

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.

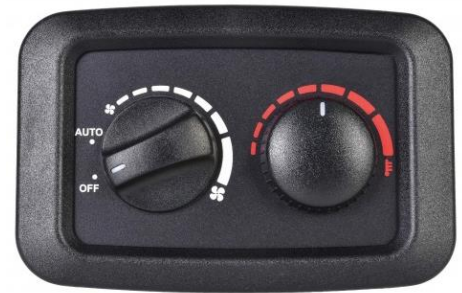
The new switching plus input also ensures compatibility with all other control units that output an S+ switch-on signal.

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)

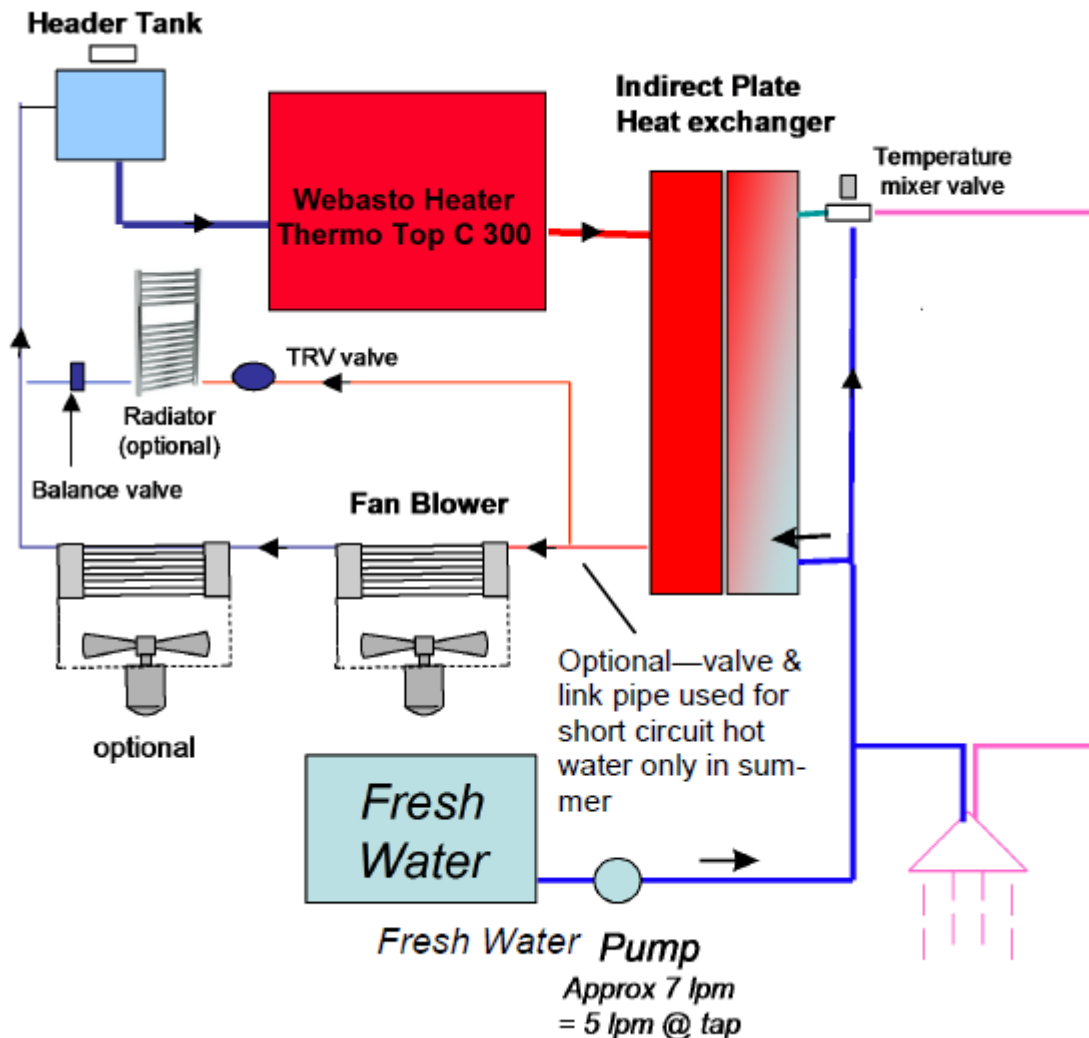


Automatic Blower Control is used to regulate the ambient temperature in the living area. This is adjusted to a comfortable room temperature. The Automatic blower control switch which comes with an external temperature sensor will regulate the room temperature by varying the fan's speed. The higher the 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 – This is used to determine the hot water temperature supplied to the taps (adjustable from 30 to 48°C , anti-clockwise to increase the temperature, clock-wise to decrease the temperature). **Typically this is around $42-45^{\circ}\text{C}$. Adjust as required. Anti clockwise = hotter (+)**

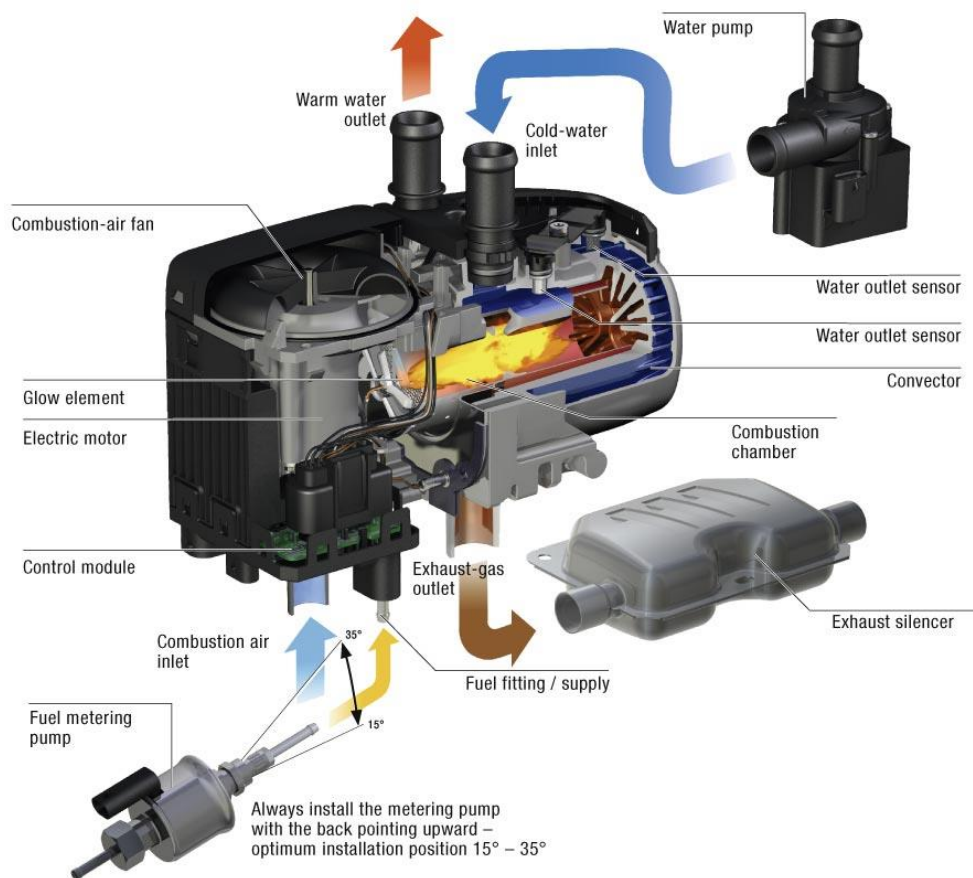




This installation uses an independent self-contained coolant system to provide heating and hot water. This is achieved very quickly due to a small coolant circuit being used which has a very quick warm up time, the hot water is produced via a plate heat exchanger therefore the hot water is ready in around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

The Eberspacher HS3 heater is typically mounted externally on the vehicle, whilst the header tank and plate heat exchanger utilise minimal interior space. The blower units would be mounted in the area where the heat is most required i.e. living area and the rear. The blowers can operate independently or together & are controlled by a thermostat. Heating & hot water on the move is possible. The bypass (optional) is used for hot water only in order to achieve a quick heat up time.

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



The indirect plate heat exchanger is made up from a series of plates which separate fresh water from the coolant giving 2 independent circuits. A transfer of heat takes place when the fresh water circuit is passed over the Eberspacher coolant circuit plates. 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.



1. Eber/Webasto Water Heater - Hot Coolant **20mm** ID hose
2. Eberspacher/Webasto circuit out to rear Blower boxes **16mm** ID hose
3. Cold fresh water in from pump **16mm** ID hose.
4. Hot mixed out to showers **16mm** ID hose.

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 plate heat exchanger should deliver hot water almost straight away. The safety thermo-static mixing valve limits the water temperature to approximately 48°C. (this threshold can be regulated between 30 and 48°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 fresh water 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 fresh water system. There may be an optional fresh water drain tap under the plate heat exchanger. The Eberspachr 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.

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

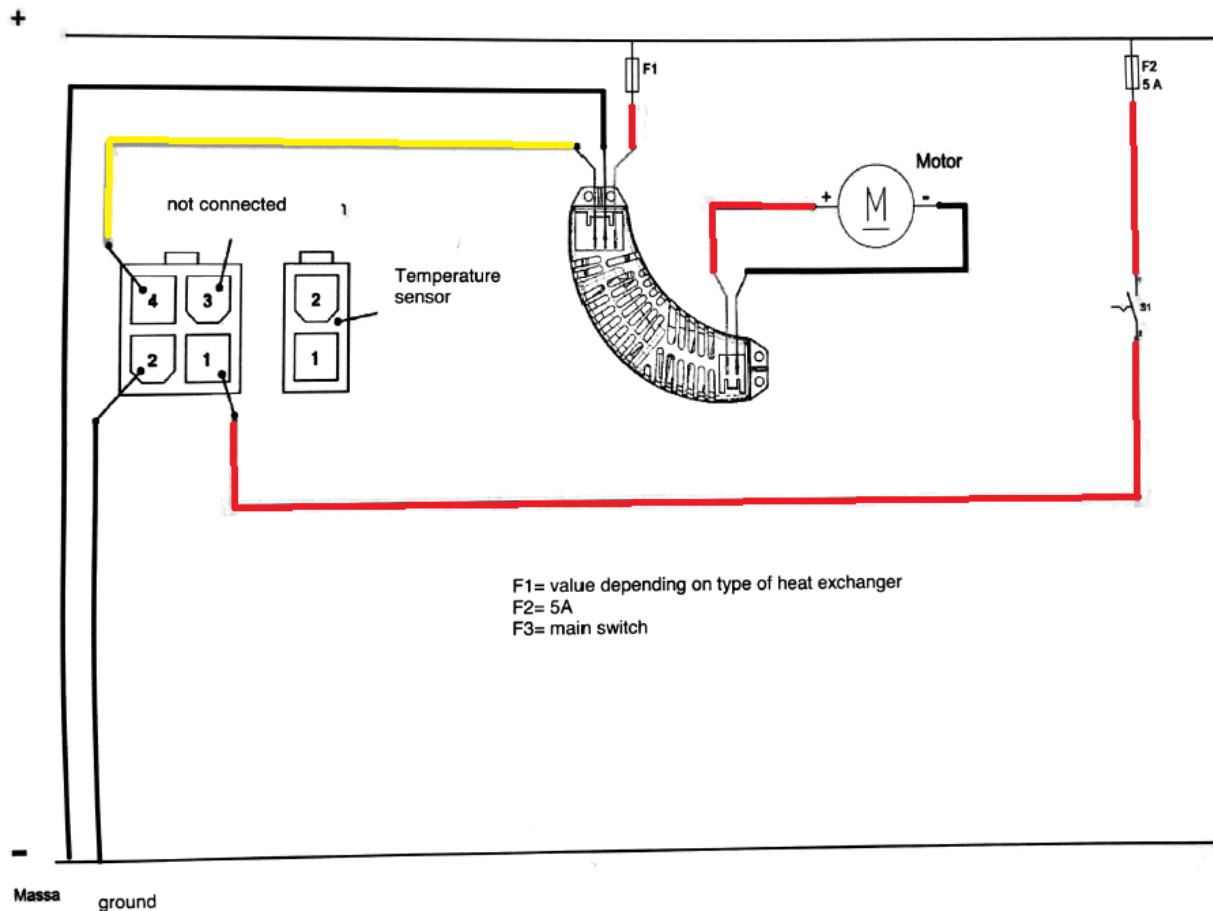
You have **TWO** options.

1. Wire the blower box up, independently as per the instructions that comes with the Auto automatic blower controller which you can see below.

or

2. You can wire up the signal wire (Black/violet) from the Eberspacher HS3 heater loom, replacing the feed on number one pin in image 1, with the black/violet wire. This now means, the automatic blower controller will only work/turn the blowers on, once the heater is switch on and up temperature (this stops the blowers blowing cold air when the heater isn't on.)

Image 1



CABLE HARNESS CIRCUIT DIAGRAM

