

Warmup

The world's best-selling floor heating brand™

Installation Manual:

Underfloor Heating Mat - type PVC



TECHNICAL HELPLINE
0845 345 2288

SAFETY Net™
INSTALLATION
GUARANTEE

IMPORTANT
Read this manual before attempting to
install the heater.
Incorrect installation could damage the
heater and will invalidate your warranty.
Complete and submit your warranty form
online at www.warmup.co.uk



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Your Warmup Underfloor heating mat has been designed so that installation is quick and straight forward, but as with all electrical systems, certain procedures must be strictly followed. Please ensure that you have the correct heater(s) for the area you wish to heat.

Warmup plc, the manufacturer of the Warmup Underfloor Heating System, accepts no liability, expressed or implied, for any loss or consequential damage suffered as a result of installations which in any way contravene the instructions that follow.

It is important that before, during and after installation that all requirements are met and understood.

If the instructions are followed, you should have no problems. If you do require help at any stage, contact our helpline:

0845 345 2288

You may also find a copy of this manual, wiring instructions and other helpful information on our website: www.warmup.co.uk

Do's and Don'ts

DO

Carefully read this instruction manual before commencing installation. Consult our helpline or a competent professional if you are unsure how to proceed.

Ensure the system is tested before, during and after installation.

Plan your mat layout and installation so that any drilling after tiling (e.g. for sanitary ware) will not damage the wiring.

Maintain a minimum gap of 50mm between wire runs and from conductive parts such as water pipes.

Check that the mat is working immediately before commencing tiling.

Take particular care when tiling not to dislodge or damage the heating wire. Ensure that during the course of the installation that no damage is caused by, for example, falling objects, sharp objects etc.

Wear gloves to prevent irritation from the fibreglass mesh.

Ensure the end cap and manufactured joint are under a full bed adhesive or levelling compound and covered with a tile.

Ensure that a heat loss calculation has been carried out and heating requirements have been met if you are using the underfloor heating system as a primary source of heating.

Ensure that the heaters are separated from other heat sources such as luminaires and chimneys.

Ensure that the control card at the back of the manual is completed and fixed at the main consumer unit along with any plans and electrical test records. As per the current BS7671:2008 17th Edition wiring regulations.

DON'T

Cut or shorten the heating element at any time.

Commence installation on a concrete floor that has not been fully cured.

Leave surplus matting rolled up under units or fixtures - **USE THE CORRECT SIZE MAT.**

Install the mat on irregular surfaces such as stairs or up walls.

Use staples to secure the the heating element to the subfloor.

Run the floor sensor wire or power lead over or under the heating element or close to other heat sources such as hot water pipes.

Connect two mats in series, only connect mats in parallel.

Commence tiling before testing the mat.

Switch on the installed mat until 8 days after fitting to allow the tile adhesive to dry completely.

Install the mat in temperatures less than +5°C.

Bend the heating cable under 25mm radius.

Use the heating system to dry out levelling compound or adhesive.

Tape over the end cap or manufactured joint.

Attempt a DIY repair if you damage the heater. Contact Warmup on 0845 345 2288. If you accidentally damage a the heating mat BEFORE tiling, under the Warmup Safety net guarantee you may return the damaged heater to Warmup, who will replace the heater FREE OF CHARGE. See details of the safety net warranty at the back of the manual.

Selecting the Correct Heater

150W/m² - Standard rooms

Ideal for quick installations in regular-shaped rooms, these mats can be laid straight onto Plywood or concrete bases. They can provide primary heating in well insulated areas and secondary heating in other circumstances. Warmup always recommend overboarding concrete/wooden bases with insulation boards (10mm standard) to improve performance.

200W/m² - High Heat Loss rooms e.g. conservatory

200W/m² system is best suited for installation in rooms with higher than normal heat-loss or areas e.g. a conservatory where rapid heat-up is required. The 200W/m² system is capable of providing primary heating in almost any situation providing the sub-floor is reasonably *insulated.

*Always ensure that a heat loss calculation has been carried out and heating requirements have been met if you are using the undertile heating system as a primary source of heating. Warmup always recommend overboarding concrete/wooden bases with insulation boards (10mm standard) to improve performance.

How to select the correct heater or heater combination

Calculate the area of the floor to be heated. This is the total floor area minus any permanent fixtures.

Length x width = m²

Select the heating mat or combination of mats closest in size to the area you want to heat. See page 7 for the full range of heater sizes.

Remember

- Heaters cannot overlap
- Heaters must be connected in parallel
- A single thermostat can control loads up to 16 Amps.

What you need for installation

Components included in your Warmup PVC kit :

- Warmup PVC Mat
- Installation Manual

Additional components needed as part of your Warmup heating installation:

- A Warmup® Thermostat with floor sensor.
NOTE: Only Warmup® Thermostats should be used.
- 30mA Residual Current Device (RCD), required as part of all installations
- Digital Multi-meter required for testing the resistance of the mat and floor sensor

- Electrical housing, back boxes and junction boxes (Back box for the thermostat must be at least 35mm deep)
- Electrical trunking/conduit for housing the power leads
- Duct Tape (to secure the floor sensor and loose wires)
- Scissors for cutting the fibreglass mesh
- Gloves
- Warmup® Insulation Boards

If the Warmup® underfloor heating mat is to be used as a primary source of heating you will need to ensure that you have adequate thermal insulation. A heat loss calculation **MUST** be carried out to determine whether or not the heaters will provide enough heat for your room.

Floor Coverings

This installation manual gives instruction for installation of the Warmup underfloor heating mat under ceramic, quarry or natural stone tiles. The maximum thermal resistance of the floor must not exceed 0.15 [m²K / W].

Other Floor Coverings

It is possible to install the heating element under floor finishes such as wood or vinyl by applying a self levelling compound over the heating mat. You must ensure that all heating cables are completely covered with a minimum of 10mm self levelling compound. It is important that the levelling compound is suitable for use with underfloor heating.

Note: Delicate floor finishes such as wood or vinyl have a maximum floor surface temperature of 27°C. This temperature must **NOT** be exceeded.

Please contact Warmup for further advice if you wish to install the underfloor heating mat under any floor finishes other than ceramic, quarry or natural stone tiles.

Safety - electrical considerations

As with all electrical projects all mains electrical connections must be undertaken by a certified electrician. All work must conform to current IEE Wiring Regulations. The Underfloor heating must be controlled via a floor sensor thermostat at all times.

Installing a Residual Current Device (RCD)

The Heating Mats must be wired via an RCD. You must install a dedicated RCD if one is not already present. You may wish to use a fused spur/RCD. No more than 4.8kW of heating may be connected to a single 30mA RCD.

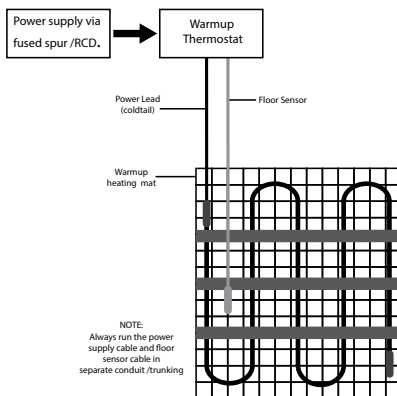
NOTE: It is possible to run the heater from an existing circuit. Consult a certified electrician to determine whether or not the circuit can handle the load and if it is RCD protected.

Installing Electrical Boxes and Trunking

You will require a deep (35-40mm) back box for the thermostat. If you are installing more than two heaters, a junction box will be required. The wiring from the heater to the thermostat should be protected by conduit or plastic trunking.

Connecting the Thermostat

The thermostat must be connected to the mains electrical supply via a double pole isolator fused spur or RCD that has a contact separation in all poles providing full disconnection under over-voltage category III conditions. The thermostat should be installed within the room to be heated. In most bathroom installations the thermostat cannot be located within the bathroom itself as the thermostat is IP20 rated and must be located outside of Zone 2. In such cases the thermostat must be fitted to the outside of an internal wall of the bathroom, as close to the under floor installation as possible. Once the electrical connections have been made and the system has been tested, the electrician must complete the control card at the back of this installation manual. As per BS7671:2008 this information must be displayed at or near to the consumer unit.



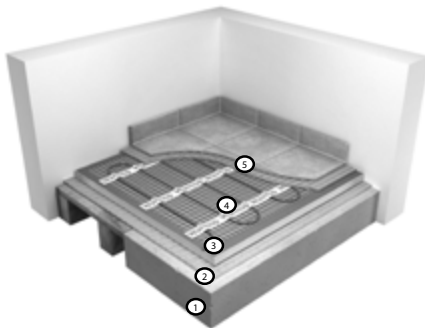
Subfloor Preparation

Wooden Subfloors

- Ensure adequate underfloor ventilation
- Existing floorboards need to be securely fixed and if necessary pre-levelled with a latex/cement self-levelling compound to give a flush fit for the subsequently applied WBP plywood (18mm) or an Insulated tile backer board (Warmup® Insulation Boards).
- A rigid base is essential - Fixing WBP plywood or Warmup® Insulation Board to joists will not provide a suitable floor finish for accepting tiles.
- Refer to BS5385: Part 3: 1999, clause 14.4 for more information on sealing the backs and edges of the WBP plywood before fixing.
- The above recommendations apply to floors of small areas as advised in clause 14.4 of BS 5385: Part 3: 1999.

Concrete Subfloors

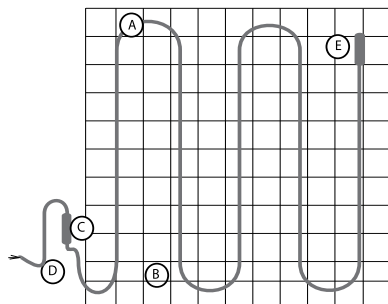
- Ensure you use an extruded polystyrene building or tile backer board (Warmup® Insulation Board) if installing your mat onto a cement-based floor.
- Fixing the board should be as per the manufacturer's instructions.



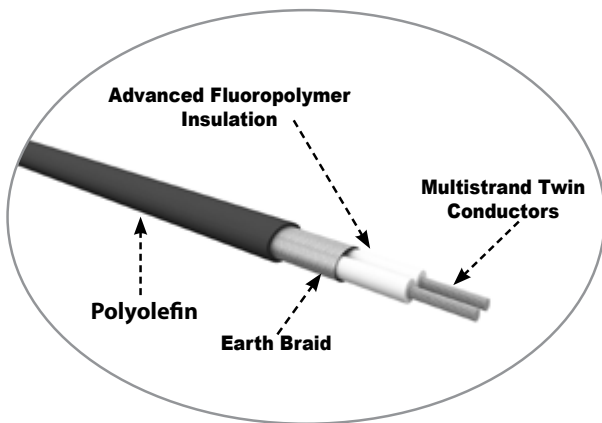
1. Concrete/ Timber Subfloor
2. Flexible Adhesive
3. Warmup® Insulation Board
4. Warmup® Underfloor Heating Mat
5. Flexible Adhesive & Tile

About the mat

The mat is made up of



- A - Heating Element
- B - Fibreglass mesh
- C - Factory-made joint
- D - Power lead (3-core)
- E - Termination Joint



NOTE:

Warmup thermostats can switch up to 16 amps. If you are installing more than two heaters you may require a junction box.

The mat is available in 2 different wattages 150W/m² and 200W/m². Each mat is designed to produce a specific amount of heat based on its length. For this reason you must never shorten the mat.

Voltage	230VAC ~ 50Hz
Min bending radius	25mm
Ip rating	IPX7
Min Spacing	50mm
Min installation temp	5°C

Testing the mat

The heaters must be tested before, during and after tiling. We recommend the use of a digital multi-meter set to a range of 0-2 K ohms for testing. The resistance (ohms) of each mat should be measured. You should carry out the following tests and should expect the results detailed below:

- Live to neutral should show the Ohms value listed in the table on page 7.

A +/- 5% Ohm reading tolerance is allowed under manufacturing guidelines. Record the readings on the control card at the back of the manual.

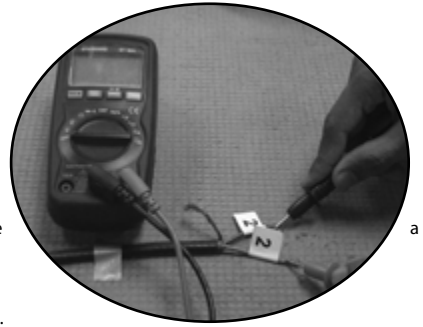
- Live to earth and neutral to earth should show infinity.

NOTE: Due to the high resistance of the heating element, it may not be possible to get a continuity reading from the mat and as such, continuity testers are not recommended. When checking resistance, make sure your hands do not touch the meter's probes as the measurement will include your internal body resistance and render the measurement inaccurate.

If you do not get the expected results or at any time you believe there may be problem, please contact Warmup's Technical Team on 0845 345 2288 for guidance.

Floor Sensor

Ensure that the floor sensor is tested before the final floor finish has been laid. The floor sensor values can be found in the thermostat instructions. When testing the floor sensor ensure that the meter can read up to 20k ohms.



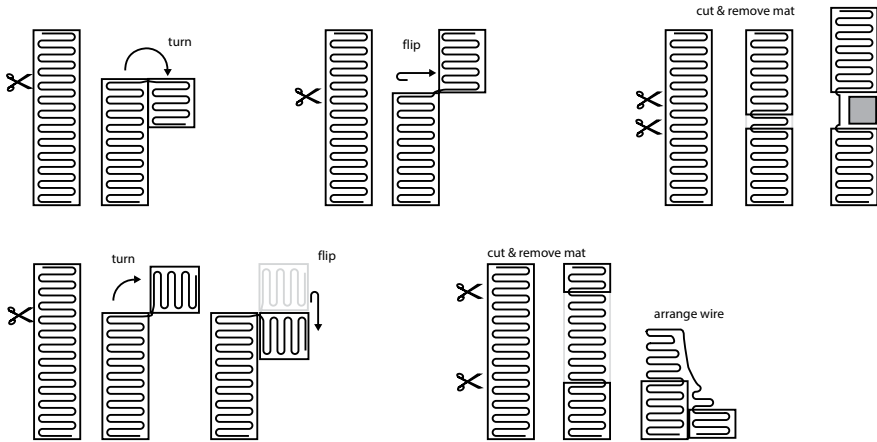
Sizing Guide

150W/m ²				
Model	Size (m ²)	Wattage	Amps	Resistance
PVCM1	1.0	150	0.7	352.7
PVCM1.5	1.5	225	1.0	235.1
PVCM2	2.0	300	1.3	176.3
PVCM2.5	2.5	375	1.6	141.1
PVCM3	3.0	450	2.0	117.6
PVCM3.5	3.5	525	2.3	70.5
PVCM4	4.0	600	2.6	88.2
PVCM4.5	4.5	675	2.9	78.4
PVCM5	5.0	750	3.3	70.5
PVCM6	6.0	900	3.9	58.8
PVCM7	7.0	1050	4.6	50.4
PVCM8	8.0	1200	5.2	44.1
PVCM9	9.0	1350	5.9	39.2
PVCM10	10.0	1500	6.5	35.3
PVCM12	12.0	1800	7.8	29.4
PVCM15	15.0	2250	9.8	23.5

200W/m ²				
Model	Size (m ²)	Wattage	Amps	Resistance
2PVCM1R	1.0	200	0.9	264.5
2PVCM1.5R	1.5	300	1.3	176.3
2PVCM2R	2.0	400	1.7	132.3
2PVCM2.5R	2.5	500	2.2	105.8
2PVCM3R	3.0	600	2.6	88.2
2PVCM3.5R	3.5	700	3.0	75.6
2PVCM4R	4.0	800	3.5	66.1
2PVCM4.5R	4.5	900	3.9	58.8
2PVCM5R	5.0	1000	4.4	52.9
2PVCM6R	6.0	1200	5.2	44.1
2PVCM7R	7.0	1400	6.1	37.8
2PVCM8R	8.0	1600	7.0	33.1
2PVCM9R	9.0	1800	7.8	29.4
2PVCM10R	10.0	2000	8.7	26.5
2PVCM15R	15.0	3000	13.0	17.6

How you can modify the mat

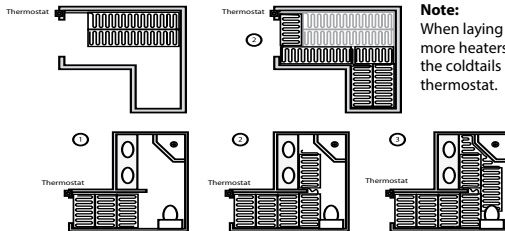
In order to fit your mat into a specific area, it may be necessary to cut and turn the mat (examples below).
NEVER cut the heating element. When cutting and flipping the mat take care not to cut or damage the heating cable.



Before installing the mat

A Check mat size

Please take a moment to double-check that your plan has the proper room dimensions and that you have the correct size and proper number of mats. Mats should run backwards and forwards between walls and obstructions as shown in the examples.



Note:
When laying two or more heaters, ensure the coldtails reach the thermostat.

Depending on insulation, air-flow & overall heat-loss within the room, additional heating may be required.

B Before Installation Test

Perform the first test following the steps described above to ensure that the mat has not been damaged during transport. Do not wire to a plug at this stage.



Installing the mat

Step 1 - Mark the subfloor

Ensure that the subfloor is of the same construction where you intend to lay the mat to ensure that the heater performs effectively. Warmup always recommend that insulation boards, such as Warmup® Insulation Boards (10mm recommended), are used to improve the efficiency of the mats.

Using a permanent marker, mark out areas on the subfloor where units and fixtures will be fitted. **DO NOT** install the mat in any of these areas. Start by laying the mat in the location closest to the thermostat. Mark the positions and planned route of the power lead cables as well as the floor sensor.

ALL MANUFACTURED JOINTS NEED TO BE PLACED ON THE FLOOR UNDER A FULL BED OF ADHESIVE AND TILES.

If you have awkward areas in the room the loose wire can be removed from the mat to fit these areas. When doing this ensure that you **DO NOT** let the heating element cross or touch. Ensure any loose wires are no closer than 50mm from each other, the wall or from any other wires still attached to the mesh. Loose wire taken from the mat can be secured to the floor using duct tape.

Step 2 - Test the Heater

Before installing the heating mat perform the same test as described on page 6 to ensure that the heater has not been damaged during planning.

Step 3 - Cut, turn and affix the mat

When you have marked the positions and planned the route of the mat on the floor, start laying the mat cutting and turning where the marks have been made, beginning at the location closest to the thermostat. Be careful and never cut the heating cable. Affix the mat using the double sided tape on the mat.

Use duct tape to affix any loose wires which have been removed from the mat. Once the mat is fitted, ensure that there are no loose sections, paying close attention to the ends of the mats and any section which has been turned.

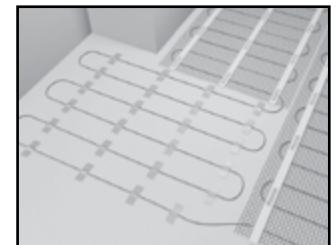
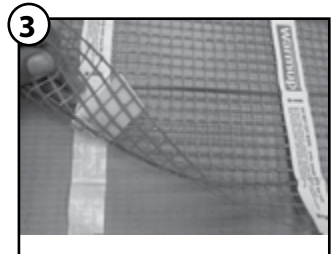
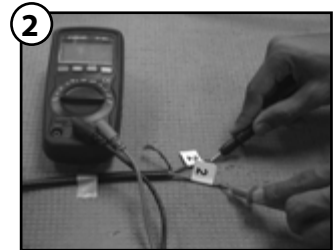
DO NOT TAPE OVER THE MANUFACTURED JOINTS OR FLOOR SENSOR TIP.

If you find that once the heater has been laid you have too much of the mat left over **STOP**, contact Warmup immediately on 0845 345 2288. Remember you must **NEVER** cut the heating element to fit an area or leave surplus mats behind units or fixtures.

If you are installing multiple mats in one room they should be connected in parallel.

Step 4 - After installation test

Perform the same test as in step 2. If at this stage you do not get the expected reading or you are getting an open circuit contact Warmup on 0845 345 2288.



Installation cont'd

Step 5 - Install floor sensor

Place the floor sensor below the fibreglass mesh. The floor sensor must be installed centrally between the two runs of heating element and should extend a minimum of 150mm into the heated area. Secure the sensor to the floor using tape.

NOTE: DO NOT TAPE OVER THE SENSOR TIP.

It is best to avoid placing the floor sensor in areas of heat fluctuations e.g. near hot water pipes or radiators. It may be necessary to cut a channel in the floor to ensure that the floor sensor and power supply cable are kept at the same height as the heating element.

When installing the floor sensor (located in the thermostat box) **DO NOT** cross over or under the heating element.

At this stage the floor sensor must also be tested. Check the resistance of the floor sensor using your multi-meter (20K ohms). You should get a reading of approximately 9-23K ohms depending on the room temperature.

If you do not get a reading your floor sensor may be damaged. If this is the case call the Warmup Technical Helpline to request a replacement.

NOTE: The sensor may be extended up to 50m.

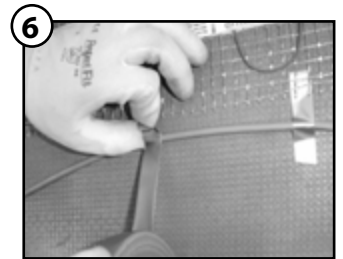


Step 6 - Fit Power Leads

Each mat is fitted with a single power lead for connecting the mat to the thermostat. To ensure the power lead remains at the same level as the heating element, you may need to cut or chisel a channel in the subfloor. When doing this take care not to damage the heating element. Secure the power lead in place using tape but do not tape over the manufactured joint where the power supply cable meets the heating element.

The power lead will go into the electrical trunking/conduit up to the thermostat. It is possible to extend the power lead using twin and earth cable.

Note: Instructions for fitting the Warmup® thermostat are included in the thermostat box.



Step 7 - Tile & grout the floor

Ensure you use tile adhesives and grouts suitable for use with underfloor heating systems (they must contain a flexible additive). It is important that each tile is solidly bedded in adhesive, with no air gaps or voids beneath. (2 Part Flexible Adhesive). Do **NOT** dot and dab the tiles.

Check with the manufacturers of the adhesive to ensure suitability.

Use a plastic notched trowel to move the adhesive along the element. Use a piece of cardboard on top of the exposed element to use as a crawl board. Ensure to test the resistance of the heating mat regularly during tiling to check the mat hasn't been damaged during tiling.

If using flexible levelling compound before tiling make sure that the mat is completely flat, extra tape can be used to secure the edges of the fibre glass mesh to the floor.

Do not store tiles or heavy objects on the mat while tiling. Wait for 8 days to allow the adhesive to dry before you switch on the system.

FINALLY TEST THE RESISTANCE OF THE HEATER(S) ONCE TILING IS COMPLETE.



Place this card in a visible spot close to the consumer unit.



Heater Location _____

Total Wattage _____

CAUTION

Radiant Floor Heating Systems
 Warning-Risk of electric shock
 Electric-wiring and heating panels
 contained below the floor. Do not
 penetrate with nails, screws, or similar
 devices. Do not restrict the thermal
 emission of the heated floor.



Attention:

Do not cut or shorten the heating element.

Ensure that the entire heating elements including the joints are installed under the tiles in the installation.

The Heating element must be used in conjunction with a 30mA RCD.

Heater Model	Resistance Before	Resistance After	Insulation Resistance Pass	Floor sensor resistance

_____ Date

_____ Signed

_____ Company stamp/name

This form must be completed as part of the Warmup Guarantee. Ensure that the values are as per the instruction manual.

This card must be situated close to the consumer unit in a visible place.

Note: Draw a Plan showing the layout of the heater.

Warmup Plc 702 Tudor Estate Abbey Road London NW10 7UW T: 0845 345 2288 F: 0845 345 2299 www.warmup.co.uk



Terms and conditions apply
Models: PVC, PVCm, 2PVCm**R and SSMAT heaters manufactured by Warmup plc -

THE 10 YEAR ELEMENT OF THIS GUARANTEE DOES NOT EXTEND TO THERMOSTATS WHICH ARE COVERED BY SEPARATE GUARANTEES. THIS GUARANTEE DOES NOT AFFECT YOUR STATUTORY RIGHTS.

Warmup Underfloor Heater is guaranteed by Warmup plc ("Warmup") to be free from defects in materials and workmanship under normal use and maintenance, and is guaranteed to remain so subject to the limitations and conditions described below. The UNDERTILE HEATER is guaranteed for the floor covering under which it is fitted, except as provided below (and your attention is drawn to the exclusions listed at the end of this guarantee).

This 10 years guarantee applies:

1. only if the unit is registered with Warmup within 30 days after purchase. 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 exact model that has been purchased; and
2. only if the heater has been earthed and protected by a Residual Current Device (RCD) at all times.

Thermostats are guaranteed for a period of 3 YEARS from the date of purchase, except as provided below. The guarantee for the Warmup 3le thermostat can be upgraded to lifetime. Contact Warmup for details 0845 345 2288.

Neither guarantee continues if the floor covering over the heater(s) is damaged, lifted, replaced, repaired or covered with subsequent layers of flooring. The guarantee period begins on the date of purchase.

During the period of the guarantee Warmup will arrange for the heater to be repaired or (at its discretion) have parts replaced free of charge. The cost of the repair or replacement is your only remedy under this guarantee which does not affect your statutory rights.

Such cost does not extend to any cost other than direct cost of repair or replacement by Warmup and does not extend to costs of relaying, replacing or repairing any floor covering or floor.

If the heater fails due to damage caused during installation or tiling, this guarantee does not apply. It is therefore important to check that the heater is working (as specified in the installation manual) prior to tiling.

WARMUP PLC SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO EXTRA UTILITY EXPENSES OR DAMAGES TO PROPERTY.

WARMUP PLC is not responsible for:

1. Damage or repairs required as a consequence of faulty installation or application.
2. Damage as a result of floods, fires, winds, lightning, accidents, corrosive atmosphere or other conditions beyond the control of Warmup plc.
3. Use of components or accessories not compatible with this unit.
4. Normal maintenance as described in the installation and operating manual, such as cleaning thermostat.
5. Parts not supplied or designated by Warmup.
6. Damage or repairs required as a result of any improper use, maintenance, operation or servicing.
7. Failure to start due to interruption and/or inadequate electrical service.
8. Any damage caused by frozen or broken water pipes in the event of equipment failure.
9. Changes in the appearance of the product that does not affect its performance.



SafetyNet™ Installation Guidelines: If you make a mistake and damage the new heater before laying the floor covering, return the damaged heater to Warmup within in 30 days along with your original dated sales receipt. WARMUP WILL REPLACE ANY PRE-TILED HEATER (MAXIMUM 1 HEATER) WITH ANOTHER HEATER OF THE SAME MAKE AND MODEL - FREE.

Please note:

- (i) Repaired heaters carry a 5 year warranty only. Under no circumstances is Warmup responsible for the repair or replacement of any tiles / floor covering which may be removed or damaged in order to affect the repair.
- (ii) The SafetyNet™ Installation 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 heater per customer or installer.
- (iii) Damage to the heater that occurs after tiling, such as lifting a damaged tile once it has set, or subfloor movement causing floor damage, is not covered by the SafetyNet™ Guarantee.

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