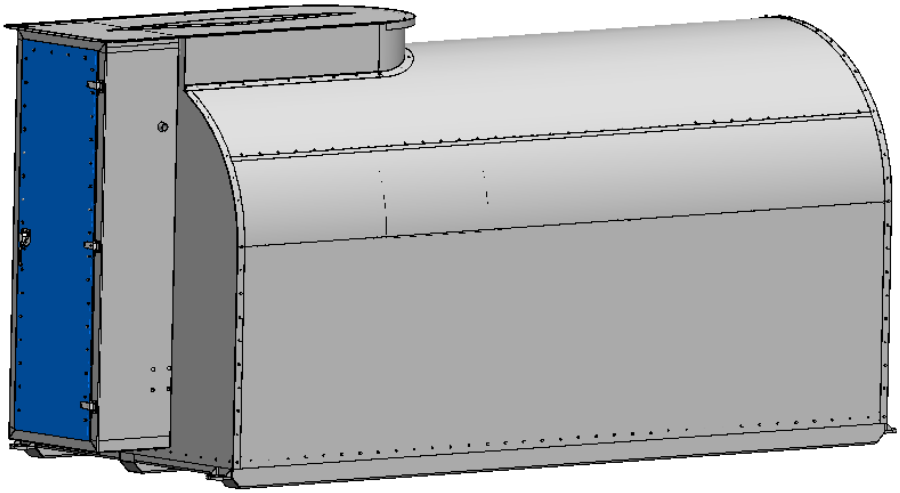

DEF OVEN

3780 GAL

Assembly Manual

Last Updated: March 8, 2016

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INTRODUCTION

This assembly manual is for the 1000 Gallon DEF (Diesel Exhaust Fluid) Oven. The steps outlined in this manual should be followed closely for consistent results.

Cleanliness

DEF is a highly pure blend of automotive grade urea and de-ionized water. It is highly susceptible to contamination during manufacturing, transportation, and storage. Take the following precautions to prevent contamination.

DO:

- Maintain a clean environment
- Only use de-ionized water and microfiber rags to clean components
- Only use Loctite 567 thread sealant
- Use thread primer Loctite 7749 on stainless steel threads
- Ensure all materials in contact with DEF are stainless, polyethylene, polypropylene, EPDM, or viton rubber

DO NOT:

- DO NOT expose DEF storage/handling components to metallic dust (from welders, grinders, etc.)
- DO NOT use any form of chemical for cleaning or degreasing purposes other than de-ionized water
- DO NOT use teflon tape
- DO NOT use compressed air from an air tool oiler to clean components.
- DO NOT leave ends of hoses or fittings exposed to the environment for long periods of time
- DO NOT leave lid of tank open after it has been cleaned

IMPORTANCE OF QUALITY

ISO 22241			
Specification	Limits	Units	Why Important
Urea	31.8-33.2	% by weight	
Density (at 77°F)	9.05-9.09	pounds/gal	
Refractive Index (at 77°F)	1.3814-1.3843		
Alkalinity (as Ammonia)	max .2	% by weight	Determines shelf life
Insoluble's	max .002	% by weight	
Calcium	max .00005	% by weight	Clogs spray nozzles
Magnesium	max .00005	% by weight	
Aldehyde	max .0005	% by weight	Forms gummy deposit in exhaust pipe
Sodium	max .00005	% by weight	
Potassium	max .00005	% by weight	
Phosphate	max .00005	% by weight	
Biuret	max .3	% by weight	
Aluminum	max .00005	% by weight	Will damage catalyst
Iron	max .00005	% by weight	
Copper	max .00002	% by weight	
Zinc	max .00002	% by weight	
Chromium	max .00002	% by weight	
Nickel	max .00002	% by weight	

Teaspoons required to make a 4,800 gallon tanker of DEF non-compliant under ISO 22241

Copper	0.1 Teaspoons
Zinc	0.1 Teaspoons
Chromium	0.1 Teaspoons
Nickel	0.1 Teaspoons
Phosphorus	1.1 Teaspoons
Calcium	1.3 Teaspoons
Iron	0.3 Teaspoons
Aluminum	0.7 Teaspoons
Magnesium	1.2 Teaspoons
Sodium	2.1 Teaspoons
Potassium	2.3 Teaspoons

Fastener Information

Hardware:

A variety of different bolts are used in the DEF dispenser and basic bulk tank.

- Any piece of hardware that has potential contact with the DEF must be either Stainless Steel (SS), or poly (plastic).
- Stainless steel hardware is softer than regular steel and more likely to strip. Ensure that recommended torque values are not exceeded.

Pipe Joints:

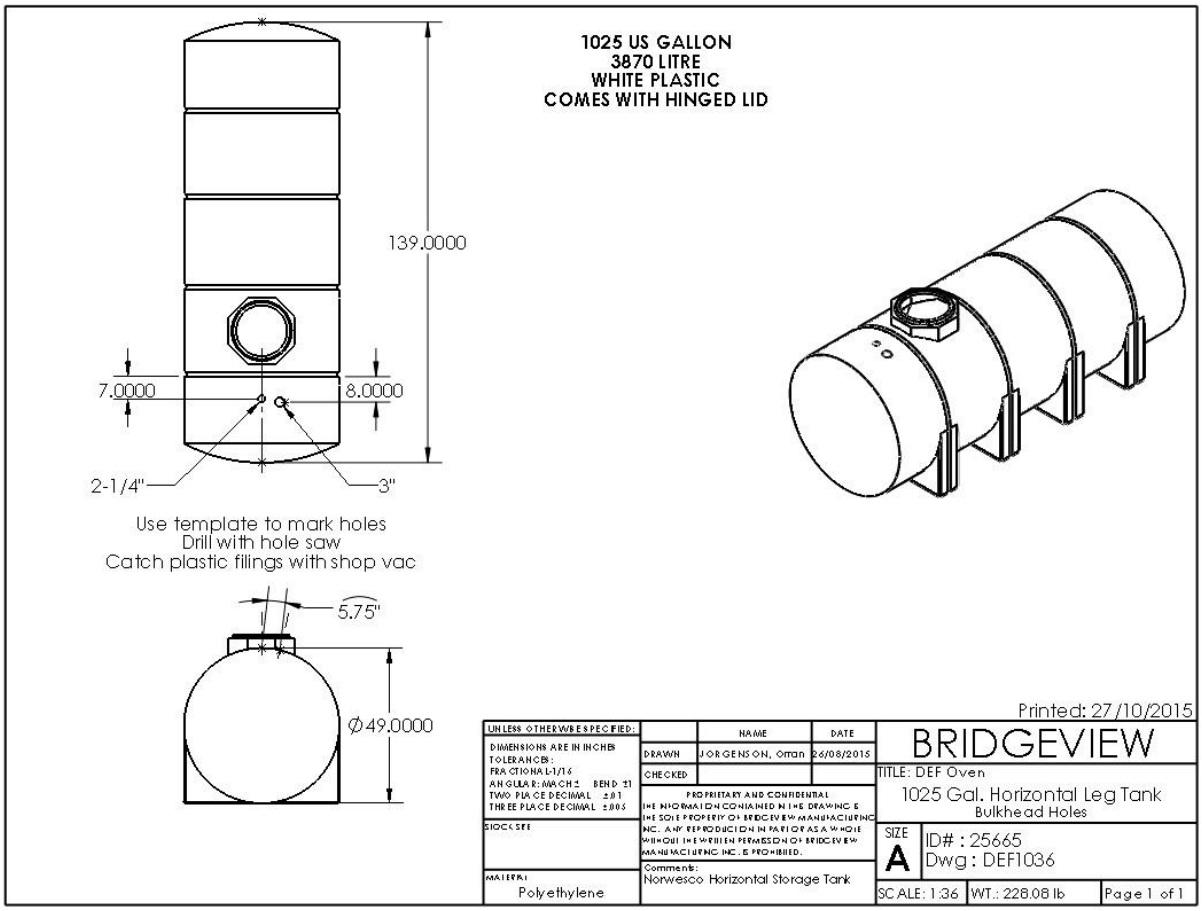
All threaded pipe couplers need to have the proper sealant applied:

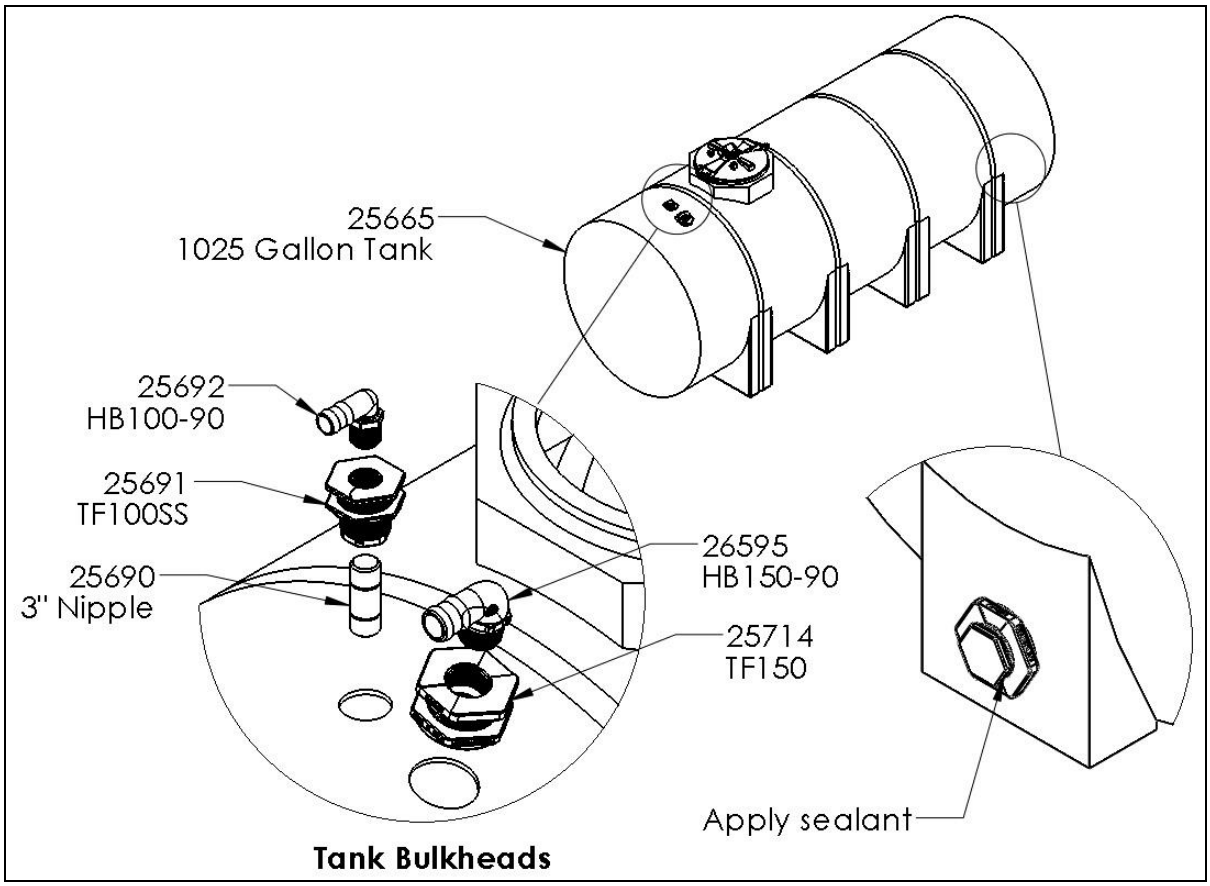
- Loctite 567 Sealer (SS to SS, SS to Poly, Poly to Poly)
- Loctite 7749 Primer (Stainless Steel only)
- NOTE: When threading SS to Poly, spray a small amount of primer on the SS fitting only, then apply sealant as normal. The primer should not make contact with the poly.
- Ensure sealant is forced to bottom of threads. Once tight, wipe off excess.
- Ensure a continuous ring of sealant is applied 2 or 3 threads down from the tip of the fitting.
- Fittings 2" and larger should have sealant applied to both male and female threads. Fittings less than 2" (pipe size) only need sealant on the male threads.
- Do not overtighten the pipe joints, especially the plastic ones.

TANK

Install Fittings to Tank

- Drill 2 holes in the top of the tank as shown using a hole saw.
- Install 3" nipple to bottom of 1" SS bulkhead fitting (USE THREAD PRIMER AND SEALANT). Install 90 degree hose barb to top side (USE PRIMER ON SS ONLY, USE SEALANT ON BARB)
- Install bulkhead fitting to small tank hole (grommet outside). Rotate so hose barb faces front of tank
- Install 1-1/2" bulkhead to larger tank hole (grommet outside). Install 90 degree hose barb so that it faces front of tank
- Remove the lower rear plug. Apply thread sealant and reinstall.

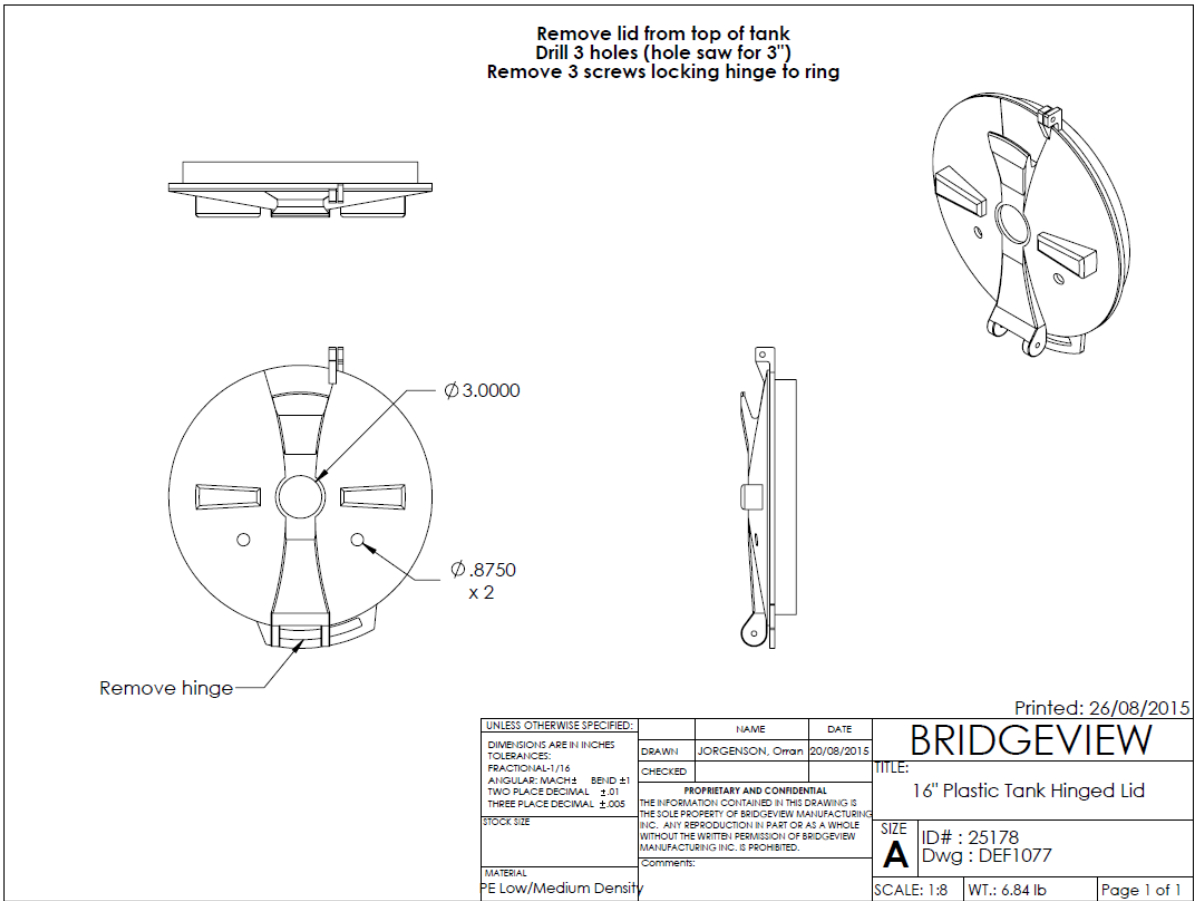


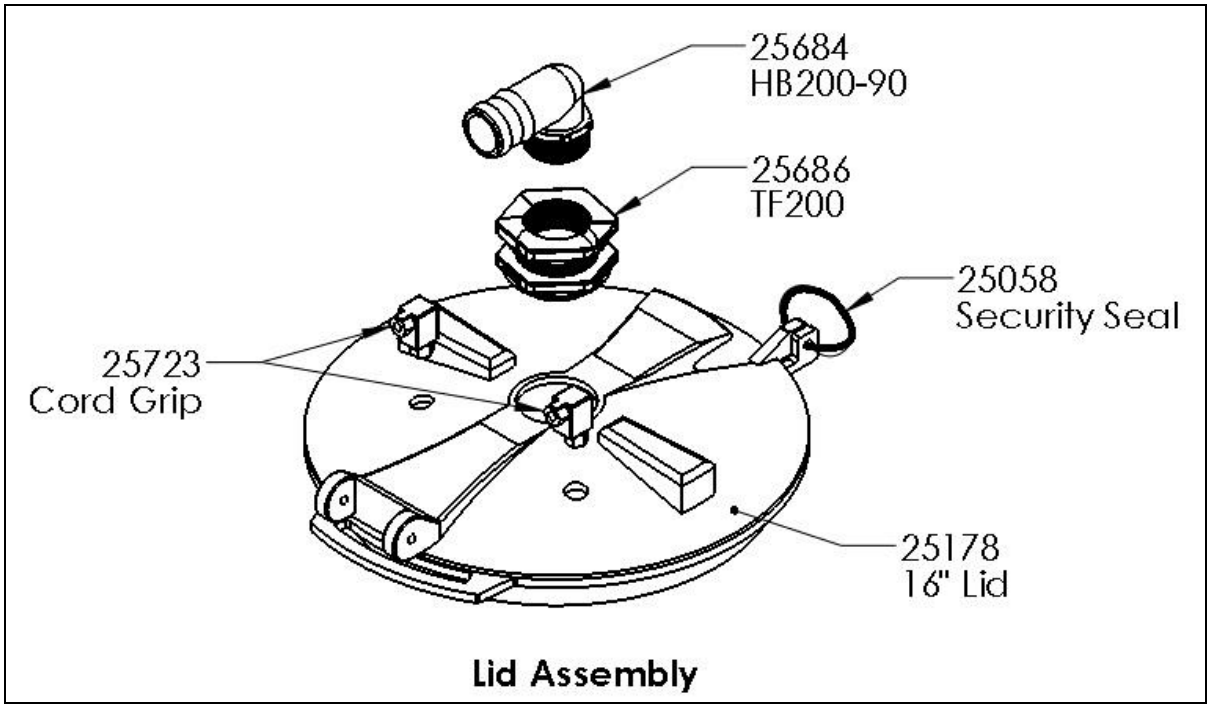


Tank Bulkheads

Modify the Lid

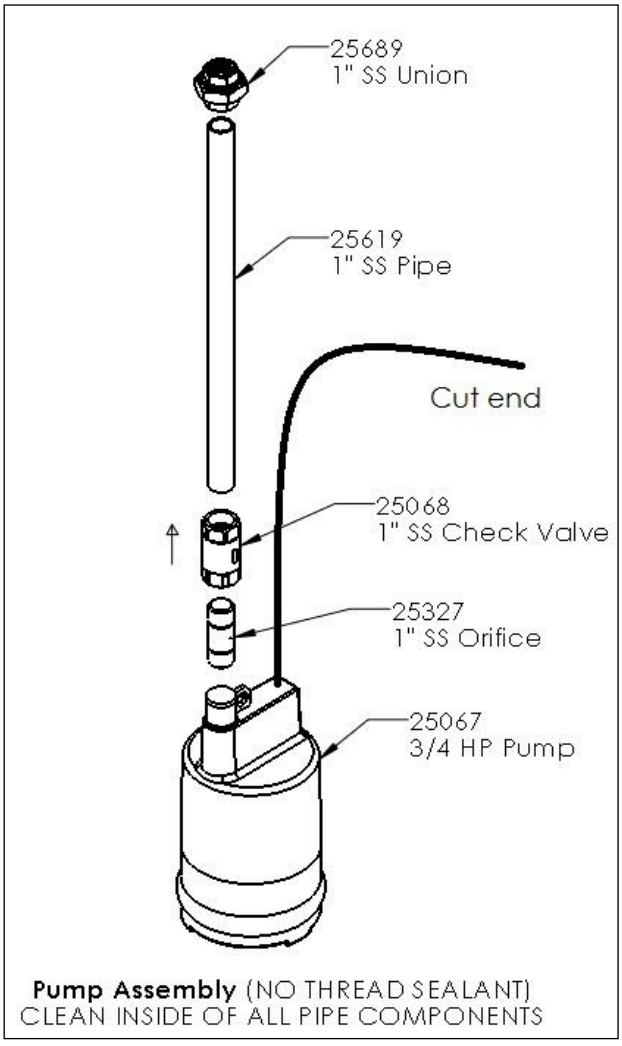
- Remove the lid from the tank (8 screws)
- Disassemble the hinge
- Drill 3 holes as shown. Use hole saw for the large one.
- Install 2" bulkhead fitting to large hole. Install 90 degree hose barb. Leave bulkhead loose so that it can be adjusted later.
- Install 2 cord grips so that they flip on the top and face the front of the tank.
- Reinstall lid and make sure that the twist lock function works correctly.
- DO NOT install the security seal until after the tank has been cleaned and the vent hose has been installed


Remove lid from top of tank
Drill 3 holes (hole saw for 3")
Remove 3 screws locking hinge to ring
Ø 3.0000
Ø .8750
x 2
Remove hinge
Printed: 26/08/2015
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL-1/16
ANGULAR: MACH± BEND ±1
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
STOCK SIZE
MATERIAL
PE Low/Medium Density
NAME
DATE
DRAWN
JORGENSON, Orran
20/08/2015
CHECKED
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BRIDGEVIEW MANUFACTURING INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BRIDGEVIEW MANUFACTURING INC. IS PROHIBITED.
Comments:
BRIDGEVIEW
TITLE:
16" Plastic Tank Hinged Lid
SIZE
A
ID# : 25178
Dwg : DEF1077
SCALE: 1:8
WT.: 6.84 lb
Page 1 of 1


25684
HB200-90
25686
TF200
25058
Security Seal
25723
Cord Grip
25178
16" Lid
Lid Assembly

Assemble the Pump

- Thread the orifice nipple to the top of the pump (DO NOT USE SEALANT for fittings inside tank). NOTE: Make sure the nipple is completely clean and hole is cleaned of any burrs.
- Thread the check valve to the top of the nipple (arrow pointing away from pump).
- Thread the check valve onto the long SS pipe. Check that the pipe is clean inside. Run a rag through on a long poker to clean inside.
- Install union fitting to the end of the long pipe
- Cut plug off end of pump cord



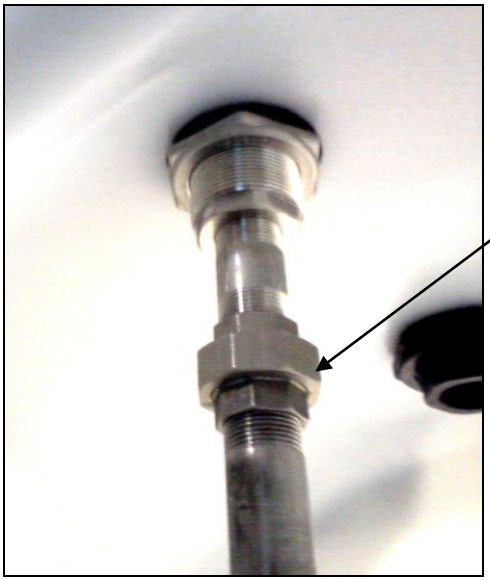
Pump Assembly (NO THREAD SEALANT)
CLEAN INSIDE OF ALL PIPE COMPONENTS

Clean and Seal Tank

NOTE: When working with the plastic tank, it is very important that it stay as clean as possible. Do not leave the lid open for extended periods of time. When cleaning the tank, ensure that your clothes and feet are covered to avoid tracking in more dirt. DO NOT USE TAP WATER OR SOLVENTS OF ANY KIND. DO NOT GRIND OR WELD IN VACINITY OF OPEN TANK.

- Collect all plastic filings from the drilling process.

- Using de-ionized water (from the Fluid Building) and white microfiber rags, completely clean the inside of the tank with a damp rag.
- Wipe down pump, pipe and cord and install inside tank. Tighten the union connection to the bulkhead stub (NO SEALANT)

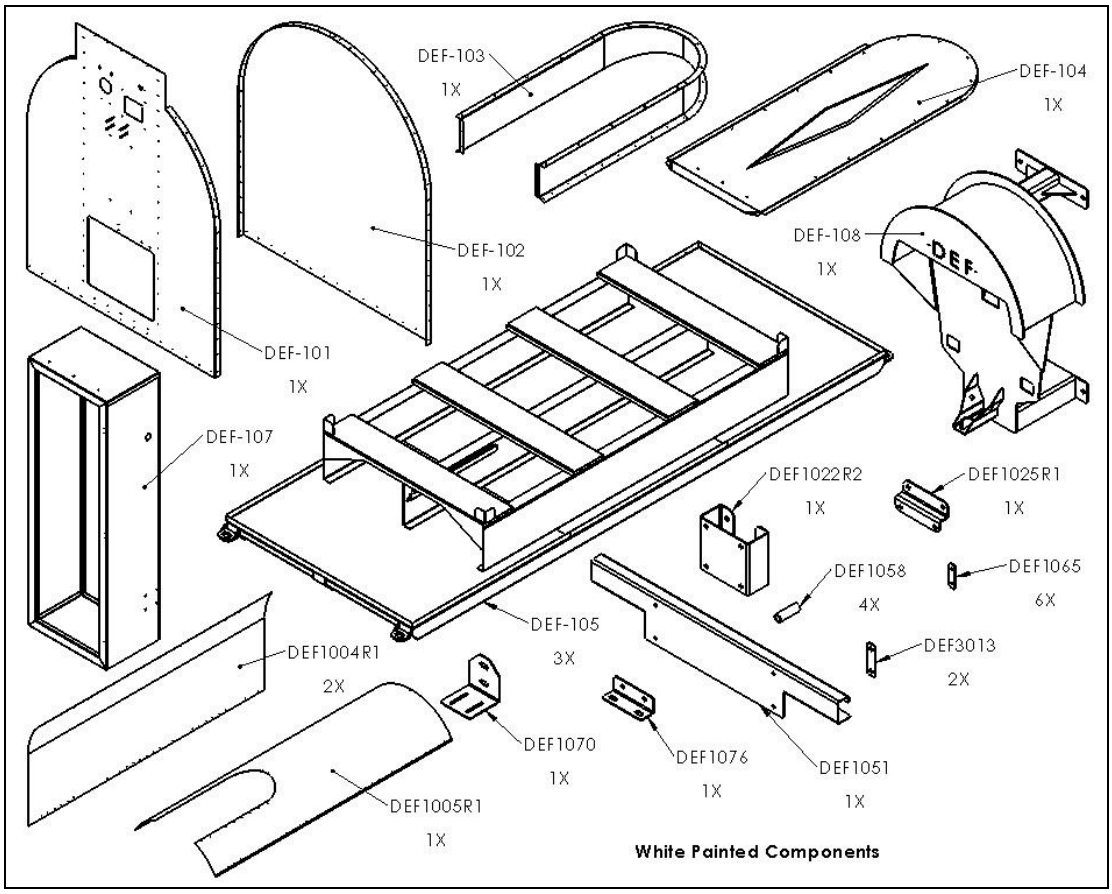


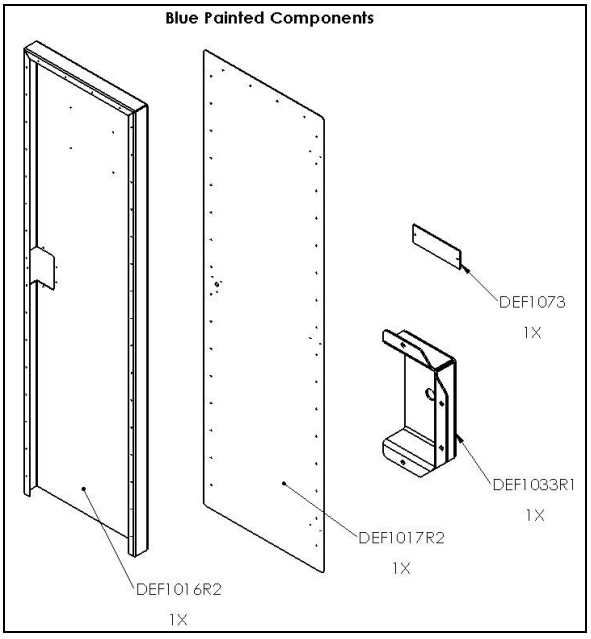
- Route the pump cord through 1 of the fittings on the lid. Ensure that there is enough slack to open the lid without pulling on the cord. Tighten and close the cord grip.
- Route the red air hose through the other cord grip. Install the weighted sensor to the inside end of the hose and tighten the fitting. Make sure that this weight rests on the floor of the tank and has enough slack to not lift up when the lid opens. Tighten and close the cord grip.
- Exit the tank and seal the lid temporarily with a zip tie. Make sure that the lid is properly seated.
- Temporarily wrap all hose barbs with plastic wrap to prevent contamination.

NOTE: DO NOT LEAVE TANK UNATTENDED WHILE OPEN. ONCE OPENED, THE PROCESS MUST BE FINISHED IN ONE SESSION.

HOUSING

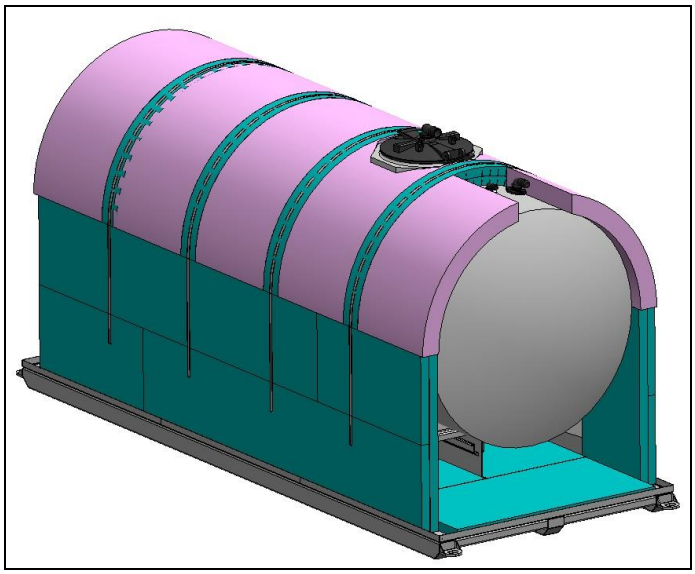
Paint Components





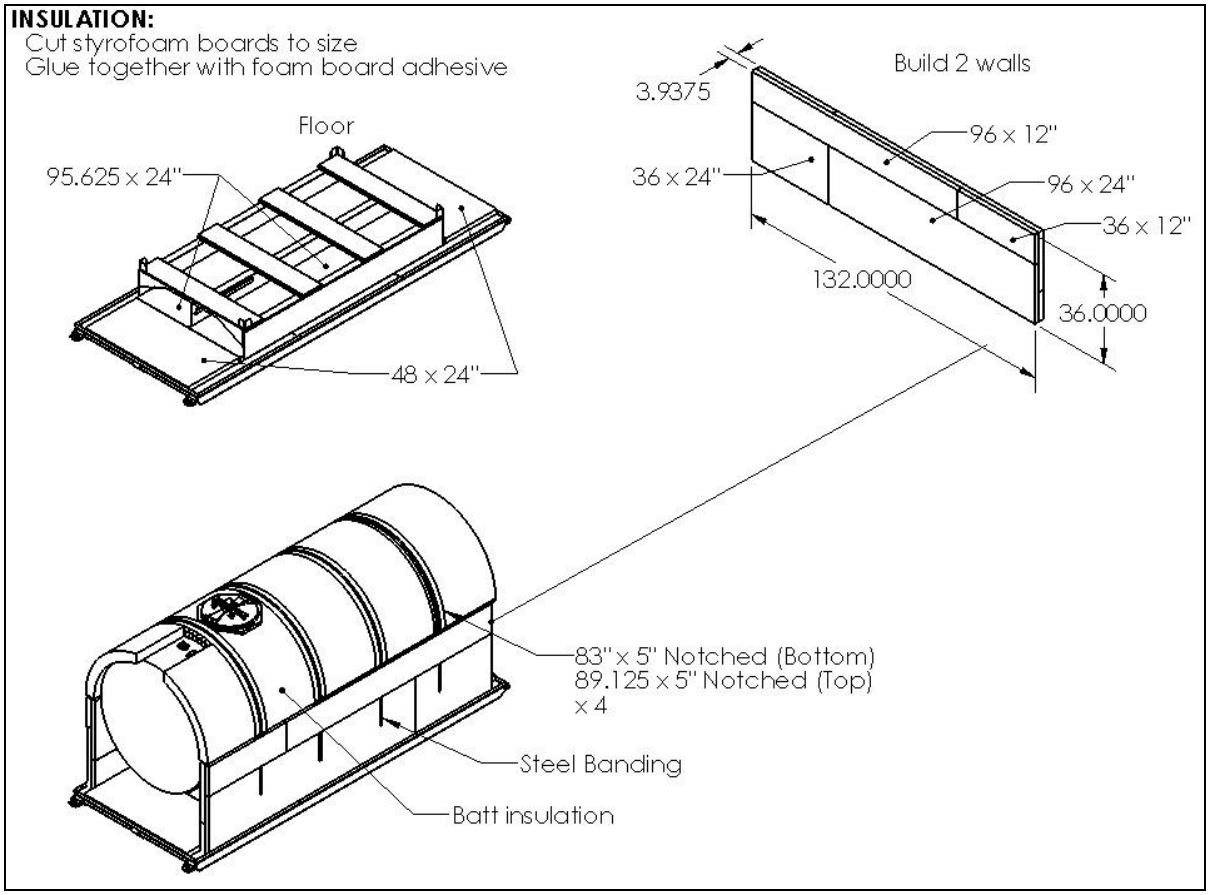
Insulate Tank

- Cut 2" XPS insulation as per drawing DEF1083. Use hot knife to cut grooves.
- Install floor panels to skid. Apply PL-300 foamboard adhesive to floor to secure in place. Use spray foam along all seams to fill in gaps. Let dry, then smooth out with knife. Adhesive should be applied in a back and forth weave, with beads approximately 12" apart. Apply pressure for an hour or so to let the adhesive set.
- Install tank onto skid.
- Assemble the side walls by gluing the appropriate foam panels together to form 1 solid board (36" x 132" x 4" thick). Allow glue to dry before installing.
- Cut notches in 5" strips of XPS as per drawing. Make sure they are deep enough to allow the strips to curve over the top of the tank without cracking or breaking.
- Install finished boards along each side of the tank and center front to back.
- Install the notched strips over the top of the tank in line with each leg. There is a short one and a long one for each leg (4" deep total).
- Using the metal banding reel, punch the banding through the side panels and run under the bottom channel to the other side, then up and over the tank. Center the 5" strips on each banding, then tighten it down and crimp the ends.
- Use spray foam or tuck tape along all seams and where the banding goes through the panels. Clean up spray foam once dry.
- Install batt insulation along the rest of the tank. Do not insulate over the lid or over the bulkhead fittings. Use tape to temporarily hold in place.



INSULATION:

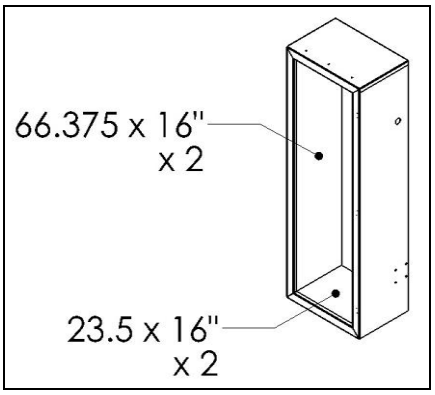
Cut styrofoam boards to size
Glue together with foam board adhesive



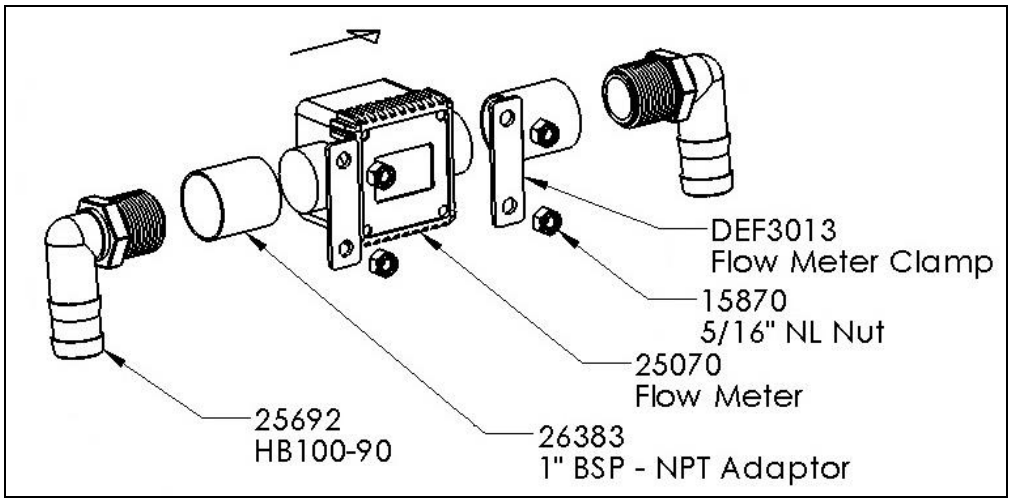
Assemble Cabinet

NOTE: Clean all components with de-ionized water and microfiber rag as you go.

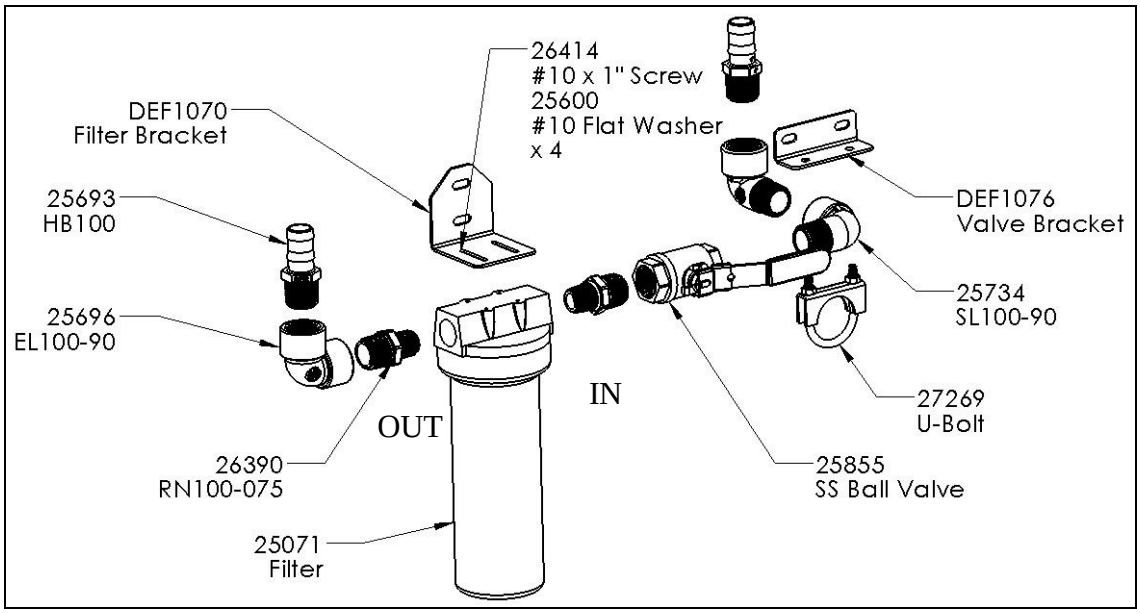
- Install XPS insulation to the inside walls of the cabinet. Use foamboard adhesive to secure.



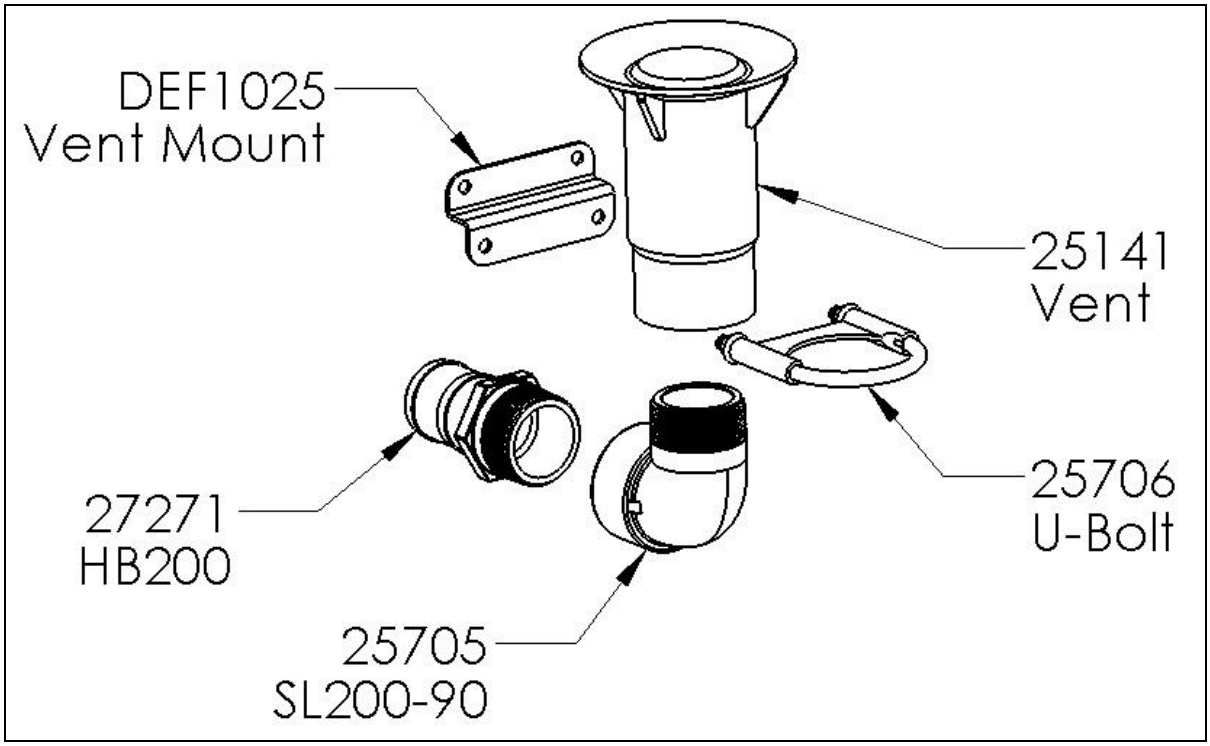
- Remove the LCD screen from the flow meter (4 small screws) and flip up-side down. The arrow on top of the housing should point right when looking at the screen.
- Assemble flow meter as shown. The gaskets inside the adaptors must be towards the flow meter. The arrow must point from left to right.
- Clamp flow meter to stand using small brackets.



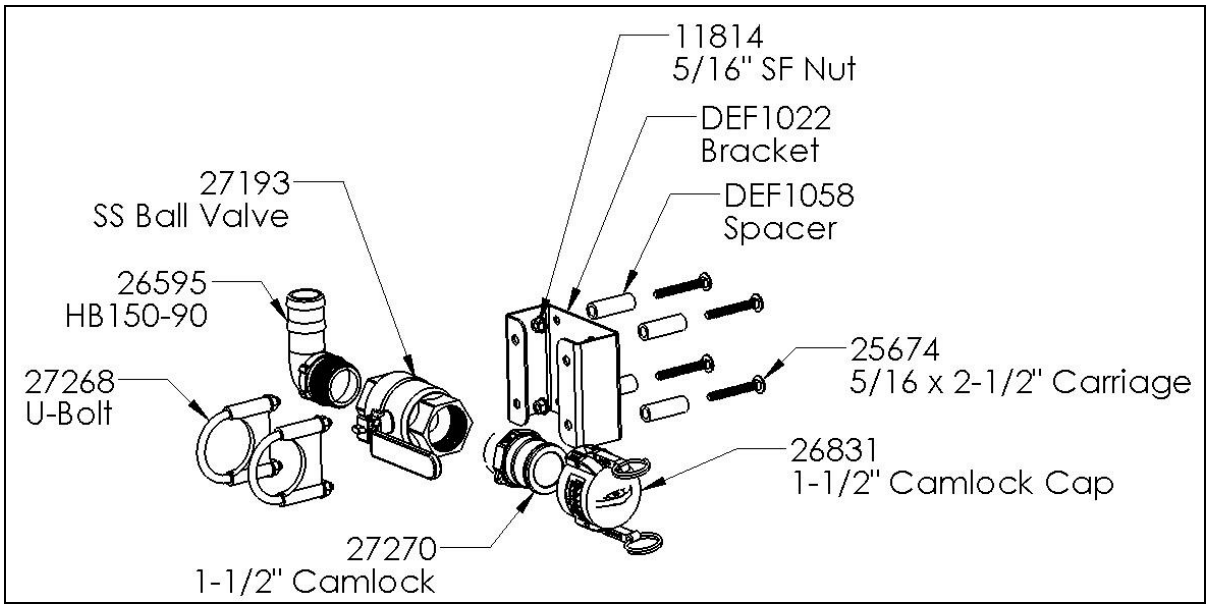
- Assemble the filter assembly as shown. Install to lower portion of front panel and bolt in place. Route **27" length of 1" hose** between filter and left side of flow meter using a small hose clamp at each end.
- Connect **57" length of 1" hose** to rear filter hose barb using a small hose clamp. Route the other end of hose loosely to the top and temporarily hold in place.



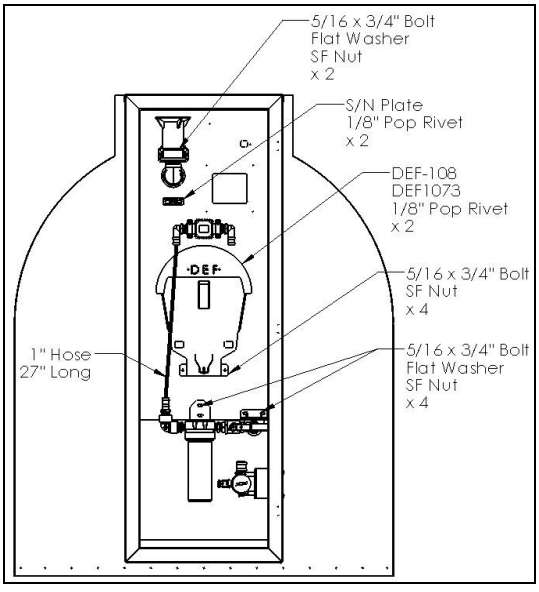
- Install hose holder. Pop rivet blue backing plate to highlight the "DEF" cut-out.
- Install serial number plate above and left of the flow meter using pop rivets.
- Assemble and install the vent as shown. Do not connect hoses yet.

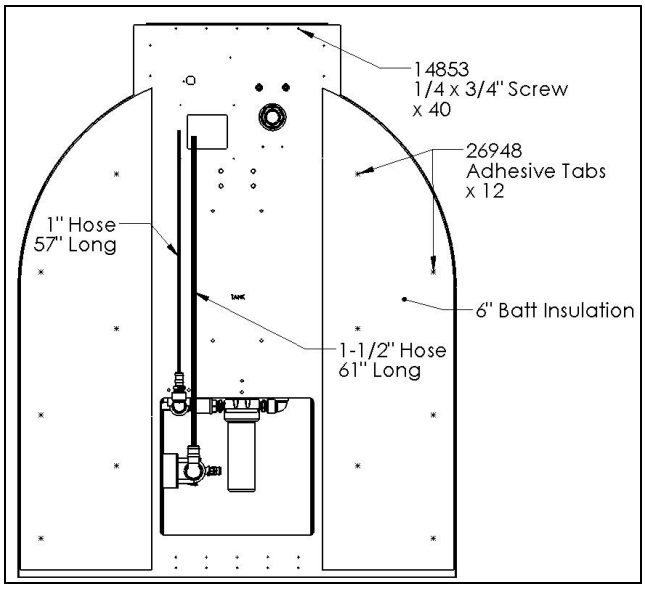


- Install the fill assembly as shown. Drill holes through the insulation for the spacer pipes. Do not connect hoses yet.



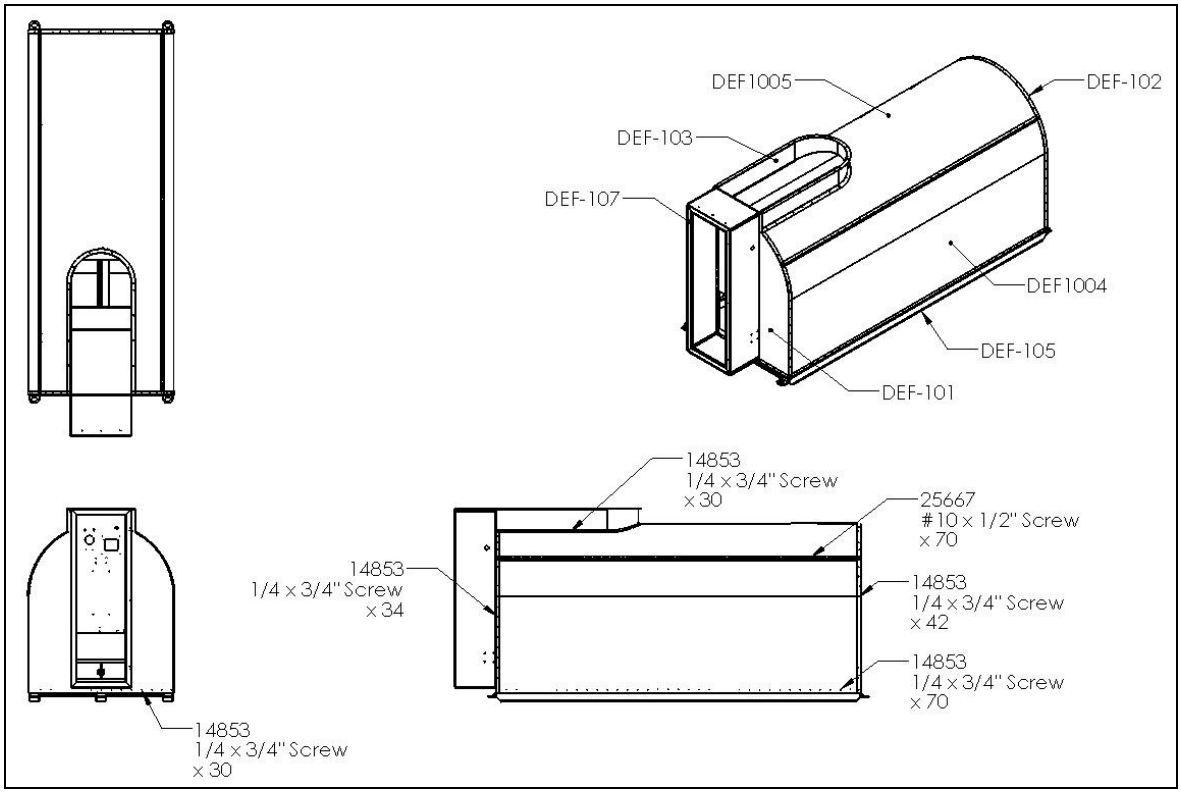
- Lay cabinet on its face and in set the front panel on top. Screw them together using self-drilling screws.
- Install **61" length of 1-1/2" hose** to the fill assembly. Loosely route the hose to the top and temporarily hold in place.
- Strategically apply self-adhesive insulation fasteners to the front panel at regular intervals (every 12"). Install batt insulation along the sides, but not along the cabinet.





Install Shell

- Lay the outer shell components on a large flat surface with wood blocks supporting the seams.
- Screw the 3 panels together with pan head screws. Be very careful not to damage the paint at this time.
- Lift assembled shell with spreader bar. 4 people are required to support each corner.
- Position shell over tank then slowly let the sides down until the 4 corners are aligned with the holes in the skid.
- Fix the 4 corners, then go along both bottom seams with self-drilling screws.
- Apply self-adhesive insulation fasteners to the rear panel at regular intervals (every 12"). Install batt insulation to cover the entire rear panel. DO NOT use studs in the center because they will run into the tank.
- Slide the rear panel over the shell and push until the inside flange bottoms out. Screw along the flange and into the frame with self-drilling screws.
- Repeat with front panel.
- Install hatch flange along top of shell using self-drilling screws.



Finish Plumbing

- Route 20 ft length of 1" hose from the right side of the flow meter, around the hose holder. Install a female camlock to the end of the hose.
- Install a male camlock the end of the VA100 nozzle assembly.
- Install a male camlock and adaptor to the stainless steel nozzle.
- Connect the hose to the SS nozzle, and place the nozzle in the holder.
- Hang the VA100 nozzle beside the other one.
- Install drip tray along floor of cabinet
- Connect the 3 hoses between the cabinet and the tank. Rotate the lid fitting as required, then tighten bulkhead.

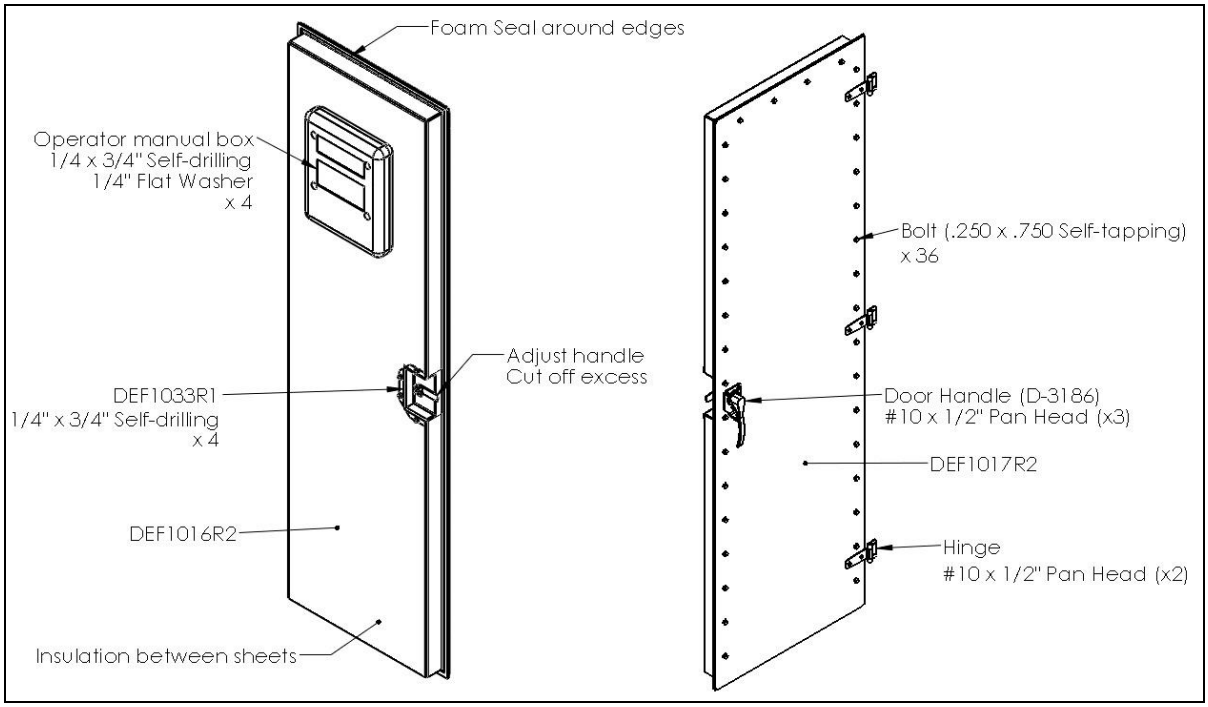
Install Electrical

- A certified electrician must install junction boxes and properly wire the pump and heater. The heater should have its thermostat removed, and controlled by a junction-box-mounted disc thermostat.
- Drill a new hole through the back of the OCIO sensor and relocate the air hose bulkhead fitting. Connect the red hose to the sensor, leaving a couple feet extra.
- Plug an extension cord into the side plug and check all functions.
- Program the OCIO sensor according to the supplied instructions.
  - press “Cancel” to see S/N. Write down last 2 digits
  - Press & Hold “Cancel” + “Enter”
- The correct input values are:

Units	L/mm	
Tank Shape	B	
Diameter	1118	
Length	23853	Alarm 1
Density	1.090	Alarm 2
Low Level	4%	
High Level	90%	

Install Door

- Assemble the door, including the handle, internal insulation, manual holder, and foam strips along the outside.
- Position and center the door in the cabinet.
- Install hinges using #10 x 1" bolts. Use shims as required for proper fit on cabinet.
- Set handle latch to correct distance and cut off excess shaft.



Package

- Clean all exterior panels and inside of cabinet. Apply silicone along all seams
- Install large "Afterburner" decal to each side
- Install "DEF" delivery decal to door.
- Zip tie nozzles and camlock caps.
- Install security seal to tank lid.
- Install batt insulation on top of lid and hoses
- Install top cover using bolts with rubber washers.