FF/ARC Knockdown Instructions

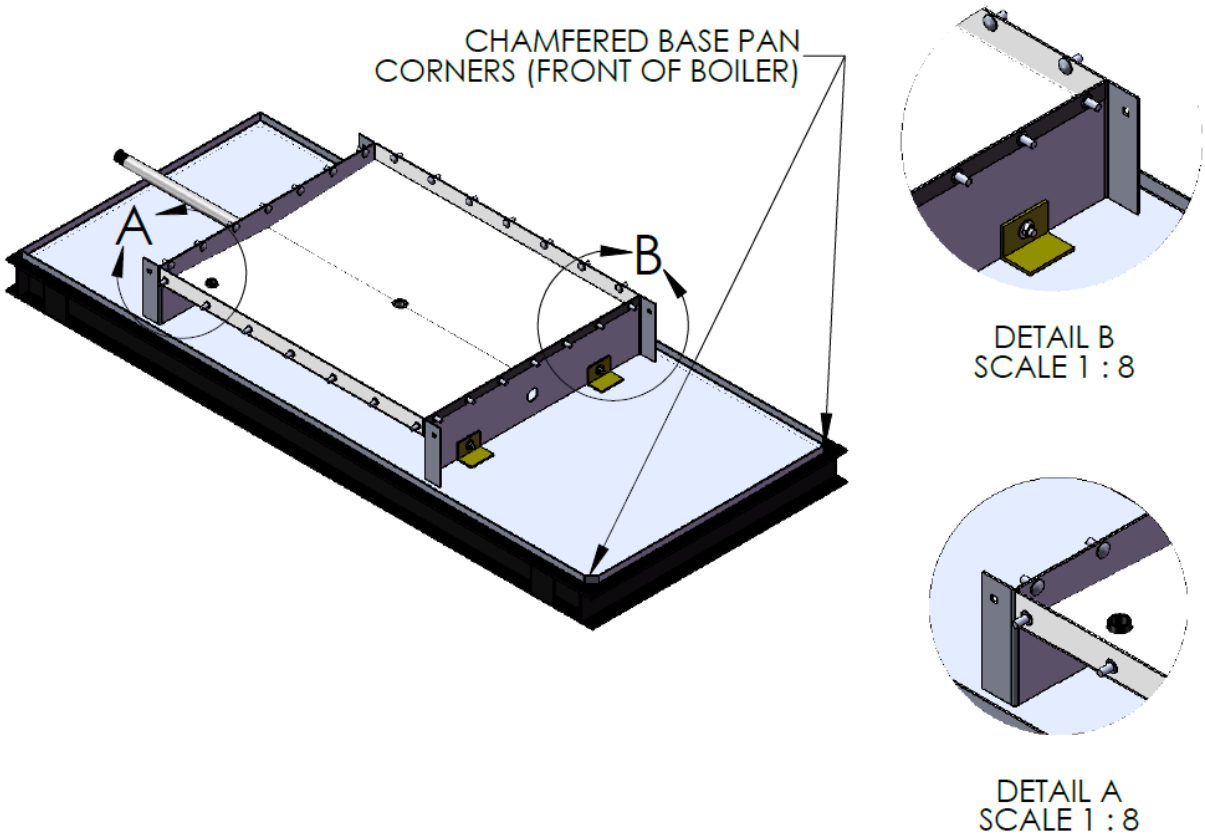
Fasteners

Item Number

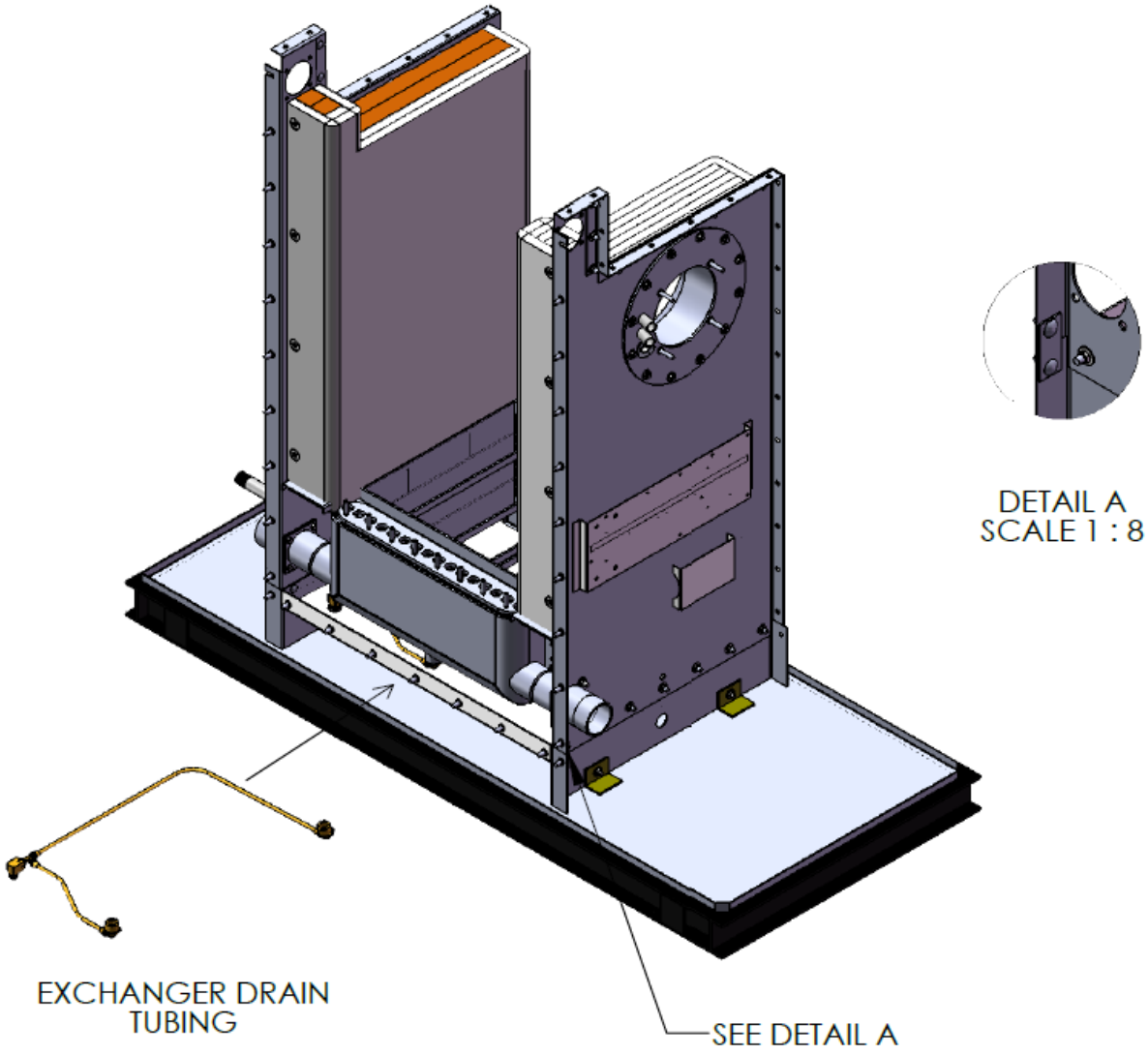
1. #17 Drill Bit or 11/64”
2. #10-24 x 1 ½” Philip Head Self-Threading Screw
3. #10 x ½” Self-Tapping Screw
4. #10 x 1” Self-Tapping Screw
5. #10 x 1 ½” Self-Tapping Screw
6. M8-20 x ½” Allen Head Screw
7. 5/16” Zinc Washer
8. 5/16” Zinc Lock Nut
9. 5/16”-18 x 1 ¼” Hex Bolt
10. 3/8” Zinc Washer
11. 3/8” Zinc Nut
12. 3/8”-16 x 1” Hex Bolt
13. 3/8”-16 x 1 ¼” Stainless Hex Bolt
14. 3/8”-16 x 1” Carriage Bolt (no writing on face)
15. 3/8”-16 x 1” Carriage Bolt (writing on face)
16. 5/8”-11 x 3” Bolt and Nut

Tools

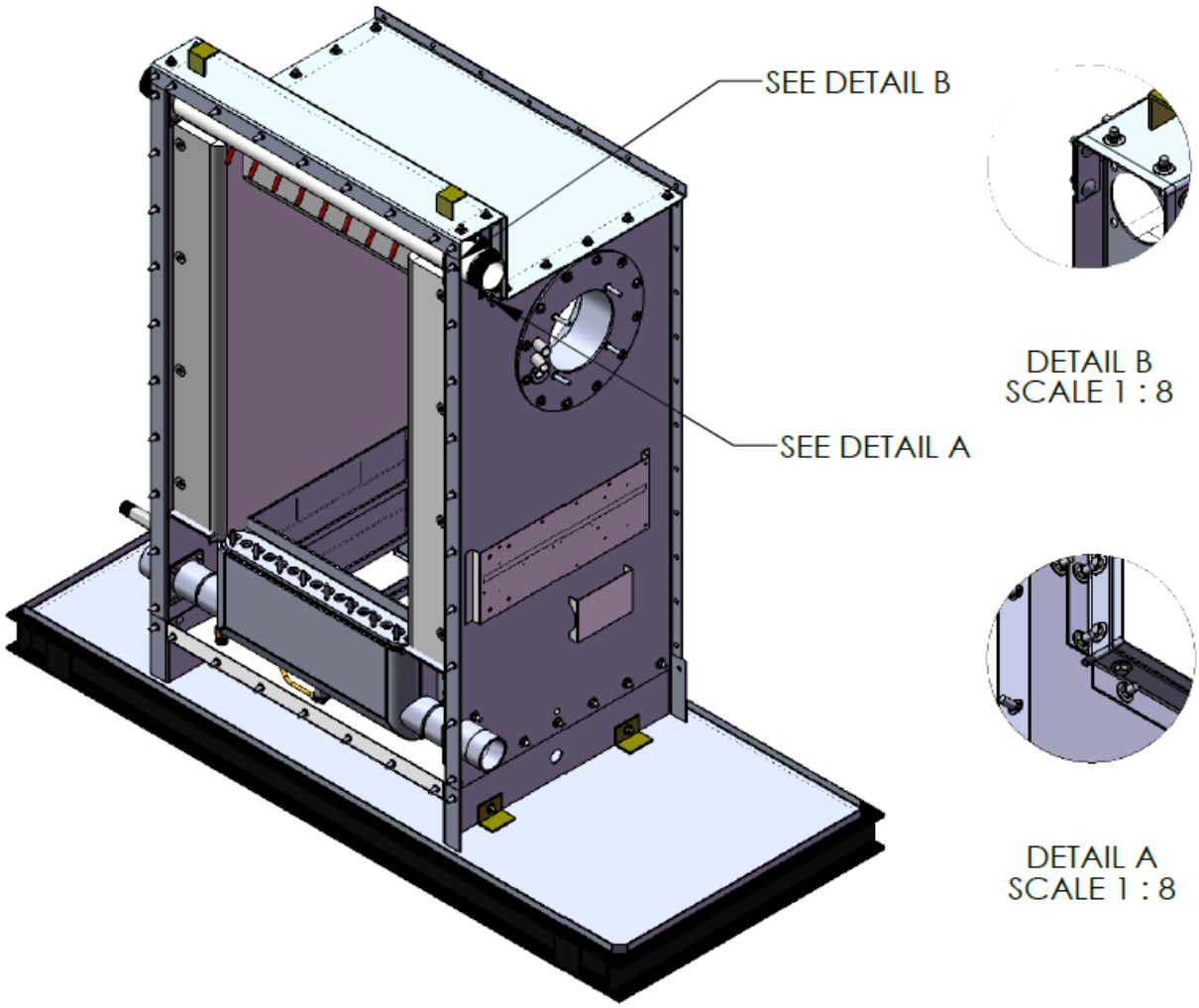
1. 9/16” Deep Well Socket For 3/8” Nuts, Bolts, and Studs
2. 1/2” Socket For 5/16” Nuts and Bolts For Blower Motor
3. 1 1/16” Socket For Supply Header Flange Bolts
4. 17mm Socket For Bottom Tube Clamp Studs
5. 5/16” Socket For #10 Self-Tapping Screws
6. 6mm Allen Wrench For M8-20x 1/2” Allen Head Screw
7. 3/4” Wrench For 5/8” Brass Flare Nut
8. Spud Wrench Adjustable
9. 7/16” Socket For 1/4”-20 Bolt For Air Filter Flange
10. Driving Tube Paste
11. Stack Sealant
12. Heat Sealant
13. Caulk Gun
14. Pipe Thread Sealant
15. Side Cuts/ Snips
16. Hammer
17. Tube Driver
18. Tube Puller
19. Adjustable Wrench
20. Flat Head Screw Driver
21. Phillips Head Screw Driver



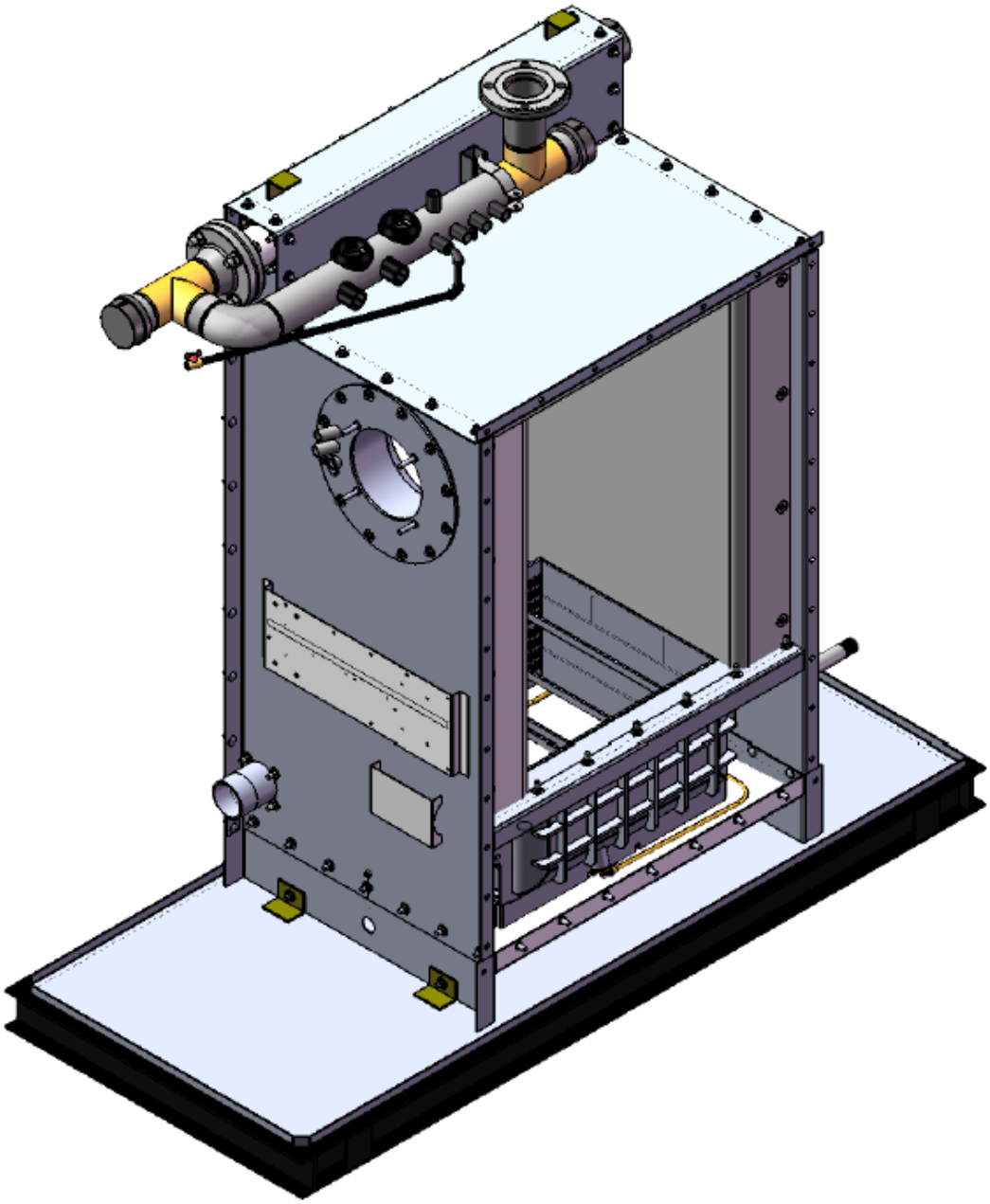
Place and attach the condensate pan assembly in-between the base drip pan brackets with 3/8"-16 x 1" zinc bolts, nuts and washers. Make sure that the condensate pipe is going out the rear of the base drip pan that has 90° corners. Add 3/8"-16 x 1" stainless steel carriage bolts with rubber grommets to the condensate pan held with retainer clips leaving the outside four corners open as shown in detail A. Make sure that the square shoulder of the carriage bolt is in the square knockout. Otherwise, the bolt could spin or leak condensate. In the 1" black gasket cut or punch out openings in the gasket for the front, side, and rear, so that the gasket can slide over the bolt creating a good seal as shown in detail B.



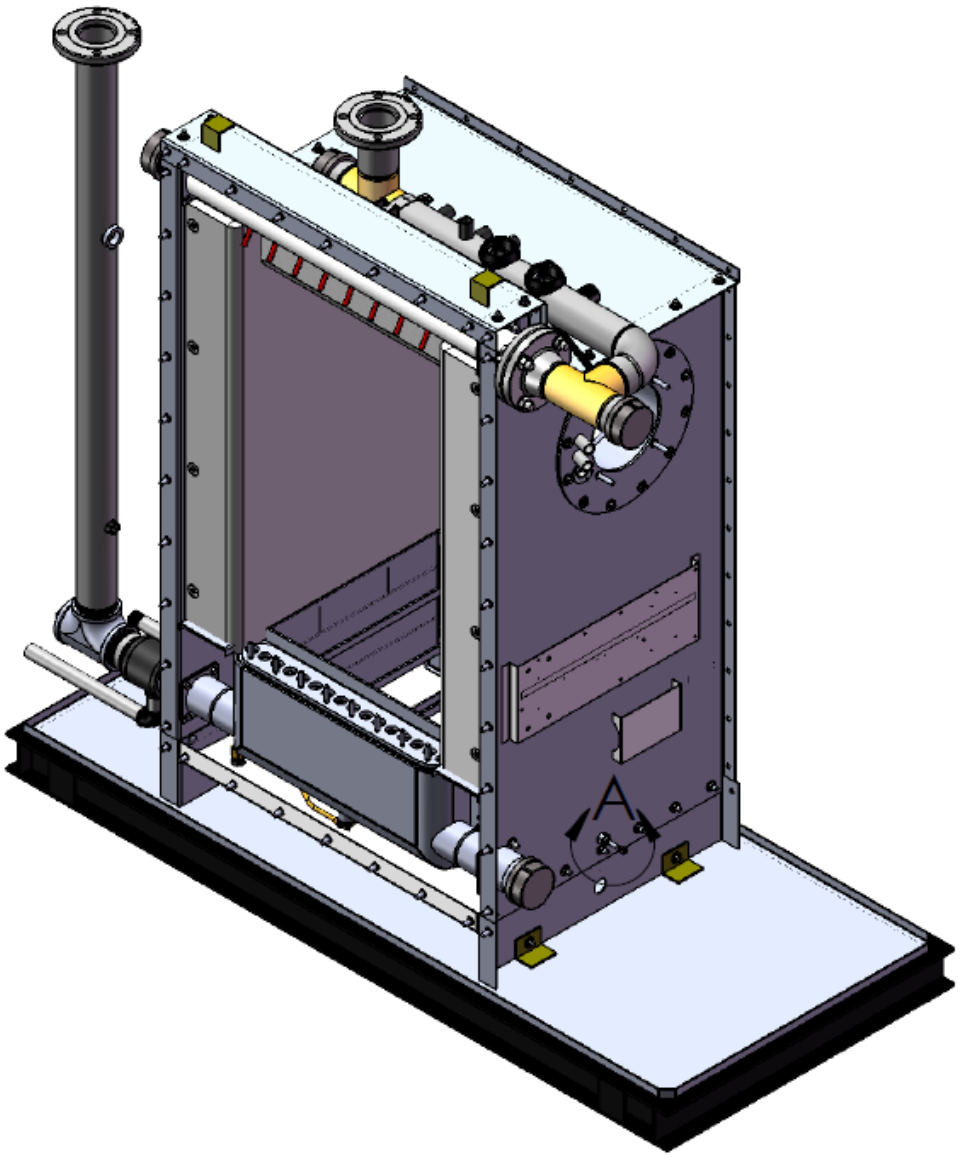
Place heat exchanger with bushings already attached into the condensate pan assembly. Make sure that the lower header (pipe) is over the exchanger drain hole. Attach the exchanger drain tubing. Place square red rubber gaskets on the square flanges on the lower headers. Apply sealant to the outside of the four corners of the 1" black gasket that will mate the flue collector end panels to the condensate pan. Attach the front and rear flue collector panels to the condensate pan assembly. Only put the 3/8" zinc nuts and washers on just enough to hold the panel from coming off. Make sure that where the panels meet the pan legs are flush and not uneven. Using 3/8-16 x 1" zinc carriage bolts and retainer clips attach the flange connector for the front and rear panels to the condensate pan as shown in detail A.



Add rubber gasket to the square flanges on the upper header pipe. Spread the front and rear flue collector pieces apart just enough to place the upper header pipe in the holes by inserting the pipe in one hole at a time. Make sure that the upper header pipe has the studs facing down and to the left when facing the boiler. Attach the header pipe to the panels with 3/8-16 x 1" zinc bolts, nuts, and washers. Evenly tighten both the top and bottom headers. Apply 1" black gasket to the remaining edges besides the tube access panel side (left side). Roll up at least a 2" piece of black gasket long ways and add sealant to the corners as shown in detail A for both front and rear panels. Place the flue collector top panel on the front and rear panels. Once placed, attach the flange connector from the end panels to the top panel using 3/8-16 x 1" zinc carriage bolts and retainers as shown in detail B. Place 3/8"-16 x 1" hex bolts and 3/8" nuts and washers in remainder holes to attach front and rear panels to the top panel and tighten evenly starting with the corners that have the rolled up gasket.

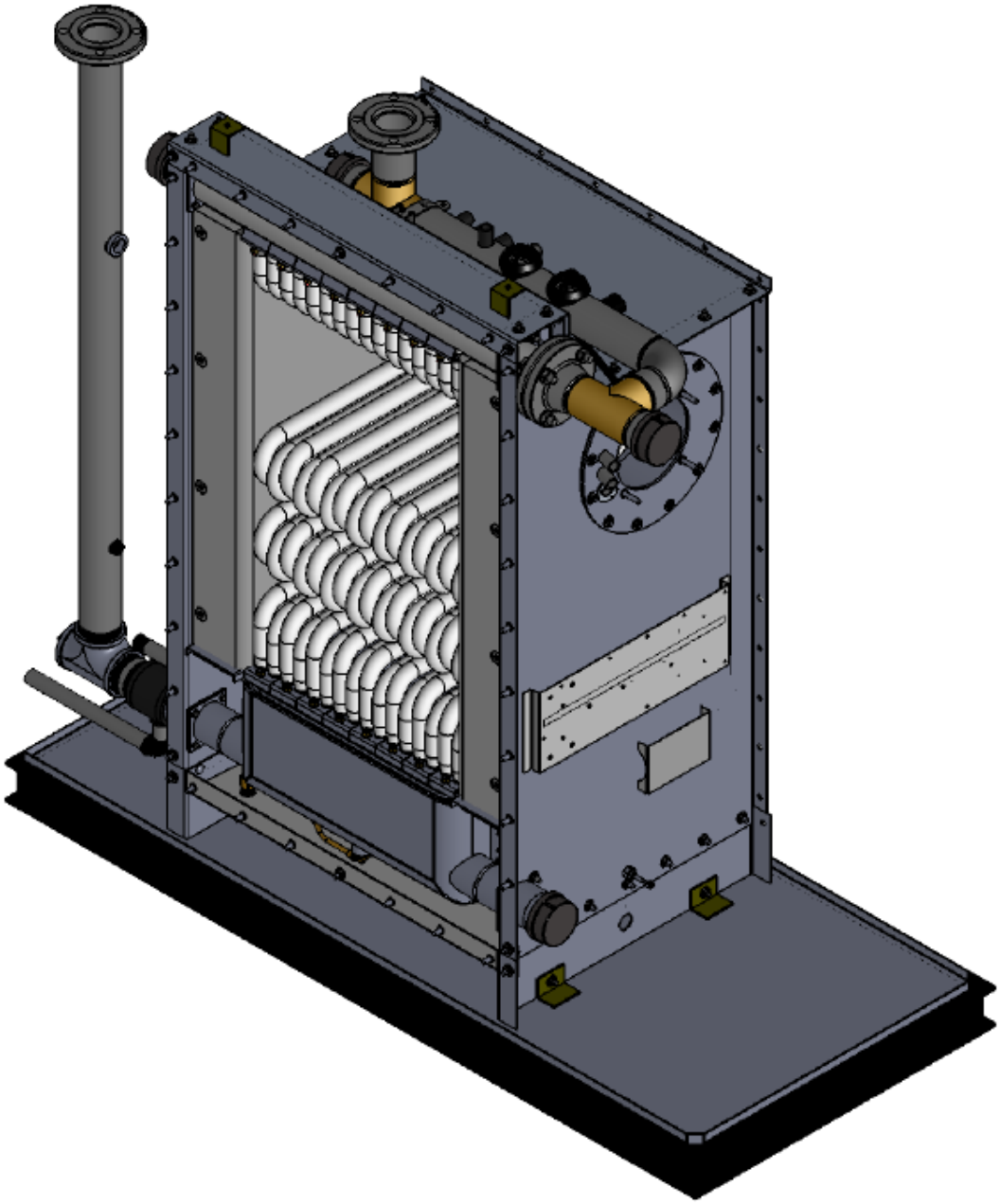


Place the threaded flange onto the upper header with the flat face sticking out. Using 5/8-11 x 3" bolts and nuts attach the water supply piping assembly to the threaded flange with a gasket in-between them. Make sure that the supply flange that gets connected to field piping is level. Then, add the support strut and pipe clamp to help support the piping. Add the 1/4" water pressure line assembly piping. Cap off the lower header pipe that comes out of the front panel with a 3" cap. Cap off the upper header pipe that goes out the rear panel with a 3" cap. Attach the exchanger flange to the heat exchanger using 3/8"-16 x 1 1/4" stainless bolts, zinc nuts, and zinc washers.

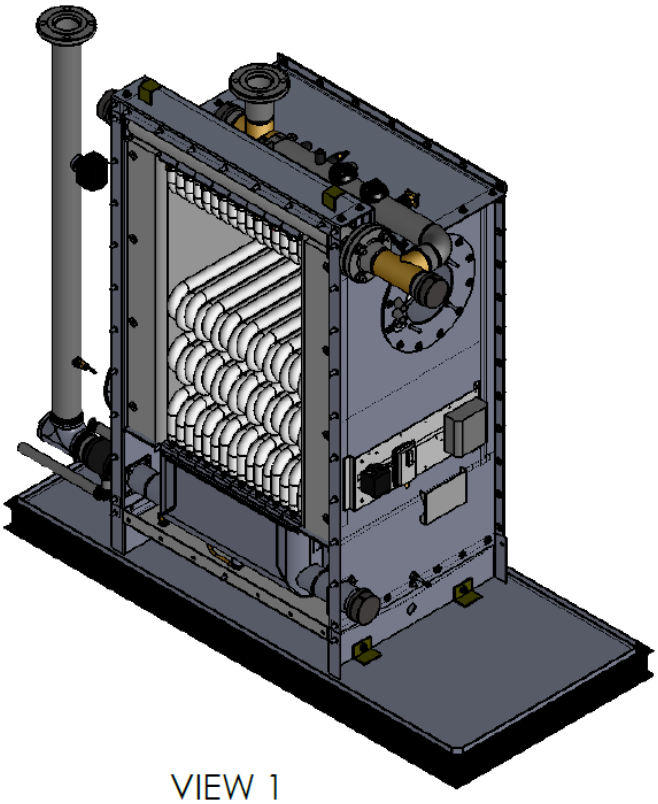


DETAIL A
SCALE 1 : 8

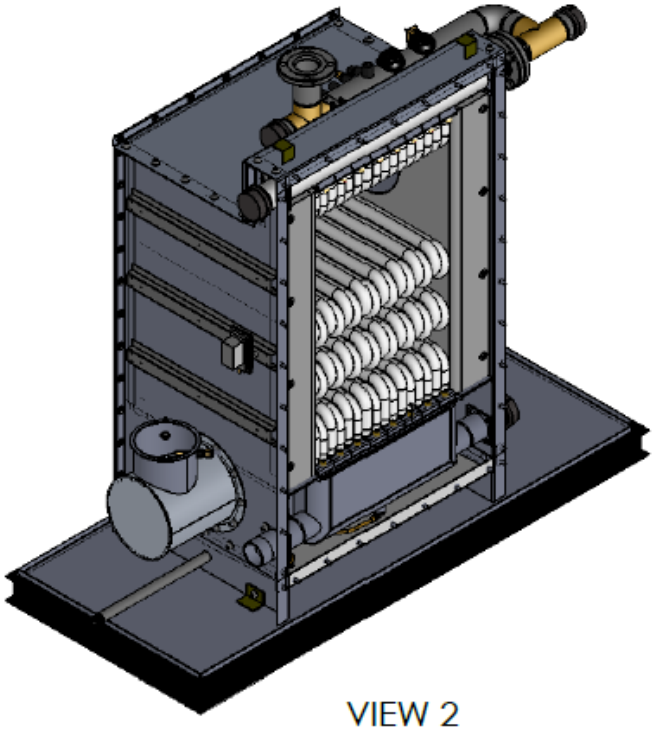
Add Return Piping assembly. Make sure that when adding the piping that the 3 x 3 x1 Tee has the 1" opening facing directly down. When tightening the 3" pipe with the openings make sure that the openings are facing the boiler and place proper components in those openings. Install the float condensate switch to the front panel shown in detail A. Add driving tube paste to the exchanger and the upper header holes.



Insert all components that need to go into the supply piping. Plug all other holes not being used. Install and drive tubes. Step 1: Apply water to the boiler and inspect for leaks. Step 2: If there are leaks, shut off water and drain to relieve pressure to fix the leak. Repeat Steps 1 and 2 until there are no more leaks. Then, fasten all the tube clamps down on the top and bottom portions of the tubes.

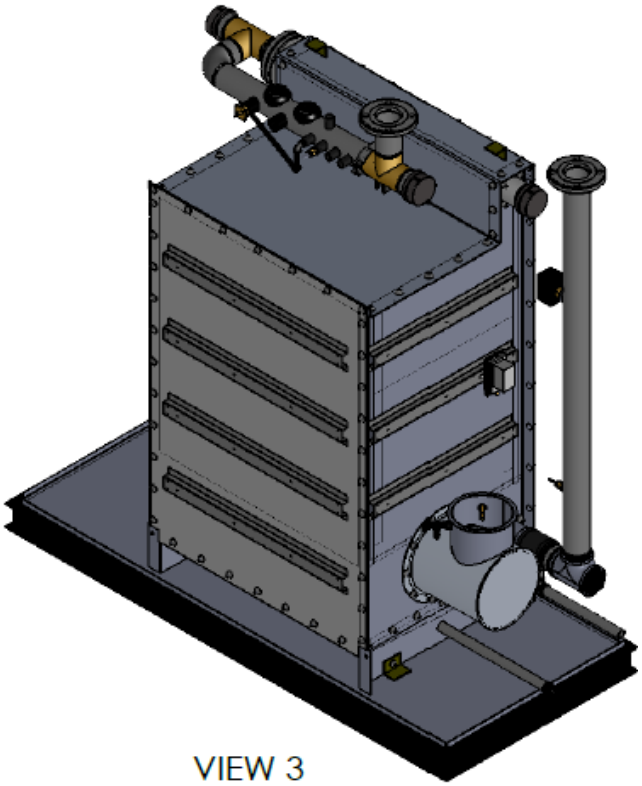


VIEW 1

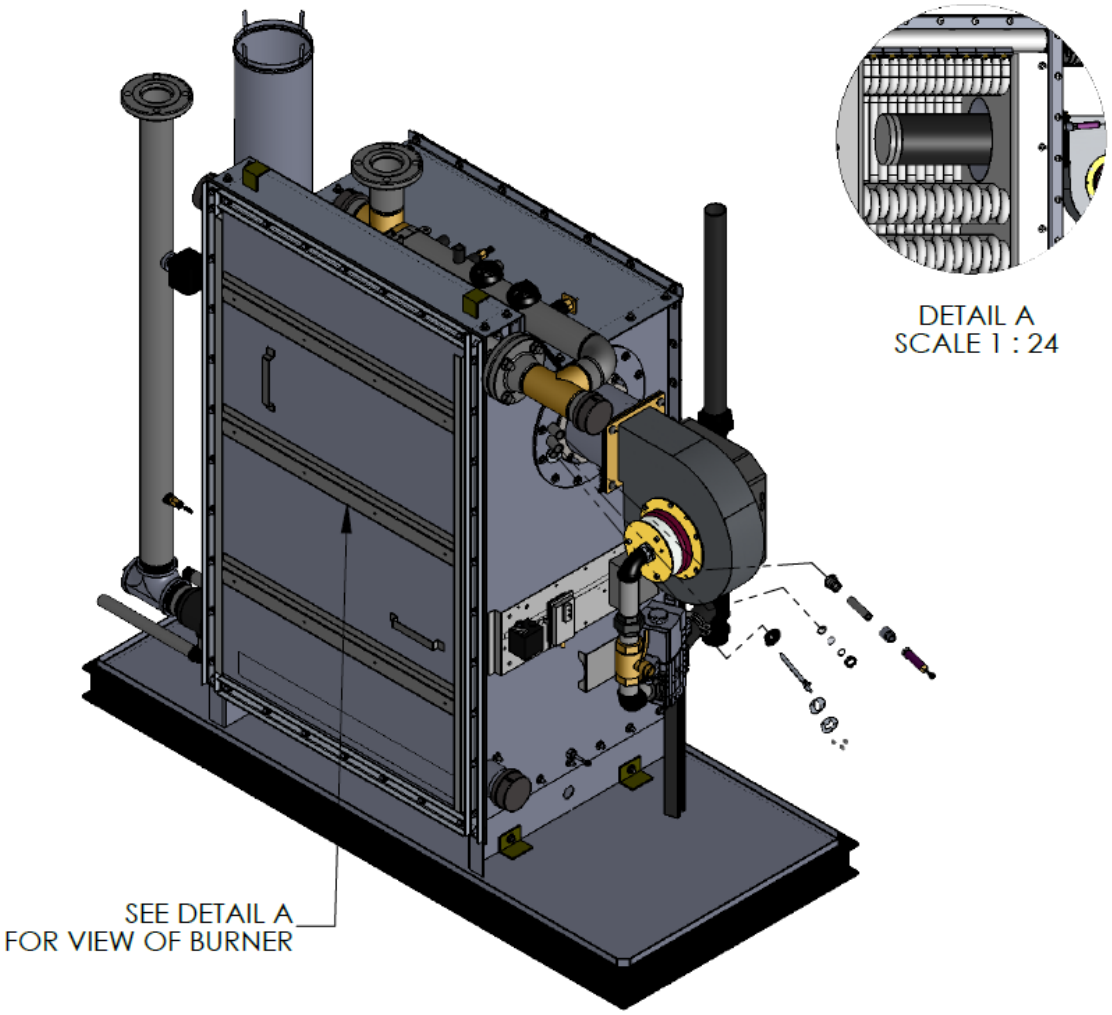


VIEW 2

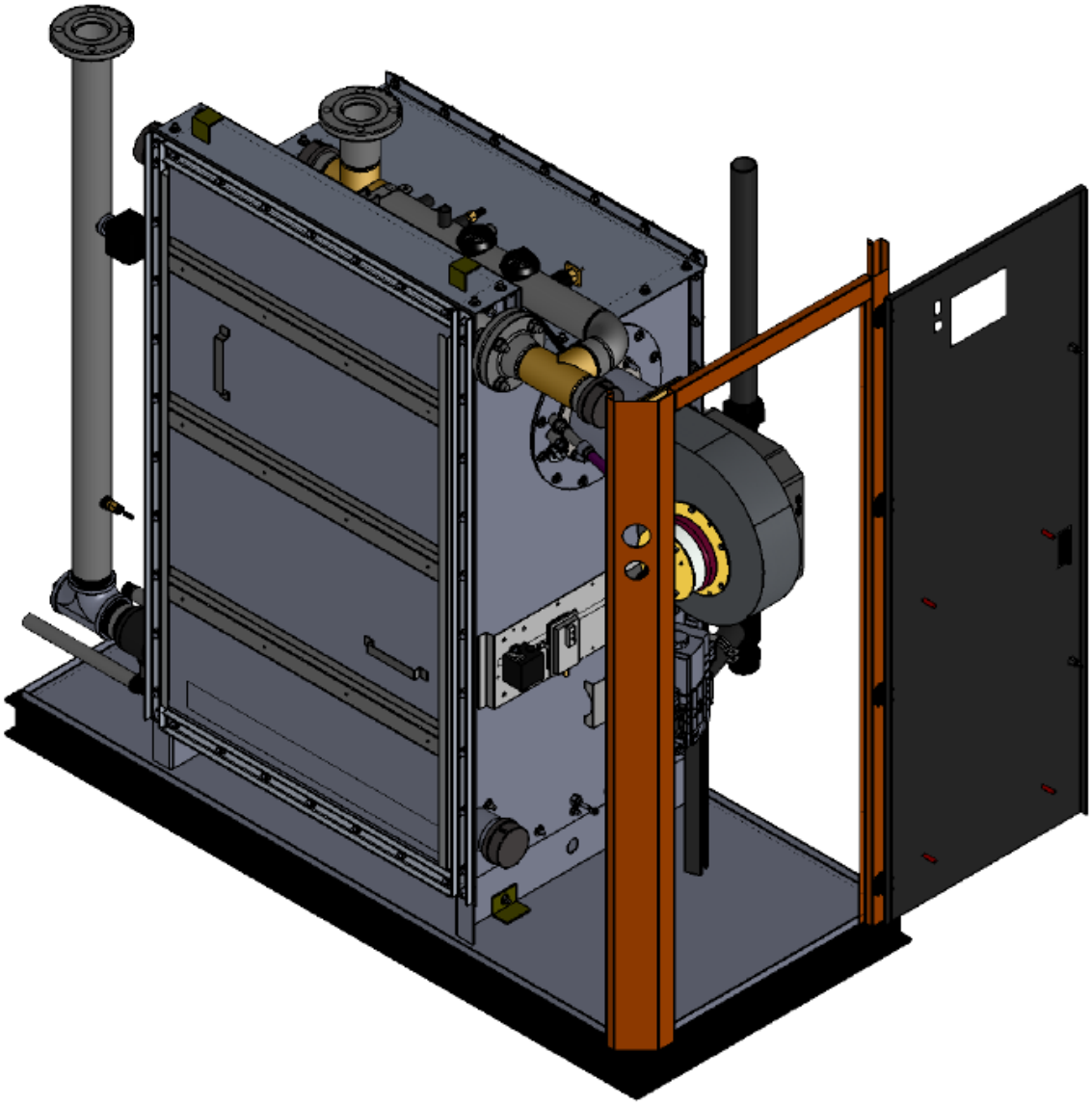
Add all electrical and pneumatic components. Add the stack transition and gasket. Add pipe fittings for pneumatic tubing to the switch from the stack transition. Add 1" black gasket on the exchanger flange. Once the gasket is placed add sealant in all four corners and on the edges of the exchanger flange if there appears to be a large gap. Then, add the right side flue collector panel by sliding the bottom holes of the panel onto the bottom carriage bolts and add zinc washers and nuts to keep the panel from sliding off. Next, using the pointed end of the spud wrench, line up the holes with the end panels and top. The spud wrench can also be used for making holes in the gasket for attaching the panel using 3/8"-16 x 1” hex head bolts and 3/8" zinc nuts and washers. Tighten everything evenly.



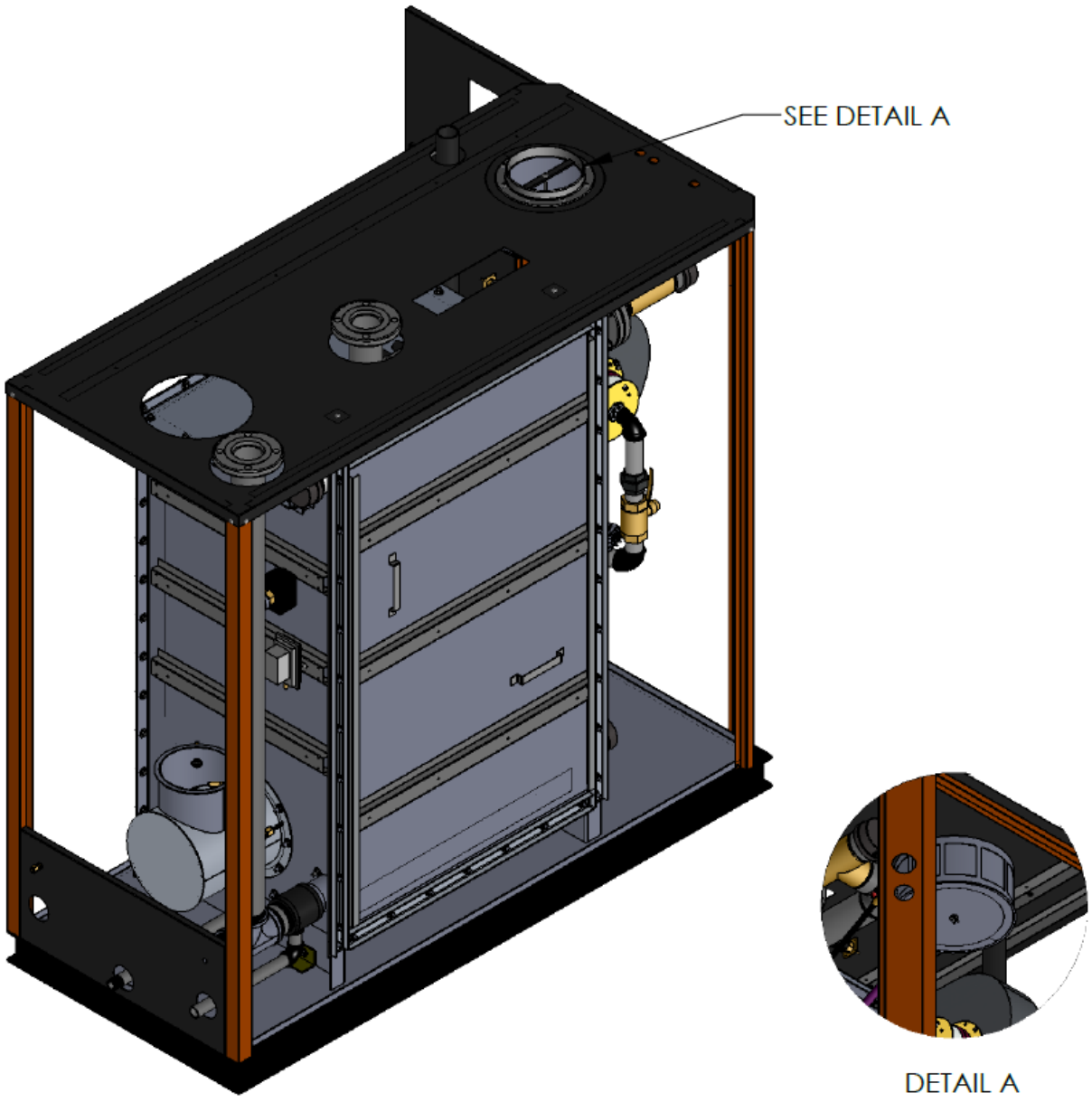
VIEW 3



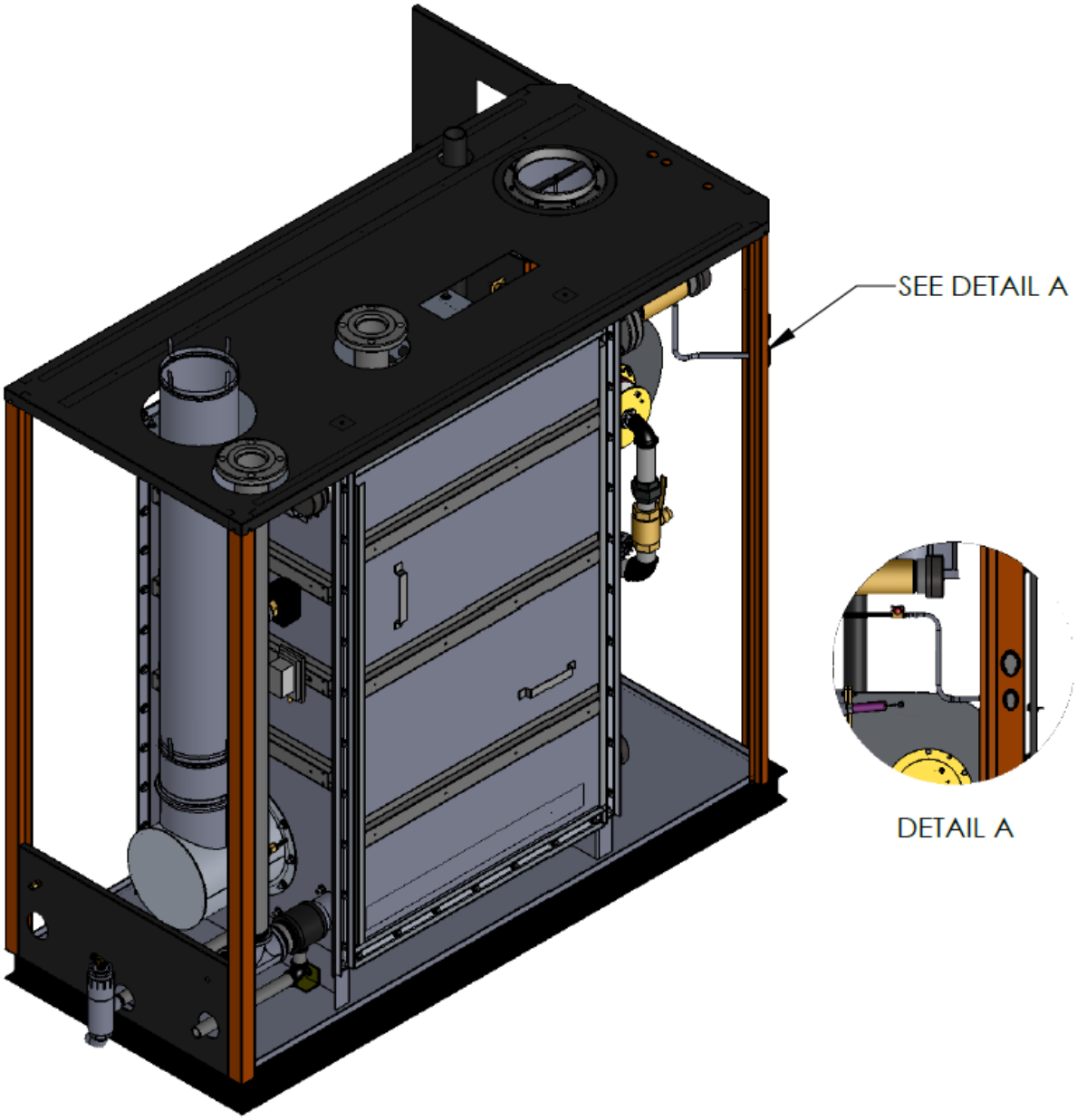
After hydro is completed add these items in this order: burner gasket, burner, burner gasket, then the burner transition, blower gasket, blower and gas train assemblies. Use 5/16- 18 x 1 1/4" and 5/16" zinc nuts and washers to connect the burner transition to the blower. Once everything has been tightened and positioned add the UV Scanner, sight glass, and ignitor assemblies that are in a broke down view of how each one is put together. Around all edges of the tube access side (Left Side) place the 2 1/2" black gasket over the bolt studs through the middle of the gasket. Add one strip completely across the top and one completely across the bottom, both are the same lengths. Then, add one strip down each side mated flush with the top and bottom gaskets. Add sealant to where they make a seam. Use a putty knife to smooth it out. Once the sealant is partially dry (about 1 hour), place the horizontal tube access bracket on all of the bottom bolts. Put on a zinc washer and nut on just a couple threads, so it doesn't fall off. Place the tube access panel on the studs in-between the horizontal bracket and the 2 1/2" gasket. Push the top portion of the tube access panel enough, so the upper horizontal bracket fits over the tube access panel and can get a 3/8" zinc nut and washer on the bolts. Slightly tighten bottom and top brackets. Add tube access side vertical brackets. Make sure to tighten everything evenly working your way up from the bottom to the top.



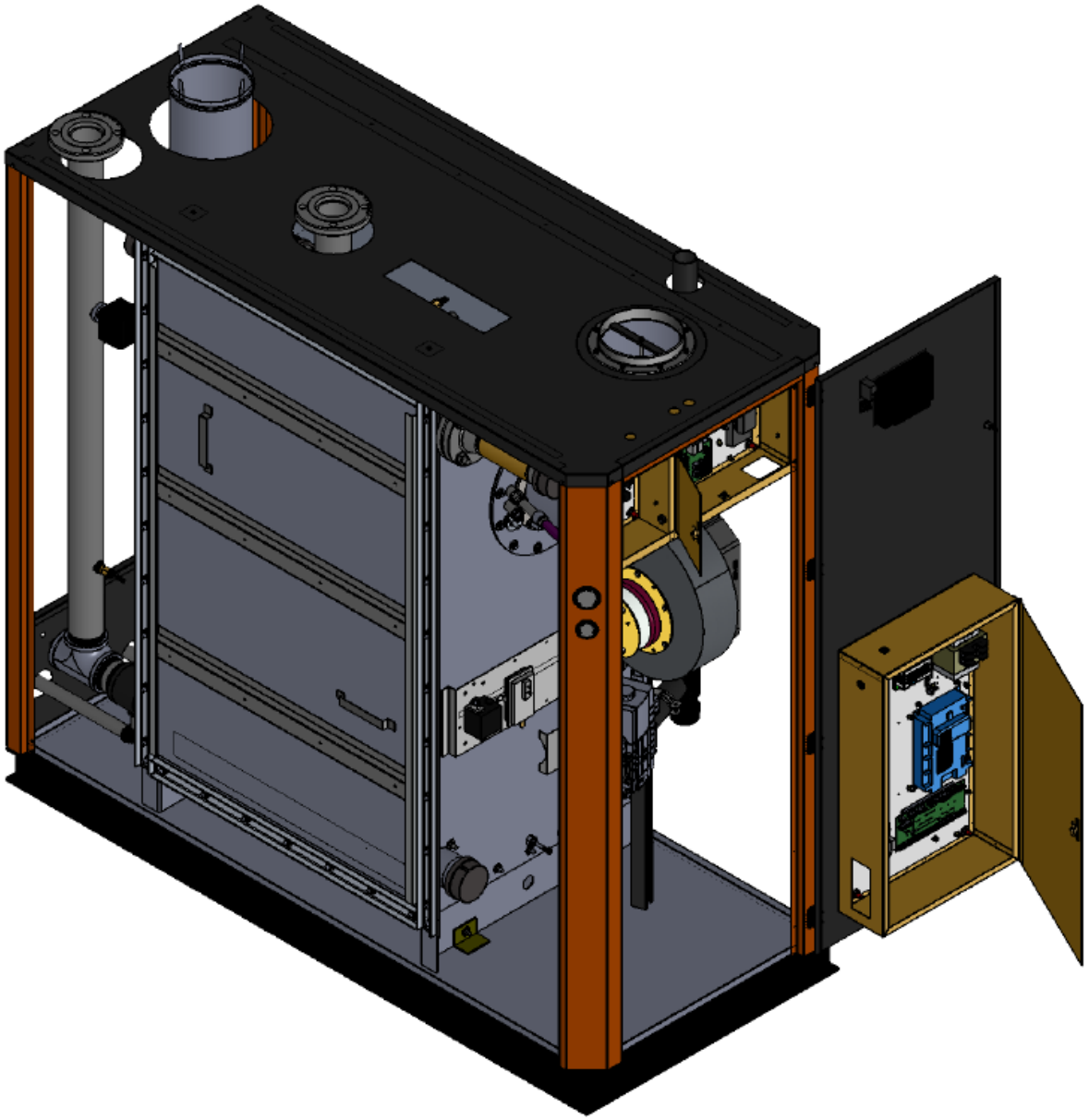
Line up the middle of the hinge post with the 45° chamfered corner of the drip pan. Then, using two 1" self-tapping screws attach the hinge post to the drip pan. Place the latch post on the opposite 45° chamfered corner of the drip pan with a minimum spacing of 24 15/16 " from inside edge of the hinge post to the inside edge of the latch post. Attach the latch post with two 1" self-tapping screws. Attach the jacket front door to the hinge post. Secure the top door bar in-between the inside edge of the posts with approximately 1/8" gap between the front door and the bar when the door is closed using 1/2" self-tapping screws. Make sure to leave a small gap at the top, bottom, and side of the front door, so that it doesn't rub on anything.



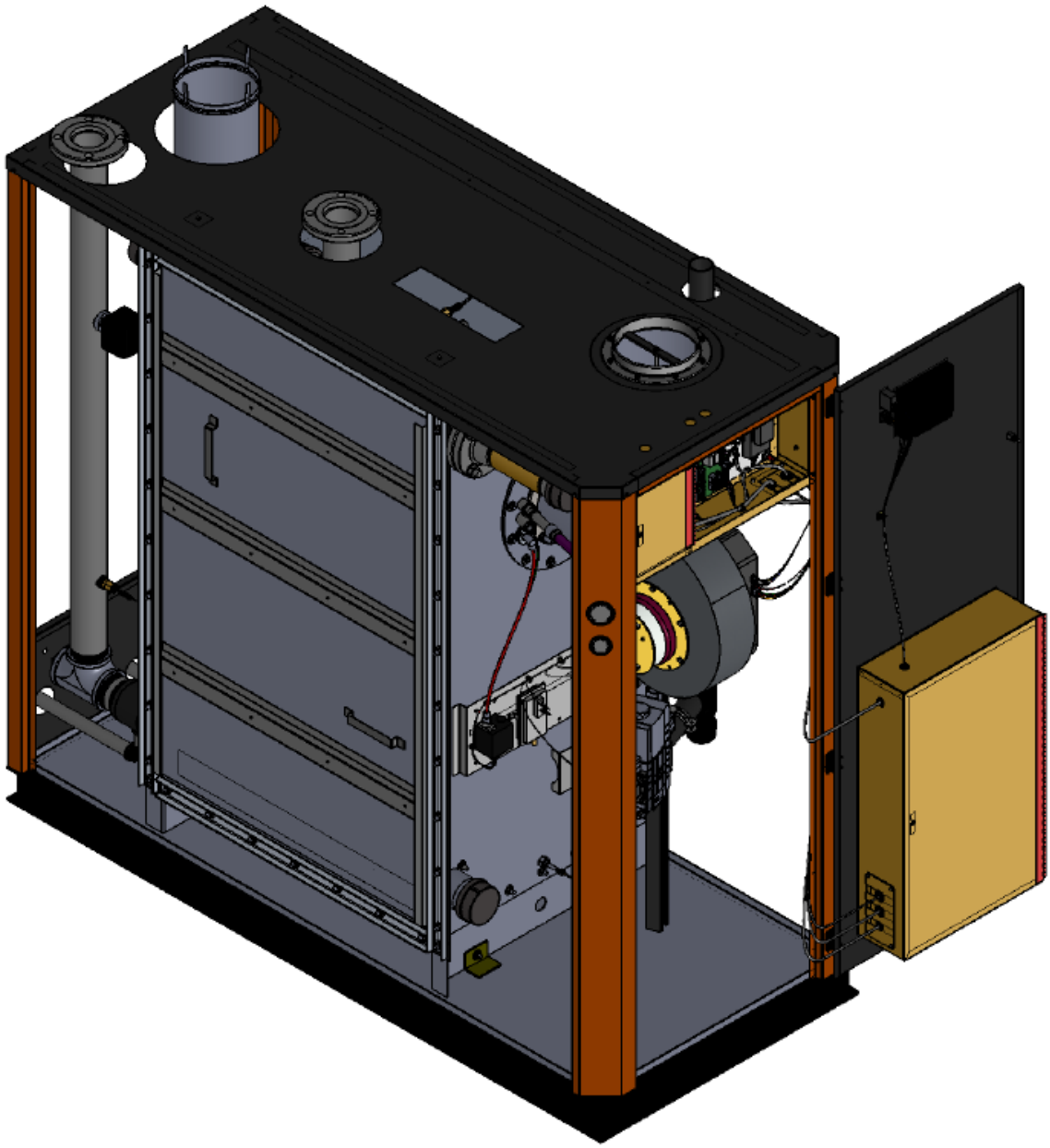
Attach the two rear jacket post to the drip pan with two 1" self-tapping screws per post with the lower rear jacket panel (30 3/4" long) in-between them to provide proper spacing and alignment. Attach the lower rear panel using two 1 1/2" long self-tapping screws in the bottom portion of the panel. Attach air filter cover assembly to the jacket top detail A. Position the jacket top over the four corner posts by first gently maneuvering over the supply and return piping flanges. Once finished and the posts are squared up use a smaller diameter drill bit to pre-drill holes into the flue collector top brackets. Recommend using a #17 drill bit. Then, use two 1" self-tapping screws to attach the jacket top to the top flue collector brackets. After that go ahead and attach the posts to the jacket top using 1/2" self-tapping screws.



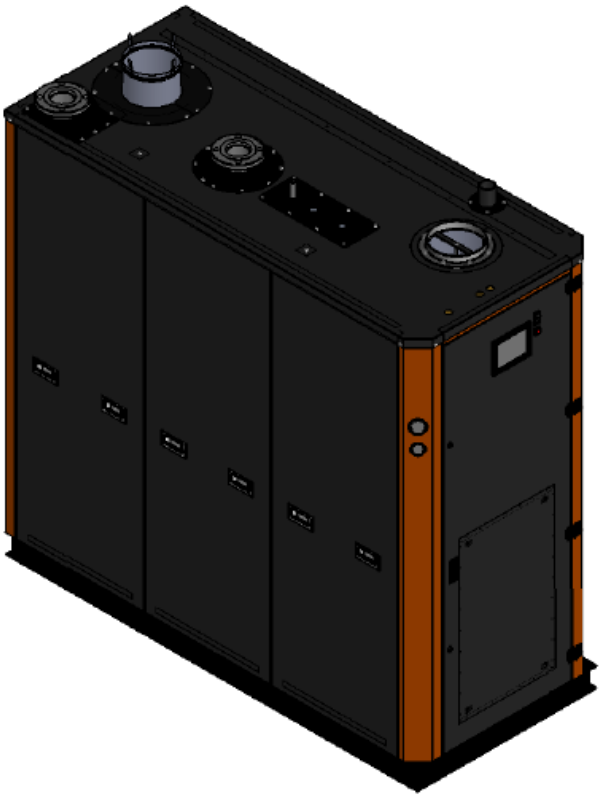
Add Stack piece to the stack transition. Add condensate trap to the condensate drain piping. Install temperature and pressure gauge in the latch post knockouts. Shown in detail A connect the flexible hose from the backside of the pressure gauge to the 1/4" ball valve. Connect the temperature probe from the gauge to the supply pipe.



Level and mount the upper control box using the pilot holes on the post for the 1/2" self-tapping screws. On the lower control box, level the box and add 3/8" zinc washers and nuts to secure the box to the front door studs. Then place the wire insert panel on the studs and secure it with 3/8" zinc washer and zinc nuts.



Wire up all components using the wire harnesses. Attach the ignitor cable from the spark generator to the ignitor. Once all the wiring is complete add control box patches for both the lower control panel and the upper control panel.



Place the jacket side panels on the boiler by sliding them up into the jacket top slot and once straight allow them to slide down with the inside bottom ledge resting on the drip pan. Add the upper rear jacket panel the same way that the jacket sides were put in. The upper rear jacket bottom will rest on top of the lower rear panel and overlap the lower panel. Drill using a #17 or 11/64” bit into both panels where they overlap. Then, place two 1 1/2” self-threading screws to hold both panels to the post. Add all patches with self-tapping screws.