

**PUNDMANN**

## Stay wild with Off Grid Creature Comfort Water Heaters for Camper Vans and more.....

Wherever your adventures take you, enjoy the creature comforts of warm water, for washing up or a quick wash down.

Question	Answer
How is the water heated	3 ways depending on the heater <ul style="list-style-type: none"> <li>• 12v – Has a 180w (3L) or 200w (6L&amp; 9L) immersion heater</li> <li>• 230v (240v compatible) has a 500w immersion heater</li> <li>• Air Model – uses the hot air flow from a diesel heater, efficiently through the cylinder heat exchanger</li> </ul>
How much power does it take	DC 12V 180W = 15.00 A Used in 3 litre unit DC 12V 200W = 16.67 A Used in 6 litre and 10 litre units DC 24V 400W = 16.67A Used in 3/6/10 litre 24v units AC 240V 250W = 1.04 A Used in 3 litre unit AC 240V 500W = 2.08 A Used in 6 litre and 10 litre units
Which size of water heater tank do I need	3, 6 or 10 litre – Consider the availability of cold water and the space you have available A modest shower uses around 5litres of water so our 6L model would provide more than enough water for a couple of showers A 3L unit will provide adequate hot water for washing up and a quick wash down.
What are the dimensions of the tanks	3l - (WxDxH): 228 x 217 x 200 mm 4.9kg 6l - (WxDxH): 228 x 360 x 200 mm 6.7kg 9l - (WxDxH): 228 x 520 x 200 mm 8.4kg 85mm allowance required for to the depth for the pipes and pressure release valve
What is the unit made of	The tanks are made of food grade (304) stainless steel. The electric heating rods are also made of food grade (304) stainless steel.
Pressure Safety release valve.	The working operating pressure for the water heater is 2.3 bar. The setting for the safety valve is 3.0 bar, if the pressure inside the cylinder increases to 3.0bar the safety valve will open and pressure will be released above.  A hose should be attached to this and directed to a safe place in case of pressure release.  The safety valve is dual purpose and can be used to empty the tank of water for longer storage or winterising of you unit.
What pressure does the tank withstand?	The units are all tested to above 4bar and are fitted with a 3.0 bar pressure release valve.
Water Temperature and heating times	Heating times will vary according to the ambient temperature of the water, the size of the tank and the type of power you are using.  The 12V 3l tank has a 180W heating rod which takes approximately 60 minutes to achieve 70°C. The 230V heating rod is 250W and will be faster.  You can have both and use both at the same time for faster heating.
How is the heating element controlled?	The built-in heating elements heat the water to 70°C and are controlled by an internal thermostat. The water heater must be full of water before turning any supply of heat on. The heating elements are 230V-500W, 12V200W depending on which heater you have chosen.  You can have both and use both at the same time for faster heating. If the temperature of the water falls below 65°C the heating rods will switch back on (and if there is a power supply.)
Water safety	Warm water can create an environment for bacterial growth.  Legionella bacteria is commonly found in water. The bacteria multiply where temperatures are between 20-45°C and nutrients are available. The bacteria are dormant below 20°C and do not survive above 60°C.
How do you control the maximum temperature with the AIR heater?  What is the water temperature if installed 500mm from heater?	There is no automatic cut off when using the air flow from your diesel heater so water can become very hot.  For safety against scalding, it is essential that you install a thermostatic mixing valve when installing an air heater.
What is a thermostatic blender valve?	A blender valve blends the hot and cold water before the water arrives at the tap controlling the maximum hot water temperature safely from the tap.  This is usually restricted to 43°C. It will shut off water supply if there is no cold water.  As well as being safe it increases the amount of hot water available.
Will it stay warm without power overnight?	Yes, the unit has an insulated jacket which will slow down the cooling of the warm water.
How do I protect my leisure battery?	An easy option is to install a relay so the 12v water heater is only powered when the vehicle engine is running.
Emptying or Winterising the Water Heater	If the boiler is not going to be used for a long time or winterising, the water must be drained from the boiler. Before emptying the boiler, it must be disconnected from all power supplies. The boiler is easily emptied by opening the safety valve once the water has been drained from the rest of the circuit.  Options: You might choose to add a release nut to make this easier. You could install a frost monitor, which drains the water-bearing parts in the boiler when frost sets in.
How do you stop the water pulsing?	The water pump you have may be adjustable alternatively you can install an accumulator which smooths the water flow.
Do you need to install an expansion valve	No, this is not essential as we install a pressure release valve. The installation of an expansion valve and or accumulator are good options to consider.
What water pump size PSI do you recommend?	Most 12v water pumps with a maximum 2.0bar / 30 psi with a flow rate of 10 litres per minute. We would recommend this unit if you were keen to enjoy a short shower.
What flow rate in litres per minute?	A lower rated pump with 1.1bar/20psi and 7litres per minute is ideal with the 3-litre unit.
Can the units be externally mounted or underslung?	Yes, we offer and optional stainless-steel covers for each boiler. Please see our price list for further information.
Can I install the unit vertically?	The units are best installed horizontally for maximum operating efficiency.  The units can be installed vertically the pressure release valve must be facing down.  Installing vertically does affects the performance and lowers its overall heating effectiveness
Plumber's tip	We recommend all valves should be installed with a PTF or similar tape. Martyn recommended the use of Loctite 45 as ideal.
Electrical Control Installation Options	When wiring in the 12v unit you might consider a couple of options to minimise the risk of draining your battery. <ul style="list-style-type: none"> <li>• An illuminated on / off switch</li> <li>• Wire the unit into your ignition loom</li> <li>• Wire into a suitable control panel</li> <li>• Install a Voltage controller (such as Solaris) which will turn on the electric element when the battery voltage hits a programmable threshold and turns it off when it drops below a separate threshold.</li> </ul>
Electrical Power Wiring	The AC units are designed to be hooked up directly to the mains power supply with a 5amp fused plug  Please note: Do not connect the 12VDC and 230V AC circuits together. The 230V / 240V lines must always be installed separately from 12V lines. For example, in a separate cable duct.
Safety Guidance	We strongly recommend you install a carbon monoxide detection alarm whenever you install a diesel heater
Warranty	Our water heaters have a 3-year return to base warranty  The Autoterm diesel heaters have a 2-year return to base warranty