



Underwood Heater
Installation Manual

SOLFEX

UNDERFLOOR HEATING

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Important Safeguards and Warnings

WARNING: Shock and fire hazard

If the SOLFEX Underwood heater System is damaged or not installed properly, fire or shock could occur resulting in serious personal injuries or damage to property. You must carefully follow the warnings and instructions contained in this manual.

- The SOLFEX thermostat must be used.
- It is important that this equipment is installed only by qualified electricians who are familiar with the proper sizing, installation, construction and operation of the floor warming system and the hazards involved. The installation must comply with all national and local electrical codes. If you are unfamiliar with these requirements, contact an electrician.
- The SOLFEX Underwood heater System is designed for underfloor heating purposes only. Be sure that the floor is not penetrated by nails, screws, or similar devices that can cause damage on first installation or during subsequent floor repairs in the future.
- If the SOLFEX Underwood heater System is damaged, it must be replaced. Do not attempt to splice or repair any part of the system.

1 General Information

1.1 Use of the Manual

Installing the SOLFEX underwood heater mat is very easy to do. SOLFEX underwood heater mat Systems combine the highest comfort levels with maximum energy efficiency. It's a proven technology that's safe, reliable and energy efficient. This manual describes the SOLFEX underwood heater system; how to design the room, select the product, and install the system. It is important to thoroughly review the SOLFEX Thermostat Installation and Operation manual prior to installation.

For additional information regarding any aspect of the SOLFEX underwood heater System, contact:

SOLFEX Ltd
Unit 16, Carnival Park,
Carnival Way,
Basildon, Essex,
SS14 3AD


Tel: 01268744249
Fax: 01268 200137

Email: sales@solflexufh.co.uk

1.2 Safety Guidelines

The safety and reliability of any floor heating system depends on proper design, installation, and testing. Incorrect installation or mishandling of the product can cause damage to the heating cable, system components and property, and can create a risk of fire or shock. The guidelines and instructions contained in this guide are important. Follow them carefully to minimize these risks and to ensure that the SOLFEX underwood heater system performs reliably.

Pay special attention to the following:

- Instructions marked **Important**
- Safety warnings identified as  **WARNING**

1.3 Remember to measure resistance

The resistance should be measured between the two conductors, blue and brown. Compare this resistance reading to the resistance specified in the Product Selection "Table 1". The value should be within -5% to +10%. If you get a different reading, contact SOLFEX on 01268 744 249.

Also, measure the resistance between the blue, brown and yellow green earth wire. Both should read infinity. If you get a different reading, contact SOLFEX on 01268 744 249.

Please refer to "5 Commissioning" for instructions on how to measure the resistance.

Important: measure the resistance four times during the installation process

Remember to always measure, verify and record the actual resistance throughout the installation process (out of the box, after installation, after thermostat installation and after installation of wood floor).

1.4 15-year Limited Warranty

For a period of fifteen (15) years from the date of purchase SOLFEX warrants that the underwood heater is free from defects in material, design and workmanship. The extended warranty is only valid if the warranty certificate has been properly completed and the installation is in accordance with the installation instructions.

2 SOLFEX Underwood heater System

2.1 SOLFEX underwood heater Specifications

Cable Construction	Twin conductor
Rated Voltage	230V
Output	80W/m ² & 140W/m ² & 150W/m ²
Cable spacing	50mm
Cable Diameter	1.0mm
Conductor Insulation	Fluoropolymer
Max. Ambient Temp.	30°C
Min. Installation Temp.	5°C
Cold lead	2-wire plus ground braid; 2.5m length

2.2 SOLFEX Thermostat Specifications

Functions:	On/Off control, digital display, 5/2 day 7-day programmable or 24hr mode
Supply Voltage	120/240 V ± 15%, 50/60 Hz
Maximum switching current	16 Amp
Temperature control range	5 to 35°C
Ambient range	0 to 45°C
Floor temperature sensor	2-wire, 3.0m lead wire (can be extended up to 20m)

2.3 SOLFEX underwood heater typical installations and applications

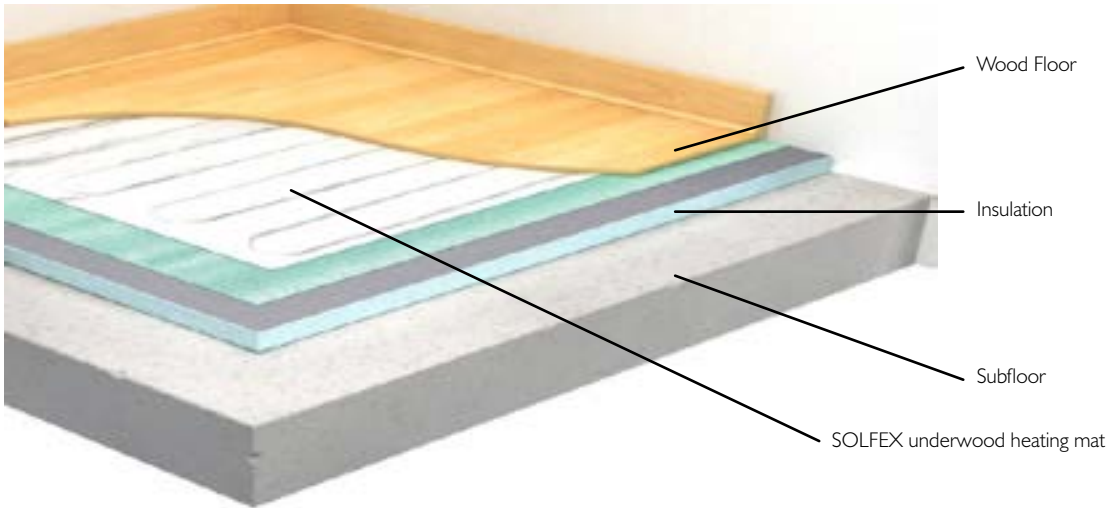


Warning
Consult the manufacturer for information on special installation requirements for wood, laminate and vinyl or linoleum flooring.

Important

- Read the instructions carefully before installing SOLFEX underwood heater system.
- Remember to measure the resistance three times.
- Only for indoor installation. Do not install SOLFEX underwood heater in walls or ceilings.
- The minimum installation temperature is 5°C.
- The heating cable cannot be cut to length, crossed over itself, or installed too close.
- It is recommended to use copper wire only.
- Remember to check that the supply voltage matches the voltage of the SOLFEX underwood heater.
- Remember to place the labels as written in this instruction.

Please consult with SOLFEX for any other questions or advice.



3 Floor Heating Design and Product Selection

3.1 Design the Installation

Step 1: Measure the heated area

Determine the heated area of the floor where there are no permanent fixtures or furniture such as showers, toilets, vanities, or cabinets. Measure the heated area of the floor. For example, in Figure 3, the area of the bathroom is 8.75 m^2 . When you subtract the area of the vanity, shower and toilet, the total heated area is only 6.45 m^2 .

Step 2: Determine the power supply voltage

Make sure the supply voltage is 230 V.

Step 3: Plan the design

Determine the optimum floor heating mat layout for your heated area to ensure coverage. Select a spot for the thermostat in the wall above the heated area where it can be reached by the 2.5m cold lead on the SOLFEX underwood heater, and the 3.0m floor temperature sensor. Please refer to Figure 4.

Important

The predetermined SOLFEX underwood heater spacing must be maintained to ensure proper floor heating. Do not change the SOLFEX underwood heating cable spacing when you lay out the cable or the floor may have cold spots.

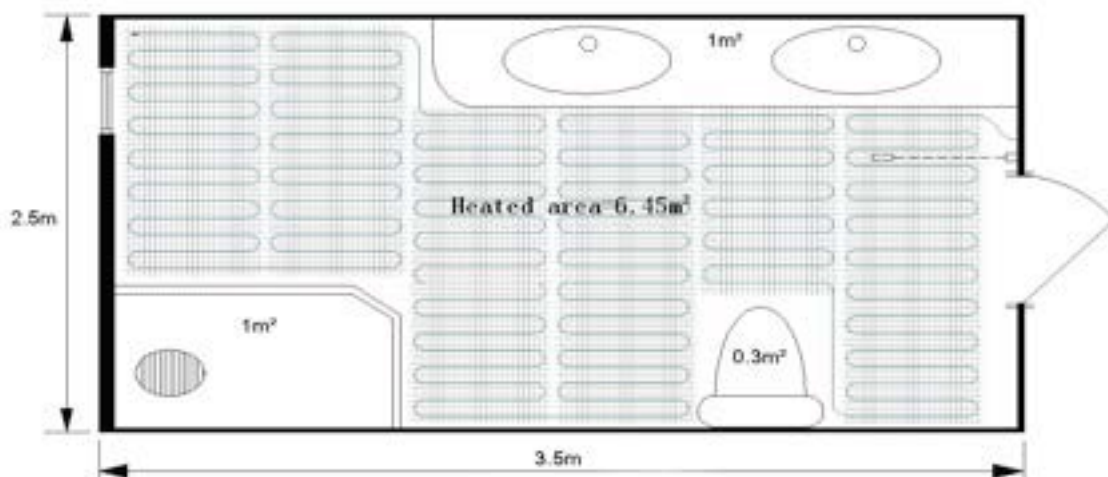


Figure 3: Heated area example

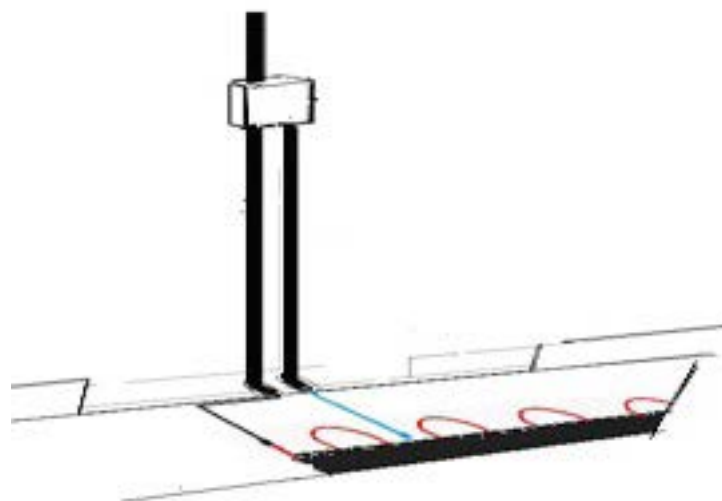


Figure 4: Typical cold lead and floor temperature sensor

3.2 Confirm Your Product Selection

Confirm that your SOLFEX underwood heater is no larger than the heated area.

Following the example from Figure 3, if the heated area is 6.45 m², select the 6.0 m² SOLFEX underwood heater system.

Table 1: SOLFEX underwood heater Product Selection

Product Code	Heating Area(m ²)	Mat Size (m)	Spacing (mm)	Resistance (Ohms)	Watts	Amps
UFH-ELEC-FOIL-01.0	1.0	0.5 x 2.0	50	377.9	140	0.61
UFH-ELEC-FOIL-01.5	1.5	0.5 x 3.0	50	251.9	210	0.91
UFH-ELEC-FOIL-02.0	2.0	0.5 x 4.0	50	188.9	280	1.22
UFH-ELEC-FOIL-02.5	2.5	0.5 x 5.0	50	151.1	350	1.52
UFH-ELEC-FOIL-03.0	3.0	0.5 x 6.0	50	126.0	420	1.83
UFH-ELEC-FOIL-03.5	3.5	0.5 x 7.0	50	108.0	490	2.13
UFH-ELEC-FOIL-04.0	4.0	0.5 x 8.0	50	94.5	560	2.43
UFH-ELEC-FOIL-04.5	4.5	0.5 x 9.0	50	84.0	630	2.74
UFH-ELEC-FOIL-05.0	5.0	0.5 x 10.0	50	75.6	700	3.04
UFH-ELEC-FOIL-06.0	6.0	0.5 x 12.0	50	63.0	840	3.65
UFH-ELEC-FOIL-07.0	7.0	0.5 x 14.0	50	54.0	980	4.26
UFH-ELEC-FOIL-08.0	8.0	0.5 x 16.0	50	47.2	1120	4.87
UFH-ELEC-FOIL-09.0	9.0	0.5 x 18.0	50	42.0	1260	5.48
UFH-ELEC-FOIL-10.0	10.0	0.5 x 20.0	50	37.8	1400	6.09
UFH-ELEC-FOIL-12.0	12.0	0.5 x 24.0	50	31.5	1680	7.30

4 Installation

Important: Tools and materials required

You will require the following items to install and test the floor heating system:

- Scissors
- Utility knife
- Wire strippers
- Tape measure
- Screwdriver
- Multimeter
- Aluminum tape
- Aluminum foil glass fiber tape

You will also need the appropriate tools and materials to install your particular floor. These will likely include products like self-leveling mortar, thin-set mortar, backer board, a notched trowel, wood flooring and any other tools for your specific floor.

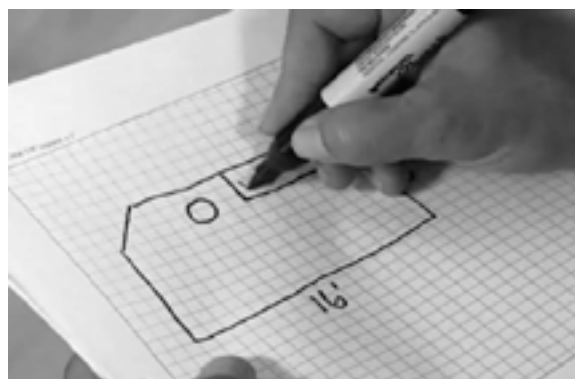
Follow these steps to ensure a successful SOLFEX underwood heater installation.

Step 1: PLAN LAYOUT

Make a sketch layout or a floor plan of the room; Include all permanent furnishings such as toilets, bathtubs, appliances, cabinets, etc. The first step is to calculate the coverage of heating mat that you require. Although 100% coverage is achievable we would recommend allowing a border of between 2cm and 4cm around the edge of the room. Calculate the internal dimensions (skirting board to skirting board) of your room and deduct 2cm from these. Using these amended dimensions sketch out a diagram of your room and calculate the total area that you have. Indicate all dimensions required to determine the available floor area and the position of the SOLFEX thermostat. We would recommend spending ten minutes sketching this out as it can save you a lot of time during the installation process if you have a plan.

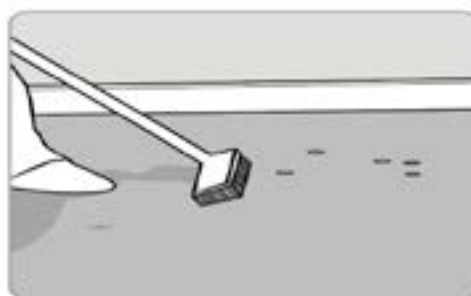
Important

SOLFEX recommends that the installation is documented with photos to note the location of connections and the sensor.



Step 2: PREPARE SUBFLOOR SURFACE

The underwood heater must not be installed in thinset cement, or in direct contact with a cement or concrete sub-floor. There must always be a soft insulation/underlay beneath the aluminum heating mat. Carefully inspect the subfloor and make sure it is clean, free of sharp edges, protruding nails and any other materials that may damage the heating mat. Clean and vacuum the floor thoroughly and remove dust and debris from the floor that may damage the heating cable. Ensure that the subfloor is secure and stable. Carefully fill in all cracks.



Step 3: LAY THE UNDERLAY INSULATION

Use EPS underlay insulation directly underneath the underwood heating mat/s, install the underlay over the full floor and tape the edges to prevent movement of the underlay during installation.

Step 4: TRANSFER LAYOUT TO FLOOR

Unroll the first few feet of the SOLFEX underwood heating mat. The starting point of the cable must be placed within 2.5m from the thermostat.

Important

Mark the position of the connection point between the power lead and the SOLFEX underwood heater cable. When using a floor temperature sensing thermostat, mark the sensor position in the middle of heating cables, about 25cm away from the wall (within the heated area), as close as possible to the thermostat.

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Step 5: INSTALL SENSOR

Install the sensor now, either in conduit tube, or directly to the subfloor. It is recommended that the sensor be installed in conduit tube. This will allow the sensor to be easily replaced in the unlikely event of failure. The tube needs to be installed between the thermostat wall box and the sensor position. The conduit tube must be partially countersunk into the insulation board. Run the probe wire down inside the conduit until it just appears from the end of the conduit. Cut a channel approximately 2cm deep x 2cm wide in the floor and wall up to the thermostat for the sensor conduit. The conduit has to go from the thermostat and minimum of 25cm away from the wall towards the middle of the floor. The sensor cable should run back up to the thermostat position, the 2 core cable should be connected to the thermostat in the correct terminals.

Important

The sensor conduit must be centered in the cable loop (between two heating wires).

Use duct tape to hold the sensor conduit into the groove to prevent it from moving. If the sensor is installed directly in the mortar bed, use duct tape to secure to subfloor.



Step 6: MEASURE THE RESISTANCE (THE FIRST TIME)

Once the insulation has been installed, remove your SOLFEX underwood heater from the packaging box, carry out a resistance test. Use a digital ohm meter to measure the resistance of the SOLFEX underwood heater and compare it to "Table I". Record the measured resistance on the warranty card. Documenting the resistance at each stage of installation is required for warranty purposes. Also, measure the resistance between the blue, brown and yellow green earth wire. Both should read infinity.



Step 7: BEGIN LAYING THE SOLFEX UNDERWOOD HEATER

Start by placing the mat such that the connection point and the temperature sensor are in their intended positions and bring the power cable to the thermostat or connection box.



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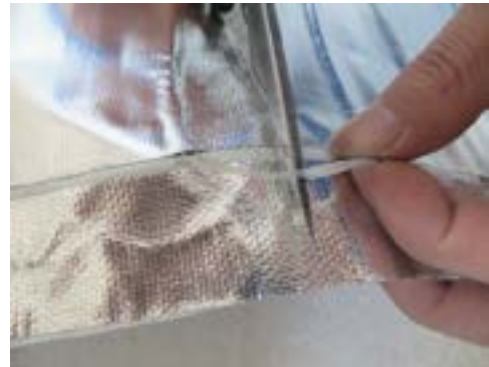
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Begin unrolling the SOLFEX underwood heater evenly across the floor outside the areas that you marked previously. When you reach the next wall, cut the foil, turn the mat, and begin rolling in the desired direction.



Ensure that the SOLFEX underwood heater is in full contact with the insulation board at all times. Avoid walking on the heating mat. If this is not possible, use shoes with soft soles.

When approaching obstacles (toilets, cabinets, etc.), carefully cut some of the heating foil from the mat and lead the cable around the obstacle. Remember to never cut the cable. Use the aluminum tape provided to fix the loose strips to the floor. It is highly recommend to take photographs of the installed SOLFEX underwood heater before installing the flooring.



NEVER CUT THE HEATING CABLE!

Step 8: STICK THE CONNECTING TAPE.

In order to protect the mat from damage, we need to take necessary protective measures. A roll of Aluminum tape and Aluminum foil glass fiber tape is provided. Firstly, using the 10 cm long aluminum foil tape, as shown in image, Stick the aluminum foil tape connection to form an integral part of the earth. Stick the tape half a meter at a time. Secondly, along the direction of the aluminum foil mesh stick the aluminum foil glass fiber tape. The role is to protect hot line damaged in the installation process.



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Step 9: MEASURE THE RESISTANCE (THE SECOND TIME)

Please refer to Step 5.



Step 10: CONNECT POWER SUPPLY AND THERMOSTAT

The connection of the power supply and the SOLFEX thermostat must be done by a qualified electrician. The electrician should connect the floor sensor to the thermostat.

Note: You need to mark the appropriate circuit breaker reference label indicating which branch circuit supplies the circuits to those electric space heating cables.

Step 11: MEASURE THE RESISTANCE (THE THIRD TIME)

Please refer to Step 5.

Step 12: INSTALL WOOD FLOOR COVERING

ENSURE THAT THE SENSOR CONDUIT HAS BEEN PROPERLY INSTALLED BEFORE PROCEEDING (see Step 3).

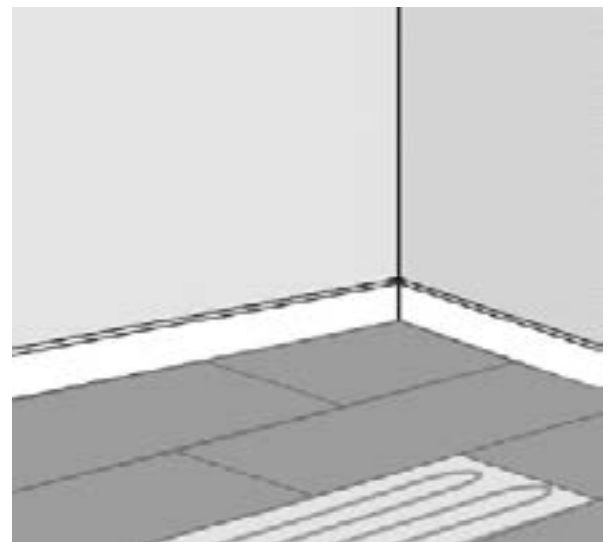
Before fitting the floor covering switch on the heating mat to check that it is working, warmth should be noticeable on the surface of the heating mat within minutes. You are now ready to lay the final floor finish. Take care not to damage the heating mats. Do not drive nails or screws into the floor or cut the floor panels on top of the heater.

Important

If the floor is not being laid immediately, all heating mats must be protected with cardboard to prevent damage. Immediately prior to the floor being laid, test the heating mat to ensure it has not been damaged.

Step 13: MEASURE THE RESISTANCE (THE FORTH TIME)

Please refer to Step 5.



Step 14: RECORD INFORMATION AND AFFIX LABELS

It is important for the homeowner to register the warranty certificate immediately after installing the system (cable and thermostat). Failure to do so could void the manufacturer's warranty. The warranty is subject to the guarantee conditions listed on the warranty certificate. Keep a copy of the warranty card for your reference.

Step 15: ENJOY THE COMFORT OF SOLFEX UNDERWOOD HEATER

The SOLFEX underwood heater heating system is now ready to use. Increase the floor temperature gradually and adjust it until it reaches a comfortable level depending on the type of room and your personal preferences.

5 Commissioning

Important

For the extended 15-year limited warranty to apply, you must perform these tests, record the results on the warranty card, and retain a copy of the record. You must perform the Insulation Resistance Test, the Heating Cable Resistance Test, and the Sensor Resistance Test four times (Please refer to Section 4) during the installation process.

5.1 Insulation Resistance Test

This test ensures that the insulating jackets of the mat is not damaged. A low value indicates the cable has been damaged and must be replaced.

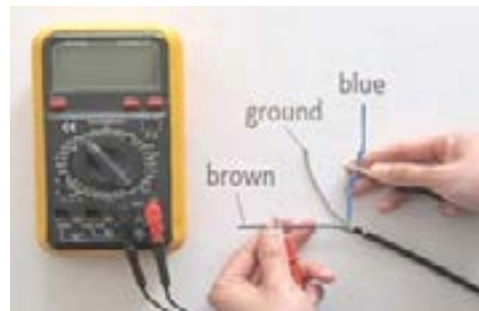
1. Connect the ground wire to the black lead and both power wires to the red lead of the multimeter.
2. Make sure the meter reads "Open" or "OL." If you get a different reading, contact SOLFEX at 01268 744 249.
3. Record these readings on the warranty card.



5.2 Heating Cable Resistance Test

This test measures the resistance of the SOLFEX underwood heater and is used to determine circuit integrity.

1. Set your multimeter to the 200 or 2000 ohm range.
2. Connect the multimeter leads to the brown and blue cold lead wires.
3. Compare this resistance reading to the resistance specified in the Product Selection "Table 1". The value should be within -5% to +10%. If you get a different reading, contact SOLFEX on 01268 744 249.
4. Record these readings on the warranty card.



5.3 Sensor Resistance Test

This test measures the resistance of the floor sensor and is used to verify the sensor integrity.

1. Set your multimeter to the 200K ohm range.
2. Connect the mutimeter leads to the red and green lead wires.
3. Make sure the meter reads between 9-25K ohms. If you get a different reading, contact SOLFEX on 01268 744 249.
4. Record these readings on the warranty card.



6 Troubleshooting

Symptom	Probable Causes	Corrective Action
Floor doesn't heat	No voltage	Check circuit breaker
	Circuit breaker tripped	Ensure that there are not too many mats or other appliances connected on the same circuit. The SOLFEX underwood heater may require a dedicated circuit. See the Product Selection "Table 1" of this manual.
	Ground-fault tripped in the thermostat	Refer to SOLFEX Thermostat Installation and Operation Manual
	Thermostat not turned on	Refer to Section 4 of this manual, and the SOLFEX Thermostat Installation and Operation Manual
	Cable not connected to SOLFEX thermostat	Refer to SOLFEX Thermostat Installation and Operation Manual
	Floor temperature sensor not connected	Refer to SOLFEX Thermostat Installation and Operation Manual
	Faulty sensor	Contact SOLFEX on 01268 744 249
Floor warm all the time	Clock not set correctly	Refer to SOLFEX Thermostat Installation and Operation Manual
Floor not warm enough	SOLFEX thermostat setting not set correctly	Refer to SOLFEX Thermostat Installation and Operation Manual
Installation instructions not available		Download the latest version of SOLFEX underwood heater system Installation Instructions from www.solfexufh.co.uk/warranty

Extended Warranty

For a period of fifteen (15) years from the date of purchase SOLFEX warrants that the SOLFEX underwood heating cable is free from defects in material, design and workmanship. The extended warranty is only valid if the warranty form has been properly completed and submitted online at www.solfexufh.co.uk/warranty and the installation is in accordance with the installation instructions.

The defective SOLFEX underwood heating cable has to be inspected by or submitted to SOLFEX. Failure to comply with all of the foregoing will void this extended warranty. SOLFEX will, when the customer has documented that a defect in the SOLFEX underwood heater was present at the date of delivery, repair or supply a new SOLFEX underwood heater at SOLFEX' option. All claims shall be made within the extended warranty period. SOLFEX shall not be liable for any claims made later than ten years from date of purchase.

SOLFEX shall not be liable for any consequential and secondary costs or damages linked to the defect or replacement of the SOLFEX underwood heater. This warranty covers product replacement only and does not cover any sub base, floor finishes and any costs associated in replacing these.

THE FOREGOING WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ON THE PART OF SOLFEX. SOLFEX DISCLAIMS ANY WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOLFEX NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM OR CORPORATION TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH SALE OR PRODUCT. SOLFEX SHALL NOT BE HELD RESPONSIBLE FOR DAMAGE TO PERSON OR PROPERTY, CONSEQUENTIAL LOSS, LOSS OF PROFIT, LOSSES ON GOODS IN STORE, OR THE LIKE WHICH MIGHT ARISE OUT OF THE FAILURE OF THE EQUIPMENT DELIVERED, IRRESPECTIVE OF THE CAUSE (INCLUDING FAULTY MANUFACTURE).

How to claim this warranty

Contact the company's Customer Service department and provide the following information:

1. Nature of the manufacturing defect
2. Date of purchase and date of installation
3. If installed, name of electrician and flooring installer
4. Resistance readings taken by installer
5. Proof of purchase and serial number from product label

Our Customer Service department will provide you with an authorization number and advise you on the next steps to complete your warranty claim.

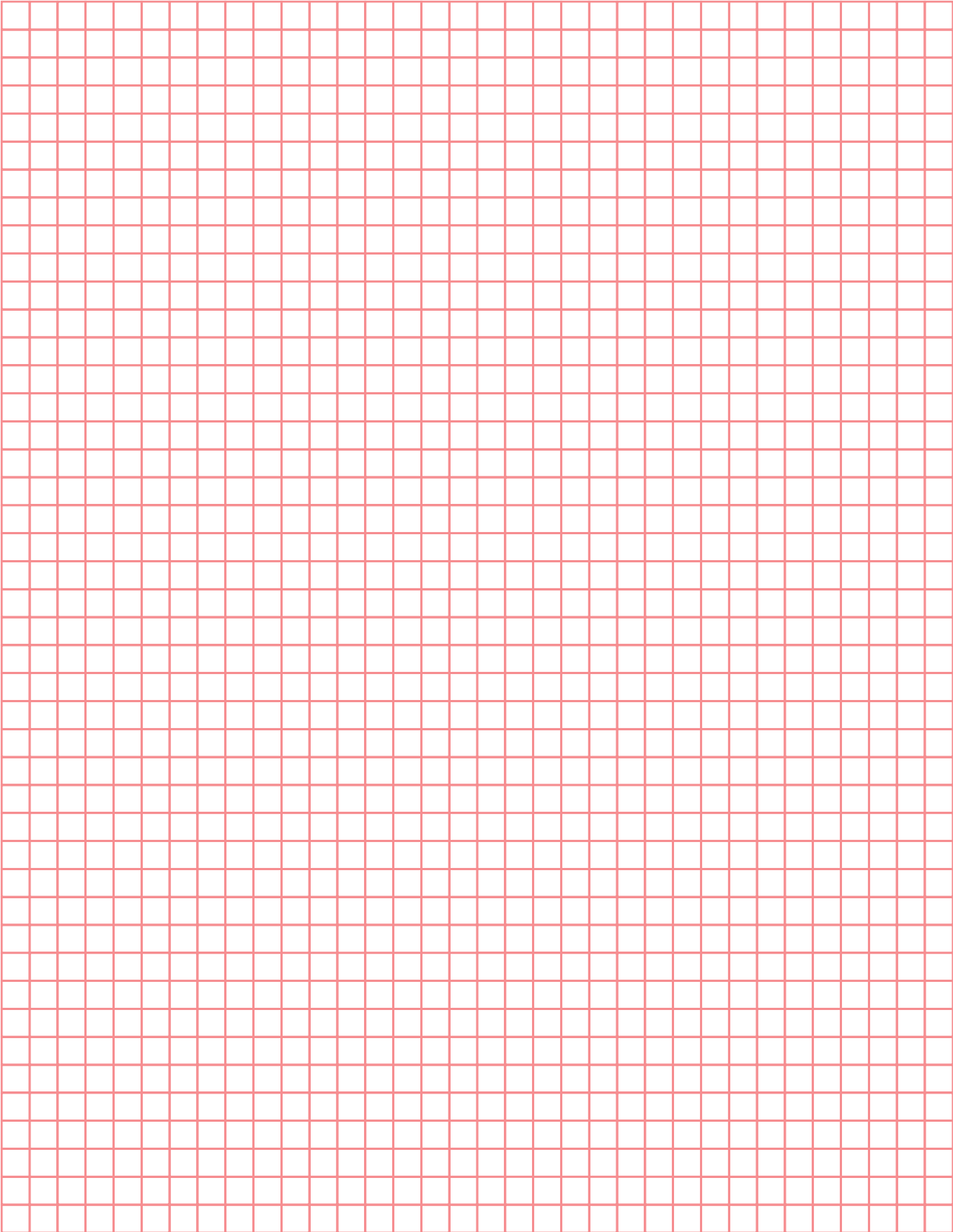
Disclaimer:

This warranty gives you specific legal rights and you may also have some legal rights which may vary from state to state or province to province. SOLFEX hereby disclaims, and it is as a condition of the sale, that there are no implied warranties. Some states and provinces do not allow limitations on an implied warranty so the above limitation may not apply to you.

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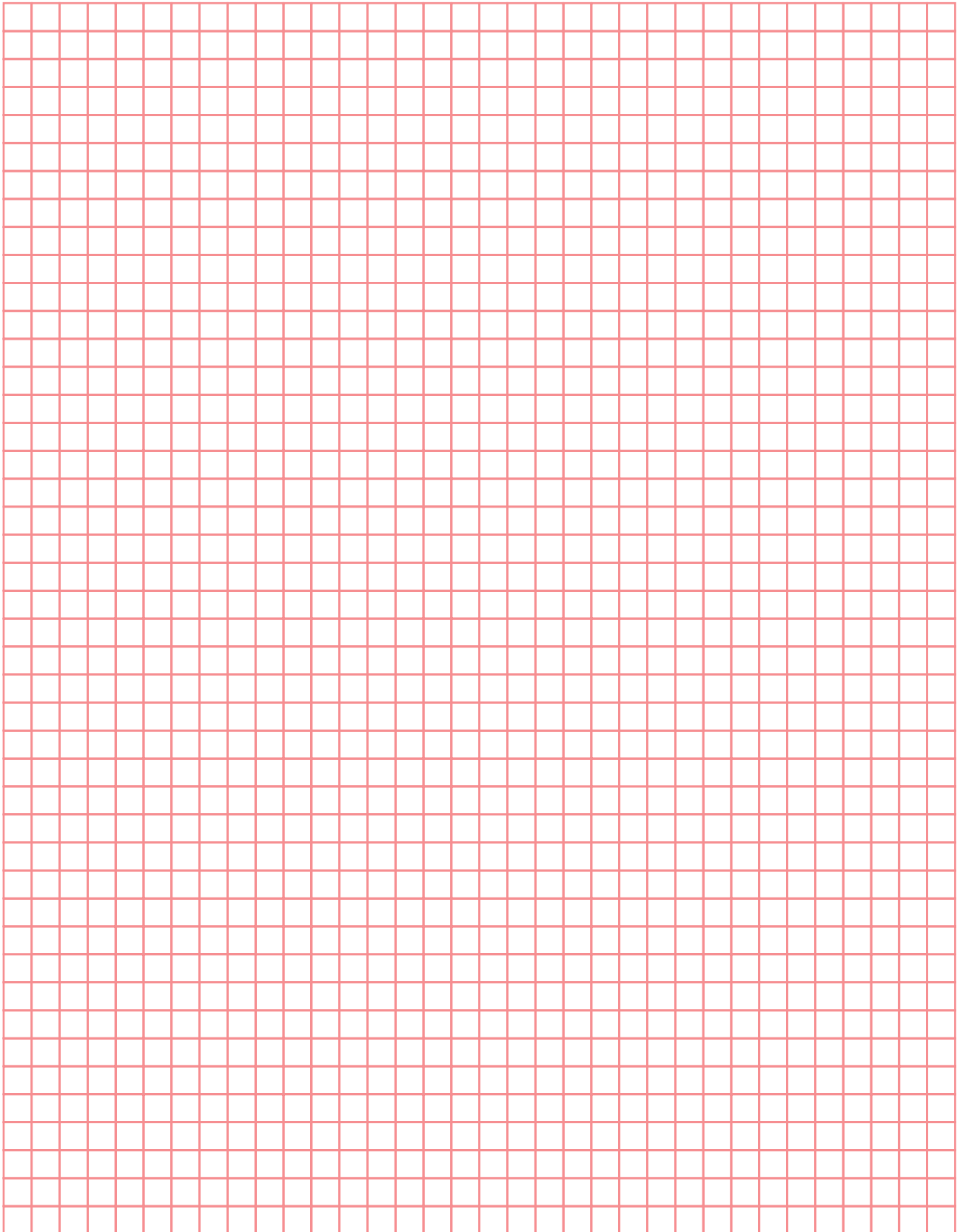
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