

Technical Bulletin

Installation Advice: Hydraulic separating UFH via closely spaced tees

Connecting UFH to provide hydraulic separation where it is not practical to use a low loss header

Where two heating pipe circuits are connected, flow in one circuit can cause flow in the other depending on the pressure losses across each. Uncontrolled interaction between circuits is not ideal and if not carefully considered can cause unwanted noise, energy consumption and unwanted heating. In this instance, providing hydraulic separation may be necessary.

Most modern domestic Underfloor Heating (UFH) manifold and pump arrangements incorporate an Injector Control Valve (ICV). Depending on the temperature of the water, the valve injects primary water from the boiler circuit to maintain the required temperature of water circulating through the UFH pipe work. This arrangement typically provides hydraulic separation from the boiler primary circuit, the ICV requiring a positive pressure on the primary pipe work to operate.

However, other UFH manifold and pump arrangements exist. These incorporate a Thermostatic Mixing Valve (TMV) - the temperature can be fixed or variable i.e. if weather compensation is required. This type of arrangement can also be used to serve remote and/or multiple manifolds.

The schematic shown in Fig. 1 shows a way of hydraulically separating a secondary underfloor heating circuit from the boiler primary circuit where it is not practicable to use a low loss header.

The UFH circuit is connected via closely spaced tees - the low pressure drop between the tees ensure the underfloor circulation pump requirements can be treated separately to the primary boiler circulation pump requirements.

The connection should be made to the primary boiler flow pipe work using closely spaced tees 150mm apart, this will reduce unwanted interaction on the primary heating circuit where an underfloor heating circuit is to be installed. It is recommended that the diameter of the pipe work between the tees should be increased by one pipe size to further reduce pressure loss. Upstream and downstream of the tee connection on the primary pipework, a minimum length of straight pipe work equal to 8 x the primary pipe work diameter is recommended.

A 3-port motorised valve with spring return must be used to ensure primary water circulation is possible when there is only a demand on the underfloor heating circuit. It should be powered open to the radiator circuit which it is controlling by the thermostat for that zone. The switched live heating demand for that zone should be via the end switch on the 3-port valve.

Flow rates for each UFH loop should be regulated and balanced as per the underfloor heating design and commissioning procedure.

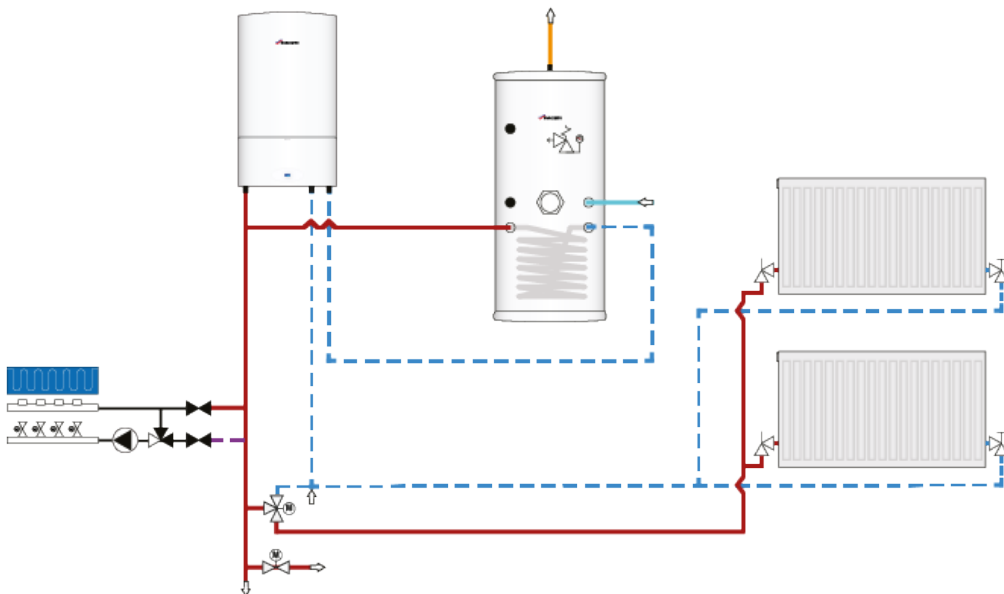


Fig. 1 - The diagram above shows a Worcester Greenstar I System boiler with integral diverter valve fitted with independent switch live for heating & hot water, but equally applies to a combination boiler.

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