

# Hot Water Systems

Appliances which provide a continual supply of hot water are called water heaters, hot water heaters, hot water tanks, hot water cylinders, boilers or calorifiers.

Hot water systems should be:

1. Installed in places which are easy to access for inspection and maintenance.
2. Regularly flushed to clear any stagnation and avoid the build-up of sludge.
3. Monitored annually. An annual visual check on internal surfaces for scale and sludge should be done, where possible. They should also be regularly inspected for water quality, temperature and bacterial activity.
4. Regularly checked for “Flow” and “Return” temperature.

Temperature:

1. Hot water should be stored at 60°C or above (to kill legionella bacteria) . One way of measuring this is to use a surface temperature probe. The thermometer pocket at the top of the cylinder and on the return leg, if fitted, is a useful point for accurate temperature measurement. And if more than one calorifier or heating device is used they should be connected in such a way that flow can be balanced to make sure that the water temperature from each of them reaches or exceeds 60°C at all times. It’s important to check the flow and return temperatures at calorifiers. Outgoing water should be at least 60°C – watch this video from the HSE <http://www.hse.gov.uk/legionnaires/hot-water-pipes-video.htm>
2. Water temperature should be checked at sentinel outlets on a monthly basis and findings recorded – watch this HSE video - <http://www.hse.gov.uk/legionnaires/sentinel-hot-water-video.htm>. If thermostatic mixer valves (TVMs) are fitted measure temperature at the hot water inlet to the TVMs – watch this video from the HSE <http://www.hse.gov.uk/legionnaires/thermostatic-valves-video.htm>. The temperature should be at least 50°C within one minute of running the water.

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## Further Information

Avoid having long pipe runs between thermostatic mixer valves and outlets. Pipe runs downstream of TVMs should not exceed two metres. Long pipe runs could result in water stagnating. It's also important not to have dead ends or blind ends where water could stagnate.

Warm water must be prevented from entering the cold-feed and a check valve should be provided in the cold feed as close to the calorifier as practicable, to prevent this happening. However, the installation of such a check valve shall not be carried out in systems that use the cold feed for expansion. In these cases U-bend or S-bend's shall be installed in the cold-feed, sufficient distance from the connection to the calorifier so that water which is warm is not displaced (on heating up) beyond the bend and the vertical pipe rise.

Calorifiers should be subjected to a regular blow-down and flush via the drain point.

Cleaning, flushing and pasteurisation should be carried out in the event of major modifications or after a period out of service, before a calorifier is returned to service.

When calorifiers are isolated from the system (for whatever reason), the associated distribution system should be subjected to DAILY flushing. However, this is only necessary when the calorifier isolated is the sole supply of Hot Water Services (HWS) to that distribution system. Where more than one calorifier supplies the distribution services, the isolated calorifier shall be drained down and remain drained whilst off line.

Where a building is to remain un-occupied, the calorifier shall be emptied and pasteurised before being allowed back 'on-line'.

Combination water heaters should be maintained such that the cold tank part of the heater is kept clean and at the correct temperature, and the hot tank part maintained at a temperature of >60°C A screened vent and an insect/rodent overflow screen should be fitted to the tank part of the units.

Return and shunt pumps should be overhauled on an annual basis (where this is a stated requirement) or shall be serviced and maintained to manufacturers specifications.