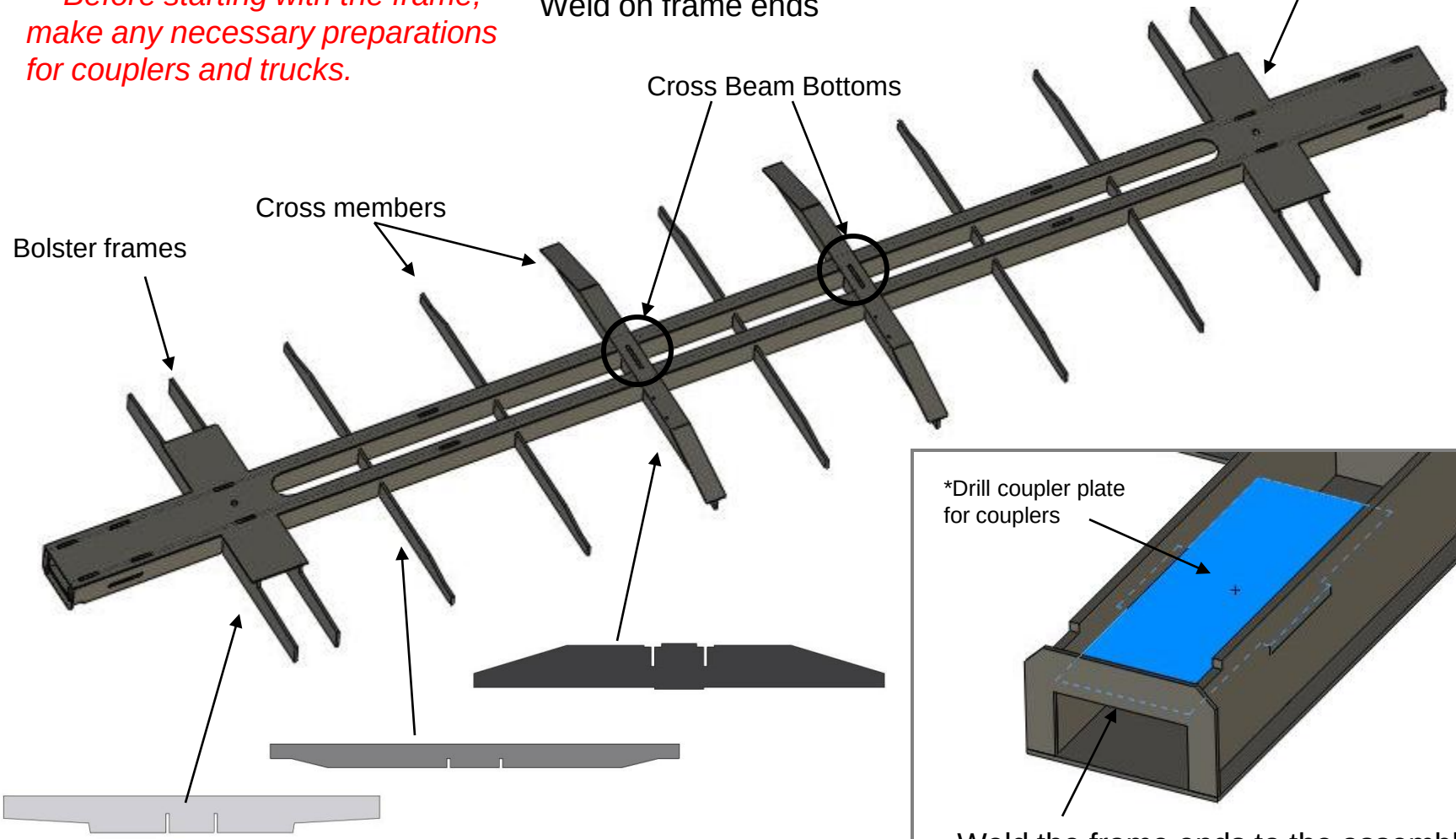
Step 1

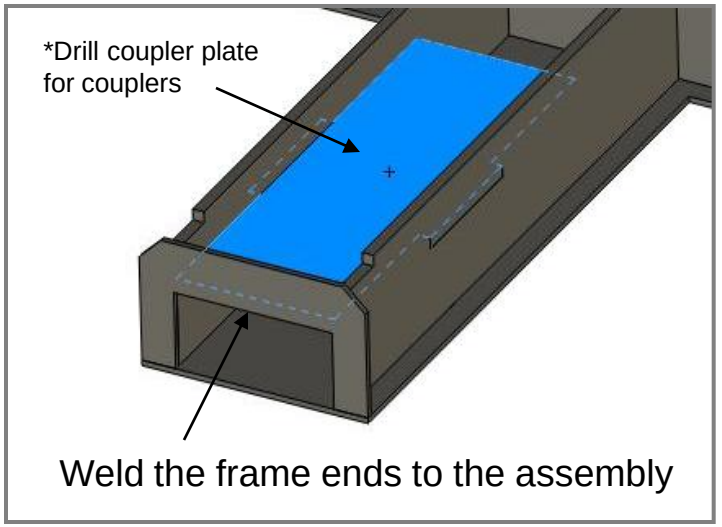
Begin by tacking the coupler plate into the frame sides. Lay the assembly upside down and continue by adding in the cross members and bolster frames.

Add the bottom sheet and cross member covers. Plug weld over the tabs.

Weld on frame ends

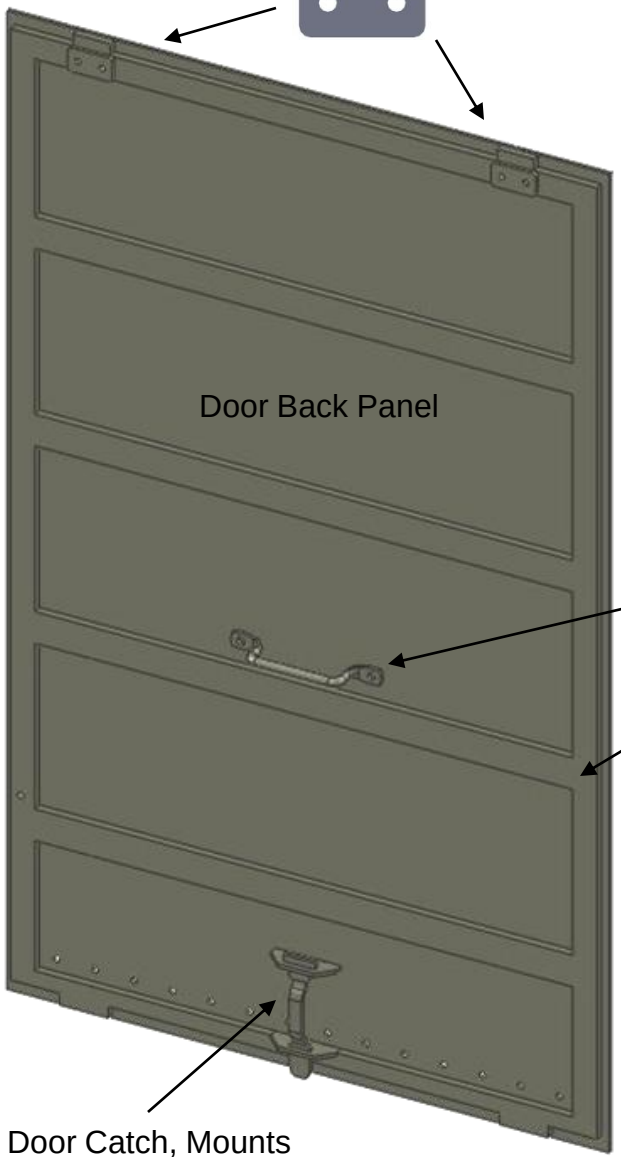
****Before starting with the frame, make any necessary preparations for couplers and trucks.*



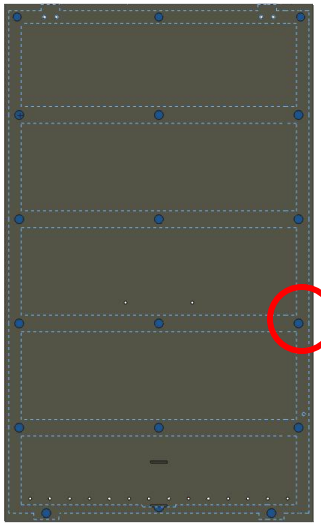


Step 2

Top Door Detail



Note: Insert Door Catch into Mounts before welding

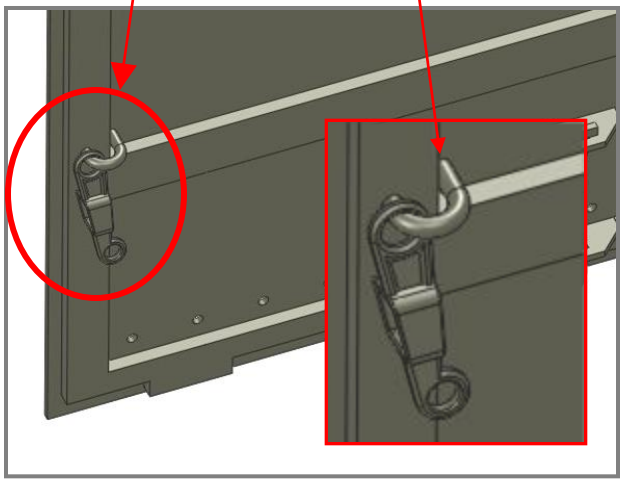


Build the door by plug welding the frame to the door back plate. Weld in door slide stop mechanism. Rivet on the top door details. Finish the rivet line at the bottom of the door.

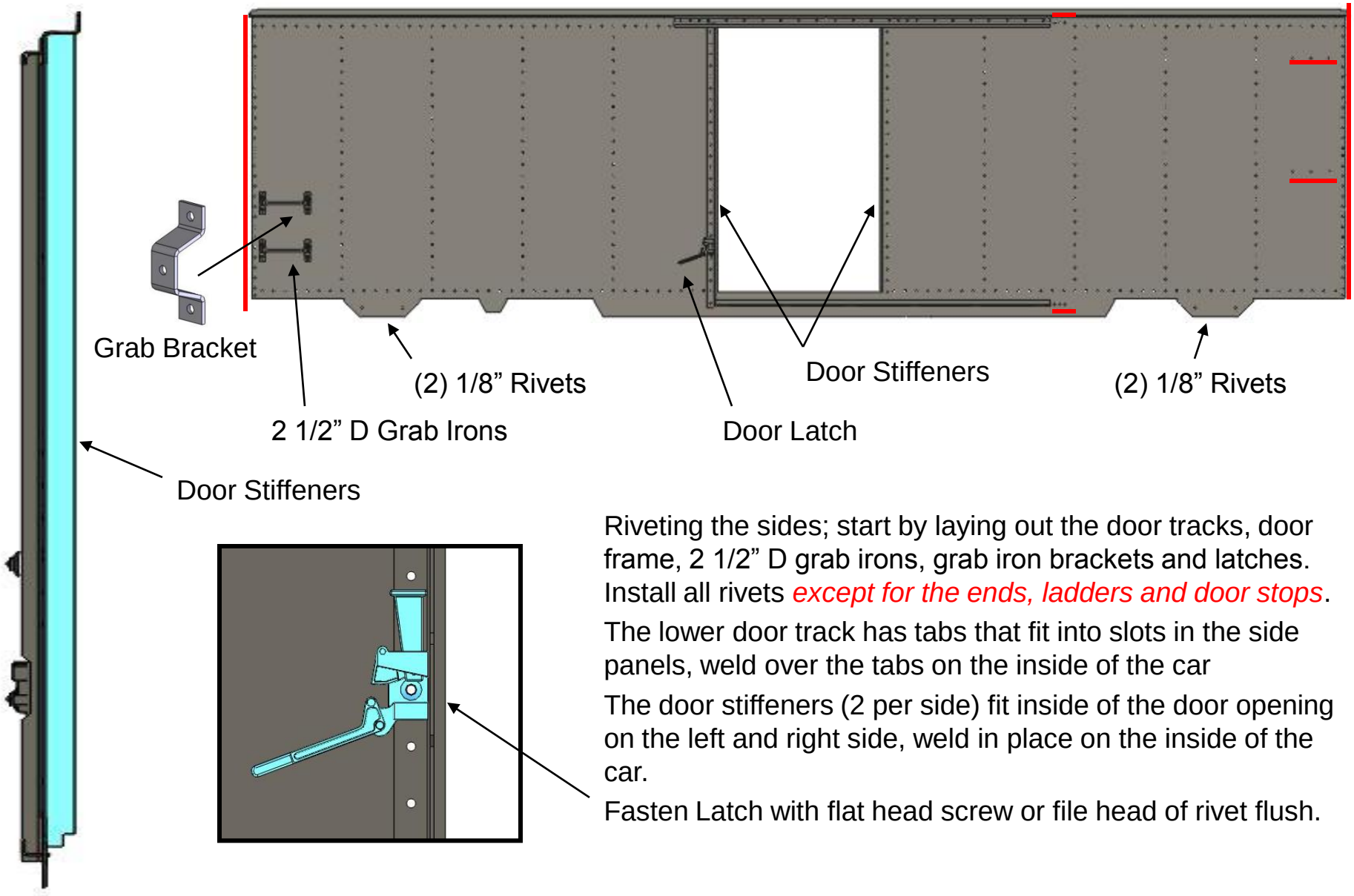
Once painted, add adhesive felt strips to the back of door. This will keep the door from scratching the side of the carbody.

Apply the grab iron and door latch. Form an eyelet from 3/32 wire bent 180 degrees around a 1/8 rod.

Orient latch as shown.



Step 3



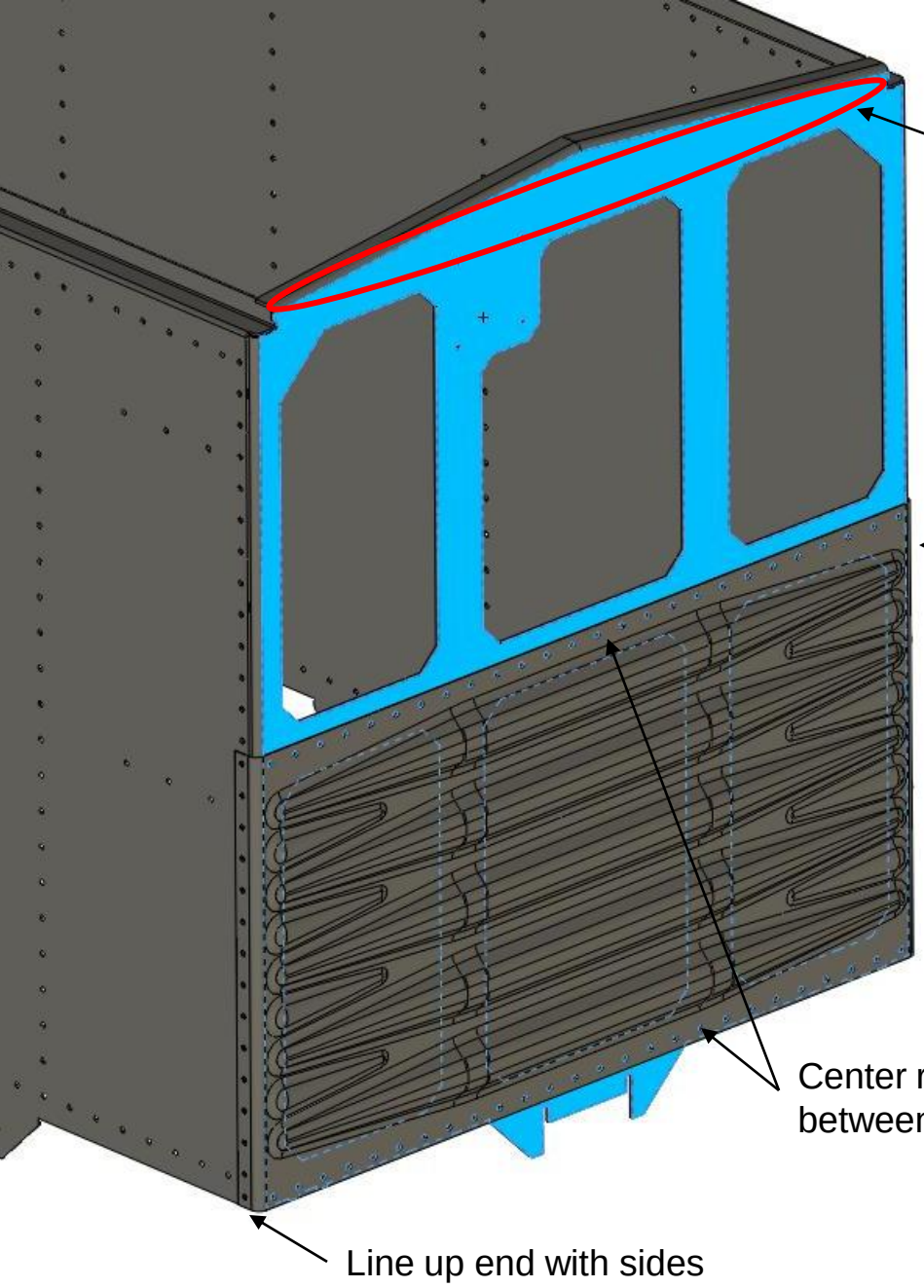
Riveting the sides; start by laying out the door tracks, door frame, 2 1/2” D grab irons, grab iron brackets and latches. Install all rivets *except for the ends, ladders and door stops*.

The lower door track has tabs that fit into slots in the side panels, weld over the tabs on the inside of the car

The door stiffeners (2 per side) fit inside of the door opening on the left and right side, weld in place on the inside of the car.

Fasten Latch with flat head screw or file head of rivet flush.

Step 4



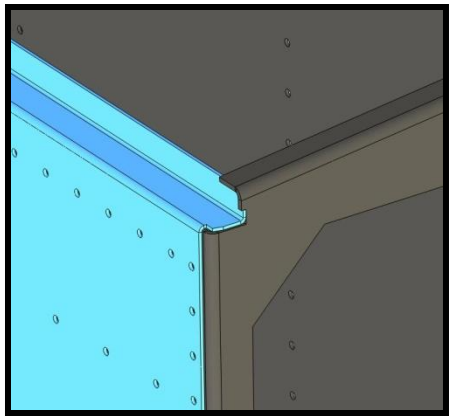
Start by tacking the sides onto the end backer plates, do not rivet yet. Start with the bottom dreadnaught end stampings, clamp in place. The bottom of the end should match the bottom of the sides.

Drill from inside through stamping using holes in the sides as guides.

Next clamp the top end stamping in place, it will overlap the bottom by approximately ½". Use a mallet to adjust bent tabs as needed.

Use epoxy to fasten top edge of upper dreadnaught end stamping.

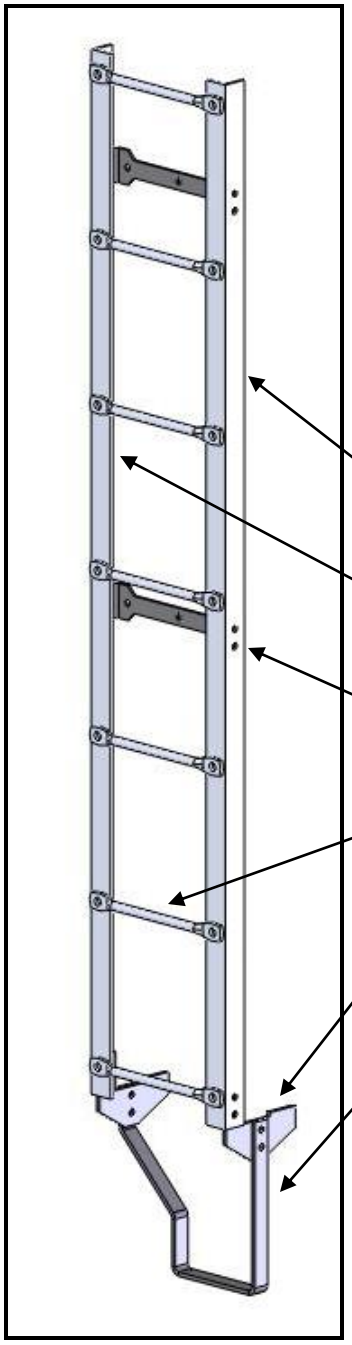
Rivet ends.



Corner Detail

Step 5

Assemble the ladders as shown. If using solid rivets with a squeezer *do not squeeze too hard*, the aluminum extrusion will distort. Do not use an pneumatic rivet tool (air hammer) to set rivets.

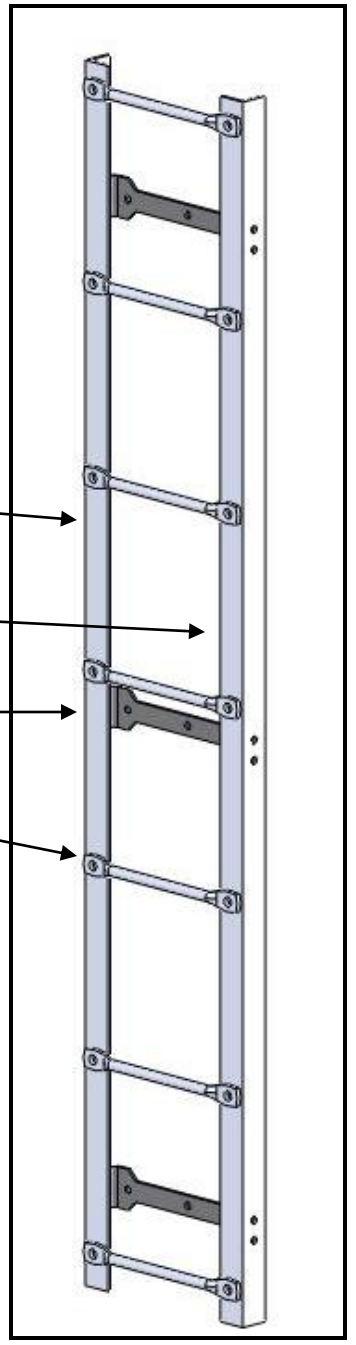


Side Ladder Assy.: 2/car

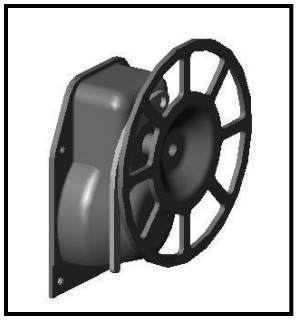
- Ladder Upright S1
- Ladder Upright S2
- (2) Ladder Brackets
- (7) 2 ¼" D Grab Irons
- (2) Ladder Bottom Mounts
- (1) Angled Stirrup

End Ladder Assy.: 2/car

- Ladder Upright E1
- Ladder Upright E2
- (3) Ladder Brackets
- (7) 2 ¼" D Grab Irons

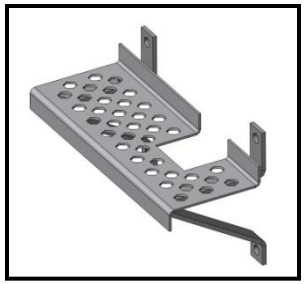


Step 6

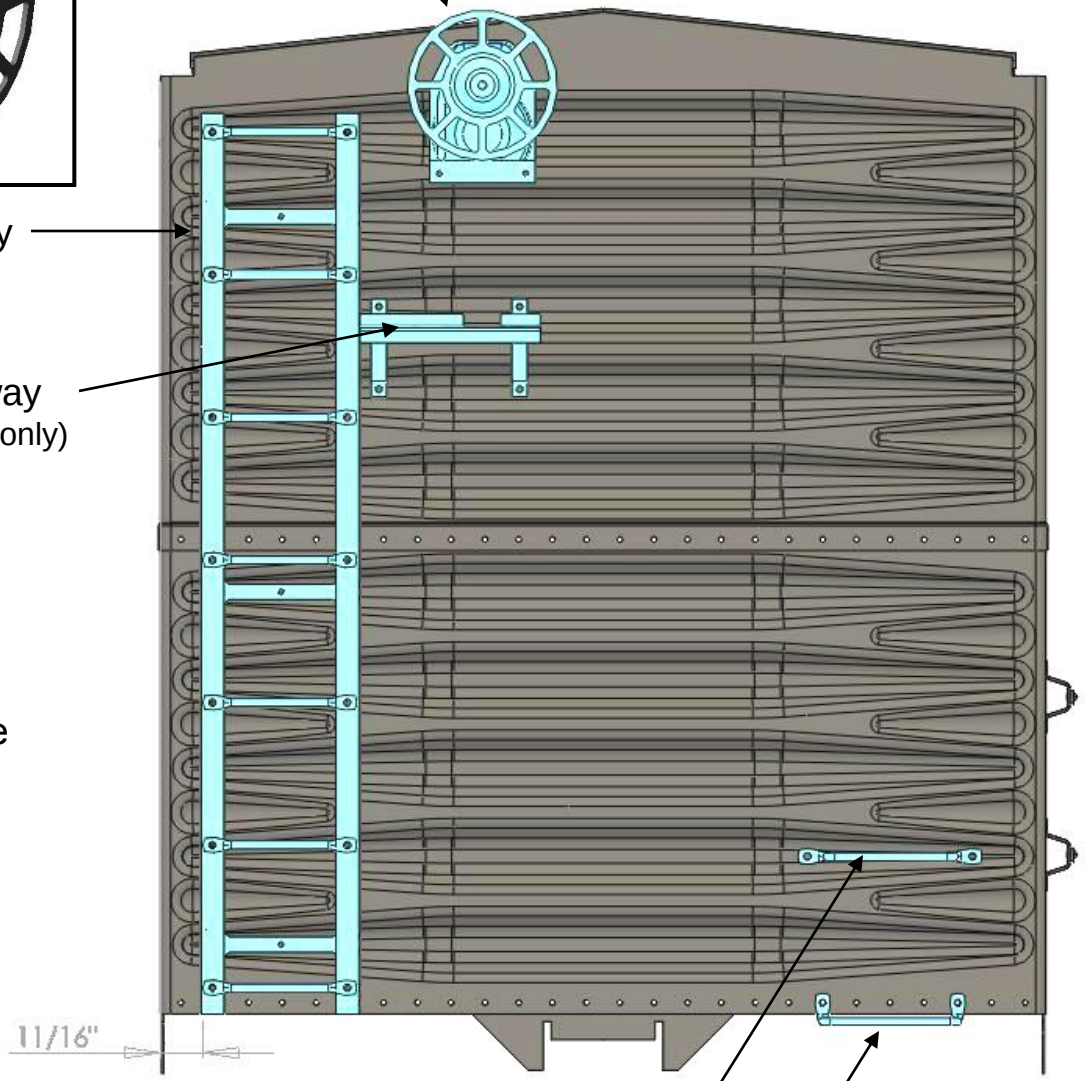


Brake wheel Assembly
(one end only)

End Ladder Assembly



Walkway
(one end only)



2 ¾" C Grab Iron

2 ¼" A Grab Iron

Detail the car ends as shown.

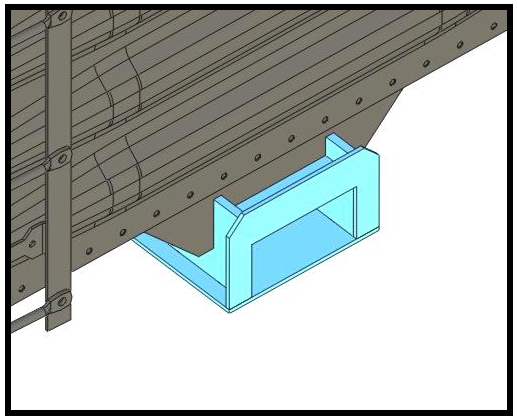
The Brake wheel assembly is mounted on four (4) 5/16" standoffs, the holes are located on the backer panel.

The walkway will mount on the raised ribs of the stamped ends. Line up the notch with the chain of the brake wheel assembly.

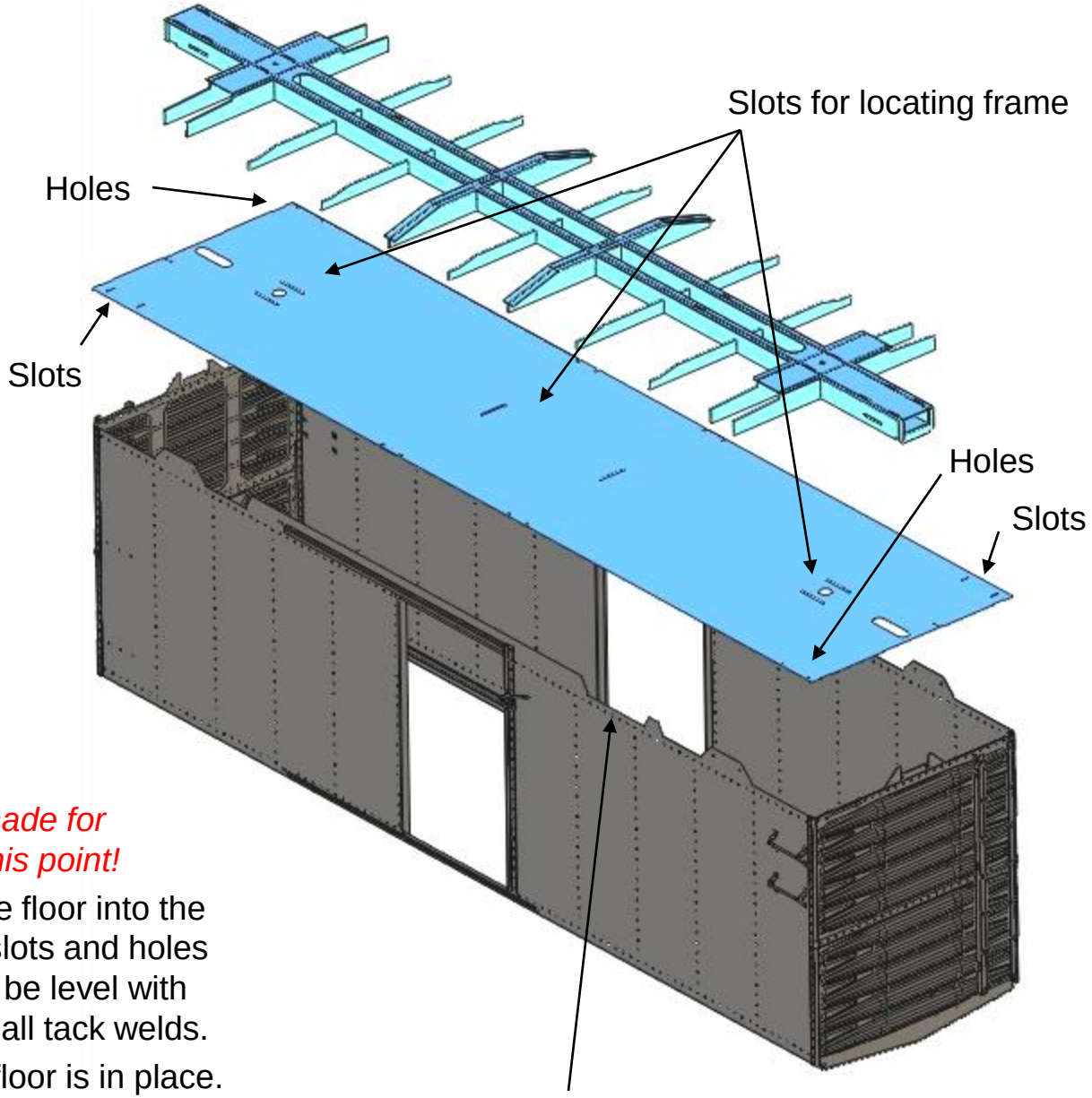
The walkway and brake wheel are mounted on one end only.

Drill through stamped ends to mount end ladder assemblies. The ladder brackets will line up with the raised ribs.

Step 7



Frame End Detail



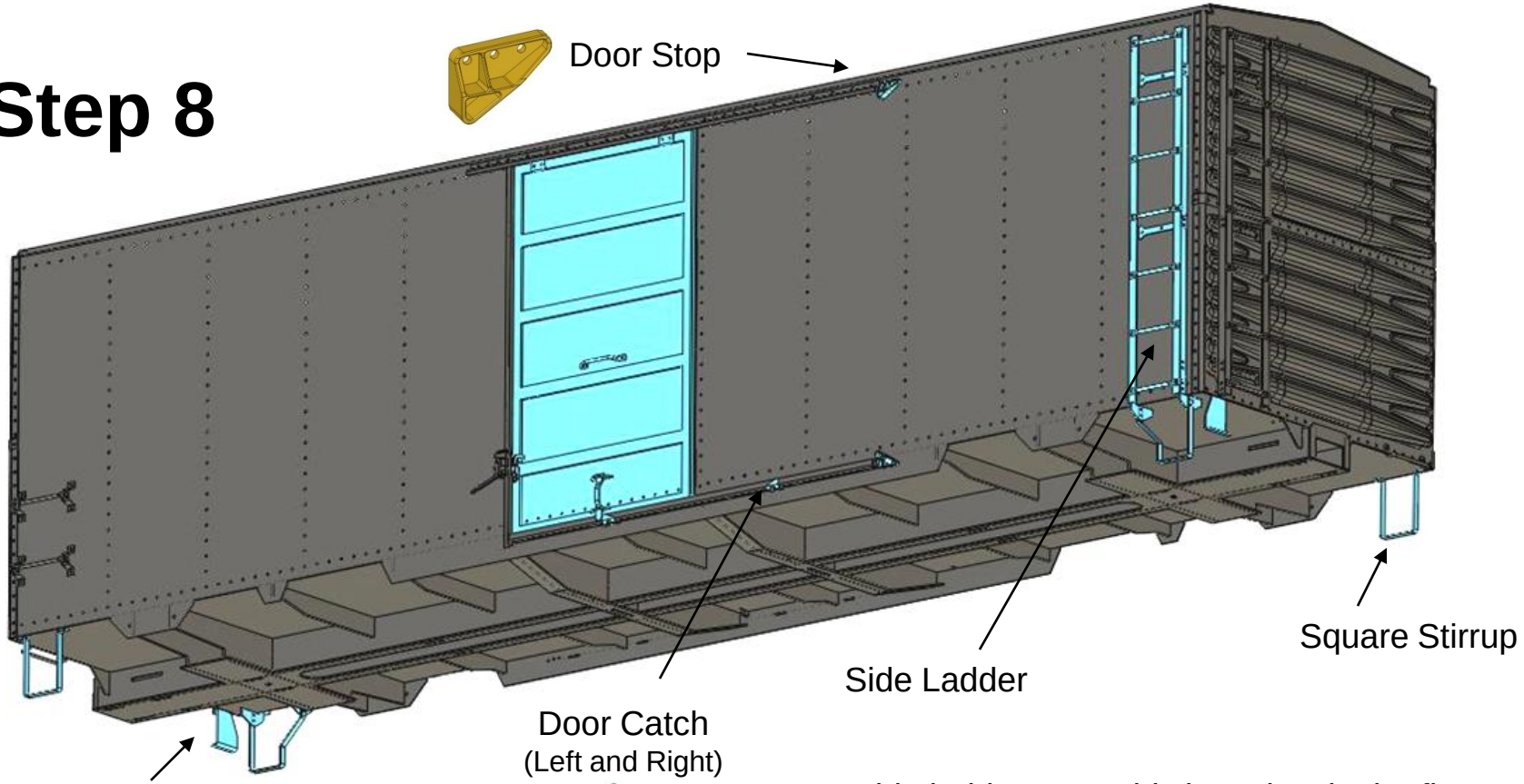
****Ensure provisions have been made for mounting trucks and couplers at this point!*

With the car upside down, weld the floor into the car body. Note orientation of the slots and holes for the stirrup steps. The floor will be level with the ends of the car. Use many small tack welds.

Weld the frame in place once the floor is in place. The frame will fit into slots in the floor and end panels

Step 8

Door Stop

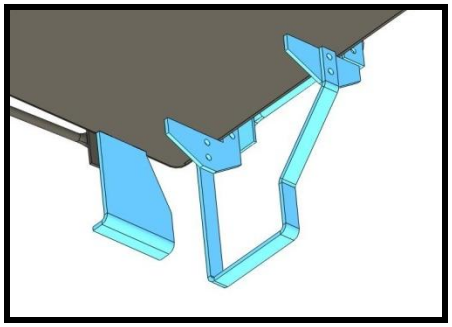


Uncoupling Plate

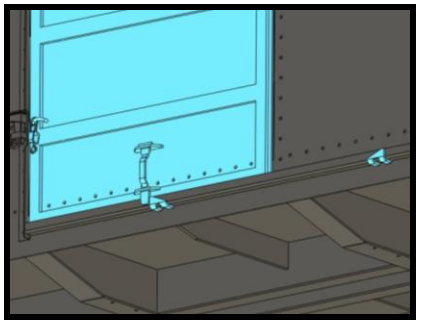
Door Catch
(Left and Right)

Side Ladder

Square Stirrup



Side Ladder
Uncoupling Plate



Door Catch
Placement

Insert side ladder assembly into slots in the floor sheet, weld and bolt ladder assembly in place.

Insert uncoupling plate into groove in the end of the floor sheet, weld in place.

Rivet the square stirrups.

Insert door assemblies into door tracks, bolt door stops in place.

Tack weld the door catches (left and right) to the lower door track. These should be placed to hold the door fully closed and fully open.

Step 9

Begin by welding the raised panels to the roof. Center over the holes and plug weld.

Epoxy the hat sections across the width of the roof. Center between the raised panels and the rivet holes with the ½” spacing.

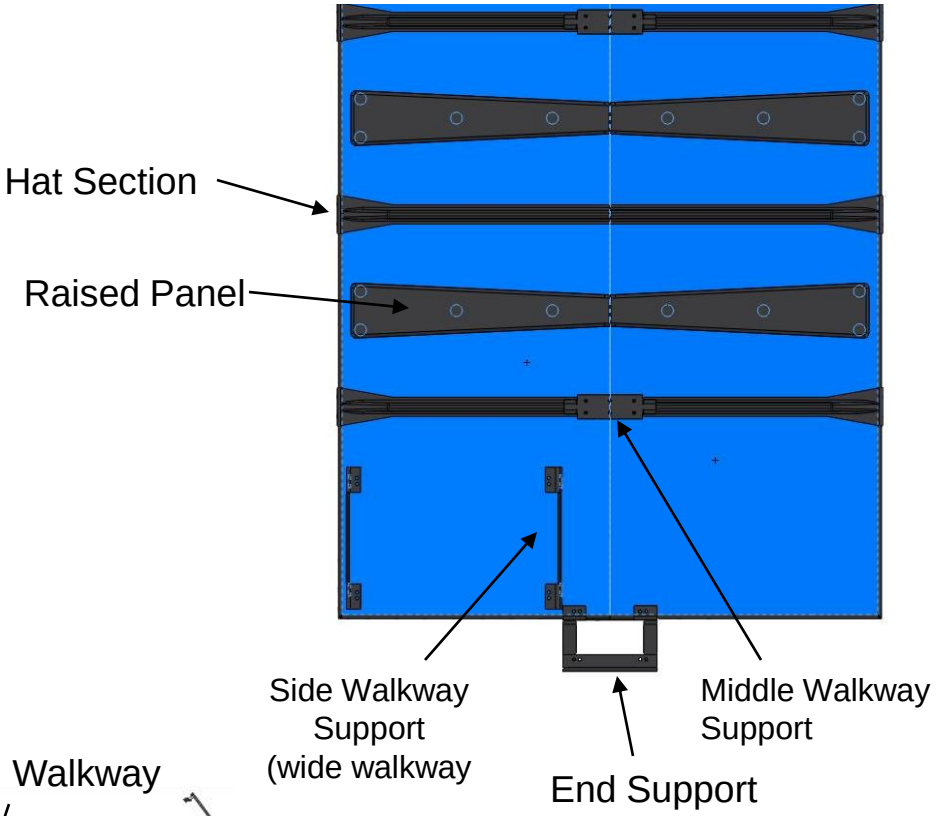
Drill and rivet the hat sections and the end walkway supports. Also rivet the remaining holes around the perimeter of the roof.

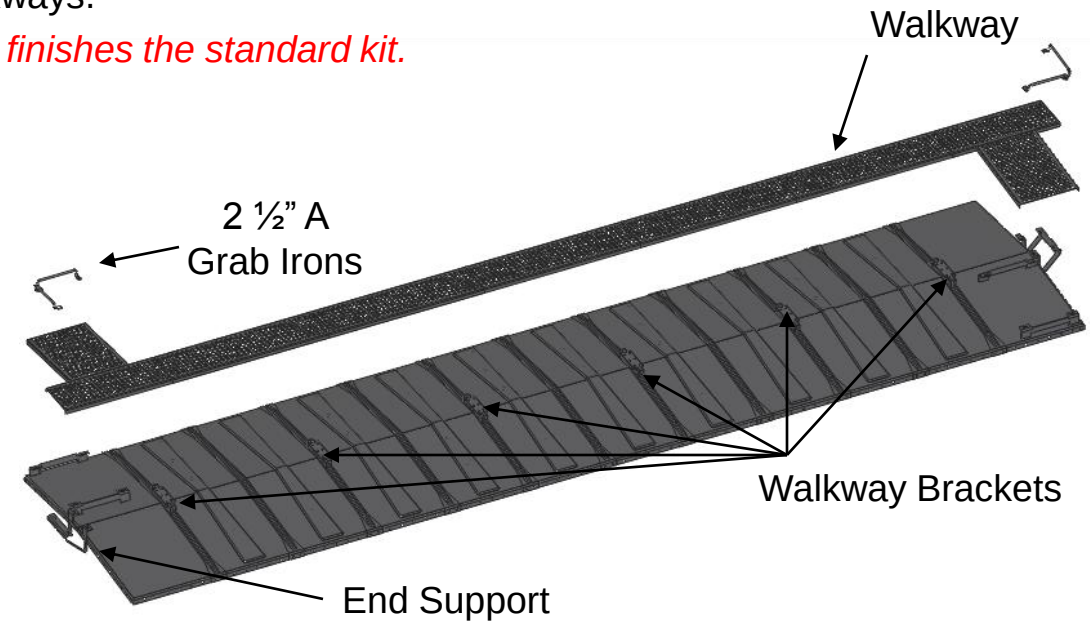
Tack weld the remaining walkway supports. Note their spacing below.

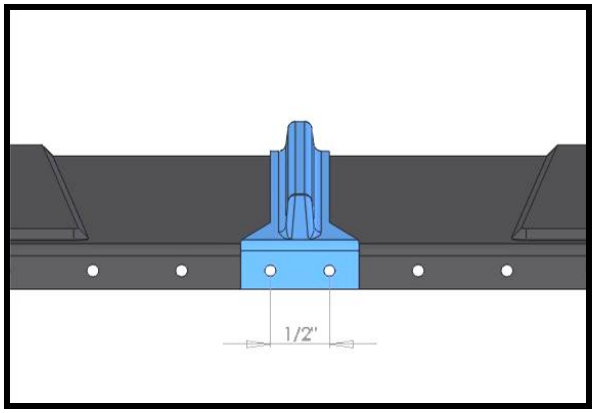
Bolt the walkways in place with the 10” long sections in the middle with seams on supports.

The grab irons mount on corner of the 3 1/2” Wide end walkways.

This finishes the standard kit.

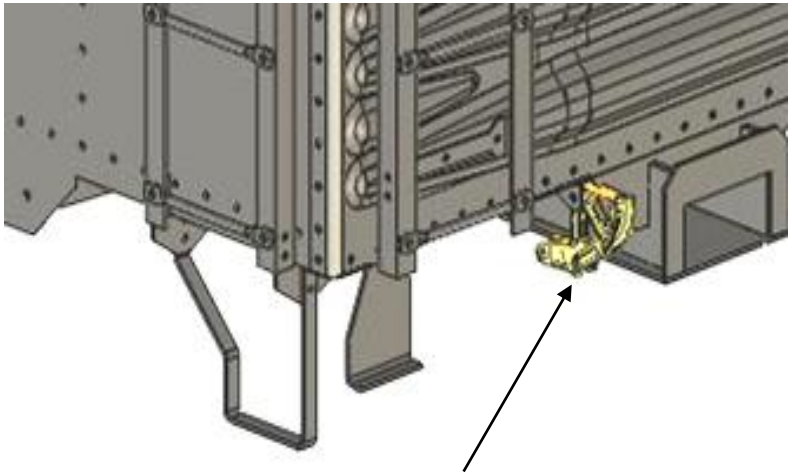






Hat Section Detail

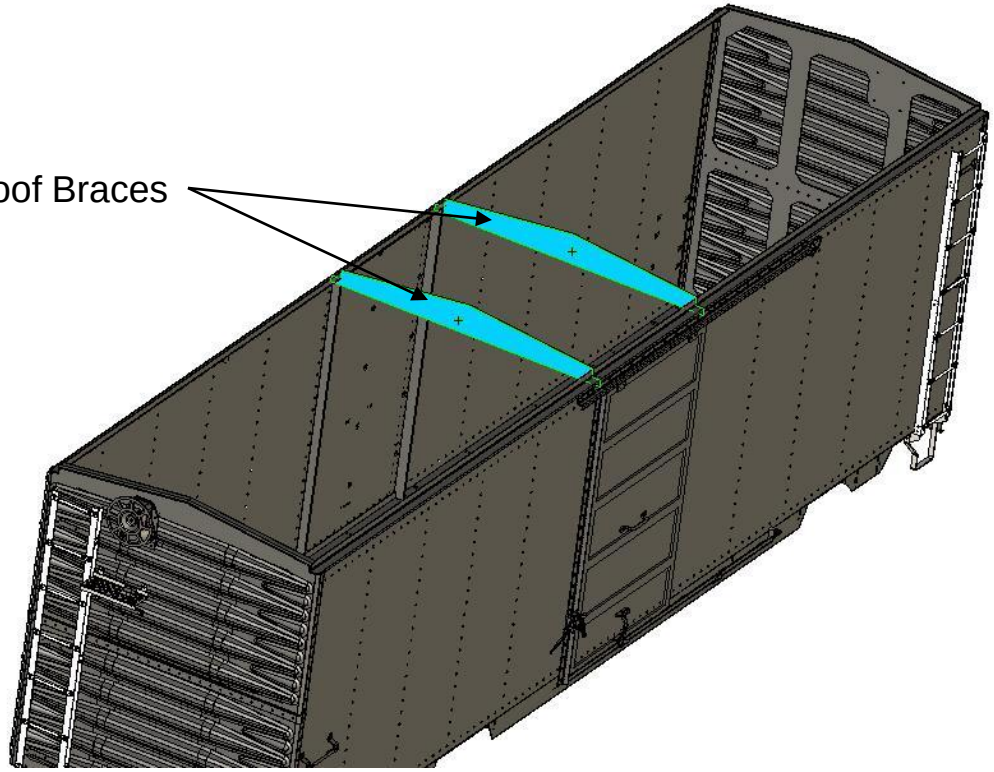
Step 10



Bell Crank & Mount

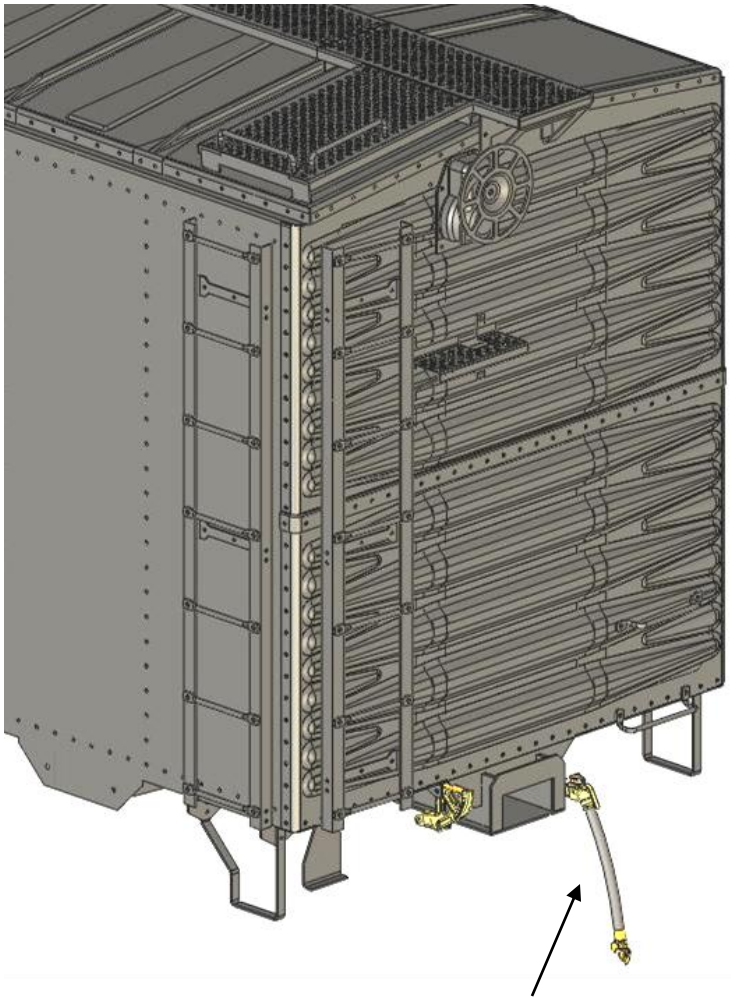
Install the bell crank mount to the bottom of the car in-line with the chain from the brake wheel housing. Install the bell crank into the mount as shown thread chain onto it.

Roof Braces



Weld the two roof braces on either side of the door to provide additional stiffness to the sides.

(Note: These parts are not necessary if the roof is permanantly attached.)



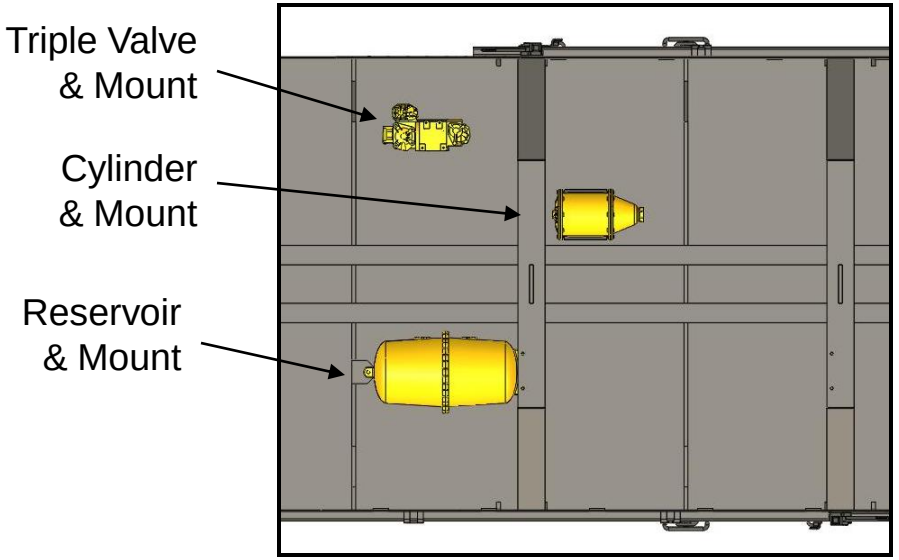
Glad Hand Assembly

Step 11: Optional Details

(if purchased)

The Anglecock and Gladhand assembly mounts to the right side of the car frame end on both ends of the car.

Locate the reservoir on the bottom of the car between the cross members. Weld the cylinder mount to the cross member. The brake cylinder and triple valve mounts weld to the floor of the carbody. Bolt the valve and cylinder to the mounts.



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