

HEATBASE Ltd FACTSHEET 26

System Pressure

Version 1.2 July 2019

If we have issued you with this factsheet it means you have either had a problem with system pressure, or that we are informing you that the system pressure was lower than it should have been. In either case please ensure you read this factsheet so you understand the importance of checking the pressure and the implications or consequences of not checking or keeping the pressure at correct levels, you may also need to read F/S 27 Expansion Vessels.

The most important thing a customer with a sealed/pressurised system can do is to regularly check the pressure in their system and do so in the correct manner. Sealed or pressurised systems require regular attention from the householder and the pressure should be routinely checked once per month or more frequently if there has been a pressure related problem. If you do not do this, then YOU are allowing the appliance to become damaged. Warranty on parts within the appliance or system will be void if they have been allowed to become overheated due to lack of pressure.

Although theoretically the pressure should never drop; most systems will lose pressure over a period of time and unless this has been checked on a regular basis and in the correct manner, no one can be sure at what rate the pressure drop is occurring. Bleeding a radiator will also cause the system pressure to drop. If the pressure becomes too low the water will become excessively hot, air gaps will form within the water and steam can also be produced. Overheat protection thermostats are usually designed to shut off between 110-120 degrees C as water does not boil until 140 degrees C under pressure. If the pressure drops too low, water will boil at 100 degrees C but the boiler will have no failsafe protection until it reaches 110-120 degrees C. The components of the boiler such as circulating pumps, diverter valves, expansion vessels, pressure relief valves and auto air valves are not designed to be run dry, or to be used under excessive temperatures and in effect become overheated or boiled. This will lead to failure or weakening of components and if left unchecked will lead to an endless stream of callouts and replacement parts. High ambient temperatures within an appliance casing can lead to other damage to electronics as well as the possibility of tripping the Fire valve due to the high temperature.

Once an issue over lack of pressure is resolved the system will then run at a higher pressure than before, but due to previous weakening of components due to excessive temperatures caused by the lack of pressure; components may then fail suddenly afterwards.

The pressure should only be checked when the boiler is fully cold i.e. when both Hot water and Heating have been turned off either over night or for at least 6-8 hours (some combi boilers have been wired to be on 24 hours per day meaning unless they are turned off at the main switch on the wall, the boiler is actually fully up to temperature); this is the only point at which the pressure is constant and therefore it is the only way to ensure the correct pressure has been set, viewing the pressure when the boiler is hot will give a false reading. Under or over pressurising the system when cold will lead to further problems, so will "guessing" where the pressure should be when hot.

Dependant on various parameters, the system will need to be topped up to a specific pressure. The usual setting is **1 Bar COLD**, but depending on the design of the system or appliance it may differ. Once the system pressure has been set with the boiler cold and the boiler is turned back on, the water within it will start to heat and expand. This causes the pressure to rise within the system and is perfectly normal and can be somewhere between ½ -1 ½ Bar higher than the pressure when cold.

If after regular routine checking of the system pressure (in the correct manner), the pressure is regularly found to be dropping it would most likely indicate an undersized or faulty expansion vessel, a blockage in the expansion pipe, a leak on the boiler or system or non-barrier plastic pipe used within the system. Leaks can be so slight they may not be visible even in slightly warm conditions. Sometimes a boiler and system may need turned off and left to stand a minimum of 24-48 hours before the slightest of leaks become noticeable and if the leak is inside the combustion chamber it may never be discovered as any water would boil off with the heat of the flame and disperse through the flue system. Leak sealing chemicals can be injected into the system and may seal slight weeps or leaks; they are not a permanent solution and should not be used on a regular basis as they may cause blockages within heat exchangers.

Care should be taken if you are having to regularly top up the system pressure as this will dilute corrosion inhibitors as well as introducing fresh oxygenated water into the system which can then lead to system corrosion or sludge, which in turn will lead to loss of efficiency, leaks and reduced life of the boiler and components as well as localised boiling conditions; which will cause higher pressures, too much heat on components and the circle begins again.