

*Operation Guide to **Hydronic HS3 D5E** Motorhome Diesel Hot Water & Heating*



The CAN/switching plus version of the Hydronic S3 Economy is the direct successor to the previous CAN/LIN version and is compatible with the Eberspächer EasyStart CAN-bus-compatible control unit family that will be available.

The new switching plus input also ensures compatibility with all other control units that output an S+ switch-on signal.

Hydronic HS3 D5E 5kw Heating System

EasyStart Pro is the least controller and is used to operate the water temperature, which has a 7 Day timer built in. This Pro controller works by setting the time the operator desires for the heater to run for, not room temperature. The internal temperature sensor is inside the heater and will get the system up to $>80^{\circ}\text{C}$, then once the heater drops below $<65^{\circ}\text{C}$, the coolant is heated again. You can also read and clear the fault code of your system (workshop manual is needed to access workshop menu. (Please see controller wiring instructions on how to wire this unit up)

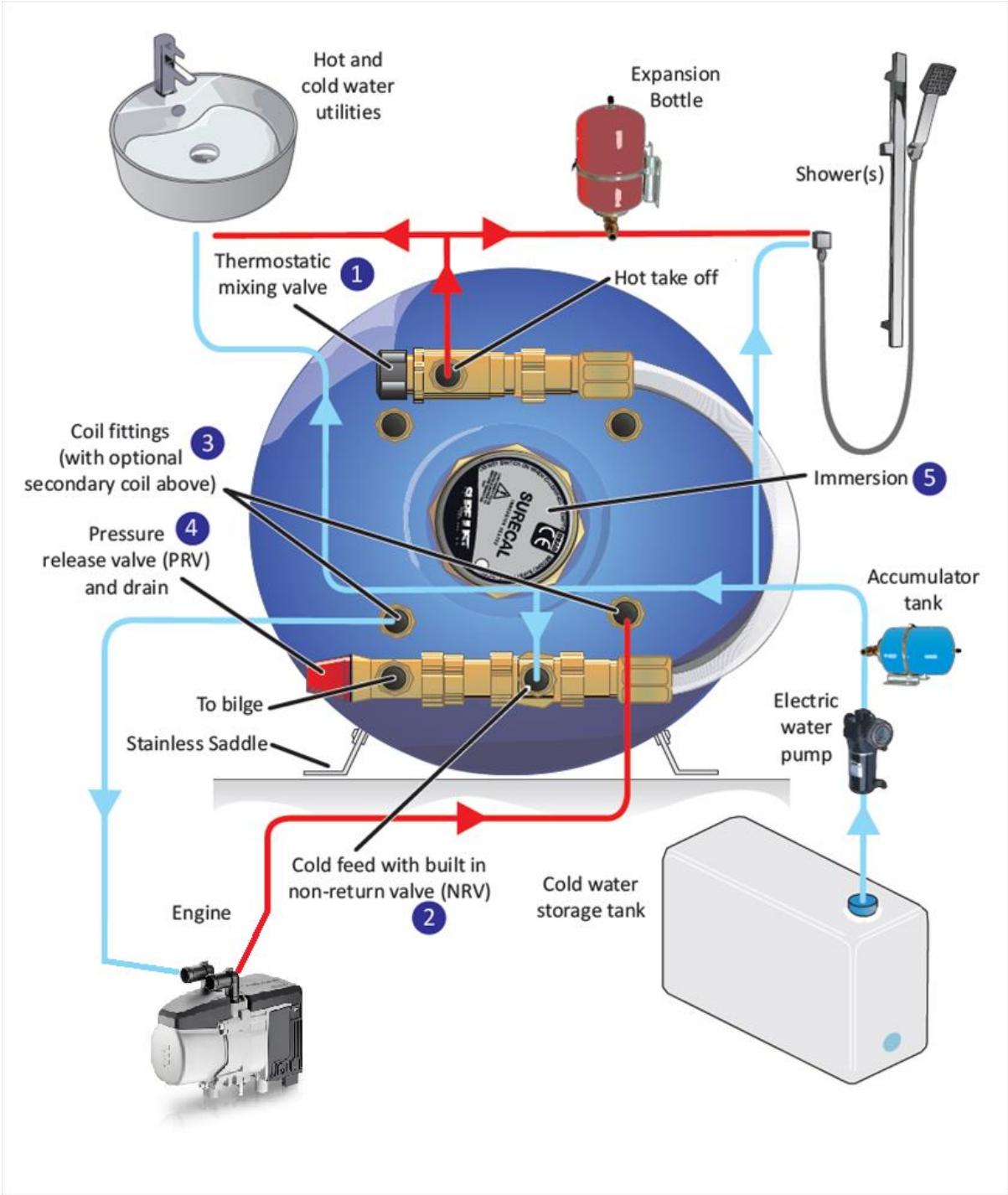


Digital Automatic Blower Control is used to regulate the ambient temperature in the living area. This is adjusted to a comfortable room temperature. The Automatic blower control switch which comes with an external temperature sensor will regulate the room temperature by varying the fan's speed. The higher the difference in temperature measured by the temperature sensor and the set temperature on the temperature selector, the faster the fans will turn. The number of revolutions will decrease when room temperature approaches the set temperature.



THE THERMOSTATIC MIXER VALVE –The calorifier is fitted with a temperature mixing valve (1). To set the valve turn anti-clockwise to the maximum, this will give a maximum water temperature of 65°C . When the knob is fully closed i.e. clockwise it is set to 30°C .





CONNECTION INSTRUCTIONS

First, select a suitable location for your new Surreal calorifier. Place the calorifier in position and secure down using its four fixing feet.

The calorifier is fitted with a temperature mixing valve (1). To set the valve turn anti clockwise to the maximum, this will give a maximum water temperature of 65°C. When the knob is fully closed i.e. clockwise it is set to 30°C.

The hot out, cold in, optional second coil and PRV are made for 15mm push fit plastic plumbing, Hep20 or speed fit. Hot out must be at 12 o'clock (i.e. at the highest point) and cold in at 6 o'clock (the lowest point).

Push on your plastic plumbing or compression fitting to the mixer valve (1) for your hot water supply.

Push on your cold feed to the lowest fitting (2) to supply pump pressure cold water to the calorifier.

Water Heater connections, to the coil (3) - Use heater hose from the water heater and pass over the barbed fittings and fix with jubilee clips.

Pipe the outlet of the pressure release valve to the bilges (4). The pressure release valve can be used as a drain by holding open.

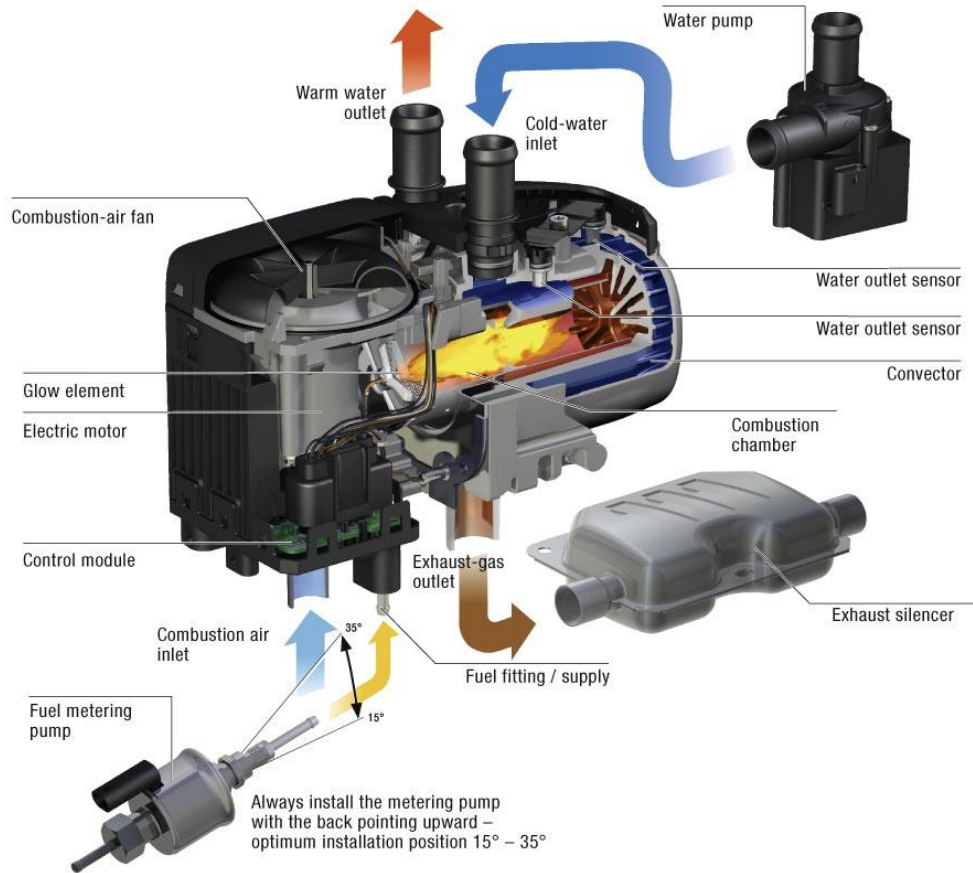
Immersion heater (5) instructions contained on 'Immersion Connection Instructions' sheet.

An expansion bottle should be fitted on the hot supply between the thermostatic mixer and first take off (i.e. Taps) This will relieve the increased pressure caused by hot water expansion.

If there is a risk of freezing when the calorifier is not in use, the calorifier must be drained as part of normal winterisation/pre storage maintenance activities.

This installation uses an independent self-contained coolant system to provide heating and hot water. This is achieved very quickly due to a small coolant circuit being used which has a very quick warm up time, the hot water is produced via a Hot water storage tank therefore the hot water is ready in around 5 minutes.

Operation- Once activated, the Hydronic S3 heater will use the vehicle's own fuel in a combustion process to heat the coolant in the calorifier. The heated coolant is then circulated round the heating circuit passing through the hot water storage tank & blower heaters by an integrated water pump. The Eberspaecher unit is self-regulating & operates in a similar way to a domestic central heating system.



The hot water storage tank is a boiler insulated in a polyurethane jacket which will retain the heat for up to 24 hours after the engine has been switched off. The boiler is made of 100% copper, this gives both performance and health benefits.

Maximum heater energy is given to the blowers until a demand for hot water is received. A thermostatic mixer valve is fitted to control the hot water temperature to the taps.

STARTUP

The Instant Hot Water and Heating System is activated by means of the switch on the control panel (EasyStart Pro). The heater start-up phase can last 2 to 3 minutes and comprises of the ventilation of the heater, the burner ignition and the control of the flame.

To obtain fresh hot water whilst also heating the interior of the motor home

After approximately 5 minutes (after combustion has been established) the hot water storage tank should deliver hot water after 5 minutes once the water has been warmed up. The safety thermo-static mixing valve limits the water temperature to approximately 30°C. (this threshold can be regulated between 30 and 65°C)

The heating system utilises the vehicle's own diesel fuel supply. The heater's "intelligent" operating system allows it to be much more economical when in constant heating use by adjusting its heat output accordingly between 2.5-5.2kW output. With both fan heaters on high speed the system will draw approximately 4 to 5 Amps, so if you are not connected to a mains electricity supply, it is advisable to start the engine of the motor home at least once a day, for approximately 15 to 30 minutes in order to recharge the batteries.

External temperatures of - 20 °C and below can result in a temporary loss of vehicle battery capacity from 25 to 50%, therefore good maintenance of the vehicle's batteries is essential, ideally supported by using the charging system of the Motor Home

The heating circuit must always be protected by anti-freeze with a corrosion inhibitor, and for extreme winter conditions a winter grade fuel is recommended. When-ever the motor home is not in use the freshwater circuit must be drained.

Summer Mode

In warmer conditions, when you do not require any heating but only hot water, leave the blowers turned off & fresh hot water will be produced much faster. Also the current draw of the heating system will be much less.

The system only needs to be switched on for the period of hot water requirement. Switch the system off when not required.

SHUT DOWN

When the heater is switched off by means of the switch on the control panel the green light will extinguish, and the heater will begin its shut down cycle. This phase includes purging of the combustion chamber and will last approximately 2 – 3 minutes before the combustion air fan automatically switches off the blowers will also switch off automatically.

In Winter when the system is not in use. Drain the freshwater system.

The Eberspaecher heater coolant circuit uses an Antifreeze Mixture. Use the same ratio as recommended by the vehicle manufacturer. For further information refer to the product installation/operation handbook.

D5E Heater specifications

Control stages

Start	Small	Large
Electrical power consumption without water pump		
135 W	5 W	32 W
Power		
	1,300 W	5,000 W
Fuel consumption		
	0.15 l/h	0.59 l/h

Attributes

Operation suitable to x altitude	1,500 m	Minimum water flow rate	300 l/h
Upper voltage limit	16 V	Delivery pressure difference	0.15 bar
Lower voltage limit	10.5 V	Delivery rate water pump	600 l/h
Allowed pressure during operation	2.5 bar		

Advantages:

- Interfaces: CAN and S++
- Economy: service life 3,000 h
- Commercial: service life 5,000 h
- Compatibility with all new and many conventional control units
- New 24-volt heater for commercial applications
- NEW: Power version with 5.6 kW heating performance
- Very large output range
- Utilization of residual heat through heating circuit run-on control
- Stepless heating performance control
- Noise emissions optimized

Hydronic S3 Economy

Blower Box switching options (V02.50.512)

You have **TWO** options.

1. Connect **J1-11** to main positive feed, which will give you continuous blower box operation even if your water heater is switch off.

or

2. You can wire up **J1-11** to the signal wire (Black/red) direct from the Eberspaecher HS3 heater wiring loom. This now means, the digital automatic blower controller will only work/turn the blowers on, once the heater is switched on (this stops the blowers blowing cold air when the heater is not on.)

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You have 2 options: If you only want the controller to power up when the heater is on, connect your heater output feed here, for example, Eberspacher (red/black) OR Webasto (Green/White). Connect to Main + feed for continuous operation.

