

Luxusheat - Underfloor Heating

System Commissioning Guide

General

Commissioning is required to enable the system to meet its design specification and comply with the energy efficiency requirements of the Building Regulations. Commissioning should only be carried out after the system has been run gently for an adequate time. The building work should be complete with all external doors and windows closed and floors dry. If doors and windows are open or solar gain is affecting some rooms, the commissioning will not be accurate. The person undertaking the commissioning should be competent and be able to carry out and record measurements.

All safety checks relating to boiler operation, controls wiring, and water connections should have been performed in accordance with the equipment supplier's instructions and with statutory requirements before system commissioning is commenced.

To record surface temperatures correctly, a surface temperature electronic thermometer that reads 0.1°C accuracy will be required and for best results thermal conducting paste should be used. Alternatively, an InfraRed Laser Digital Thermometer may be used for fast progress.

Care must be taken to ensure that floor surface temperatures recommended for wood or plastic floor finishes 27°C with a variance of approx. +/- 1°C are not exceeded.

In Summary the commission procedure is as follows:

Depending on contractual obligations some of the tasks may have already been completed by others.

- Check pressure test and other safety inspection certificates
- Carry out a visual inspection of the entire system for completeness satisfactory condition and conformance to design drawings and approved modifications
- Pressurise system
- Open all isolation valves of the main heat distribution pipework and check system pressure
- Operate the underfloor heating system pumps
- Purge any air that remains in the system and re-pressurise
- Switch on the heat source
- Balance underfloor heating circuit valve to the zone flowrates
- Check the temperature Drop across each circuit and rebalance if necessary. This may not be possible if the commissioning takes place in the summer months
- Check the correct operation of the control system (this may be done by the underfloor heating specialist or other trade, depending on who installed it). This should include checking the correct operation of all control valves, thermostats, actuators, time control devices including the night setback function, and outdoor weather compensation devices
- Check the flow and return temperatures. Again, this will depend on the weather conditions at the time.
- Check room temperatures
- Produce commissioning report
- Modify working drawings as necessary and produce a detailed set of records drawings.

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Commissioning Equipment

The person commissioning the system will require the following items:

- InfraRed Laser Digital Thermometer
- Hand tools
- Adjustable spanner
- Notebook / commissioning documents.

Pre-commissioning Check

A routine check on all aspects of the system should be carried out, even though some items may have been installed by others. It is important to know for certain that the boilers are operating, water is flowing towards the system and that electricity is connected; then walk the floor noting all existing cracks or defects.

Commissioning – Flowmeters

Commissioning of warm water underfloor heating system that is provided with instantaneous visual readout of water flow rate devices is straightforward, remains repeatable and readily accessible to maintenance engineers over the life of the system. Since design procedures generate a specific circuit water flow rate, this influences the water temperature drop in the pipe circuit which is directly related to the flow rate. Flow meters are positioned on the flow manifold bar and can be easily adjusted without using any tools. The flow rate data for each circuit is shown on the underfloor heating design which is included in the project pack.

Commissioning – Loch Shield Valve's

For this method every circuit requires to be fitted with locks shield valves with the special valve seats which have a percentage opening characteristic (0-100%). These are used in conjunction with the bespoke underfloor heating design that is supplied with the project. Each valve is set and adjusted accurately and quickly using the design and tool supplied, the valve is set from the fully closed position and the design shows the amount of full turns to open (0-5).

First identify the correct data column in the underfloor design that shows the amount of turns for the particular loop on the manifold.

Each individual circuit will have a flow rate and pressure loss attributable to the amount of turns from fully closed.

Set the individual loops from the fully closed position (fully wound in) to the data shown on the underfloor heating design as a starting point. Then accurately adjust each loop so that the return water temperatures are the same across all loops to the underfloor heating design using the InfraRed Laser Digital Thermometer.

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