



INSTALLATION AND USER INSTRUCTIONS

Whale® Expanse™ Gas & Electric Water Heater

More Heat, More Space, More Control*



Model Number	Suffix	Description
Underfloor Installation Models		
WW0801U	B or R or C	Underfloor Gas and Electric Water Heater (Install with Whale® Water Heater Control Panel)
IW0801U	B or R or C	Underfloor Gas and Electric Water Heater (Install with Whale iVan® Control Panel)
DW0801U	R	Underfloor Gas and Electric Water Heater (Install with Whale® Duo Control Panel)
Onboard Installation Models		
WW0801O	B or R or C	Onboard Gas and Electric Water Heater (Install with Whale® Water Heater Control Panel)
IW0801O	B or R or C	Onboard Gas and Electric Water Heater (Install with Whale iVan® Control Panel)
DW0801O	R	Onboard Gas and Electric Water Heater (Install with Whale Duo Control Panel)

Suffix	Description
B	Bulk Packaging
R	Returnable Packaging
C	Commercial Packaging

Thank you for purchasing this Whale® product. For over 70 years Whale has led the way in the design and manufacture of water and waste systems including:-plumbing, faucets, showers, pumps and heating for mobile applications. Today's range features space and water heaters for caravans and motorhomes. The company and its products have built a reputation for quality, reliability and innovation backed up by excellent customer service.

For information on our full product range visit: www.whalepumps.com

* More Heat, More Space, More Control compared to previous Whale Heating System Models



All Whale gas products must be installed by a **Qualified Gas Engineer** in accordance with the installation instructions and BS EN 1949-2011.



All work must be carried out by a **competent person** as defined by BS7671 PART2.



Please note if incorrectly installed a risk of electrocution exists.

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1. PRINCIPLES OF OPERATION

The Whale® Expanse™ Water Heater is a gas and electric storage Water Heater. Expanse™ can be installed internally, inside the vehicle or externally, under the vehicle. The unique design has an 8 litre capacity hot water tank which incorporates versatile controls to deliver low current draw or fast heat up settings. With robust insulation and no removable flue cover, the Whale® Expanse™ Water Heater only requires minimal maintenance.

Read the following carefully before installation

2. SPECIFICATION

Model: WW0801U or IW0801U or DW0801U / WW0801O or IW0801O or DW0801O

WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

Maximum dimensions inside vehicle:

Height: 180mm (underfloor), Width: 262mm, Length: 522mm, Dry Weight: 4.5kg

WW0801O (Suffix: B or R or C) or IW0801O (Suffix: B or R or C) or DW0801O (Suffix: R)

Maximum dimensions inside vehicle:

Height: 252mm, Width: 280mm, Length: 522mm, Dry Weight: 4.5kg

Nominal Water Capacity 8 litre

Gas: Butane/Propane 30mbar - CAT I₃B/P (30)

Classification of Storage Water Heater: Type: C₁₃

Nominal Heat Input: Gas 1.35kW

Standby Consumption: Gas 43W

Nominal Heat Input Electric 1.5kW

Electric: 230V a.c. 50 Hz 750/1500W

Maximum Current a.c: 6.5 amps

Nominal Voltage: 12V d.c. (10.1 Volt d.c. min. to 14.9 Volt d.c. max.)

Maximum Current d.c: 0.48 Amps (0.03 Amps on standby)

Maximum Water Supply Pressure: 190kPa (1.9 Bar)

Rated Pressure: 300kPa (3.0 Bar)

Pressure Relief Valve Setting: 300kPa (3.0 Bar)

Maximum Caravan Floor Thickness: 47mm

Ingress Protection Rating: IP45

Note: If connecting to mains water supply, a suitable water pressure regulator **must be** connected to ensure that the maximum supply water pressure does not exceed 190kPa (1.9 Bar).

Dry Storage Temperature: -20°C to 70°C

Maximum Water Temperature: Approx. 72°C

Typical heating up times from 15°C to 70°C:

Gas and 1.5kW Electric approx. 15 minutes. 1.5kW Electric (two electric elements only) approx. 24 minutes.

Gas only approx. 26 minutes.

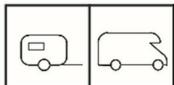
For use only in road vehicles i.e. caravans and motorhomes only. Not suitable for caravan holiday homes i.e. mobile homes or static caravans.

The Water Heater position **must** allow access for servicing and to the reset button.

Whale's policy is one of continuous improvement and we reserve the right to change specifications without prior notice.

3. APPLICATION

The Whale® Expanse™ Water Heater has been designed for caravan, motorhome and mobile applications, and is suitable for small and medium sized recreational vehicles only. It is only suitable for use in recreational vehicles i.e. caravans and motorhomes, but is not suitable for use in caravan holiday homes e.g. mobile homes and static caravans. The compact and lightweight 8L tank can be fitted under the floor or internally and has a variety of power input for rapid heat up times.



This symbol indicates that this appliance is suitable for use in Leisure Accommodation Vehicles.



This symbol indicates that this appliance is **not** suitable for use in boats.

4. WARNINGS

Observe all warnings.



WARNING

In the unlikely event of leaks in the gas system, or if there is a smell of gas:

- Extinguish all naked flames
- Switch off all appliances and do not operate any electrical switches
- Turn off all gas appliances
- Open windows and doors for ventilation
- Do not smoke
- Shut off gas connection

Immediately ensure that the system is thoroughly checked by a Whale® Authorised Dealer or Whale® Approved Service Engineer.

The Water Heater **must not** be operated in the following situations:

- When refuelling the vehicle or refuelling the vehicle towing the caravan or any other appliance.
- When the vehicle in which the Water Heater is installed is in motion.
- When the vehicle in which the Water Heater is installed in a confined space (such as a garage).

This appliance can be used by children aged from 8 years and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance **must not** be carried out by children without supervision.



WARNING

Before Operation: Ensure the caravan water system, including the Water Heater is full of water, and that the vehicle is level before operating the Water Heater.

This appliance **must be** fully drained if there is a risk of frost. Only when the Frost Protection setting is turned on and activated, the Water Heater does not have to be drained.

Please note: The Frost Protection setting is only recommended for a period of 3 days or less. If the vehicle will not be in use for longer than 3 days, the water system **must be** fully drained.

Please note: The user **must ensure** that Frost Protection is turned on, activated and remains in operation for the duration for its period of use. Frost damage will not be covered by warranty.

The water temperature cannot be adjusted. It is automatically set to approximately 70°C (or 55°C if eco mode is available and set) and controlled by the PCB to prevent bacteria growth. To avoid scalding, the temperature of the hot water supplied to the taps and showers **must be** controlled at the tap or shower. **Do not** use the water as drinking water.

Any alteration to the appliance, including flue and flue cover, use of non-Whale® spare parts/accessories and non-observation of the installation and operation instructions shall lead to cancellation of the warranty and exclusion of liability claims and results in it becoming illegal to use the appliance.

Please note: Incorrect installation or use of non-original Whale® parts may invalidate the warranty. It also becomes illegal to use the appliance if incorrectly installed, and in some countries this also makes it illegal to use the vehicle.

5. PARTS LIST

	Onboard Mounted Models	Underfloor Mounted Models
Water Heater		1
Water Heater with Mounting Feet	1	
Braided Hose	1	1
Warranty Registration Card	1	1
Instruction Manual Including Installation Templates	1	1

Note DW models:

A reset module is supplied instead of a wireless PCB

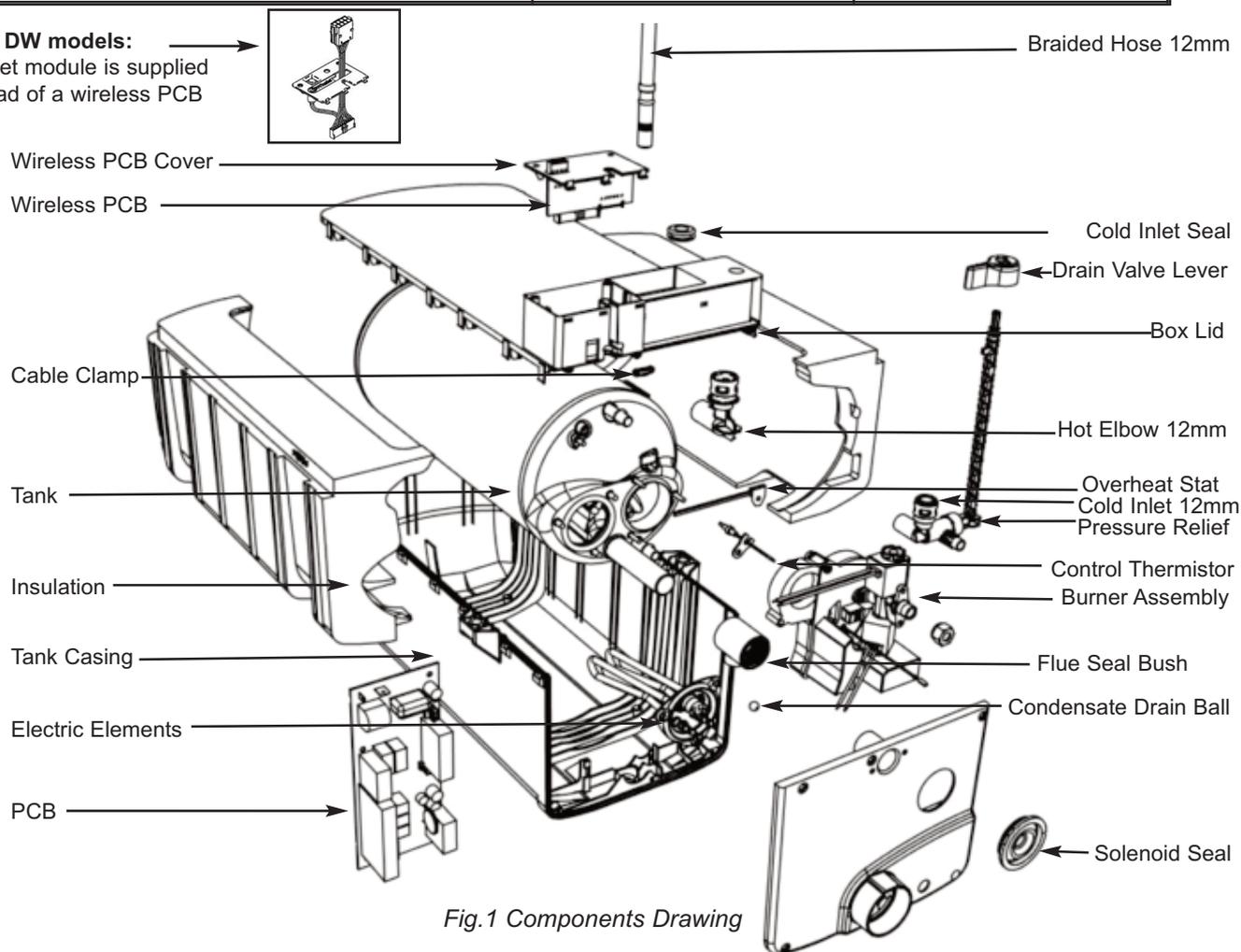


Fig.1 Components Drawing

6. INSTRUCTIONS FOR INSTALLATION



To the Fitter:

Installation and servicing of this appliance **must only** be carried out by competent persons registered with the Gas Safe Register (GB) or the relevant national organisation, in accordance with the relevant regulatory and safety requirements.

Before installation, ensure the appliance has been supplied in good condition and if damaged do not install and contact Whale® Support +44 (0)345 9090 911.

A competent person **must install** the appliance in accordance with the appliance installation instructions. This appliance is for use with LPG (see appliance data plate) and mains electricity (230V a.c.) only. You **must check** that the product is suitable for the intended application. In particular, the installer **must check** the compatibility of the data plate information with the LPG supply requirements of the vehicle. Follow these installation instructions and ensure that all relevant personnel read the points listed below. Also ensure that these operating instructions are passed on to the end user.

Please note: The appliance **must be** installed in accordance with any relevant regulations in the country where the appliance is installed. For this appliance in Europe, the standard is BS EN 1949:2011 "Specification for The Installation of LPG Systems for Habitation Purposes in Leisure Accommodation Vehicles and Accommodation In Other Road Vehicles" applies.

DIMENSIONS

Underfloor Models

Whale Part Number: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

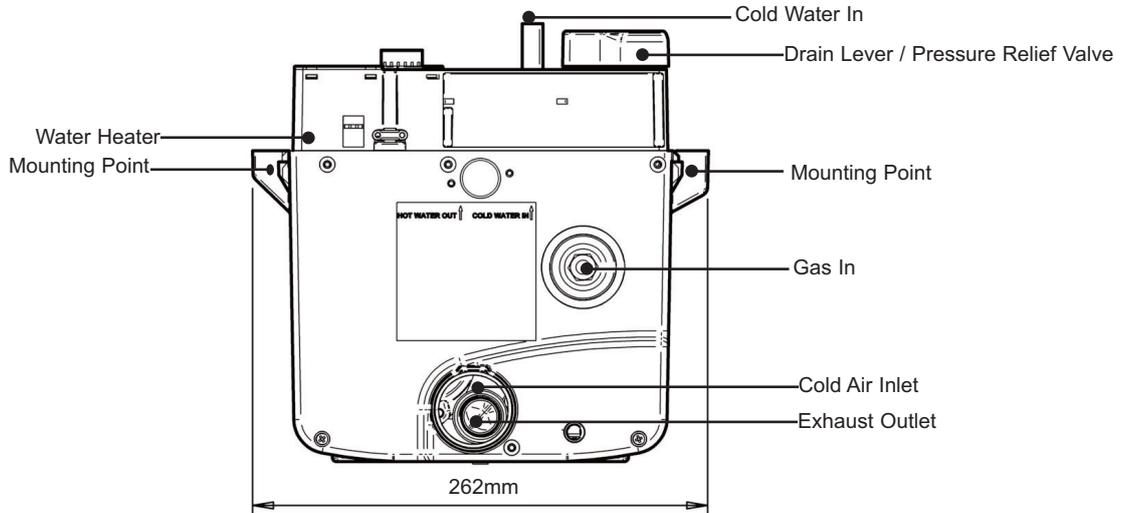


Fig. 2 Dimensions – Front View Underfloor

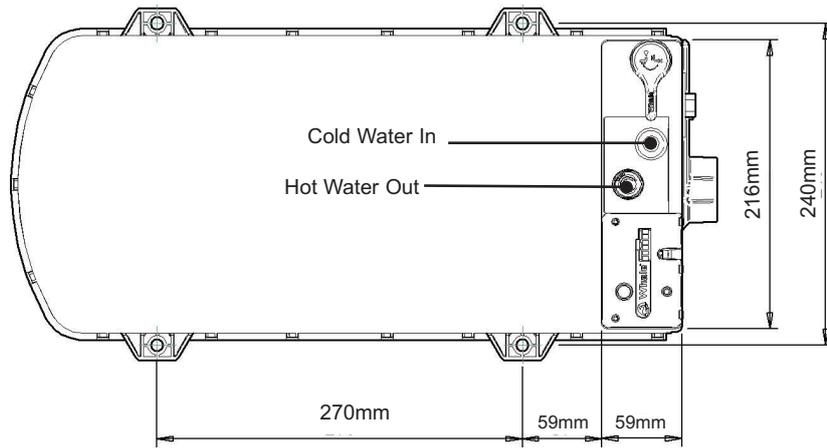


Fig. 3 Dimensions – Plan View Underfloor

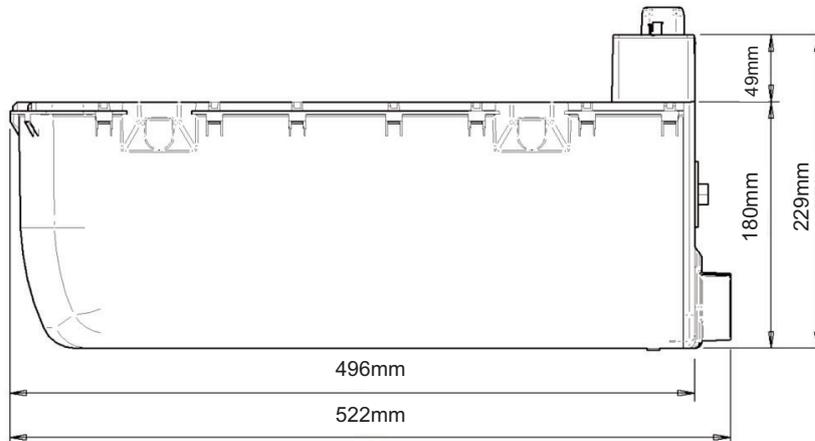


Fig. 4 Dimensions – Side View Underfloor

DIMENSIONS

Onboard Mounted Models

Whale Part Number: WW0801O (Suffix: B or R or C) or IW0801O (Suffix: B or R or C) or DW0801O (Suffix: R)

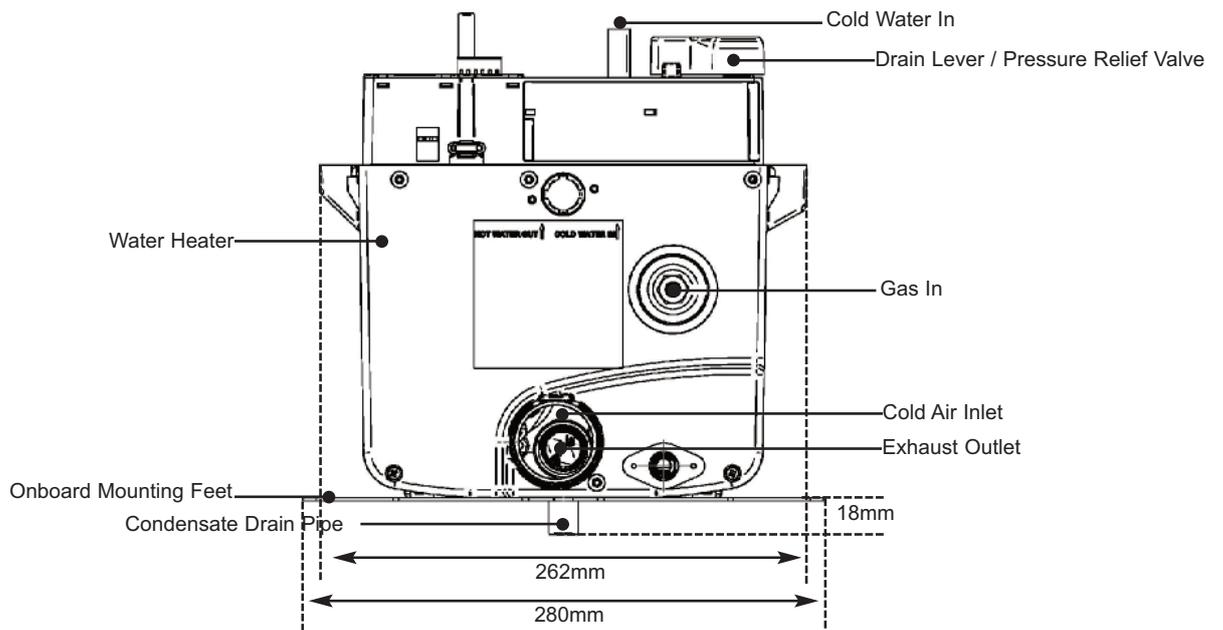


Fig. 5 Dimensions – Front View Onboard

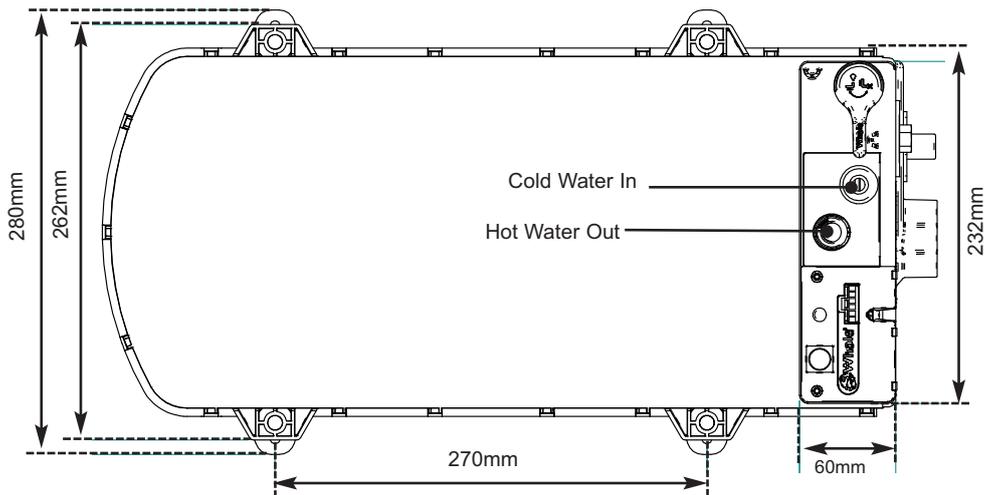


Fig. 6 Dimensions – Plan View Onboard

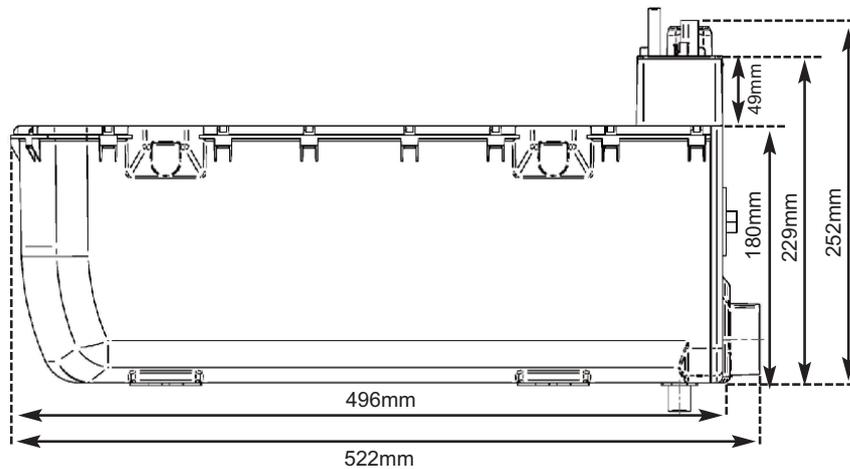


Fig. 7 Dimensions – Side View Onboard

INSTALLATION INSTRUCTIONS - UNDERFLOOR MODELS

Whale Part Numbers: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

Step 1 Find Suitable Location For Water Heater Installation

Consider the following 9 points:

- i. For weight distribution in caravans, the Water Heater **must be** positioned as close to the axle as possible. The installer **must** avoid locating the Water Heater at the very rear and the very front of the vehicle.
- ii. The Water Heater **must be** located between chassis members to protect it from the curb. The chosen location **must ensure** that the Water Heater is protected by chassis members which **must be** at least 180mm deep.
- iii. Any surfaces in contact with the Water Heater **must be** rated to at least 70 degrees C.
- iv. The location **must allow** access for servicing the Water Heater.
- v. The flue terminal **must be** located at the side of the caravan. Acceptable flue lengths are, 0.75 metres, 1.25 metres and 2 metres.
- vi. The flue terminal **must be** positioned at the side of the vehicle, that an awning will **never be** fitted to.
- vii. Only the Whale flue terminal (supplied with this Water Heater) is permitted to be used in conjunction with this Water Heater. This flue **must not** be positioned within 500mm of a refuelling point or fuel tank breather outlet or any ventilator from the fuel system(s). The flue terminal **must not** be fitted within 300mm of a ventilator for the living space or an opening part of a window.
- viii. The flue terminal **must only** be positioned vertically below an opening part of a window, if the appliance is fitted with an automatic shut-off device to prevent operation when the window is open. The flue terminal **must be** a minimum of 300mm below the window.
- ix. If supplied with a reset button, the user must have access to it in order to be able to clear some lockouts.

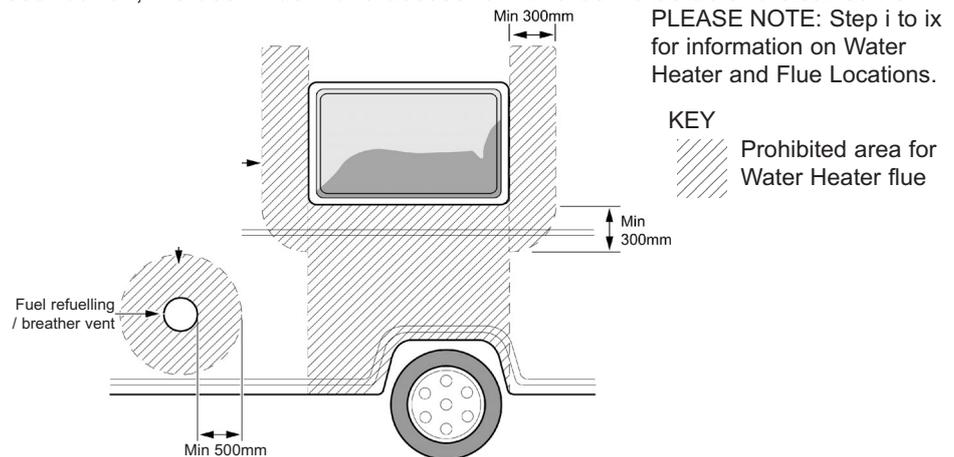


Fig. 8 Installation Locating Diagram - Underfloor Installation

Step 2 Cut Out Hole for Underfloor Water Heater

The cut out in the floor and hole positions are shown in Fig. 9.

A cut out template is available on request by contacting Whale on +44 (0)345 9090 911.

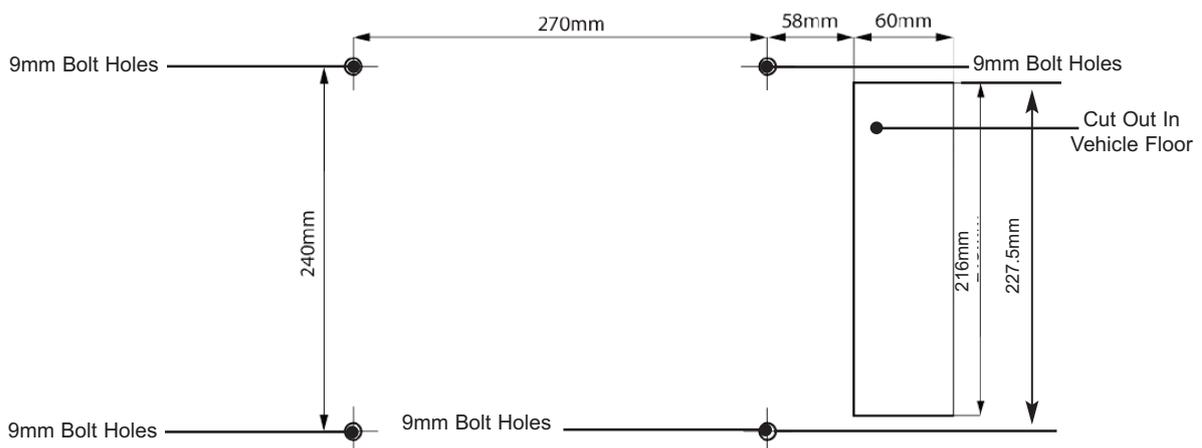


Fig. 9 Cut Out Hole in Floor - Underfloor Installation

INSTALLATION INSTRUCTIONS - UNDERFLOOR MODELS

Whale Part Numbers: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

The vehicle floor cut out **must be** reinforced with wooden batons (minimum 22mm wide, not supplied) around the edge of the vehicle floor cut out. The floor in the area of the flat headmounting bolt holes **must also** have wooden batons built in.

Step 3 Fit The Water Heater to The Floor

- i. Insert 8mm flat head mounting bolts (not supplied) through the 9mm holes in the floor from the inside, (as shown in Fig 10).

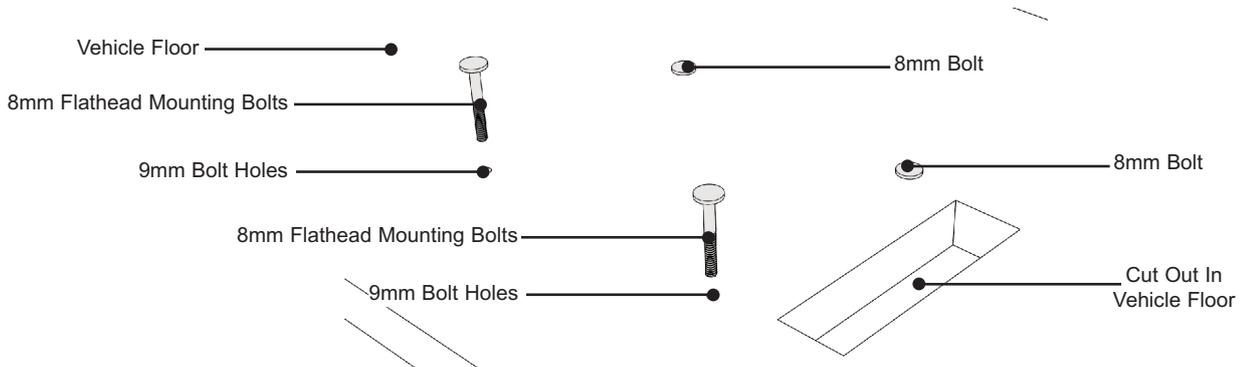


Fig.10 Fit Mounting Bolts

- ii. Place the Water Heater on the underside of the vehicle floor. The mounting bolts **must pass** through the mounting points, (as shown in Fig. 11).

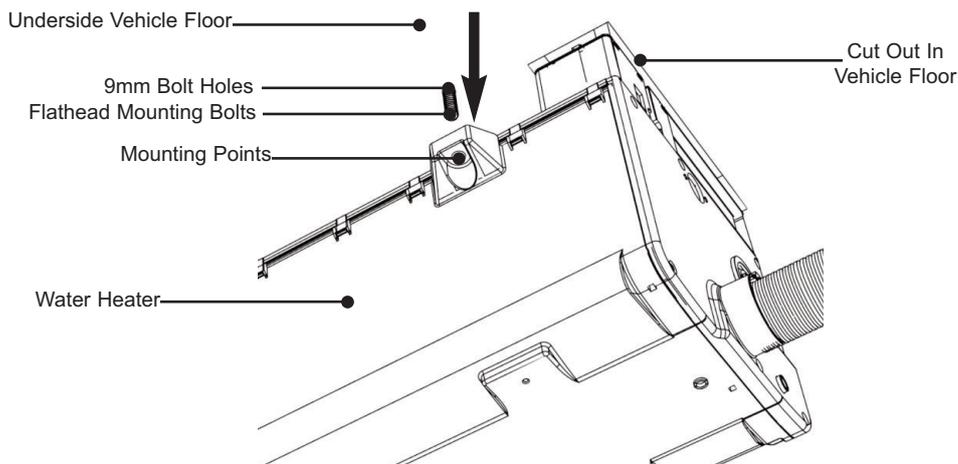


Fig. 11 Fit Water Heater

- iii. Secure the mounting bolts with M8 serrated flange head nuts (not supplied).

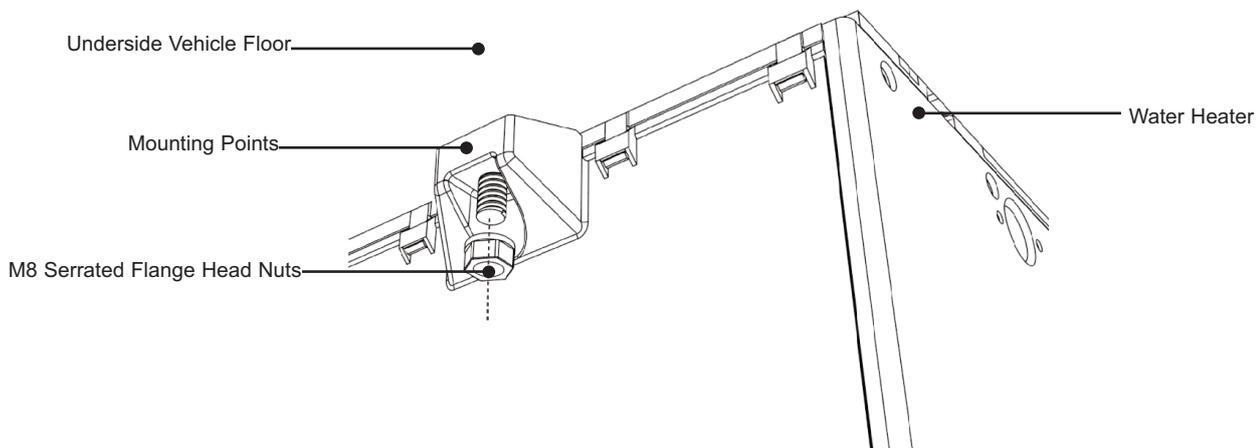


Fig. 12 Secure Bolts

INSTALLATION INSTRUCTIONS - UNDERFLOOR MODELS

Whale Part Numbers: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

Step 4 Connect Water Heater to Flues

- i. Attach the exhaust flue to the Water Heater by pushing over the flue exhaust outlet on the Water Heater. The flue will push into the red sealing bush by 20mm. Turn the flue clockwise until the clip locks in place behind the plastic cover of the Water Heater. Check that the flue is locked in place by gently pulling the flue away from the Water Heater. The flue is locked in place when it does not come away from the Water Heater when gently pulled.

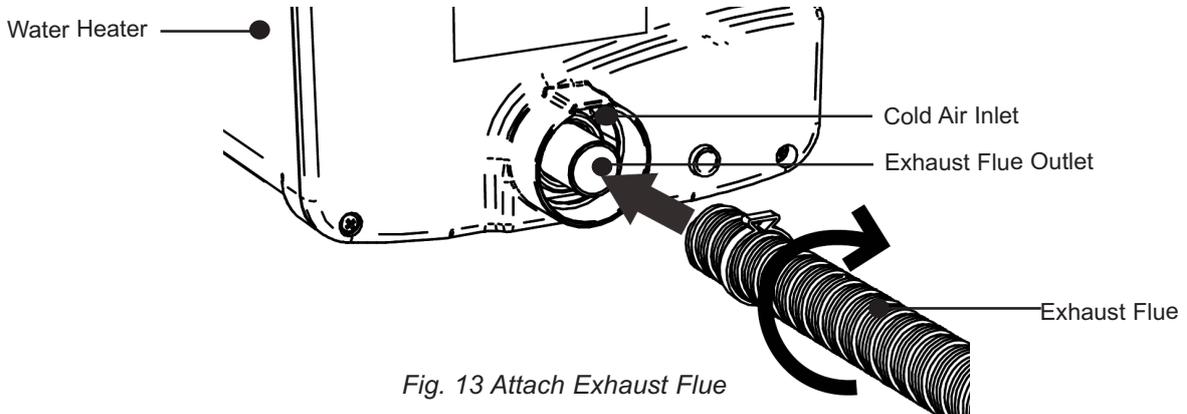


Fig. 13 Attach Exhaust Flue

- ii. Fit the combustion air flue to the Water Heater by sliding it over the exhaust flue and then connect to the Water Heater (as shown in Fig. 14).

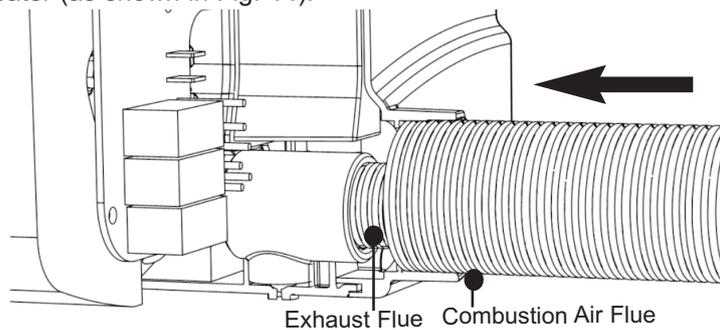


Fig. 14 Attach Combustion Air Flue

- iv. Push the exhaust flue into the rear of the flue terminal (fitted to the vehicle floor) until it will go no further, approximately 50mm. The flue **must be** pushed fully home. Please see Figs. 15A, B and C.

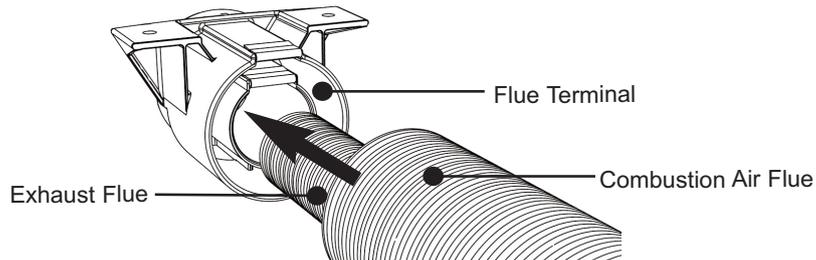


Fig. 15A Attaching Flue To Flue Terminal



WARNING

- iv. Push the inlet flue into the rear of the flue terminal (fitted to the vehicle floor). The flue **must be** pushed fully home. Please see Figs. 15. The flue **must be** visible in the flue terminal.

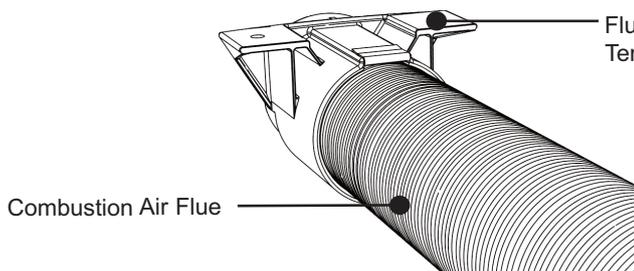


Fig. 15B Attaching Flue to Flue Terminal

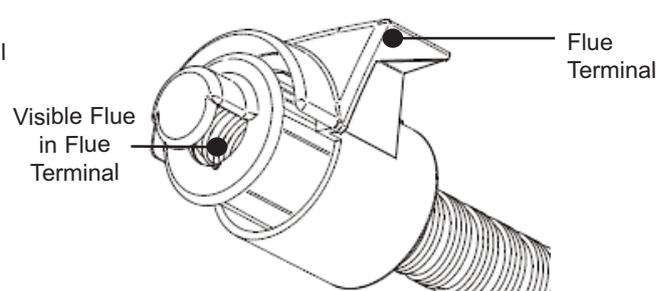


Fig. 15C Attaching Flue to Flue Terminal

INSTALLATION INSTRUCTIONS - UNDERFLOOR MODELS

Whale Part Numbers: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

Step 5 Attaching the Flue Terminal to the Vehicle

A wooden spacer may be required to locate the flue terminal below the side valence. Attach the flue terminal with 2 x No.8 x 3/4" pozi screws (not supplied). The flue terminal **must be** at the side of the vehicle, where an awning will **never be** fitted to.

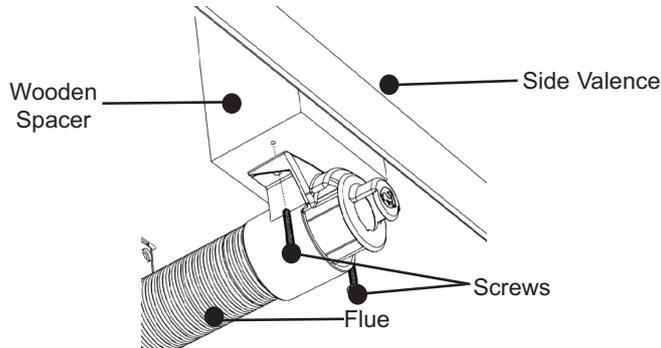


Fig. 16 Attaching the Flue Terminal to the Vehicle

Please note: The flue duct from the Water Heater to the terminal **must** have a maximum of one rise. As shown by point A in Fig. 17. This allows condensation to drain away from the Water Heater.

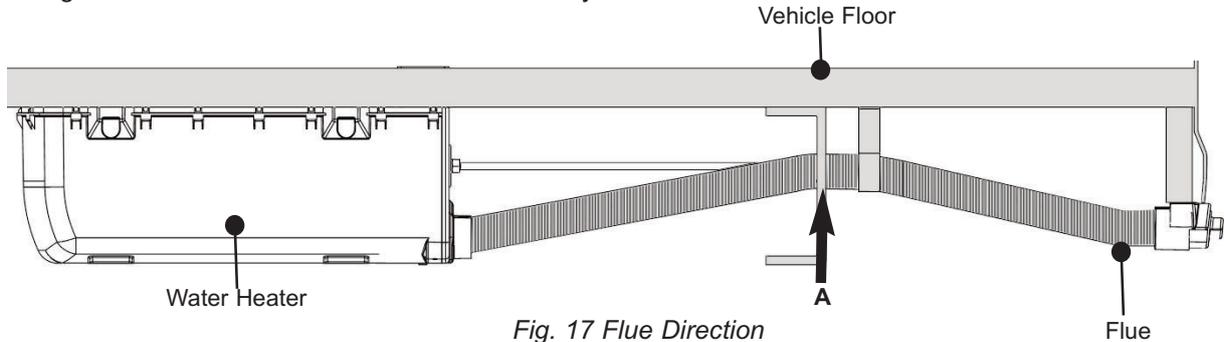


Fig. 17 Flue Direction

The flue **must be** attached to the underside of the vehicle floor with the two brackets supplied. Clip the bracket around the flue and use two screws (No.8 x 3/4") to secure each bracket to the underside of the vehicle floor as per Fig.18.

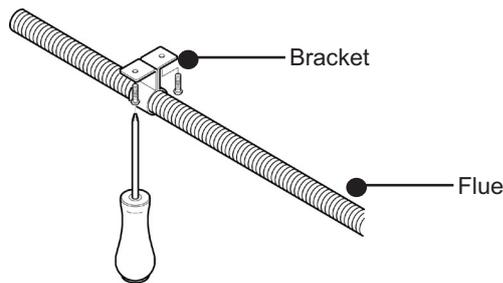


Fig. 18 Attaching Flue Bracket

For Step 6, please proceed to page 16.

INSTALLATION INSTRUCTIONS ONBOARD MOUNTED MODELS

Whale Part Numbers: WW0801O (Suffix: B or R or C) or IW0801O (Suffix: B or R or C) or DW0801O (Suffix: R)

Step 1 Find Suitable Location For Water Heater Installation

Consider the following 8 points:

- i. For weight distribution in caravans, the Water Heater **must be** positioned as close to the axle as possible. The installer **must** avoid locating the Water Heater at the very rear and the very front of the vehicle.
- ii. Any surfaces in contact with the Water Heater **must be** rated to at least 70 degrees C.
- iii. The location **must allow** access for servicing the Water Heater.
- iv. The flue terminal **must be** located at the side of the caravan. Acceptable flue lengths are, 0.75 metres, 1.25 metres and 2 metres.
- v. The flue terminal **must be** positioned at the side of the vehicle, that an awning will **never be** fitted to.
- vi. Only the Whale flue terminal (supplied with this Water Heater) is permitted to be used in conjunction with this Water Heater. This flue **must not** be positioned within 500mm of a refuelling point or fuel tank breather outlet or any ventilator from the fuel system(s). The flue terminal **must not** be fitted within 300mm of a ventilator for the living space or an opening part of a window.
- vii. The flue terminal **must only** be positioned vertically below an opening part of a window, if the appliance is fitted with an automatic shut-off device to prevent operation when the window is open. The flue terminal **must be** a minimum of 300mm below the window.
- viii. If supplied with a reset button, the user must have access to it in order to be able to clear some lockouts.

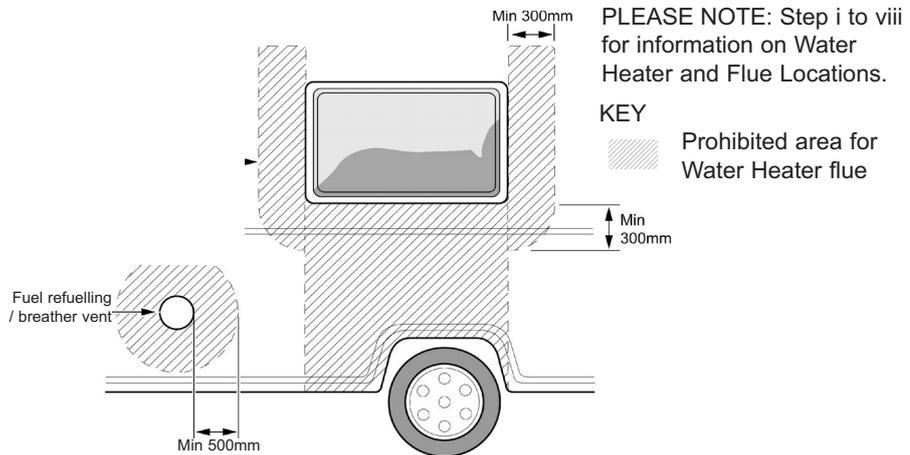


Fig. 19 Installation Locating Diagram

Step 2 Cut Out Holes for Onboard Water Heater

The cut outs in the vehicle floor and screw hole positions are shown in Fig. 20.

*These cut outs can be located anywhere to the front of the Water Heater.
A cut out template is available on request by contacting Whale on +44 (0)345 9090 911.

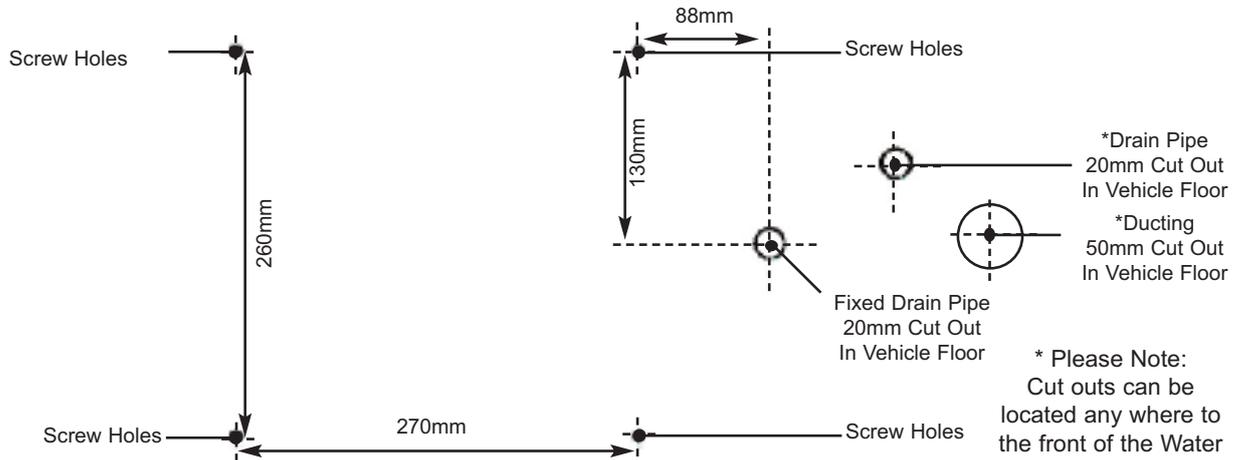


Fig. 20 Cut Out Hole in Floor

**INSTALLATION INSTRUCTIONS
ONBOARD MOUNTED MODELS**

Whale Part Numbers: WW08010 (Suffix: B or R or C) or IW08010 (Suffix: B or R or C) or DW08010 (Suffix: R)

Step 3 Connect Water Heater to Flues

- i. Attach the exhaust flue to the Water Heater by pushing over the flue exhaust outlet on the Water Heater. The flue will push into the red sealing bush by 20mm. Turn the flue clockwise until the clip locks in place behind the plastic cover of the Water Heater. Check that the flue is locked in place by gently pulling the flue away from the Water Heater. The flue is locked in place when it does not come away from the Water Heater when gently pulled.

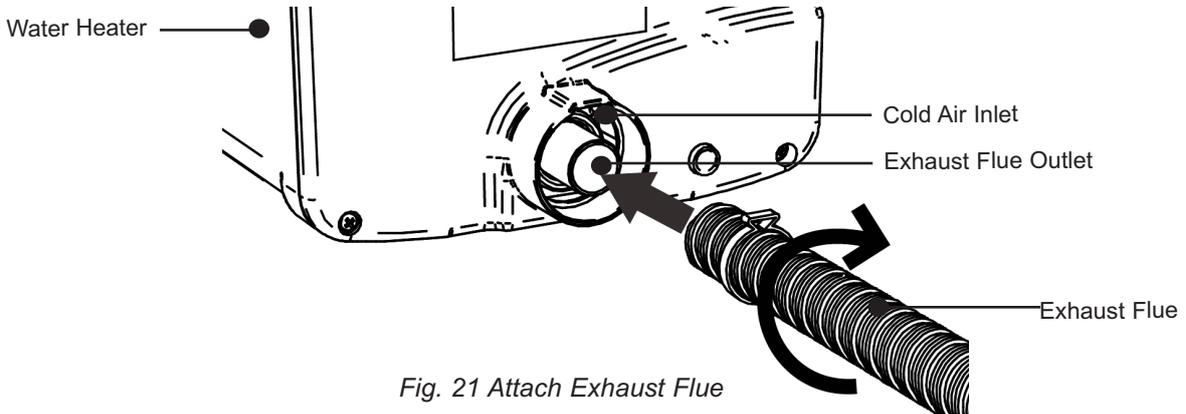


Fig. 21 Attach Exhaust Flue

- ii. Fit the combustion air flue to the Water Heater by sliding it over the exhaust flue and then connect to the Water Heater (as shown in Fig. 22).

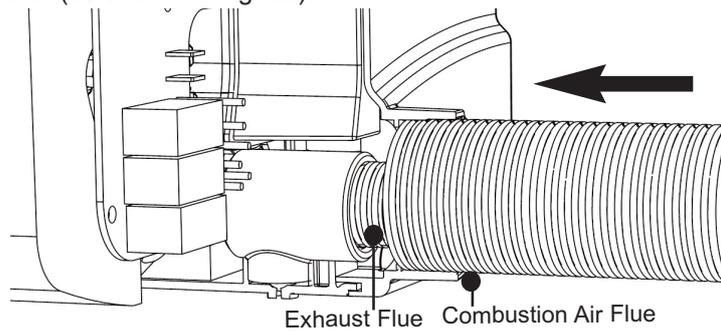


Fig. 22 Attach Combustion Air Flue

- iv. Push the exhaust flue into the rear of the flue terminal (fitted to the vehicle floor) until it will go no further, approximately 50mm. The flue **must be** pushed fully home. Please see Figs. 23A, B and C.

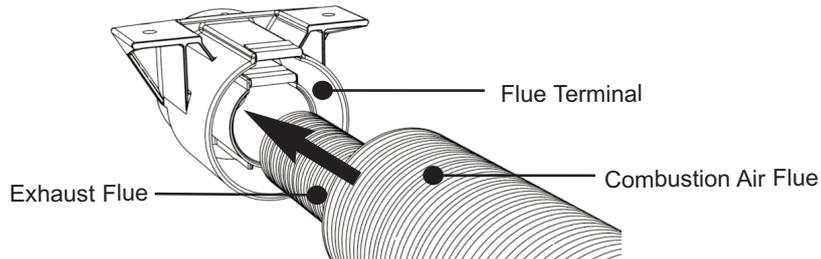


Fig. 23A Attaching Flue to Flue Terminal



- iv. Push the inlet flue into the rear of the flue terminal (fitted to the vehicle floor). The flue **must be** pushed fully home. Please see Figs. 23. The flue **must be** visible in the flue terminal.

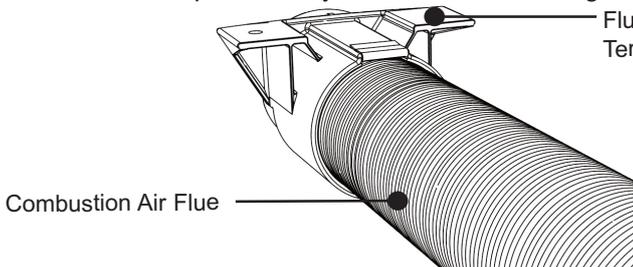


Fig. 23B Attaching Flue to Flue Terminal

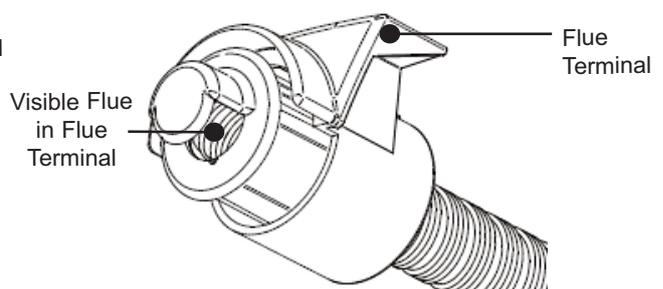


Fig. 23C Attaching Flue to Flue Terminal

**INSTALLATION INSTRUCTIONS
ONBOARD MOUNTED MODELS**

Whale Part Numbers: WW0801U (Suffix: B or R or C) or IW0801U (Suffix: B or R or C) or DW0801U (Suffix: R)

Step 4 Attaching the Flue Terminal to the Vehicle

A wooden spacer may be required to locate the flue terminal below the side valence. Attach the flue terminal with 2 x No.8 x 3/4" pozi screws (not supplied). The flue terminal **must be** at the side of the vehicle, where an awning will **never be** fitted to.

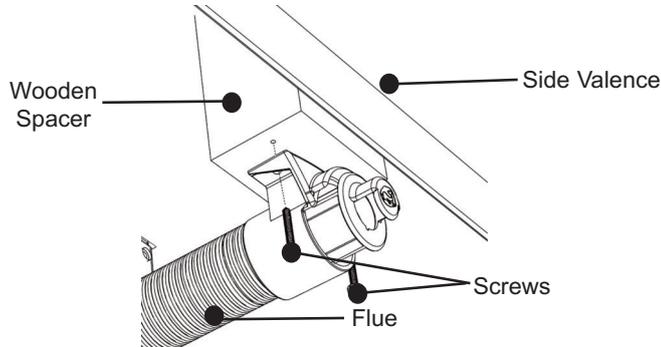
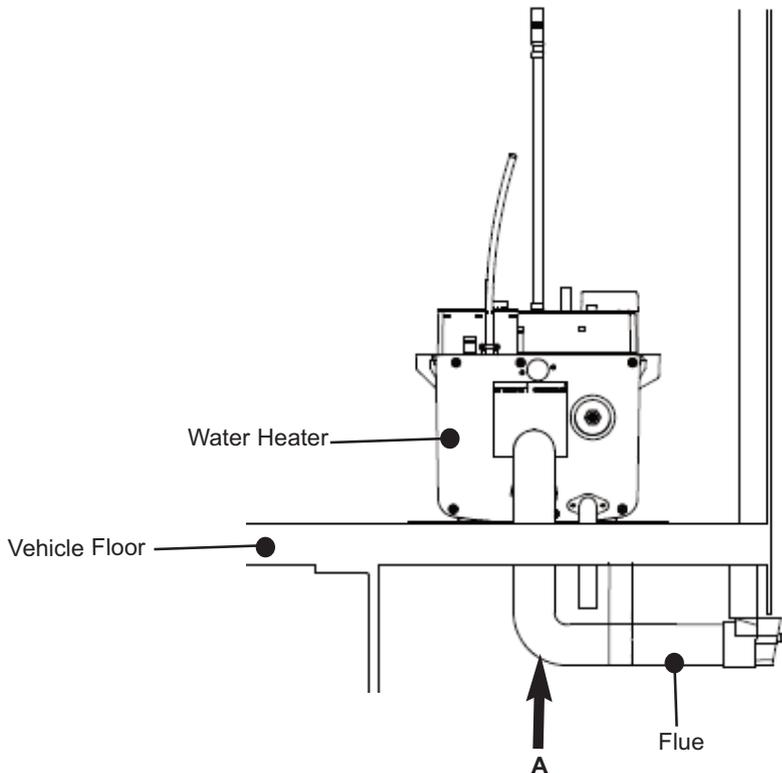


Fig. 24 Attaching the Flue Terminal to the Vehicle

Please note: The flue duct from the Water Heater to the terminal **must** have a maximum of one rise. As shown by point A in Fig. 25. This allows condensate to drain away from the Water Heater.



Please note: When installing flues sharp bends **must be** avoided and the number of bends **must be** minimised.

Fig. 25 Flue Direction

The flue **must be** attached to the underside of the vehicle floor with the two brackets supplied. Clip the bracket around the flue and use two screws (No.8 x 3/4") to secure each bracket to the underside of the vehicle floor as per Fig. 26.

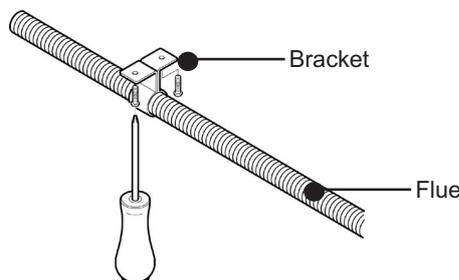


Fig. 26 Attaching Flue Bracket

INSTALLATION INSTRUCTIONS - ONBOARD MOUNTED MODELS

Whale Part Numbers: WW0801O (Suffix: B or R or C) or IW0801O (Suffix: B or R or C) or DW0801O (Suffix: R)

Step 5 Fit The Water Heater to The Floor

- i. Place the Water Heater on the vehicle floor, feed the attached flue, fixed drain pipe and drain pipe through the cut out holes in the vehicle floor.

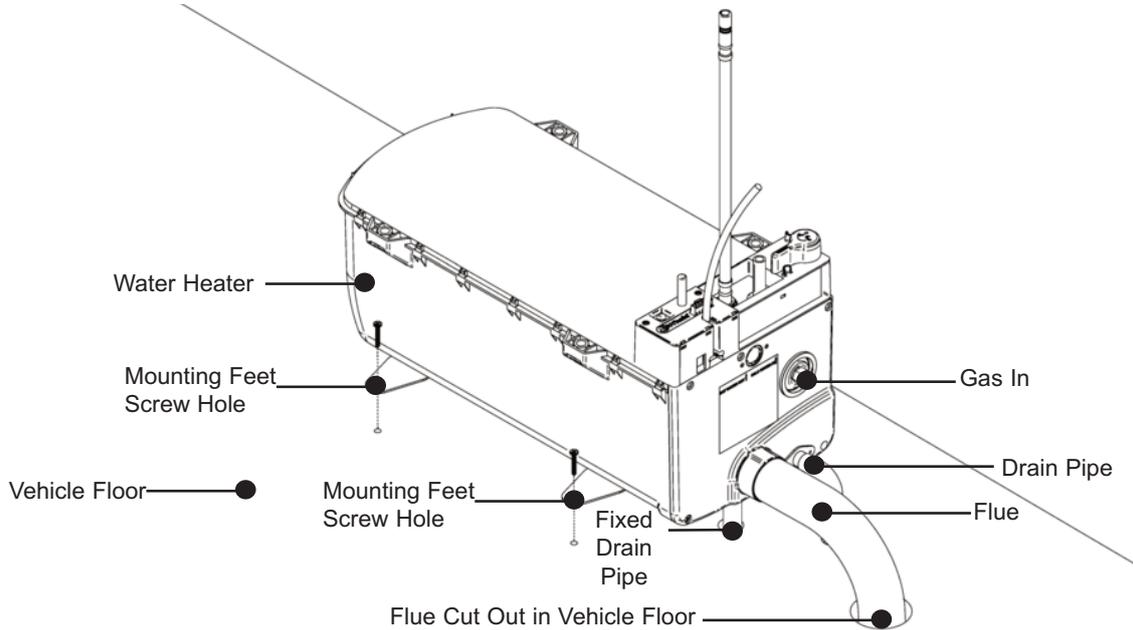


Fig. 27 Place the Water Heater On The Floor

- ii. Attach the Water Heater to the vehicle floor. The screws **must** pass through the mounting feet, as shown in Fig. 28.

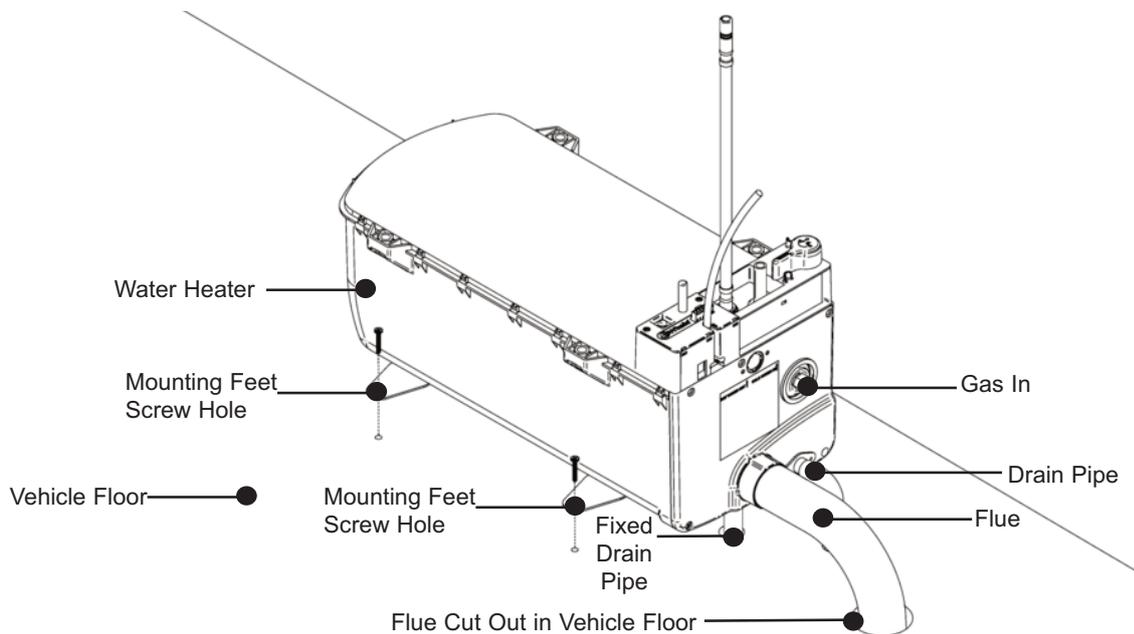


Fig. 28 Secure the Water Heater To The Floor

INSTALLATION INSTRUCTIONS - ALL MODELS

Step 6 Connect to Gas Supply

Please Note: Ventilation **must** comply with relevant local requirements, e.g. EN 721. Gas Valve and connections are to be supplied by the fitter. Adequate gas drop out vents must be installed in the vicinity of the gas connection.

The appliance **must be** installed in accordance with the installation instructions and **must comply** with any relevant regulations in the country where the appliance is installed.

Check the gas pipe of the Water Heater and the main gas supply pipe to ensure it is clear from dirt or other particles. Fit the gas supply to the compression fitting on the Water Heater. The supply pipe **must be** positioned to ensure the Water Heater can be removed for servicing.

Gas shut-off valve **must be** located as close as possible to the Water Heater inside the vehicle and all connections **must be** kept to a minimum.



WARNING: The operating pressure for the gas supply **must** be either 28-30mBar Butane or Propane.

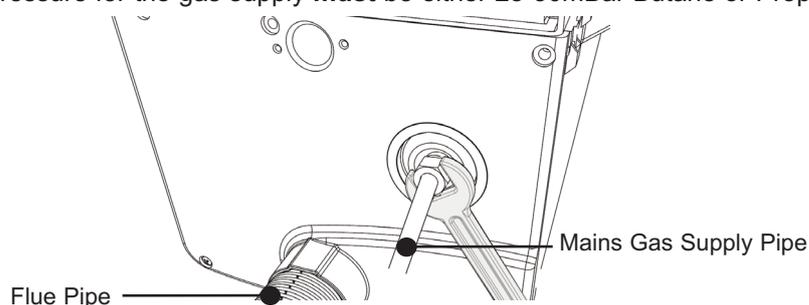


Fig. 29 Connecting Gas Supply

Step 7 Electrical Connections 12V d.c.

Option 1 - Electrical Connections 12V d.c. when fitted with Whale® Water Heater Control Panel

Option 2 - Electrical Connections 12V d.c. when fitted with Whale® Duo Control Panel

Option 3 - Electrical Connections 12V d.c. when fitted with Whale® iVan® Wireless Control Panel



WARNING: Always disconnect the appliance from the power supply prior to working on electrical components. The Water Heater comes complete with electrical connectors fitted.

Please note: A 5 Amp fuse **must be** fitted in the 12V d.c. supply.

Step 7 - Option 1 Installing With Whale® Water Heater Control Panel

The Whale® Water Heater and Control Panels are designed to be integrated into the caravan's wiring loom. The Water Heater is provided with a JST VH series 10 way socket, 7 wires are required to connect the Water Heater to the Control Panel, plus 12V d.c. and 0V d.c. power supply. If a wiring loom is supplied, connect the red wire to 12V d.c. and the white wire to 0V d.c.

Table 1: Showing Electrical Connections when fitted with Whale® Water Heater Control Panel

Wire Number	Description
1	12V d.c. supply
2	0V d.c. supply
3	Switch common
4	Lockout LED
5	Burner LED
6	Burner Switch
7	Immersion 1 switch
8	Immersion 2 switch
9	Blank
10	Frost protection switch

INSTALLATION INSTRUCTIONS - ALL MODELS

Step 7 -

Option 2 -

Installing With Whale® Duo Control Panel

Table 2A: Showing Electrical Connections when fitted with Whale® Duo Control Panel

Wire Number	Description
1	12V d.c. supply for Water Heater
2	Burner switch
3	Immersion 1 switch
4	Immersion 2 switch
5	Burner LED
6	Lockout LED
7	Frost protection switch
8	0V d.c. supply

Option 3 -

Installing With Whale® iVan® Wireless Control Panel

Table 2B: Showing Electrical Connections when fitted with Whale® iVan® Wireless Control Panel

Wire Number	Description
1	12V d.c. supply for Water Heater
2	0V d.c. supply
3	12V d.c. supply for pump
4	Pump 12V d.c.
5	Pump running light
6	Pump 0V d.c.

Step 8 Electrical Connection 230V a.c.



The appliance **must be** installed in accordance with the installation instructions and comply with any relevant regulations in the country where the appliance is installed. Electrical installation **must be** carried out by a suitably qualified electrician. The electrical supply must be connected to a 10 amp fused spur (not provided) with an all-pole disconnection and the appliance **must be** earthed.

If the supply cord is damaged, it **must be** replaced and fitted by Whale® personnel or by a Qualified Approved Whale® Service Engineer.

Manufacturer Installation Example (see Fig. 30)

The Mains Supply Cable is supplied with a JST LP series socket (terminal pins are JST SLM-61T-2.0) and **must be** mounted in a housing with strain relief to prevent accidental disconnection and to prevent access to the connector.

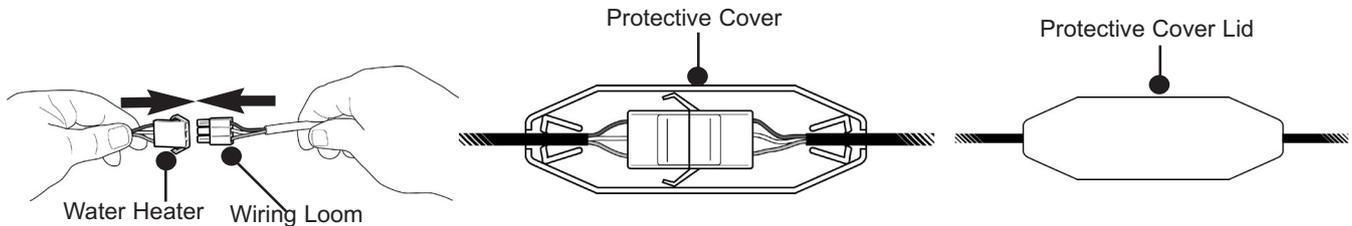


Fig. 30 Mains Electrical Connection

Step 9 Connection to Cold Water Supply (see Fig. 31)

The Water Heater is fitted with Whale® 12mm semi-rigid pipe on the cold water inlet. A Whale® 12mm straight (Whale Part Number: WU1203) or 12mm elbow (Whale Part Number: WU1204) Quick Connect fitting **must be** used to connect to the vehicles cold water supply. A suitable adaptor may be required depending on the plumbing system used. **Please note:** A non-return valve (Whale Part Number: FV1300) **must be** fitted on the cold water supply.

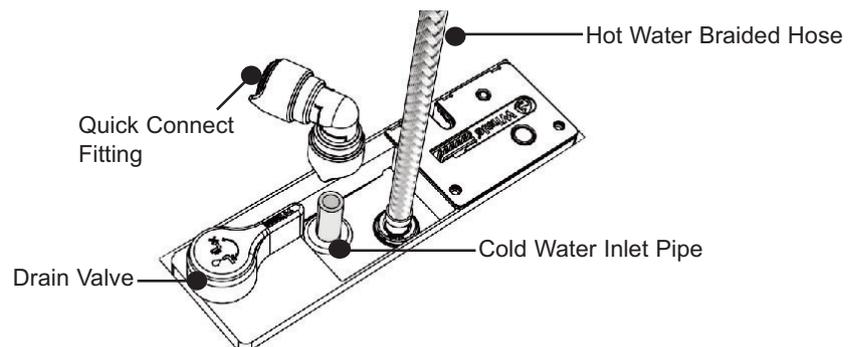


Fig. 31 Connect Cold Water Supply

INSTALLATION INSTRUCTIONS - ALL MODELS

Step 10 Connect Hot Water Supply (see Fig. 32)

To connect the hot water outlet to Whale® 12mm semi-rigid tubing, use the Whale® braided hose (supplied) and a Whale® 12mm Equal Straight fitting (Whale Part Number: WU1204).

For connecting to 13mm (½") flexible tubing use a Whale® braided hose supplied and an Equal Straight fitting (Whale Part Number: WU1204) and ½" Stem Adaptor (Whale Part Number: WU1282).

To connect directly to 10mm (¾") flexible tubing, push the hose over the 12mm port on the end of the braided hose and secure with a hose clip. Please note: **Do not** over tighten.

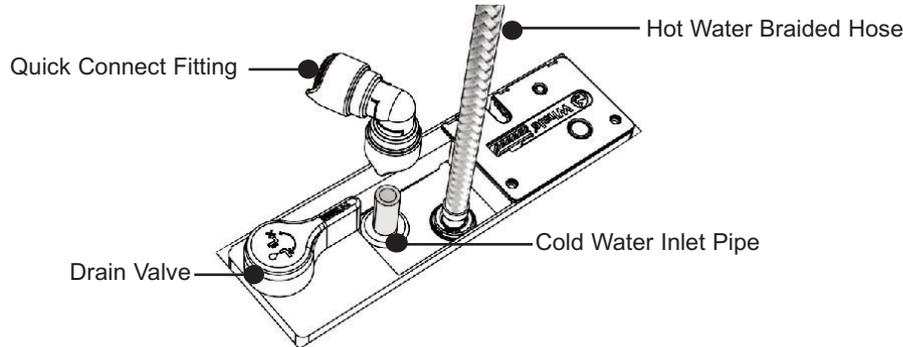


Fig. 32 Connect Hot Water Supply



Please note: The hot water flexible braided hose **must always** be fitted to ensure safe operation.

If you have any other plumbing system, contact Whale® Support Team by telephoning +44 (0)345 9090 911 for further information.

Step 11 Completed Installation

This appliance **must be** installed in accordance with the installation instructions and in compliance with any relevant regulations in the country where the appliance is installed.

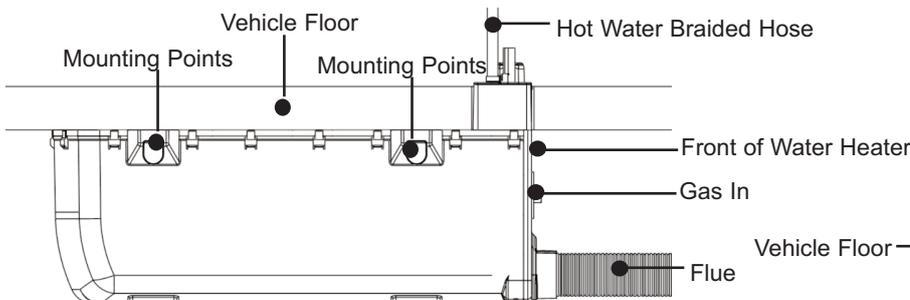


Fig. 33 Completed Installation - Underfloor Models

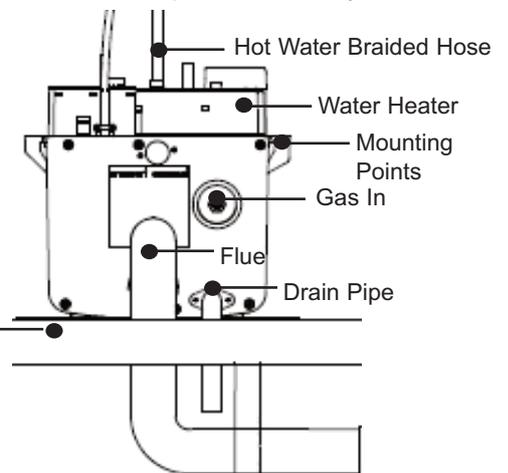


Fig. 34 Completed Installation - Onboard Models

Check the gas pipe of the Water Heater and the main gas supply pipe to ensure it is clear from dirt or other particles. Fit the gas supply to the copper gas pipe of the Water Heater with a compression fitting. The supply pipe **must be** positioned to ensure that the Water Heater can be removed for servicing.

Gas shut-off valve **must be** located as close as possible to the Water Heater and all connections **must be** kept to a minimum.



WARNING: The operating pressure for the gas supply **must be** either 28-30mBar Butane or Propane.

Please note: After completing installation, a full function check including gas soundness **must be** carried out to ensure that the appliance has been installed properly and operates correctly. The gas soundness check **must be** carried out by an accredited LPG engineer and a test certificate for the Water Heater **must be** issued.

7. INSTRUCTIONS FOR USE

To the User: Read the following instructions carefully.



Observe All Warnings.

Never operate the Water Heater without water in it. This appliance **must not** be connected directly to the mains water supply without a pressure regulator fitted, or any water supply greater than 190 kPa (1.9 bar). Ensure that the caravan water system, including this Water Heater is full of water and that the vehicle is level before operating.

If temperatures are likely to fall below zero degree celsius, you **must ensure** that water is drained from the Water Heater. (Unless Frost Protection is in operation).

Please note: The Frost Protection setting is only recommended for a period of 3 days or less. The user **must ensure** that Frost Protection is turned on, activated and remains in operation for the duration for its period of use. Frost damage will not be covered by warranty. If the vehicle will not be in use for longer than 3 days, the water system **must be** fully drained.

The Installer and Vehicle Manufacturer are responsible for providing user instructions and identification of symbols on the control panel. When using operating switches provided by the Installer or Vehicle Manufacturer, the Installer or Vehicle Manufacturer are responsible for providing user instructions and identification of symbols on the Control Panel.

For operation of this Water Heater, a 12V d.c. supply **must be** connected at all times. To operate the Water Heater's electric elements, it **must also** be connected to a suitable 230V a.c. supply.

Step One: Upon initial operation or to refill after the system has been drained, check that the drain valve is closed, (see Fig. 38A) then fill the system with clean fresh water.

Step Two: To fill, open one hot tap and switch on the water pump.

Step Three: Leave the tap open to allow air to escape while the Water Heater is filling. When water flows smoothly out of the hot tap, the water heater is filled. To allow the remainder of air to escape from the system, open each hot water tap in turn until water flows smoothly from each tap.

Option 1 Whale® Water Heater Control Panel

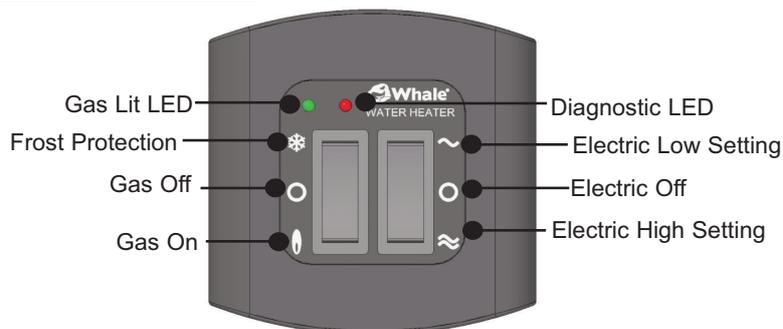


Fig. 35 Whale Water Heater Control Panel

Gas Operation. Operate the left-hand switch to the 'On' position. There will be a pre-purge pause of approx. 15 seconds to allow any unburnt gas to leave the flue. A green LED will light upon successful flame ignition. If there is air in the gas supply line, it may take a few attempts for the gas to ignite. See Section 9 for gas lockout re-setting. If the ignition is not satisfactory, the red LED will flash - refer to the Trouble Shooting Guide (see section 9).

Electric Operation. The Water Heater is equipped with twin 750W (230V a.c.) immersion heater elements offering operation at 750W or 1500W. Operate the right-hand rocker switch to the top position (~) to turn on one electric element. To turn on both electric elements, operate the right-hand rocker switch to the bottom position.

Note: The electric elements will still operate if the appliance is in gas ignition lock-out.

Gas and Electric Operation. For faster water heating, the appliance can be operated with both gas and electric simultaneously. Select 'Gas On' (left-hand rocker switch) and one of the electric settings (right-hand rocker switch).

Switching The Appliance Off. Operate the left-hand gas switch to the centre 'Off' position (O) and the right-hand electric rocker switch to the centre 'Off' position (O).

Protection Against Frost. If the Water Heater is not going to be used for more than 3 days, isolate the gas supply, by ensuring the gas shut off valve is closed and that the mains gas supply is turned off. The Water Heater **must be** fully drained if there is a risk of freezing (unless Frost Protection is selected on the control panel).

Please note: The user **must ensure** that Frost Protection setting is turned on, activated and remains in operation for the duration of its use. This **must not** exceed 3 days. Frost damage will not be covered by warranty.

Option 2 - Whale[®] Duo Control Panel

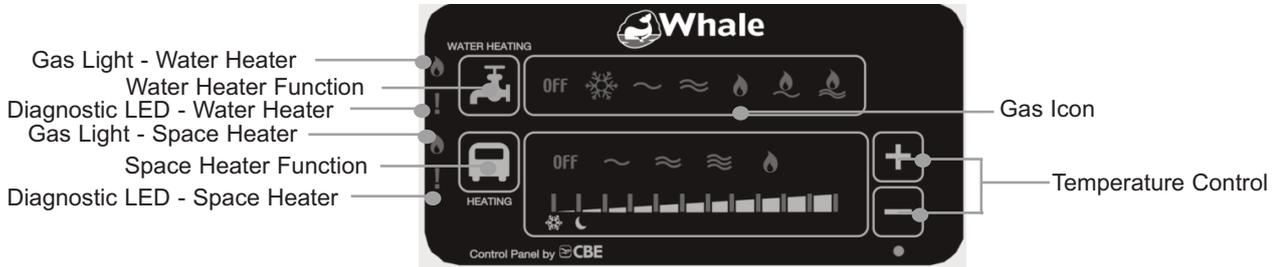


Fig. 36 Whale Duo Control Panel

For Gas Operation - Water Heater: Press the Water Heater Function key until the 'gas' icon is illuminated. There will be a pre-purge pause of approx. 15 seconds to allow any un-burnt gas to leave the flue and will extinguish when the water is up to temperature. A green LED will light upon successful flame ignition. If there is air in the gas supply line, it may take a few attempts for the gas to ignite. See Section 9 for gas lockout re-setting. If the ignition is not satisfactory, the red diagnostic LED will flash - refer to the Troubleshooting Guide (see Section 9).

For Electric Operation - Water Heater: The Water Heater is equipped with twin 750W immersion heater elements offering operation at 750W or 1500W.

For 750W, press the Water Heater Function key until the 'low power setting' icon is illuminated.



For 1500W, press the Water Heater Function key until the 'high power setting' icon is illuminated.



Note: The electric elements will still operate if the appliance is in gas ignition lock-out.

Gas and Electric Operation: For faster heating, the appliance can be operated with both gas and electric.

Press the Water Heater Function key until the desired function is illuminated.

For 750W and Gas, press the Water Heater Function key until the desired setting is illuminated.



For 1500W and Gas, press the Water Heater Function key until the desired setting is illuminated.



Switching Appliance Off: Press the Water Heater Function key until 'Off' is illuminated.

Frost Protection Setting: The control panel incorporates a low temperature / frost protection setting. This can be activated by pressing the Water Heater Function key until the frost icon is illuminated. **Please note:** The user **must ensure** that Frost Protection setting is turned on, activated and remains in operation for the duration of its use. This **must not** exceed 3 days. Frost damage will not be covered by warranty.



Note: For Frost Protection to be active, the 12V d.c. supply must be on along with the power source i.e. gas supply or 230V a.c.

Protection Against Frost. If the Water Heater is not going to be used for more than 3 days, isolate the gas supply, by ensuring the gas shut off valve is closed and that the mains gas supply is turned off. The Water Heater **must be** fully drained if there is a risk of freezing (unless Frost Protection is selected on the control panel).

Table 3: Whale Water Heater Control Panel Functions

Symbol	Setting	Description
OFF	OFF	Water Heater will be off.
	Gas	Water Heater will operate on gas. There will be a pre-purge time of around 20 seconds before ignition. When the gas is lit, the green LED will be illuminated. If the Water Heater fails to light for any reason, the red '!' symbol will be illuminated. Refer to Troubleshooting Guide (Section 9).
	Electric Low	Water Heater will operate at LOW on electric setting.
	Electric High	Water Heater will operate at HIGH on electric setting.
 or 	Boost / Dual	The Water Heater will operate on gas and electric simultaneously. When the gas is operating, the green flame symbol will be lit. If there are any problems with operation, the red '!' symbol will be illuminated, refer to Troubleshooting Guide (see Section 9).
	Frost Protection	The Water Heater will operate on electric (if available), otherwise on gas. Frost Protection will heat the water to prevent freezing at low temperatures. Frost Protection will only activate if a power source is both connected and turned on. Frost Protection must not be used for more than 3 days at one time.

Please Note: In cold temperatures, the water in the supply pipe work may freeze and prevent the tank filling.

Option 3 Whale iVan® Control Panel

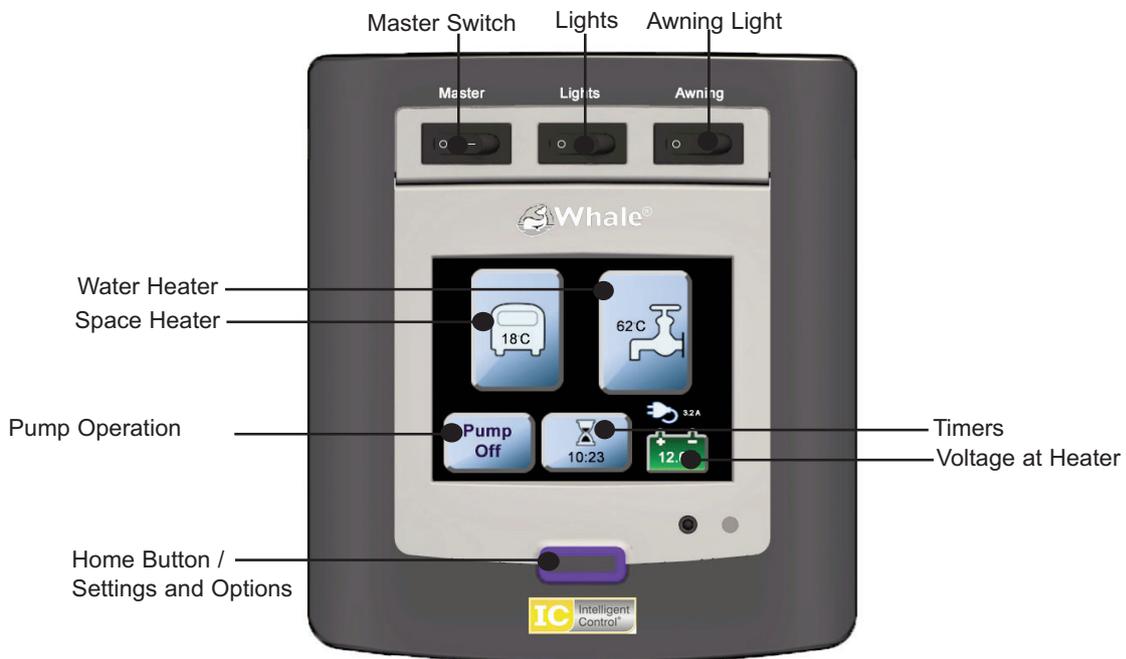


Fig. 37 Whale iVan® Control Panel

Operating the Water Heater

1. From the home screen, touch the 'tap' icon



2. Select the desired setting by touching one of the icons. The icon will turn green to show it has been activated.

3. Eco mode can be selected to maintain water temperature at an environmentally friendly 50 to 55°C.



Operating the Space Heater

1. From the home screen, touch the 'van' icon:



2. Select the desired setting by touching one of the icons. The icon will turn green to show it has been activated.

OPERATING INSTRUCTIONS - DRAIN VALVE

The Water Heater **must be** drained before travelling or if it is not being used for a period of more than 3 days, or if there is a danger of freezing (unless Frost Protection setting is active). The drain valve is located at the top of the Water Heater, beside the cold and hot water inlet. To operate the drain valve, turn the yellow lever clockwise 90 degrees.

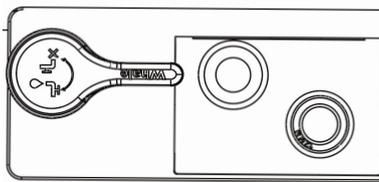


Fig. 38A Drain Valve - Closed Position

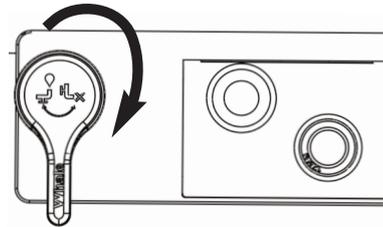


Fig. 38B Drain Valve Open Position

General Safety Notes: The operating pressure of the gas supply to the Water Heater **must be** either 28-30mBar Butane or Propane.

8. MAINTENANCE

To clean and sterilise inside the Water Heater use diluted sterilising fluid and fully rinse through with clean water afterwards. The outside of the appliance should not normally require cleaning. If it does, isolate the electrical supplies and wipe down with a soft, damp cloth only. Do not use abrasive cleaners. Allow to fully dry before reconnecting the electrical supplies. If descaling of this appliance is required, this can be done using a domestic liquid de-scaling product and fully rinse through with clean water afterwards. Cleaning and user maintenance **must not** be carried out by children without supervision.

Please Note: Water will drip from the discharge pipe of the pressure-relief valve during heating up. The pressure relief valve **must be** operated regularly (at least twice a year) by turning the yellow lever in the anti-clock wise direction (see Fig. 38B), to remove lime deposits and to ensure that it is not blocked.

The Whale[®] Water Heater **must be** checked periodically by a Whale[®] Approved Service Centre / Technician, or competent person, at least annually. This **must be** completed according to the practice in the country where it is used and according to the Whale[®] instructions. Whale recommends annual testing of gas soundness and combustion by an accredited LPG engineer. The appliance contains ESD sensitive components and therefore **must only** be opened by a Whale[®] Approved Service Centre / Technician.

To contact Whale[®] Support, telephone +44 (0)345 9090 911.

9. TROUBLE SHOOTING

Option 1 - Whale Water Heater Control Panel

The heater is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas or d.c. supply to internal heater malfunctions. In the unlikely event of a failure, the red light on the control panel will flash a number of times, pause, and repeat until switched off. Count the number of flashes and refer to the table below.

Number of flashes	Fault	Remedy
1	No flame detected	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. Ensure that if the temperature is below 5°C, only propane gas is used. Clear lockout as described below. Check combustion air inlet flue and exhaust flue for blockages.
2	Overheat	Check there is water in the appliance. We recommend you wait at least 5 to 10 minutes to allow the heater to cool before clearing lockout as described below.
3	Low/high supply voltage	Minimum operating voltage is 10V, maximum is 15V, when measured at the heater. Check battery voltage. If between 10V and 15V, check connections between heater and battery. Check alternator or external battery charging. Clear lockout as described below.
4	Air Proving	Check combustion air inlet flue and exhaust flue for blockages.
5	Other / internal fault	Attempt to clear lockout as shown below. If this fails, contact Whale Support on +44 (0)345 9090 911.

Gas Lockouts

Gas lockouts **must be** cleared by moving the gas switch from 'on' position to 'off' position then back to the 'on' position. The complete sequence of switch movements **must be** completed within 2.5 seconds for a lockout to be successfully cleared. If there is air in the gas line, e.g. after a gas bottle change, the Water Heater may require several attempts before it lights.

Other Lockouts

If the lockout is caused when the unit is operated on electric, the lockout can be cleared by moving the electric switch from 'on' position to 'off' position then back to the 'on' position. The complete sequence of switch movements **must be** completed within 2.5 seconds for a lockout to be successfully cleared.

Note: A cycling of the power supply to the unit will not clear a lockout. Some gas lockouts, e.g. ignition lockout will still permit use of the appliance in electric only operation.

When using the Water Heater in winter ensure the flue is not blocked by snow or fallen leaves etc.

Option 2 - Whale Duo Control Panel

In the unlikely event of a failure, the red '!' symbol on the Control Panel will light. To identify the lockout press and hold the Water Heater Function Button. The temperature control bars will light to indicate the fault code e.g if 1 bar lights, the fault code is 1, if 2 bars lights, the fault code is 2 etc. Identify the fault code and refer to the table below.

Table 4: Water Heater Fault Finding

Number of flashes / Bars lit	Fault	Remedy
1	No Flame Detected	Check gas supply making sure there is gas in the bottle and no blockage in the gas line. At temperatures below 5°C, use propane gas rather than butane. Clear lockout as described below. Check combustion air inlet flue and exhaust flue for blockages.
2	Overheat	Check that there is water in the appliance. Whale recommends that you wait at least 5 to 10 minutes to allow the Water Heater to cool before clearing lockout as described below.
3	Low/High Supply Voltage	Minimum operating voltage is 10V d.c., maximum is 15V d.c., when measured at the Water Heater. Check battery voltage. If between 10V d.c. and 15V d.c., check connections between Water Heater and battery. Check alternator or external battery charging. Clear lockout as described below.
4	Air Proving	Check combustion air inlet flue and exhaust flue for blockages.
5	Other / Internal Fault	Attempt to clear lockout as described below. If this fails, contact Whale Support on +44 (0)345 9090 911.
All bars lit	General Fault	Two faults have occurred at the same time OR at least five lockout clearing attempts have been unsuccessful. Clear lockout by pressing the red Reset Button on the Water Heater as described below.

Lockout Clearing Procedure

If the Water Heater lockout condition has been identified by **3, 4 or 5 flashes / bars lit**, the lockout **must be** cleared by turning the d.c. power 'off' and then 'on' again at the master switch in the vehicle. If the first attempt is unsuccessful, you can retry an additional 4 times. If the lockout still will not clear (identified by all bars lit), please press the red Reset Button on the Water Heater for 1 second. The Reset Button can be found beside the drain valve (see Fig. 38B).

If the Water Heater lockout condition has been identified by **1 or 2 flashes / bars** or **all bars lit**, please press the red Reset button for 1 second.

Option 3 - Whale iVan® Control Panel

iVan® is equipped with an electronic diagnostic system which will detect fault conditions ranging from poor gas or d.c. supply to internal Water or Space Heater malfunctions. In the unlikely event of a fault, this will be indicated by a red '!' on the Water or Space Heater icon on the Home Screen.



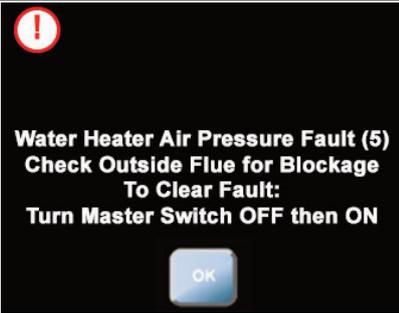
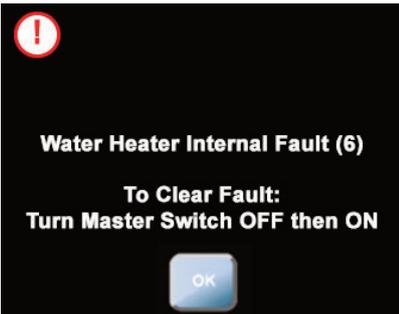
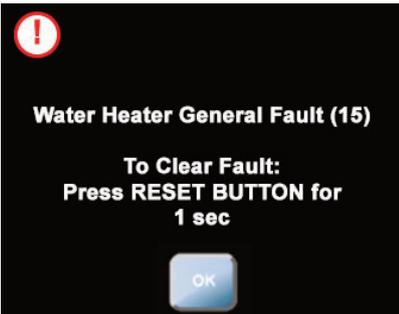
The Water Heater will not operate when a fault is indicated on the home screen. A pop-up screen will appear when you attempt to operate the Water Heater. The pop-up screen identifies the fault. As soon as you have completed the suggested actions on the fault screens below, you **must** clear the fault code by pressing 'OK'.

When the lockout has been cleared successfully, the Water Heater will default to 'Off'. The user must select the desired power operation to operate the Water Heater. Please follow the advice on screen, as outlined in the table below.

Table 5: Water Heater Fault Screens

Fault	Fault Screen	Solution
<p>“Check gas supply” (1)</p>		<p>Ensure that there is gas in the gas bottle and that there is no blockage in the gas line. At temperatures below 5°C, use Propane gas rather than Butane. Once the checks are complete, press the red Reset Button on the Water Heater once, then press OK on the iVan® Control Panel. This will clear the fault code. If there is a problem with the gas supply which cannot be dealt with immediately, select an electric heating option. The Water Heater is not getting enough air through the flues - check the flue ends (outside the vehicle) and clear any obstructions away from them. When the check is complete, clear lockout by turning the Master Switch 'off' then 'on', then press OK on the iVan® Control Panel. This will clear the fault code. If the fault does not clear, please contact Whale Support on +44 (0)345 9090 911.</p>
<p>“Gas overheat fault” (2) OR “Electric overheat fault” (3)</p>		<p>Check that the Water Heater is completely full of water. Run the pump with one hot tap open until water flows smoothly out of the tap. Wait at least 10 minutes to allow the Water Heater to cool, press the red Reset Button on the Water Heater once, then press OK on the iVan® Control Panel. This will clear the fault code. If the fault does not clear, please contact Whale Support on +44 (0)345 9090 911.</p>

Table 5: Water Heater Fault Screens (Continued)

Fault	Fault Screen	Solution
<p>“Voltage Supply fault” (4)</p>		<p>Minimum operating voltage is 10V d.c., maximum is 15V d.c., when measured at the Water Heater. Check battery voltage. If between 10V d.c. and 15V d.c., check connections between Water Heater and battery. Check alternator or external battery charging. Clear lockout by turning the Master Switch ‘off’ then ‘on’, then press OK on the iVan® Control Panel. This will clear the fault code. If the fault does not clear, please contact Whale Support on +44 (0)345 9090 911.</p>
<p>“Air pressure fault” (5)</p>		<p>The Water Heater is not getting enough air through the flues - check the flue ends (outside the vehicle) and clear any obstructions away from them. When the check is complete, clear lockout by turning the Master Switch ‘off’ then ‘on’, then press OK on the iVan® Control Panel. This will clear the fault code. If the fault does not clear, please contact Whale Support on +44 (0)345 9090 911.</p>
<p>“Thermistor fault” (6) OR “Flame simulation fault” (7) OR “Relay sense fault” (8) OR “Start-up fault” (9) OR “Configuration fault” (10) OR “Switch fault” (11)</p>		<p>An internal fault has occurred, clear lockout by turning the Master Switch ‘off’ then ‘on’, then press OK on the iVan® Control Panel. This will clear the fault code. If the fault does not clear, please contact Whale Support on +44 (0)345 9090 911.</p>
<p>“General fault” (15)</p>		<p>Two faults have occurred at the same time OR at least five or more lockout clearing attempts have been unsuccessful. Clear lockout by pressing the red Reset Button on the Water Heater once. If the fault does not clear, please contact Whale Support on +44(0)345 9090 911.</p>

10. WINTERISING / DRAINING



When using the Water Heater in winter, ensure the flue is not blocked by snow or fallen leaves etc. When not in use, the Water Heater **must be** fully drained. This is particularly important during the winter months as a precaution against freezing. To drain, switch off the water pump at either the pump switch or main switch. Open all the hot water taps in the vehicle and operate the drain valve fitted in the system. The drain valve **must be** left in the “open” position to ensure all the water drains out.

11. SERVICE SUPPORT DETAILS

For installation or serviceable parts advice please contact Whale® Customer Support:

Tel: +44 (0)345 9090 911 Email: info@whalepumps.com

12. EU DECLARATION OF CONFORMITY

Description of Equipment: **Gas and Electric Storage Water Heater**

Manufacturer's Declaration

We hereby declare, under our sole responsibility, that the above equipment complies with the provisions of the following EC Directives:

Gas Appliance Regulation (EU) 2016/426 (GAR) on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.

Low Voltage Directive 2014/30/EU on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

Electromagnetic Compatibility Directive 2014/108/EC, on the approximation of the laws of the Member States relating to electromagnetic compatibility.

CE mark first affixed: 2014

Basis on which conformity is declared

The above equipment meets the protection requirements of the EMC Directive and the principal elements of the safety objectives of the Low Voltage Directive.

Please contact Whale® if further details are required.

Richard Bovill
Engineering Director

13. PATENTS AND TRADEMARKS

The Whale® Expanse Water Heater is protected by the following patent and design registrations: - Patent number: EP 2438364, WO 2010091836, WO 2010091836. Patents Applied for : 1414454.7, 1414462.0, 1414465.3
WHALE® and IVAN® are registered trademarks and EXPANSE™ is an unregistered trademark of Munster Simms Engineering Limited, Bangor, Northern Ireland.

14. WARRANTY

The Whale® Water Heater is covered by a 2 year warranty.

Please complete the enclosed warranty card and return to Whale.
For warranty details, please see the enclosed Warranty Statement.

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WHALE®, is a registered trademark of Munster Simms Engineering Limited, Bangor, Northern Ireland trading as Whale. Whale's policy is one of continuous improvement and we reserve the right to change specifications without prior notice. Illustrations are for guidance purposes only.

Neither the accuracy nor completeness of the information contained in this or any product literature is guaranteed by the Company and may be subject to change at its sole discretion.

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