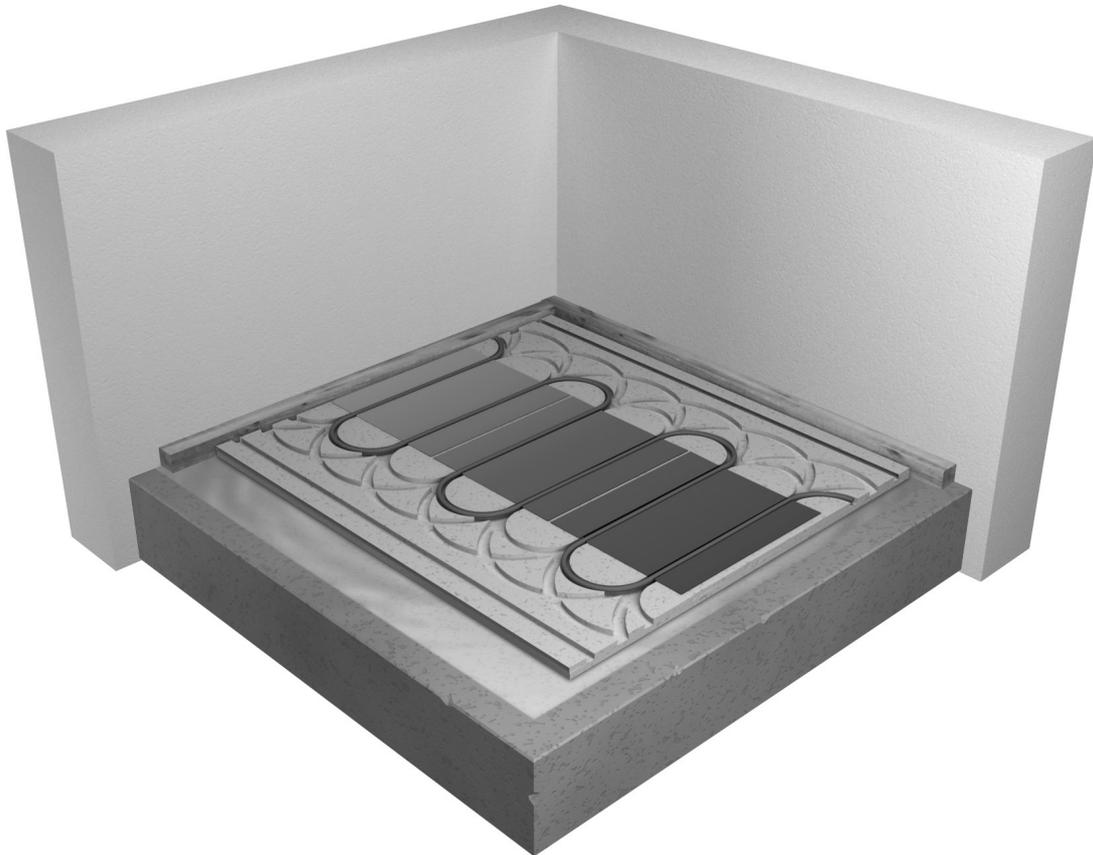


Warmup[®]

The world's **best-selling** floor heating brand™

Total-16 Floating Floor Underfloor Heating Installation Manual



Technical Helpline
0345 345 2288

SAFETY Net™
Installation-Guarantee

Contents

- ③ Product Information
- ④ Important Information
- ⑥ Installation
- ⑧ Pressure Testing & Floor Covering Information
- ⑨ Warranty
- ⑪ Pressure Test Report

IMPORTANT

Please read this manual before attempting to install your underfloor heating.

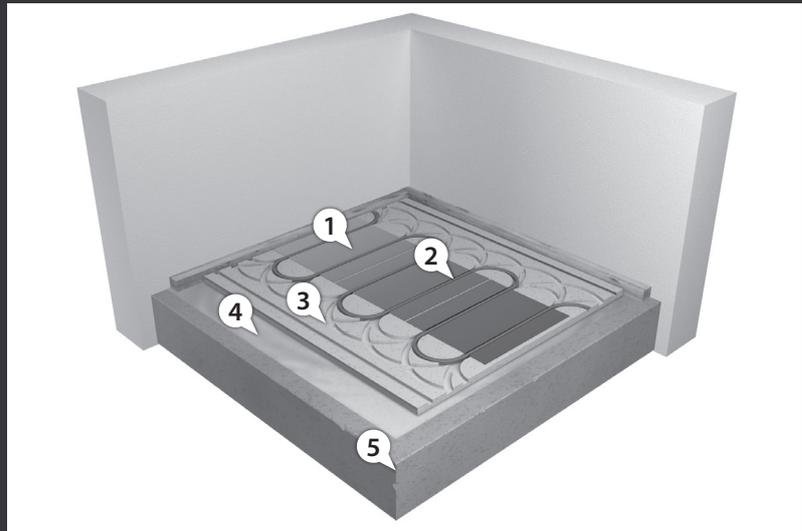
Incorrect installation will invalidate your warranty.

Warmup Plc, accepts no liability, expressed or implied, for any loss or consequential damaged suffered as a result of installations which in any way contravene the instructions that follow.

If you require any help at any stage of the installation please call our helpline :
Warmup Technical Helpline 0345 345 2288

Product Information - Warmup® Total-16 Floating Floor System

- ❶ Warmup Total-16 Insulation with integral diffusion plates
- ❷ Warmup Pipe
- ❸ Warmup Total-16 turning board
- ❹ Vapour barrier (when installed "floating")
- ❺ Subfloor



System Description:

Warmup Total-16 is a lightweight, heavy duty insulation system comprised of three components: straight, multi-feed and return boards.

The Warmup Total-16 Floating Floor System is used where heating is installed onto a concrete or solid wooden subfloor but where a dry finish is used in place of a standard screed covering.

If it is used in new builds then additional insulation to comply with the building regulations may be required.

It is suitable in refurbishment projects; the system is made from EPS insulation so reduces downward heat loss. It can be installed under almost any floor finish, in particular ceramic tiling, engineered wood and composite laminate wood.

Technical Information

In new build the additional insulation supplied must comply with Building Regulations in force at the time.

The straight boards come with aluminium heat diffusion plates as an integral part of the board. Return boards and the multi-feed boards, which are used to transit pipes to other heating circuits from the manifold, do not have the aluminium heat diffusion plates installed; note that the heating plate for these boards does not affect performance.

The Warmup Total-16 boards are made of high density EPS with a 400Kpa compressive strength; providing extremely high resistance for short and long term loads.

Once the boards have been laid as per the Warmup design, the pipework can be installed and pressure tested. Once installed, the pipe should be protected and the final floor finishes laid as soon as possible.

Output from the system will be designed to meet your requirements taking into account such criteria as floor finishes.

Typical Outputs

Output W/m ²	Floor finish
111	25mm Marble, Cushion Linoleum, 5mm Underlay
83	9mm Carpet Floor Tile, 13mm Hardwood, 8mm Underlay
64	Medium pile Carpet, Wood Blocks, 22mm Timber Laminate
55	Deep pile carpet with 5mm Underlay
52	Deep pile carpet with 8mm Underlay

Components Required

Item	Information
Warmup Pipe (WHS-P-PEXA-12)	PEX-a - 12x2mm pipe
Warmup Total-16 Insulation Board complete with integral diffusion plate (WHS-TOTAL16-BOARD)	EPS - 400 1200 x 600 x 16mm; pipe grooves spaced at 150mm Thermal conductivity 0.034 W/m K @ 10° C
Warmup Total-16 return board (WHS-TOTAL16-RETURN)	EPS Return board 600x 300 x 16mm
Multi-feed board (WHS-TOTAL16-FEED)	EPS multi-feed board 600 x 300 x 16mm
Warmup primer (WHS-X-PRIMER)	Used to prime the Total-16 boards before tiling
Warmup seal adhesive* (WHS-X-SEAL25)	Used to secure the Total-16 boards to the subfloor. To be used in conjunction with WHS-X-BIND
Warmup glue* (WHS-X-Glue)	Used to secure the Total-16 boards to the subfloor

* The seal adhesive (WHS-X-SEAL25) in conjunction with WHS-X-BIND or the glue (WHS-X-Glue) can be used to secure the Total-16 boards to the subfloor. The glue should be used when looking to minimise floor height. If rising damp is an issue use seal adhesive in conjunction with WHS-X-BIND.

Important Information

Before commencing installation, it is important that a site inspection is performed. You will need to confirm that all measurements and other requirements on site match your building plans.

Ensure that all subfloors are the correct depth needed to incorporate the underfloor heating. Check for anything that might interfere with pipe installation such as concrete walls where they were not expected or changes to the floor layout.

Note: A redesign of the layout system may be required if any changes have been made.

The Total-16 system must be laid on load bearing floors only. Suitable subfloors are solid floors and suspended floors of minimum 22mm floor grade chipboard fixed to joists at a maximum spacing of 600mm. Where ceramic tiles are to be used over suspended floors then cross batten at 300mm. Total-16 can be installed as floating or fixed to the structure, ultimately the choice depends upon the floor finish to be used. The subfloors should be finished to a minimum surface regularity of SR1.

Insulation

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. The insulation must be installed beneath the under floor heating system in order to ensure that any downward heat loss does not exceed 10W/m², in accordance with BS EN 1264.

Damage

Inspect the site for possible hazards that could damage the WARMUP pipe, such as nails, staples, materials or tools. Remove any items or potential hazards before installing pipe.

When handling the WARMUP pipe it is important to protect the pipe from damage.

Uncoiling the pipe

DO NOT pull of the coil while it is sitting flat. It must be unwound from the coil, pulling from the top or the bottom of the coil. This will require one person to hold the pipe off the ground, or the use of an uncoiling device such as the WHUF-UNWINDER.

Bending Radius of the Pipe

When laying the pipe, do not force the pipe into bends. It is easier to lay the pipe with a large radius and then gently pull the pipe to the required bend.

The maximum bending radius is 5 times the diameter of the pipe.

Kinking

PEX-a pipe only

Excessive bending of the pipe can cause it to kink, where this occurs flow may be obstructed or reduced. Kinked pipe must be repaired. To repair a kink, straighten the pipe and simply heat the area with a hot air gun until the kink disappears.

NOTE: DO NOT use an open flame to heat the pipe.

Heat around the pipe to evenly heat the surface. Ensure that you do not overheat the pipe as this will result in damage. The maximum temperature that the PEX-a pipe can withstand is 95°C.

NOTE: Do not try to bend the pipe in the same spot.

Where the pipe is not PEX-a the circuit will need to be replaced with new pipework.

Cutting the pipe

Use a pipe cutter designed for plastic pipe ensuring that there are no burrs on the pipe ends. It is important to achieve a clean cut.

NOTE: If you accidentally damage a Warmup underfloor heating pipe BEFORE covering it with screed or other coverings, under the Warmup SafetyNet guarantee you may return the damaged coil of pipe to Warmup, who will replace the coil FREE OF CHARGE with pipe of the same length and type.

Important Information

Pipe Installation

Install the pipe along outside walls first so that the hottest (supply) water goes to the coldest areas. Pipe should not be installed under appliances such as freezers.

If a pipe circuit is installed under floor coverings such as carpet and tile, install pipe under the high R-value area first if possible, as this area will require a higher water temperature.

Keep pipe at least 15 cm from the edges of slabs, walls or other permanent objects in order to prevent damage. This will help to prevent damage to the pipe when these items or flooring materials are being installed.

Plan the circuit layout ensuring that pipes can connect to manifolds without crossing each other.

Ensure that all circuits have been planned in advance to minimize areas where the pipe passes through expansion joints.

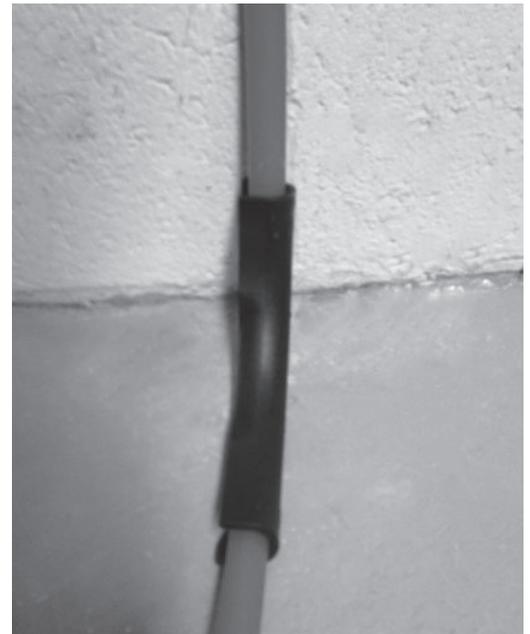
In confined areas it may not be possible to use the designed spacing. To avoid cold spots always use tighter spacing and more pipe rather than wider spacing and less pipe.

Protecting the Warmup Pipe

Pipe Bends

Protection will be required where the Warmup pipe enters the screed. The recommended method for protecting the pipe is the rigid PVC Bend Guide, which holds the pipe in a 90° bend, as well as protecting the pipe from damage.

To install PVC Bend Guides, simply insert the WARMUP pipe through the PVC Bend Guide to the appropriate length, (50-75 cm). The PVC Bend Guide should be positioned so that the pipe rises straight to the manifold with approximately half the guide within the floor.



Use the Warmup Pipe Bend Support where it enters the floor.

How to glue Total-16

Total-16 must be glued with either Warmup's glue (code: WHS-X-Glue) or with Warmup's adhesive mixed with its binder (codes: WHS-X-SEAL25 and WHS-X-BIND respectively) as described below. Where floor height is an issue the WHS-X-Glue should be used to reduce floor height. This adhesive should not however, be used on floors where there could be problems with rising damp, for example cellar floors. If there is a risk of rising damp it is best to use WHS-X-SEAL25 & WHS-X-BIND instead. For more information see the details under the respective brands below.

Please note, under floor heating will not resolve potential problems with damp. Damp problems shall be resolved before underfloor heating is installed.

Using WHS-X-Glue to glue Total-16:

Total-16 can be glued with WHS-X-Glue to porous surfaces such as concrete, chipboard, plasterboard and tiles. There must be no rising damp present. The surface should be free of oil, grease, paint or other substance that will prevent bonding. The WHS-X-Glue should be applied to the surface underneath the Total-16. Spread using a comb or roller. The glue should go tacky, such that it is not wet to touch and doesn't come away on your fingers, prior to laying Total-16 boards. On porous surfaces, this usually takes up to 30 minutes, times will vary according to temperature and humidity. If the glue is not tacky, the boards may not adhere.

Usage is approximately 2m² per litre. Adjust the turning boards and the slotted boards so that the pipe slots are aligned. Drying time is approx. 12 hours. Drying time is affected by both room temperature and humidity. When gluing TOTAL-16 to a sub floor, it is particularly important that the boards are firmly pressed down into the glue to create the necessary adhesion. For good adhesion, it may be necessary to use weights on top of the Total-16 or to screw the boards down. Avoid unnecessary treading on the Total-16 before the adhesive has properly set.

Glue thickness: approximately 1 mm.

Using WHS-X-SEAL25 to glue Total-16:

Total-16 can also be fixed with WHS-X-SEAL25 in conjunction with WHS-X-BIND to porous surfaces such as concrete, chipboard, plasterboard and tiles.

The surface should be free of oil, grease, paint or other substances that will prevent bonding. Adjust the turning boards and the slotted boards so that the pipe slots are aligned. Drying time is approx. 12-18 hours. Drying time is affected by room temperature and humidity.

Mix the WHS-X-SEAL25 with WHS-X-BIND; 5 litres of binder to 20 kg of WHS-X-SEAL25. (NOTE! Water shall not be used as a replacement of the binder). Spread the adhesive with a putty-knife; work in the adhesive before "combing" it out. Use a comb size of 6-8 mm for the board. Lay the board and press firmly down into the adhesive.

When gluing TOTAL-16 to a sub floor, it is particularly important that the heating boards are firmly pressed down into the glue to create the necessary adhesion. For good adhesion, it may be necessary to use sandbags/weights or to screw the boards to the surface. Avoid unnecessary treading on the boards before the glue has properly set. Drying time is approximately 12-18 hours (Drying time is affected by room temperature and humidity)

Adhesive thickness: approximately 3-4 mm

Note: It may be acceptable to use a flexible tile adhesive to fix the Total-16 boards to the subfloor. Always seek advice from the manufacturer on suitability with underfloor heating.

How to prime Total-16

The topside of the Total-16 must be primed if the intention is to apply tiles directly to the boards. For this use Warmup's WHS-X-PRIMER. WHS-X-PRIMER has outstanding qualities as a primer for expanded polystyrene and aluminium. Ensure the plates are clean; vacuum or alternatively wet/dry vacuum carefully. There must be no grease or oil on the boards and any present must be cleaned off. Apply the WHS-X-PRIMER with a brush, including any unused slots.

Allow the primer to dry properly (the surface should be totally dry before any further installation steps are carried out).

Coverage Rate: 3L will cover 30m²

Warmup® Total-16 Floating Floor System - Installation

Step 1

Ensure that the installation area is dry and sealed to the elements and that you have a level floor surface. The subfloors should be finished to a minimum surface regularity of SR1.

NOTE: Additional insulation may be required in order to meet the current building regulations.

Step 2

If using a floating cementitious board such as Warmup WDOC, you will need to install the Warmup perimeter strip around the perimeter of the room. It is not required for plywood but can help reduce sound bridging. The strip can be fixed using glue or staples.

Step 3

If additional insulation is required ensure that the boards are tightly butted up together laid in a brick work pattern with the longest side of the insulation laid at a 90° angle to the Total-16 insulation.

Step 4

Where installation is to take place onto a concrete base the Warmup polyethylene DPM sheets will need to be used. Ensure that when each sheet is laid the edges overlapped by approximately 200mm and are sealed.

Where the perimeter strip has been used ensure that it is securely fixed to the DPM.

Step 5

When laying the boards, leave an expansion gap of 5mm between the boards and the wall and other fixed objects. If required, the boards and aluminium plates can be shortened using a jigsaw. Remove any burrs from the shortened aluminium plates with a file before continuing.

Lay the Total-16 turning boards first so that pipe bends match the pipe layout. Next lay the straight Total-16 boards. Finally lay the multi-feed boards which are used for flow and return pipe runs. They may also be used where the pipes do not fit rooms dimensions. Mark out on the panels where any additional grooves are required and route out using an industrial router, e.g. for 90° bends on flow and return pipework from manifold.

Step 6

After establishing the area to be covered by the circuit, connect to the manifold holding the pipe at a 90° bend using the Warmup pipe bend support. (see page 5)

Step 7

Following a single meander pattern install the pipe by pushing into the grooves on the diffusion plates.

Step 8

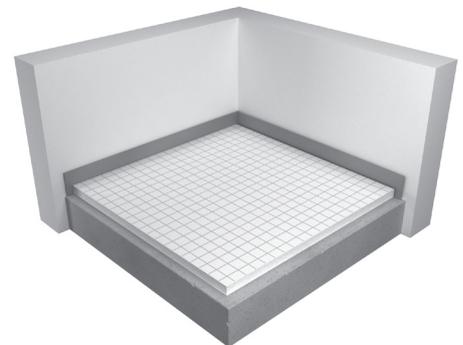
Fix pipe bend to the return pipe and connect to the manifold.

Step 9

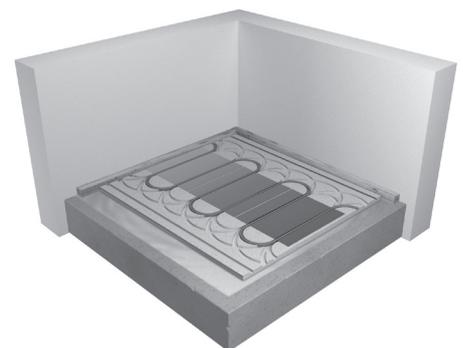
Complete Steps 6-9 for each circuit.



Prepare the subfloor



Install additional insulation if required



Lay the Total-16 boards

Installing Total-16 with Ceramic or Stone Tiles

The boards will have to be glued to the subfloor if the floor finish is tile or you require a vinyl floor finish in a wet area. The boards can be glued using either Warmup's Seal Adhesive (WHS-X-SEAL25) in conjunction with WHS-X-BIND or with glue (WHS-X-Glue). A tiled floor finish will also require the Total-16 boards to be primed using WHS-X-PRIMER.

Dry areas

Total-16 boards should be glued onto load-bearing floor structures; see page 6 "How to glue Total-16". The surface should be free of oil, grease, paint or other substances that will prevent bonding.

Apply a coating of primer to the boards ensuring you also coat unused pipe slots. Drying time 1-2 hours. Only start to lay ceramic tiles once the primer is dry. See Page 6 "How to prime Total-16"

Wet areas

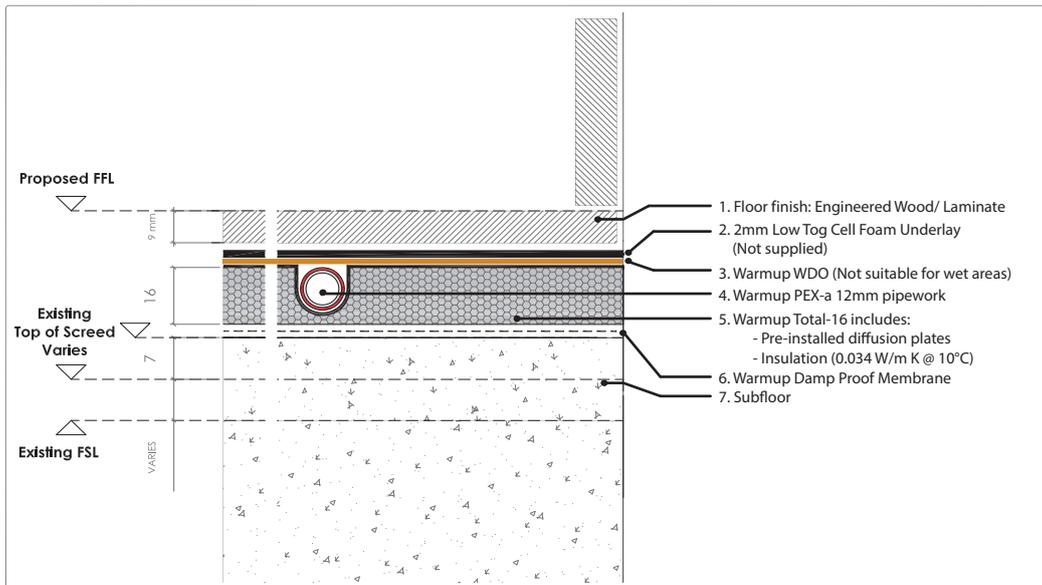
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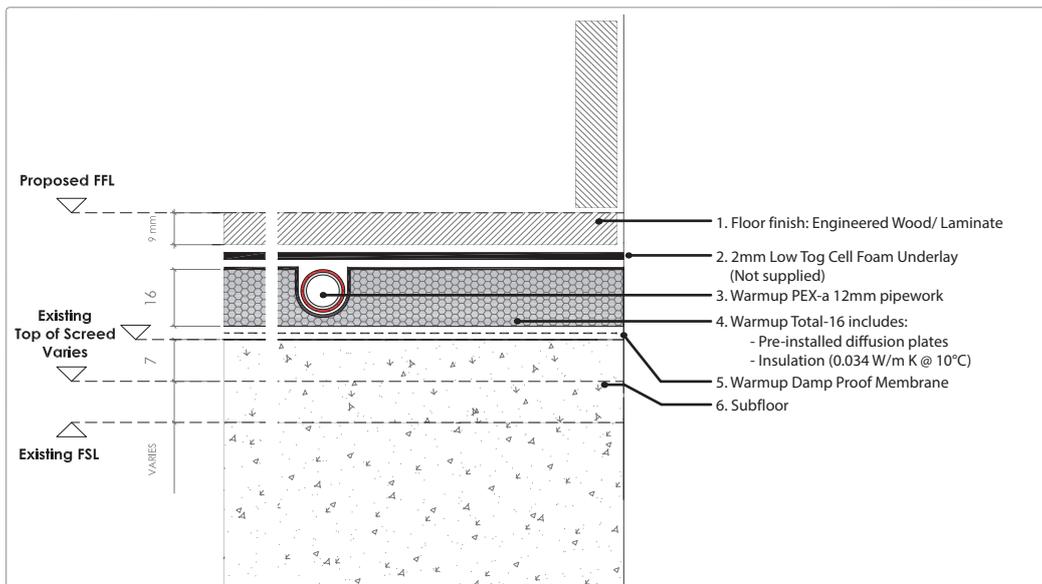
Installing Total-16 in wet areas requires the boards to be primed followed by a layer of self levelling screed to be applied on top of the boards. The minimum thickness of such a levelling compound coating adjacent to the floor drain should be a minimum of 12 mm to allow for the necessary slope to the floor drain; Drying/hardening time is 3-5 days. A sealing layer followed by ceramic tiling can then be applied.

Warmup® Total-16 Floating Floor System - Installation

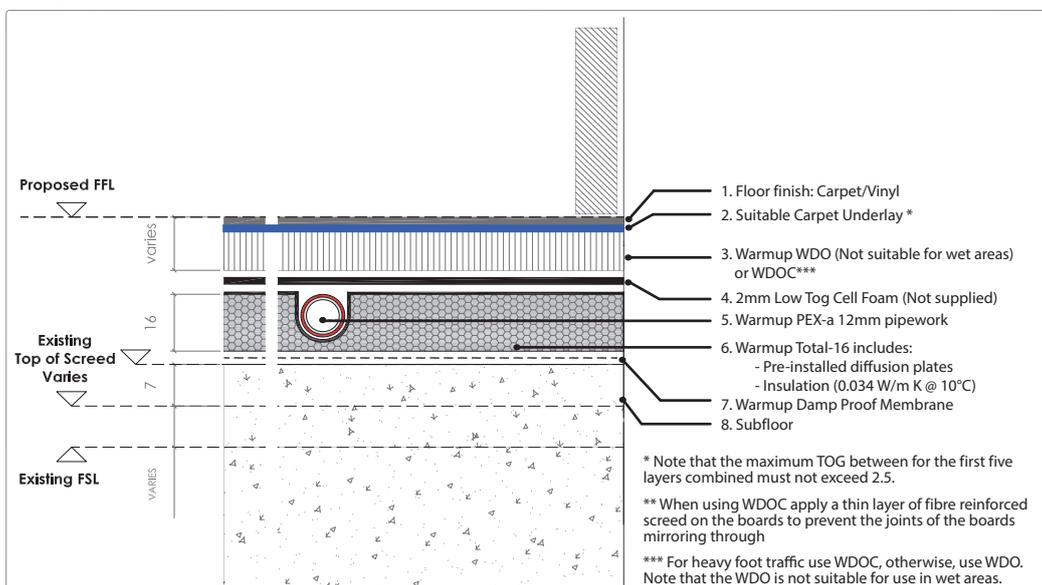
Wood/Laminate less than 12mm



Wood/Laminate over 12mm

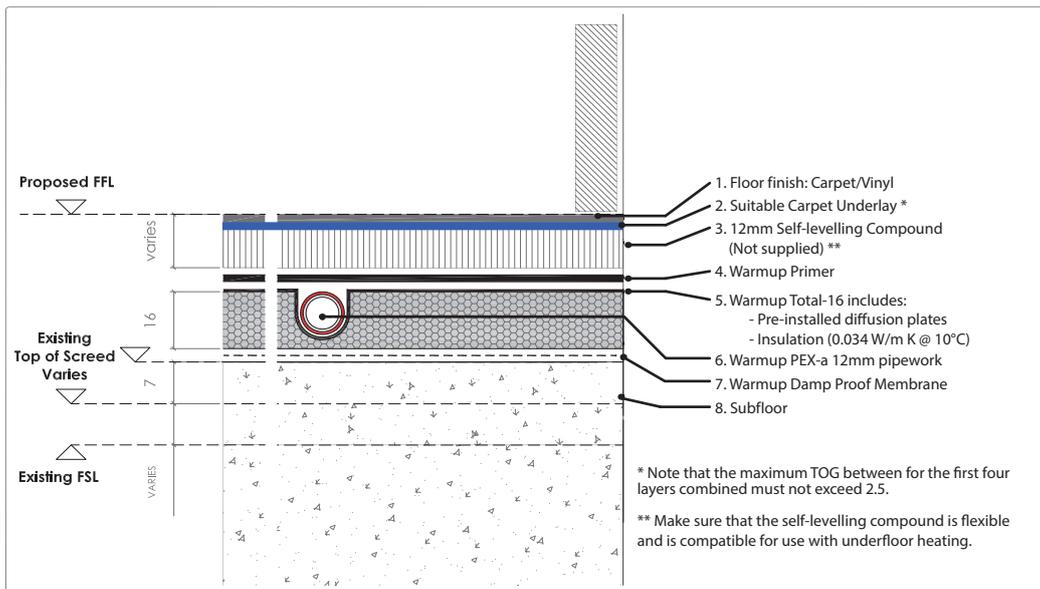


Carpet & Vinyl using Warmup Dual Overlay

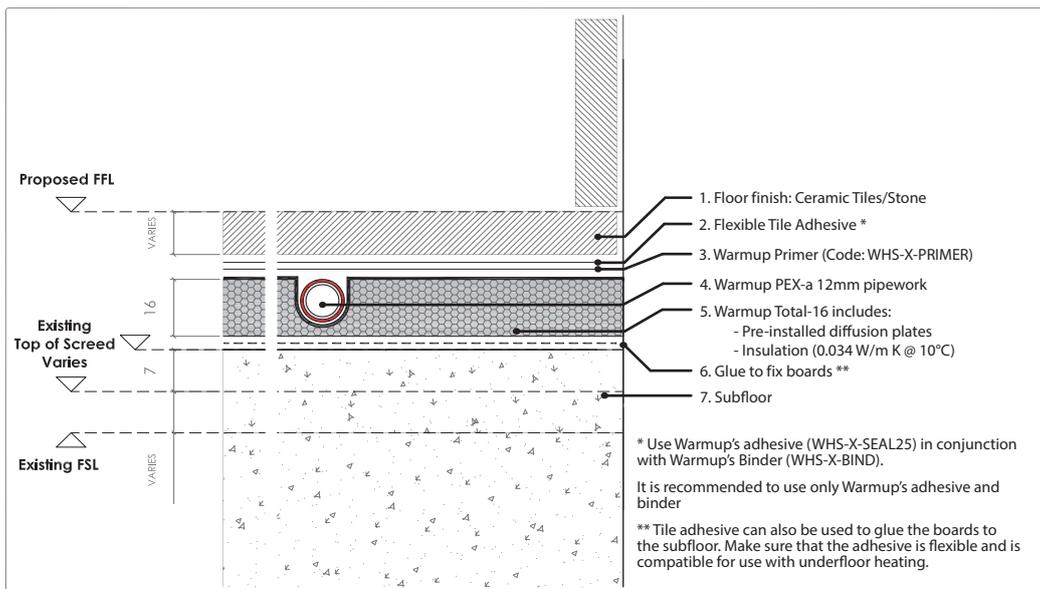


Warmup® Total-16 Floating Floor System - Installation

Carpet & Vinyl with Self-levelling



Tile & Stone



Pressure Testing

A system pressure test **MUST** be carried out before the screed has been laid. The system should be filled and each circuit purged of air.

Connect the pressure tester to the drain valve and increase the pressure test to 6 bar.

Leave at 6 bar for 1hr. If the pressure level remains stable record the results on the pressure test certificate.

If you see that the pressure has dropped you will need to inspect the pipework for damage and fittings for proper attachment.

Once the pressure test is complete reduce the system pressure down to 3 bar during screeding to protect the pipework.

Floor Coverings

When installing an underfloor heating system the thermal conductivity of the final floor covering must be considered at the design stage.

Ensure that the floor covering is suitable for use with underfloor heating. It is also important to check that any adhesives used with the floor covering are suitable and can tolerate the floor surface temperatures.

Before installing the final floor covering ensure that the Total-16 boards are clean and debris free.

Timber floors

The Total-16 boards should be laid floating on the subfloor which is then covered with Cellfoam. Lay the floating timber floor 90° to the underfloor heating pipe. The timber floor finish should not exceed 18mm in thickness. Please contact Warmup for advice for floors exceeding 18mm thickness. Timber flooring carries a 27°C surface temperature limit.

Carpet

The thermal resistance of carpets and underlay is fundamental in attaining good heat transfer. The most popular underlay type is sponge with a waffle pattern molded into the underside. These allow good heat transfer. Felt and rubber crumb underlay should be avoided. These products can seriously reduce the effectiveness of an under floor heating system, as they insulate the floor surface and prevent heat transfer. For optimal system performance choose an underlay with a maximum TOG value of approximately 0.5. The maximum combined TOG value of carpet should not exceed 2.5 TOG.

Tiles

If you are installing ceramic tiles over suspended floors they must be cross battened at 300mm. The Total-16 boards must be adhered to the subfloor when a tiled floor finish is to be applied. Clean the boards with a cloth and then apply the WHS-X-PRIMER on the entire surface, leaving to dry for 1-2 hours. (See page 6 for gluing and priming information). Once the primer has dried begin tiling. These floor coverings work well with under floor heating. The tiles should be laid on a full bed with no air gaps. It is important that the design of the supporting floor structure is stable and rigid to prevent cracking. It is recommended that flexible adhesives and grout be used.

Installation in wet areas

For installation in wet areas follow the installation method as above. Once the primer has fully dried a layer of self levelling screed should be applied on top of the boards. The minimum thickness of such a levelling compound coating adjacent to the floor drain should be a minimum of 12 mm to allow for the necessary slope to the floor drain. Once the self levelling screed has fully dried a sealing layer followed by ceramic tiling can then be applied.

Vinyl

Once the pipe has been installed lay either Warmup Dual Overlay boards or Warmup WDOC boards with a self levelling layer over the Total-16 boards ensuring you do not damage the pipes. Then vinyl/linoleum can be fixed (glued). Check the floor surface temperature indicated by your vinyl supplier for compatibility with under floor heating.

Vinyl flooring carries a 27°C surface temperature limit.

Installation in wet areas

The Total-16 boards must be adhered to the subfloor if laying a vinyl floor finish in a wet area. (See page 6 for gluing information). Once the pipe has been installed lay Warmup WDOC boards with a self levelling layer over the Total-16 boards ensuring you do not damage the pipes. Then vinyl/linoleum can be fixed (glued).

Warranty

Warmup Plc Limited Warranty – Hydronic Floor Heating Pipe

PLEASE REGISTER YOUR UNDERFLOOR HEATING SYSTEM ONLINE AT: www.warmup.co.uk

Registration can be completed online at www.warmup.co.uk. In the event of a claim, proof of purchase is required, so keep your invoice and receipt - such invoice and receipt should state the type of pipe that has been purchased.

THIS WARRANTY DOES NOT EXTEND TO OTHER COMPONENTS WHICH ARE COVERED BY SEPARATE WARRANTIES. THIS WARRANTY DOES NOT AFFECT YOUR STATUTORY RIGHTS.

Limited Warranty:

Warmup® underfloor heating pipe is warranted by WARMUP PLC (“Warmup”) to be free from defects in manufacturing under normal use and maintenance, and is warranted to remain so subject to the limitations and conditions described below.

This warranty period begins on the date of purchase. Registration is confirmed only when confirmation of receipt is forwarded by Warmup PLC.

Warranty Duration



•The Pex-a Underfloor heating pipe is warranted for the LIFETIME of the floor under which it is fitted, except as provided below; your attention is drawn to the exclusions listed and the end of this warranty.



•The Pe-rt Underfloor heating pipe is warranted for a period of 50 years from date of purchase, except as provided below; your attention is drawn to the exclusions listed and the end of this warranty.

•The Pe-rt-Al-Pe-rt Underfloor heating pipe is warranted for a period of 50 years from date of purchase, except as provided below; your attention is drawn to the exclusions listed and the end of this warranty.

Notification of a suspected failure must be received in writing by Warmup within thirty (30) days of the suspected breach. Products believed to be defective must be made available to Warmup for testing and determination of cause.

Upon acceptance of any warranty claim, Warmup shall have ninety (90) business days in which to investigate and determine whether it recognises responsibility for any believed defects in material or workmanship and determines the appropriate course of action to be taken.

It is expressly agreed that the sole remedies under this limited warranty shall be at the discretion of Warmup, Plc. to either: issue a refund, repair or replace any article which is proven to be defective. Any and all allowances made to customers for transportation, labour, repairs or all other work, are at the exclusive discretion of Warmup and shall be authorised in writing, in advance, by Warmup. Such cost does not extend to any cost other than direct costs of repair or replacement by Warmup and does not extend to costs of relaying or repairing any floor covering or floor.

The warranty applies to the products identified above only if they:

1. are registered with Warmup within 30 days after purchase;
2. are selected, designed and installed by a qualified contractor according to installation instructions provided by Warmup which are current as of the applicable Installation Date;
3. are connected to appropriate power and water supplies;
4. are installed according to all applicable building code requirements;
5. are not exposed to pressures and/or temperatures that exceed any limitations printed on the warranted product or in the applicable Warmup product installation manual;
6. remain in their original installed location, such that the floor covering or screed over the product is not damaged, lifted, replaced, repaired or covered with subsequent layers of flooring;
7. do not show evidence of accidental damage, misuse, lack of care, tampering, or repair or modification without the prior written approval of Warmup Plc.

Without limiting the foregoing, this Warmup Warranty does not apply to:

- 1.damage or repairs required as a consequence of faulty installation, application or abnormal operating conditions;
- 2.damage caused during installation, screeding, laying of the flooring or floor finish, or any other remedial works to the floor that are done post installation;
- 3.damage as a result of floods, fires, winds, lighting, accident, corrosive atmosphere, ultraviolet light or other conditions beyond the control of Warmup Plc;
- 4.use of components or accessories not compatible with this product;
- 5.products installed outside the country of original intended destination when specified by Warmup.
- 6.Normal maintenance as described in the installation and operating manual.
- 7.Parts not supplied or designed by Warmup.
- 8.Any damage caused by frozen or broken heat transfer fluid pipes in the event of equipment failure.
- 9.Changes in the appearance of a product that does not affect its performance.

NOTE: It is important to check that the pipe is pressure tested as specified in the installation manual, prior to screeding or final flooring/finishes being laid.

The above Limited Warranty is the full extent of explicit warranties provided by Warmup Plc.

By mutual agreement of all parties, it is agreed that this limited warranty, any claims arising from breach of contract, any breach of warranty, or any other claim arising, shall be governed under the laws of England and Wales. It is expressly understood that Warmup Sales Representatives, Engineers, Distributors, Sub-contractors and Sales and Technical Support Team Members have no authority whatsoever to bind Warmup to any agreement, warranty or remedy of any kind without the express written consent of Warmup Plc.

WARMUP PLC. DISCLAIMS:

- ANY WARRANTY NOT PROVIDED HEREIN INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE.
- ANY STATUTORY OR IMPLIED WARRANTY OF HABITABILITY AS WELL AS ANY RESPONSIBILITY FOR LOSSES, EXPENSES, AND INCONVENIENCES, SPECIAL, INDIRECT, SECONDARY, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM POSSESSION OR USE OF THE PRODUCTS AND ITEMS SOLD HEREUNDER.

THIS WARRANTY DOES NOT AFFECT YOUR STATUTORY RIGHTS.



The Warmup SafetyNet Installation Guarantee for Underfloor Heating Pipe

The Guarantee:

If you accidentally damage a Warmup underfloor heating pipe BEFORE covering it with screed or other coverings, you may return the damaged coil of pipe to Warmup, who will replace the coil FREE OF CHARGE with pipe of the same length and type.

Exceptions:

- 1.The SafetyNet Guarantee does not cover any other type of damage, misuse, or improper installation due to improper adhesive or subfloor conditions. Limit of one free replacement coil of pipe of a maximum of 125m in length per customer, installer and/or property.
- 2.If at any point Warmup believes the damage to be malicious or intentional, they shall reserve the right to withdraw this guarantee.
- 3.Damage to the pipe that occurs after installing your system is not covered by the SafetyNet installation guarantee.
- 4.You must purchase the Warmup Underfloor Heating system from a recognised reseller, and follow all recommended installation procedures written in the, at time of purchase, current Installation Manual. Failure to follow the instructions will result in the revocation of the guarantee.

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