Warmup®

The best underfloor heating - **guaranteed**™

Forte Grid Underfloor Heating Installation Manual

Technical Helpline
0845 345 2288

Warmup LIFETIME LIMITED WARRANTY

Warmup 50 YEAR LIMITED WARRANTY

SAFETY Net™
Installation-Guarantee

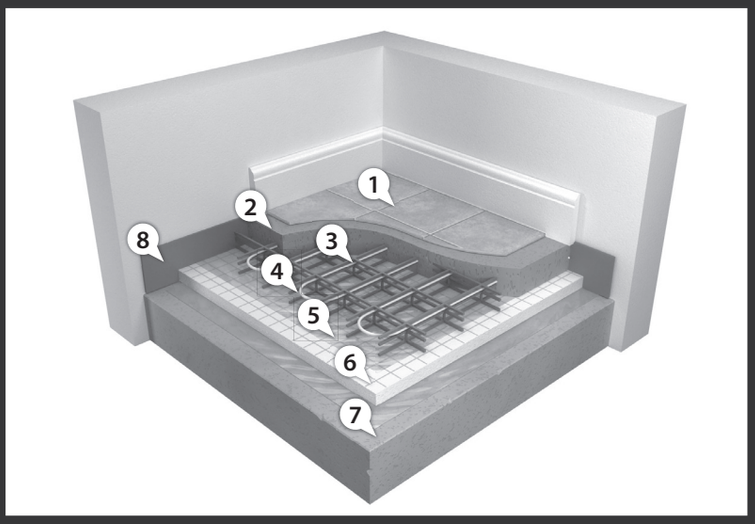
Contents

IMPORTANT
Please read this manual before attempting to install your underfloor heating.
Incorrect installation will invalidate your warranty.
Warmup Plc, accepts no liabilty, 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 0845 345 2288

Product Information - Warmup® Forte Grid System

1. Final Floor Finish
2. Concrete
3. Grid
4. Warmup Pipe (attached to grid using Warmup cable ties)
5. Plastic Membrane
6. Warmup Insulation
7. Subfloor with DPM
8. Perimeter Insulation



System Description

The Warmup Forte Grid System is designed for installation into load-bearing structural floors. The grid system will be designed by the structural consultant.

The Forte Grid System incorporates wire grids to which the underfloor heating pipework is attached using cable ties.

The Warmup Forte Grid System is either located within a concrete or structural screed, but is suitable for almost any floor finish, in particular where the flooring is for a commercial application, such as epoxy paint or resin.

Technical Information

The subfloor below the Warmup Forte Grid System must be smooth, level and capable of supporting the floor zone and imposed loads. A Damp Proof Membrane (DPM) may be required.

The Warmup Forte Insulation will meet both the relevant statutory and thermal efficiency requirements. Each insulation board covers an area of 2.88m^2 and is available in a choice of thickness from 25 to 100mm and varying compressive strengths to meet the project's exact requirements.

On top of the insulation we place a plastic membrane to act as a moisture barrier for the screed as it cures, this will be at least 500 gauge.

The Warmup Forte Wire Grid System is then placed on top of the plastic membrane. Once laid, the pipework can be installed to the approved design, utilising plastic ties, which hold the pipe in place against the Grid.

Once the system has been installed and pressure tested it should be protected and concreted as soon as possible. Concrete is laid to a depth normally of 150mm.

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

Components Required

Item	Information
Warmup Pipe	PEX-a - 16mm or 20mm PE-RT/AL /PE-RT - 16mm PE-RT - 16mm
Metro Insulation Board	PIR or EPS Gridded insulation boards available in 25mm -100mm thickness.
Warmup Perimeter Strip Part no. WHS-X-EDGE50	8mm x 150mm x 50m
Warmup Cable Ties Part no. WHS-FO-TIE	100 per bag
Warmup Pipe Conduit protection Part no. WHS-CL-CONDUIT	25mm conduit available in 50m lengths
Warmup Pipe Bend Support Part no. WHS-P-BEND	Suitable for use with all Warmup pipes

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 incorperate 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.

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.

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 none Pex-a the circiut will need to be replaced with a 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 when this will help to prevent damage to the pipe when these items or
flooring materials are being installed.

The pipe must not overlap when encased in a Screed as this will reduce the thickness of the Screed possibly leading to damage and/or "hot spots".

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.

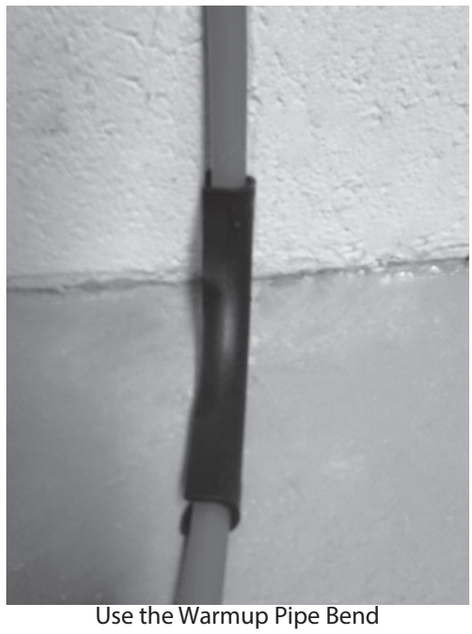
In the areas where pipes are closer than 10 cm such as near manifolds, if the thickness of the Screed permits, insulate the pipes with conduit to prevent "hot spots".

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.

Conduit Sleeving

Using the Warmup pipe conduit protection sleeve across all construction joints in floor. Locations where pipes pass through expansion joints, door frames, walls or where the pipe could get damaged by sharp edges will require protection.

When installing the conduit cut along the length of the conduit and clip onto pipe.

Expansion Joints

Heated screeds will expand and contract slightly during use. The perimeter insulation will allow for a certain amount of expansion in the slab but expansion joints may also be required. As per BS EN 1264-4 expansion joints should be used for every 40m^2 at a maximum length of 8m and an aspect ratio of 2:1.

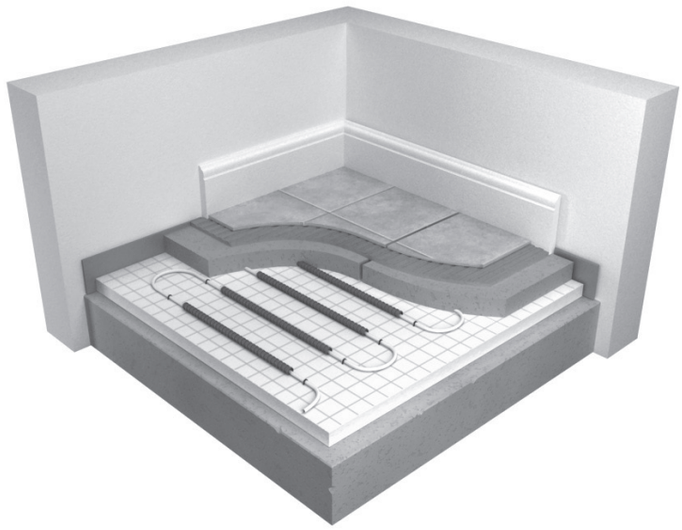
One joint is always required between a heated screed slab and an unheated screed slab.

The pipe must be protected using the expansion joint profile and the corrugated sleeve, extending to at least 300mm either side of the joint.

Where these joints occur, the pipework circuits crossing them should be kept to a minimum.

Where pipes are to cross over a screed expansion joint, use a small section of conduit over the pipe, up to a minimum of 300mm either side of the joint.

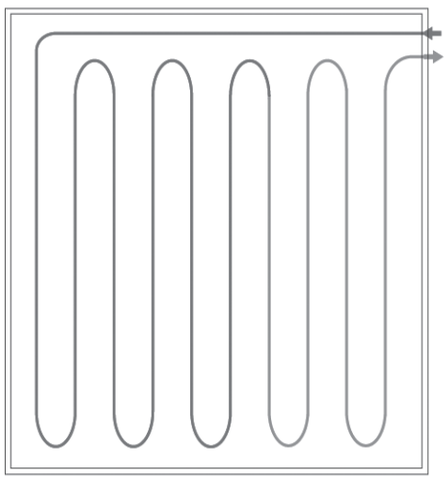
It is important that all planned joints must be marked on the design drawings.



For further information regarding floor screeding requirements for under floor heating systems please refer to BS8204-1.

Laying Patterns

The following laying patterns maybe used when installing the Tella Grid system.



Single Meander

Warmup® Forte Grid System - Installation

Step 1
Ensure that the installation area is dry and sealed to the elements and that you have a level floor surface.

Step 2
Install the Warmup perimeter strip around the perimeter of the room.

Ensure that the strip is positioned above screed level and fixed using staples or glue. Always ensure that there are no gaps that could allow contact between the screed and the structure.

NOTE: Care must be taken to ensure any damp proof membrane in the wall is not perforated.

Step 3
Lay the insulation boards over the entire floor area butting the boards up to the perimeter strip. Ensure that the boards are laid with the foil facing up. The Boards should be laid in a brick wall pattern with all the boards butted tightly against each other.

Fix the The polythene overlap of the perimeter strip to the insulation board using tape.

Step 4
Lay the polythene DPM sheet over the floor insulation. Ensure that the sheet is placed above the finished floor height and that the sheets overlap each other by 80mm. Ensure that all joints are taped to ensure that the membrane is watertight.

Step 5
The wire grid must be laid on top of the polythene DPM sheet , covering the whole floor area.

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)

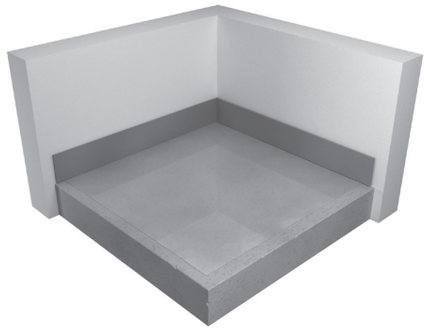
Step 7
Using cable ties attach the pipes to the wire grid approximately 500mm apart in the desired pattern. It may be necessary to use more ties on pipe bends .

Step 8
Locations where pipes pass through expansion joints, door frames, walls or where the pipe could get damaged by sharp edges will require protection.

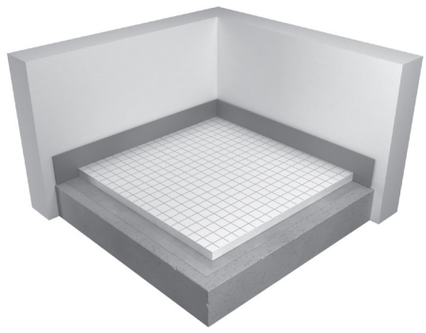
Using the Warmup pipe Conduit protection cover the pipe. Spilt the sleeving along its length and fix over the pipe.

Step 9
Fix pipe bend to the return pipe and connect to the manifold.

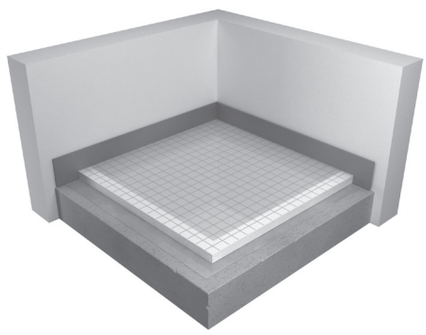
Step 10
Complete Steps 6-9 for each circuit.



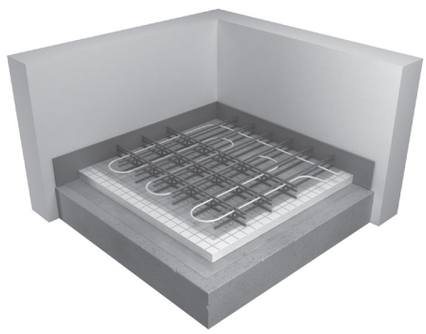
Prepare the subfloor



Install the perimeter strip and the insulation



Lay the Warmup Polythene Membrane



Fix the the pipe to the wire grid.

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 1 hr. 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.

Screeding & Floor Coverings

Ensure that the screed has fully cured before using the underfloor heating system as this may reduce the moisture content of the screed.
Once the screed has cured and has undergone its first heat cycle, minor micro cracking may occur within the screed. This does NOT affect the performance of the screed. However, final floor coverings must NOT be laid until the floor has cooled down completely.

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.

Timber floors
The important factor is the floor moisture content.
Timber floors can be laid directly over the screed if they have a moisture content of 10-11% which when heated will reduce to 8-9% and may cause a small amount shrinkage.
The floor will re-absorb some moisture when the heating is not operating and the moisture content will increase to 12-13%.
The timber floor finish should not exceed 18mm in 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
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.

Vinyl
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.

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.

SAFETY Net™
Installation-Guarantee

The Warmup Safety Net 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 Safety Net 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 Safety Net 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.

Underfloor Heating Pressure Test Report

Client :	**Installer Name :**
Installation Address :	**Address :**

Completion Date :

Room / Area	Circuit no.	Pass	Notes

Signed by Tester :	**Print Name :**	**Date:**
Witnessed by:	**Print Name :**	**Date:**

This form must be completed and a copy sent to Warmup to validate the system warranty.

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