

## Instructions for installation of Electric Underfloor Heating Cable Kit

**Before you begin installing please read through these instructions carefully and check that you have all the components required.**

The system is designed for installation below tiles, stone or marble flooring, it may also be installed below vinyl, laminate and thin carpets but in these cases must be first covered with a suitable latex based levelling compound.

### Contents of heating kit

- 3mm twin-core heating cable on drum(s)
- Neoprene floor primer 750ml
- Disposable roller for application of primer
- High adhesion fixing tape
- Digital thermostat and separate floor sensor
- Guarantee Certificate

### Installation Notes:

- The system requires a mains voltage 230/240v and must be connected in compliance with building regulations Part 'P' approved document.
- The system is intended for heating tiled or stone floors and the optimum recommended output is approx **150watts per sqm** achieved by **spacing the cable at around 6.5cms between the loops**. Exact cable spacing should be calculated before installation (see step 5).
- The 'cold' cable is double insulated and the first outer sheath (coloured black), carries an earth screen (the silver coloured braid). The cable 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.
- For larger areas, if two or more cables 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 suitable for tiling,



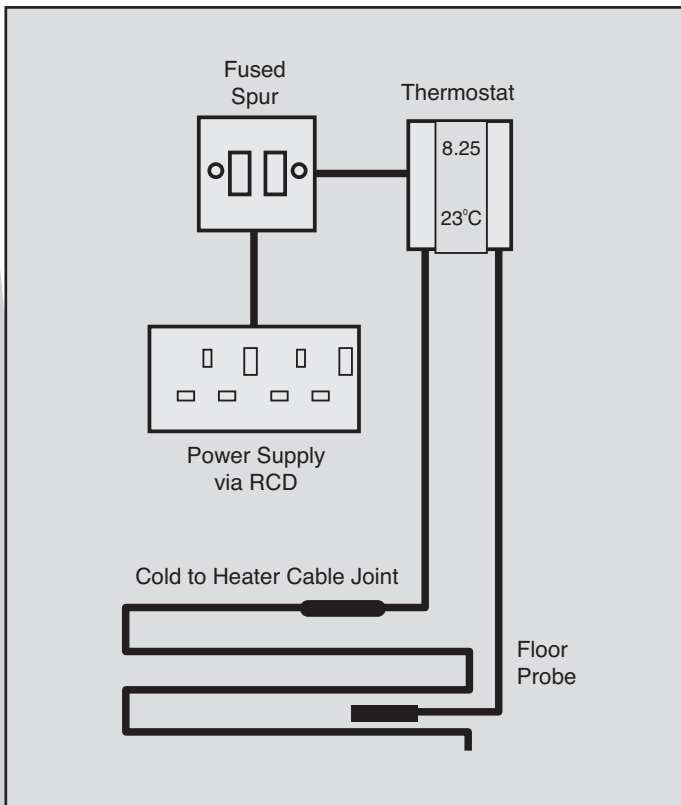
In the main this will be concrete, plywood or cement faced tile-backer boards. Some water resistant composite boards may also be suitable, but it is not recommended to tile directly onto hardboard, MDF or standard grade chipboard as these substances absorb moisture and subsequent swelling could cause 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 1mm per day in good conditions).

- 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:

Before starting the installation you should make provision for the electrical connections. For smaller areas this should be possible by means of a fused spur or combined RCD spur from an existing circuit - **see fig1**. However, for larger areas a separate circuit from the distribution board is recommended. **When planning the installation you should always consult with your electrician concerning your requirements.** **Note** - 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, or example in a bedroom or hallway/landing.

Fig 1



### Important Notes:

The system **MUST** incorporate a 30mA RCD protection either at the distribution board or by replacing the fused spur with a combined fused spur/RCD.

The yellow heater cable **MUST NOT** be cut or cross at any point – only the black 'cold' cable and the probe can be cut or lengthened.

The joint between the yellow heater cable and the black cold cable **MUST** be located under the final floor covering.

For larger areas a separate circuit will be required – always consult your electrician concerning your individual requirements.

The thermostat has a rating of **15amps** – loads in excess of 15amps (3.45kw approx) will either, require further thermostats or need to be connected via a suitable switched contactor – consult your electrician on this.

The thermostat is rated to IP20 and **MUST NOT** be located in a bathroom.

### Preparation

Ensure that the sub-floor is solid and suitable for tiling, free from dust and debris. Wood flooring with more than 30cms between the joists should ideally be reinforced to prevent flexing and the possibility of tiles dislodging. Wood flooring can be reinforced using 18mm WBP plywood or Marine plywood or insulated tile-backer boards such as **Marmox™** or **Aquapanel Thermal™**.

### Insulation

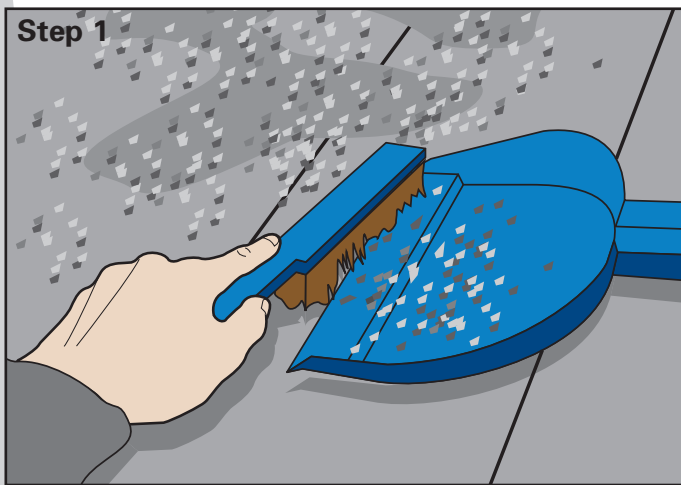
The insulation levels of a floor will affect both the performance and running costs of an underfloor heating system and although not essential in many cases, it is recommended wherever possible. For example it would not be considered necessary to insulate small areas where the requirement is simply to 'take the chill off the floor', however in cases where the heating is being installed over large areas, particularly as the primary heating source in a ground floor room or conservatory, insulation boards will greatly reduce warm-up times and running costs. Suitable insulation boards are available from your underfloor heating retailer/supplier.

## Installation

### Step 1

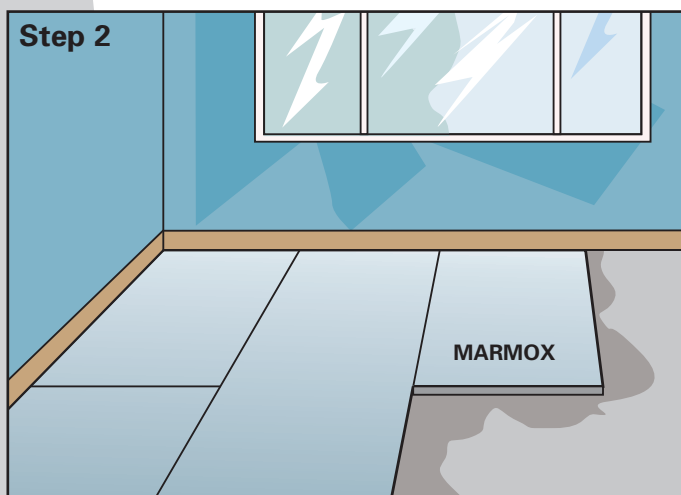
First prepare the sub-floor ensuring that it is clean and free from grease, dirt or debris.

**Note** - if installing on a bitumen base, this must either be removed or covered with a suitable insulation board before proceeding. The most suitable sub-floors are: concrete, tile-backer boards, existing tiles, water-resistant timber e.g. WBP Ply.



### Step 2

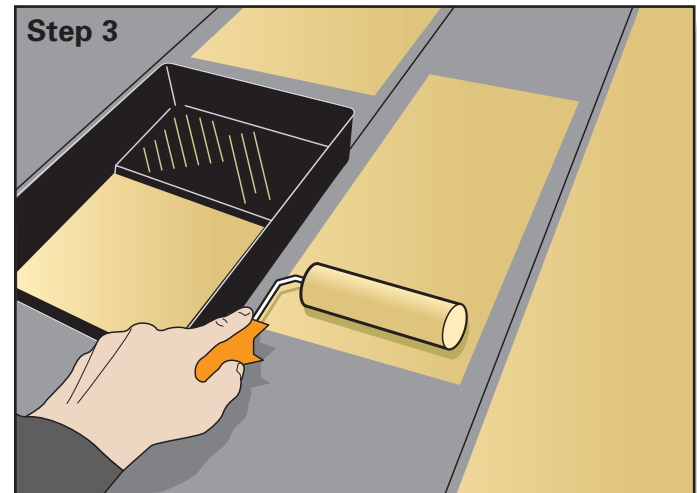
If fixing tile-backer boards, do so in accordance with the separate instructions provided, using tile adhesive on a concrete sub-floor and galvanised screws with washers/fixings on timber sub-floors.



### Step 3

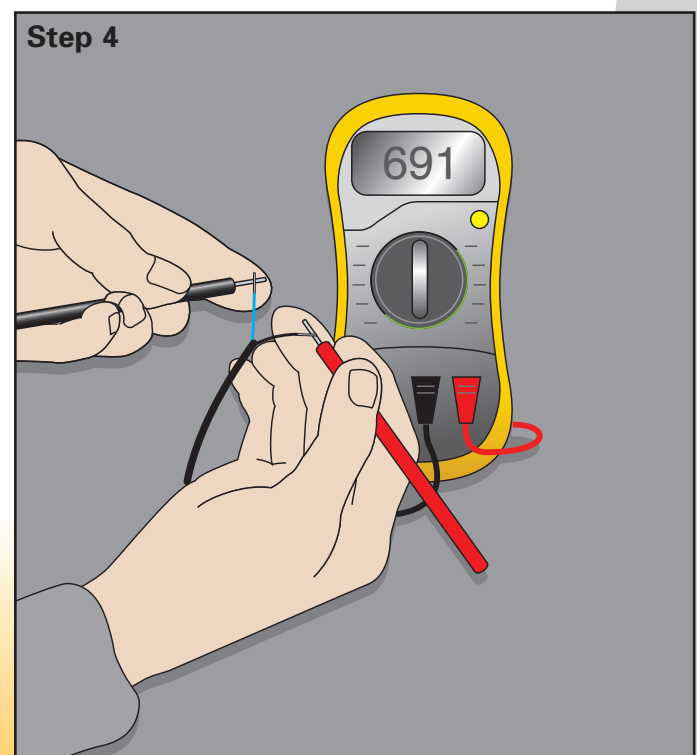
Prime the floor or the tile backer boards using the Neoprene primer contained in the kit. If installing over a large area or on an absorbent

surface the primer may need to be diluted with water to a maximum of two parts water to one part primer. Once primed leave to dry (typically 1-3 hours) and avoid foot traffic over this area. The purpose of priming is to promote greater adhesion of the tape and reduce the amount of moisture absorbed into the sub-floor.



### Step 4

Test the resistance of the cable prior to installing and ensure that the reading is as stated on the drum ( $\pm 10\%$ ). Make a note of reading. **Do not** tile over the cable without first testing it.



## Installation- continued

### Step 5

**Calculate the cable spacing.** 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 10 watts per linear metre so a 750 watt kit contains 75 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 Step 5)**

### Step 5

Example room: 2m x 3m (6sqm) less 0.9m for shower and WC = 5.1sqm. A 750watt (75metre cable) kit is ideal.

**Cable Spacing is calculated at  $5.1 \div 75 = 0.068\text{m}$  (6.8cms) leaving a gap of approx 4cms from the perimeter of the room.**

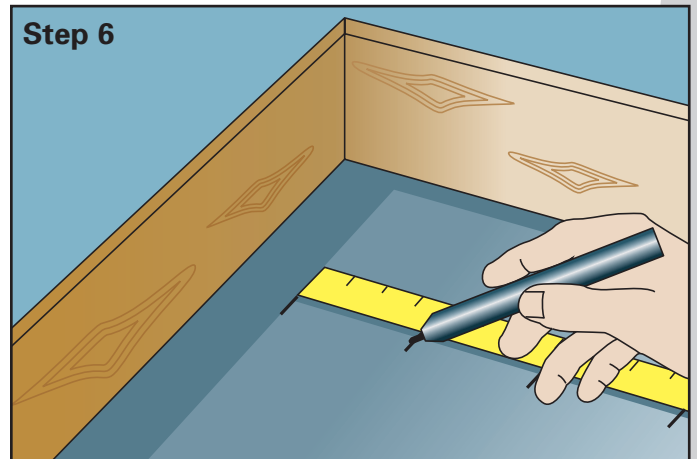
WC  
0.1sqm

Shower  
0.8sqm

### Step 6

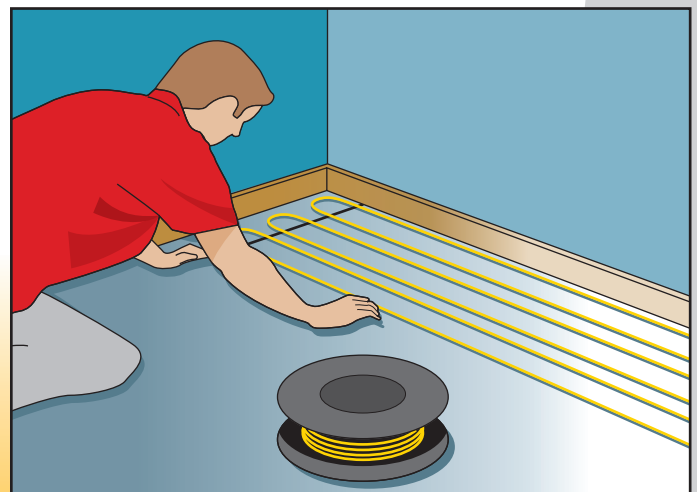
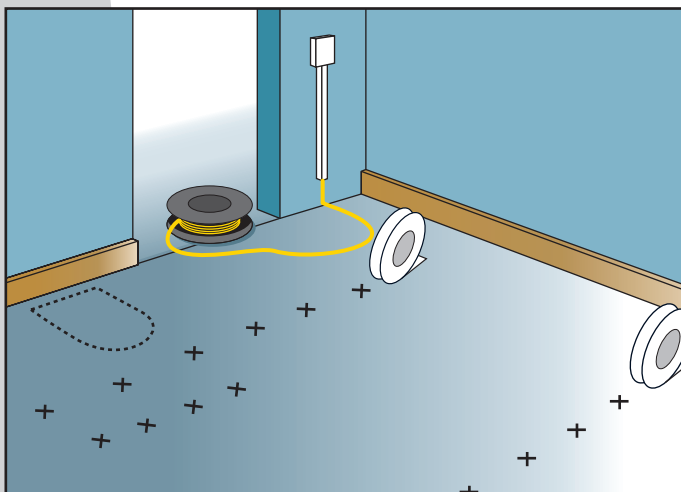
Once the spacing has been determined, **leaving a perimeter of 3-5cms around the edge of the room**, mark out the floor at the calculated intervals. **This will usually be between 6 and 8cms.** If your calculated spacing is less than 5cms **STOP** and do not install – the kit size is too large for the room. A spacing of 10cms will in many cases only take the chill off the floor. Used as a heating source in most domestic situations the spacing should be between 6-8cms (this is always dependent on insulation levels and type of construction).

### Step 6



### Step 7

Once marked out, position one roll of tape in each corner of the room. Begin to loop out the cable as shown. **At this stage only use a single line of tape at each edge in case you have to adjust the spacing slightly later.** You must ensure that the cable is only installed in the 'free floor area' and is **NOT** routed below any fixed objects or drains. **Note – the joint between the black 'cold' cable and the yellow 'heater' cable MUST be located under the floor covering. Eg. under the tiles.**



## Installation- continued

### Step 8

Adjust the spacing if necessary to ensure all the cable is used up and the floor has an even covering then. Cables should be spaced no closer than 50mm (5cm). Tape over the cable at regular intervals ensuring that it is well secured to the floor – **see example opposite.**

### Step 9

Position the sensor between two runs of cable and tape into position. The sensor wire can be shortened or if necessary, lengthened with 2 core flex cable. If you need to shorten 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 (see separate thermostat instructions).

**DO NOT** turn the system on until the floor has been tiled and allowed time to set.

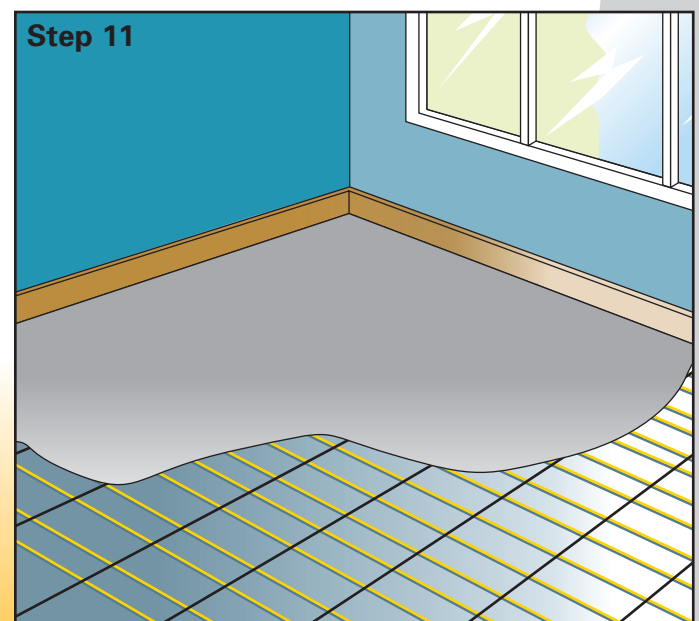
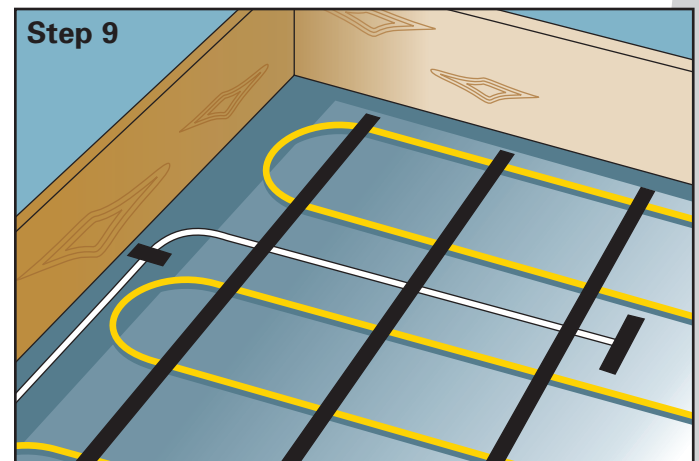
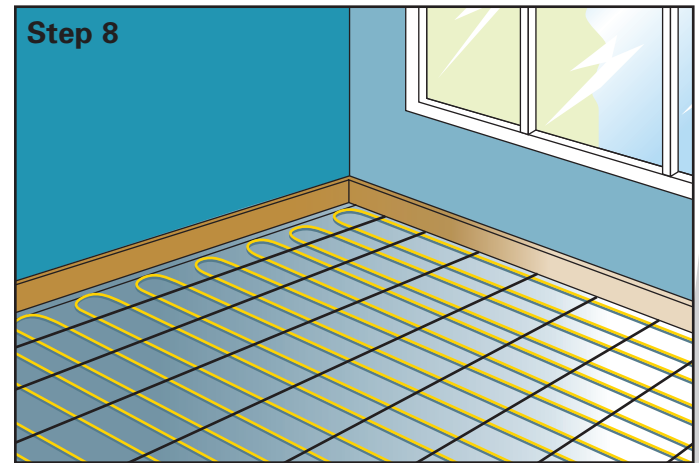
### Step 10

Test the resistance of the cable and the floor probe immediately prior to tiling to ensure that neither have been damaged. Compare readings with those recorded earlier. **UNDER NO CIRCUMSTANCES** should power be supplied to the cable when it is still on the drum or partly coiled up.

### Step 11

If possible cover the cables with a thin layer of latex based levelling screed (3-4mm) This will help protect the cables when tiling. Suitable products will usually be available from your tile supplier but if you have any difficulties we have included details of some of the UK's manufacturers at the bottom of the last page. If you do not wish to use a latex levelling screed, you may tile directly over the cables in a single operation, however extra care must be taken not to damage or dislodge the cables. Tile the floor using a flexible tile adhesive and grout as per industry standards and the manufacturers instructions. If you are using a suitable vinyl or thin carpet as the final flooring we recommend a minimum of a 6mm covering

over the cables to ensure even heat distribution.



**Installation- continued****Step 12**

After the floor has been tiled test the Cable and Floor Probe one last time to ensure that neither have been damaged. Record final readings and complete the Guarantee Certificate. If this is not done the Guarantee is invalid, retain the certificate for your records. Finally wait at least **ONE WEEK** before turning the heating system 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 around 20-22°C and build up by 1 degree per day until your desired temperature is reached.

**Please see separate instructions for connection and operation of the digital thermostat.**

**DO'S and DONT'S**

- DO –** Read through these instructions carefully before beginning work
  - DO –** Use flexible adhesives and grouts
  - DO –** Test the cable BEFORE tiling. See steps 4, 9, 10 and 12
  - 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 –** Try to protect the cable with cardboard or carpet during tiling
  - DO –** Wait at least 7 days before turning on the system
  - DO –** Read the separate installation and operating instructions for the thermostat
  - DO –** Ensure that the joint between the black 'cold' cable and yellow 'heater' cable is beneath the tiles
- DON'T –** Attempt to cut the yellow heater cable at any point
  - DON'T –** Allow the wires to cross or touch
  - DON'T –** Allow excessive foot traffic over the wire before tiling
  - DON'T –** Cut tiles directly over the cable
  - DON'T –** Place tools or stacks of tiles on top of the cable

**Recommended adhesives and levelling compounds****Manufacturer**

F Ball and Co - Tel: 01538 361633  
 web: www.f-ball.co.uk  
 e-mail: sales@f-ball.co.uk

Granfix - Tel: +44 (0) 1773 607778  
 web: www.tileadhesive.co.uk  
 e-mail: info@granfix.co.uk

For further help and advise please call our help line on 0800 8818097

**Products**

Stopgap Red Bag mix with water  
 Stopgap Green Bag mix with latex additive

1 Part Rapid Set Flex Adhesive (2 hr set)

1 Part Standard Set Flex Adhesive (24 hr set)