

 **dhhydronic**

OPERATION MANUAL

DH9, DH15, DH9DUO, DH15DUO and DH30
with Eberspacher Furnace

RETAIN IN VEHICLE FOR OPERATOR REFERENCE



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Introduction

DH Hydronic hot water heaters operate by transferring the energy from coolant heated by the diesel furnace to a potable water heat exchanger welded inside the tank and optional fan air heaters.

The systems are assembled with pride in Tasmania and designed to be long-lasting and reliable. Please retain this operation manual in your RV/boat for quick reference on how to use and care for your system.

Operating Considerations

- Units are designed to be switched on when needed and turned off when not in use. Extended periods with the unit left in standby are not recommended.
- Try to start showers when the furnace is running, not in standby, as the furnace restart time can reduce the amount of available hot water.
- When starting from cold, or after a shower, allow time for the system to fully reheat before using it. The system is fully heated when the diesel furnace reduces from full power and starts to slow down.
- Never leave the system in storage with very hard water in it as this can cause damage to the internal stainless steel plate heat exchanger.
- Never run the furnace in a sealed box or with any obstruction to the air inlet or exhaust as this will cause the furnace require servicing prematurely.

Typical Coolant Furnace Operation

- Turn on the furnace using the on/off switch, the controller, or the Dieselheat thermostat (depending on your setup).
- After approximately 3 seconds, the coolant circulating pump will come on. The glow pin and fuel pump will then come on and the furnace will start its combustion cycle.
- Once the furnace obtains full combustion, it will continue to produce heat on full power until the coolant temperature reaches 80°C.
- At this temperature, the furnace will cycle down to its lower heat setting and the circulating pump will continue to circulate coolant around the system.
- When the coolant reaches approximately 90°C, the furnace will go to standby and the coolant circulation pump will continue.
- The furnace will not restart until the coolant temperature drops to 78°C. This will happen either by heat dissipation over time, or if the hot water service or cabin fan heater demands heat.

Only turn the furnace off using its own on/off switch or the controller. Do not cut power to the furnace during any stage of its operation.

Controlling The Hot Water System and Air Temperature

Display Icons & Buttons



Display

- ① Fan speed: Low, Med, High and Off
- ② Room temp display
- ③ Set temp display
- ④ Hot water furnace is ON (if connected)
- ⑤ Keypad is locked

Buttons

- ⑥ Hot Water Furnace: On/Off
- ⑦ Fan speeds: Low, Med, High and Auto (only available when the furnace and fan mode is selected)
- ⑧ Power on/off
- ⑨ Temp up
- ⑩ Temp down



Backlight

The first touch of any button will activate the controller backlight. The backlight will turn off after approx 15 seconds.

Hot Water Control

To turn the hot water system on or off press .

Air Heating Control

To run the air heating first turn on the hot water using . The air heating is turned on by turning on the fan using . The fan can be run in manual mode (low, medium or high) or automatic mode where it will change its speed automatically to maintain the set room temperature.






If installed, turning on the fan will also open the coolant control valve.

Keypad Lock/Unlock

Push and hold  and  buttons simultaneously for 5 seconds to LOCK all buttons.

Push and hold  and  buttons simultaneously for 5 seconds to UNLOCK all buttons.

Parameters Setting

Some of the operating parameters for the thermostat can be changed by the user. For example the fan speeds on each of the 3 manual fan speed settings can be adjusted. The pre-loaded settings work in most cases and generally these do not need to be changed. If you wish to change any of the parameters with the thermostat turned off, press and hold the  &  buttons for 3 seconds. Once in Parameter mode, use the  button to scroll through the parameters and the  and  buttons to make changes. Changes are saved instantly.

Switch off to exit parameter settings.

CODE	PARAMETERS	RANGE	DEFAULT
1	Temp calibration/offset	-9°C ~+9°C	0°C
2	Fan auto mode P-band range	2, 4, 6, 8, 10	10
3	Fan auto mode I-time range	1 - 60 mins	3 mins
4	Min EC Output for Auto Fan	0 - 10 Vdc	0 Vdc
5	Max EC Output of Auto Fan	0 - 10 Vdc	10 Vdc
6	Low Fan Speed for EC fans on manual mode	0 - 10 Vdc	4 Vdc
7	Medium Fan Speed for EC fans on manual mode	0 - 10 Vdc	7 Vdc
8	High Fan Speed for EC fans on manual mode	0 - 10 Vdc	9 Vdc
9	Min PWM Output for Auto Fan	0 - 100%	0% (00 stands for 0%)
10	Max PWM Output for Auto Fan	0 - 100%	100% (10 stands for 100%)
11	Low Fan Speed for PWM fans on manual mode	0 - 100%	30% (03 stands for 30%)
12	Medium Fan Speed for PWM fans on manual mode	0 - 100%	60% (06 stands for 60%)
13	High Fan Speed for PWM fans on manual mode	0 - 100%	90% (09 stands for 90%)
14	Hot water temperature display. Only used for DH22 and DH40 Electric Solar Systems.	0,1	0

Note: Parameters 2 and 3 adjust the sensitivity of the fan in Auto mode. P sets the speed at which the fan adjusts as the set temp is approached and T sets the time interval at which the controller adjusts the fan.

Restarting After Running Out of Fuel

Turn the switch on and the furnace will attempt to start. The furnace will not start until the fuel pump and fuel line have primed.

A furnace start process involves 2 separate start attempts and takes approximately 6 minutes.

During each start attempt, the coolant pump runs, the combustion fan revs up and down and the fuel pump attempts to pump fuel.

At the end of a start process (after 2 attempts), the furnace will shut down and wait. A new start process can be triggered by turning the furnace off and turning the furnace on again. This process can take 2-6 start attempts, particularly if the fuel line is long.

The Eberspacher furnace will lock out after approximately 10 failed start processes. Always double check the fuel source before commencing startup. An EasyStart Pro controller is required to unlock a locked out furnace.

Coolant

The system must be filled with good quality engine coolant to prevent corrosion of internal components. Commonly available automotive coolants that include corrosion inhibitors are acceptable and should be used in accordance with the manufacturer's specifications. Antifreeze is not required unless the system will be operated or stored in freezing conditions.

It is important to replace the coolant at the interval specified by the coolant manufacturer to prevent corrosion of system components. If no information on the coolant is known it is recommended to change it every 3 years or if it becomes discoloured.

Using an Eberspacher Controller

Systems are supplied with an on/off switch or thermostat for normal operation. The Eberspacher D5E furnace does not come with an EasyStart Pro Controller by default; this needs to be purchased separately. If the furnace is having trouble starting, the controller can be purchased from Dieselheat and plugged in to obtain error codes or to reset a locked out furnace.



Controller connection plugs are included in the wiring loom and will generally be coiled up near the furnace when the system is installed.

Controllers can be plugged in by removing power from the furnace, plugging in the controller, leaving the on/off switch in the off position and reconnecting the power. Do not use the on/off switch and controller at the same time. Refer to the EasyStart Pro Installation Manual (supplied with the controller) or follow the adjacent QR code link for information on how to access error codes.

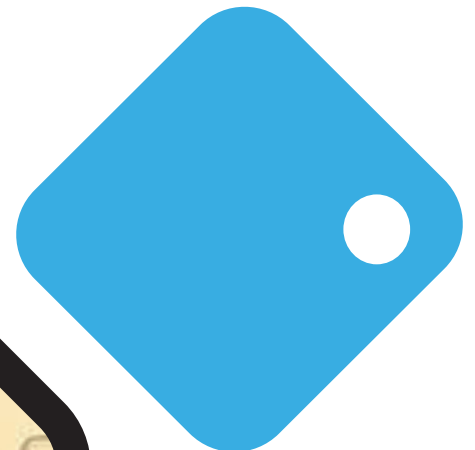
Tempering Valve - Controlling Water Temperature



The tempering valves built onto the DH Hydronic hot water heaters come preset at 50°C, but can be set at between 40°C and 55°C by removing the yellow cap and rotating the brass bolt beneath it.

The system will always be shipped with the tempering valve installed.

Never operate the system without the tempering valve or with a defective tempering valve as the outlet water temperature can be as hot as 80°C.



Simple Troubleshooting

PROBLEM	THINGS TO CHECK	SOLUTIONS
On initial switch on, furnace does nothing.	<ul style="list-style-type: none"> • Check fuel pump connection wires are properly inserted into connector and connector is properly plugged into the fuel pump. • Check coolant pump wires are properly connected. • Check power supply fuses. • Check battery voltage is above 12 volts. • Check furnace is wired directly to batteries and there are no poor connections. 	<ul style="list-style-type: none"> • For Eberspacher D5E, check for furnace lock-out and error codes (this requires EasyStart Pro Controller).
Furnace tries to start but doesn't start.**	<ul style="list-style-type: none"> • Check fuel level in tank. • Check fuel filter has fuel in it. If it doesn't, look for low fuel or blockages. • Check fuel flow in fuel line by shining a torch on the fuel line and looking for bubbles or advancing fuel front when fuel pump is ticking. If fuel has bubbles, look for air leak in fuel line. • On the Eberspacher D5E, the pump will tick until filled with fuel. Check fuel pump noise when pump is pumping. If pump can be heard, check fuel source and air leaks in fuel line. • Check battery voltage is above 12 volts. 	<ul style="list-style-type: none"> • For Eberspacher D5E, check for furnace lock-out and error codes (this requires EasyStart Pro Controller).
Furnace starts but smokes or smells after initial startup.	<ul style="list-style-type: none"> • Smell and smoke at startup is normal but should clear within 1 minute. • Check for partially or completely blocked combustion air inlet or exhaust. • Check for condensation or water in the exhaust system. • If your fuel tank has quick disconnect fittings, check that the fittings are properly connected so adequate fuel can flow. • Carefully inspect the air intake and exhaust pipes for mud wasp nests. • Check the furnace is not running in a sealed container and that it has adequate combustion inlet air. 	<ul style="list-style-type: none"> • If condensation is gathering in the exhaust on RVs, drill 2mm holes at low point. For marine use, install a drainage lock. • Open any obstructed combustion air or exhaust pipes and run the furnace on high to clear any accumulated soot. • Contact Dieselheat to arrange servicing of the furnace.
Furnace has tried to start multiple times and is now 'dead'. (Eberspacher only)	<ul style="list-style-type: none"> • The furnace has locked out due to excessive start attempts. 	<ul style="list-style-type: none"> • Furnace will need to be unlocked using an EasyStart Pro Controller.
Furnace starts and runs for approx. 1 minute then shuts down very quickly.	<ul style="list-style-type: none"> • Check coolant level. • Check coolant circulation and ensure pump is primed and nothing is obstructing the coolant flow. 	<ul style="list-style-type: none"> • Open any closed valves, or remove anything obstructing the coolant flow. • Follow instructions for priming the coolant pump.
System works but the air heating fan head is not hot.	<ul style="list-style-type: none"> • Check all shutoff valves are in correct positions. • Check coolant circulation. • Check air return on fan head is adequate. 	<ul style="list-style-type: none"> • Open any incorrectly closed valves. • Ensure coolant pump is properly primed.
The shower runs cold too quickly.	<ul style="list-style-type: none"> • Check system is properly preheated before starting shower. • Check furnace is not in standby mode before starting shower. • Check shower head flow rate is not outside the recommended range. 	<ul style="list-style-type: none"> • Allow more time for the system to preheat/reheat. • From a cold start, do not allow the furnace to fully shut down before starting shower. • Trigger the furnace to restart by running some hot water prior to getting into the shower, then shut off the water and wait for furnace to be running prior to entering shower. • Change to a shower head with a lower flow rate.

****The Eberspacher D5E furnace will lock out after approximately 10 failed start attempts. Always try to find the issue prior to restarting the furnace to avoid locking it out.**

TWO YEAR PRODUCT WARRANTY

Dieselheat offers a 2 year warranty on this product. Upon receipt of proof of purchase of a product, Dieselheat will, where possible, provide product support via telephone or email.

If Dieselheat determines that the issue necessitates the return of the product for inspection and/or repair, it is your responsibility to uninstall the product and return the product at your cost to Dieselheat. Upon repair of the product, Dieselheat will return the product to you at its cost. It is your responsibility to reinstall the product.

See our full warranty terms on our website.