Hurricane® Installation Quick Guide

This is intended as a "cheat sheet" to guide the installer in the standards for a successful and trouble-free installation of the **HURRICANE®** Heating System. These are standards that will be assumed when and if the system is inspected for warranty purposes by a third party.

1. **Location**
   - Unrestricted access to the front of all Hurricane Heater models. For the SCH25, the left side of the heater also requires access.
   - Non-absorbent mounting surface.
   - Vibration isolators are recommended for the SCH25.
   - At least 1-foot clearance over the top of the heater.

2. **Exhaust**
   - All exhaust bends are to be radiused.
   - Exhaust has a sharp rise,or goose neck at the thru-hull for the purpose of eliminating water ingestion.
   - Maximum length of exhaust is 10 feet including a goose neck. Each additional 90 degree bend is equivalent to 2 feet of exhaust.
   - Minimum of 3" of clearance between exhaust and any surface measured from the outside of any exhaust insulation material.
   - All junctions are to be clamped tightly so that there is no movement at the joint. Exhaust cement should also be used.
   - If the dual exhaust thru-hull is used, it is located in an area that is protected from spray.
   - There needs to be a 1/8" air gap around the exhaust thru-hull. The standard thru-hull for 1.5" exhaust is 3" indiameter. The hole for the fitting should be 3.25". Make sure that the holes for the mounting screws have enough material left to properly bite. The fitting must be centered in the hole.

3. **Fuel System**
   The standard fuel pump will lift five feet vertically and the horizontal run should not exceed 15 feet. This is from the bottom of the fuel pick-up.The fuel pick-up must be a dedicated pick-up. If this is IMPOSSIBLE, it is acceptable to use a true manifold. A true manifold for this purpose is defined as a large diameter tube with a fuel source that has enough capacity to allow several fuel pick-ups to source from it. The key is to have a buffer between the relatively small HURRICANE® fuel pump and any other equipment using the manifold. A fuel return line is also recommended and this return should be restricted

   The fuel system must have a dedicated 10-micron fuel filter, preferably one with a changeable element. It is preferred, but not required, that a fuel shut-off be installed on the tank side of the filter to allow isolating the filter from the primary fuel supply. ITR can provide a UL listed filter that incorporates an inline valve and a fire safety shut-off.

4. **Circulation System**
   An expansion tank and overflow bottle must be used in the heating system. It is recommended that the installer have a flow meter available to them that will allow a direct, accurate measurement of the flow with all components in place. A rough rule of thumb is that there should be 1 GPM flow for every 10K BTU of heater output. The slower the flow, the more inefficient the system.

Regardless of the type of tubing used in the installation, aside from the fact that it should be of the best quality consistent with the job, great care should be taken to ensure against kinks or sharp bends that can inhibit flow. It is never acceptable to use pipe elbows or other short radius bends in the installation. All bends should be sweep bends with a minimum of a 6" radius. This is especially critical in series-plumbed systems where every bend adds to the cumulative restriction. All valves installed in the system should be full-port valves.

A manifold system should be designed so that the tubing runs and number of components in each run be as equal as possible. In a series-plumbed system, the pressure drop across each component should be known prior to installation. One caution, when plumbing a water heater into a series system, make sure that the water heater heat exchanger does not impose excessive restriction on the system flow. Also a non toxic propelyne glycol is recommended when the coolant may come in contact with potable water.

It is always desirable to have in-line air bleeders in the system, especially in cases where the expansion tank is lower than the highest point in the system.

5. **Air Handlers**
The air handlers come in several different configurations, with two basic considerations, output and the space available. Typically, the low profile fan is designed for toe-kicks and areas that have limited height. The standard fan is best in areas that have large flat surfaces for direct discharge using a full-face grill and for ducted applications where the outputs are remote from air handler. Using the ducted method an air handler can heat two spaces.

6. **Zone Controls**
A heating zone is defined as an area that has its own thermostat. Each zone can have multiple air handlers in it. The air handlers in a zone can have a speed control that controls all fans in a zone. The fan used in our standard cabin fan draws .9 amps @ 12VDC and provides 8K Btu/H 140 CFM @ 170 degrees F. If a speed control is used, a low setting is enabled, providing 100 CFM @ 170 degrees F. There are two other general classifications of air handlers available, the high output which offers a high setting of 14K Btu/H @ 180 CFM @ 170 degrees F and draws 1.6 amps @ 12VDC and the defrost which offers three speeds, the high setting provides 20K Btu/H @ 300 CFM and draws 10.5 amps @ 12VDC. If a thermostat is to be connected to the defrost fan, it must be installed with a relay. The fan is then controlled by a signal from the HURRICANE® circuit board with power supplied from a separate, properly fused, source.

7. **Heater Size Calculation**
A simple way to calculate the BTU required for a particular is to use the following formula. L x W x H (approximate for each zone or separate space) x .80 (this is the adjustment for furniture and fixtures) x one of the following factors: 8 (for small spaces like heads or work rooms); 10 (for sleeping spaces); 12 (for all other spaces, generally below 48 North and non-liveaboard); and, 15 (for high use spaces, or live-aboards).

For example a space 10 feet long, 12 feet wide and 6.5 feet high that is a salon (high use) would require 10 x 12 x 6.5 x .80 x 12 or 7,488 Btu/H.