

# eCable

## Installation Manual



[www.electricunderfloorheating.co.uk](http://www.electricunderfloorheating.co.uk)

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

# Introduction

Important notes, please read carefully before proceeding with installation

## The eLine Brand

Congratulations on choosing your eCable underfloor heating product from the eLine range of underfloor heating solutions.

The eLine range has been manufactured to exceed all relevant standards and expectations considering ease of installation and usability through the lifetime of the product.

## The eCable Product

The eCable is a thin (5.5mm) twin conductor, PVC free 20w per linear metre constant wattage heating cable, with a pre-terminated 2.5m cold tail (power cable) attached.

Twin conductor product design ensures a simple installation for either a warm floor or total heating solution.

The fixing strip provided with the eCable kit, allows installation of the eCable at variable spaces (minimum 50mm) consequently altering the heat output to your own requirements.

## Tools needed for installation

You will require the following items to install and test the eCable system.

- Tape measure drawing pad and pencil.
- Cable strippers and screw driver.
- Resistance tester(multimeter)
- Hammer & masonry nails.

## Contents of eCable system

- Heating cable
- Sensor tube
- Installation instructions
- Warranty

The following pages contain all the information you will need about the eCable. Please take the time to study this information thoroughly before you attempt to install this product.

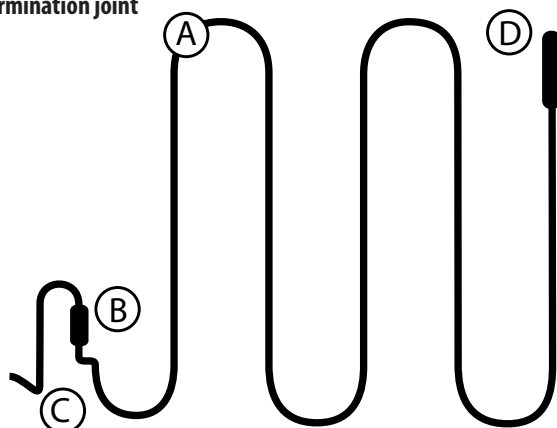
## Glossary of Terms

**A – Heating element**

**B – Factory made cold tail joint**

**C – Cold tail power lead**

**D – End termination joint**



## Do's & Don'ts

### Do

Carefully read this instruction manual before starting your installation and follow the testing procedure as detailed on page 6. Throughout your installation:

- Take some time to plan your cable layout considering all obstacles e.g. drain covers, kitchen units bathroom sinks etc.
- Ensure the floor sensor thermostat is inserted within the flexible tube provided, with the floor end of the flexible tube properly sealed (to ensure easy removal of the floor sensor after installation if required)
- Maintain a minimum of 50mm spacing between the heating element runs at all times.
- Take care not to damage the heating cable and cold tail (power cable) whilst screeding the floor area.
- Ensure all the black heating element is covered with the sand cement screed or flexible self leveling compound.
- Ensure the floor surface is correctly prepared before installation (see page 7).
- Ensure the entire black heating element is installed within the floor.
- When using more than one eCable from a single supply, cold tails must be connected in parallel.
- When using foil faced insulation ensure all insulation joints are properly taped to prevent the eCable from slipping in-between insulation panels.
- Ensure all the eCables are evenly spaced across your complete free floor area.

### Don't

- Cut or shorten the black heating cable.
- Cross or touch the black heating cable.
- Lay directly on to polystyrene jablite insulation without separating with a chicken wire mesh min 12 gauge.
- Connect the heating element to the power supply whilst still coiled.
- Leave coiled sections of heating cable under your floor screed. Ensure all heating cable is evenly spaced across the free floor area.
- Commence installation of your floor surface before testing your eCable (see page 7).
- Screed over damaged or twisted cables.
- Install heating cables closer than 50mm.

# Electrical Requirements

Please follow these instructions carefully. If you require assistance prior to or during your installation please call our helpline on 0845 118 99 99 Lo-Call

## Electrical Requirements

Before installing the eCable you should make allowance for the electrical connections.

The eCable system requires a mains voltage 230/240V and must be connected in accordance with the current IEE regulations and building regulations part 'P' approved document.

For areas up to 14m<sup>2</sup> @ 200w per m<sup>2</sup> power connection can be provided through a 13A switched spur outlet/combined RCD spur outlet. For larger areas a dedicated circuit should be installed from the local consumer unit.

**Confirm your thermostat is suitable to switch the appropriate electrical load e.g. 16A thermostat is suitable to switch up to 17m<sup>2</sup> @ 200w per m<sup>2</sup>.**

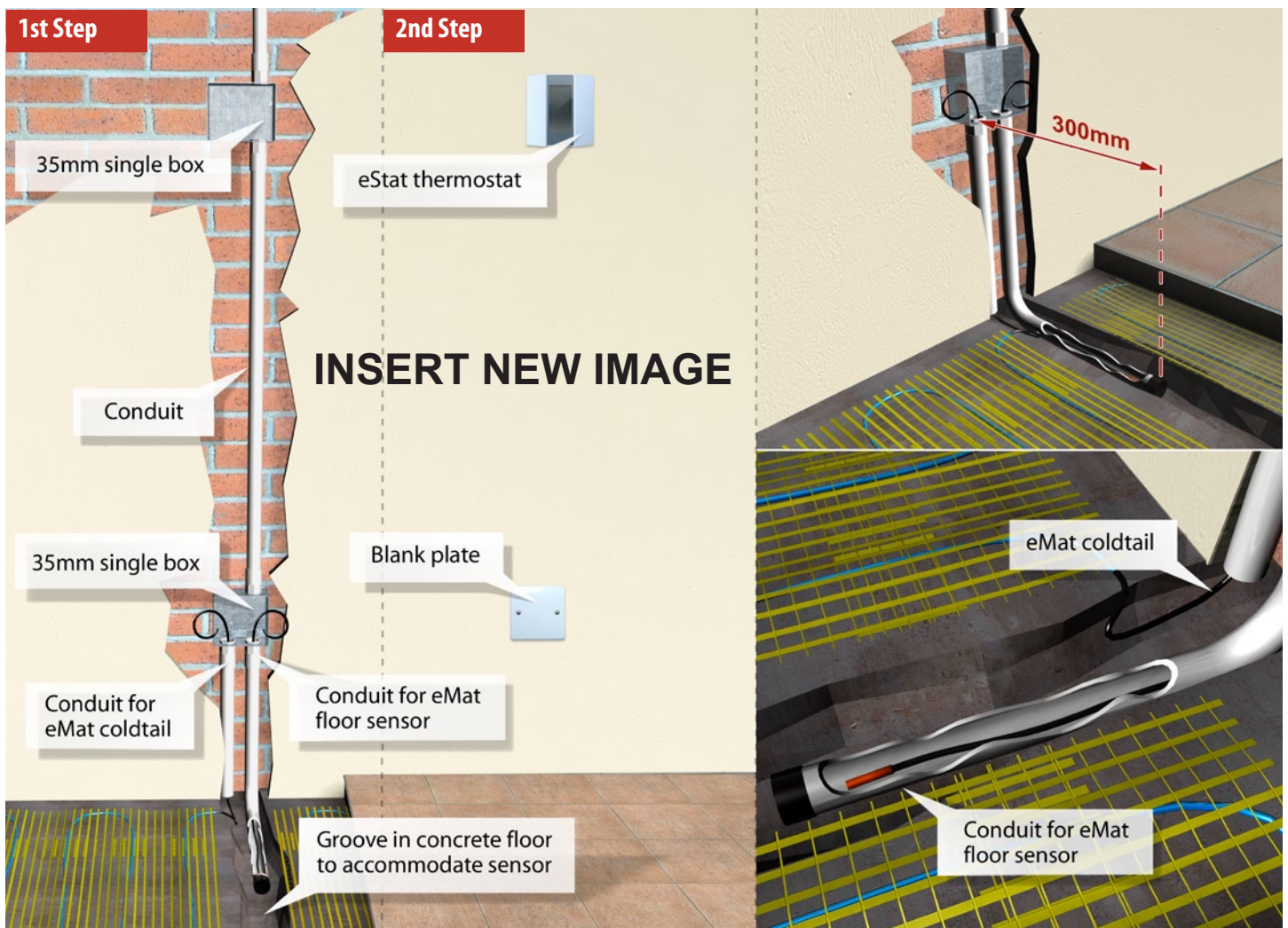
**If you are required to switch greater electrical load than 16A a suitably sized thermostat or electrical contactor MUST BE INSTALLED. Please consult our Help Line if in doubt 0845 118 9999 Lo- Call.**

We recommend that all eCable systems are protected by a 30ma RCD earth trip either at the consumer unit or by a combined RCD spur outlet.

When installing in a bathroom or other wet areas the thermostat must be located in Zone 3 (600mm from any wet appliance e.g. shower sink etc) or outside of the wet area ideally on the opposite face of the wall. The eCable must be earth bonded in accordance with the current IEE regulations.

**Important. When designing your electrical installation you should always consult an electrician concerning your requirements.**

## eMat and Floor Sensor



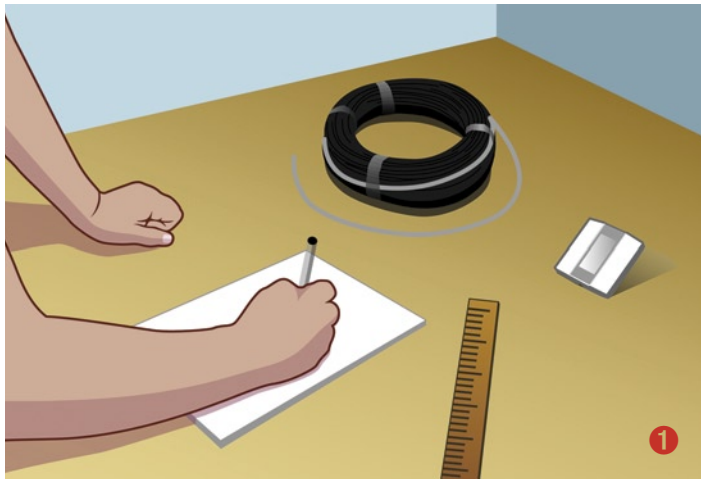
# Installation Instructions

## Step 1

Draw a layout of your room (see page 6) including all obstacles e.g. Drain covers, toilets, sinks etc, then determine the required floor area to be heated.

Decide a suitable position for the thermostat (start point) then refer to page 6 to calculate your eCable spacing and layout.

**Ensure your eCable is correctly sized before you unpack the product.  
Call 0845 118 99 99 Lo-Call with any questions.**

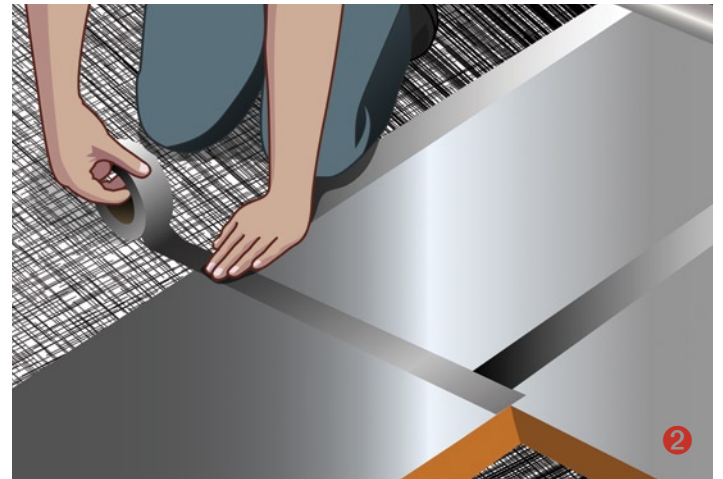


## Step 2

The floor should now be prepared ready for the eCable installation. All loose particles should be removed and the floor thoroughly cleaned and treated with any proprietary sealants as normally required.

If your existing floor has a bitumen or asphalt surface it must either be removed or covered with a thin flexible self levelling compound, sand cement mix or foil faced insulation panels. If you are installing foil faced insulation panels do so in accordance with the manufacturer's instructions.

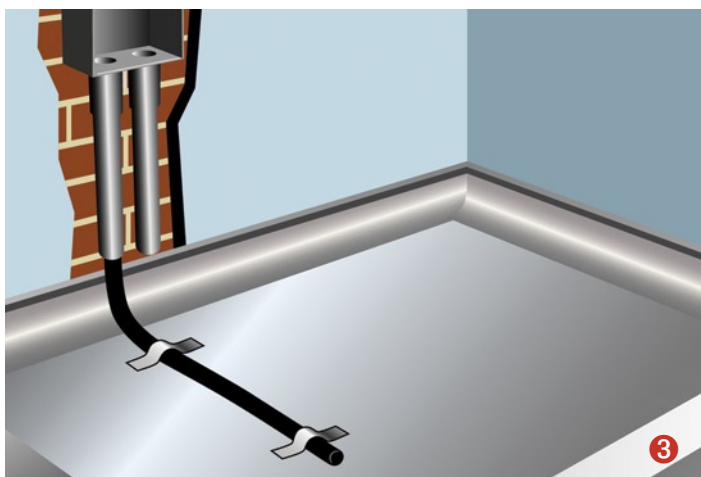
**Ensure all joints are properly taped and sealed to prevent the eCable from slipping in-between insulation panels.**



## Step 3

Directly below the electrical connection point install a 10mm flexible tube the flexible tube must be situated in-between two cable runs (see step 6). The floor sensing probe is installed into the flexible tube to monitor the floor temperature and may need to be replaced if the sensor fails. Ensure the tube is installed to allow easy replacement of the sensor probe.

The flexible tube in the floor should be sealed to prevent sand/cement mix or self levelling compound entering the tube. Secure the flexible tube in position with a section of fixing strip or robust utility tape.

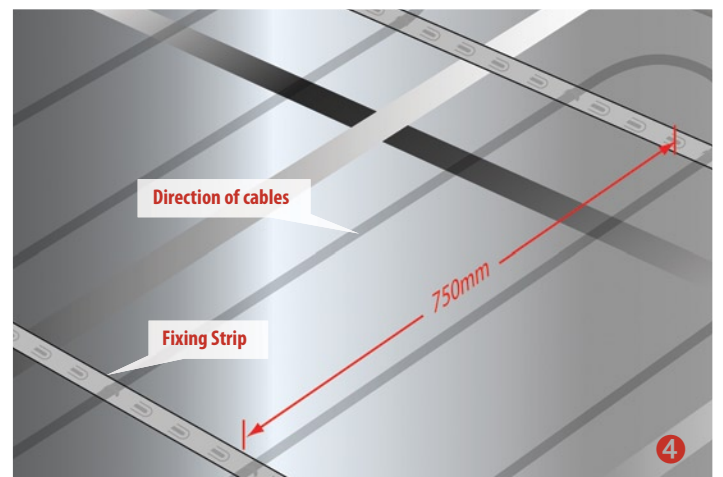


## Step 4

The fixing strip should then be anchored to the floor running perpendicular to your proposed heating cable layout and spaced evenly every 750mm.

The fixing strip fastening will vary depending on your floor base.

- Fix on to a concrete slab use masonry nails.
- Fix onto foil faced insulation panels use a robust utility tape.

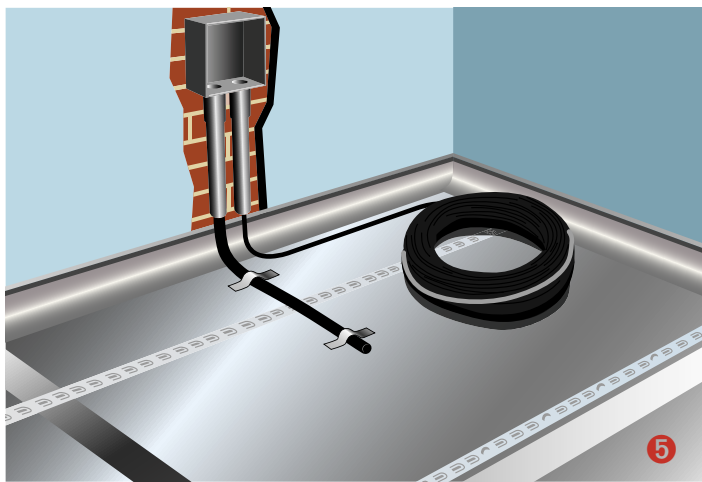


# Installation Instructions

## Step 5

Perform the following tests: insulation resistance test, a heating cable resistance test and a floor sensor resistance test (see page 7), record your findings in the test & commission form on page 8.

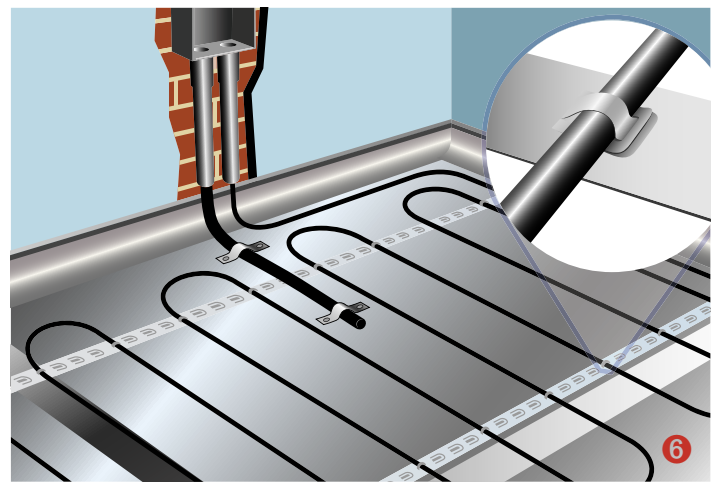
Remove the securing tape from your eCable roll and position at the start of your eCable plan with cold tail (power cable) at the electrical back box. Ensure the separate thermostat floor sensor cable is inserted in to the pre-installed 10mm flexible tube and returned to the low level electrical back box. The cold tail joint must be positioned in the floor area.



## Step 6

Once the eCable cold tail (power cable) and thermostat floor sensor probe have been positioned you can now start to lay your eCable. Following your previously drawn eCable layout and spacing, continue to lay and secure your eCable on to the pre-installed fixing strip. Continue laying cable until total floor area is covered. All heating cable must be used, any excess heating cable must be reconfigured into the floor area by adjusting your cable spacing. Ensure all heating cables are evenly spaced across the floor area.

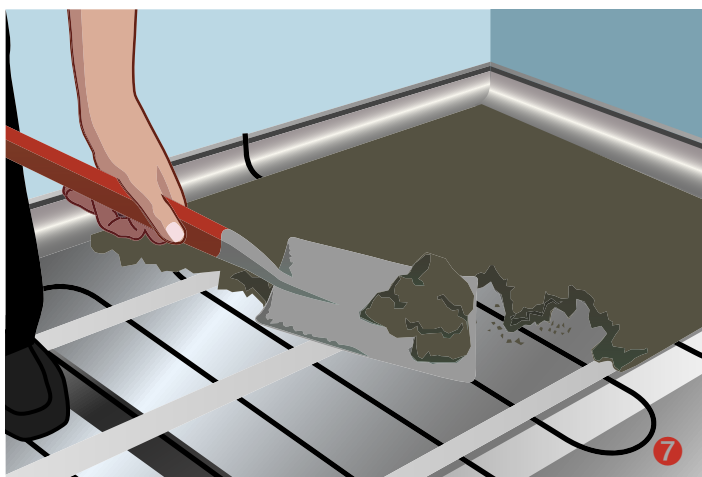
- Do not cut any surplus heating cable.
- Do not leave any excess heating cable spoiled or coiled in the floor area.
- Ensure all heating cable is used and spaced evenly across the floor.



## Step 7

Now that all your heating cable is correctly laid into your floor area you can begin to lay your floor screed. Ensure your floor screed is laid in accordance with your local building control requirements and take care not to damage your eCable product.

- Take care not to damage the heating cable.
- Do not disturb the cables from their pre-placed spacing.



## Note

After the finished floor covering has been laid perform the following tests:

- Insulation resistance test
- Heating cable resistance test
- Floor sensor resistance test

Record your findings in the test & commission form on the back page.

Register your warranty online at:

[www.electricunderfloorheating.co.uk/warranty](http://www.electricunderfloorheating.co.uk/warranty)

**Always allow 6–8 weeks for complete curing of your floor screed before switching your system on.**

# Cable Spacing and Layout Instructions

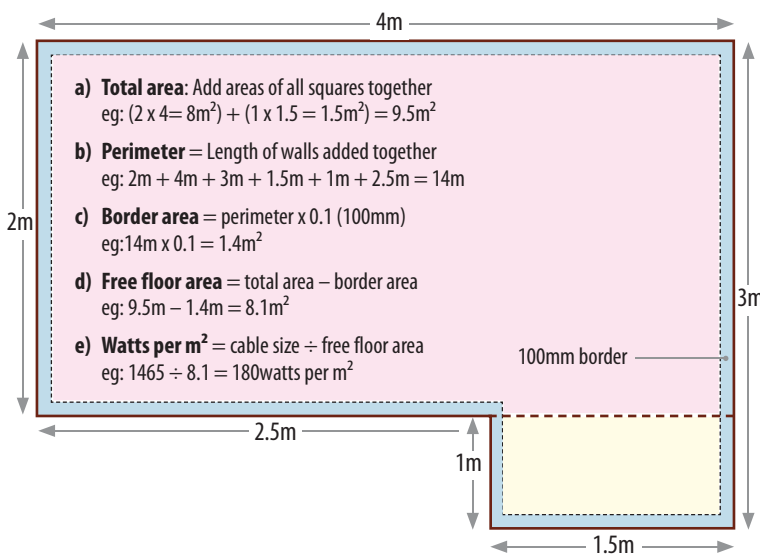
## Cable Spacing and Layout Instructions

It is important when calculating your eCable spacing to accurately draw your room area as this will help to save time and ensure a smooth installation.

1. Draw your total room area including all fixed furniture such as kitchen units, toilets and sink areas (fig 2). Mark your drawing with all relevant dimensions (fig 1).
2. Calculate the **total area** by multiplying the length and width of room. If your floor is an unusual shape it helps to divide the area into square sections and add the sections together (fig 1, part a).
3. Calculate the **perimeter** by adding the lengths of all the walls together (fig 1, part b).
4. A border of 100mm must be maintained between the edge of the wall and the eCable. Calculate the **border area** by multiplying the border width (0.1m) with the perimeter (fig 1, part c).
5. Calculate the **free floor area** by subtracting the border area from the total area (fig 1, part d).
6. Finally, find the **watts per m<sup>2</sup>** by dividing the cable size, as indicated on your product, by the free floor area (fig 1, part e).
7. Once you have calculated your wattage per m<sup>2</sup> refer to the Cable Space and Wattage chart (A) opposite to find your ideal cable spacing: ie 180 watts per m<sup>2</sup> = 111mm.
8. The pre-spaced fixing strip has cable spacing every 25mm therefore we need to refer our calculated cable spacing to chart B to find our nearest actual cable spacing.
9. Our 111mm ideal cable spacing becomes 112.5mm (nearest average spacing) so the spacing for your eCable will be 1 space at 100mm (4 segments of 25mm) and 1 space at 125mm (5 segments of 25mm) = Average 112.5mm.

Repeat this pattern as inset diagram in fig 2.

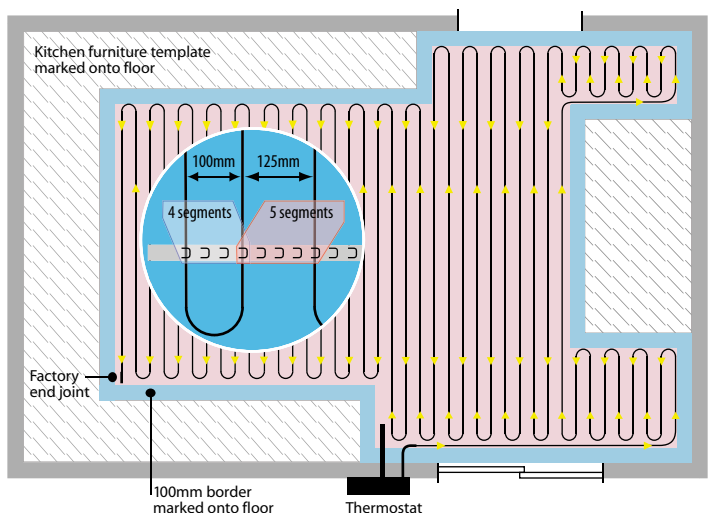
**Fig 1**



**Chart A: Cable space and wattage per m<sup>2</sup>**

Installed W/m <sup>2</sup>	Spacing mm	Installed W/m <sup>2</sup>	Spacing mm	Installed W/m <sup>2</sup>	Spacing mm	Installed W/m <sup>2</sup>	Spacing mm
133	150	162	123	191	105	220	91
134	149	163	123	192	104	221	90
135	148	164	122	193	104	222	90
136	147	165	121	194	103	223	90
137	146	166	120	195	103	224	89
138	145	167	120	196	102	225	89
139	144	168	119	197	102	226	88
140	143	169	118	198	101	227	88
141	142	170	118	199	101	228	88
142	141	171	117	200	100	229	87
143	140	172	116	201	100	230	87
144	139	173	116	202	99	231	87
145	138	174	115	203	99	232	86
146	137	175	114	204	98	233	86
147	136	176	114	205	98	234	85
148	135	177	113	206	97	235	85
149	134	178	112	207	97	236	85
150	133	179	112	208	96	237	84
151	132	180	111	209	96	238	84
152	132	181	110	210	95	239	84
153	131	182	110	211	95	240	83
154	130	183	109	212	94	241	83
155	129	184	109	213	94	242	83
156	128	185	108	214	93	243	82
157	127	186	108	215	93	244	82
158	127	187	107	216	93	245	82
159	126	188	106	217	92	246	81
160	125	189	106	218	92	247	81
161	124	190	105	219	91	248	81
						249	80
						250	80

**Fig 2**



**Chart B: Combinations to achieve average space**

Spacing	Combination	Spacing	Combination
58	2@50mm, 1@75mm	108	2@100mm, 1@125mm
62	1@50mm, 1@75mm	112.5	1@100mm, 1@125mm
67	1@50mm, 2@75mm	117	1@100mm, 2@125mm
83	2@75mm, 1@100mm	133	2@125mm, 1@150mm
87.5	1@75mm, 1@100mm	138	1@125mm, 1@150mm
92	2@100mm, 1@75mm	142	1@125mm, 2@150mm

# Testing & Commissioning and Floor Construction Examples

## Warranty Validation

To validate your 15 year online warranty registration you must perform the insulation resistance test, the heating cable resistance test, and the sensor resistance test three times during the installation process.

1. Before you lay the eMat.
2. After you have laid your eMat and before you cover your eMat.
3. After your finished floor has been laid.

This information must then be recorded on your commissioning record form (see page 8).

## Heating Cable Resistance Test

This test is carried out to prove continuity of the heating element. A low resistance ohm meter should be used (ie Multimeter on ohm setting), connect your meter on to the brown and blue mains lead and confirm resistance value matches that quoted on your specification label on the eCable Cold Lead joint.

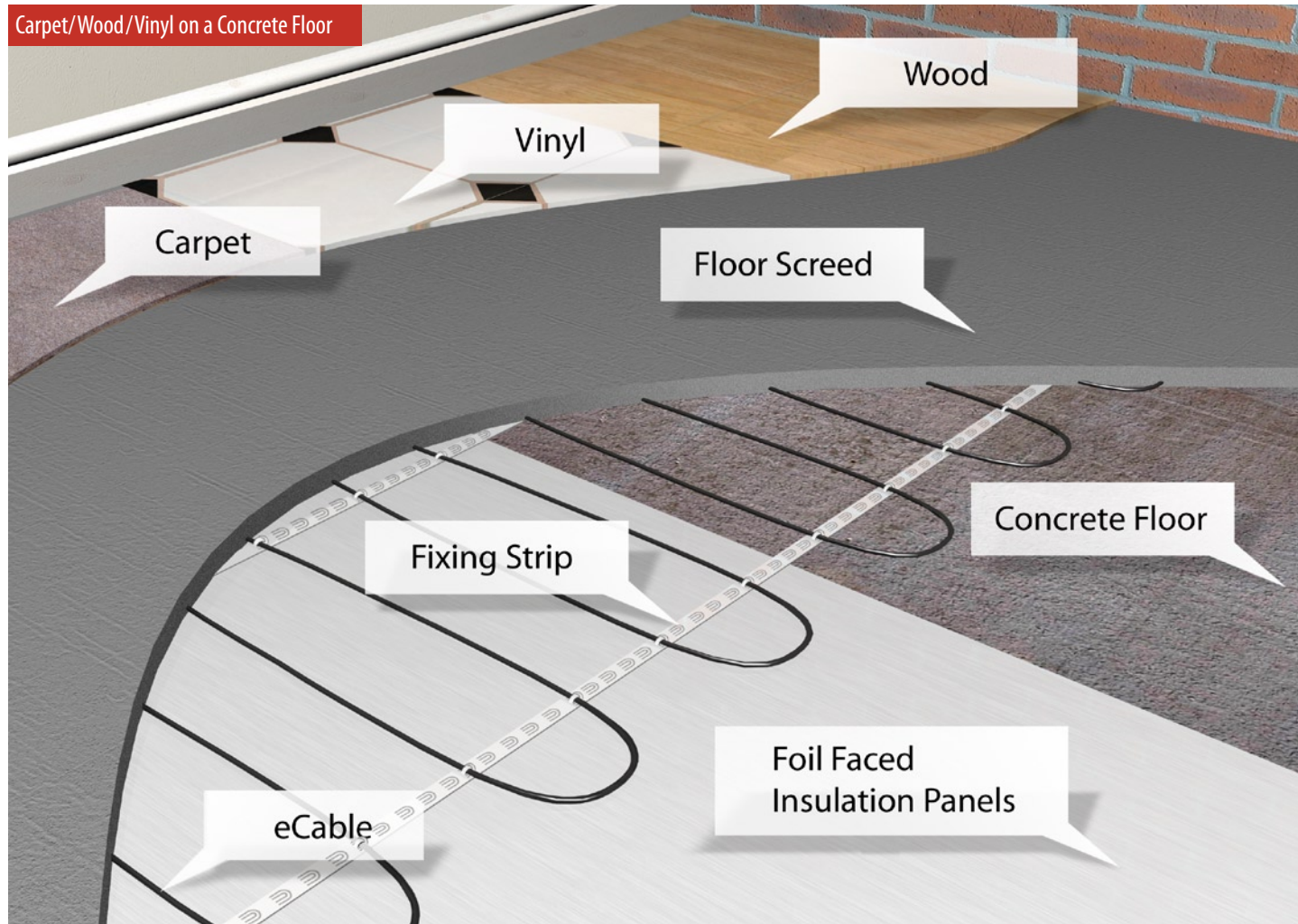
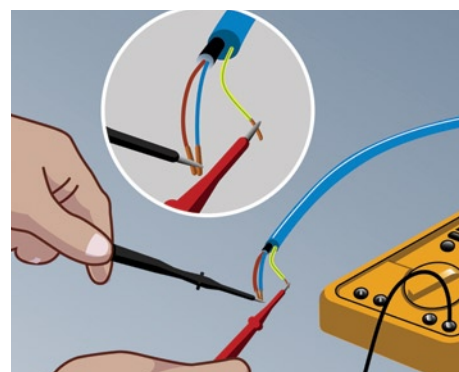
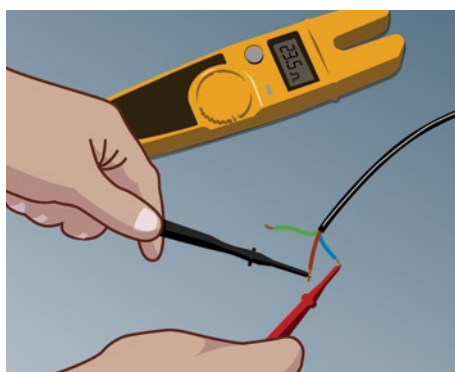
## Floor Cable Resistance Test

See Heating Cable Resistance Test and repeat with floor sensor cable.

## Insulation Resistance Test

This test is performed to measure the insulation resistance between conductors and ensures the cable insulation is not damaged. A low resistance reading indicates a damaged cable and must be repaired or replaced.

The insulation resistance tester should be connected between the conductors (blue and brown cables) and the earth (yellow/green cable). The meter should record a high resistance value e.g. above 100 Meg ohms.



# Commissioning Record and Troubleshooting

## Commissioning Record

Please retain this record. Register your warranty online at: [www.electricunderfloorheating.co.uk/warranty](http://www.electricunderfloorheating.co.uk/warranty)

Installer		
Date of Commissioning	Customer Name	
Name of Installer	Phone	Mobile
Customer Address		
Town/City	County	Postcode

eMat	Product Code <input type="text"/>	Results
Insulation Resistance	Before embedding in mortar	Above 10 Meg ohms <input type="checkbox"/>
	After floor covering	Above 10 Meg ohms <input type="checkbox"/>
Heating Cable Resistance	Before laying	= ohms
	Before embedding in mortar	= ohms
	After embedding in mortar	= ohms
Sensor Resistance	Before embedding in mortar	= k ohms
	After embedding in mortar	= k ohms

## Troubleshooting

Symptom	Probable Causes	Corrective action
Floor does not heat	No power at controller	Check Power supply
	MCB Tripped	Check the circuit is not overloaded
	Thermostat not set correctly	Refer to thermostat Instructions
	eCable not correctly connected with thermostat	Refer to thermostat Instructions
	Floor temperature sensor not connected	Refer to thermostat Instructions
	Faulty sensor / thermostat	Contact the eLine Helpdesk 0845 118 99 99
Floor warming all the time	Heating element cut or damaged	Contact the eLine Helpdesk 0845 118 99 99
	Thermostat not set correctly	Refer to thermostat Instructions
Floor not getting warm enough	Floor temperature sensor not connected	Refer to thermostat Instructions
	Thermostat not set correctly	Refer to thermostat Instructions
	Floor sensor too close to heating element	Contact the eLine Helpdesk 0845 118 99 99

Contact the eLine Helpdesk with any questions on 0845 118 99 99

## eCable

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