

Hot and cold water systems

Any fresh water left in a system over the winter is likely to cause damage. There are **10** approaches to mitigate this problem, but not all of them are effective.

1. Employ a professional engineer to completely remove all the fresh water from the system - a 'drain-down'

A professional drain-down is the safest option. The engineer should use equipment that blows compressed air through the system. This way the double check valves that feature in plumbing components, such as shower mixers, are opened and all the water will be removed from the system.

The pressure of the compressed air or gas should be limited to 3bar as damage may be caused to boiler components or taps/mixers if the pressure is higher. The compressor or gas source must not introduce any lubrication oil or other contaminants into the water pipes.

For combi boilers, the appliance must be turned off at the electrical mains to avoid the boiler mistaking the flow of air/gas with the flow of water. A professional engineer will leave the plugs out of the draincocks and tie a small bag around the draincocks to stop insects using them as a home for the winter. A drain-down should be looked upon as a mini insurance policy.

If the caravan holiday home is being used during the winter then repeatedly draining down and recommissioning each time the home is left and revisited may be seen as too much effort and cost. However, it only takes one freezing night for the system to be damaged and the cost of the repair needs to be added to the inconvenience of turning up to a home that has no heating and/or hot water.

2. Isolate the freshwater supply

This is routinely carried out by park staff and homeowners alike. The freshwater supply to the home should be switched off whenever it is unoccupied to avoid flooding. This will ensure that any frost damage will be limited to pipework, taps and appliance components. Disconnecting the supply pipe will ensure that any stopcock failure will not cause flooding.

3. Installing a trace heating system

Some holiday home manufacturers offer trace heating on new homes. This involves a resistive wire being attached to the entire length of the cold and hot water pipe network underneath and within the home. Insulation is then fitted around the pipe as normal. When a thermostat senses the temperature has fallen below approximately 5°C, an electric current is passed along the wire and this generates heat. Once the ambient temperature rises the current is switched off. Mains electricity will need to be supplied to the home throughout the winter months for this to work. Retrofitting trace heating to an existing home is a laborious task as it involves removing all existing hot and cold water pipe lagging and then replacing it after the trace heating wire has been fitted. Extremely cold weather can still damage boiler components and taps/mixers as the trace heating is only applied to the pipes that connect to these components.

4. Increasing the insulation around the pipes

Increasing insulation around pipes will have a positive impact. The time the water in the system takes to freeze for any given air temperature will be prolonged. Extended periods of freezing weather will, however, overcome the extra protection provided by insulation and frost damage will occur. Extra insulation therefore reduces the chance of frost damage but does not remove the risk.



The coil on the left is the heating element and the coil on the right is the temperature sensor. A mains supply cable needs to be added.