

The likely timeline is as follows:



6.00pm

Watch Michael Fish confirm it is going to be a freezing night on the weather report



10.00pm

Check the heating is set to keep the inside of the home warm all night



3.00am

Ice starts to form in the pipes under the home increasing the pressure in the unfrozen water inside the home



4.00am

The pressure inside the mains water part of the warm combi boiler exceeds its 10bar design specification. The shower mixers have already exceeded their 6bar maximum and been damaged



4.30am

The O-ring seals in the boiler give way - minimal water leaves the boiler as the mains water supply to the home is frozen solid



8.30am

The customers wake up after a warm night in bed and find that they cannot fill the kettle or take a shower as the pipes under the van are frozen. The owners look inside the boiler cupboard and utter a sigh of relief as there is no water on the floor and so obviously no damage has occurred



1.00pm

The bright sunny winter's day causes the frozen water in the pipes under the home to thaw. The good news is the kettle can now be filled, the bad news is that mains pressure water pours past the displaced and damaged O-rings in the boiler, filling the boiler cupboards with water



1.05pm

The customer turns off the stop tap to stop further damage



5.00pm

An engineer calls Morco from the home to be advised that he is probably describing frost damage and is therefore not covered by warranty



5.01pm

The customer understandably reacts with choice words. Only when the whole process is explained do they start to believe that their unfortunate situation is due to frost

3 days later

The boiler is now repaired. Imagine the owner's frustration when the water delivery for their first shower in days is lukewarm and variable in delivery! The immediate conclusion is that the boiler is broken, again! In reality it is the internal damage caused to the shower mixer due to exceeding its operating pressure. This device will not leak water when damaged but will cause the hot water delivery at all showers and taps to be compromised until it is replaced.

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Timing and solutions to water pressure damage

The problem is caused by the expansion of ice compressing water within a sealed supply.

There are two reasons why the problem is largely caused overnight:

1. Temperatures are lower
2. The hot and cold water outlets are not used as the family are asleep. Continually using hot and cold water during the day draws the water that is about to freeze under the home through and replaces it with water from pipes that are buried underground that may be 5-10°C warmer.

Solutions

The holiday home could have trace heating fitted to all 35-40m of hot and cold pipes underneath the home. This can often be specified when the home is being manufactured - see 3 below

Some lodges and most park homes have the pipework under the home sealed inside a 'box floor'. This protects the pipes far better than tubes of insulation, but is expensive to include in a design.

When Michael Fish gives out the bad news:

- fill the kettle and take a shower
- turn off the cold water supply to the home at the external stopcock
- leave the combi boiler in heating mode as it does not need mains water to keep providing heat throughout the night - this is because it continues to circulate the antifreeze-rich sealed system that carries the heat to the radiators
- open all the hot and cold water outlets in the home - for mixer taps put them in the mid position to allow both hot and cold water to leave the pipes
- if the water now freezes in the pipes, the increase in pressure will force a small amount of water through the outlets and avoid damage. There may still be some damage to pipework under the home, but this is easily fixed and does not run the risk of flooding the home
- After a good night's sleep, use the water in the kettle for a cuppa prior to turning off all internal outlets and then turning the water on at the external stopcock.

For caravan holiday homes that do not have central heating, the only concern is the removal of the fresh water in the hot and cold water system (or methods to ensure it does not freeze). ➤