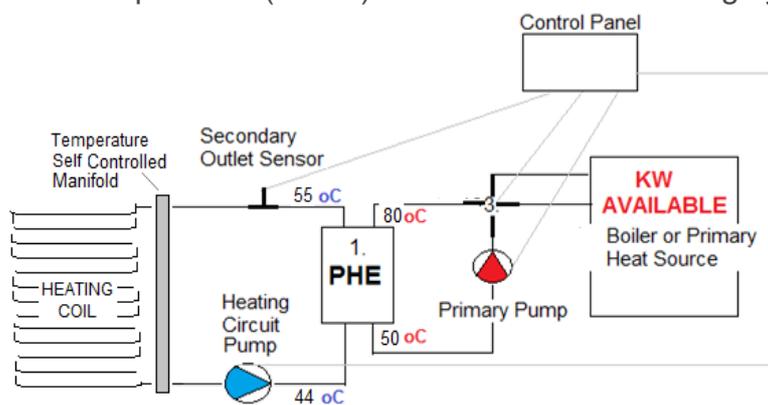


USING A PLATE HEAT EXCHANGER WITH AN UNDER FLOOR HEATING SYSTEM

A plate heat exchanger can be used as a system break from the boiler to provide the required Primary hot water at a safe temperature (55 oC) to the Underfloor Heating system manifold.



NOTE: Possible layout when using a Plate Heat Exchanger as an underfloor heating system break

When designing an underfloor heating system with or without a Plate Heat Exchanger as a Primary heat source it is most important to know the minimum and maximum required water flow rate and actual pressure drop across the under floor heating system as well as the maximum water temperature limits of the underfloor heating equipment and floor covering around the pipe coils (A rule of thumb to calculate the flow rate for each underfloor heating loop is to take the loop length and divide by 40. For example, 100 m loop length divided by 40 = 2.5 litres per minute water flow rate).

To control the water temperature of a typical underfloor heating system properly it is important that the manufacturers' recommendations are referred to. As a guide, the hot water within the underfloor heating coil would normally be designed to operate at a maximum temperature of 55°C for a screed floor and possibly higher for a suspended floor or timber joisted floor.

Regardless of whether a controlled low temperature system break is used or not as a back up to avoid heat damage to the screed and the underfloor heating pipe the manifold must have the necessary temperature safety control equipment installed to ensure that a faulty valve or thermostat will not allow excessive high temperature (80 °C) Primary water directly supplied from a boiler to enter the underfloor heating system.

The cost of installing the correct temperature control in the first place is far cheaper than repairing the damage of the underfloor heating pipe and the floor covering as well as invalidating the manufacturer's guarantee.

Excessive temperature fluctuations can occur within the controls of any reputable boiler or primary water heat source equipment. Despite the use of high quality components and controls on primary heating equipment they do need to be checked regularly by professional engineers as most problems tend to occur when the settings of the primary heat source have been altered or played with by unqualified people.

Using an operating working temperature limit of 55°C and a maximum safety high limit cut off of 60°C as required by European standards provides an industry safety temperature point standard which can be highlighted and damage avoided whether using an electric or water underfloor heating system.



Preassembled System Break c/w Pumps & Isolation Valves
(To be Controlled externally by others)



Bare Plate System Break Without Any Controls

A GUIDE TO TEMPERATURE LIMITS OF FLOOR COVERINGS.

When installing underfloor heating different floor coverings have different temperature limitations before damage occurs. The maximum temperature that of a floor covering will vary from product to product so each covering manufacturer should be consulted before the installation goes ahead.

Please see a few floor covering temperature guidelines below:

- Wet rooms not exceeding 33°C and the perimeter zone of up to 1 metre 35°C;
- Vinyl and Linoleum flooring not exceeding a temperature of 27°C;
- High Duty Plastic sheeting flooring not exceeding 29°C;
- Carpets and carpet tiles accepting any temperature within the range of the system.

HOW DO I CONTROL THE TEMPERATURE OF AN UNDERFLOOR HEATING SYSTEM

It is the sole responsibility of the project design engineer to ensure that an underfloor heating system remains within the manufacturer temperature safety limits so they should therefore:

1. Check the maximum temperature that the underfloor system could possibly reach under fault conditions looking at the boiler / heat exchanger and all the thermostat controls.
2. Check with the manufacturers that if the water was heated to the maximum temperature could it cause damage to the underfloor heating system, the floor structure, or the floor covering.
3. Consider any necessary preventative measures, such as the use of underfloor heating pipe with a higher temperature rating and/or additional safety controls to reduce the maximum high limit temperature at the flow manifold.
4. Consider the use of floor temperature sensors to cut off the flow of water if the temperature becomes too high.
5. Consider, the minimum temperature that the underfloor heating system should be set at knowing that if the temperature was too low it could lead to condensation forming on the underfloor heating pipe, within the floor, and on the floor covering when used as a cooling system in the summer.

GENERAL; FAULT FINDING ON AN UNDERFLOOR HEATING SYSTEM

Share

1. As part of the final commissioning of the underfloor heating system you must check the flow rate through the flow meters and make sure that that you have the correct flow moving around the loop while checking the operation and response of the valve actuators.

Symptoms	Check
No circulation	Check flow meters are open. Check thermostats & valve actuators are operational
Primary flow pipe gets hot but return pipe stays cool, even after many hours of operating. Air lock Insufficient flow from boiler to the heat exchanger or manifold	Check flow meters are open properly Flush through by repeating the filling up process. Check the setting of the boiler or pump.
Both flow & return pipes are both hot, but the floor temperature is low.	Check the water flow rate through the underfloor heating is not too high to allow the transfer of heat & that all valves are open.
Rooms are not getting hot	Check the room thermostat is calling for heat and the primary heat source pumps are switched on.
Room thermostat is calling for heat, but no power to the pump.	Safety stat on the manifold (if fitted) has locked out or A faulty electrical connection has occurred.
One room warm, other cold. Insufficient flow for all circuits required	Check the correct valve actuators are fitted and wired correctly to the manifold ports. Check the primary pump duty is capable of supplying All circuits. Possible air lock – flush through by repeating the Filling up process.
One room not getting warm.	Check the thermostat in that room is calling for heat and opening the correct actuator
Noise in system.	Manifold not fitted to a suitable base, reverberating And very noisy. Tension on copper flow & return pipes. Air in system – due to incorrect filling procedure. Too high pressure in the system

Room gets too warm with no sign of thermostatic control.

Not connected to correct manifold port.
Thermostatic valve head faulty or broken.

Room thermostat faulty or broken