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Dry Sand/Cement Insulation System (Pug Screed)

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F05

Dry Sand/Cement Mix Insulation System

For Underfloor Heating suitable for solid wooden joists only, that have been sized by a structural engineer to take the increased loadings. It is often chosen for use with low temperature heat sources such as Heat Pumps, as it acts as a thermal store and conducts heat more evenly to the surface above.

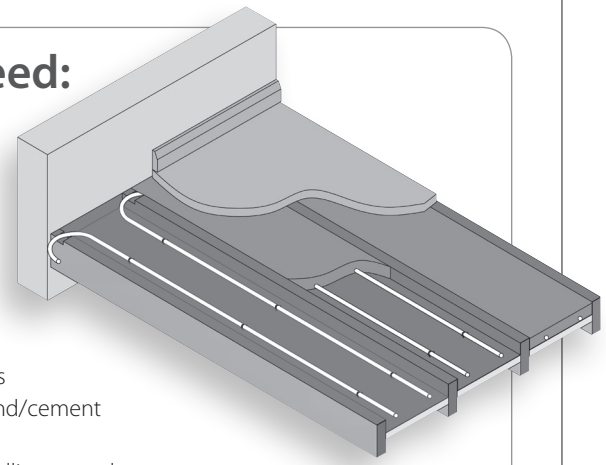
In order to support this system, batons are fixed to the sides of the joists. If the insulation is too thin to support the mix, plywood can be used to bridge the gap. A thin poly Membrane should be installed between the joists and the floor to stop any moisture affecting the surface above.

- **Suitable for use with a dry sand/cement mix**

Before working on open floors always follow health and safety guidelines and wear protective clothing where necessary.

You will need:

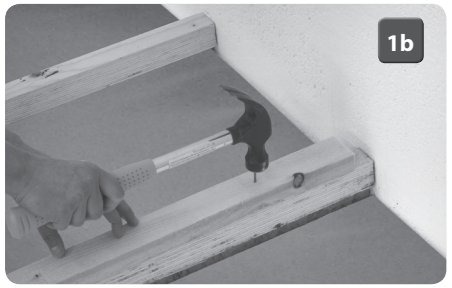
- Sand & Cement
- Hammer
- Saw
- Nails
- Polythene Sheeting
- Staple Gun
- Scissors
- Stanley knife
- Safety Glasses/Gloves
- Bucket for mixing sand/cement
- Trowel
- Straight edge for levelling screed
- Tape Measure



1 Pug Screed installation Step-by-step

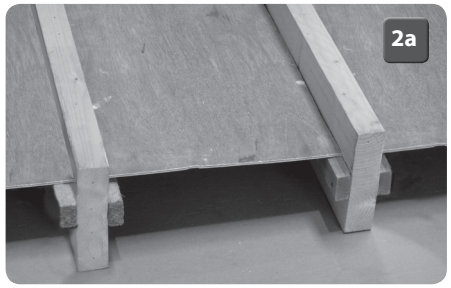
Preparing the joists

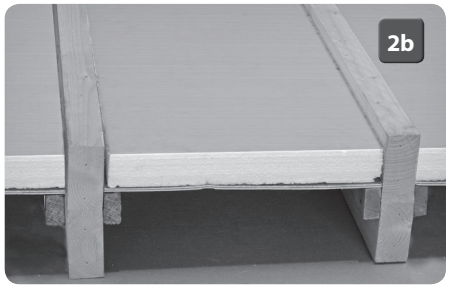
1 Notch joists according to building regulations if permissible **(1a)** or secure battens to the top of joist **(1b)** to allow pipe to pass between the joists allowing for bends and returns as per pipe layout (adjustment to pipe layout is acceptable on site). If attaching battens use 18mm minimum depth to allow for pipe and ensure all fixings are hammered flush.



Fitting the insulation boards

2 The Pug system can be installed into timber suspended floors. Our preference is for timber boards to be fixed on battens between joists **(2a)** to support the system and insulation board. High density Insulation board is fitted between joists, these can be supported using battens along the lower edge of the joists **(2b)**. Allow a 25mm – 30mm gap between the top of the insulation board and the top of the joist allowing a dry pug screed to be applied.





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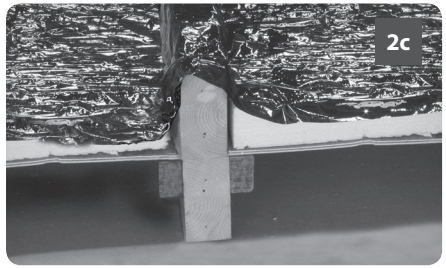
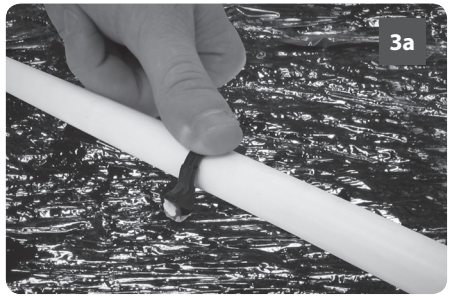
A polythene membrane is then placed over the insulation & joists prior to fixing pipes and applying screed **(2c/d)**.



Fixing the pipe with Staples

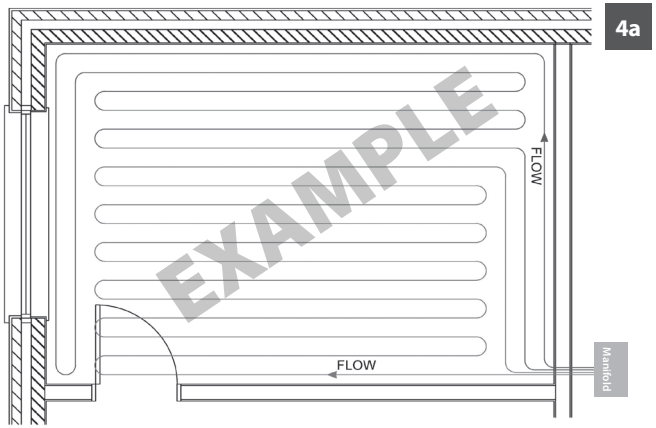
3 The Area where pipe and staples are to be laid should be clean, level and free from debris. Staples can be pushed in by hand **(3a)**, or alternatively an optional staple gun is available **(3b)**.

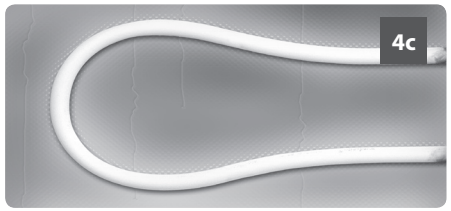


Following the pipe layout

4 First study the pipe layout drawing if requested and familiarise yourself with the design and layout (if you have requested one) **(4a)**. Pipe will be laid between 135mm and 200mm pipe centres dependent upon heat source. Pipe is laid between the joists and stapled to the insulation board **(4b)** don't worry if your pipe runs are not straight, it will not affect performance. The heat required relies more on the amount of pipe in the floor than the exact layout design. Start laying the pipe at the manifold, this will give a fixed reference point.

Working with 2 people to lay the pipe, one person walks along unrolling the pipe, the other person follows behind stapling the pipe to the insulation.





Be careful not to kink the pipe with a sharp bend. It is not necessary to follow the design of bends exactly. If a sharp bend is likely to kink, it is better to produce a 'light bulb' bend **(4c)**.
The performance will not be affected.

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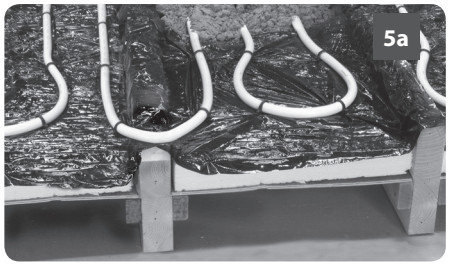
Pug Screed

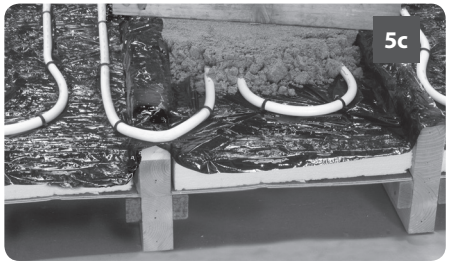
5 The 'Pug system' (a thin biscuit of dry screed) is used when the heat source (heat pump) produces low flow temperatures of 35-45ºC. The Pug system can be used in timber suspended floors.

The Pug system is installed between joists, usually set at 400m centers, allowing 135-200mm centres for the pipe layout design. A minimum of 25mm thick dry screed is then laid, ensuring that it penetrates fully around the pipe and sits level with the top of the batten **(5a/b/c/d)**. As the screed is directly beneath the covering board, heat conductivity is increased.

The timber floor finish can be screwed into the still exposed timber battens. It is important to remember that the screed is to be mixed and installed **dry** 8:1 Sand/cement mix and is for heat distribution only. Any cracking will not affect system performance. The Pug system is ideal for constructions where floor build up is restricted.

Our preference is for timber boards to be fixed on battens between joists to support the system. An alternative is to use the insulation board to support the system. The Approximate weight loading for the pug mix when used as above, would be 20- 25 KG M^2. Check with structural engineer or other qualified person if in doubt about weight loading.

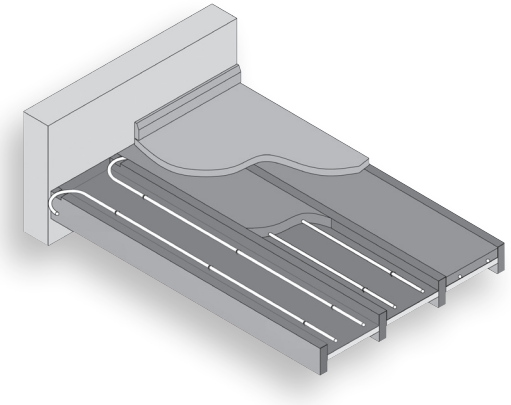




Technical Information	
Maximum heat output	Approx 90 W/m2 (60ºC)
Recommended flow temperature	Heat Pump - 35º - 45ºC* Conventional - 45ºC*
Maximum loop length	100m (16mm MLC Pipe)
Pipe centres:	Heat Pump - 135mm Conventional - 200mm/135mm
Dimensions: Thickness	25-30mm
Mix. Sand/Cement	8:1 Dry Mix

Important Information

*Limiting floor surface temperature to a maximum of 27ºC. by using floor probes, is essential when using wooden floor finishes. Specialist timber floor suppliers should be contacted to obtain expert advice on your chosen floor finish. The addition of carpet and rugs on wooden floors can increase the temperature between floor and carpet. Make sure the combined tog value of carpet & underlay does not exceed 2.5 tog. Total thickness of floorboards and any wooden or laminate floor finish should not exceed 25mm.



"When mixed floor solutions are being served from the same manifold, a floor probe must be used in the floor solution with the lower maximum supply temperature. This is to limit the temperature in these floor areas and prevent damage to the floor solution and/or floor finish."

Your Notes:

Tech support opening hours are subject to change - please visit our website for the latest information

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