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It's time to get acquainted with the Aqua-Hot system.

Hydronic heat means to heat with liquid. Operating similar to a thermos, the Aqua-Hot system holds water, heats it with liquid and keeps it hot for hours. This innovative heating method combines a water heater and furnace into one element, making it easier than ever to tackle the harsh weather conditions of winter camping, or merely take the chill off an early summer morning. The Aqua-Hot system is capable of handling all the coach's heating needs out of one box, including bay heating.

The core of the Aqua-Hot system is a sixteen-gallon heat tank, which contains a solution of 2 $\frac{1}{3}$ water and 1 $\frac{1}{3}$ antifreeze. An internal coil wrapped around the tank heats the domestic water. This tank is thermostatically maintained at approximately 200 degrees Fahrenheit. The Aqua-Hot system is equipped with a mixer valve to prevent excessively hot water from flowing through the faucets.

Maintaining the temperature of the solution can be achieved by two separate heat sources — the diesel burner or the electric heating element. When initially running the system, the diesel burner will heat in 10-20 minutes. On start-up, the electric heating element takes about two hours to heat. Due to its efficiency, the diesel burner is the main heating source of the Aqua-Hot system. A thermostatic switch, set to cycle on and off according to an internal thermostat, controls the diesel burner. The amount of diesel used by the Aqua-Hot system is one to three gallons in a twenty-four hour period. However, a properly operating system will not continuously burn for that long.

A factory-set internal thermostat controls the electric heating element. Electrical power is about one-tenth the heating capability of the diesel burner and can be used in moderate temperatures when there is a low demand for domestic hot water. Both the diesel burner and the electric heating element can be used at the same time for automatic convenience.

In addition to the diesel burner and electric heating element, a third feature provides engine preheating as a supplemental heating source to reduce the operating hours of the diesel burner. While the vehicle is being driven, the engine's heated coolant automatically passes through an engine preheat loop to transfer heat into the Aqua-Hot heat tank.

Once the heat tank is up to normal operating temperature, the heated solution of water and antifreeze passes through separate interior heating zones. A series of plastic piping connected within the coach makes up a zone. Each zone is regulated by a thermistor located within the wall thermostats. The middle zone has a separate wall thermistor. It is by this method that the Aqua-Hot system puts controlled heat inside the coach. When a wall thermostat calls for heat, the chosen zone circulation pumps and the heat exchanger fans are activated. The heat exchanger fans operate on 12-Volts DC. Individual zones can be designated for heat to eliminate hot air from a furnace blasting throughout the entire coach. Heat introduced by the Aqua-Hot system will not dry out the air. Why? Because it does not "super heat" and remove any moisture content the air may have.

The Aqua-Hot system heats fresh domestic hot water automatically. Whenever a hot tap is activated, water is pulled from the coach's domestic water storage tank and sent to the selected faucet. Since the internal coil surrounds the heat tank, the Aqua-Hot system is continuously heating domestic water on demand. The bay thermostat is set between 45 and 50 degrees Fahrenheit to prevent freezing of the domestic water system located within the coach's bay area.

Aqua-Hot Engine Preheat Feature

Engine coolant can be preheated in cold weather by activating the Engine Preheat switch located on the control panel. This will propel the Engine Preheat circulation pump to move the engine's coolant through the Aqua-Hot's engine preheat loop and warm the engine for easy starting. In colder temperatures the engine preheat feature

should run for a couple of hours or more. This pump can be left on overnight if it would be beneficial to do so. The Aqua-Hot system will not overheat the engine. However, the Engine Preheat switch should be off when engine preheating is not necessary. When driving the coach, the preheat circulating pump must be off.

Preventative Maintenance

- For preventative maintenance the Aqua-Hot system should be operated monthly on the diesel burner for at least 10-15 minutes, unless the unit has been winterized. Keep in mind that running the system requires 12-Volts DC.
- Different qualities of water can cause scaling problems and create less flow. Have the mixing valve inspected and cleaned once a year.
- The copper tubing of the Aqua-Hot system is designed for fresh water and winterizing solution.
- Periodic flushing with chlorine bleach, or other concentrated chlorine bearing chemicals, can cause failure to the domestic water loop if not completely rinsed and allowed to remain inside of the piping for extended periods of time.

Annual maintenance

- Annual maintenance should consist of a complete tune up of the diesel burner.
- The fuel nozzle and filter should be replaced annually.
- Connections to the fuel line need to be inspected and tightened, if necessary.
- The combustion chamber can be gently scrubbed with a wire brush.
- There is a flame sensor (photocell) which monitors the flame of the diesel burner.
- During annual maintenance the photocell should be cleaned with a rag to remove any carbon deposits that may have built up.

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