

SCOUT Projects:



m/v SCOUT (Great Harbour N37)

Ray Henry

Description

Our cruising plans keeps us in the warm(er) climates most of the time. However, there is always that rare cold morning when you have to get moving and would just like to have something to take the chill off.

We did not want (or need) a full-blown heating system for the entire boat as we have a mattress heater forward for cold nights and reverse-cycle air conditioners for when at the dock.

We read a lot about all kinds of installations in boats and RV's of the low-cost Asian-sourced "parking heaters". Their extensive use and write ups made them appear very safe and reliable and nearly identical copies of the high-priced Eberspacher heaters, albeit with sometimes sub-standard connection and interfacing materials.

We bought one of the base units and then purchased high-quality protection and installation materials to make it even more safe.

Primary Parts Ordered

1. 5Kw Diesel Heater



[maXpeedingrods 5KW 12V Diesel Fuel Air Heater Knob Switch + Diesel Tank + Silencer for Car Bus Trucks Motor-Homes Boats](#)

Sold by: [maXpeedingrods-us](#) | [Product question? Ask Seller](#)

\$124.00

2. Exhaust Thru Hull



[316L Straight Exhaust Fitting 22, 24, 30 mm/Thru Hull for Webasto Eberspacher Planar Chinese heaters \(24 mm Exhaust Pipe Diameter\)](#)

Sold by: [marine stainless steel](#)

Return eligible through May 31, 2020

\$59.00

3. Upgraded Exhaust Clamps



[2 Pcs Heater exhaust clamp fits Eberspacher Webasto 22-24mm](#)

Sold by: [BUMA PARTS](#)

Return window closed on Mar 19, 2020

\$9.50

4. Exhaust pipe extension



[Eberspacher Espar or Webasto Exhaust Pipe 24mm | 36061296 | 90394a \(1m\)](#)

Sold by: [Heate](#)

Return eligible through May 31, 2020

\$24.00

5. Fuel Diverter Valve and Fittings



Moeller Fuel Tank Four-Way Valve (1/4", Brass)

Sold by: Amazon.com Services LLC

Return eligible through May 31, 2020

\$26.78



EDGE INDUSTRIAL 5/16" Hose ID to 1/4" Male NPT MNPT 90 Degree Elbow Brass Fitting Fuel / AIR / Water / Oil / Gas / WOG (Qty 01)

Sold by: UPE Group

Return eligible through May 31, 2020

\$6.20



LTWFITTING Brass Fitting Coupler 5/16" Hose Barb x 1/4" Male NPT Fuel Gas Water(Pack of 5)

Sold by: honest-f

Return eligible through May 31, 2020

\$9.99



[Order details](#) | Ordered on April 1, 2020 (1 item)

EDGE INDUSTRIAL 3/16" Hose ID to 1/4" Male NPT MNPT Straight Brass Fitting Fuel/AIR/Water/Oil/Gas/WOG (1 Qty)

Sold by: UPE Group

6. Various other upgraded/improved parts (referenced in descriptions below)

- Higher-rated fuel supply hose
- Heat and abrasion protection hose sheath
- Heat shield insulation
- Heat shield protector
- Expanding duct hose
- Stainless shelf brackets

Design

As stated above, we did not intend to heat the entire boat. We wanted something to take the chill off on the rare cold morning when underway or getting up to the salon.

To that end, we chose to put a single output vent at the end of the salon seating riser. This vent location would produce heat near the helm and navigation area as well as some possibly falling down into the galley area.

This vent location was also a function of easing the routing of the air duct, location of the heater itself (to provide a good exhaust routing location), and fuel supply. All of these functions played together in deciding the system component layout.

The first order of business was to setup the heater box itself. I used two stainless shelf brackets and bolted the included metal base plate to them. I chose a location on the port side, aft of the generator, on the aft (bosun's locker) bulkhead. The exhaust could run down to a new thru hull above the port engine and generator exhausts already there.



Shelf Brackets and Heater Base Plate

The shelf position just cleared the exhaust hoses for the engine and generator and allowed for a mostly direct run to the thru hull location proposed. The circular cutouts in the brackets would come in handy later.



Allowing for the Exhaust Run to the Thru Hull



Testing Heater Mount and Exhaust Hose Routing

Next, a new thru hull was installed above the engine and generator ports. A balance between height off the water, rub-rail above, engine/generator ports below, and aft bulkhead location were all considered.



Detailed Thru Hull Measurements

Somewhat nervously, a hole was cut and the thru hull installed with butyl tape. In the photo below, the exhaust pipe runs past a pair of water lines feeding the cockpit shower. I wrapped the water lines in a heat shield, and curved the exhaust hose out and around them a bit. The exhaust hose is also covered in heat insulating wrap over its entire length.



Exhaust Pipe Routing and New Thru Hull

The overall exhaust run can be seen in the photo below. The stainless box mid-way is a “muffler” supposedly reducing noise, although I am not sure it is really needed in our installation.



Exhaust Pipe Routing

In the photo below, the shelf bracket had a convenient hole through which to route the pipe. On exit, the pipe ran past some electrical wiring on the bulkhead. I used the heat shield wrap around those and also curved the exhaust pipe around this as well.



Exhaust Pipe Exit Routing

For the diesel burn air intake (the black hose on the left of the above photo), it is open to the engine room allowing the engine intake vents (3) to supply fresh outside air for the diesel burner.

The fresh (hot) air ducting runs along the head-high portion of the engine room forward to the corner of the salon seat riser bulkhead. I bought some 3" batten insulation to cover the duct for heat protection.



Hot Air Duct Routing

Outside in the salon the vent that came with the heater was used. It is angled about 45 degrees and is rotatable. The heaters generally come with two kinds of controls, one is an digital screen-based unit and the other option is a manual dial. Reviews and comments seemed to favor the reliability of the manual control so we bought that kind. I mounted the control right next to the outlet for convenience of electrical routing.

Since the area is somewhat vulnerable, I mounted a metal drawer pull across the front of the control to protect it (the bar is not part of the control head). I also purchased a \$12 replacement control just in case.....



Hot Air Outlet Vent and Control Head

For the fresh air inlet, I had an unused air conditioner vent under one of the salon seats aft that I thought would be useful for circulating the hot air throughout the salon. The only problem was getting to it with the duct from the heater location. I had to cut a hole to go through bosun's locker bulkhead aft.



Fresh Air Intake from Salon

.....then through part of the bosun's locker and up underneath the salon seat.

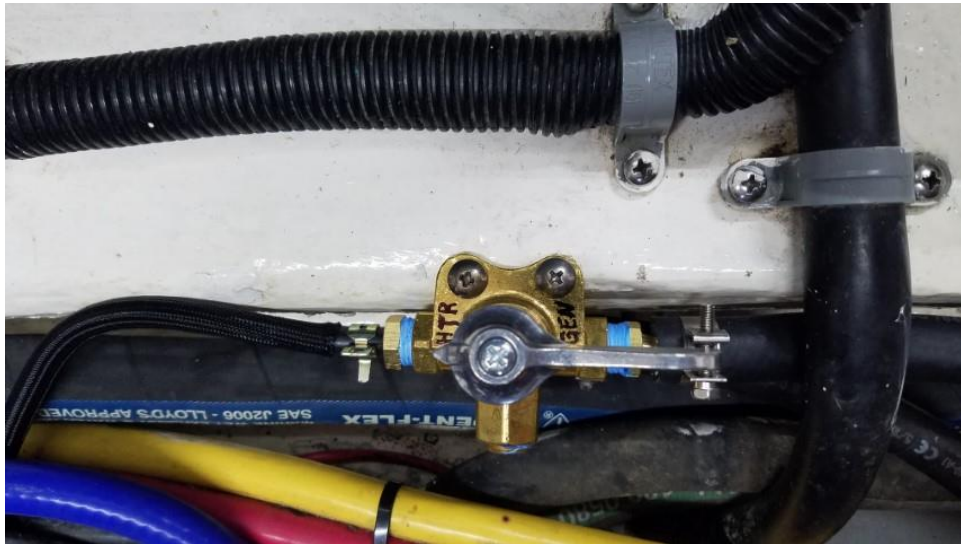


Fresh Air Intake Duct Through Bosun's Locker Up To Salon Seat



Fresh Air Intake Under Aft Salon Seat

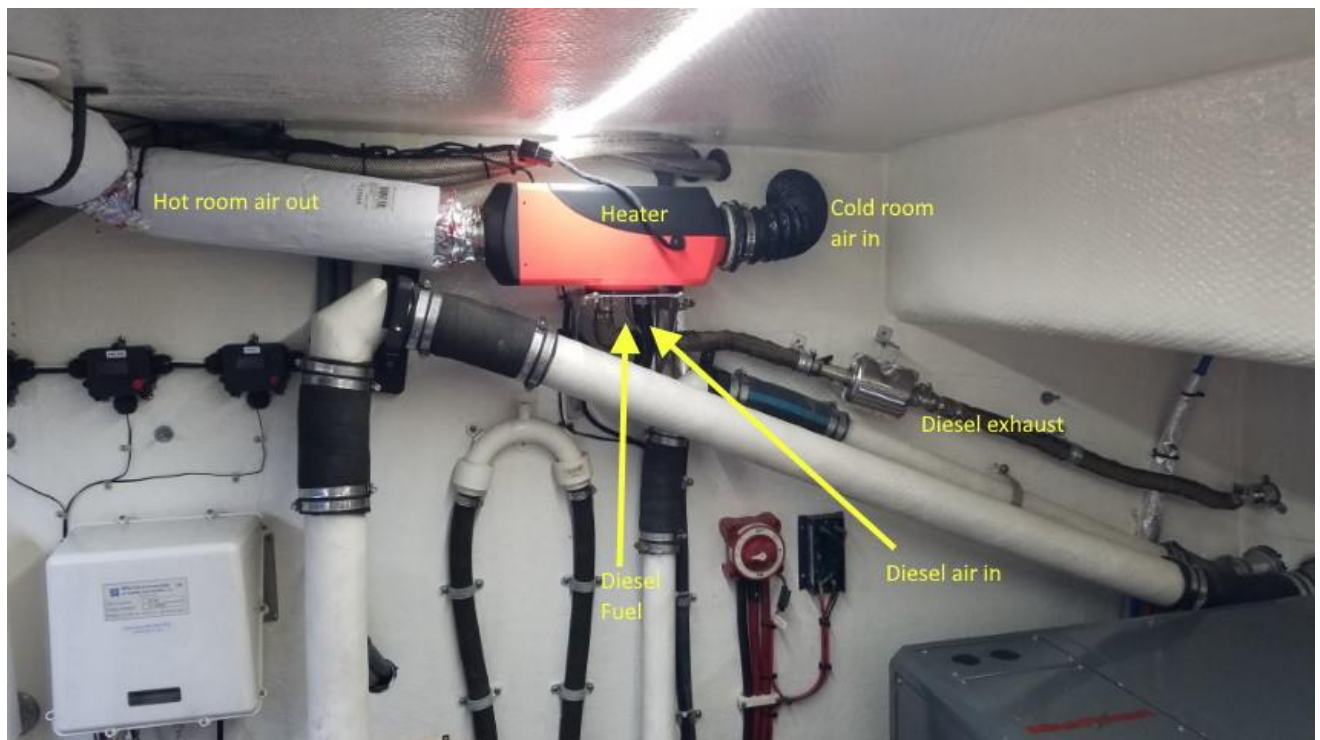
Finally, for the fuel supply, I cut into the generator supply after it left the primary filter on the way to the generator. I inserted a valve to select between generator operation and diesel heater supply. We don't anticipate ever needing the generator and the diesel heater at the same time. The valve is mounted right next to the generator platform.

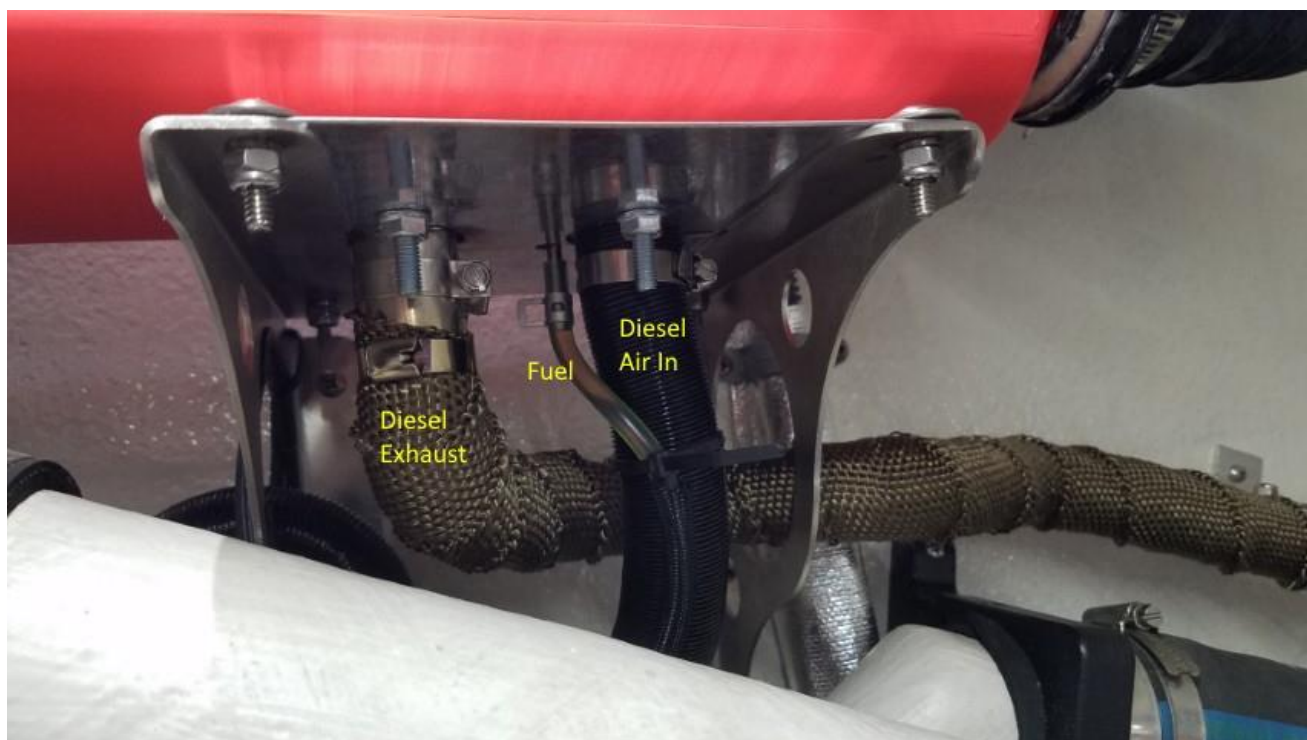


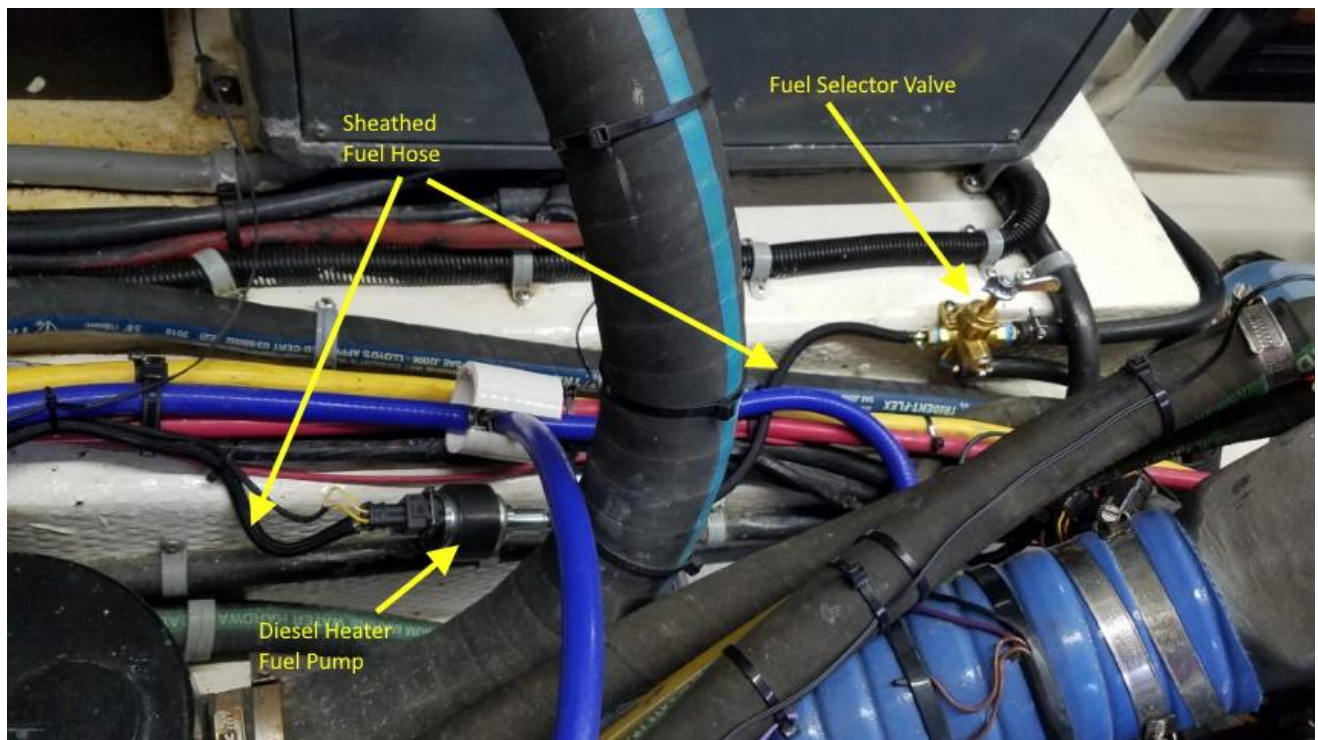
Fuel Supply Selector Valve

Completion

The photos below show the overall installation with notations. The diesel burner intake and exhaust pipes had to crisscross so that the fresh air ducting could work out. Not ideal, but there was room to curve things around for protection.







Do-Overs and Comments

We have test run the system for about an hour (as long as we could stand it (with Florida 90-degree outside temperatures!)).

After the initial burn-off of the exhaust pipe insulation wrap (a documented process) there was no diesel or other smell to the system at all. We think pulling cabin air from the unused salon vent and (re-)heating it will be more efficient in the long run.

We measured output vent temperatures of 195 degrees with the IR gun with the system running full blast. We think this will be plenty of heat for the helm/salon on those rare cold mornings.

Measurements along the exhaust pipe in the engine room showed about 450 degrees right at the exit of the heater box, 300 degrees midway, and about 130 degrees right at the thru hull exit.