UNDERFLOOR HEATING

Nu-Heat UNDERFLOOR & RENEWABLES

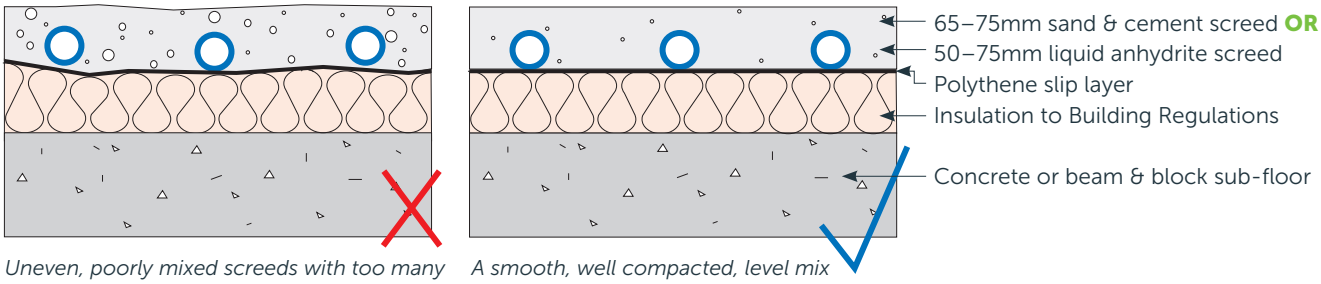
Information sheet

Screed floors

Technical guidance for laying screed in new-build projects, covering traditional sand & cement screed and free-flowing, pumped screed.

Sub-floor construction – concrete slab or beam and block

The concrete sub-floor is laid in the normal way and must form a flat, stable base. Insulation is fitted on top of the slab (not below) when the building is wind, and weather-proof. The underfloor heating is then installed on top of the insulation.



Uneven, poorly mixed screeds with too many air pockets will not conduct heat efficiently

A smooth, well compacted, level mix will improve performance

TYPES OF SCREED

Traditional semi-dry, sand & cement screed

A traditional screed usually consists of 4-parts sand to 1-part Portland cement. This can either be mixed on site or delivered ready to lay.

Traditional screeds are laid over the UFH pipework to a minimum depth of 65mm, and an ideal maximum of 75mm.

It is essential to the effective running of the underfloor heating that the screed is properly compacted, particularly around the UFH pipe, in order to maximise thermal conductivity.

Pumpable self-smoothing (liquid) screed

There are numerous advantages to liquid screeds; speed of installation and drying, ease of finish due to self-levelling characteristics, and improved heat output due to conductivity. Pumpable screeds might be cement-based, or calcium sulphate based.

Another significant advantage is that the thickness of screed can be as low as 35mm above the top of the pipe, which implies a total depth of 50mm for 14mm pipe systems (allowing for the height of the cliprail).

GENERAL CONSIDERATIONS

A polythene slip layer must be laid on top of the insulation before the underfloor heating pipe is installed. This is intended to prevent any chemical reaction between the insulation and the screed, and also prevents liquid screed from seeping between the sheets of insulation.

Increasing the depth of screed will increase the response time of the underfloor heating; anything thicker than 65mm will require the use of a setback temperature during night-times and unoccupied periods, rather than switching the heating off completely.

The screed should be finished flat and level to SR2 standard in order to receive floor coverings.

DRYING TIMES FOR SCREED

Drying times for any screed will be affected by climatic conditions, but the British Standard advises 1mm per day for the first 50mm, and 2mm per day for every additional millimetre.

The only sure way of assessing the moisture content is with a hygrometer, but a simple alternative is to tape a 1m^2 sheet of plastic to the floor. This is left for 24 hours, and if the underside is clearly wet after this period then moisture levels are too high to switch the heating on, and subsequently lay a floor finish.

Reduced drying times

With cement based screeds (either traditional or pumpable) the floor heating must not be used to accelerate the floor drying process as this causes increased risk of cracking. However with calcium sulphate screeds the heating may be used to accelerate drying after 7 days (always check with the supplier).

INITIALLY HEATING THE SCREED

In all cases the screed should be heated slowly to the operating temperature, and maintained at that temperature for several days before cooling down to room temperature (but not below 15°C) before installing the floor covering.

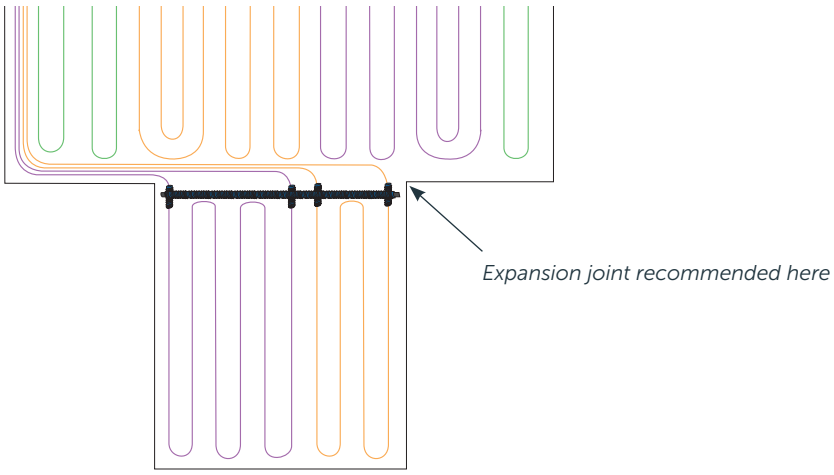
To achieve this, turn the floor heating on and set the heating mixing valve (or heat pump maximum flow temperature) to 40°C. Increase this temperature daily by 5°C up to a maximum of 60°C (see A3 *Manifold and Zone Information* for correct set temperature). Note that calcium sulphate screed may be affected by high temperature. Please check with the supplier for any limitations.

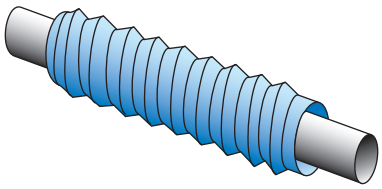
EXPANSION/CONTRACTION (MOVEMENT) JOINTS

When the floor screed is dry, it will expand and contract with changes in temperature and allowance must be made for this. Edge isolation supplied by Nu-Heat will allow for a degree of movement around the perimeter of the room but large areas may need expansion joints to allow movement and prevent cracking due to stress build up in the screed.

In sand and cement screed floors expansion joints should be fitted when the surface area of screed is greater than 40m^2 or within any single length of screed greater than 8m.

For both liquid anhydrite and sand and cement screeds, expansion joints should be formed in high stress areas such as where large areas are in contact with smaller ones e.g. L or T shaped rooms and where tube passes through doorways (see diagram below).

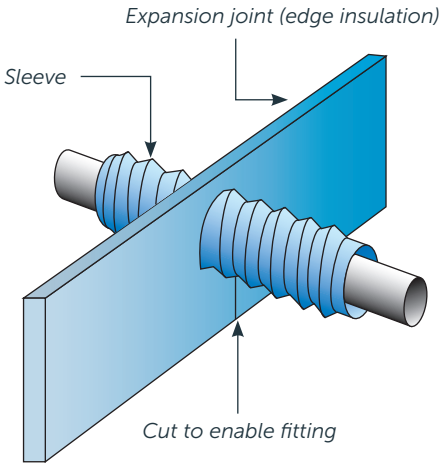


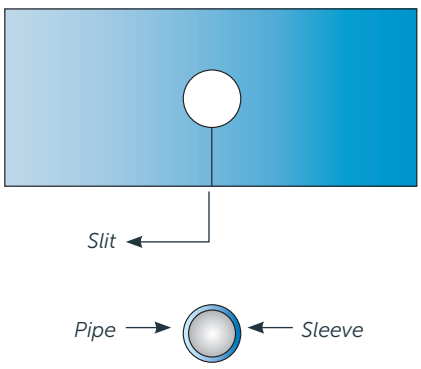


EXPANSION SLEEVING

It is essential that heating pipes are sleeved for 300mm either side of any expansion joint to prevent stresses building up in the pipe. It is important to anticipate the use of joints and to feed sleeving down the pipe during installation. Alternatively, slit the section of sleeve lengthwise, slip over pipe and fasten securely at the joint to prevent ingress of screed. If required, expansion sleeves can be purchased from Nu-Heat.

Expansion joints may be formed using Nu-Heat edge insulation or other flexible material, cutting holes around the pipe positions and from the bottom of the insulation so that the joint can be placed prior to screed laying.





Where a soft medium such as Nu-Heat edge insulation is used to form the expansion joint, this will need mechanical support during the screeding and drying process in order to prevent partial slump or distortion of the floor.

For information on fitting floor coverings please see separate information sheets.