

# RADIANT FLOORS

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Lancashire, BB7 9SE

**A division of Eltrace Limited**

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## **Installation Instructions**

### **RFMH Undertile Heating Mat System - 200 w/m<sup>2</sup>**

The RFMH undertile heating mat system is suitable for a wide range of floor coverings – ceramic, stone, limestone, slate, terracotta, porcelain or marble. The RFMH electrical underfloor heating system is designed for installation directly below tiles and stone flooring, and the following instructions should be read carefully before you begin your installation.

**Please read these instructions and complete your Guarantee and return it to Radiant Floors after installation.**

RFMH systems can be applied to insulation construction boards, concrete, and existing old tile surfaces. Insulation construction board is already primed, comprising a cement polymer mortar finish on both sides of the board.

#### **Electrical Requirements**

It is recommended the installation is carried out in accordance with local electrical regulations and the wiring of the system to the mains electrical supply is performed by a qualified electrician. **Wiring and circuit protection to comply with BS7671 – 2008.**

The heating system is designed for operation at 230V 50Hz.

Installations require a 30mA RCD (residual current device) for safe operation.

Make sure the total current (amps) of your RFMH system and other appliances connected to the circuit do not exceed the current capacity of the circuit. Normal ring main circuits are rated at 13A and the electrical feed can be taken from a 30mA RCD via a 13A fused spur.

The UFHSTAT thermostat has a 16A maximum rating. When the total load of your RFMH system exceeds 3400 watts (17m<sup>2</sup> system) a contactor must be used to switch the electrical load, or alternatively split the heating into more than one heating zone each operated by its own thermostat – **always consult your electrician.**

Part Number	Heated Floor Area (m <sup>2</sup> )	Heating Mat(s) Required	Total Watts	Amps	Total Mat(s) Resistance (ohms)
RFMH400	2	RFMH-400	400	1.74	132
RFMH600	3	RFMH-600	600	2.6	88
RFMH800	4	RFMH-800	800	3.47	66
RFMH1000	5	RFMH-1000	1000	4.34	52.9
RFMH1200	6	RFMH-1200	1200	5.22	44
RFMH1400	7	RFMH-1400	1400	6.08	37.8
RFMH1600	8	RFMH-1600	1600	6.96	33
RFMH1800	9	RFMH-1800	1800	7.83	29.3
RFMH2000	10	RFMH-2000	2000	8.7	26.4
RFMH2400	12	RFMH-2400	2400	10.43	22

In bathrooms the thermostat control should be mounted outside the bathroom.

**The heating cable must never be cut.**

To facilitate installation the cold lead wire can be cut to suit.

## FLOOR PREPARATION

**Wooden Subfloors** – timber floorboards and chipboard. Make sure any loose boards are firmly fixed and reinforce the floor if necessary to prevent any movement in the floor that could cause tiles to crack. **The floor should be level.**

Reinforcement can be applied to the floor by covering the complete floor with 18mm WBP plywood (weather & boilproof plywood).

Before applying RFMH rated at 200w/m<sup>2</sup> to wooden sub-floors a thermal barrier must be installed such as construction board. This will add the benefit of improving the insulation properties and only a 10mm thickness is required to obtain good results and the necessary thermal barrier.

**Concrete Subfloors** – Before proceeding repair any imperfections in the floor and level the floor with approved building materials.

**Wooden & Concrete Subfloors** - Clean the floor surface so that it is free from dust, dirt, grease etc.

Prime floors with a water based PVA adhesive primer to improve bonding between the adhesives and the subfloor.

Most tile or hardware outlets will supply this item and you will be able to purchase the exact specification and quantity required for the floor area involved.

When installing insulation construction boards use tile adhesive to fix the boards to concrete floors and galvanised screws/washers on wooden subfloors.

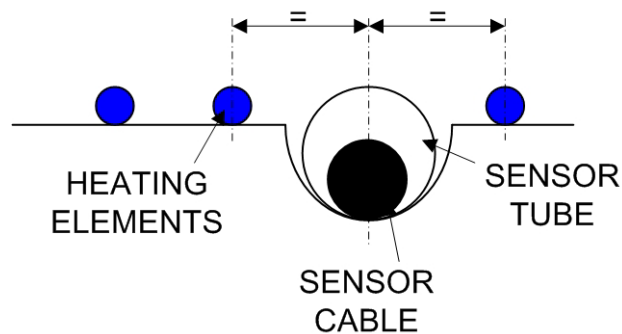
### First Step

Plan the installation.

Draw a general view of the room and mark the area which will be covered with heating elements. Avoid heating under units and sanitary ware as this can cause heat blockage and it is unnecessary to heat these areas anyway.

Mark the position of the supply lead(s) – the cold lead wire, at floor level. This will be close to and below the thermostat position in most cases.

When decided on this position you can cut a groove in the floor to accommodate the protective floor sensor tube. The sensor must run centrally (in the middle) between two runs of heating element so it is important to note where the element will be positioned. Make the sensor tube level with the heating element as shown below.



Make sure the sensor tube has a gradual bend when it enters floor level - this will ensure the sensor cable can be easily inserted. The tube can be cut to length to suit. Seal the end of the tube.

The black cable joint between heating element (blue cable) and cold lead wire (white cable) must be located on the floor. This joint should be level with the heating system – another small groove may be necessary.

### Floor Insulation

On wood or concrete subfloors, a thermal barrier between the heating element and subfloor increase performance, heat up time and saves electricity costs.

To maximise the efficiency of the installed heat energy, insulation should be installed, either below the subfloor or as a layer of insulation construction board on top of the subfloor, OR BOTH.

### Testing

**IMPORTANT:** Before and during installation resistance continuity tests are necessary. Also, measure the insulation resistance value - the minimum reading should be 10Mohms regardless of the element length.

- Test before installing, immediately after installing and before putting the heating into operation. **Consult a qualified electrician.**



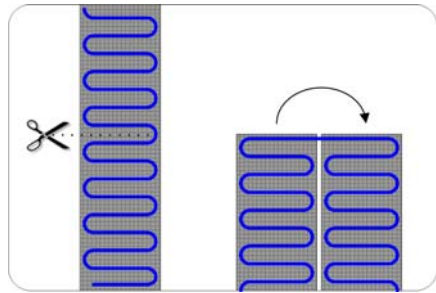
A digital multimeter is ideal for testing cable continuity and its resistance (ohms), as well as the resistance of the sensor cable.

**Insulation resistance readings should also be carried out as required by BS7671.**

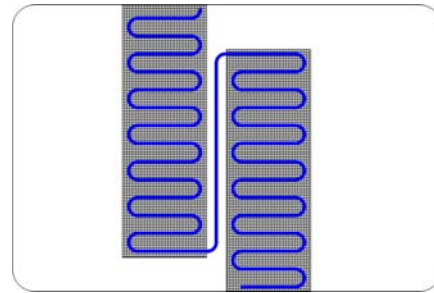
## Mat Layout & Fixing

Planning is important and when calculating the heated floor area leave a gap unheated around the room perimeter of between 50-100mm. The heated floor area must be free, avoid heating under kitchen cabinets, sanitary ware and appliances.

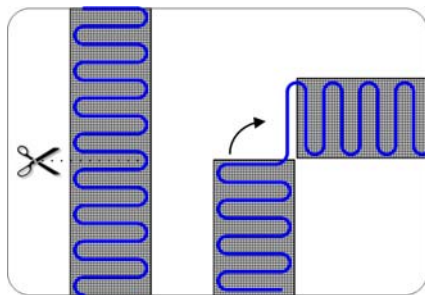
Make sure the RFMH system can fit the floor area to be heated. It is better to have just too little than too much over. Remember, NEVER cut the heating element. Cut only the element carrier when needed, and turn / flip the mat to meet your requirements as shown in the small illustrations below.



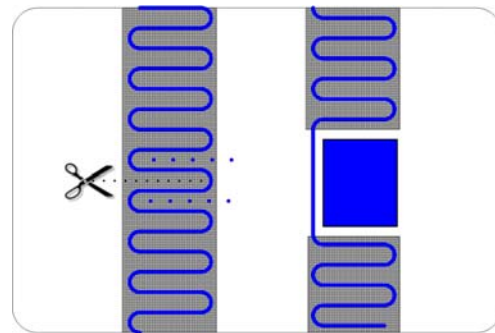
**PLAIN WALL CUT**



**LOOSE CABLE**



**OPEN CORNER**



**OBSTACLE CUT**

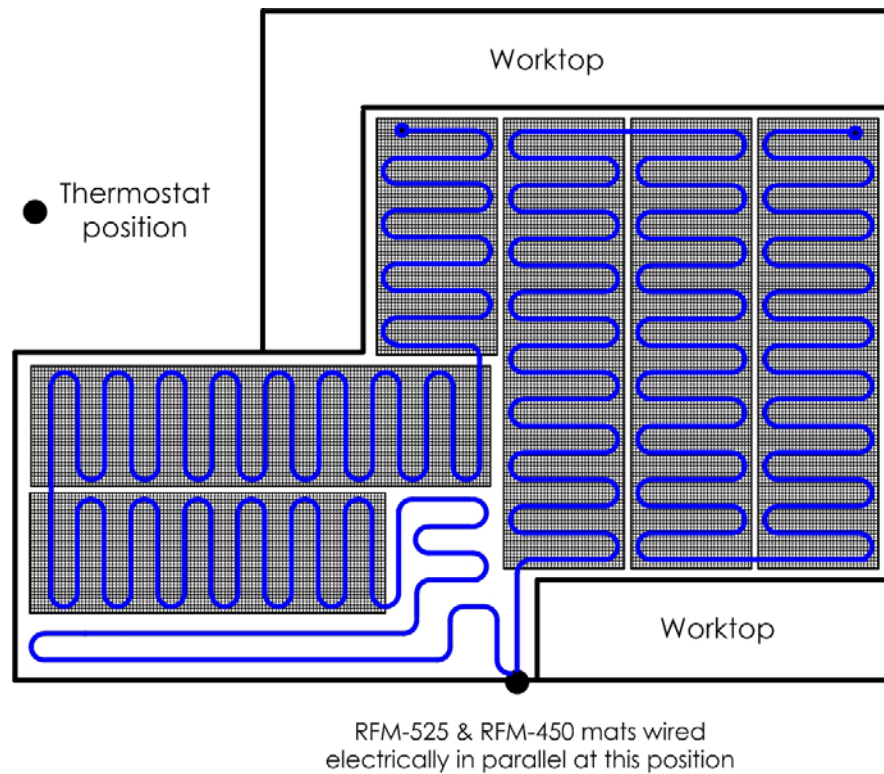
The position for the thermostat should have been decided at the initial planning stage.

Check that the cold lead wire for the mat(s) will reach the connection – (this is the connection with the junction box, depending on the number of mats, or direct to the thermostat). If it does not, extend by removing some of the heating element from the carrier and fix the heating element to the floor with fixing tape.

Arrange the mat on the floor, roll out and make the appropriate cuts at walls and to facilitate loose cable, open corners and obstacle cuts. Do not remove the two sided adhesive tape until you have planned which way you intend to lay the mat. Once the mat installation has been planned remove the two sided tape and stick to the subfloor pushing lightly to ensure good adhesion. It helps to walk on the mat in stocking feet.

The RFMH undertile heating mat system is installed the professional way with the heating elements facing downwards. This is especially helpful when laying your tiles directly onto the mat without first applying a screed. Also, because the elements are on the underside of the glass fibre mesh they are shielded from sharp trowels and possible damage.

## Typical Layout of the RFMH Undertile Heating Mat System



### Tiling

To fix tiles select a single step or two step method. Latex, acrylic or polymer based adhesives are acceptable.

**Single Step:** Using a flexible adhesive the tiling can be carried out as a single operation directly on top of the heating mat. Allow a depth of adhesive sufficient to lay the tile and to encapsulate the heating element with no air gaps

**Two Steps:** Apply a thin layer of flexible self levelling compound just sufficient to cover the mat and encapsulate the heating elements with no air gaps. Allow to cure in accordance with the manufacturers instructions. This will provide protection to the heating mat prior to tiling. Next apply the tiles in flexible tile adhesive in the normal manner.

Both steps are approved for under tile heating.

All adhesives must be flexible and suitable for underfloor heating. These are available from most tile or builders merchant outlets and the outlet will provide full instructions on the application of the adhesives and screed materials.

### Grouting

Use a **latex, acrylic or epoxy grout** for grouting between the tiles. Latex, acrylic and polymers add flexibility to grouts to resist cracking. Epoxy grouts provide high strength, good thermal shock resistance and fast cure. Do not use sharp objects to clean the grout from between the tiles. Most damage to the heating cable occurs when excess grout is scraped away and a sharp tool goes deep enough to cut the cable.



*If in any doubt please contact Radiant Floors for support – 01254 824 234*

### **Reminders**

Do – read the instructions

Do - Use approved adhesives and floor screeds – consult your local tile or builders merchant outlet

Do - use the right size of mat(s) and only apply the mat to the area to be heated

Do - consult a qualified electrician

Do - make sure the heating is connected to an RCD rated 30mA maximum.

Do - make sure the black joint between the blue heating element and the white cold lead wire is in the floor beneath the tiles.

Do - keep a record of where the floor probe is positioned and the general layout of the heating mat for future reference.

Do Not - overload circuits – consult your Electrician

Do Not - cut the heating element

Do Not - cross or touch heating elements

Do Not - cut or prepare tiles on top of the mat

### **Support**

a. Eltrace / Radiant Floors deliver next day carriage free

b. With a simple request, our technical / design team work to your floor plans, or scale the floor sizes from a set of architects plans. Please include phone and fax numbers and email address.

c. Fax to 01254 825 212 or phone 01254 825 234 for Design help.

d. email: [sales@eltrace.co.uk](mailto:sales@eltrace.co.uk) or [sales@radiant-floors.co.uk](mailto:sales@radiant-floors.co.uk)

# RADIANT FLOORS

## GUARANTEE CERTIFICATE

Unit 14, The Sidings Business Park, Whalley, Lancashire, BB7 9SE  
Tel: 01254 825 234 Fax: 01254 825 212 email: [sales@radiant-floors.co.uk](mailto:sales@radiant-floors.co.uk)

### RFMH Undertile Heating Mat System

Please complete and return this installation certificate within 14 days to Radiant Floors and keep a copy to validate the 10 year guarantee

Name: .....

Address: .....

.....

Type of room: .....

RFMH size – Part Number .....

**Initial Resistance test (continuity)** ..... (ohms)

**Insulation Resistance:** .....

Signed by electrician: .....

Date: .....

**Resistance test (continuity) prior to laying tiles** .....(ohms)

**Insulation Resistance:** .....

Signed by electrician: .....

Date: .....

**Final Resistance test (continuity)** .....(ohms)

**Insulation Resistance:** .....

Signed by electrician: .....

Date of completion: .....



