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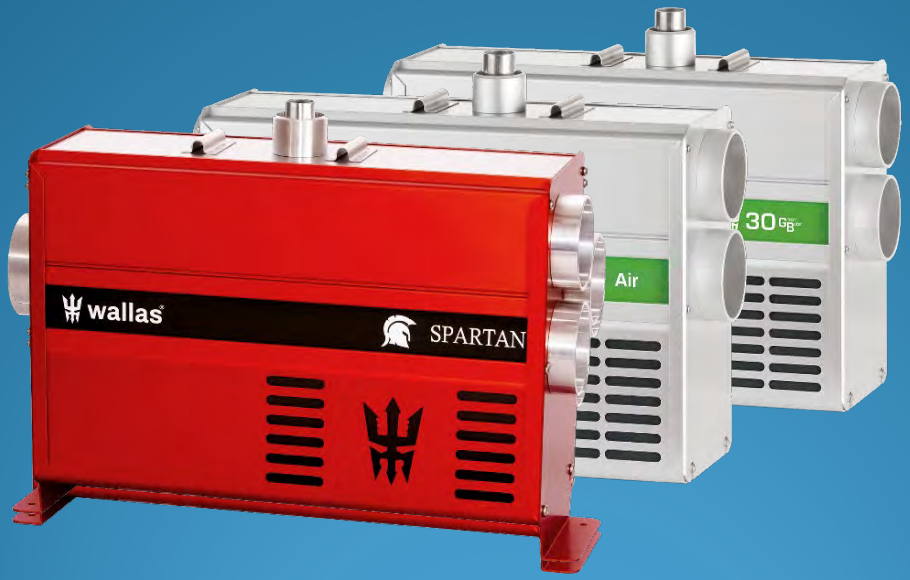
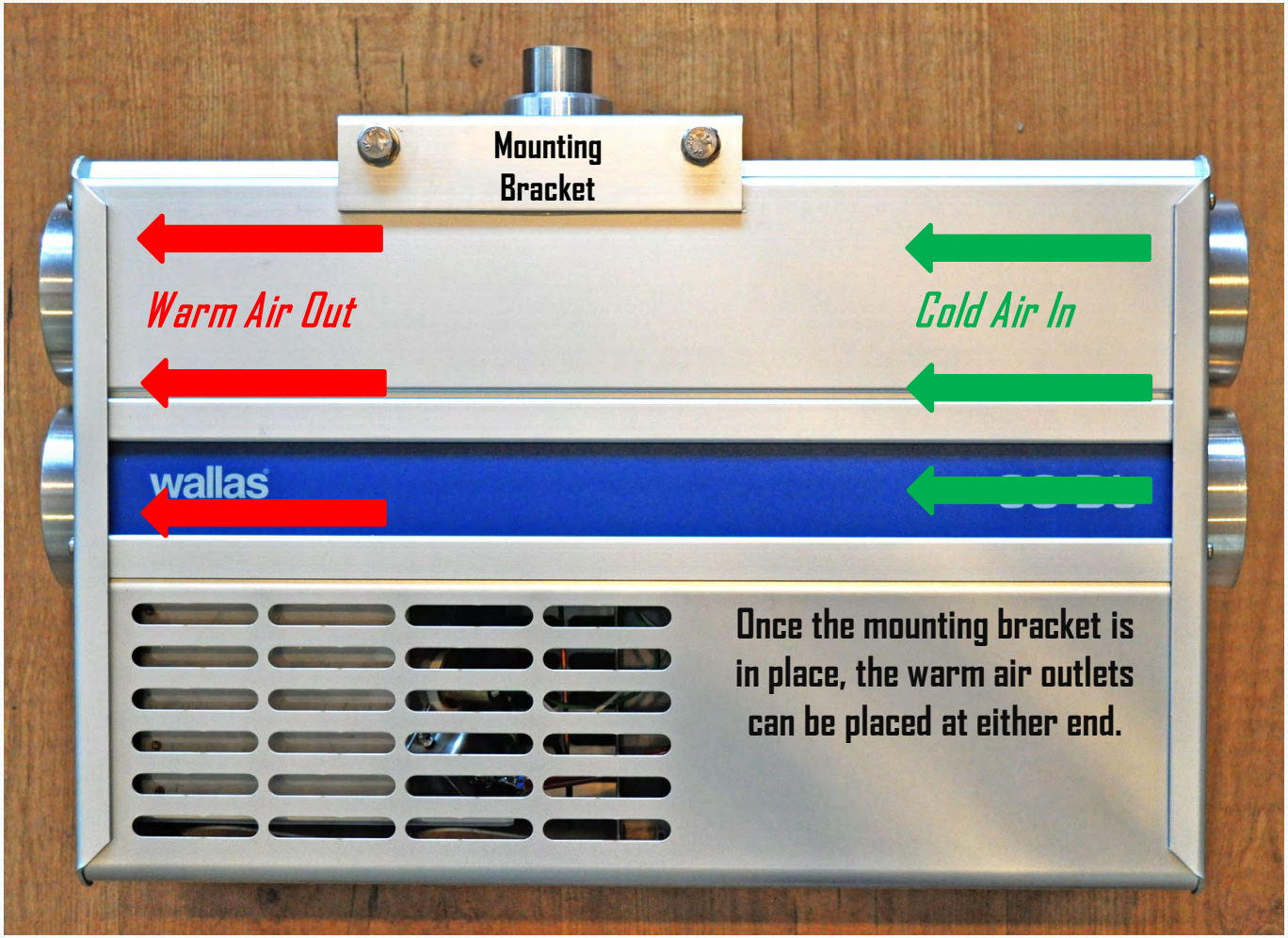
Forced air marine diesel heating systems.



Installing a Wallas Forced Air Heater In An Away Space:

Figure 1: Heater Reference



Power, control harness and fuel connections are located on the bottom of the heater case.

Section 1: Location

- **Finding a location for the heater:**
  - It should be mounted upright, higher than the fuel, placed to allow duct runs and within heater exhaust run limits. It can be mounted parallel or athwart ships.
    1. In a diesel engine room.
    2. In an outside locker or lazarette.
    3. In the cabin (see other guides).
    4. In a closet (see other guides).

Safety Note:

- **Every boat or vehicle equipped with any kind of petroleum fueled engine or device should also be equipped with a CO (carbon monoxide) detector.**

1. Should be capable of independent function.
2. Should be tested for correct operation regularly.
3. Replaced every five years.

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Section 2: Exhaust System

- **Find a place for the exhaust through hull or house fitting:**
  1. Within 6.5' exhaust run limits.
  2. Not facing the direction of travel.
  3. Aft of the widest point of the beam.
  4. Not on the back of the house to prevent "station wagon" effect.
  5. Allowing for 12" rise above through hull inside the hull.
  6. 14" or more above the waterline.
     - See Figures 2 & 2S.

Figure 2: Exhaust outlet locations

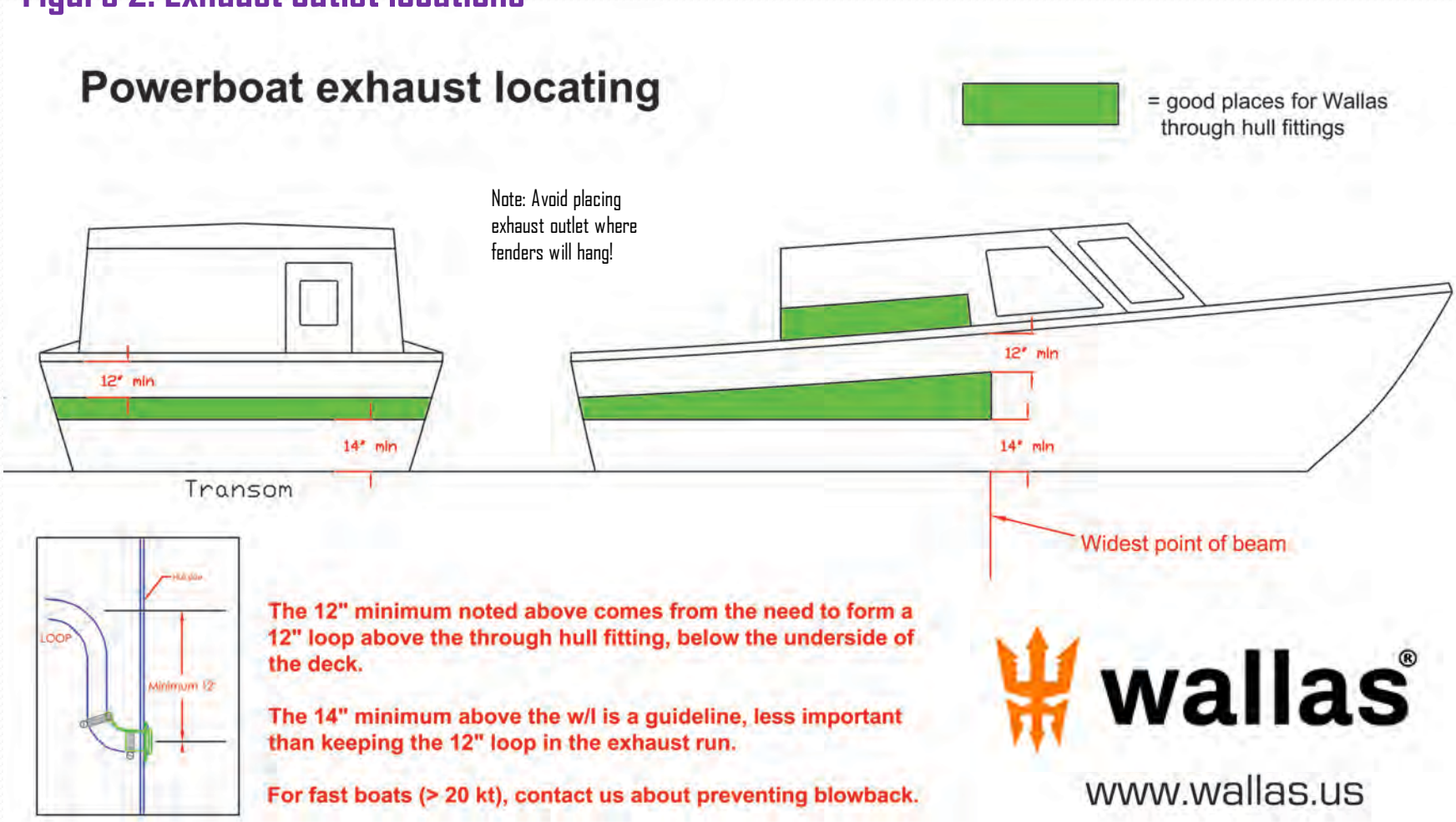
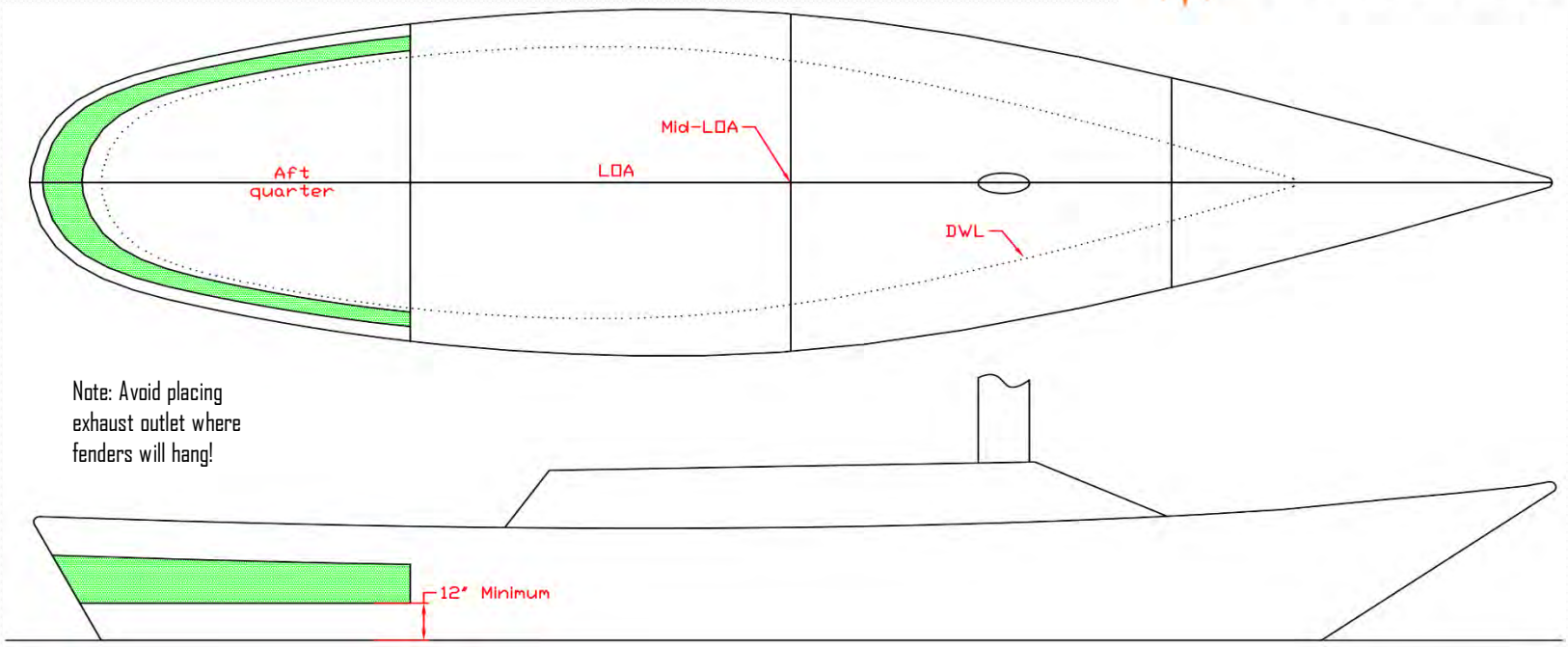


Figure 2S: Sailboat exhaust outlet locations



Green shaded area represents ideal locations for Wallas exhaust through hull fittings on monohull sailboats. Through hull routings must include a 12" vertical drop in the last 14 inches of the flexible exhaust run, to form a preventive loop to eliminate the possibility of water entering the system and becoming entrained.

Exhaust perforation can alternatively be made on top of house, providing a covered or elevated covered fitting is installed.

Section 2: Exhaust System

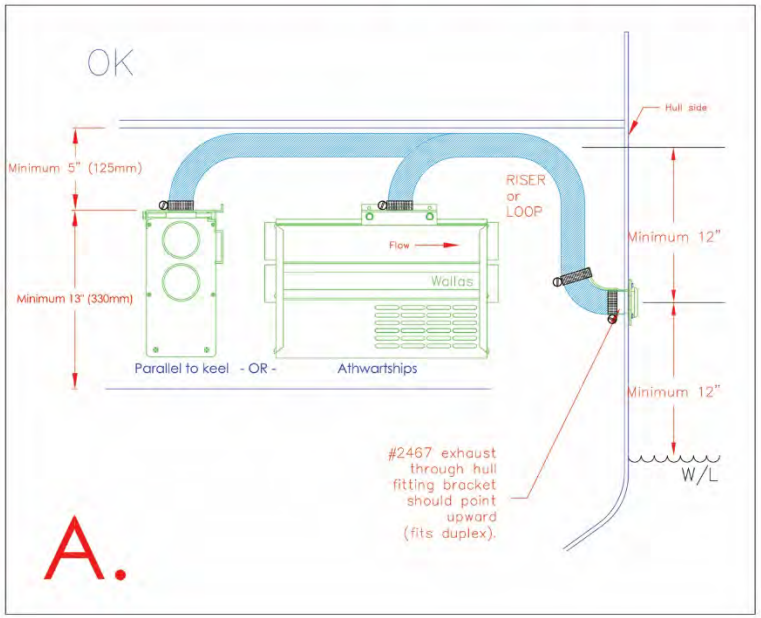
- Make the exhaust run as necessary. Avoid tight turns and keep away from wiring or plastic objects.
- Routing is not critical except for the last 12", which should point vertically downward before connecting to the through hull fitting, forming a riser, preventing permanent water entry.
- See the descriptions in figures 3. and 4.

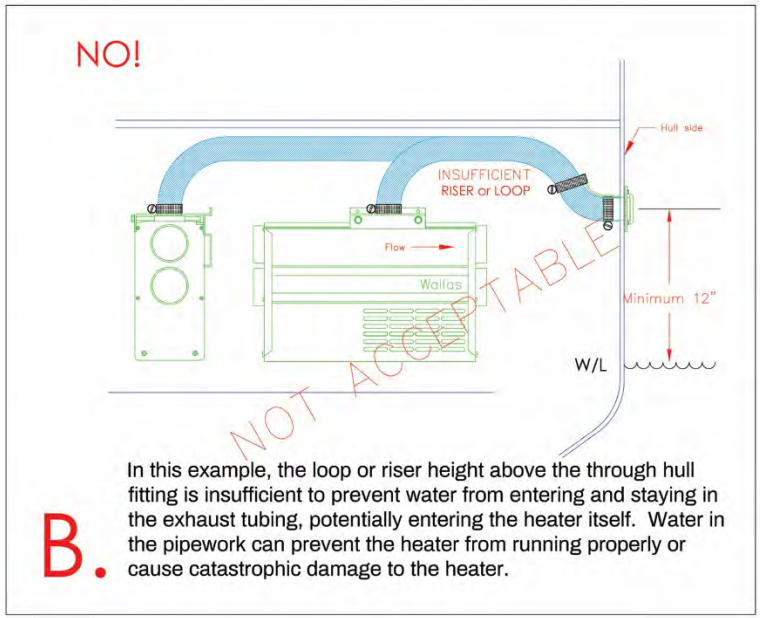
Figure 3: Exhaust routings

Wallas Furnace Exhaust Routing:

1. Your Wallas heater can be mounted above or below the through hull exhaust fitting, but the last 12" of the exhaust run should be pointed down before it connects to the through hull fitting

2. If your Wallas device is to be mounted in a location where the exhaust nipple is lower than 12" above the through hull point, or you can't avoid having "bellies" in the run, use the installation methods shown in examples A. or C. here. The loop shown prevents any water from entering the system.

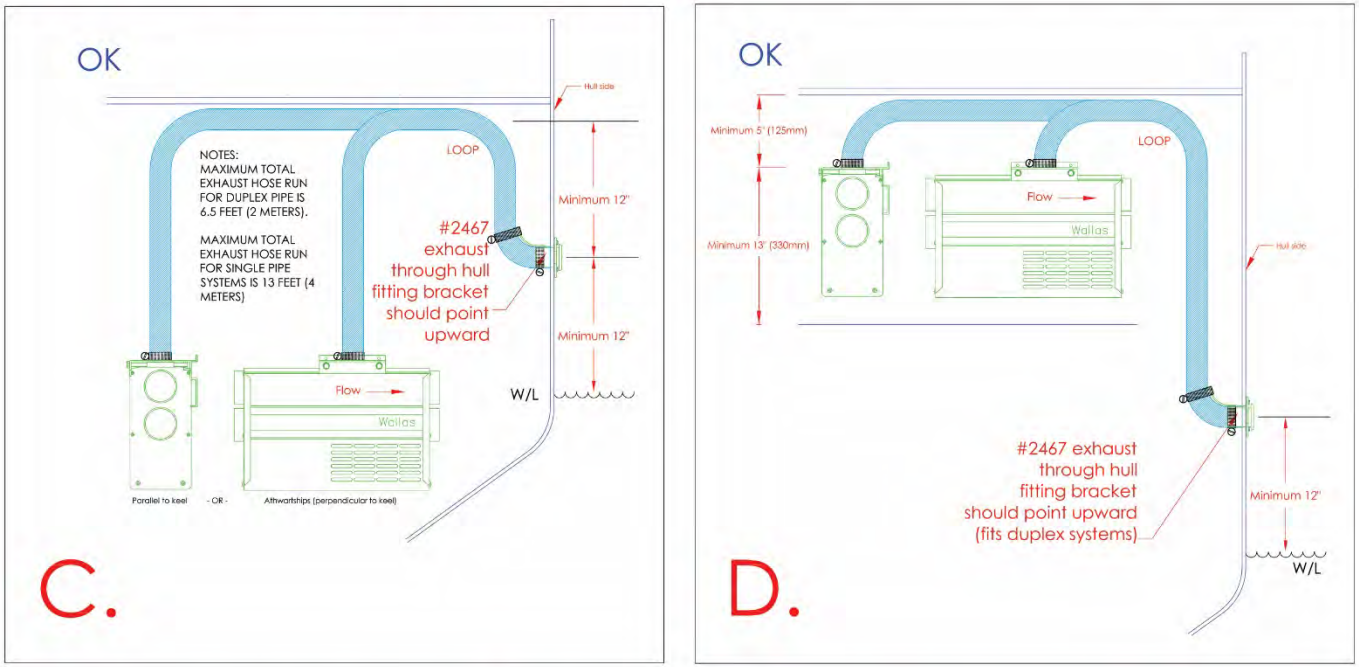




In this example, the loop or riser height above the through hull fitting is insufficient to prevent water from entering and staying in the exhaust tubing, potentially entering the heater itself. Water in the pipework can prevent the heater from running properly or cause catastrophic damage to the heater.

Figure 4: Exhaust routings

3. If your Wallas device is to be mounted in a location where the exhaust nipple is more than 12" above the through hull point, simply route the exhaust pipe from the stove to the through hull, without any low points or "bellies" in the run. See example D.

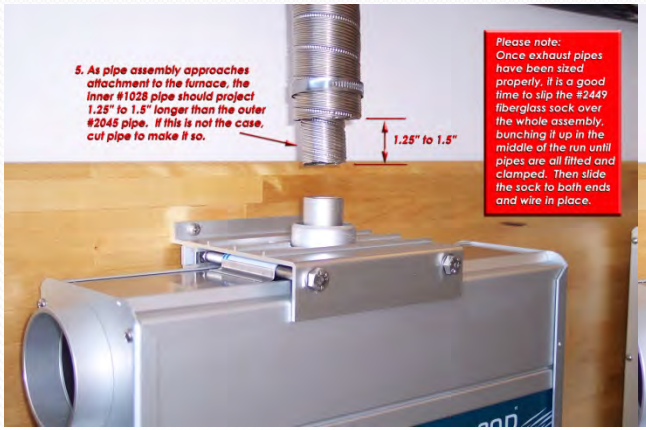


Flexible pipe should be covered with fiberglass insulating sock. Configurations should be the same for either single pipe (Spartan Option) or duplex exhaust pipe systems (30Dt, 22Dt, 30GB, 22GB, Viking Air, Spartans).

All Wallas heaters can be mounted parallel to the keel or athwartships. Once wall bracket is mounted, the flow can run from right to left or left to right by reversing the heater position in the bracket.

Section 2: Exhaust System

- **Installing duplex exhaust):**

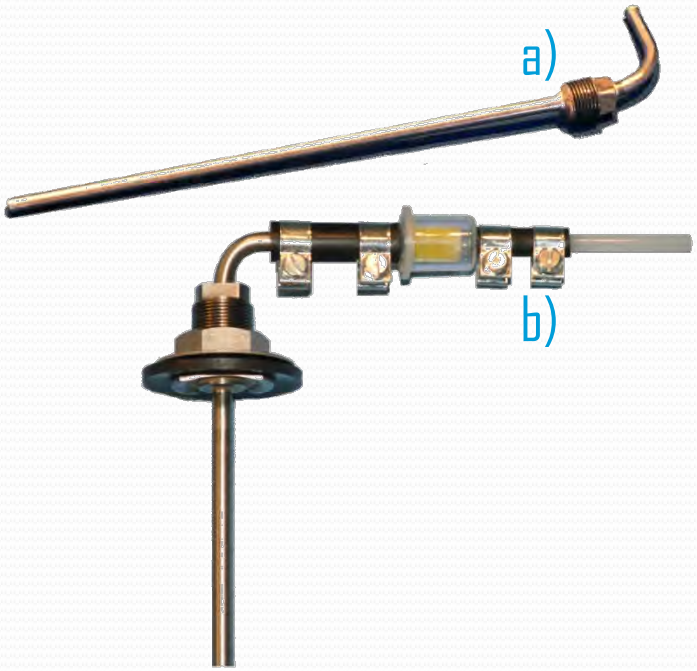


Section 3: Fuel connections

- **Make fuel connection.**
  1. If using a Wallas supplied day tank, just connect the parts, shorten the fuel line from the filter end as appropriate to the installation, and attach the tank appropriately to prevent it moving.
  2. If using a dedicated day tank from other suppliers, verify it is a top of tank pickup, use a Wallas filter and fuel line only. If the tank pickup ends in a ¼" hose barb, this will make connections easy.

Section 3: Fuel connections

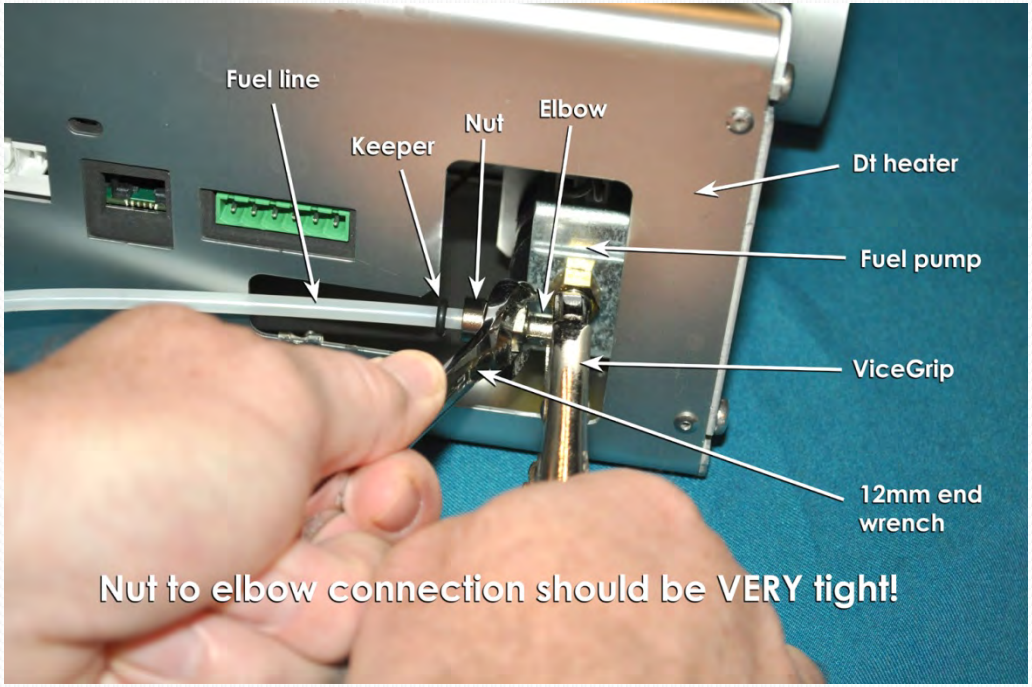
3. If taking fuel from the main tank or a shared tank, assure the Wallas device has its own pickup.



You can use a #50011 custom drop tube to match an existing female fitting, or adapt to a breather fitting, or use a #30011 drop tube to make a new penetration into the top of the tank.

Section 3: Fuel connections

4. When connecting the fuel line to the fuel pump, ALWAYS hold the fuel pump elbow with ViceGrip® or equivalent and use a 12 mm end wrench to tighten the fuel nut to the elbow VERY TIGHT. This will assure no air leaks. Do NOT turn the elbow relative to the pump body, as this will damage the pump metering.



You may find it easier to make the fuel connection before mounting the heater in the bracket, as shown here!

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Section 4: Inlet duct connections

- C. If mounted in a diesel engine room (See Figure 8), the heater **must draw all makeup air from outside the engine spaces**.

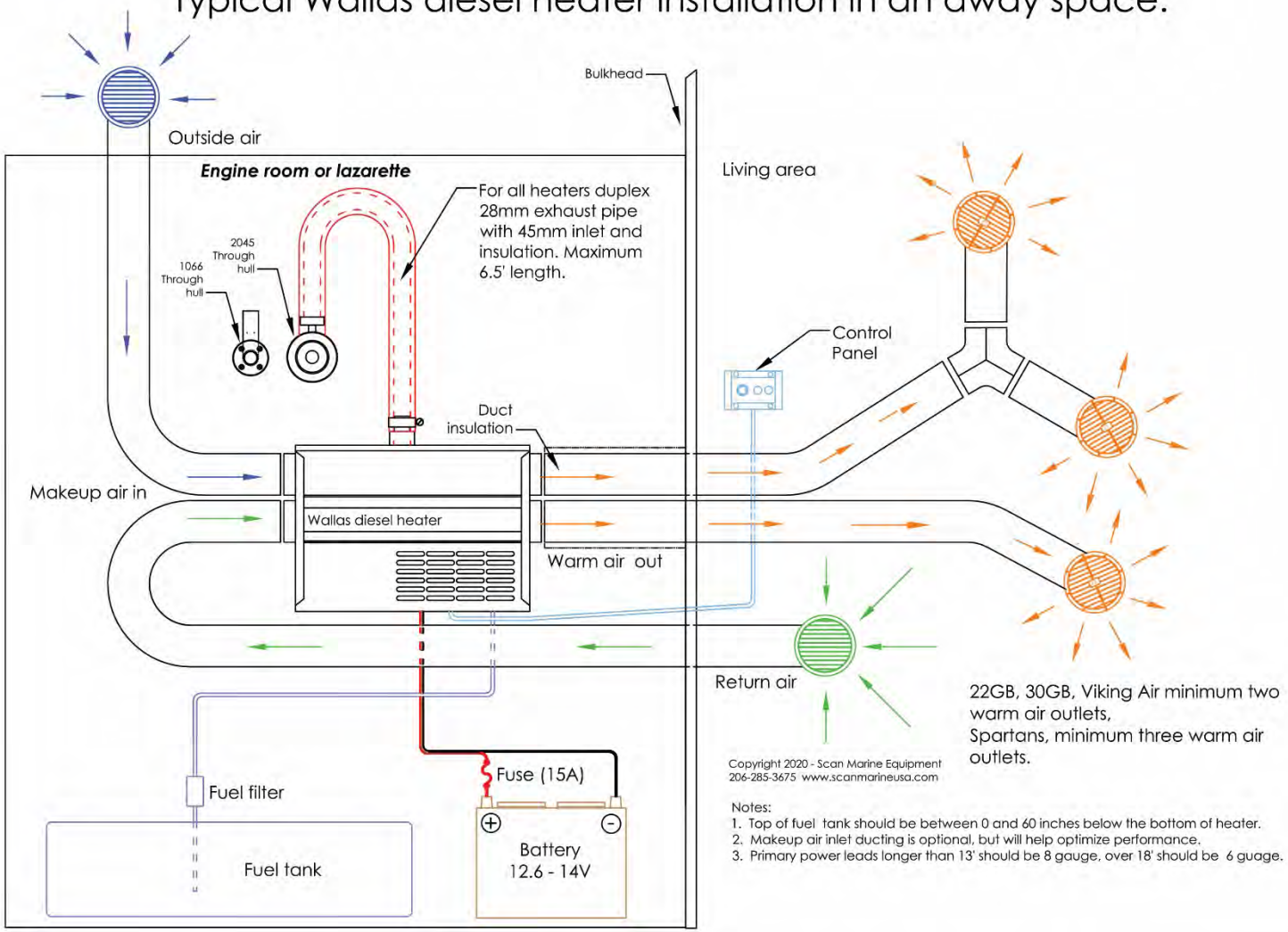
1. Run a dedicated duct from outside the boat to the upper inlet fitting on the heater. Make sure that water can't directly enter the outside inlet fitting under any circumstances.
2. Run a dedicated return air duct from the living quarters to the lower inlet fitting on the heater. The fitting inside the cabin should be distant from any warm air outlets, and will help to warm the place where it is located.
3. Each makeup air duct run should be less than 8 feet long.

Section 4: Inlet duct connections

- **D. If mounted in a lazarette or external locker, verify that space is completely separate from the engine spaces.**
  1. Run a dedicated duct from outside the boat to the upper inlet fitting on the heater. Make sure that water can't directly enter the outside inlet fitting under any circumstances.
  2. – or - leave the upper inlet fitting disconnected if the lazarette or external locker has sufficient air flow from outside. This will help dry the area surrounding the heater when it runs.
  3. Run a dedicated return air duct from the living quarters to the lower inlet fitting on the heater. The fitting inside the cabin should be distant from any warm air outlets, and will help to warm the place where it is located.
  4. If the space is not separate from engine space, it must be treat as an engine space.

Figure 8:

Typical Wallas diesel heater installation in an away space.



Section 5: Outlet duct connections

- **C.** If mounted in an engine room, lazarette or external locker, you can: (See Figure 8)
  1. Run ducts to two or more locations, normally low in the boat, since heat will rise naturally. Spartan units need to have three outlets as a minimum if the outlets are to retain their valve controls.
  2. Ducts can all be full sized (3") or the duct size can be reduced to 60mm when running to small spaces.
  3. (OPTION) For defogging windows, a branch to the windows should always be located **after a wye**. In some applications, an in-line blower can be incorporated to boost flow to the windows for short durations.
  4. Insulate any ducting exposed in non-heated areas to reduce heat losses.

Section 5: Outlet duct connections

- D. Adding duct outlets beyond the two or three normally required for these heaters can add a lot of expense and labor. Sometimes it is worth the extra cost and work, but sometimes not. Excessive numbers of outlets can reduce apparent performance by slowing the time to heat cabin air due to losses into the surrounding structures of the ductwork. Heating the air first means you will heat the occupants more quickly. Less outlets leads to more aggressive stirring of the air, heating it more quickly.

Section 6: Electrical connections

- **The Wallas power supply should be fuse or breaker protected to 15 amps.**
  1. The system will arrive with 13' of 12 GA wire. If this is long enough to reach the battery or main bus, it should be large enough to carry the starting amperage to start the heater.
  2. Longer wire runs WILL require larger wire gauge.
  3. When testing the heater, a flashing yellow panel light may indicate low voltage, possibly power lead drop due to undersized or too long power leads.
  4. *The heater should always be shut off using the control panel. Do not cut the power supply while the heater is running.*

Section 7: Mounting the PI control panel (Dt and GB)

- **The Wallas Dt and GB heater control panel comes fitted with a 20' wire harness.**
  1. The panel can be mounted with or without the supplied bezel. Thermo control function will work either way.
  2. Mount the panel in a good location for thermo control operation.
     a) *Away from outside walls.*
     b) *At or about 4' from the floor*
     c) *Where sunlight will not hit it directly*
     d) *Away from heat or cold generating sources*

Section 8: PI panel Lockout feature. (Dt and GB models)

- **The Wallas Dt & GB heaters have a lockout feature that locks the system up if it has failed to start on two consecutive tries. On the third try, yellow, red and green panel lights will all flash rapidly for about five minutes.**
  - **To clear lockout:**
    1. Leave panel on, all three lights must be flashing.
    2. While lights are flashing, kill power to the unit:
       - Pull the plug, remove the fuse or turn off breaker.
    3. Return power to the unit:
       - Reconnect the plug, replace the fuse or turn on breaker.
    4. Wait ten seconds, then push power button for two seconds, background lights will go out.
    5. *Heater is ready to start again, but before you do, investigate the system to figure out why it has not been starting successfully: fuel, power, glow plug failure, etc.*
    6. When you are ready, push the power button once again for two seconds to start the system.

Section 9: ICP panel system. (Spartan & Viking models)

- **The Wallas Spartan & Viking heaters use the ICP control panel and remote thermo sensing devices for thermostatic operation.**
  - **The ICP panel is connected by CAT6 cable to the heater.**
    - **It can control the heater directly by turning the dial face and pressing the panel face to select functions.**
    - **You can use the Wallas Bluetooth app on your smartphone to control the heater through the ICP panel.**
    - **You can control the heater via WiFi, if the boat is in a WiFi zone.**
    - **The ICP panel can read cabin temperature from either a wired sensor or the Bluetooth puck**

ICP Panel

Bluetooth puck

- **The ICP panel should be mounted in a central location in the cabin that is easy to access.**
- **The Bluetooth puck can be placed anywhere within 35' of the ICP panel.**
- **The wired sensor should be mounted somewhere it can get a good indication of central cabin air temps.**

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Thank you!

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