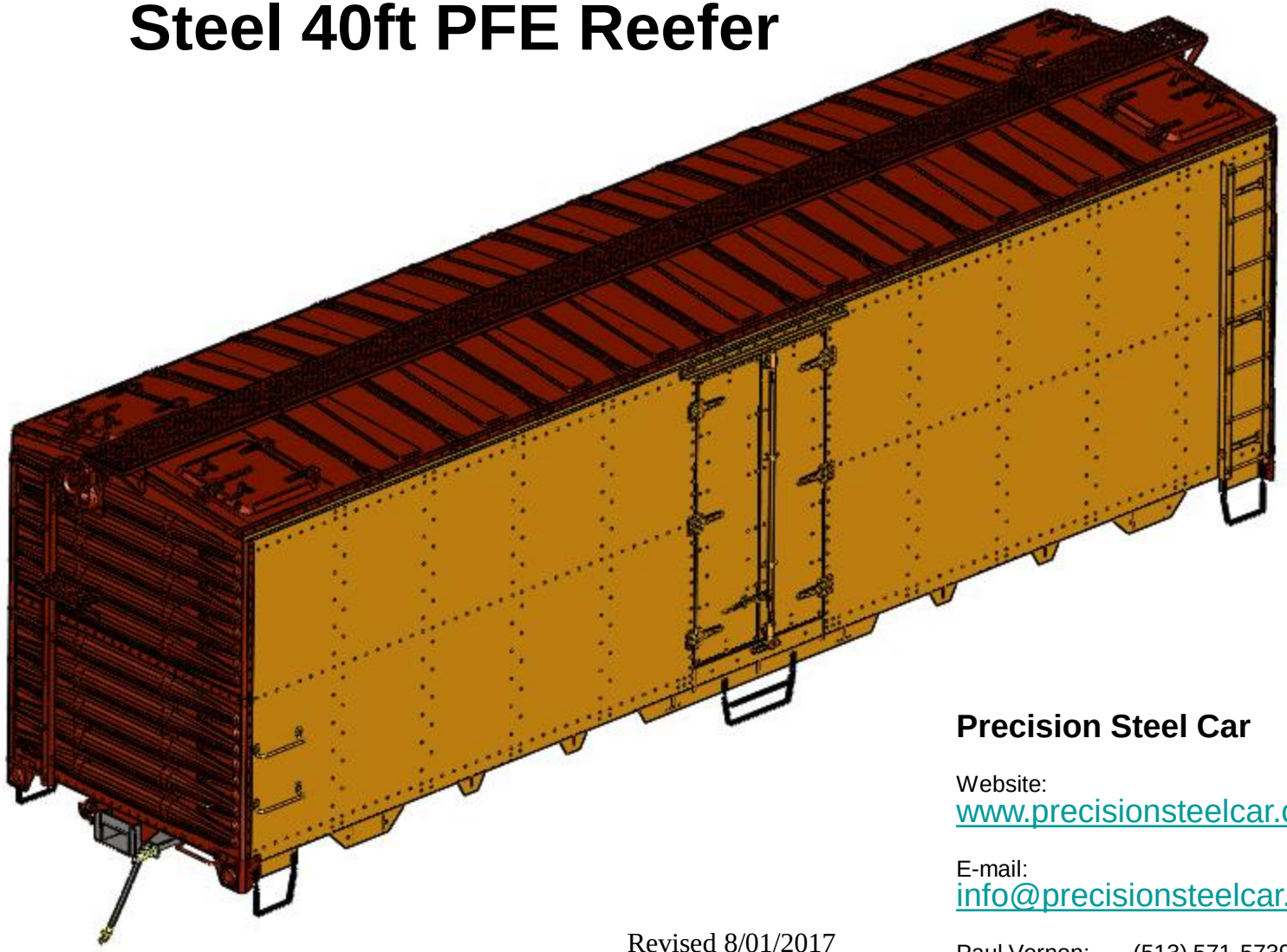
Precision Steel Car's
Steel 40ft PFE Reefer



Revised 8/01/2017

Precision Steel Car

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PSC 40ft PFE Reefer Kit: Parts List

Body	Qty.	Material
Reefer carbody Side	2	Steel
Door Drip Edge	2	Steel
Door Side Brace	4	Steel
Door Top Brace	4	Steel
Dreadnaught End Backer	2	Steel
Corner Brace (Left)	2	Steel
Corner Brace (Right)	2	Steel
Floor Sheet	1	Steel
Triple Valve Mount	1	Steel
Brake Cylinder Mount	1	Steel
Reservoir Mount	1	Steel
Dreadnaught Stamping Set	1	Pkg
Poling Pocket	4	Brass

Doors	Qty.	Material
Door - Left Side	2	Steel
Door - Right Side	2	Steel
Latch Bar	2	Steel
PFE Door Hinge (2pc.)	12	Brass
PFE Door Handle	2	Brass
PFE Door Lock Hasp	2	Brass
PFE Door End Cam	4	Brass
PFE Door Mid Bearings	4	Brass
PFE Door End Bearings	4	Brass
PFE Door Bottom Reciever	2	Brass
PFE Door Top Reciever	2	Brass

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

Details / Ladders	Qty.	Material
Ladder Upright LH	2	Alum
Ladder Upright RH	2	Alum
Ladder Bracket	12	Steel
End Stirrup	4	Steel
Center Stirrup	2	
Stirrup Midstep	2	
Brake Wheel Kit - Traditional	1	Pkg
Traditional Brake Wheel	1	Steel
Brake Wheel Platform	1	Alum
Platform Supports	2	Steel
Standoff 3/8" Long	4	Alum
Bell Crank	1	Brass
Bell Crank Mount	1	Steel
Grab Iron 2.5" A	4	Alum
Grab Iron 2.25" A	2	Alum
Grab Iron 2.75" C	2	Alum
Grab Iron 2.25" D	28	Alum

Roof	Qty.	Material
Roof Panel - Reefer	1	Steel
Roof Stiffeners	4	Steel
Roof Bowtie	9	Steel
Roof Hat Sections	10	Steel
Walkway Middle Bracket	6	Steel
Walkway End Bracket	2	Steel
Punched Walkway 2.5"x10"	4	Alum
Punched Walkway 2.5"x9.375"	2	Alum
Punched Walkway 2.5"x5"	1	Alum
Hatch Frames	8	Steel
PFE Hatch Stamping	4	Steel
PFE Hatch Standoff	8	Steel
PFE Hatch Hinge Base	12	Brass
PFE Hatch Hinge Arm	8	Brass
PFE Hatch Latch Arm	4	Brass
PFE Hatch Latch Reciever	4	Brass
PFE Hatch Latch Rod	4	Brass
PFE Hatch Handle	4	Brass

Total Parts **253**

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 or similar)

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

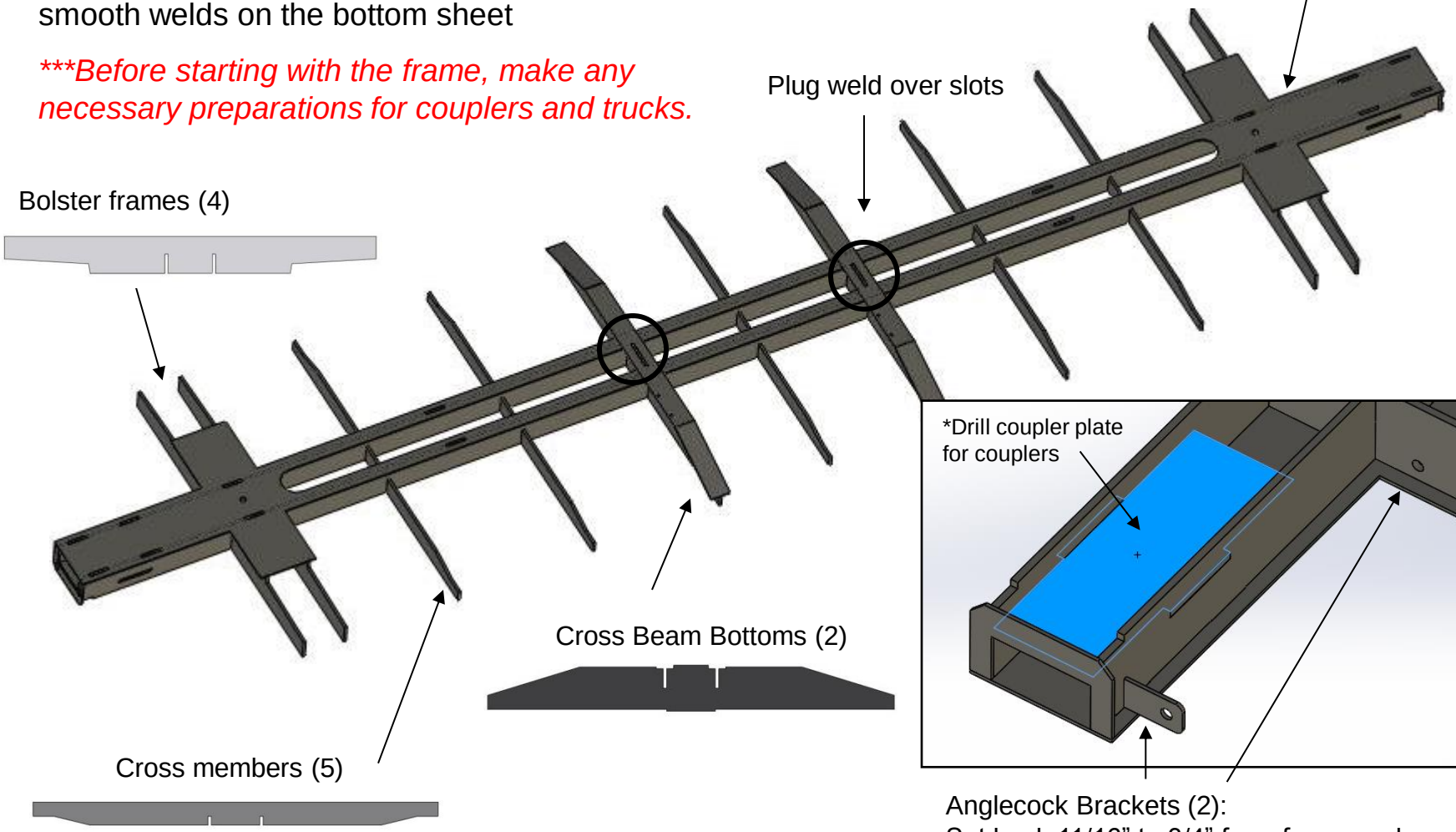
Precision Steel Car is not responsible for defects resulting from poor assembly or careless handling. Replacement parts may be available to purchase.

Frame Sub-Assembly:

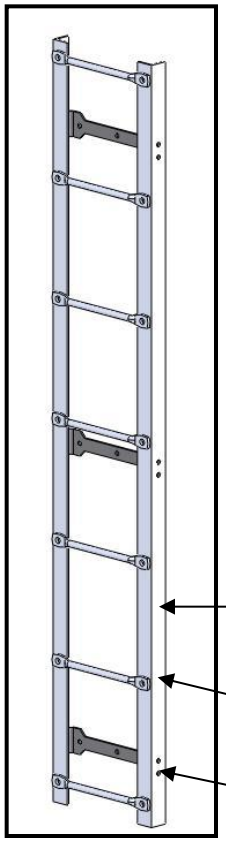
Step 1

Assemble parts as shown. Parts are located by tabs and slots. Weld as needed, plug weld and grind smooth welds on the bottom sheet

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



Step 2



Ladder Uprights (LH/RH)

2.25” D Grab Iron (7)

Ladder Brackets (3)

Ladder Sub-Assemblies

Assemble the ladders as shown. If using solid rivets with a squeezer or hammer, *do not squeeze/set rivets too hard*, the aluminum extrusion will distort.

Door Sub-Assemblies:

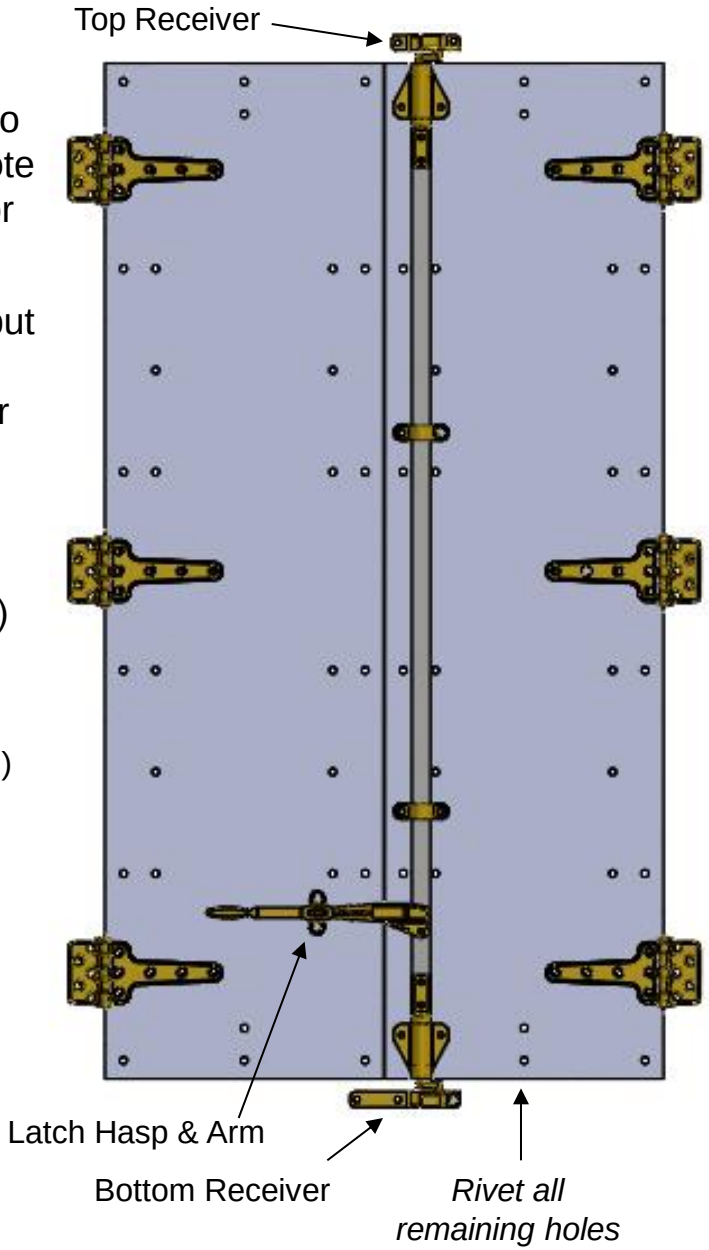
Build the door sub-assemblies as shown (at right), receivers will need to be fastened to the car body side. Note the hole locations and orientations for the LH/RH door parts.

Bolts for Rod Ends may need to be put in from the back with the nuts facing out for proper rotation of the latch bar mechanism.

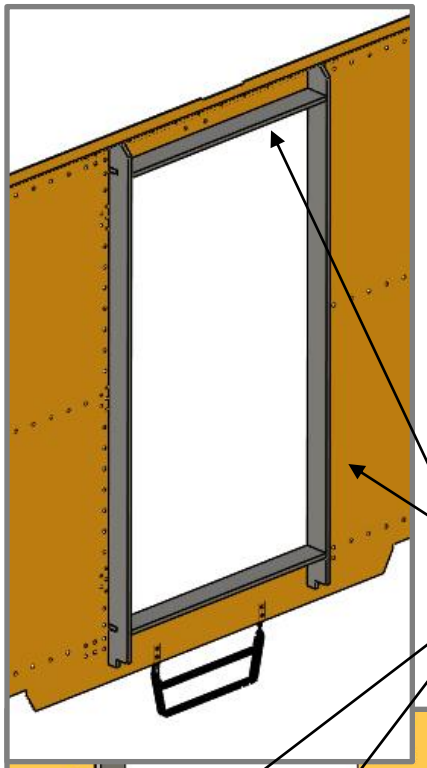
1-72 and 0-80 Brass hardware recommended for installation. Remaining holes to be riveted (3/32”)

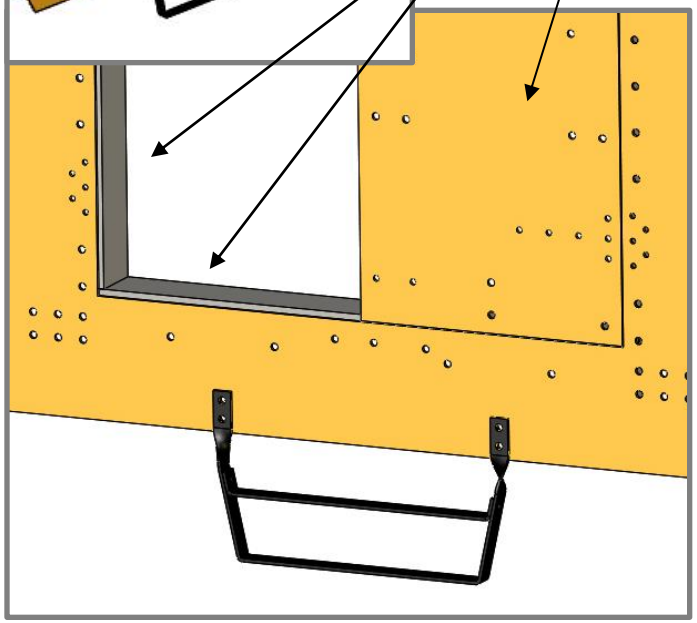
Per Door/Side

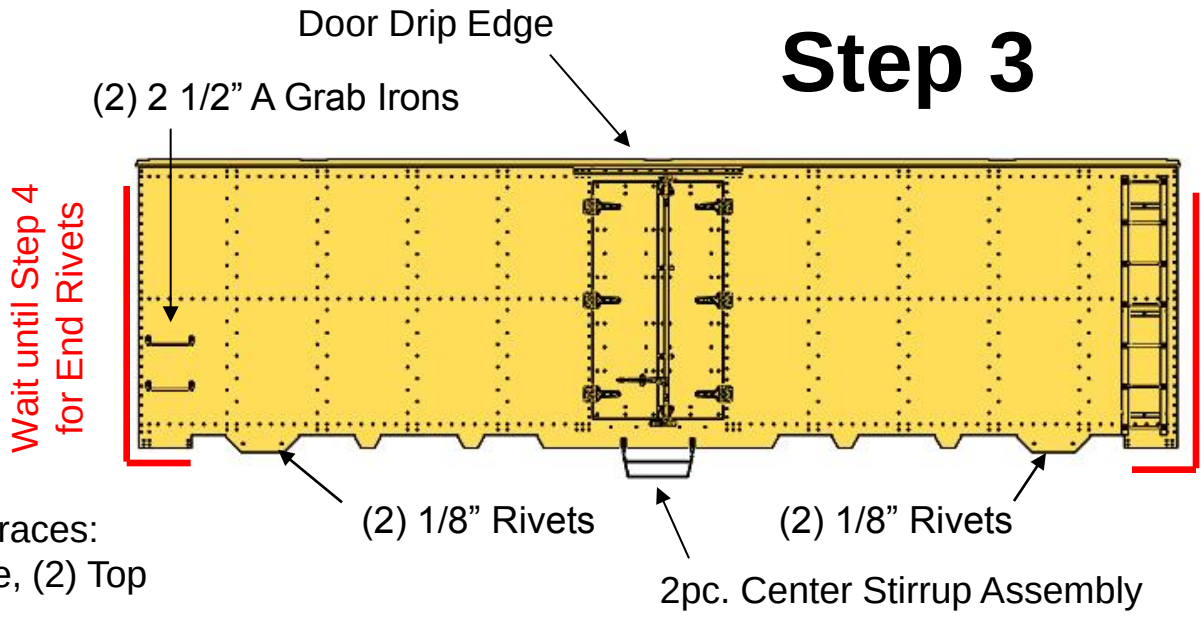
Door Panels (LH/RH)
Hinges (6)
Latch Bar (1)
Latch Handle (1)
Latch Hasp (1)
Mid Bearings (2)
End Bearing (2)
Top Receiver (1)
Bottom Receiver (1)



Step 3







Door Braces:
(2) Side, (2) Top

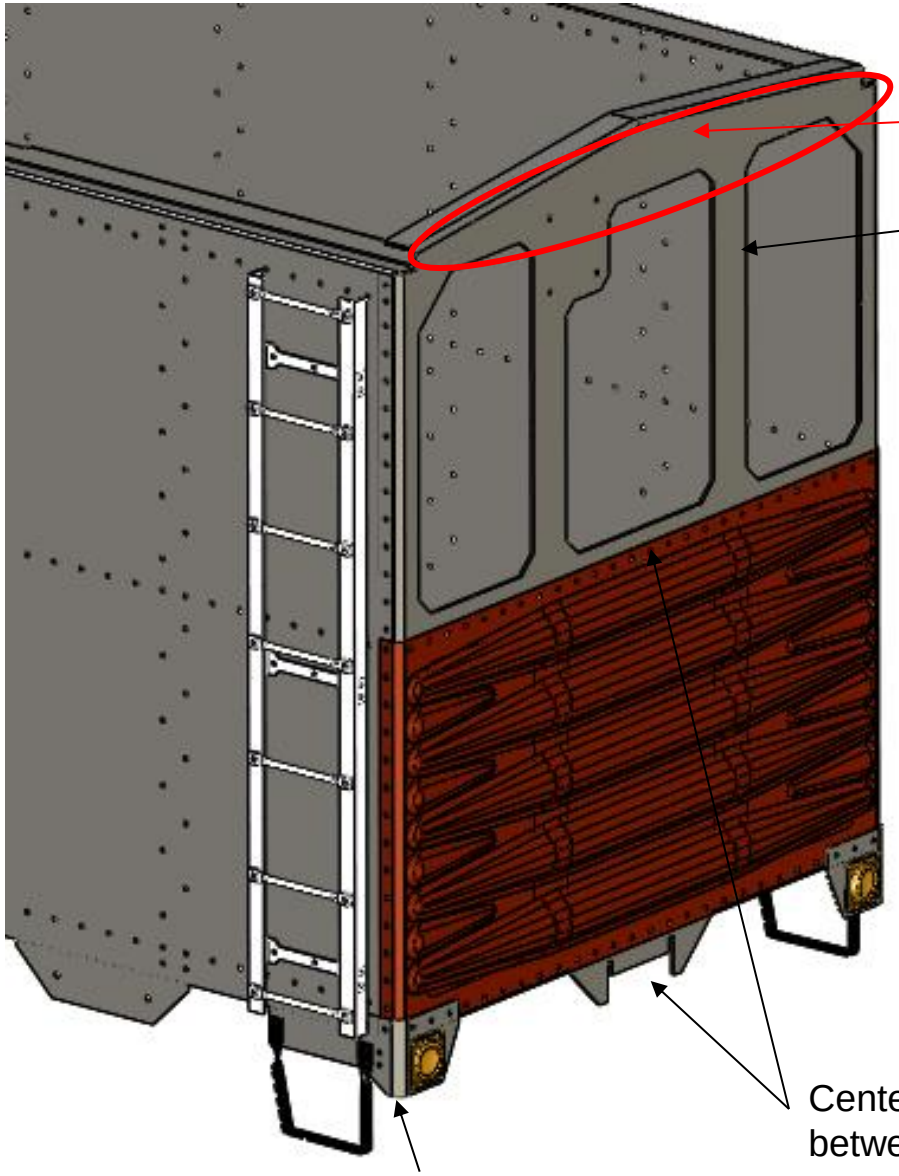
Door Panel

Riveting the sides:

Weld the door braces to form a frame inside the door opening. The frame opening will be smaller than the door opening, providing a surface all around for the doors to butt against. The frame should be ~3/32” small at top and bottom and ~1/16” small at each side. Install the door assemblies, ensure proper fit and function.

Install all rivets *except for those where the end stampings will lap over the sides, the corner braces and end stirrup steps.* Some rivets will need to be install prior to the ladders. All rivets are 3/32” diameter except for (4) 1/8” diameter near the bolster frames.

Add (2) 2 1/2” A grab irons, ladder sub-assembly, door drip edge (above door opening) and center stirrup step.



Step 4

Car Body Ends:

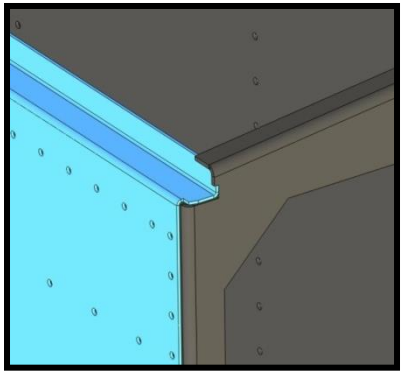
Start by tack welding the sides onto the end backer plates, do not rivet yet. Start with the bottom dreadnaught end stampings, clamp in place. The bottom of the end should match the bottom of the sides.

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.

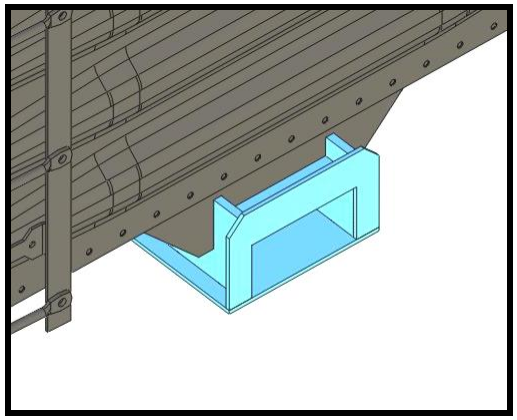
Use epoxy to fasten top edge of upper dreadnaught end stamping.

Rivet ends.

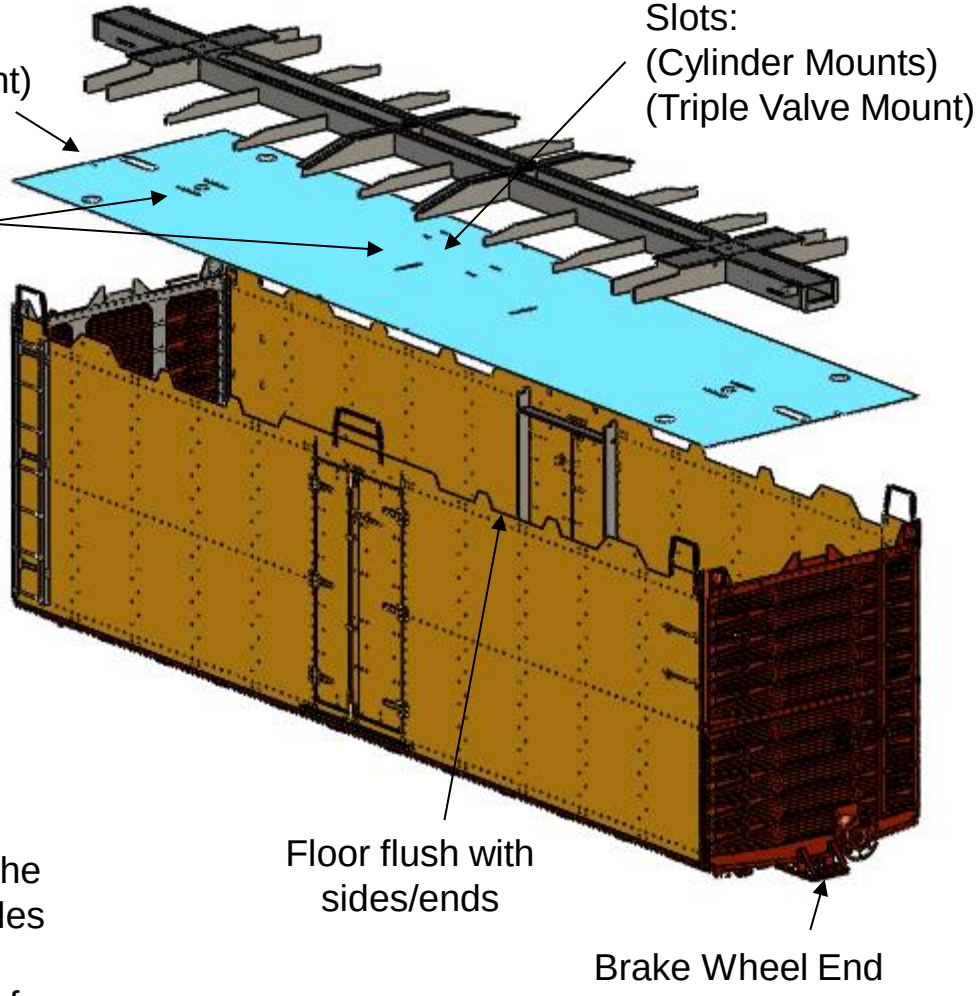


Corner Detail

Step 5



Frame End Detail



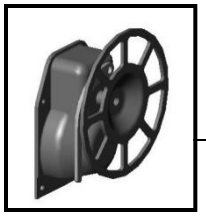
Welding the Body, Floor and Frame

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

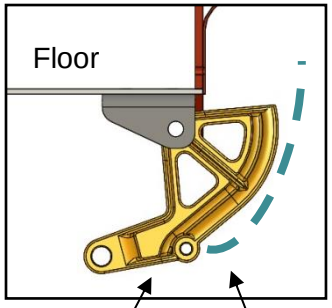
With the car upside down, weld the floor into the car body. Note orientation of the slots and holes for the bell crank and brake valve/cylinder mounts. The floor will be level with the ends of the car. Use many small tack welds.

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

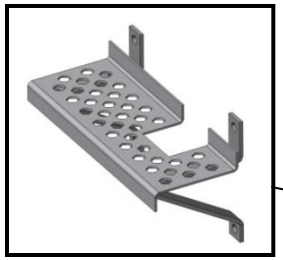
Step 6



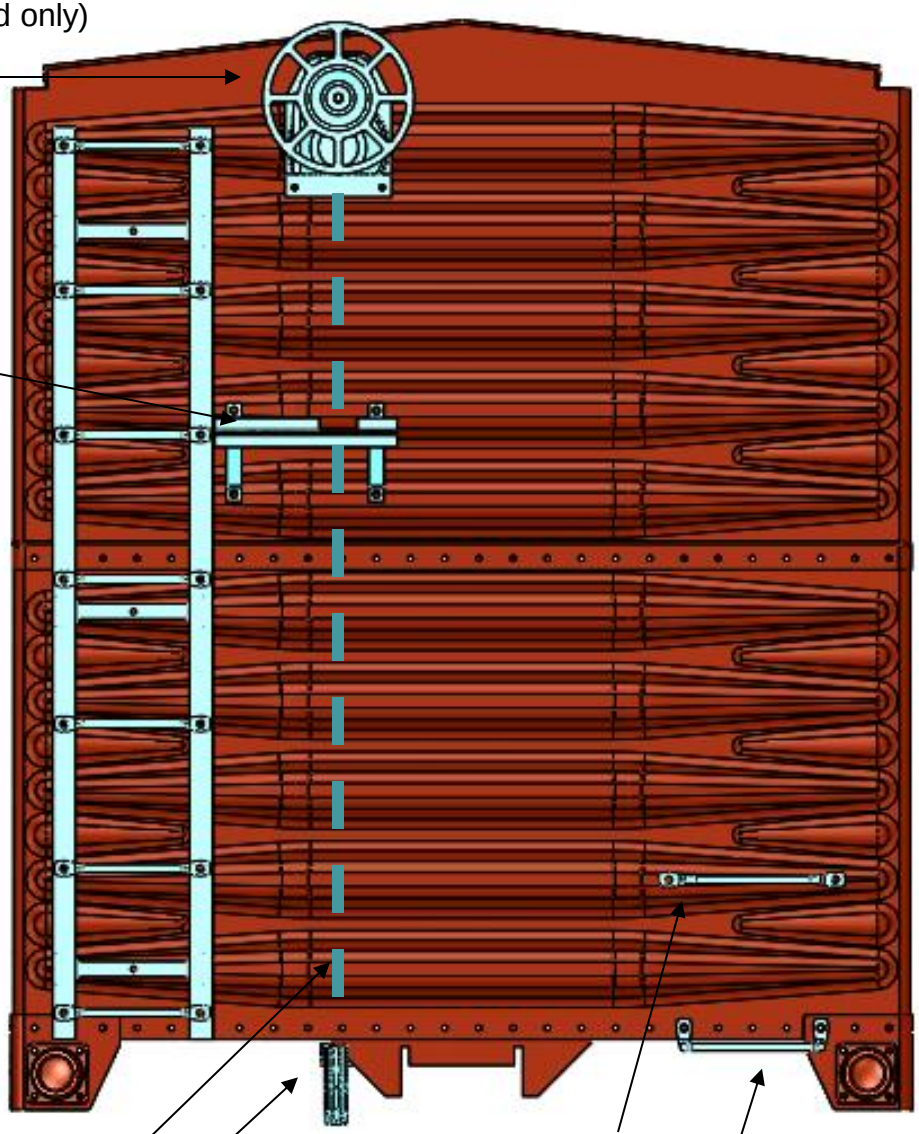
Brake Wheel Assembly
(one end only)



Bell Crank Chain
(one end only)



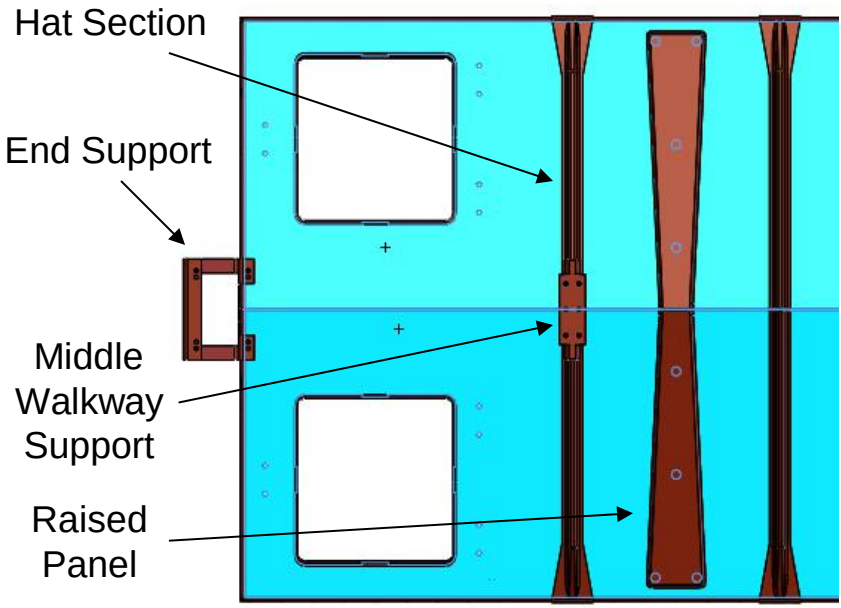
Walkway & Supports
(one end only)



Detailing the Car Ends

- The Brake wheel assembly is mounted on four (4) 5/16" standoffs, the holes are located on the backer panel.
- Bell Crank mount rivets to floor (2 holes) note location under Brake Wheel. Run chain from Brake Wheel housing into Bell Crank.
- 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, bell crank 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.
- Edge of Ladder should be 11/16"– 3/4" from side of car body

Step 7

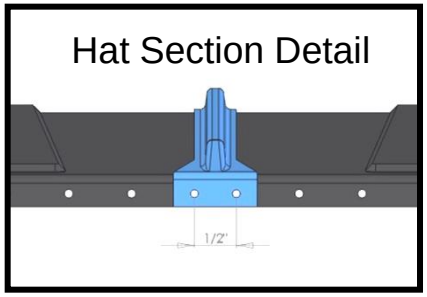


Roof Sub-Assembly:
Begin by welding the raised panels to the roof. Center over the holes and plug weld. Alternate welding from one end to another and allow the roof to cool to prevent warping due to heat.

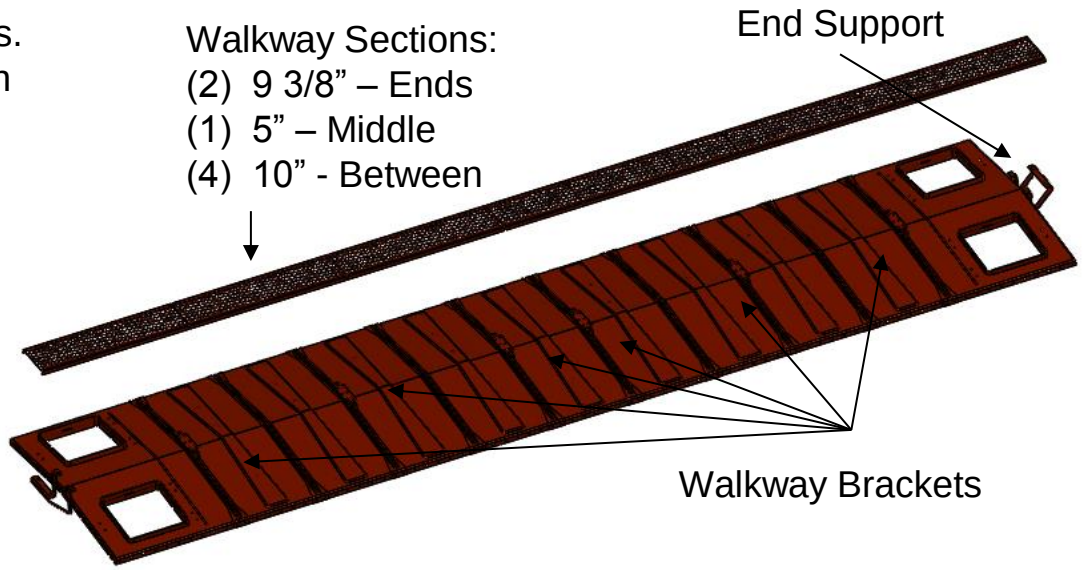
Epoxy the hat sections across the width of the roof. Center between the raised panels and the rivet holes with the ½" spacing.

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. Walkway section order is as follows:
9 3/8", 10", 10", 5", 10", 10", 9 3/8".



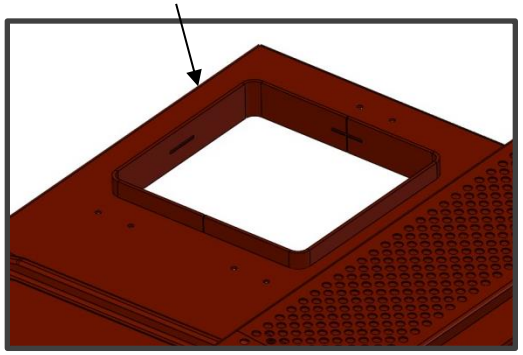
Walkway Sections:
(2) 9 3/8" – Ends
(1) 5" – Middle
(4) 10" - Between

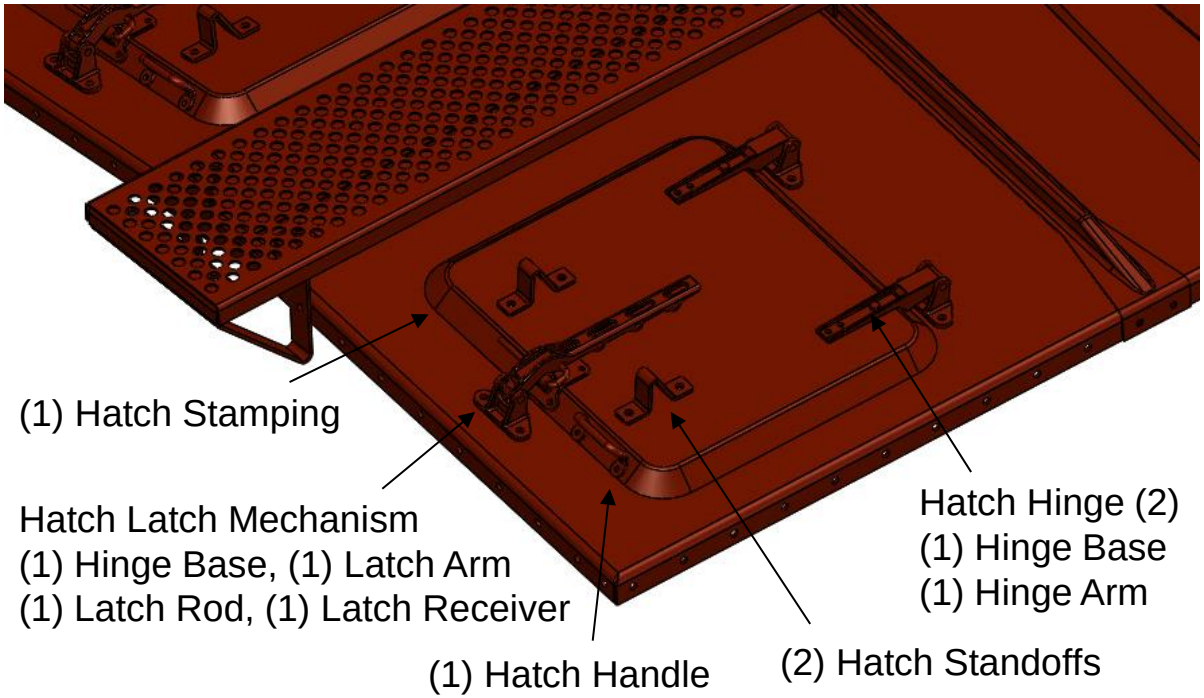


Step 8

Hatch Frames:
At each hatch opening, weld in the (2) hatch frame halves. Fit slots over tabs in main roof panel, plug weld over tabs and seams.

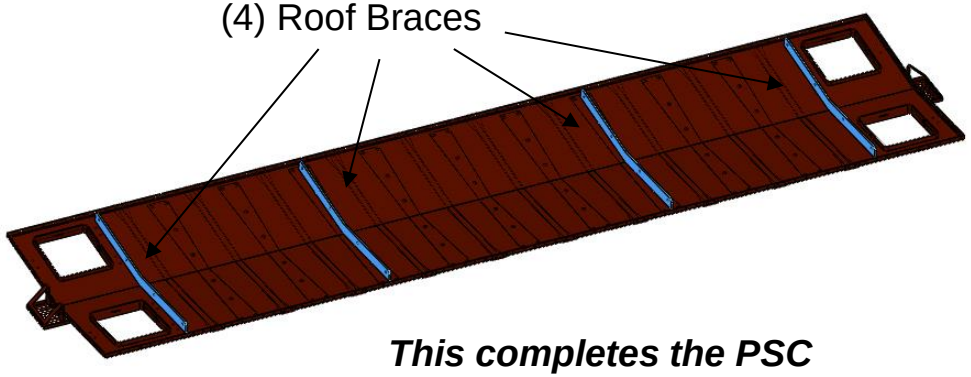
(2) Hatch Frames





Hatch Assembly:
Assemble the hatch castings to the stamped hatch as shown above. Bolt hatch assemblies (4) to roof.

(4) Roof Braces



Roof Bracing:
Weld roof braces (4) to the underside of the roof. Space along the length of the roof.

This completes the PSC 40ft Steel PFE Reefer kit.

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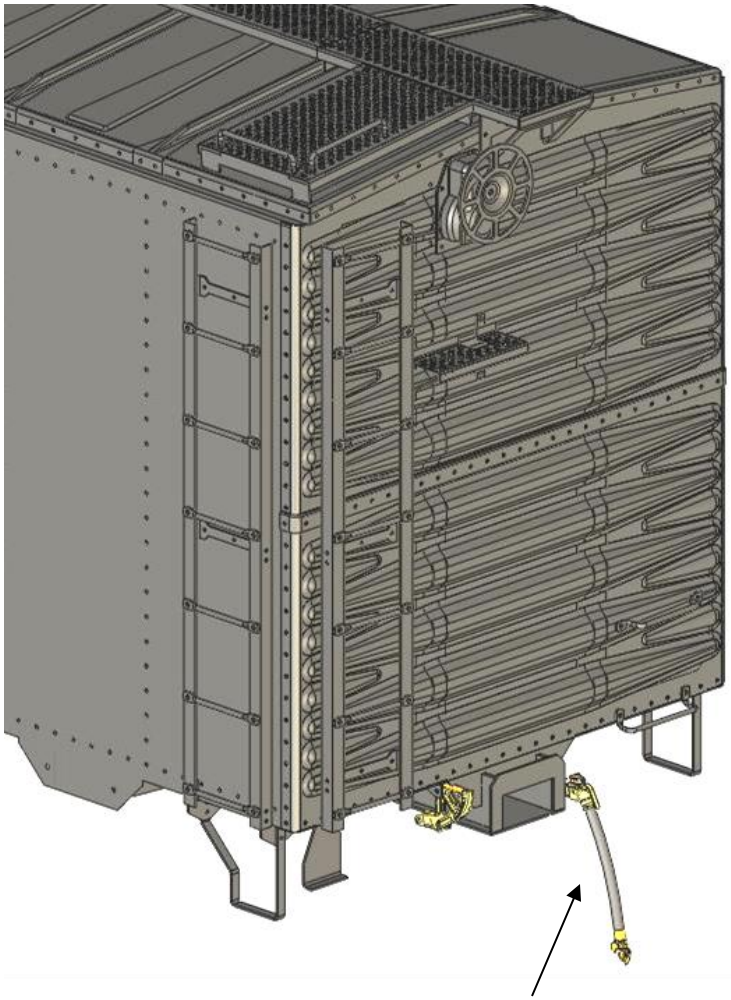


Glad Hand Assembly

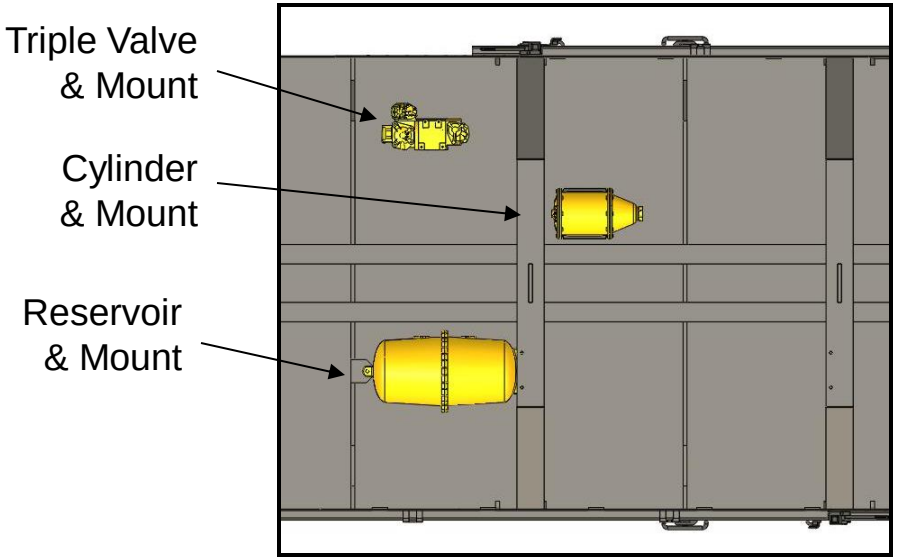
Optional Details

Not Included with Kit

(available separately)

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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