the underfloor heating company

APPROVED BY PROFESSIONALS

Loose Cable

Kit Installation Guide

- Easy to Install
- Ultra Thin Cable
- Complies to Latest IEE Regulations
- UKCA Approved
- Lifetime Warranty

Electric Kit

the underfloor heating company

Thank you for choosing our industry leading electric underfloor heating system.

Our electric underfloor heating kits are the perfect option for both homeowners and tradesmen looking to install a high quality underfloor heating system.

This instruction manual contains the information to ensure the safe install and operation of the cable or cables.

Please ensure you read the floor covering instruction in conjunction with this manual. If in any doubt contact the floor manufacturer or us before proceeding with the install.

Need Help? Talk to an Expert...

01625 466 258

www.theunderfloorheatingcompany.co.uk

Contents

Kit Contents

Loose Cable Kit

Included in your kit are all the components needed to build your electric underfloor heating system.

Heating Cable Drum

Acrylic Floor Primer

Floor Primer Roller

Fixing Tape

Conduit for Floor Sensor

Optional Thermostat

Thermostats are NOT included in the Kit.
We have a wide range to choose from on our website.

N.B. Multiple Thermostats will be required for Multi-Room setups.

Loose Cable Kit Overview

Electric Loose Cable Kits have been designed to be installed below most floor coverings:

✔ Tiles ✔ Stone ✔ Marble ✔ LVT ✔ Thin Carpet

For Vinyl, Laminate and Carpets the sub-floor must be first covered with a flexible floor levelling compound (available on our website).

Always check with the floor covering manufacturer that their product is suitable for loose cable under floor heating.

Before you begin installing...

Please read through these instructions carefully and check that you have all the components required.

The Underfloor Heating Company's kits contain everything you need in one box for your project. If you need help or advice with your installation please get in touch.

We recommend using the following items to help with your installation:

- **Tape Measure**
- **Electrical Test Equipment*** ***(see note below)***
- **Marker Pen or Pencil**
- **Knee Pads**
- **Retractable Knife**
- **Scissors**

** Note:* A multi-meter will suffice for preliminary testing of the cable prior to laying of the floor finish. Final testing for completion of the guarantee must be performed by your electrician with calibrated test equipment.

⚠ Important

- **DO NOT** cut or cross the heating cable.
- **DO NOT** fit the system without testing the heating element(s).
- **DO NOT** supply power to the heating element whilst it is coiled or partially coiled Cables and Mats must be fully encapsulated in adhesive or levelling compound.

Installation Requirements

The system requires a mains voltage 230V AC and must be connected in compliance with building regulations Part 'P' and current wiring regulations.

The 'cold' cable attached to each heating element is double insulated and the first outer sheath (coloured black) carries an earth screen (the silver coloured braid). The heating element also contains a built in return meaning that the cable only has to be connected to the thermostat from one end. Inside the outer sheath there are 2 wires, these are the live and neutral, normally not coloured (occasionally coloured) these can be connected either way around.

For larger areas, if two or more heating elements are supplied, these can usually be connected together at the thermostat or by using a small blank fronted connection box.

The system is suitable for installing on any sub-floor* which is sound and suitable for tiling. In the main this will be concrete, plywood or cement faced tile-backer boards. Some water resistant composite boards may also be suitable, but it is not recommended to tile directly onto hardboard, MDF or standard grade chipboard as these substances absorb moisture and subsequent swelling could cause tiles to crack or dislodge.

Note: if installing on a newly finished concrete screed the required minimum drying out or 'curing' period should be followed before installing (this is typically 1day per millimetre in good conditions).

* *Bitumen or asphalt coated floors need to be covered with either a tile backer board or latex levelling compound. If the bitumen is present only as a thin residue then you may lay the heating system directly on top.*

The electrical and electromagnetic fields generated are negligible and well within all recommended European and International guidelines.

The heater cable **MUST NOT** be cut or cross at any point.

Electrical Provision

Important Notes

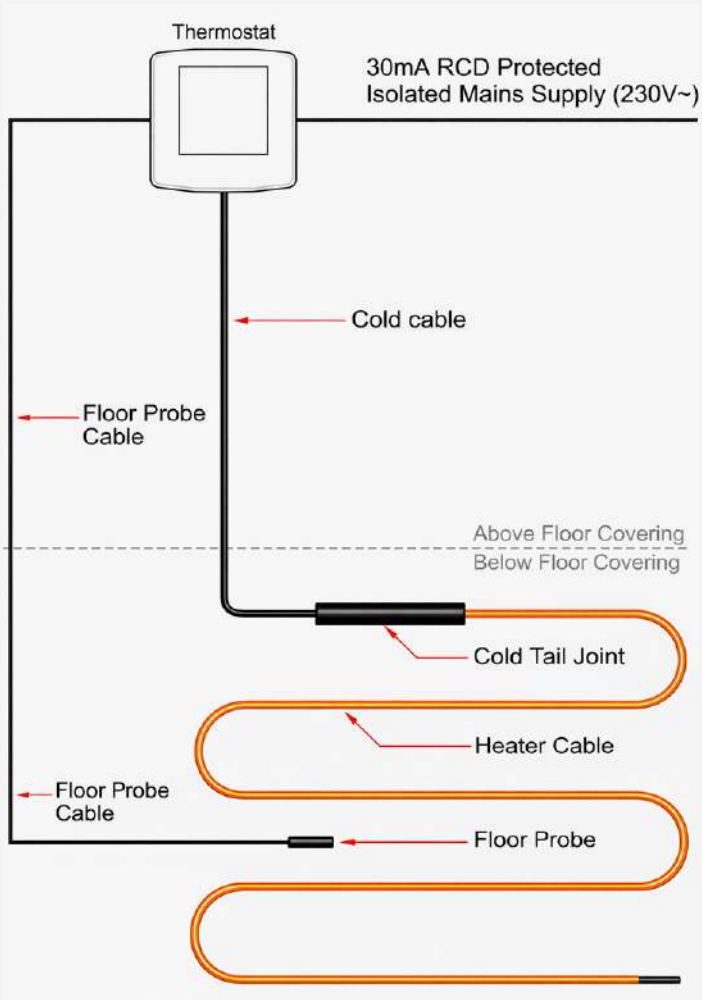
Make the electrical provision as per the diagram below. The circuit must incorporate 30mA RCD protection.

- Installations below 13Amp, a fused spur or combined spur/ RCD is recommended.
- Installations over 13Amp use a suitable isolated supply incorporating 30mA RCD protection.

The thermostat rating varies depending upon which model is being installed. Refer to the thermostat instructions to determine the maximum current that the thermostat can switch. It will be either 15 or 16 Amps (most domestic installations are within this figure). If the system supplied is over the maximum rating of the thermostat it will be subject to a more comprehensive electrical installation. (a qualified electrician will be able to advise you on this).

Note: All electrical connections should be made in compliance with building regulation Part 'P' and current wiring regulations.

Note: If installing in a bathroom or other 'wet' room the thermostat must be located OUTSIDE of the room, on the opposite side of the wall, for example in a bedroom or hallway/landing.



Installation Instructions

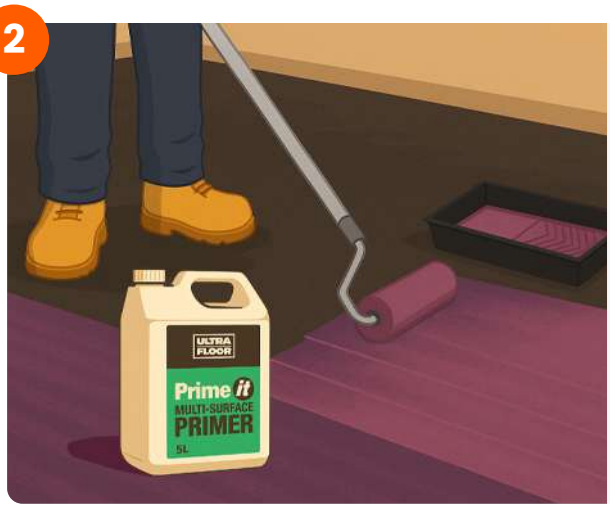
1

Ensure the sub-floor has been solidly fixed down and free of dust and debris. Timber floorboards must be covered with a suitable thickness marine ply or suitable tile backer boards. (Please contact for advice if you are insure).

DO NOT USE XPS Boards on a timber sub-floor.

Bitumen coated floors must be covered by a tile backer board or 3 to 5 mm of a self-smoothing compound that is suitable to cover bitumen. Never install a cable or mat onto a bitumen covered surface.

2

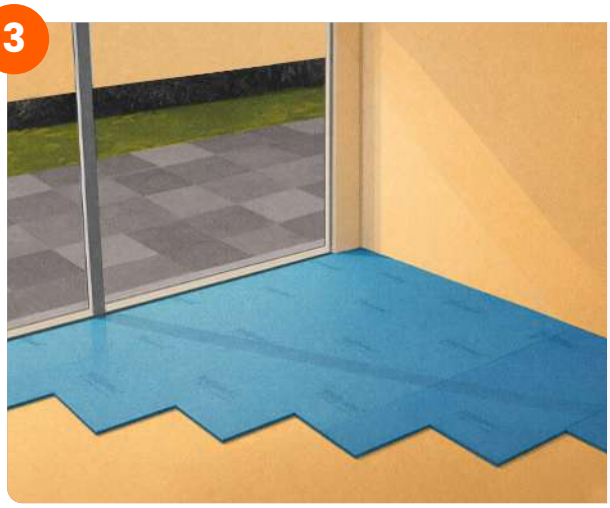


Prime the floor with the acrylic based primer (this primer is not suitable for Anhydrite screeds).

Leave to dry, typically 1 to 2 hours dependent of air temperature. Avoid excess foot traffic on primed surface.

Always check that the self-smoothing compound and tile adhesive are compatible with the primer (most are) but if in doubt check with the manufacturer of the self-smoothing compound and adhesive.

3



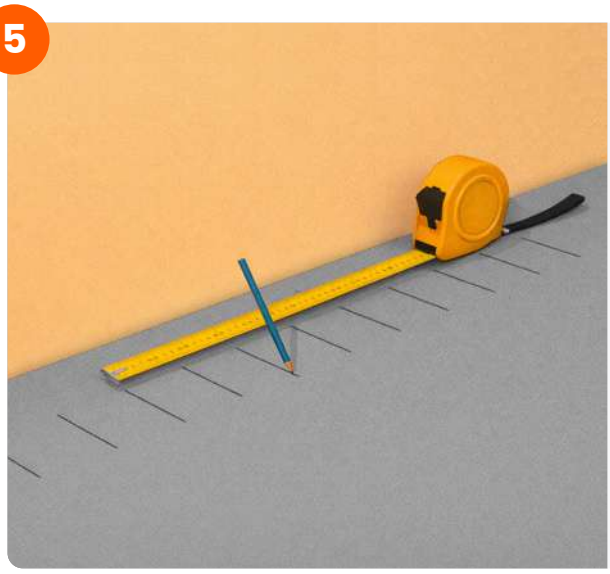
If using tile backer boards or XPS insulation boards, please follow the manufacturer's instructions.

Fix the boards in a brick bond fashion. Either fix the boards with a cement- based tile adhesive or screws and washers. Fix the screws at a maximum 300mm centres dependent on the sub floor.

DO NOT USE XPS Insulations Boards on to a timber sub floor, use tile backer boards to give a stable sub floor.

Installation Instructions (continued)

5



Calculate the cable spacing.

IMPORTANT:
This is a very important step and MUST be done correctly to ensure all the cable is used up.

Before you start measure the area to be heated in sqm (do not include the area taken up by fixed objects such as toilets and kitchen units etc), then divide this area by the length of the cable shown on the drum. The cable is 10 watts per linear metre so a 850 watt kit contains 85 metres of heating cable. The spacing is calculated by dividing the total sqm of to be heated by the cable length in metres (example shown below).

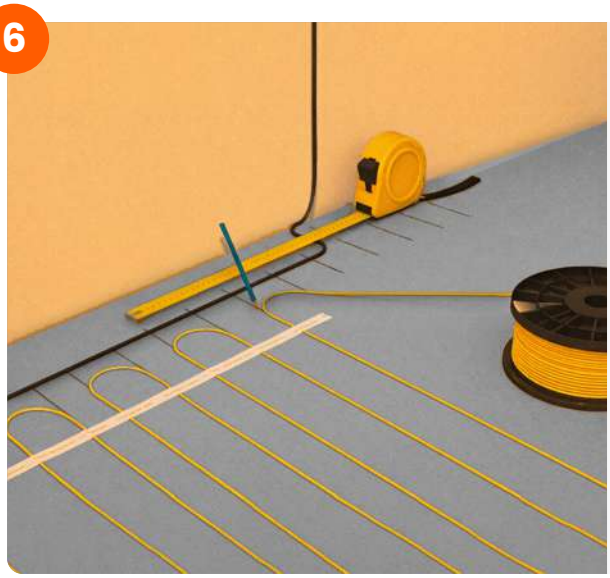
Example room: 2x3m (6m2) less 0.9 for bath and WC = 5.1m2. A 4.9 to 5.8m2 loose cable kit would be suitable (cable length 76m).

Cable spacing is calculated at 5.1 (room size) divided by 76 (cable length) = 0.067m (6.7cms) leaving a gap of approx 5-10cms from edge of the room.

Cable Spacing

100w per m2 : 10cm apart	165w per m2 : 6cm apart
135w per m2 : 7.5cm apart	180w per m2 : 5.5cm apart
150w per m2 : 6.5cm apart	200w per m2 : 5cm apart

6



When you have worked out the spacing leave a perimeter of 5-7cms around the edge of the room and mark out the floor at the calculated spacings. This will usually be between 5 and 10cms.

If your calculated spacing is less than 5cms, then do not continue and do not install. The cable size is too big for the area.

A spacing of 10cms will only just warm the floor and not heat the room.
A heating source in most domestic situations would be between 5 - 7cms (this always depends on the insulation thickness and type of floor construction).

4

Refer to the testing procedure below.

It is very important the testing is carried out.

Testing The Heating System

The Varme® Loose Cable System is tested prior to shipping but it must be tested as follows:

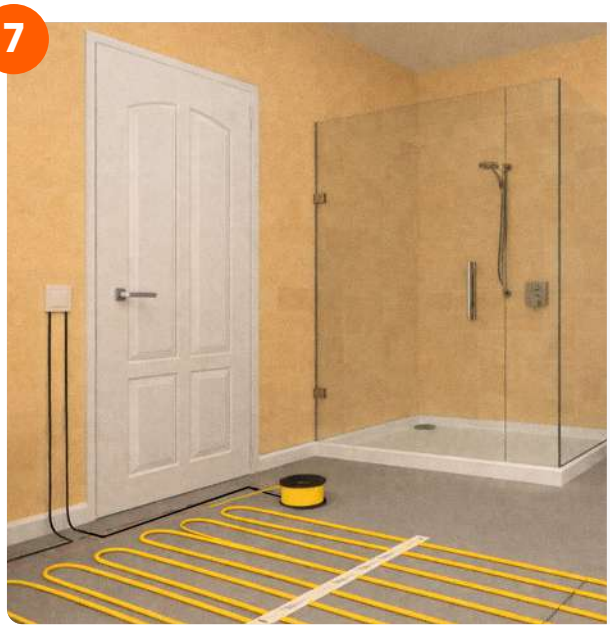
1. After unpacking and prior to installation (record the readings)
2. At this point installing electrician must carry out a 500 Volt DC insulation resistance test (record the readings)
3. Once you have installed it on the sub floor (record the readings).
4. If a smooth levelling compound has been used test again prior to the final floor covering (record the readings).

The test is a reading in Ohms and can be within 10% plus or minus of the value shown on the table below (measured at a room temperature of 20 degrees.)

N.B. hot or cold conditions can cause the resistance to alter.

Length (m)	Watts (W)	Resistance (Ohms)
11.5	115W	460.0
14	140W	377.9
17	170W	311.2
22.5	225W	235.1
29	290W	182.4
35	350W	151.1
40	400W	132.3
48	480W	110.2
56	560W	94.5
64	640W	82.7
70	700W	75.6
76	760W	69.6
82	820W	64.5
92	920W	57.5
104	1040W	50.9
114	1140W	46.4
125	1250W	42.3
145	1450W	36.5
160	1600W	33.1
180	1800W	29.4

7



The yellow heater cable **MUST NOT** be cut or cross at any point (the heater cable/s should not be spaced closer than 50mm at any point anywhere).

If necessary adjust the spacing to ensure all the cable is used and the floor has an even amount of cable covering it. Fix the tape over the cable at regular intervals to ensure that it's well taped to the floor.

Do not use excess tape over the cables, as it can create unnecessary air pockets around the heating wire.

Do not use too much tape as It can also impede the bonding capability of the levelling compound or tile adhesive.

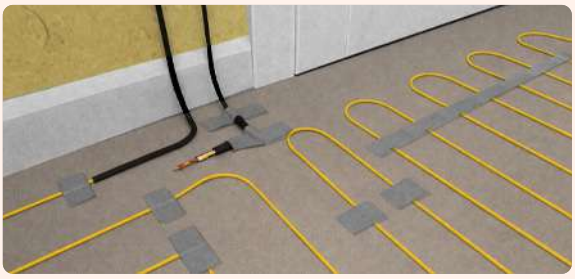
Cold Tail & End Joint Installation

When installing the heating cable you need to be careful with how you install the end joint and cold tail joint (the join between the supply lead and the heating cable). They can potentially overheat if the following steps are not taken.

The joints on the heating cables are a much larger diameter than the heating element, you will need to cut a small channel for them to sit into the subfloor or the insulation boards.

Once they have been secured in the channel it is important that you **DO NOT** cover them with tape as this will create an air pocket preventing the joint from releasing the heat, this can lead to a potential failure in the future.

The cold tail joint can be secured in place by taping the cable either side of the joint, a small piece on the heating cable and a small piece on the cold tail. This will ensure the joint is NOT covered with tape.



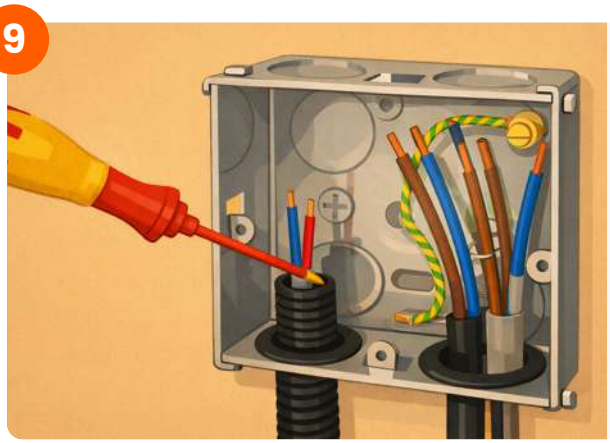
The end joint can be secured in place by taping the red heating element just before the joint to help secure it in place. This will ensure the joint is NOT covered with tape. Both these heating joints MUST now be fully encapsulated within levelling compound and/ or tile adhesive.

8

Check and record the insulation resistance value and the cable resistance value.

Installation Instructions (continued)

9



The cold tail from the cable has an earth which is a braided wire. If it is necessary to shorten the cold tail, at the thermostat, then the earth braid must be 'unpicked' with a small screwdriver or similar tool.

IT MUST NOT BE CUT ALONG ITS LENGTH as this will cause it to become unravelled. It should then be twisted back together and connected to the incoming earth on the power supply.

10

Position the sensor in the black conduit supplied from the thermostat position down in between two runs of cable (not overlapping the heating cable) and tape into position. If using insulation boards, these can be cut to allow the conduit to be placed inside. If installing directly onto plywood then a groove can be cut using a sharp chisel (beware of pipes).

The joint between the heating cable and the cold tail can also be placed inside a groove in the floor as this can be bulky and difficult to tile over. The sensor wire can be shortened or lengthened. If you need to cut the sensor wire you must only cut the end with the exposed wires.

DO NOT cut the end which contains the plastic sensor. The connections to the thermostat can now be made.

11

Test the heating cable as before.

Installation Instructions (continued)

12

If possible cover the cables with a thin layer of latex based levelling compound (5-6mm).

This will help protect the cables when tiling. You may tile directly over the cables, however extra care must be taken not to dislodge the cables or to damage the cable in anyway.

You can now lay your flooring according to your floor manufacturer's instructions.

Please refer to adhesive manufacturer's guidelines for drying times before turning on your heating system, this is usually around 7 days, the floor temperature should be increased gradually by 1-2 degrees per day over a 2 week period to reduce the risk of force drying. If in any doubt please check with adhesive/latex manufacturers for advice.

13

Tile the floor using a flexible tile adhesive and grout as per industry standards and manufacturers conditions. Finally wait at least 1 week before turning on to allow time to dry.

NOTE the heating may be slow to react at first, especially if installed on a new screed floor or in a new building. Start by setting the floor temperature at approx 18°C - and build up by 1°C per day until your desired temperature is reached. Please see separate instructions for connection and operation of digital thermostat.

Vinyl Floor Covering

If you are using a vinyl floor covering, then a minimum **10mm** self-smoothing compound should be used to cover the cable.

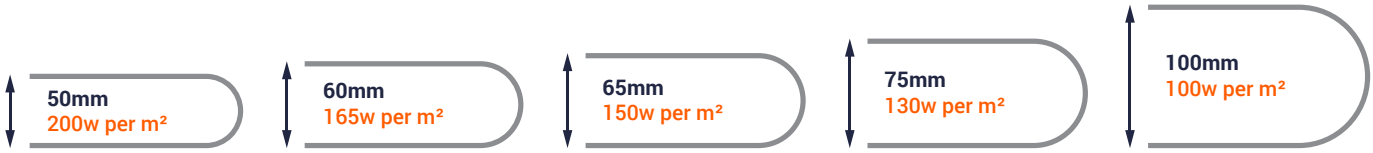
N.B. CONSULT A VINYL FLOOR INSTALLER BEFORE USING THE COMPOUND TO CHECK COMPATABILITY.

Carpet Covering

If carpet is to be used as the finished floor covering then a 10mm self smoothing compound needs to be used in conjunction with a suitable low tog underlay and subfloor.

N.B. THE CARPET AND UNDERLAY MUST NOT EXCEED 2.5 TOG COMBINED.

Cable Spacing Guide



Coverage (m²)							Drum Sizes	
5cm Spacing	6cm Spacing	6.5cm Spacing	7.5cm Spacing	10cm Spacing	Power	Cable Length	Drum 1	Drum 2
0.6m²	0.7m²	0.75m²	0.9m²	1.15m²	115w	11.5m	11.5m	-
0.7m²	0.8m²	0.9m²	1.1m²	1.4m²	140w	14m	14m	-
0.8m²	1m²	1.1m²	1.3m²	1.7m²	170w	17m	17m	-
1.1m²	1.4m²	1.5m²	1.7m²	2.25m²	225w	22.5m	22.5m	-
1.45m²	1.7m²	1.9m²	2.2m²	2.9m²	290w	29m	29m	-
1.75m²	2.1m²	2.3m²	2.7m²	3.5m²	350w	35m	35m	-
2m²	2.4m²	2.7m²	3.1m²	4m²	400w	40m	40m	-
2.4m²	2.9m²	3.2m²	3.7m²	4.8m²	480w	48m	48m	-
2.8m²	3.4m²	3.7m²	4.3m²	5.6m²	560w	56m	56m	-
3.2m²	3.9m²	4.2m²	5m²	6.4m²	640w	64m	64m	-
3.5m²	4.3m²	4.6m²	5.4m²	7m²	700w	70m	70m	-
3.8m²	4.6m²	5m²	5.8m²	7.6m²	760w	76m	76m	-
4.1m²	4.9m²	5.4m²	6.3m²	8.2m²	820w	82m	82m	-
4.6m²	5.4m²	6m²	6.9m²	9.2m²	920w	92m	92m	-
5.2m²	6.3m²	6.9m²	8m²	10.4m²	1040w	104m	104m	-
5.7m²	6.9m²	7.6m²	8.8m²	11.4m²	1140w	114m	114m	-
6.2m²	7.6m²	8.3m²	9.6m²	12.5m²	1250w	125m	125m	-
7.2m²	8.8m²	9.6m²	11.2m²	14.5m²	1450w	145m	145m	-
8m²	9.7m²	10.6m²	12.3m²	16m²	1160w	160m	160m	-
9m²	10.9m²	12m²	13.8m²	18m²	1800w	180m	180m	-
10.4m²	12.6m²	14m²	16m²	20.8m²	2080w	208m	104m	104m
11.4m²	13.9m²	15.2m²	17.6m²	22.8m²	2280w	228m	114m	114m
12.5m²	15.2m²	16.7m²	19.3m²	25m²	2500w	250m	125m	125m
13.5m²	16.4m²	18m²	20.8m²	27m²	2700w	270m	145m	125m
14.5m²	17.5m²	19m²	22.3m²	29m²	2900w	290m	145m	145m
15.3m²	18.2m²	20m²	23.1m²	30.5m²	3050w	305m	160m	145m
16m²	19.5m²	21.3m²	24.5m²	32m²	3200w	320m	160m	160m
17.3m²	20m²	23m²	25.4m²	34.5m²	3400w	345m	180m	160m
18m²	21.8m²	24m²	27.7m²	36m²	3600w	360m	180m	180m

Do's & Dont's for Installation

- **DO** read through these instructions carefully before beginning work.
- **DO** use flexible adhesives and grouts.
- **DO** test the cable before tiling.
- **DO** be careful not to damage or dislodge the cable during tiling.
- **DO** ensure the cable is spaced no closer than 50mm between loops.
- **DO** wait at least 7 days before turning on the system.
- **DO** read the separate installation and operating instructions for the thermostat.
- **DO** ensure the joint between the cold tails and heating cable is beneath the tiles.

- **DON'T** attempt to cut the heating cable at any point.
- **DON'T** allow the cables to cross or touch.
- **DON'T** allow excessive foot traffic over the wire before tiling.
- **DON'T** cut tiles over the heating cable.
- **DON'T** place tools or stacks of tiles on top of cable.
- **DON'T** place any product over the floor covering with a higher tog value than 2.5.
- **DON'T** place any bean bags or fixed furniture over the floor covering.
- **DON'T** place cable closer than 100mm near any pipes.
- **DON'T** turn on the heating mat/cable while it is rolled up or still on the drum.

Important

Please ensure that the cold tail joint (the join between the heating cable and flexible supply lead) is fully encapsulated in adhesive or levelling compound underneath the floor covering.

Please ensure that the end joint (the join at the end of the cable which is black) is also fully encapsulated in tile adhesive or levelling compound underneath the floor covering.

Both the cold tail joint and end joint **MUST NOT** be covered with tape, this can cause the cable to overheat and eventually fail!

DO NOT BEND THE COLD TAIL JOINT AT ANY POINT.

Troubleshooting / FAQs

Does it matter which way around the heating cables are connected to the load terminals of the thermostat?

No, There is effectively no live or neutral polarity to the heating element, therefore they can be connected either way around.

What are the silver stranded wires in the cold tail for?

This is the earth braid. The strands need to be twisted together and connected to earth.

When I perform the resistance test on the heating element I cannot get a reading or the reading shows out of range?

Check that the test equipment you are using is on the correct setting and that the tester probes are in contact with the conductors of the heating element. Some professional electrical testing equipment is designed to test low resistance electrical circuits. Electric heating elements have a high resistance, some of the small heating cables with a resistance above 200 Ohms may show as out of range on such equipment. A multi-meter is often the best device to use to check the resistance of the heating cable.

What should be used to house the thermostat?

Recommended depth 35mm, single gang socket box. Can be either surface or flush mounted.

The heating element(s) is too large for the room, can they be cut?

Under no circumstances should the heating element be cut. If you find you have too much heating element, attempt to lose the excess cable in an adjacent area or use the clearance left at the edge of the room, maintaining a minimum of 50mm clearance between cables. Failing this contact us for help.

Can the elements be overlapped?

Under no circumstances should the heating cable/cable mat be overlapped or crossed.

Can the heating system be installed onto a bitumen covered floor?

If there is only a thin residue of bitumen on the existing sub-floor, usually where the bitumen had previously been used to fix vinyl tiles or similar, then you may lay the heating system down. If the bitumen covering has been used as a damp-proof membrane and is several millimetres thick, then this layer must be covered, either with a tile backer board or a levelling compound, before the heating system can be laid.

What type of adhesive and grout should be used?

Any flexible tile adhesive and grout should be suitable. Most products will usually state on the packaging as to whether they are suitable for under floor heating. If you are in any doubt ask the supplier/manufacturer. We do not recommend using ready mixed tile adhesive.

Safety Guidelines

This installation manual has been designed for your safety.

For a successful installation please make sure you have understood the guidelines and adhered to all the instructions.

Flat bottomed furniture **MUST NOT BE** placed over areas where the heating mat/cable is installed as this can restrict airflow to the floor, causing thermal blocking, and in extreme cases may lead to the cable overheating causing a possible fire hazard. This also includes rugs, bean bags, or any item which has a tog value greater than 2.5.

The supplied Commissioning Record **MUST BE** completed, including a floor plan sketch, to indicate heated areas, which must be permanently fixed in or near the distribution/fuse board as required by the 18th Edition BS7671 amendment 3.

DO NOT cover the heating mat/cable areas with:

Mattresses

Bean Bags

Animal Beds

Thick Rugs

Flat Based Furniture

If in doubt...

Talk to an Expert...

01625 466 258

www.theunderfloorheatingcompany.co.uk

Warranty

Our Heating Mats come with a Full Lifetime Warranty.

The warranty does not cover installations made by unauthorized persons or faults caused by incorrect design by others / misuse / damage caused by others / damage in transit / incorrect installation and any other subsequent damage that may occur. Replacement will be fully chargeable if the damage is because of any of the above reasons.

Please visit website for full terms & conditions.
www.theunderfloorheatingcompany.co.uk

the underfloor heating company

Lifetime Warranty / Guarantee - Installation Test Report

Section 1

Company Name:	
Installer Name:	
Address:	
Signed:	
Reg No:	Date:

Client Name:	
Address:	
.....	
City:	
County:	
Postcode:	
	Telephone:

Section 2

	Heating Element(s)						Floor Probe	
	Cable Specification				Before Installation of Floor Covering	After Installation of Floor Covering	Actual Reading Before Fitting (Kilo Ohms)	Actual Reading After Fitting (Kilo Ohms)
	Cable Length or Mat Size (m)	Location	Total Wattage (W)	Labelled Resistance (Ohms)	Cable Resistance (Ohms)	Cable Resistance (Ohms) / Insulation Resistance (Mega Ohms)		
Cable/Mat 1								
Cable/Mat 2								
Cable/Mat 3								

the underfloor heating company

Get in touch...

01625 466 258 Mon-Fri : 9am-5pm

Drop us an email, we'll get straight back to you...
info@theunderfloorheatingcompany.co.uk

www.theunderfloorheatingcompany.co.uk

Excellent ★★★★★ Trustpilot

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