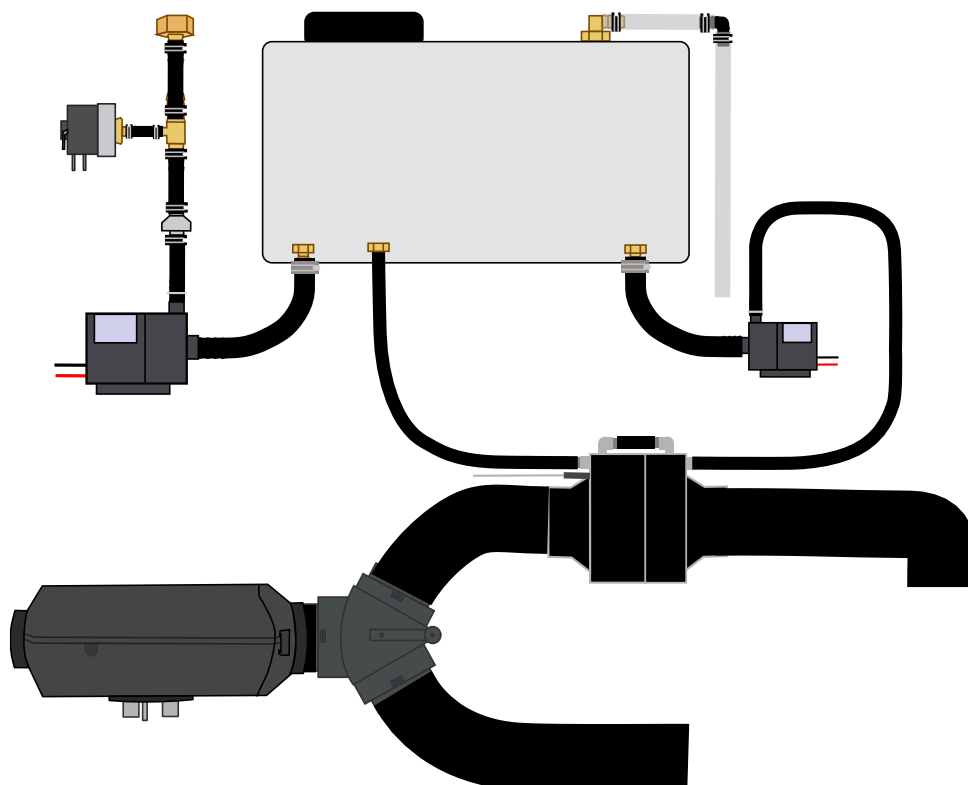




BOBIL VANS AIR XCHANGE WATER HEATER WITH SMART CONTROLLER

INSTALLATION INSTRUCTIONS





Important Safety Instructions! Please save these instructions!

This manual contains important safety, installation, and operating instructions for the Bobil Xchange Kit.

The manufacturer accepts no liability for damage by:

- Incorrect assembly.
- Damage resulting from mechanical influences or excess voltage.
- Modification or tampering with the unit without expressed permission from the manufacturer.
- Used for purposes other than described in this manual.

General safety

- Firmly secure all cables and hoses.
- In the event of product failure, do not attempt to repair the water heater. Inadequate repairs may cause serious injury.
- Electrical devices are not toys - keep away from children.
- Disconnect the product from the battery and mains power each time before cleaning or maintaining the heater.
- This product is for 12V battery banks only. Make sure your voltage specification is within the input voltage range expressed.
- Install and store the product in a dry and cool place.
- Keep electronics away from liquids!
- Do not use the product if physically damaged or with visibly perished hoses.

Installation

- Ensure secure location where it cannot tip or fall.
- If necessary, verify installation with a qualified electrician or installer.
- Lay cables so they cannot be damaged or be a tripping hazard.
- Do not operate in salty, wet, or damp environments; in the vicinity of corrosive fumes; in the vicinity of combustible material; in areas with risks of explosions.
- Ensure proper cable sizing for currents generated.
- Over-current protection devices should be on the positive line.

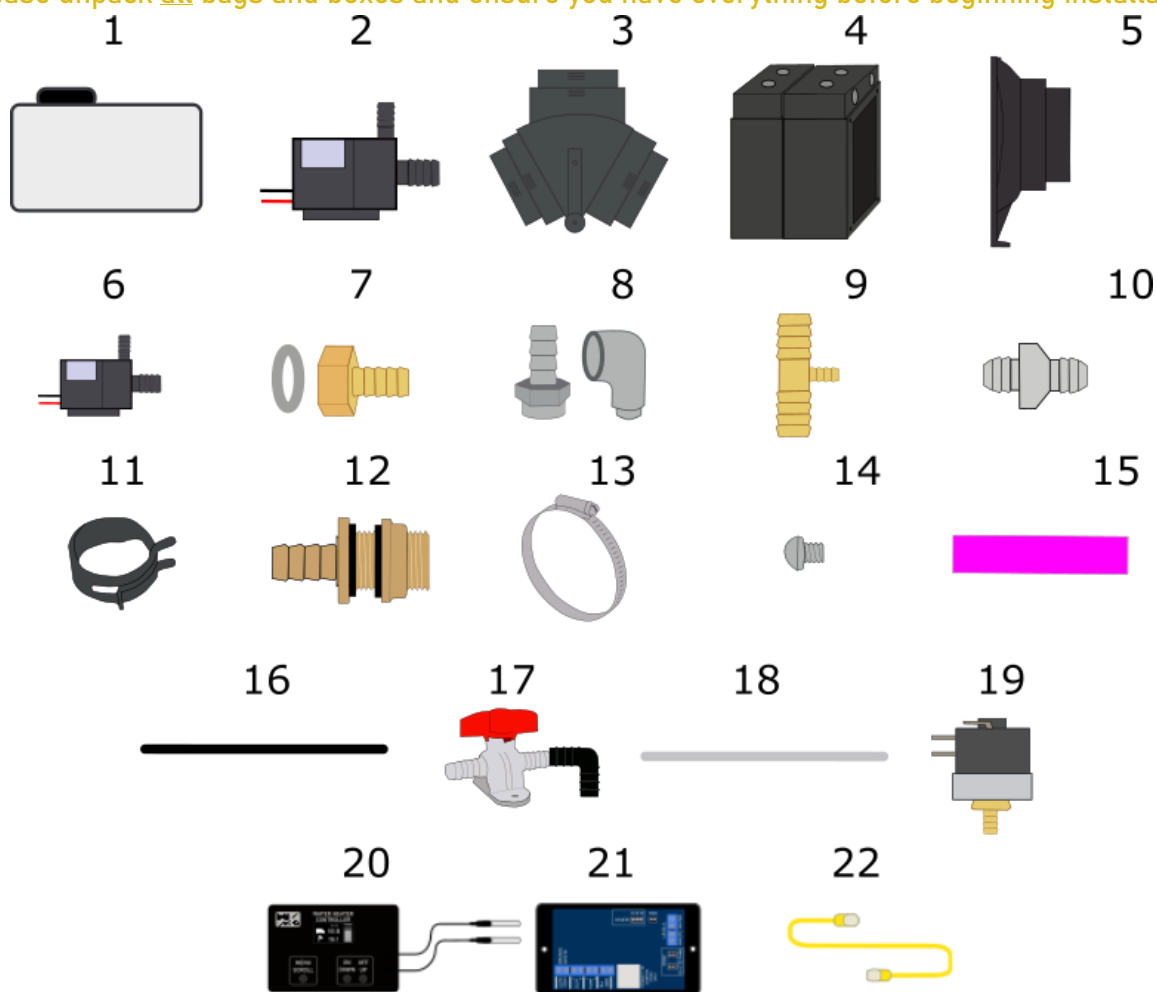
Due to the nature of ways the Bobil Xchange systems can be fitted, we cannot account for all instal variations and eventualities in this instruction manual. If you install your system in a way which deviates from these instructions without contacting us beforehand, then we cannot accept fault for any issues that might occur due to incorrect assembly or use, and as such, broken parts would not be covered under warranty.

If you have any questions about your installation, please email us at info@bobilvans.co.uk



What comes in the box?

Please unpack all bags and boxes and ensure you have everything before beginning installation.



| | |
|-------------------------------------------|-----------------------------------------|
| 1. 12/18L Water Tank (if you ordered one) | 13. Jubilee Clips (x7, 2 sizes) |
| 2. High Flow Outlet Pump | 14. Screws (x8) |
| 3. Diverter Valve + Flap | 15. 10mm ID hose - PINK (0.25m) |
| 4. Heat Exchanger Assembly | 16. 8mm ID hose - BLACK (1.25m) |
| 5. Ducting Adaptors + Gaskets (x2) | 17. Drain Valve (x2) & Elbow (x3) |
| 6. Circulation Pump | 18. Clear PVC Overflow Pipe (0.75m) |
| 7. ½" Barbed fittings & Washer | 19. Pressure Switch & 5mm Silicone Hose |
| 8. Heat Exchanger Fittings (x8) | 20. STC 3008 Controller |
| 9. Pressure Switch Fitting | 19. Pressure Switch & 5mm Silicone Hose |
| 10. One Way Valve | 20. Master control unit |
| 11. Hose Clamps (various sizes) | 21. Slave control unit |
| 12. Bulkhead Fittings (x4) with PTFE tape | 22. Link cable |

If you ordered level sensors, these will also arrive inside the smart controller box.



Preparing your installation area

The tank should be installed in a cupboard or locker which is clean, dry, ventilated, accessible and free of explosive gases or vapour such as those given off by charging batteries. The heat exchangers can be installed remotely from the tank, even under the vehicle. If they are mounted under the vehicle the units should be protected from road debris and hose should be secured where they won't be damaged by being passed through the floor of the van. You should always drain the system if there is a risk of freezing.

To install the kit, you will also need:

- Pliers
- Spanner
- Drill with 4mm, 5mm & 10mm drill bits & 26mm hole saw or spade bit
- Scissors to cut silicone hose
- Screwdriver

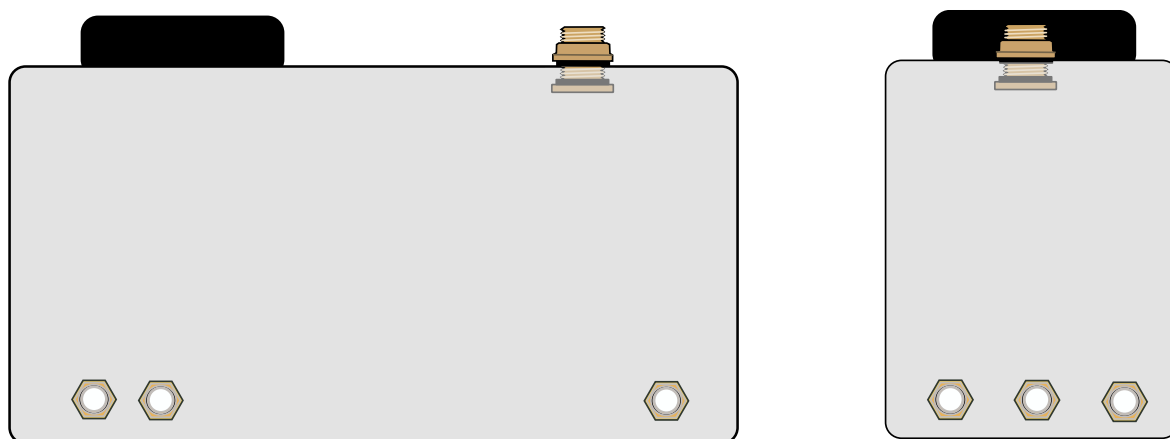
Thank you for buying our products!

Small businesses like ours only exist because of the support of our customers. We appreciate you purchasing from us, and hope that you have a great experience.

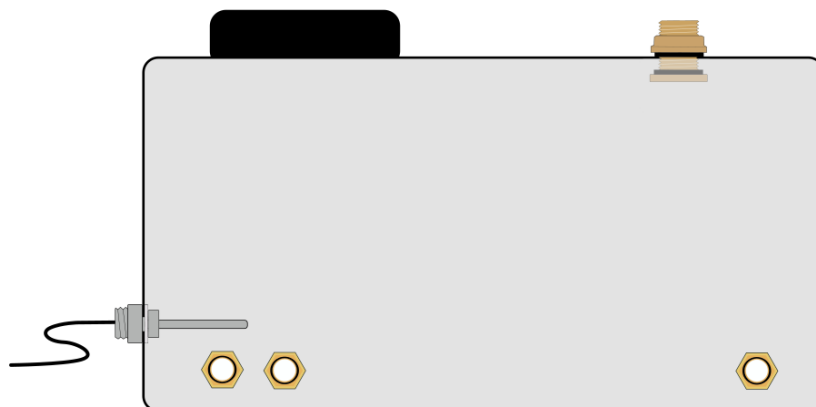
If you have any installation questions or queries then just get in touch, we're here to help.
Contact us at info@bobilvans.co.uk or on the phone at +44 1275 261074

Installation

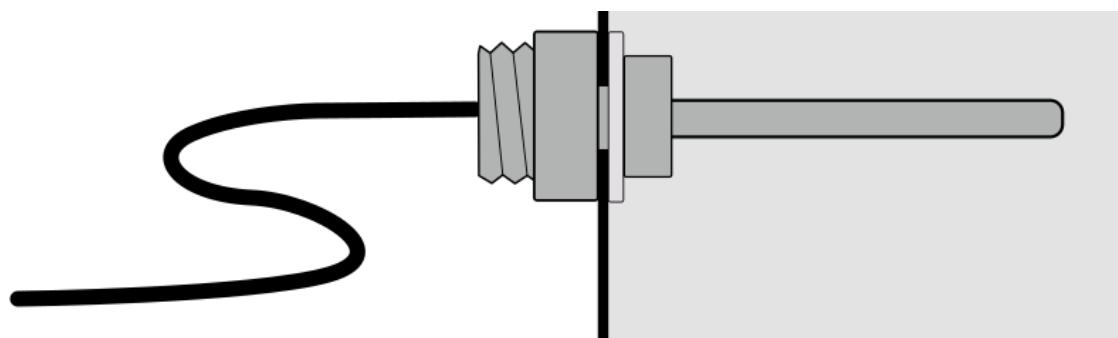
1. **PREPARE THE TANK:** Drill 3 x 10mm holes in the sides of the tank for the water, and 1 x 26mm hole in the top of the tank for the overflow. Fit the large bulkhead fitting to the top of the tank. Two layouts are shown below, but feel free to modify whichever layout suits your van. The centre of the holes should be at least 30mm from the bottom and sides of the tank.



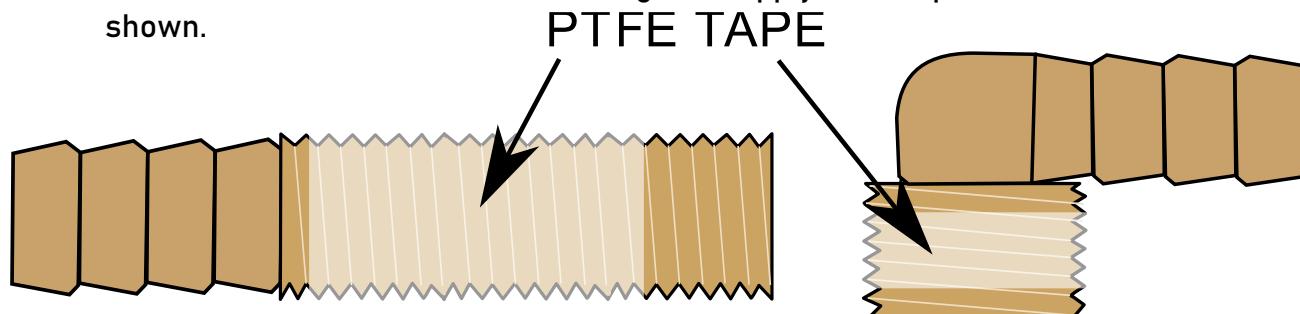
You will then need to drill another 10mm hole for the temperature sensor. This should be quite low in the tank, and near the outlets.



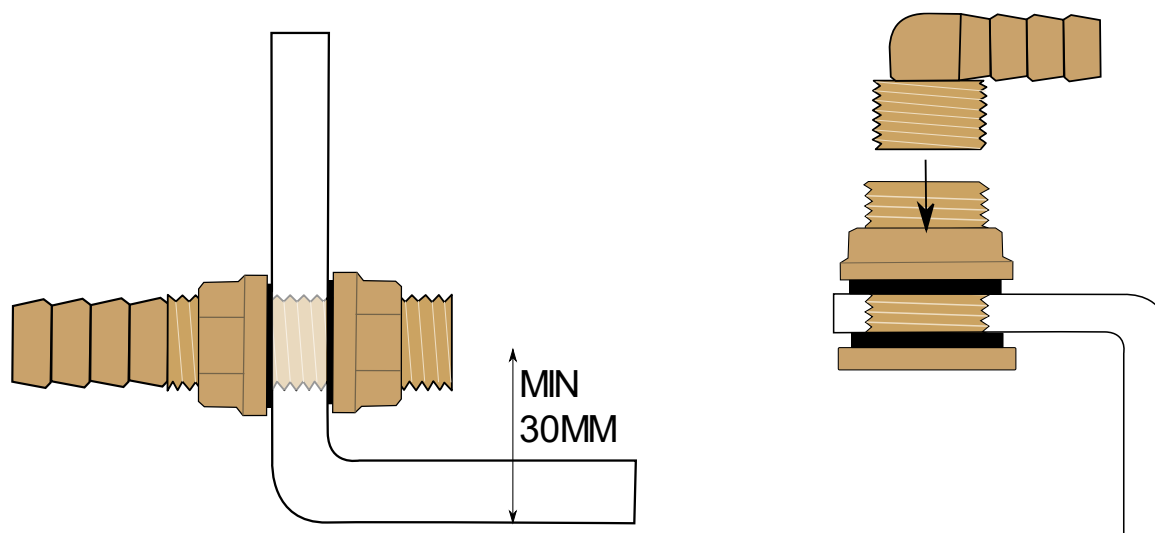
Fit using the nut provided, with the washer fitted on the inside of the tank.



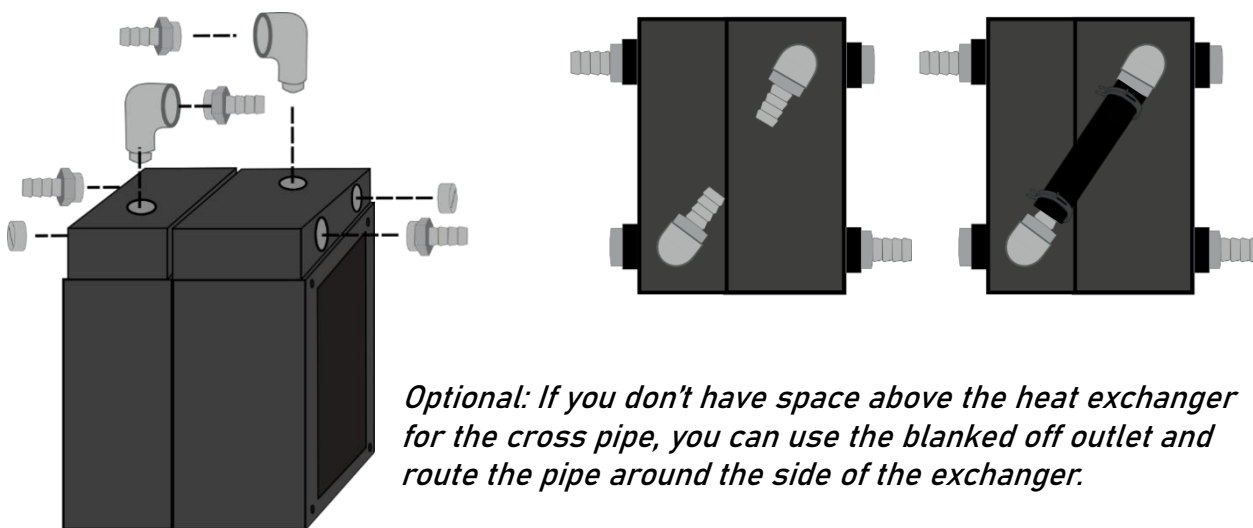
- BULKHEAD FITTINGS:** 4 bulkhead fittings are supplied; the angled outlet is for the overflow (see page 10) and the other three are for the water circulation. Remove the nuts from the smaller brass fittings and apply PTFE tape to the threads as shown.



Fit to the tank as shown:



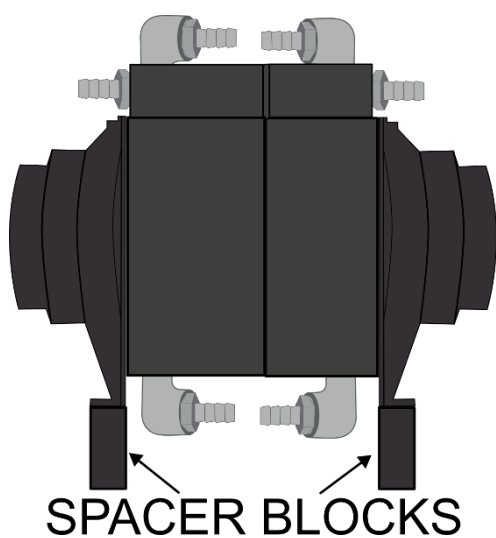
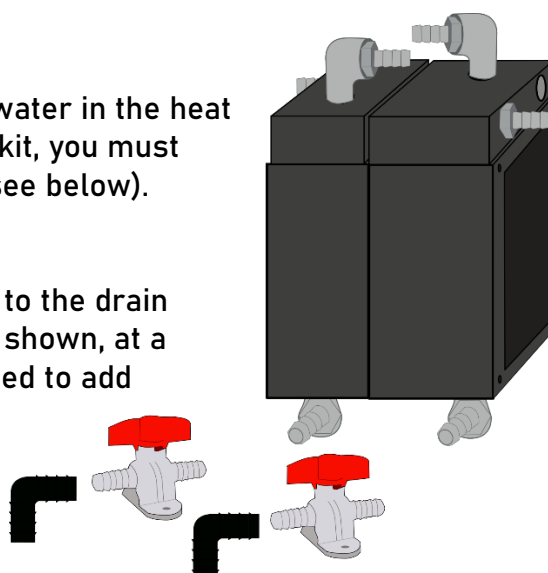
- HEAT EXCHANGER ASSEMBLY:** Remove the 4 red plastic blanking plugs and 2 metal blanking plugs. Assemble heat exchangers as shown, adding the metal blanking plug into the spare port on the exchanger. **Do not overtighten the fittings. Hand tighten only.** Add a small piece of the 8mm ID silicone hose to connect the 2 top ports together.



4a. **DRAIN KIT (optional):** Install the drain kit.

This is required for use in cold climates when the water in the heat exchanger is likely to freeze. If you do fit the drain kit, you must mount the exchangers on provided space blocks (see below).

Screw in the remaining elbows and barbed fittings to the drain ports. Add drain valves and black elbow fittings as shown, at a convenient place to drain the tank. You will then need to add silicone hose and hose clamps (not shown in this image for clarity).

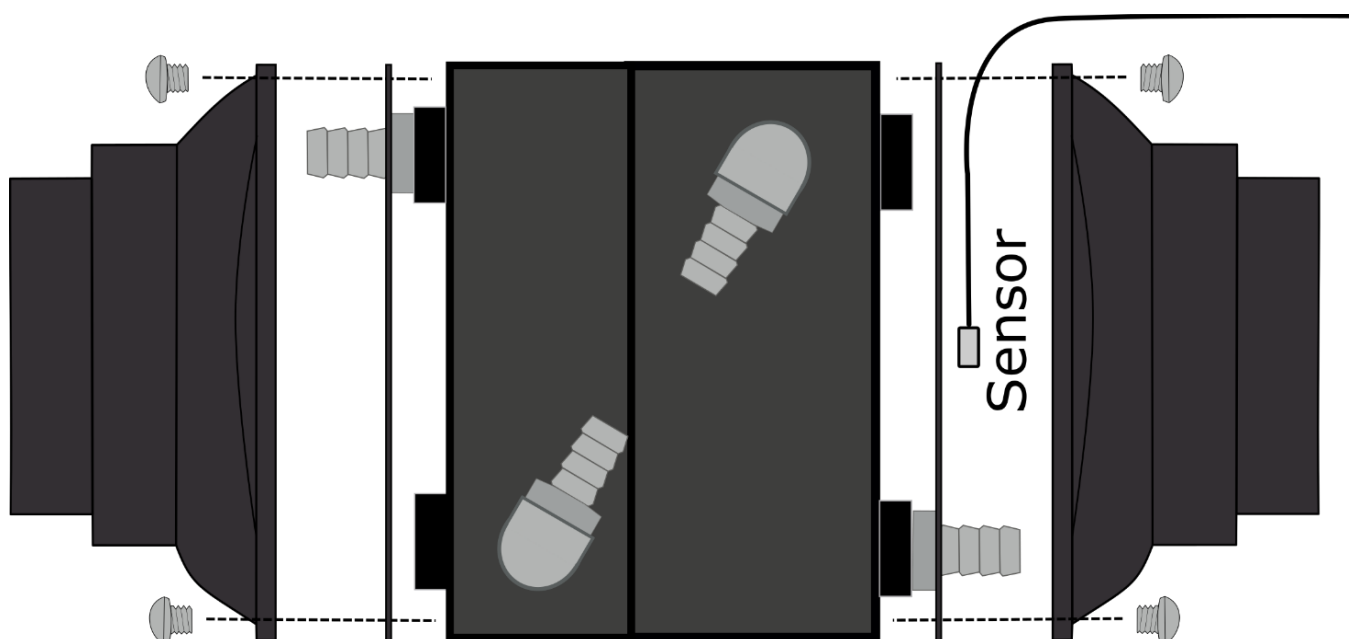
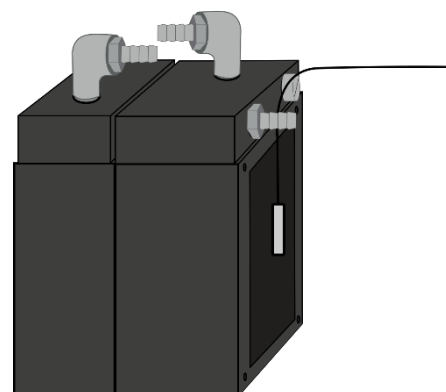


The spacer blocks click into the adaptors and allow a long screw to be fitted down through the block.

4. HEAT EXCHANGER ADAPTORS:

The duct temperature sensor gets clamped between the rubber gasket and the plastic adaptor and is positioned as shown.

Assemble ducting adaptors onto heat exchangers. Ensure the adaptor with the drilled hole goes on the thicker exchanger. Add the rubber gaskets between the exchanger and the adaptor. Fitting the screws through the adaptor and gasket before fitting to the exchanger makes this task much easier.



Add the rubber gaskets between the exchanger (orientation doesn't matter) and the adaptor. Fitting the screws through the adaptor and gasket before fitting to the exchanger makes this task much easier.



5. **DIVERTER ASSEMBLY:** Assemble the diverter by clipping together the two halves of the units with the flap in between. Ensure the servo for the diverter flap motor is on the top.

6. **OUTLET PUMP:** Assemble the outlet pump using the diagram shown. Ensure that the one-way valve faces upwards, away from the pump. Note the different hose clip sizes.

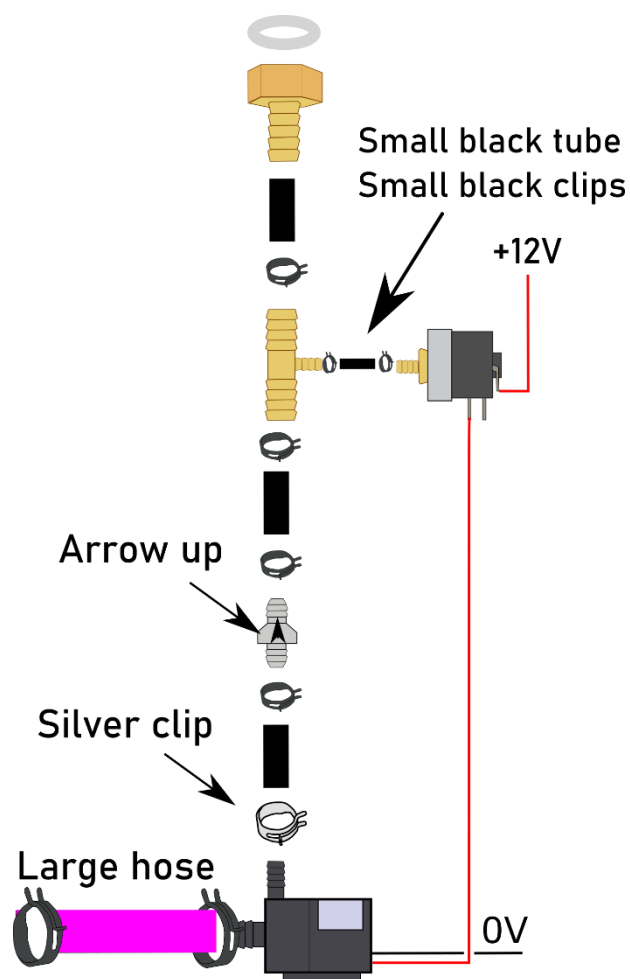
You can wire the pump through the pressure switch as shown. This will switch the pump on and off when a drop in pressure is detected.

To connect to your plumbing, ½" BSP threads are provided on the brass fittings.

The pump has a maximum power consumption of 1.4 amps. Ensure that the wiring can handle this amount and that the wire is appropriately fused.

To adjust the pressure, open the taps fully and rotate the back of the switch clockwise until the pump stops. You can then give a minor adjustment so that the pump runs correctly when the tap is partially open.

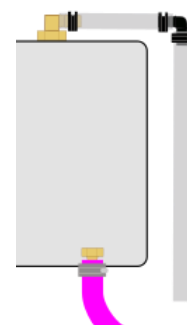
Do not run the pump without water!





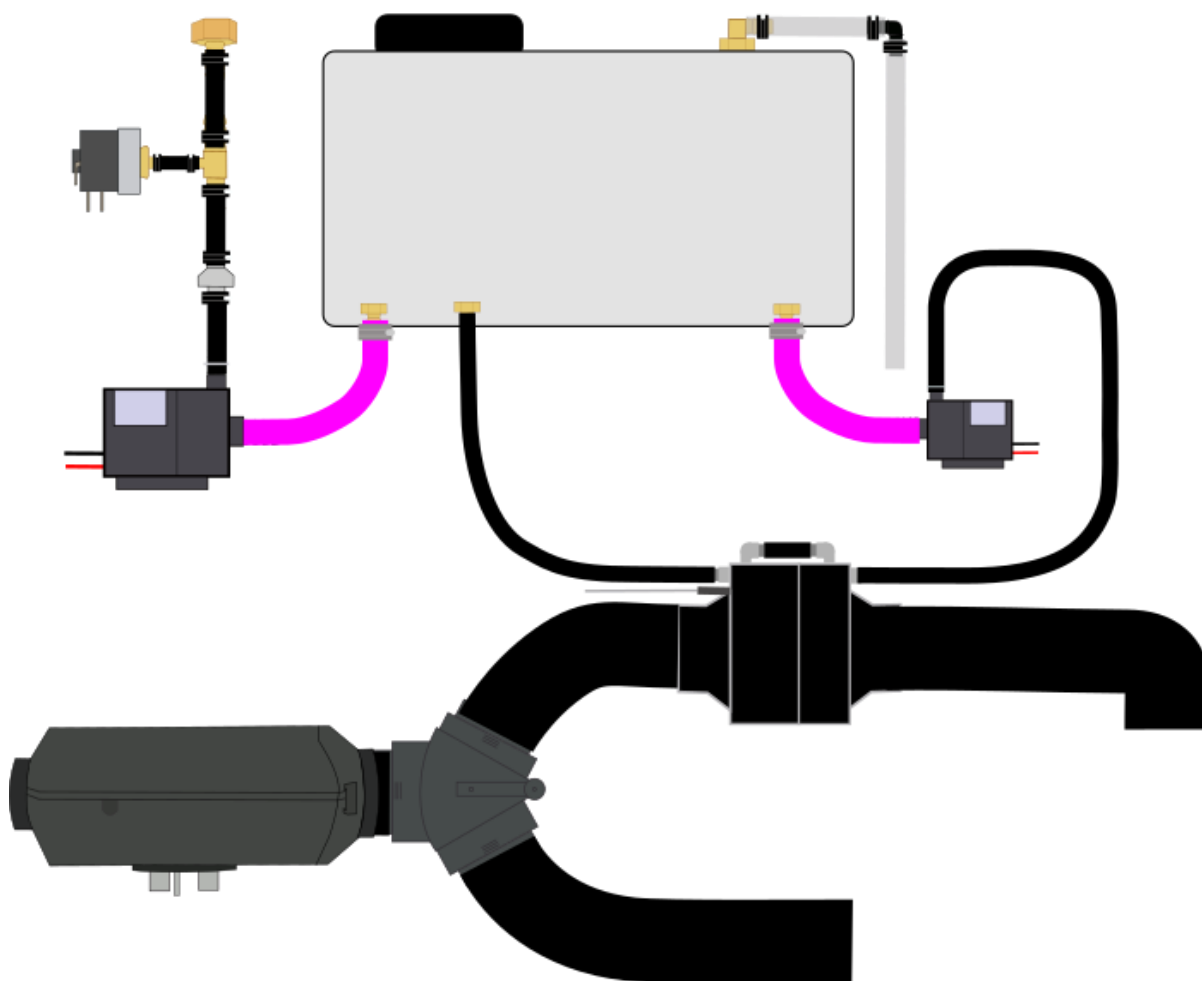
Final Assembly

Assemble the heater kit as shown. Ensure that the silver wire clips are fitted on the pump outlets, and the jubilee clips are fitted to the large hose going to the pumps. The water pump outlet port is 1/2" BSP to which you can add your own fittings to plumb into your system. To fill the tank we recommend a manual fill; fittings with on/off valves are available in most plumbing sizes.



For the overflow pipe, install the PVC pipe to the right angled bulkhead fitting you drilled on the top of the tank. This pipe will act as an overflow, so direct it somewhere where overflowing water can drain safely.

The ducting should be secured with the supplied jubilee clips, and the exhaust from the heat exchangers can be used to either heat a shower room, garage or vented straight outside through the floor of the van.



The pumps should be lower than the water level as they are not self-priming and so that any air from the tank is allowed to escape.



Element Upgrade Kit fitting (optional)

With the element upgrade kit, you will also receive a level sensor, element and activation relay.

1. Drill and deburr a 34mm hole in the side of the tank to fit the element. This hole should be around 60mm from the bottom of the tank and be centrally positioned. Fit the element to the tank, fitting the seal on the outside of the tank. Ensure that the thermocouple cannot come into contact with the element.
2. Drill and deburr a 12mm hole towards the top of the tank. This is for the level sensor. The heater element will therefore only come on if the level sensor is activated. This means the element cannot be run dry.

The tank should then look like this:



For electrical wiring, see the diagram on page 14.



Water level sensor wiring

Before you start, add crimped spade connectors to the wires for easy connections when the time comes.

Fresh Water

To fit the fresh level sensor, drill a 35mm-38mm hole in the top of the tank. Using the supplied screws and gasket, fit the sensor to the tank using stainless steel bolts on the inside of the tank.

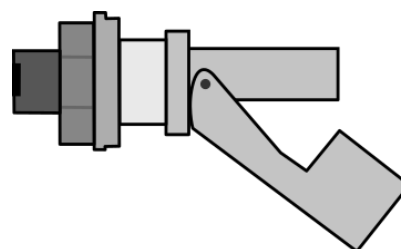
If you don't have access to the inside of the tank then you can affix the sensor with stainless steel screws from the outside of the tank.

Alternatively, you can plumb this fresh water sensor into your Xchange tank so you can see the amount of water in your Xchange tank from the Bobil Smart Controller screen.

Waste Water

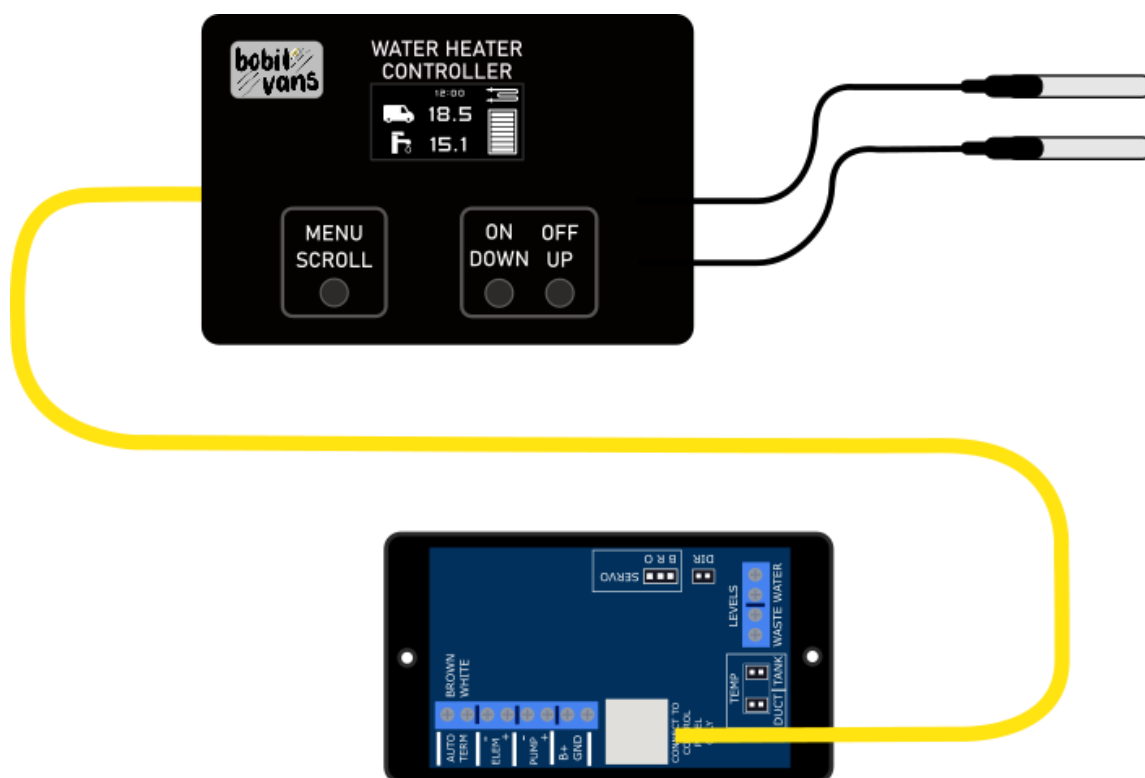
To fit the waste sensor, you need a 21mm hole in the side of the tank at a level which corresponds to a level of around 80% of the water volume.

This hole should be accurate, so we would recommend using a 20mm spade bit and widening it with a file. Once the sensor fits through the hole, tighten the collar on the outside to lock the sensor in place. You should ensure that the sensor is fitted in the orientation shown here.



Controller wiring

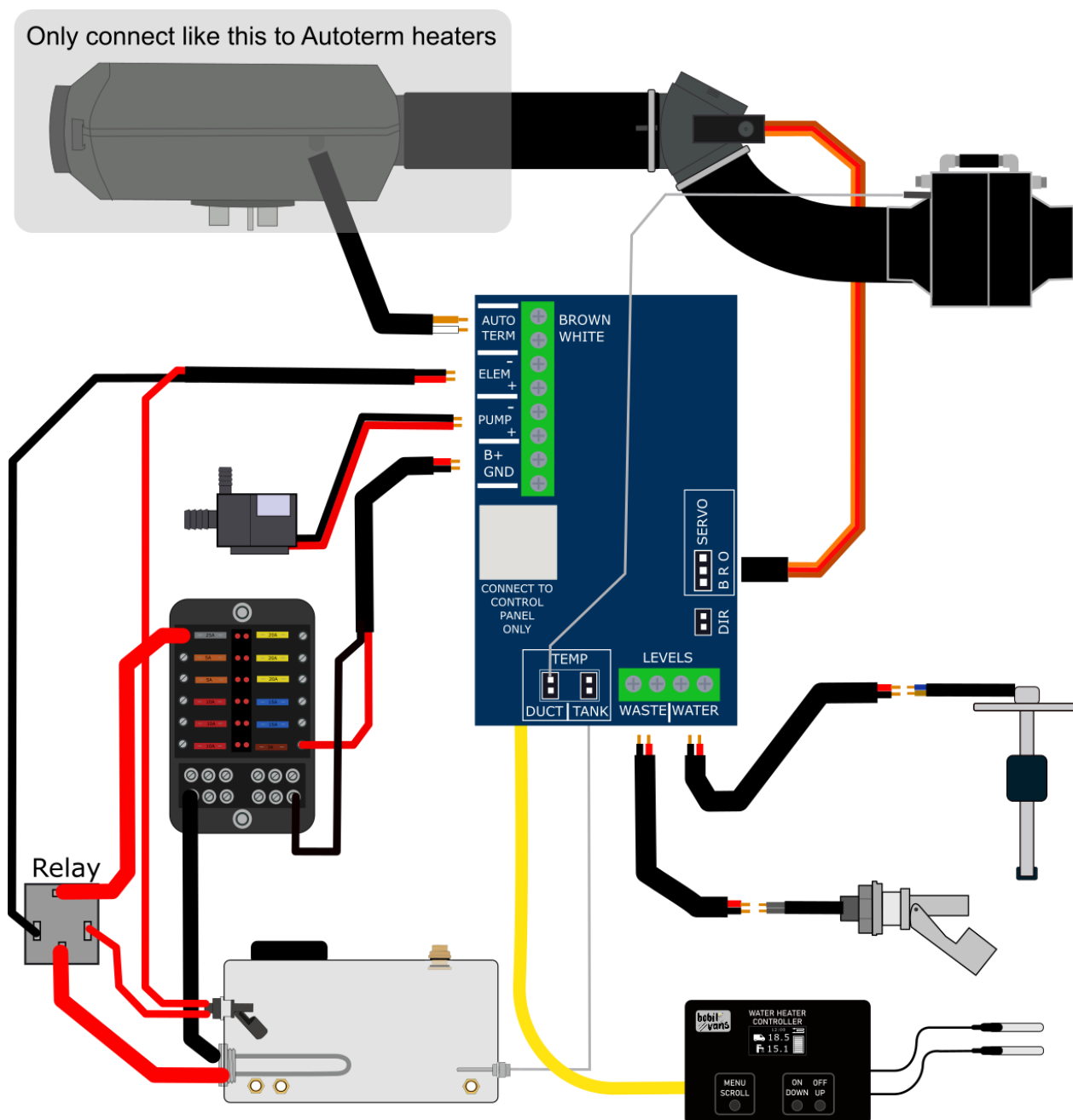
The Bobil Smart controller system is made up of two boxes, one which can be mounted in the living area, and one which is situated near the heater itself. All connections are made from the slave unit except for the air temperature sensors which come from the cabin box.



The two sensors from the master controller are for measuring the internal and external temperatures. The internal sensor should be mounted high up in the main living space, away from any direct flow from the heater outlet duct. The external sensor can be mounted anywhere outside the vehicle but must be protected from moisture. We would suggest attaching it to the underside of the van with the provided rubber P-clip.

Electrical Wiring

Wire the controller like this.



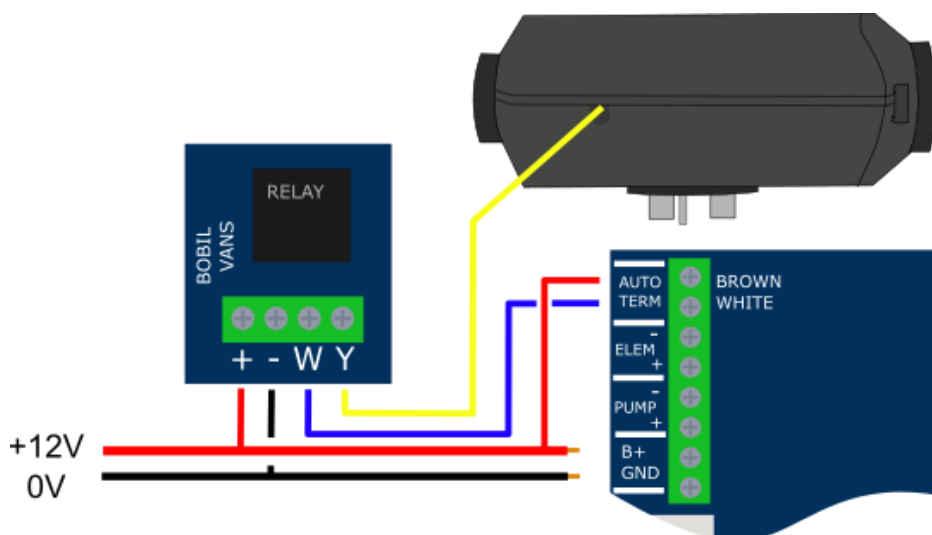
There is no polarity on the level sensors.

If you went with the optional 12V element for your Xchange tank, then connect the element and relay as in the diagram above. If you did not, leave the element port on the controller blank.

Do not wire the controller directly to a Chinese heater, as these heaters use radio commands to communicate to the Smart Controller. Follow the pairing instructions in the user guide for these heaters.

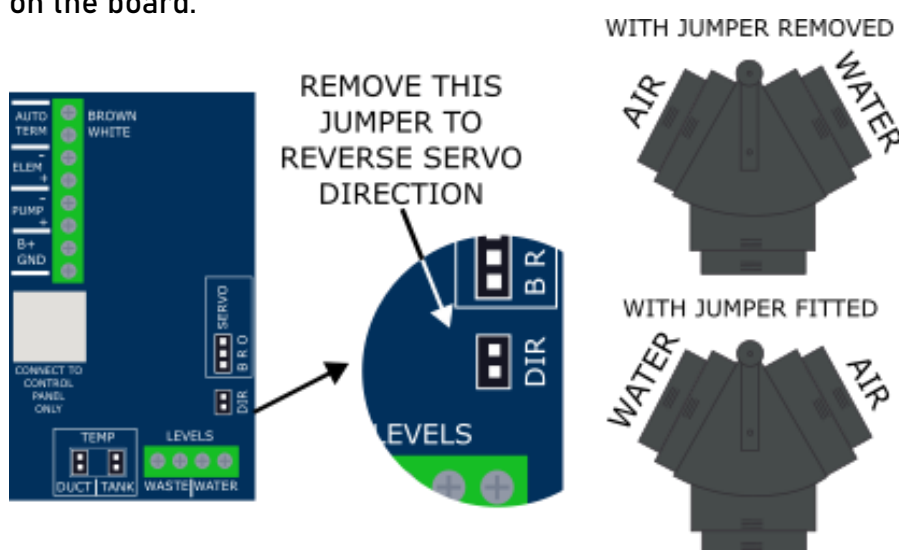


If your heater has a 'remote start' function which requires a 12v signal, you will need to use the supplied external board. (This board is only supplied if you have one of these heaters). Eberspacher heaters have a yellow wire, but please check the wiring diagram of your particular heater before wiring anything up.



The controller controls the DC element for "free" hot water when your batteries are full. If you have a 12V/Dual Voltage element tank, then when your batteries reach 13.7V, it will switch the DC element on, and switch it off when voltage falls below 12.7V. This can be enabled on or off, but the values cannot be altered.

Normally the servo will point to the left for water heating and to the right for air heating. However, you can reverse this by removing the 'DIR' jumper which connects the two pins on the board.





Technical Specifications

| Parameter | Value |
|---------------------------------------|-------------------------------------------------------------|
| Outlet pump specification | 7PSI, 9 litres per minute, 1.4 amps |
| Pump and controller power consumption | 0.2 amps in standby, 1.5 amps with circulation pump running |
| Water heating times | 20 minutes for 12 litre tank to 60 degrees with 5kw heater |
| Certification | This product is CE marked |

We would love to know what you think!

Please let us know by leaving a review through the link sent through when you made your purchase, or email us at info@bobilvans.co.uk!

You can also share photos of your installation on the 'Bobil Water Heater Users', Facebook page, we'd love to see them!

www.bobilvans.co.uk

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