



- ✓ Ultra thin cable
- ✓ Easy to install
- ✓ Fully compliant to latest regulations
- ✓ CE approved

Suitable for  
most floor coverings  
(always check with floor manufacturer)



# UNDERFLOOR INSCREED HEATING

INSTALLATION MANUAL



## **Thank you for investing in our industry leading ProWarm™ underfloor heating system**

### **THIS INSTRUCTION MANUAL MUST BE READ ENTIRELY BEFORE COMMENCING ANY INSTALLATION**

This instruction manual contains important information regarding the safe installation and operation of your heating cable/s.

These installation instructions are not intended to replace or supersede the installation instructions provided by the manufacturers of your floor coverings but to supplement them.

Both sets of installation instructions should be complied with, (always check with the floor manufacturer if you are in any doubt that our heating cable/s are suitable).

Our cable kits are extremely strong but care must be taken when installing them, please follow the step by step installation guide to ensure a carefree installation.

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## CE approved systems

Our heating cables are CE approved, certified and manufactured to the highest standards using state of the art Teflon coated cables. All our cables are designed to be 17th Edition Part P compliant and the instructions we supply with them include as much information as possible to ensure that all installations comply with them (please contact us if you are in any doubt).

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## Before you begin Installing: Please read through these instructions carefully and check that you have all the components required.

Always check with the floor covering manufacturer for suitability of use with electric Underfloor heating systems, also check the suitability of any adhesives/latex compounds that are intended to be used with both the floor coverings and the heating system.

### Contents of Heating Cable Kit

✓ 5.5mm twin-core heating cable

✓ High adhesion fixing tape

✓ Digital thermostat & separate floor sensor

✓ Guarantee Certificate

✓ Conduit for floor sensor

✓ Double sided tape

✓ Spray adhesive

## Installation Notes

- The system requires a mains voltage 230/240v and must be connected by a suitably qualified person. **All wiring must conform to IEE 17th Edition Part P regulations.**
- Our ProWarm™ inscreed heating cable/s are 17w per linear metre, total wattage per metre squared is determined by the spacing of the cable. (**DO NOT** place the cables any closer than 50mm at any point).
- The first part of the cable is the cold tail (coloured black), this carries an earth screen which is either a solid green/yellow earth cable or a silver coloured braid which is connected to the main incoming earth from the supply. The heating cable contains a built in return meaning that the cable only has to be connected to the thermostat from one end, this cable is double insulated with a self regulating heating element.
- For larger areas, if two or more cables are supplied, these can usually be connected together by using a small blank fronted connection box and a single cable connected to the thermostat.
- The electrical and electromagnetic fields generated are negligible and well within all recommended European and International guidelines.
- The red/blue heater cable **MUST NOT** be cut or cross at any point.
- The joint between the heating cable, cold tail and end joint **MUST** be located under the floor and encapsulated in the screed or self levelling or tile adhesive and **MUST NOT** be taped over.
- Any (load amperage) 16 amps or over must be connected via a contactor fitted with a snubber across the contactor coil

## Professional Electrical Installation

The installation of electrical systems presents risks of fire and electrical shock which can result in personal injury. Caution should always be taken to guard against each such risk. Only a qualified electrician should connect the heating cable/s to the thermostat and / or to the electrical supply circuit.

Carry out all electrical work required to install ie. chase walls and install back boxes for fused spurs and thermostat position. Please make sure all works conform to the current regulations.

## Caution:

Due to the new requirements of the Part P Regulations, only a qualified person who is familiar with the construction and operation of the apparatus and the hazards involved shall make the final connections to the electricity supply and test the installation.

## ProWarm™ Underfloor Heating Systems

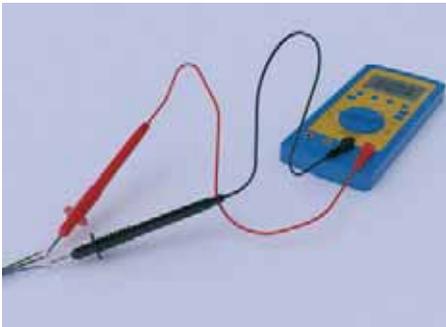
Must be controlled via an rcd protected circuit, for systems not exceeding 13 amps a fused spur that has contact separation in all poles that provides full disconnection under Cat 3 conditions can be used, for systems larger than 13 amps a suitable protective device that complies with regulations must be used (please contact us for technical assistance or consult a fully qualified approved electrician). If you are in any doubt about the electrical installation then please contact our technical advice centre.



## IMPORTANT

**All such connections MUST be in accordance with BS7671 17th Edition Part P wiring regulations.**

**Note: When installing thermostats in bathrooms they should always be located outside the room and use the floor probe supplied, always check with a qualified electrician that all electrics are in safe and suitable zones.**



## Testing

Each and every ProWarm™ cable is carefully tested before it is shipped from the factory and is packed suitably to avoid damage during transit. However, damage does sometime occur in storage or transit, and sometimes during installation. We strongly recommend you test your cable/s:

- After unpacking them but before you install them.
- After you have installed them but before you install the floor screed (i.e. while the cable is still exposed). At this point an insulation resistance test must be carried out (500V DC).
- After installation of the floor screed but before the thermostat or contactor is connected.

A simple test is a visual inspection to make sure there is no visible damage to the heater, and in particular to the cable component in the heater. A simple electrical inspection can be done with an ohm metre to make sure the ohm resistance is what it should be (see page 8). Ohms resistance can vary significantly depending on the ambient temperature and an allowance of - 10% to + 10% from the nominal value is acceptable. At this point an insulation resistance test should now be carried out at 500v DC out by a qualified electrician.



## IMPORTANT

**At this point and insulation resistance test must be carried out.**

**Please see table for the values you should see when testing the cable.**

### Resistance Values

#### Twin Conductor 17w/m/230 VAC

Code	Length (M)	Watts (W)	Resistance (Ohms)
FHC-T-17W/170	10	170	311.2
FHC-T-17W/250	15	250	211.6
FHC-T-17W/360	21	360	146.9
FHC-T-17W/460	27	460	115.0
FHC-T-17W/600	35	600	88.17
FHC-T-17W/700	41	700	75.6
FHC-T-17W/920	54	920	57.5
FHC-T-17W/1100	65	1100	48.1
FHC-T-17W/1340	79	1340	39.5
FHC-T-17W/1430	84	1430	37.0
FHC-T-17W/1630	96	1630	33.3
FHC-T-17W/1900	112	1900	27.8
FHC-T-17W/2400	141	2400	20.0
FHC-T-17W/2890	170	2890	18.3
FHC-T-17W/3100	183	3100	17.06

#### Single Conductor 17w/m/230 VAC

Code	Length (M)	Watts (W)	Resistance (Ohms)
FHC-S-17W/170	10	170	311.2
FHC-S-17W/250	15	250	211.6
FHC-S-17W/360	21	360	146.9
FHC-S-17W/460	27	460	115.0
FHC-S-17W/600	35	600	88.17
FHC-S-17W/700	41	700	75.6
FHC-S-17W/920	54	920	57.5
FHC-S-17W/1100	65	1100	48.1
FHC-S-17W/1340	79	1340	39.5
FHC-S-17W/1430	84	1430	37.0
FHC-S-17W/1630	96	1630	33.3
FHC-S-17W/1900	112	1900	27.8
FHC-S-17W/2400	141	2400	20.0
FHC-S-17W/2890	170	2890	18.3
FHC-S-17W/3100	183	3100	17.06

**Metal fixing bands of 25m are available if required**

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## STEP 1

# 1

Calculate the cable spacing.



## IMPORTANT

**This is a very important step and MUST be done correctly to ensure all the cable is used up and avoid extra work later.**



First measure the area to be heated in sqm (do not include the area taken up by fixed objects such as baths/showers and kitchen units), then divide this area by the length of the cable shown on the drum. The cable is 170 watts per linear metre so a 1350 watt kit contains 79 metres of heating cable. The spacing is calculated by dividing the total sqm of the area to be heated by the cable length in metres (see example below).

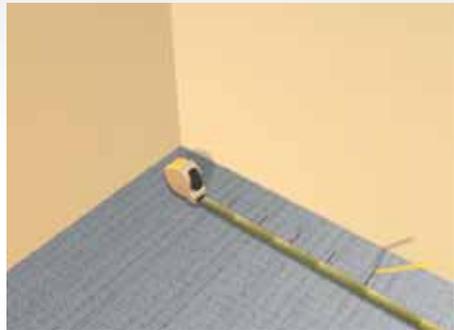
Example room: 2x3m (6m<sup>2</sup>) less 0.9 for shower tray = 5.1m<sup>2</sup>. A 65m inscreed cable kit would be suitable (5.5mm).

**Cable spacing is calculated at 5.1 (room size) divided by 65 (cable length) = 0.084m (8.4cms) leaving a gap of approx 4cms from edge of the room.**

## STEP 6

# 2

Once the spacing has been determined, leaving a perimeter of 5-10cms around the edge of the room mark out the floor at the calculated intervals. This will usually be between 5 and 10cms. If your calculated spacing is less than 5cms **STOP** and do not install. The kit size is too big for the room.



### STEP 3

# 3

The 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 to each other).

Adjust the spacing if necessary to ensure all the cable is used up and the floor has an even covering.

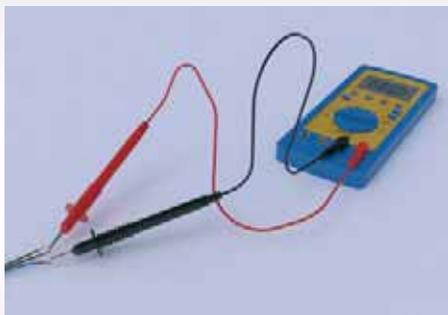


**NOTE:** thermostat shown for illustration is to be sited outside the bathroom, please consult qualified electrician if in any doubt of zoning regulations.

### STEP 4

# 4

Check the cable resistance **and insulation resistance values** after laying. Check if these values are consistent with pre-install values. Record values on the guarantee certificate which came with the kit.

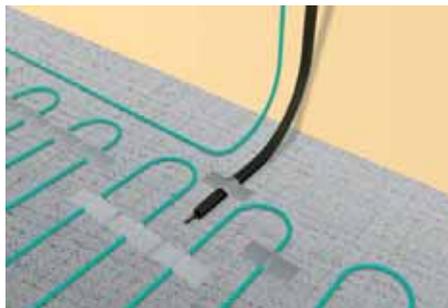


### STEP 5

# 5

Position the sensor in the black conduit supplied between two runs of cable and fix into position. The sensor wire can be shortened or lengthened. If you need to cut the sensor wire you must only cut the end containing the wires. **DO NOT** cut the end which contains the plastic sensor. The connections to the thermostat can now be made.

The earth from the cable can then be connected to the earth from the incoming supply by using the earth terminal in the back box. If using a plastic box with no terminal then a suitable terminal block can be used. (At this point an insulation resistance test must be carried out by a qualified electrician). The rest of the thermostat connections can be made according to the separate instructions provided.



## STEP 6

# 6

Run the power leads from the start of the cable up to the thermostat position.

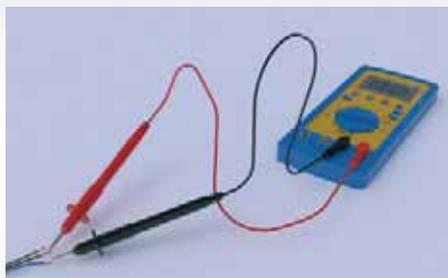
If the cable contains a silver earth braid around the cold tail this can be unbraided by using a screwdriver and pulling down the braid to separate the strands these can then be twisted into a single strand, this is then connected to the main earth supply - if the cold tail contains a solid green/yellow earth then this can be connected straight to the main earth supply. If using multiple cables route all power leads through a conduit from the floor to a junction box and supply the junction box from the thermostat. The earth from the cable can then be connected to the earth terminal in the back box, (shown here) if using a plastic box with no terminal then a terminal block can be used.



## STEP 7

# 7

Test the cable's resistance again using a multi-meter, an **insulation resistance test** should also be carried out to ensure the cable is free from damage.



## STEP 8

# 8

Install screed in line with illustrations as shown on page 11. Allow screed to dry without turning on the heating. 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.**

**NB: A 65mm screed can take up to 100 days to dry unless an accelerator has been added. Consult screeding company to clarify drying times.**

## Do's and Don'ts for Installation

- ✓ **Do** read through these instructions carefully before beginning work.
- ✓ **Do** use flexible adhesives and grouts.
- ✓ **Do** test the cable before screeding.
- ✓ **Do** be careful not to damage or dislodge the cable during screeding.
- ✓ **Do** ensure the cable is spaced no closer than 50mm between loops.
- ✓ **Do** try to protect the cable during screeding.
- ✓ **Do** wait for the recommended screed drying / curing time 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 wires to cross or touch.
- ✗ **Don't** allow excessive foot traffic over the wire before screeding.
- ✗ **Don't** cut tiles over the heating cable.
- ✗ **Don't** place tools or materials on top of cable.
- ✗ **Don't** place any product over the floor covering that has 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 inscreed cable while it is rolled up or still on the drum
- ✗ **Don't** lay directly on to Celotex type insulation.



## 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

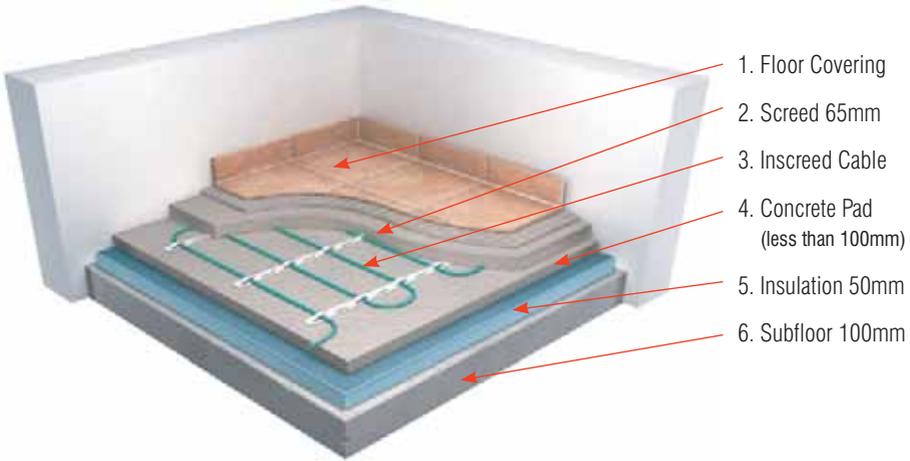
Please ensure that the end joint (the join at the end of the cable which is black) is also fully encapsulated in tile adhesive or levelling compound

Both the cold tail joint and end joint **MUST NOT** be placed into a cut out of insulation or subfloor and just covered with tape, this can cause the cable to overheat and eventually fail!

**DO NOT BEND THE COLD TAIL JOINT AT ANY POINT**

**IF CONCRETE PAD IS LESS THAN OR EQUAL TO 100mm & INSULATED:**

You may install the heating cable directly on top of the concrete pad.

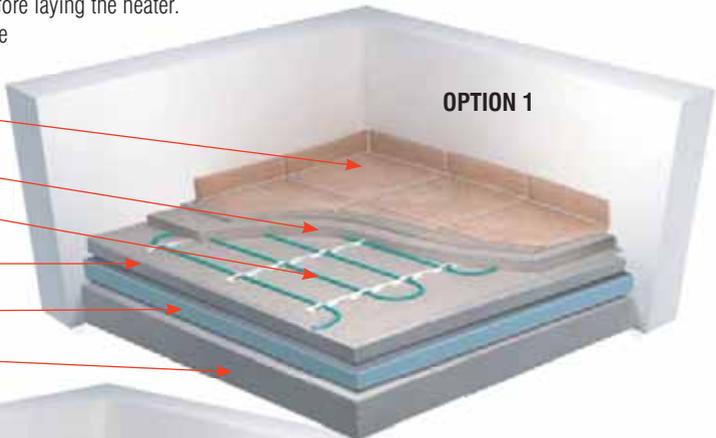


**IF CONCRETE PAD IS MORE THAN 100mm OR UNINSULATED:**

You must install insulation before laying the heater.

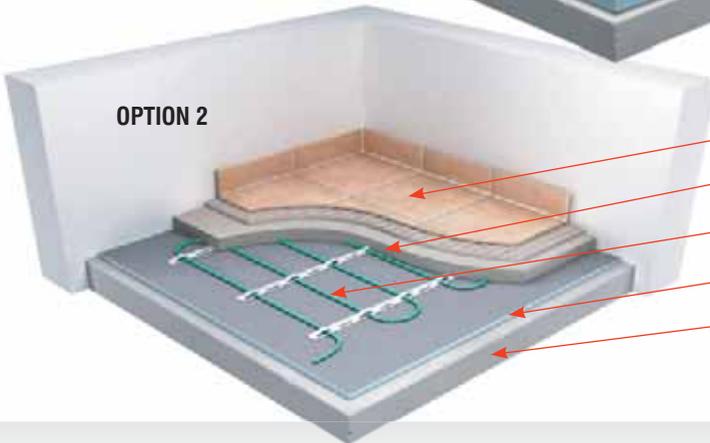
There are two options available

- 1. Floor Covering
- 2. Screed 30mm
- 3. Inscreed Cable
- 4. Screed 35mm
- 5. Insulation 50mm
- 6. Concrete Pad



**OPTION 2**

- 1. Floor Covering
- 2. Screed 65mm
- 3. Inscreed Cable
- 4. Insulation Board 10mm
- 5. Concrete Pad



# 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



## IMPORTANT

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 17th Edition BS7671 amendment 3



**MATTRESSES**



**BEAN BAGS**



**ANIMAL BEDS**



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