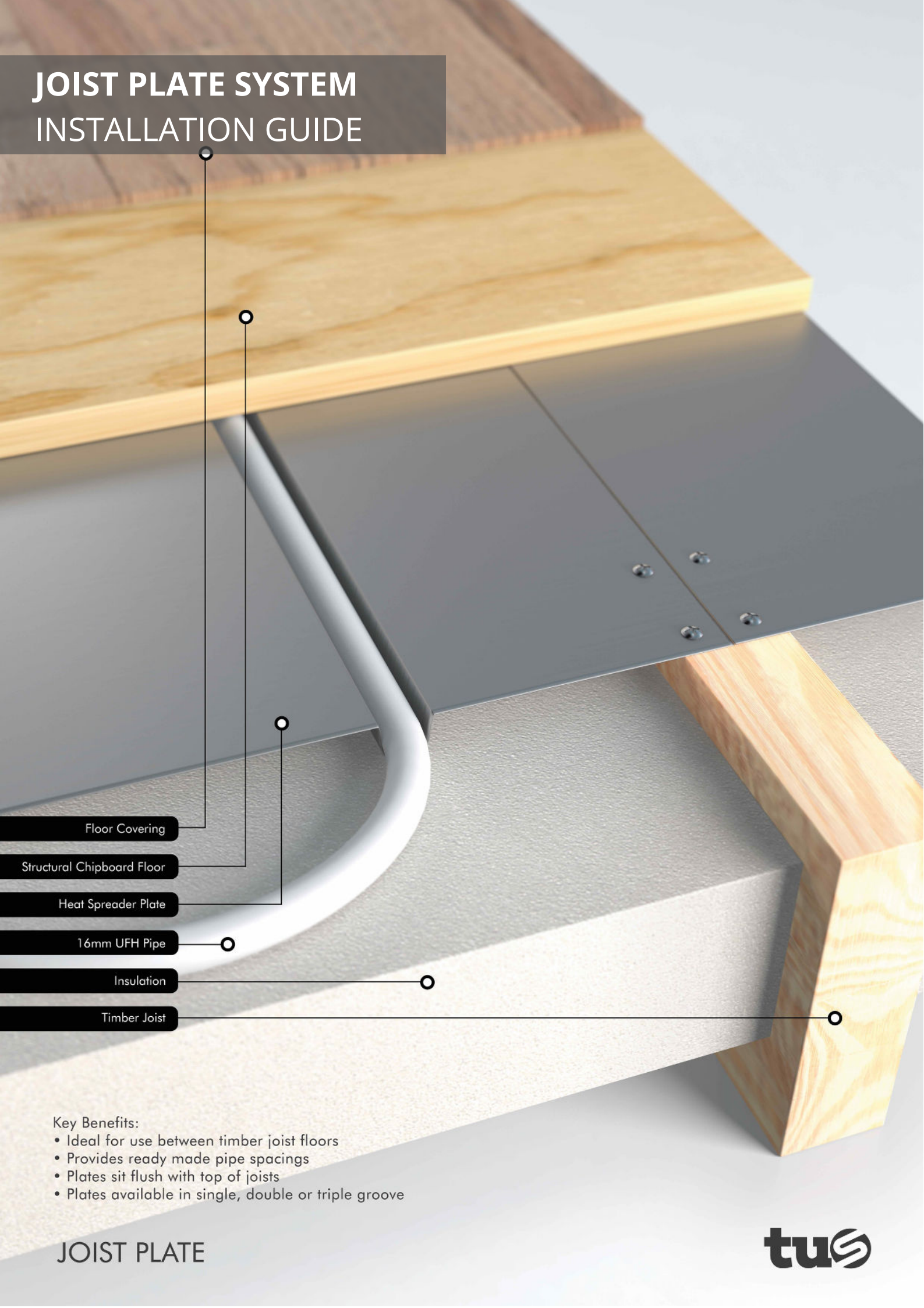


# JOIST PLATE SYSTEM INSTALLATION GUIDE



Floor Covering

Structural Chipboard Floor

Heat Spreader Plate

16mm UFH Pipe

Insulation

Timber Joist

## Key Benefits:

- Ideal for use between timber joist floors
- Provides ready made pipe spacings
- Plates sit flush with top of joists
- Plates available in single, double or triple groove

JOIST PLATE

**tuS**

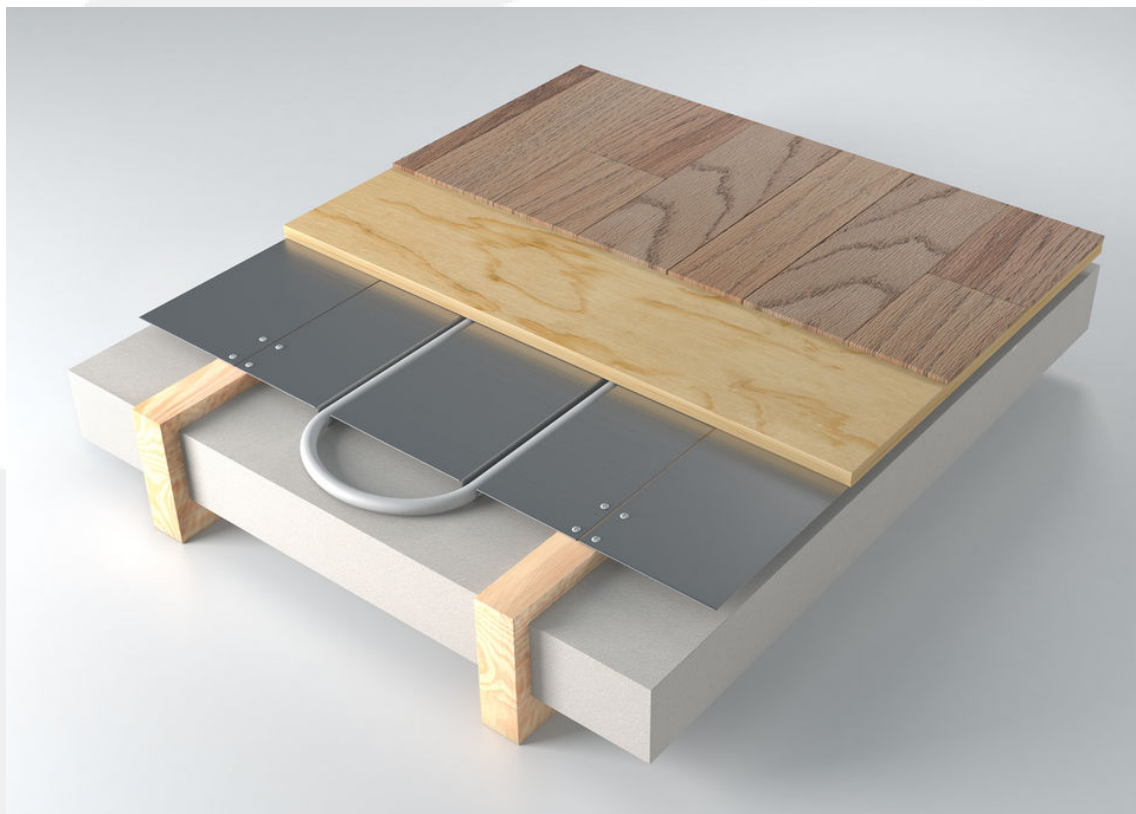
## INTRODUCTION

Joist Plate® is a popular option for installing underfloor heating into timber joist suspended floors in new and existing properties.

At just 0.3mm thick, the aluminium heat spreader plates are fixed to the top of the joists before being covered with structural floor boards meaning there is no impact on the height of the floor.

This means an underfloor heating system can be added to any joist floor, quickly and efficiently, during the build process in both new build and retrofit projects. The plates are suitable for joists or battens spaced at 400mm centres.

Joist Plates® are available with pipe spacings of 133mm (triple groove) or 200mm (double groove) to ensure they are compatible with low temperature heat sources such as ground and air source heat pumps as well as high temperature gas boilers.



## COMPONENTS USED:

Joist Plates: 1000x390x0.3mm

UFH Manifold & Control Pack: Size dependant on UFH design

Pipe: 16x2mm PE-RT or PE-RT/AL/PE-RT (Coil Sizes: 100m/240m/500m)

## TOOLS REQUIRED:

Pipe De-Coiler, Pipe Shears, Pipe Reamer, Adjustable Spanner, Tool for cutting aluminium plates

## UFH DESIGN

Prior to installation please ensure you have received your detailed UFH CAD proposal from your account manager and you are happy that the system design meets your requirements.

## INSULATION

Provided by others - In accordance with Part 'L' of the current Building Regulations, a suitable layer of insulation material should be included within the floor construction. It is the responsibility of the Architect or Builder to ensure compliance. However, in all instances insulation must be installed beneath the underfloor heating system in order to ensure that any downward heat loss does not exceed 10W/m<sup>2</sup>, in accordance with BS EN 1264.

## HEAT OUTPUTS

	Wood Floor	Carpet 1.5 TOG/ 10mm ply
Flow/Return Temp	Heat Output W/m <sup>2</sup>	
35/30	22	19
40/35	31	27
45/40	40	35
50/45	49	43

**Not allowed as per BS EN 1264**

\*PLEASE NOTE: The above are typical heat outputs based upon BS EN 1264, 20°C room temperature, and a delta T of 5°C.

This is not necessarily representative of the system you are installing. A number of variables including screed depth, flow temperature, pipe spacings, floor covering and insulation levels will dictate heat output levels.

Details of heat outputs specific to your project are displayed on the UFH CAD design provided.

If you are unsure about any aspect of your design or installation please contact TUS on 01283 850040 or email [info@tradeunderfloor.co.uk](mailto:info@tradeunderfloor.co.uk)



**IMPORTANT** - Pipes cannot run above the Joist Plates and therefore it is often necessary to notch the joists.

All notching and drilling of joists must conform to building regulations Part A.

To avoid notching the structural joist, a batten can be installed on top of the joists which is then notched instead so as to avoid weakening the joists - see example opposite.

## 1 - INSTALL INSULATION BOARDS BETWEEN JOISTS

1.1 - Fix battens either side of the joist and lay a minimum of 50mm rigid insulation boards (e.g. Kingspan, Celotex) on top of the battens.

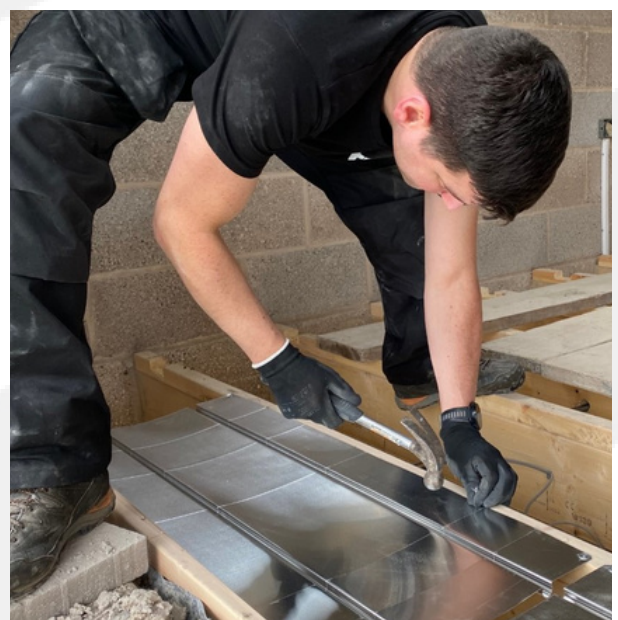
1.2 - Ensure the top of the insulation board is no more than 16mm below the top of the joist so as to allow the Joist Plate to sit flush and minimise the air gap between the insulation board and Joist plate.

## 2 - FIX JOIST PLATES TO JOISTS

2.1 - Before commencing the installation familiarise yourself with the UFH CAD design provided to ensure plates and pipes are laid in accordance with the proposed design.

2.2 - Begin by laying the first Joist Plate at least 250mm from the wall to allow enough room to be able to bend the pipe and return it into the Joist Plate.

2.3 - Screw or nail the Joist Plate into the joist.



2.4 - Continue laying the joist plates along the joists.

It is important that the plates do not touch or overlap so ensure that you leave a gap of at least 5mm between plates.

2.5 - Once you have laid all of the full plates it's likely you will have areas where you need to fill the space with smaller sections of the plates.

Measure the space you need to fill and cut the plates to size.

The plates are scored to help you reduce the size of the plates more easily.



**IMPORTANT! Take care when laying the plates that you do not step or put pressure on the middle of the plates so they bow or sag downwards.**

Once all plates are laid you are ready to install the manifold and begin laying pipes into the plates - see next page.

## 4 - INSTALLING THE MANIFOLD

4.1 - The manifold location will be shown on your UFH CAD design. When you have located the correct positioning fix the manifold firmly to a wall ensuring there is adequate space available for access to either side of the manifold for future servicing and maintenance.

Manifolds are usually fitted at least 600mm from the floor to allow pipes to be connected up to the manifold easily.

Refer to the manufacturers instructions provided for detailed installation instructions regarding the manifold, ball valves and pipe connectors.

## 5 - INSTALLING THE PIPE INTO THE JOIST PLATES

5.1 - When all plates are laid and the manifold is mounted it is time to start installing the pipe. Lay the pipe in accordance with the UFH CAD design and return to the manifold at the appropriate distance. Our pipes are labelled every linear metre so you can easily see how much pipe you have laid and check this against the CAD design if necessary.

5.2 - Push the pipe gently into the grooves taking care not to apply too much pressure that makes the Joist Plate sag or bow in the middle below the height of the top of the joists.

Tip! Use nail clips to fix pipes when they cross the notched battens or joists to keep them in place.

5.3 - Once you have completed the first loop, connect the pipe to the return rail (bottom rail on the manifold) and begin laying the next loops.

3.4 - Once all loops are complete and connected to the manifold ensure the system is filled, vented and pressure tested as outlined in the next steps.

# FILLING & VENTING THE SYSTEM



1. Once all of the circuits have been completed, and all connections are tight, connect a suitable hose to the upper drain valve and a second hose to the lower drain valve on the right hand side of the flow and return manifold.
2. Connect the Upper drain valve to the cold water fill. Ensure both the red and blue isolating ball valves are closed and all flow meters are closed on the flow rail. On the return rail, all actuator valves should be open. Working from the left open up the flow meter on the first manifold port. With all of the remaining circuits closed, open up both drain valves. You are now ready to flush out the first loop. Visually check the water coming out of the hose from the lower drain valve is flowing freely without any bubbles into a suitable drain/bucket.
3. Repeat the process on the remaining circuits. **IMPORTANT!** When each loop has been flushed correctly, ensure that the flow meter is closed before moving on to the next port. When flushing the underfloor heating system, only 1 loop at a time should be open. When all loops are flushed, open all flow meters and close the lower drain valve first and then the upper to maintain pressure within the manifold.

You can now vent any remaining air in the system through the manual or auto air vents.

## PRESSURISING THE SYSTEM

Once all of the loops are flushed and air has been removed, the system should be pressurised to 6 bar, using a suitable pressure testing pump.

Open all of the circuit flow meters and close off the upper drain valve on the right hand side of the manifold. Connect the pressure tester to the lower drain valve, and raise the pressure to 6 bar.

## TESTING PERIOD

We recommend holding the system at 6 bar pressure for 1 hour. The pressure gauge may drop even though there are no leaks. This is due to the temperature change of the water. Generally in 1 hour you will recognise a leak.

**IMPORTANT!** make sure a suitably responsible person witnesses the pressure test, and signs to say the test was successful. Make sure you carry out a thorough visual inspection of all the pipework before you leave site.

# CIRCUIT PRESSURE TESTING REPORT



Floor Name	Room Name	Circuit No.	Pass/Fail	Key Notes

Installer/Tester:  
Name:

Signature:

Date:

Witness:  
Name:

Signature:

Date:



Below is some advice on the most popular floor coverings that may be used over the Joist Plate underfloor heating system.

However, in all cases, before laying floor coverings we advise checking for recommendations with the flooring manufacturer or supplier.

**IMPORTANT!** - Check with the floor covering supplier/manufacturer that the chosen product is suitable for use with underfloor heating.

BS EN 1264 advises that, in occupied areas, the floor temperature **MUST NOT** exceed 29°C. However, it also states that, when using timber floor coverings, it is necessary to ensure that the surface temperature does not exceed 27°C.

## **ENGINEERED WOOD & LAMINATE FLOORING**

Engineered wood and laminate floors can be laid directly to the finished structural chipboard or plywood which will sit on top of the joists and Joist Plates.

For best results wooden floors or laminates should be glued to the wood rather than using an underlay.

## **TILES**

A structural screed board or plywood should be installed above the joists. A decoupling mat can then be installed prior to the tiles being laid to avoid the risk of movement. Advice should be sought from a professional tiler prior to the installation.

## **CARPETS**

Carpets with underlay can be laid directly onto a structural chipboard or plywood which will have been laid on top.

It is important to ensure that the TOG value of the carpet and underlay does not exceed 2 TOG combined. The lower the TOG value, the better the heat transfer and efficiency from the underfloor heating system will be.

## **Vinyl & LVT**

A completely flat surface is required when laying vinyl or LVT floor coverings. Usually, an intermediate 10mm dry screed board or 6mm ply board should be installed on top of the structural floor board. For best results, consult the floor covering manufacturer or supplier.



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