TRUEHEAT

Heating Cable System
Installation Manual

Contents

Important Safeguards and Warnings

⚠ WARNING: Shock and fire hazard

If the Heating Cable 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.

· A Thermostat must be used.

· Do not wire up to a plug, and do not switch on whilst it is still coiled up. It is important that this equipment is installed only by qualified electricians who are familiar with the proper sizing, installation, construction and operation of 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 heating cable is designed for under floor 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 Heating Cable 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

This manual describes the heating cable floor heating system — how to design the room, select the product, and install the system. It is important to thoroughly review this manual and the following document prior to installation: Thermostat Installation and Operation Manual For additional information regarding any aspect of the Heating Cable System, contact:

TrueHeat | mail@trueheat.co.uk | www.trueheat.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 Heating Cable 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. The value should be within -5%～+10%. If you get a different reading, contact TrueHeat (mail@trueheat.co.uk). Also, measure the resistance between the blue, brown, and shielding/ground wire. Both should read infinity. If you get a different reading, contact

TrueHeat (mail@trueheat.co.uk). 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 thin set cement or self-leveler application and after installation of floor tiles). Your warranty will be void if this is not done and recorded.

1.4 Lifetime Warranty

From the date of purchase TrueHeat warrants that the heating cable is free from defects in material, design, and workmanship. The extended warranty is only valid if the warranty certificate has been properly completed and mailed, and the installation is in accordance with the installation instructions.

2 Heating Cable Systems

2.1 Heating cable Specifications

Cable Construction:	Twin conductor
Rated Voltage:	230V
Output:	12W/m
Heating Element Size:	12.5-150.5m
Cable Diameter:	2mm
Conductor Insulation:	Fluoropolymer
Outer Insulation:	Nylon
Max. Ambient Temp.:	30°C(85°F)
Min. Installation Temp.:	5°C(40°F)
Cold lead	2-wire plus ground braid; 2.5m length

2.2 Heating cable typical installations and applications

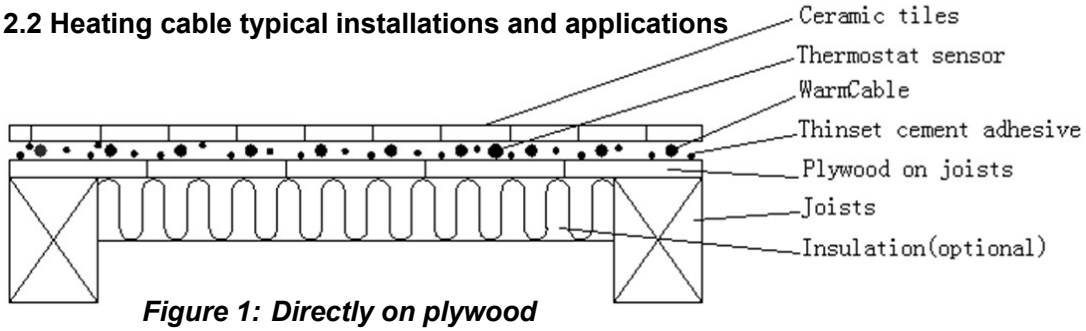

Figure 1: Directly on plywood

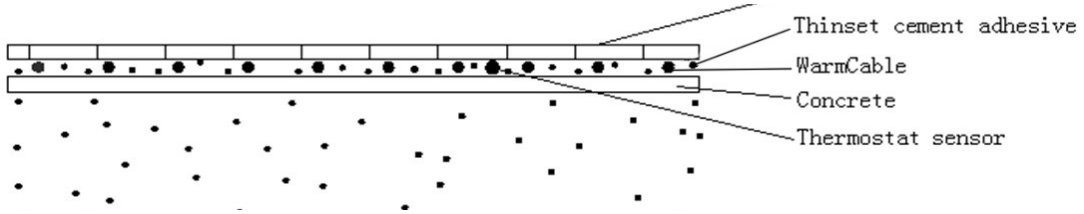

Figure 2: Directly on concrete (use suitable insulation beneath the mat)

Alternative method: self-leveling cement is recommended for large surfaces and the

following floor materials: engineered wood, laminate, floating floors, vinyl, linoleum, and carpet.

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 the Heating Cable System.
- Remember to measure the resistance four times.
- Do not install heating cable in walls or ceilings.
- The cable must be embedded in mortar, thinset, concrete or similar material.
- The minimum installation temperature is 5°C (40°F).
- **The heating cable cannot be cut to length, crossed over itself, or installed closer than 60mm to itself.**
- Remember to check that the supply voltage matches the voltage of the heating cable.
- Remember to place the labels as written in this instruction.
- Only for indoor installation.
- Metal structures or materials used for the support of or on which the heating cable is installed must be grounded in accordance with CSA Standard C22.1, section 10 and the NEC.
- **Please contact TrueHeat 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 baths, showers, toilets, vanities, or cabinets. Measure the heated area of the floor. For example, in Figure 3, the area of the bathroom is 96 ft^2. When you subtract the area of the vanity, shower and toilet, the total heated area is only 74 ft^2 (6.8m^2).

Step 2: Determine the Power Supply Voltage

Make sure the power supply voltage is 230V.

Important

Operating the 230V cable at 220V will reduce the output by 8.5%; at 240V it will add 8.9% to the output.

Step 3: Plan the design.

Determine the optimum floor heating cable 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 heating cable, and the 3m floor temperature sensor. Please refer to Figure 4.

Important

The pre-determined heating cable spacing must be maintained to ensure proper floor heating. Do not change the heating cable spacing when you lay out the cable or the floor may have cold spots.

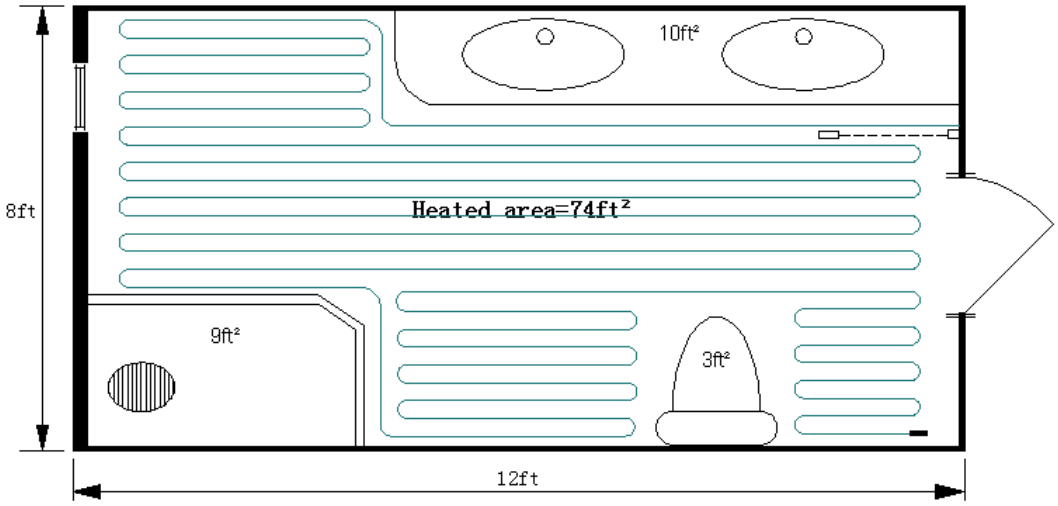

Figure 3: Heated area example

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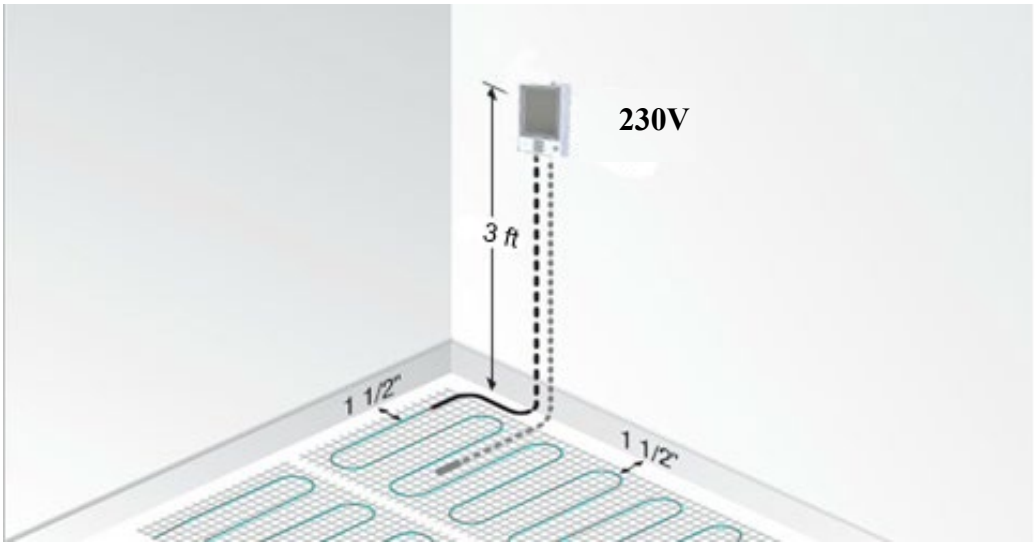


Figure 4: Typical cold lead and floor temperature sensor

3.2 Confirm Your Product Selection

Confirm that your Heating cable is no larger than the heated area. Following the example from Figure 3, if the heated area is 74 ft^2 (6.8m^2), and you prefer 150W/m^2, then 6.8*150=1020W, select the heating cable 12/900.

Table: Product Selection

230V Catalog Number	Length (m)	Watts (12W/m)	Amps	ohms
HC12/150	12.5	150	0.7	352.7
HC12/225	18.8	225	1.0	235.1
HC12/300	25.0	300	1.3	176.3
HC12/375	31.3	375	1.6	141.1
HC12/450	37.5	450	2.0	117.6
HC12/525	43.8	525	2.3	100.8
HC12/600	50.0	600	2.6	88.2
HC12/675	56.3	675	2.9	78.4
HC12/750	62.5	750	3.3	70.5
HC12/900	75.0	900	3.9	58.8
HC12/1050	87.5	1050	4.6	50.4
HC12/1200	100.0	1200	5.2	44.1
HC12/1350	112.5	1350	5.9	39.2
HC12/1500	125.0	1500	6.5	35.3
HC12/1800	150.0	1800	7.8	29.4

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

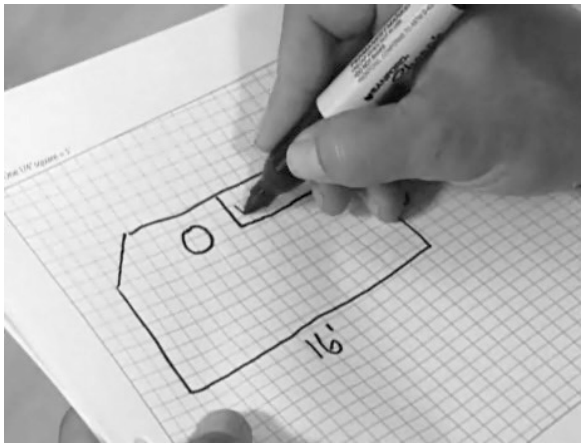
·Multi-meter

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

Follow these steps to ensure a successful heating cable 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, cabinetry, etc. Indicate all dimensions required to determine the available floor area and the position of the Thermostat.

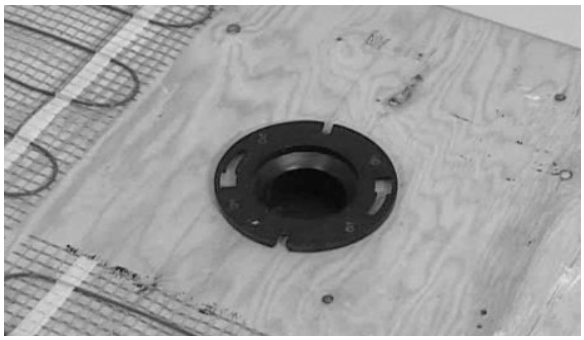


Important

TrueHeat recommends the installation to be documented with photos to note the location of connections and sensor.

Step 2: Transfer Layout to the Floor

Draw an outline of the layout on the room floor including a footprint of all furnishings that are not yet installed. Uncoil the first couple of meters of the Heating cable. The starting point of the cable must be placed within 2.5m from the thermostat. Using your floor plan and the type of heating (Primary 62mm or Secondary 100mm) determines the spacing of your cable.



Important

The minimum distance between the cables must be 60mm or greater. Mark the position of the connection point between the power lead and the red Heating cable. **This connection must be concealed in thinset or self-leveling cement.** When using a floor temperature sensing thermostat, mark the sensor position in the middle of 2 Heating cables, about 25cm away from the wall (within the heated area), as close as possible to the thermostat.

Step 3: Install Sensor

The floor temperature sensing thermostat, install the sensor now, 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 sensor tube needs to be installed between the thermostat wall box and the sensor position. The conduit tube must be partially countersunk into the subfloor. Cut a channel (approx. 8mm x 8mm) in the floor and wall up to the thermostat for the sensor conduit. The conduit has to go from the thermostat and a minimum of 25cm away from the wall towards the middle of the floor.

Important

The sensor conduit must be centered in the cable loop (between two heating wires).
Use duct tape to close the end of the conduit so that thinset can't penetrate the conduit.
Use duct tape to hold the sensor conduit into the groove to prevent it from floating up when the mortar or thin-set is poured. If the sensor is installed directly in the mortar bed, use duct tape to secure the cable to the subfloor.

Step 4: Prepare Subfloor Surface

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 to prevent any potential damage to the new tiles resulting from shifts in the subfloor.

Step 5: Measure the Resistance (THE FIRST TIME)

Use a digital ohm meter to measure the resistance of the heating cable and compare it to the product selection table on page 5. 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 shielding/ground wire. Both should read infinity.

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

Step 6: Begin Laying the Heating Cable

Place the cable so that the connection point and the temperature sensor are in their intended positions and bring the power supply cable to the thermostat or connection box.

Begin laying the Heating cable according to the layout developed in Step 1.

DO NOT CUT OR SHORTEN THE HEATING CABLE!

Do not expose it to any mechanical stress. Avoid walking on the heating cable. **Wear only shoes with soft soles.** Use the supplied duct tape to secure the cable to the subfloor.

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

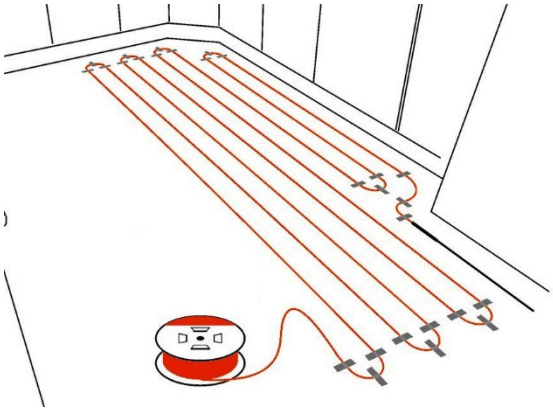
It is highly recommended to take photographs of the installed heating cable before installing the flooring.

Step 7: Measure the Resistance (THE SECOND TIME)

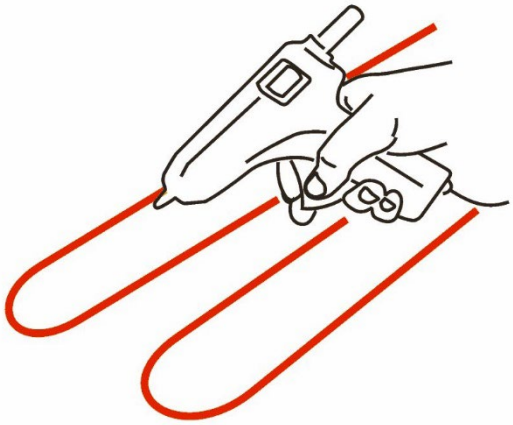
Please refer to Step 5.

Step 8: Heating Cable Installation

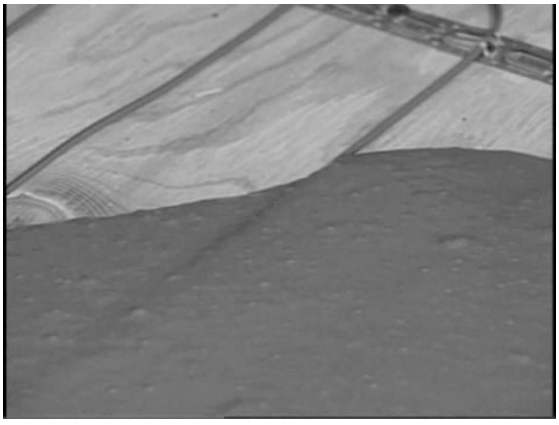
Secure the heating cable to the subfloor using the supplied duct tape.



Once the cable is secured to the floor with the duct tape, it is recommended that a hot melt glue gun is used to permanently secure the heating cable to the sub floor. If the glue gun method is used the temporary duct tape can be removed once the gluing is complete.



Step 9: Embedding the Floor Heating Cable in Mortar



For tiling applications, proceed with the installation of the tiles by covering the heating cables with a layer of thinset cement as directed by the tile manufacturer. Ensure that the thinset mortar covers the entire Heating cable as the tiles are installed.

For engineered wood or laminate floor coverings, it is recommended to consult the flooring manufacturer for maximum temperature allowance (use a thermostat with a floor temperature limiter).

Ensure that all moisture in the self-leveling cement has been fully eliminated in accordance with the drying times recommended by the cement manufacturer (consult the manufacturer for exact drying time).

Important

The system must not be turned on until the thinset cement has fully dried. A minimum of two weeks is recommended.

Step 10: Measure the Resistance (THE THIRD TIME)

Please refer to Step 5.

Step 11: Install the Tiles

To install the tile, apply a layer of acrylic or latex modified thin-set using the ridged side of your trowel. Tile and grout the floor using best industry practices and in accordance with instructions provided by the manufacturer of the tile.

Step 12: Connect Power Supply and Thermostat

The electrician should take the final set (**Fourth set**) of resistance readings before connecting the power supply and record it on the warranty card. The connection of the power supply and the thermostat must be done by a qualified electrician. The electrician should then connect the floor sensor to the thermostat and connect the power supply.

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

Step 13: Record Information and Affix Labels

It is important for the homeowner to mail in the 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 14: Enjoy the Comfort of Underfloor Heating

The Heating cable 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.

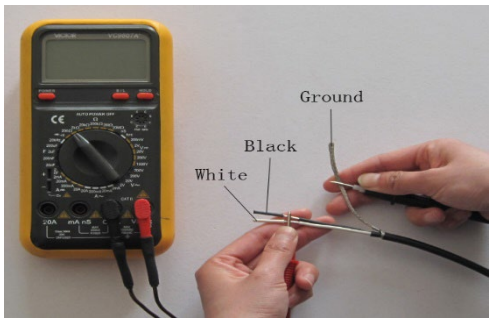
5 Commissioning

Important

For the extended lifetime 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 during the installation process.

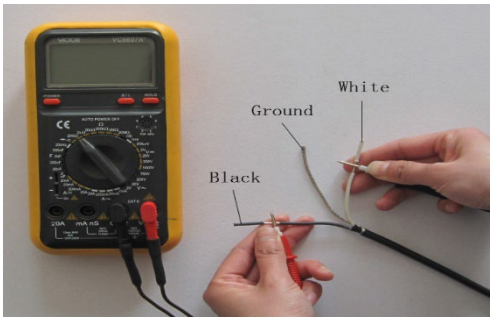
5.1 Insulation Resistance Test



This test ensures that the insulating jackets of the cable are 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 TrueHeat at mail@trueheat.co.uk.
3. Record these readings on the warranty card.

5.2 Heating Cable Resistance Test

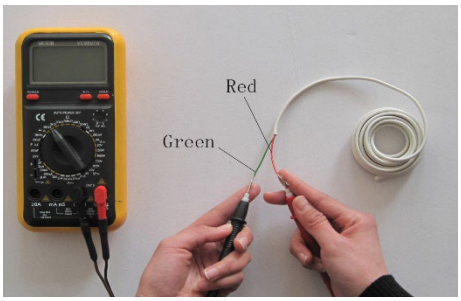


This test measures the resistance of the Heating cable and is used to determine circuit integrity.

1. Set your multi-meter 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. The value should be within -5%～+10%. If you get a different reading, contact TrueHeat at mail@trueheat.co.uk.
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 multi-meter to the 200K ohm range.
2. Connect the multi-meter 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 TrueHeat at mail@trueheat.co.uk.
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 cables or other appliances connected on the same circuit. The Heating cable may require a dedicated circuit. See the Product Selection "Table 1 or Table 2" of this manual.
	Ground-fault tripped in the thermostat.	Refer to Thermostat Installation and Operation Manual.
	Thermostat not turned on.	Refer to Section 4 of this manual, and the Thermostat Installation and Operation Manual.
	Cable not connected to Thermostat.	Refer to Thermostat Installation and Operation Manual.
	Floor temperature sensor not connected.	Refer to Thermostat Installation and Operation Manual.
	Faulty floor sensor.	Contact TrueHeat at mail@trueheat.co.uk.
Floor warm all the time	Clock not set correctly.	Refer to Thermostat Installation and Operation Manual.
Floor not warm enough	Thermostat setting not set correctly.	Refer to Thermostat Installation and Operation Manual.
Installation instructions not available		Contact TrueHeat at mail@trueheat.co.uk.

EXTENDED WARRANTY:

TrueHeat offers a lifetime warranty on underfloor heating cables to the original purchaser. This warranty is non-transferable and only applicable providing that the warranty form is filled in and returned to us completed with all test readings recorded and installed in accordance with the installation instructions. **Failure to provide this will void the warranty.**

The defective Heating cable must be inspected by or submitted to TrueHeat or an authorized Heating cable dealer. Failure to comply with all the foregoing will void this extended warranty. TrueHeat will, when the customer has documented that a defect in the heating cable was present at the date of delivery, repair or supply a new heating cable. All claims shall be made within the extended warranty period. TrueHeat will not be liable for any consequential and secondary costs or damages linked to the defect or replacement of the heating cable. TrueHeat will be liable for any costs related to the dismantling of defective product(s) and the

installation of a new product; however, such liability is limited to the amount of five (5) times the initial product costs for each damage/case.

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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, if already installed, 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. TrueHeat 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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