elements

INSTALLATION MANUAL

eMat Pro 100W/150W/200W

LIFETIME WARRANTY

Intertek

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

01473 276677
www.elementsunderfloorheating.co.uk

Introduction

Important notes, please read carefully before proceeding with installation

The elements brand

Thank you for choosing the eMat Pro underfloor heating mat from our range of electric underfloor heating solutions.

The eMat range has been manufactured to surpass all current industry standards and comes with a lifetime warranty.

eMat Pro underfloor heating mat

The eMat underfloor heating mat has a self-adhesive fibre glass backing mesh with an ultra-thin twin conductor 3mm heating cable pre attached, ensuring minimal increase to the existing floor height. The function of the matting system is to provide a warm floor.

Superior product design ensures a speedy installation with an even heat across the complete floor surface, whilst allowing unlimited adjustment of the heating element to suit irregular formats.

The eMat matting system is available in three output types:

100 watts per m² (for use with timber floor substrates e.g. plywood etc).

150 watts per m² (for use with concrete floor substrates e.g. sand cement screed, insulated backer boards etc).

200 watts per m² (for use where a higher wattage output is required e.g. conservatory).

Tools needed for installation

You will require the following items to install and test the floor warming systems.

- Tape measure, drawing pad and pencil
- Utility knife, scissors
- Cable strippers, screw driver
- Resistance tester (multimeter), insulation resistance tester

You will also need the appropriate tools and materials to install your finished floor surface; these will probably include products like self-levelling compound, insulated backer board, notched tile trowel and various other tools and materials for your specific project.

Do's & Don'ts

Do

Carefully read this instruction manual before starting your installation and follow the testing procedure on page 7. Throughout your installation:

- Take time to plan your mat layout, considering all obstacles e.g. kitchen cupboards, bathroom sinks etc. Ensure the mat will fit before laying.
- Use flexible tile adhesives and grouting materials.
- Ensure the floor sensor thermostat is inserted within the flexible tube provided and installed between two heating elements, with the floor end of the flexible tube effectively sealed (to ensure easy removal of floor sensor if required after installation). See page 3.
- Maintain a minimum of 50mm between the heating element runs.
- Take care not to damage the heating element and cold tail whilst tiling.
- Ensure all the yellow heating element is covered with a flexible self-levelling compound or flexible tile adhesive.
- Make certain there are no air gaps underneath tiled areas or between heating element runs.
- Ensure the floor surface is prepared correctly before installation. See note on page 4.
- When using more than one mat from a single supply, cold tails must be connected in parallel.

Don't

- Cut or shorten the yellow heating cable.
- Cross or touch the yellow heating cables together.
- Switch on your underfloor heating system for a minimum of 7 days after tiling to allow correct curing of tile adhesives and grouts.
- Install in temperatures lower than -10°C.
- Install near other heat sources such as luminaires and chimneys.
- Connect the heating element to the power supply whilst still rolled up.
- Leave rolled up surplus sections of mat under kitchen units or bath spaces.
- Commence installation of your floor surface before testing your mat. See page 7.
- Tile over damaged or twisted cables.
- Install under kitchen units or permanent fixtures such as baths

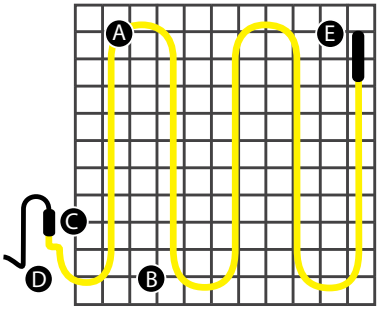
Construction of the eMat Pro

Intertek Semko certified

- Heating mat
- Sensor tube
- Installation instructions
- Warranty

This manual contains all the information you will need about the eMat underfloor heating mat.

Please take time to study the information thoroughly before you attempt to install this product.



A Heating element

B Fibreglass backing mesh

C Factory made cold tail joint

D Cold tail power lead

E End termination joint

Electrical Requirements

Always consult an electrician regarding your requirements

Please follow these instructions carefully. If you require assistance prior to or during your installation, please call our helpline on 01473 276677

Electrical requirements

Important Note

When designing your electrical installation, you should always consult an electrician regarding your requirements. Before installing the eMat you should make allowance for the electrical connections.

The eMat system requires a mains voltage 230/240V and must be connected and installation is to be in accordance with the national wiring rules.

For areas up to 30m² (eMat 100w), areas up to 20m² (eMat 150w) or areas up to 15m² (eMat 200w) power connection can be provided through a 13A switched spur outlet/combined RCD spur outlet.

For areas larger than the above, a dedicated circuit should be installed from the local consumer unit.

This symbol means **Direct Floor Heating**

List of accessories required in addition to the heating mat:

- Floor sensing programmable thermostat (*see below*)
- Main switch
- Residual current device (RCD)

Note:
Details of the thermostat installation will be available in the installation manual provided with the thermostat.

It is a requirement that all eMat systems are protected by a 30ma RCD earth trip either at the consumer unit or by a combined RCD spur outlet.

Important Note

When installing in a bathroom or other wet areas the thermostat must be located outside Zone 2 (0.6m from any wet appliance, e.g. shower, sink etc) or outside the wet area, ideally on the opposite face of the wall. The eMat must be earth bonded in accordance with the national wiring rules.

Controls

- Thermostat: OJ Electronics OCC2

Pre-Installation Instructions

Ensure the sub floor is structurally sound, clean and dry

Ensure your eMat is correctly sized before you unpack the product.
Call 01473 276677 if you have any questions.

Notes

The floor should now be prepared ready for the eMat installation.

All loose particles should be removed and the floor thoroughly cleaned and treated with any proprietary sealants as normally required for your finished floor.

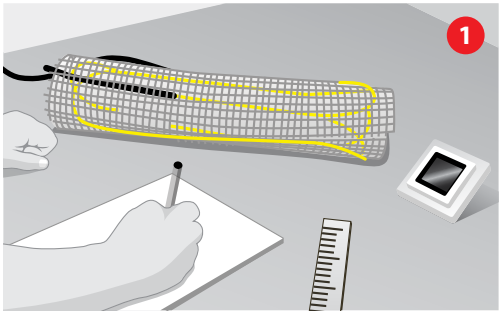
If your existing floor has a bitumen or asphalt surface, it must either be removed or covered with a thin flexible self-levelling compound, tile backer board or water resistant timber.

If installing insulated tile backing boards, you must comply with the manufacturer's instructions.

Minimum bend radius of the heat cable while laying must not be less than 10× its diameter, ie 40mm.

Step 1

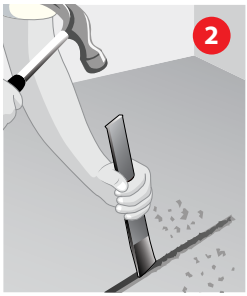
Draw a layout of your room including all obstacles, e.g. toilet, sink etc, (**use the floor plan grid on page 10**) then determine the required floor area to be heated. Decide a suitable position for the thermostat (start point) then sketch the proposed eMat layout to ensure the heated area is completely covered whilst using all of your mat (**see mat planner notes on page 6**).

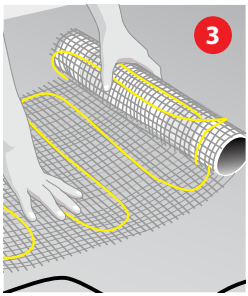


Step 2

Directly below the electrical connection point install a 10mm flexible tube (provided with each eMat) – you may have to channel a groove to allow the flexible tube to remain flush with the existing floor. The floor sensing probe is to be installed into the flexible tube to monitor the floor temperature. Ensure the tube is installed to allow easy replacement of the sensor probe (in case the sensor fails) and positioned between two heating elements.

The flexible tube in the floor should be sealed to prevent adhesive or self-levelling compound entering the tube.





Now check the resistance of the mat (see page 7 for details)

Step 3

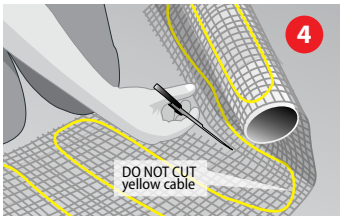
Remove the plastic outer cover from the eMat. Position at the start of your matting plan with the cold tail (power cable) at the electrical connection and positioned in to a low level electrical back box.

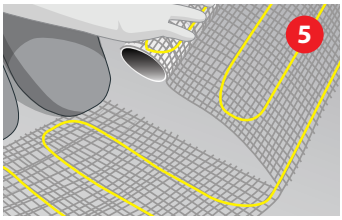
Ensure the separate thermostat floor sensor cable is inserted into the pre-installed 10mm flexible tube and returned to the low level electrical back box.

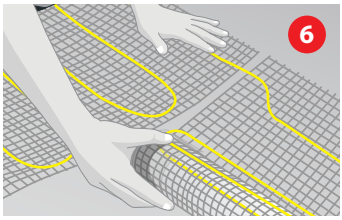
The factory made cold tail joint must be positioned in the floor area.

Installation Instructions

Read through these instructions carefully before laying your mat







Notes

In some instances it may be necessary to remove the yellow cable from the grey backing mat.

Ensure the cables are not laid in areas where fixed appliances could be positioned, e.g. underneath sink basins or toilet pans.

Care should be taken to avoid damage during installation, such as dropping sharp objects, stepping too heavily on the heating unit or careless pouring of the adhesive.

Step 3 (continued)

Once the mat cold tail (power cable) and thermostat floor sensor probe have been positioned (ensure the sensor probe is situated between two heating elements) you can start to lay your mat.

Following your previously drawn mat layout, ensure the mat is placed on the floor with the adhesive side down. Unroll your mat until you reach the end of your first run.

Steps 4, 5 & 6

When you have reached the end of the mat run, carefully cut the grey backing mat in-between the two yellow cables (**do not cut the yellow cable**) and turn the mat to its new position. Ensure the cable remains a minimum of 50mm apart.

Once the mat is turned and secured, continue this process until all of the mat is used. Then check the complete matting area is securely fixed to the floor.

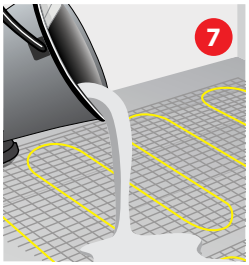
Check the resistance of the mat again (see page 7 for details) to make sure damage hasn't occurred during the installation process.

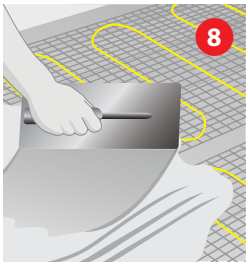
Steps 7 & 8

The mat must now be covered with a minimum of 5mm of either a flexible tile adhesive or flexible self-levelling compound.

Check there are no air pockets then carefully spread the flexible tile adhesive or self-levelling compound until all mat areas and heating cables are covered.

You can tile directly over the mat. Carefully apply the flexible tile adhesive with a notched trowel ensuring each tile is securely fixed, and all mat and cable areas are completely covered with the adhesive.





Important Notes

The maximum thermal resistance recommended between heater and the room is 0.15m² K/W (1.5 tog).

After the finished floor covering has been laid, perform the following tests (see page 7 for details):

- Insulation resistance test
- Heating cable resistance test
- Thermostat floor sensor resistance test

The findings must be recorded on the *Commissioning Record* enclosed in the mat box or your warranty will be invalidated.

Mat Planning Examples

Using one & two mats

Planning your mat

When planning your eMat, ensure you cover as much of your free floor area as possible:

- never install your heating cables any less than 50mm apart.
- never cut your heating cable.
- never remove any pre-manufactured cable joints or end seal joints.

When installing two or more mats within the same area, always ensure the cold tail (power cables) are returned to the thermostat power connection and are wired in parallel – never wire your eMat in series.

Always check your eMat is thoroughly adhered to the floor before tiling.

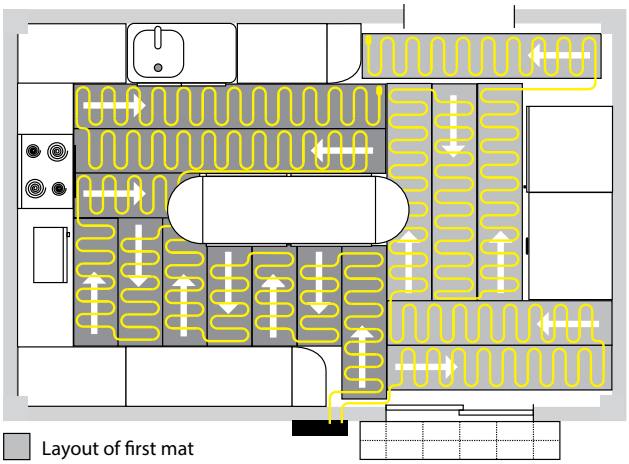
Timber substrates should be prepared as required by tiling guide lines, for example, bracing of a timber floor with WBP or tile backer board.

Please follow these instructions carefully. If you require assistance prior to or during your installation please call our helpline on 01473 276677.

Note

- Sketch your floor plan using the grid on pages 10 & 11
- Calculate your Total Load on page 9

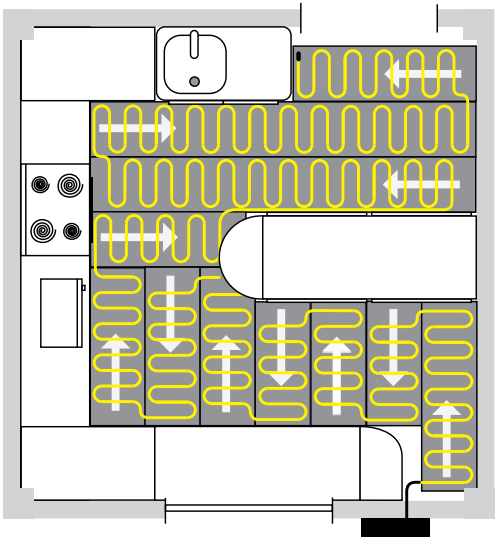
Plan using two mats



Layout of first mat

Layout of second mat

Plan using one mat



Testing & Commissioning

The Warranty Validation Procedure must be carried out to validate the warranty

Warranty Validation

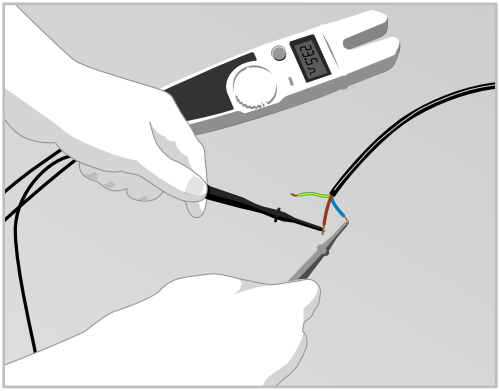
To validate your lifetime warranty registration you must perform the insulation resistance test, the heating cable resistance test and the sensor resistance test three times during the installation process.

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 (enclosed in the box), otherwise the warranty will be invalidated.

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 cable cold lead joint.



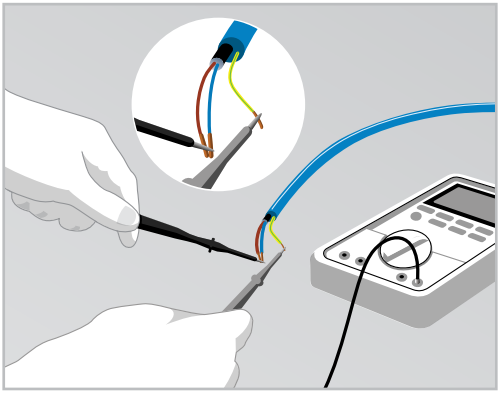
Floor Cable Resistance Test

See *Heating Cable Resistance Test* above 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.



Important Note

The Commissioning Record must be placed adjacent to the distribution board and must contain the location of the installed underfloor heating

Product Specifications

100 watt/150 watt/200 watt

100W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
11173	eMat100-1	1.00m^2	2.0m	0.5m	100w	529.00 Ω
11174	eMat100-1.5	1.50m^2	3.0m	0.5m	150w	352.67 Ω
11175	eMat100-2	2.00m^2	4.0m	0.5m	200w	264.50 Ω
11176	eMat100-2.5	2.50m^2	5.0m	0.5m	250w	211.60 Ω
11177	eMat100-3	3.00m^2	6.0m	0.5m	300w	176.33 Ω
11178	eMat100-3.5	3.50m^2	7.0m	0.5m	350w	151.14 Ω
11179	eMat100-4	4.00m^2	8.0m	0.5m	400w	132.25 Ω
11180	eMat100-5	5.00m^2	10.0m	0.5m	500w	105.80 Ω
11181	eMat100-6	6.00m^2	12.0m	0.5m	600w	88.17 Ω
11182	eMat100-7	7.00m^2	14.0m	0.5m	700w	75.57 Ω
11183	eMat100-8	8.00m^2	16.0m	0.5m	800w	66.13 Ω
11184	eMat100-9	9.00m^2	18.0m	0.5m	900w	58.78 Ω
11185	eMat100-10	10.00m^2	20.0m	0.5m	1000w	52.90 Ω
11186	eMat100-12	12.00m^2	24.0m	0.5m	1200w	44.08 Ω

150W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
11188	eMat150-1	1.00m^2	2.0m	0.5m	150w	352.67 Ω
11189	eMat150-1.5	1.50m^2	3.0m	0.5m	225w	235.11 Ω
11190	eMat150-2	2.00m^2	4.0m	0.5m	300w	176.33 Ω
11191	eMat150-2.5	2.50m^2	5.0m	0.5m	375w	141.07 Ω
11192	eMat150-3	3.00m^2	6.0m	0.5m	450w	117.56 Ω
11193	eMat150-3.5	3.50m^2	7.0m	0.5m	525w	100.76 Ω
11194	eMat150-4	4.00m^2	8.0m	0.5m	600w	88.17 Ω
11195	eMat150-5	5.00m^2	10.0m	0.5m	750w	70.53 Ω
11196	eMat150-6	6.00m^2	12.0m	0.5m	900w	58.78 Ω
11197	eMat150-7	7.00m^2	14.0m	0.5m	1050w	50.38 Ω
11198	eMat150-8	8.00m^2	16.0m	0.5m	1200w	44.08 Ω
11199	eMat150-9	9.00m^2	18.0m	0.5m	1350w	39.19 Ω
11200	eMat150-10	10.00m^2	20.0m	0.5m	1500w	35.27 Ω
11201	eMat150-12	12.00m^2	24.0m	0.5m	1800w	29.39 Ω

Product Specifications

100 watt/150 watt/200 watt

200W

Quick Find	Part Code	Coverage	Length	Width	Wattage	Resistance +9/-4%
11639	eMat200-1	1.00m^2	2.0m	0.5m	200w	264.50 Ω
11640	eMat200-1.5	1.50m^2	3.0m	0.5m	300w	176.33 Ω
11641	eMat200-2	2.00m^2	4.0m	0.5m	400w	132.25 Ω
11642	eMat200-2.5	2.50m^2	5.0m	0.5m	500w	105.80 Ω
11643	eMat200-3	3.00m^2	6.0m	0.5m	600w	88.17 Ω
11644	eMat200-3.5	3.50m^2	7.0m	0.5m	700w	75.57 Ω
11645	eMat200-4	4.00m^2	8.0m	0.5m	800w	66.13 Ω
11646	eMat200-5	5.00m^2	10.0m	0.5m	1000w	52.90 Ω
11647	eMat200-6	6.00m^2	12.0m	0.5m	1200w	44.08 Ω
11648	eMat200-7	7.00m^2	14.0m	0.5m	1400w	37.79 Ω
11649	eMat200-8	8.00m^2	16.0m	0.5m	1600w	33.06 Ω
11650	eMat200-9	9.00m^2	18.0m	0.5m	1800w	29.39 Ω
11651	eMat200-10	10.00m^2	20.0m	0.5m	2000w	26.45 Ω
11581	eMat200-12	12.00m^2	24.0m	0.5m	2400w	22.04 Ω

Calculator

Calculate your total load

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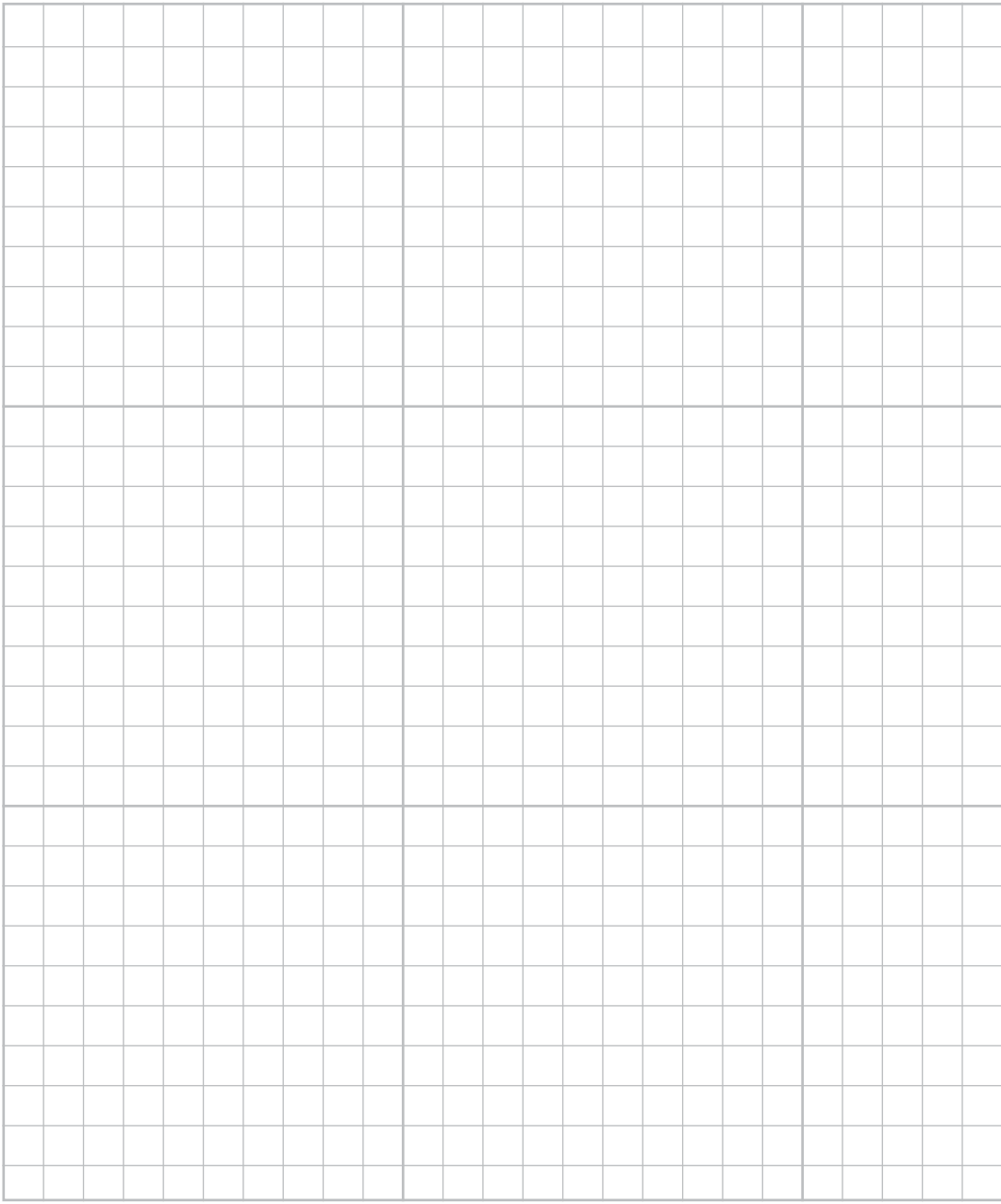
Total Load .....

Floor plan Sketch

Calculate your total heat area



Floor Plan Sketch

Calculate your total heat area

Scale approx 1:18 (56mm = 1m)

When sketching your floor plan, please work around any permanent / fixed furniture items as these will block the heated areas

Troubleshooting

Refer to the table below and contact us with any questions on 01473 276677

Symptom	Probable Causes	Corrective Action
Floor does not heat	No power at controller	Check power supply
	RCD/MCB tripped	Check the circuit is not overloaded
	Thermostat not set correctly	Refer to thermostat instructions
	Cable not correctly connected with thermostat	Refer to thermostat instructions
	Floor temperature sensor not connected	Refer to thermostat instructions
	Faulty sensor/thermostat	Contact the eMat Helpdesk 01473 276677
	Heating element cut or damaged	Contact the eMat Helpdesk 01473 276677
Floor warming all the time	Thermostat not set correctly	Refer to thermostat instructions
	Floor temperature sensor not connected	Refer to thermostat instructions
Floor not getting warm enough	Thermostat not set correctly	Refer to thermostat instructions
	Floor sensor too close to heating element	Contact the eMat Helpdesk 01473 276677

Contact the eMat Helpdesk with any questions on 01473 276677

Notes

Use this space to make notes for reference

elements

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Intertek

LIFETIME WARRANTY