Diesel Heater & Stove Maintenance

Having problems with your diesel heater or stove?
Follow these simply steps to get your fuel to air mixture balanced to achieve a clean burn.

Fuel

1. First check the fuel flow from the oil inlet fitting on the oil metering valve. Disconnect the fuel line and place it into a bucket. Turn on the pump or open the fuel tank shut-off valve and allow the fuel to flow into your bucket. This will make sure the filter is not plugged and we can ensure there is a good consistent flow of fuel to the oil metering valve.
2. Remove the brass elbow fitting on the valve fuel inlet and check the fine mesh screen in the valve behind the brass fitting. If the mesh is cleaned then reconnect the fuel line and allow fuel to flow into the valve.
3. Next disconnect the fitting directly under the valve, use 2 wrenches and push the copper line aside so the valve can drip into a small cup or container.
4. Turn on the valve to # 1 setting and the drips of oil should fill a teaspoon in 50 seconds. If not see adjusting instructions in the manual.
5. Before reconnecting, blow through the copper line so any debris will end up in the bottom of the burner and can easily cleaned up with a paper towel.

***We now know there is 1 teaspoon of fuel getting into the bottom of the burner on low setting with any type of fuel. (diesel, kero or stove oil) Later when using the metering valve, always adjust the valve in small ½ increment adjustments and wait until you see the reaction of the flames before making any another adjustments.

Air

1. The hot chimney will draw air into the little holes in the burner so they have to be cleaned. The burner ring should fit snuggly into the burner groove and the super heater should make good metal to metal contact with the bottom of the burner. Twist it back and forth a couple of times to ensure this.
2. After setting the fuel to any setting and seeing the reaction of the flames, you need to make an air adjustment as well. If flames are still under the top burner ring then you need to give the burner less air by adjust barometric flap open, turn the fan down, or turn up the fuel until ALL flames are above the top burner ring.
3. On higher settings of fuel you will need to add a little air by using the fan to keep the flames vibrant yellow but you know you are using too much air if the flames start to burn below the ring. Hard carbon deposits are also formed inside the burner from too much air or not enough fuel in the burner.

Operation

In cold conditions the heater may stay cold until it gets warmed up. The cold fuel is thick in viscosity you will need to turn up the oil metering valve to higher settings in order for the fuel to flow, and use less air as it cools the burner, so you may need to operate the burner on much higher settings of fuel and lower settings of air until the valve starts to warm up and as the fuel inside the valve gets a chance to warm up as well, then you can start to turn down these higher settings, and set the flames for a cleaner burn.

Backdraft

It is important to create and maintain a positive pressure inside the boat. High winds or turning the boat in a certain position can draw air from the boat and thus create a negative pressure. Remember that the amount of air being drawn out of the boat will be replaced by the same volume of air coming in. This incoming air should come from a separate vent close to the heater or a window or hatch that is opposite to where the air is being drawn out so it will not want to come in from down the chimney. To find where the air is being drawn out, twist a paper towel into a wick, light it and blow it

out to create smoke. Placing the smoking wick near the open hatches, windows or vents will lead you to the location. Installing or opening opposing vents will allow the air to come in from a path of least resistance and not disturb the draft in the chimney. Your stove is a natural draft appliance and it creates its draft pressure like a chimney with a wood stove. The rising, heated air in the stack pulls fresh air into the stove as it rises up the stack and exits the flue cap. The greater the draft pressure going up, the more able the stove will be to resist strong winds coming down.
The next common reason for backdraft is having the burner burning too low (too much air or not enough fuel). If the flames are burning below the top burner ring then it is burning inefficiently causing the draft to be too weak allowing backdraft. When the flames are burning above the ring then the natural draft is at its strongest so it can fight and win against backdraft.

Turning the fan on to a low speed can also help as it is forcing air up the chimney however it can also have a negative effect. Adding air to the burner can force the flames below the top ring causing a weaker draft, so if air is added then fuel must be increased to keep the fuel to air mixture correct making it burn above the ring efficiently and keeping the draft strong.

Note- a barometric damper is a must for best combustion. The purpose is to maintain a strong draft without causing too much air to the fuel mixture.

The best cap for the top of the chimney is the H cap but may be too cumbersome for sailboats however the DP cap is the best for all installation.

Note-It is possible for the air intake on your engine to be strong enough to suck the air out of a cabin as well if not properly vented.