Perfectly Warm™
Floor Heat

INSTALLATION & OPERATION INSTRUCTIONS

Calorique

PWFH-A-2016

Perfectly Warm™
Floor Heat

Perfectly Warm™ Radiant Floor heat
Installation and Operation manual
PWFH-A2016

2380 Cranberry Hwy
West Wareham, MA 02576
800-922-9276 (Toll Free) • 508-291-2000 (Ph) • 508-291-2299 (fax)
info@calorique.com • www.calorique.com

Perfectly Warm™ Floor Heat

INSTALLATION AND OPERATION

The Perfectly Warm™ Radiant Heat system works just like the sun. When the thermostat calls for power, the heating element warms the floor's surface by providing radiant heat, the same type of heat that warms you on a cool spring day. Although the air is cool, the radiant heat from the sun keeps you warm.

The radiant heat warms your floor, and provides clean even heat throughout the room by uniformly warming the objects while providing thermal comfort. There is no need to directly over-heat the air. This is the opposite of how a conventional forced hot air or baseboard heating systems works. In other types of heating systems, the large mass of air in a home is heated while the objects remain relatively cool.

CAUTION

Read and follow all the installation instructions in this manual before attempting to install Perfectly Warm Radiant Heat. Improper installation procedures or techniques can cause potentially unsafe conditions, including overheating and shock hazards.

Failure to comply with the instructions in this manual can void the manufacturer's warranty.

Electrical connections should only be made by licensed contractors.

The heating product shall not be installed in closets, under walls or partitions, or under cabinets. Furniture should provide a minimum of 1 inch clearance from the ground.

This product is not to be installed in contact with combustible surfaces.The intended use of this product is for floor warming underneath tile, stone and marble floor coverings.

Perfectly Warm™
Floor Heat

UL Listed
E230827

LIMITED WARRANTY

PERFECTLY WARM™ warrants that, at the time of shipment to the customer who directly purchases the Product from **PERFECTLY WARM**™, the product will be free of defects in workmanship and materials and will conform in all material respects to any written specification that **PERFECTLY WARM**™ provided to that customer before the purchase.

If that customer believes that a shipment of product fails to satisfy the above warranty, that customer must (a) contact **PERFECTLY WARM**™ in writing within 25 years after that customer receives the shipment, including a detailed explanation of the alleged nonconformity and (b) return the shipment to Perfectly Warm postage prepaid. If **PERFECTLY WARM**™ reasonably determines through examination of the returned shipment that the shipment did not satisfy the above warranty, then AS **PERFECTLY WARM**™ EXCLUSIVE LIABILITY AND THE CUSTOMER'S SOLE REMEDY, **PERFECTLY WARM**™ WILL, WITHIN A REASONABLE PERIOD OF TIME, REPAIR THE PRODUCT, REPLACE THE PRODUCT WITH THE SAME OR SIMILAR PRODUCT, OR CREDIT THE CUSTOMER'S ACCOUNT WITH THE PURCHASE PRICE, WHICHEVER **PERFECTLY WARM**™ MAY ELECT IN ITS SOLE DISCRETION.

This warranty does not apply if **PERFECTLY WARM**™™ reasonably determines that the product has been added to or otherwise altered, stored improperly, misused, damaged, or installed not in accordance with the instruction manual supplied by **PERFECTLY WARM**™. **PERFECTLY WARM**™ requires that this product be used ONLY with approved control devices. Use of any other control device will render the provisions of this warranty null and void. This warranty covers only components manufactured by **PERFECTLY WARM**™. Components such as attaching hardware, connecting parts, wire, tape, and other items included in kits, finished mats, or assemblies that are not manufactured by **PERFECTLY WARM**™ are excluded from the provisions of this warranty.

Except as expressly provided in this Limited Warranty, the customer is responsible for the cost of labor, service calls, insurance, shipping, installation costs and any other expense or damage incurred.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS, WARRANTIES, OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, AND OF ANY OTHER OBLIGATION OR LIABILITY ON THE PART OF PERFECTLY WARM WHETHER BY STATUTE, CONTRACT, STRICT LIABILITY, TORT OR OTHERWISE.

PERFECTLY WARM™ IS NOT RESPONSIBLE FOR ANY INCIDENTAL, CONSEQUENTIAL, MULTIPLE, PUNITIVE OR INDIRECT DAMAGES OR LOSS, LOSS OR DAMAGE TO OR LOSS OF USE OF FACILITIES OR OTHER PROPERTY, OR FOR LOST PROFITS OR LOST REVENUE, WHETHER BASED UPON WARRANTY, STATUTE, CONTRACT, STRICT LIABILITY, TORT OR OTHERWISE. **PERFECTLY WARM**™ SHALL IN NO EVENT BE LIABLE FOR THE PERFORMANCE OF, OR COST OF PERFORMING, THE REMOVAL OR INSTALLATION OF THE PRODUCT OR ANY PRODUCT OR MATERIAL INTO WHICH IT IS INSTALLED, INCORPORATED OR ADDED. THE CUSTOMER IS RESPONSIBLE FOR THE COST OF LABOR, SERVICE CALLS, INSURANCE, SHIPPING, INSTALLATION COSTS AND ANY OTHER EXPENSE OR DAMAGE INCURRED.

IN NO EVENT SHALL **PERFECTLY WARM**™'S MAXIMUM LIABILITY EXCEED THE PURCHASE PRICE FOR THE RELEVANT SHIPMENT OF PRODUCT, EXCEPT TO THE EXTENT MADE MANDATORY BY LAW.

TABLE OF CONTENTS

Section 1. Introduction
- Features....1
- How To Use This Manual....1
- Before You Begin....1
- NEVER Do the Following:....2
- ALWAYS Do the Following:....2

Section 2. Designing the Installation
- Sketch the System Layout....3
- Multiple Unit Installations....3
- Input Power Controls....4
- Thermostat Requirements....4
- Locating the Thermostat....4
- Heat Loss Calculations....4

Section 3. Installation

Preparation....5
- Preparing the Job Site....5
- What You Will Need....6

Electrical Installation....6
- Step 1. GFCI Installation....6
- Step 2. Install Additional Power Modules....6
- Step 3. Install Electrical Boxes....6
- Step 4. Bottom Plate Work....6
- Step 5. Install Power Lead Conduit....6
- Step 6. Install Thermostat Sensor....9
- Step 7. Rough in the Wiring....9

Installing the Mats....9
- Step 1. Inspect and Test Heating Mats....9
- Step 2. Preparing the Stable Sub-floor....9
- Step 3. Laying the Mats....10-15
- Step 4. Install the Thermostat Sensor....16
- Step 5. Connect the Electrical Leads....16

Section 4. Inspection and Testing
- Visual Inspection....17
- Continuity/Resistance Check....17
- Test for Heating....18
- Final Floor Installation....18
- Tile, Stone, and Marble Installation....19
- Place Caution Stickers....19
- Documentation....20
- Troubleshooting....21

Section 5. Operation
- How the System Works....22
- Operating the System....22
- Precautions....22

SAFETY INFORMATION

Throughout the manual you will see Cautions and Notes. These notices highlight conditions, procedures, or other information that require special attention to prevent damage to the mats, to your flooring, or possible injury. For a safe and functional installation of Perfectly Warm™ Radiant Heat, read and follow these important safety precautions. Failure to comply with these items may result in injury or damage to the mats.

This information must be read and understood by all technicians who will be working in the area of an installed Perfectly Warm™ Radiant Heat or main electrical systems. Failure to follow these guidelines may result in a risk of electric shock or fire hazard.

Indicates precautions or procedures that should be followed to prevent the possibility of fire.

Indicates precautions or procedures that should be followed to prevent the possibility of electrical shock.

Indicates an item that you should pay special attention to. For example, notes are used to highlight installation tips.

CAUTION: 

Make sure that the jobsite is neat and clean before working with the mats. Nails, screws, and other sharp debris can damage the mats creating a potential shock hazard. Any mats which become torn or otherwise damaged must be discarded.

Ensure that the breaker supplying power to the heating mats has been turned off before making electrical connections.

When installing any other materials on or near a heated floor, ensure that no heating mats are punctured by nails, screws, etc.

Not for use in wet areas, such as showers. This system is only for use in areas considered dry, and damp locations by National Electrical Code.

Do not install mats in walls, under walls or partitions, or in locations where they will be covered by floor hugging furniture or fixtures.

CAUTION: 

Flooring materials must be rated for use with electric floor warming system.

Do not fold or alter the heating mats.

Do not place futons, beanbag chairs, or similar furniture on heated floors.

SECTION 1. Introduction

The Perfectly Warm™ Radiant Heat mats are a unique floor heating system with anti-fracture membrane. Completely unseen, Perfectly Warm™ combines easy release liner installation with anti-fracture protection to provide warmth and comfort to the floor configuration. Perfectly Warm™ is a safe and efficient electric floor warming product for interior applications. It cannot be used for exterior snow melting applications.

Perfectly Warm™ Radiant Heat can be used to heat a room as well as to warm the floors. Refer to "Heat Loss Calculations" on page 4 for further information.Perfectly Warm™ is designed to deliver 12 watts per square foot. The floor temperature attainable is dependent upon how well the floor is insulated, the temperature of the floor before start up, and in the case of uninsulated slab applications, the thermal transfer of the underlying materials. Perfectly Warm's efficiency is maximized with a well insulated sub floor.

Features:

- 0.05" thick and easy to install
- 3/8 inch crack isolation
- Draws 12 watts per sq. ft.
- Produces 41 BTUs per sq. ft., providing even heat throughout
- Available in 18", 24", 36" and 48" widths
- 120V and 240V
- Controlled by a thermostat
- Warranted to be free of defects in manufacture for a period of 25 years.

How to Use This Manaul

This manual is organized into four sections:

- Designing The Installation • Installation
- Inspection and Testing •Operation

Before You Begin

- Perfectly Warm™ Radiant Heat should be installed on properly prepared stable subfloors. Do not use glue, nails, or other mechanical fasteners
- Perfectly Warm™ Radiant Heat must be installed on a dedicated 20 amp circuit. Do not connect lights, outlets, or any other electrical device to any branch circuit used with the Perfectly Warm™.
- All wiring, fuses and/or circuit breakers must conform to National Electrical Code requirements.
- Maximum thermal resistance permitted above Perfectly Warm™ Radiant Heat is R-1.5.
- Materials which may not contact Perfectly Warm™ Radiant Heat include any vinyl or linoleum floor coverings.
- All wiring must run through conduits to junction boxes.

1. Introduction Continued

NEVER Do the Following:

- Never puncture, or otherwise alter the mats to make them fit. Punctures, or modifications to the heating mats may result in risk of electrical concerns and will void the warranty. ***Mats can be cut to length BETWEEN the black stripes. Never cut THROUGH the stripes.**
- Never bang a trowel on the mat or wire to remove excess mortar from it.
- Never attempt to repair Perfectly Warm™ Radiant Heat. If it is damaged, call 508-291-2000 for instructions before proceeding.
- Never install in wet areas, such as showers.
- Never install without the floor sensor.
- Do not install the mats in any walls.
- Never install mats under cabinets or other built-ins. Excessive heat will build up in these small spaces, and the mat can be damaged by fasteners (nails, screws, etc.) used to install built-ins.
- Never install under nail down wood flooring.
- Never allow solvent based products such as sealers or sealants (including silicone) to come in contact with the membrane.
- Never install mats on floors where hydrostatic or moisture vapor rate emissions exist above 4 lbs per 1,000 square in 24 hours per the Calcium Chloride test method.

ALWAYS Do the Following:

- Protect the circuit supplying power to the Perfectly Warm™ Radiant Heat mats with a ground fault circuit interrupter (GFCI).
- Install floor sensor.
- Refer to the TCNA Handbook recommendations and ANSI references for proper substrate needed for thin-set tile installations and for recommendations on proper Movement Joints within the plane of the tile per Detail EJ-171.

SECTION 2. Designing the Installation

To select the proper size heating mat(s) for your application, measure the area to be heated and determine the heating mat widths and lengths to fit the clear inside dimensions (wall to wall, etc). It is important to allow 3" to 6" of clearance around the perimeter of the room and from any baseboard heating or permanent fixtures to allow the mats to fit without touching adjacent vertical surfaces or overlapping.

For installations over wooden sub-floors, check floor for deflection. If it flexes when walked on, the addition of another layer of plywood may be required to provide sufficient rigidity to support tile and provide a stable sub floor. (For further information on wood sub-floor design criteria for tile installations, refer to the International Residential Code.)

NOTE:

The heating mats cannot be cut or notched to fit around any obstructions or penetrations such as door openings or floor registers.

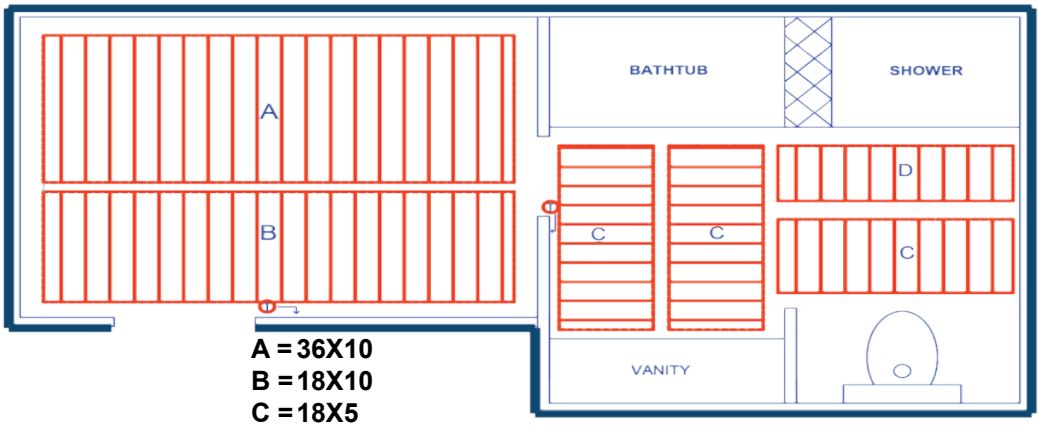
Sketch the System Layout

A sketch of the area to be warmed, including the mat locations and associated wiring, is recommended to make installation and ordering as smooth as possible. See the example sketch below.

Multiple Unit Installations

Installations with multiple heating mats with pre-wired factory connections will require a junction box to gang the connections together. If a junction box is required, it should be located directly beneath the thermostat, 12" to 18" above the floor. The total number of mats used in a single circuit is limited to 15 amps

When specifying multiple width heating mats for the same area, make sure that the total power required does not exceed the total power of a single circuit. Add additional 20 amp circuits as required for proper electrical supply to the installation.



Sketch the System Layout

The fuse or circuit breaker used must be rated for a maximum of 20 amperes (no greater than 16 amp load). If a lower rated fuse or circuit breaker is used, it must be rated at least 25% greater than the heating system load attached to it. If an area requires 15 amps or more, additional branch circuits may be used, each having its own overcurrent protection. These branch circuits may all be controlled by a single thermostat if it is used with a system of electric relays or power modules. The National Electrical Code specifies that each branch circuit used in conjunction with a heating system must be for the exclusive use of the heating system. Do not connect lights, outlets, etc. to any branch circuit used with Perfectly Warm™ Radiant Heat.

NOTE:
The installation of this heating product and listed components shall be in accordance with Article 424, of the National Electric Code, ANSI/NFPA 70. All electrical connections should be made by a licensed electrician.

Thermostat Requirements

Locating the Thermostat

Thermostats are usually located near the power leads. However, they can be located almost anywhere, because the power leads and the sensor wire can be routed to electrical junction boxes and extended to a location outside the heated room (such as a utility room or basement). Location of the thermostat should be approximately 60" (152 cm) above the floor on an inside wall. A 3" deep box is recommended for the thermostat.

Heat Loss Calculations

For installations where Perfectly Warm™ Radiant Heat is the primary heat source, a heat loss calculation must be performed. FOR ADDITIONAL HELP, A HEAT LOSS CALCULATOR CAN BE PERFORMED BY A HEATING AND VENTLATION SPECIALIST. The building professional must determine if the output of Perfectly Warm™ is enough heat to match the heat loss of the structure. Make sure that all sources of heat loss (transmission, infiltration and radiant) are taken into account.

NOTE:
The product must be installed using a thermostat which is approved by the manufacturer. For a list of approved thermostat devices, refer to our website: www.calorique.com. USE OF ANY OTHER THERMOSTAT OR CONTROL DEVICE WILL VOID THE MANUFACTURER'S WARRANTY.

A separate heat loss calculation must be done for each enclosed area (room, etc.). A separate control device must be included for each enclosed area. Include a recovery factor of at least 20% more than the minimum calculated heat requirement to cover unforeseen circumstances.

Some heat loss methods, particularly those designed for gas or oil based systems, provide their answers in BTU's Per Hour. To convert BTU's Per hour to WATTS, multiply each area's total amount of BTU's by 0.293.
All wiring, fuses and/or circuit breakers must conform to National Electrical Code requirements.

SECTION 3. Installation

Preparing the Job Site

1. Ensure the job site is clean before working with the Perfectly Warm™ Radiant Heat, free of any nails, screws and other sharp debris that could damage the mats.
2. For uninsulated concrete slabs, it is highly recommended that you install insulation (minimum 1/4" extruded polystyrene) over the slab. Cover the insulation with backer board.
3. For wood sub floors, installation must include a minimum ¼ inch backer board or cemetitious board.

CAUTION: 

Make sure that the jobsite is neat and clean before working with Perfectly Warm™. Nails, screws, and other sharp debris can damage the mats creating a potential shock hazard. Any mats which become torn or otherwise damaged must be discarded.

CAUTION: 

Use copper ONLY as the supply conductor. Type NM and NMC non-metallic sheathed cable is not suitable for installing this product.

NOTES: 

The installation of this heating product shall be in accordance with the manufacturer's instructions. Improper installation can result in mats that do not work, poor heating, and can void the manufacturer's warranty.

Heating mats should not be installed at or below 32°F (0°C).

This equipment shall be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and the risks involved.

Installation of this product and listed components shall be in accordance with Article 424, of the National Electrical Code, ANSI/NFPA 70. Listed to UL1693.

What You Will Need

Included in kit:

- Perfectly Warm Radiant Heat Roll/Mats
- 3M 22 Insulation Tape, Part # = 22, UL Listed E129200
- 3M Ring Terminal. Part # MU10-14R/S, UL File # = E23438
- Kapton Insulating Dots
  Manufacturer Part 85#. UL E File # 363668
- Hole Punch Unit 10573-CC
- Grommet Pliers
- Grommets

NOT Included:

- UL certified Thermostat: An approved floor-sensing thermostat
- UL certified GFCI Breaker (if not part of the thermostat)
- UL certified Junction Boxes: One box (2x4 inch) required for thermostat, one box (4x4 inch) required for electrical connections if needed.
- Tools: Digital ohm meter (multi-meter), CP-413 Wire Stripper/ Crimper, screw driver, wood chisel, knife, pliers.
- Tile installation products (3/8" x 1/4" or greater plastic trowel, mortar, backer board, tile, etc.)
- UL certified 14 AWG stranded copper wire where 2 wires are secured to the barrel end of the ring terminal and UL certified 12AWG stranded copper wire for locations where 1 wire is secured to the barrel end of ring terminal.

Electrical Installation

Step 1. GFCI Installation

Perfectly Warm™ Radiant Heat mats must be protected by a UL certified ground fault circuit interrupter (GFCI). This can be done either by the internal GFCI in the thermostat (as long as it directly controls the mat), or by a GFCI protected circuit breaker. Follow all local building and electrical codes. Typical Amperage Requirement: 120 VAC Perfectly Warm™ Tile Heat: 0.1 amps per square foot, or 10 amps per 100 square foot of mat.

Step 2. Install Additional Power Modules

Depending on the amperage requirements of the mat(s), one or more secondary power modules may be required. Do not load the thermostat control with more than 15 amps. The National Electrical Code specifies that each branch circuit used in conjunction with a heating system must be for the exclusive use of the heating system. Do not connect lights, outlets, etc. to any branch circuit used with the Perfectly Warm™ Floor Heat .

Step 3. Install Electrical Boxes

Install Junction box for the control device (UL certified thermostat) according to the manufacturer's instructions. This box should be located, unobstructed, on an inside wall so that the device reads accurately.

Install a 4x4 inch junction box for making electrical connections between the mats and thermostat if needed.

Step 4. Bottom Plate Work

Drill or saw holes at the bottom plate. One hole is for routing power leads or conduit and the other is for the thermostat sensor. These holes should be directly below the electrical box(es). It is recommended that you drill or saw holes at the bottom plate. You may also use a notch technique as an alternative.

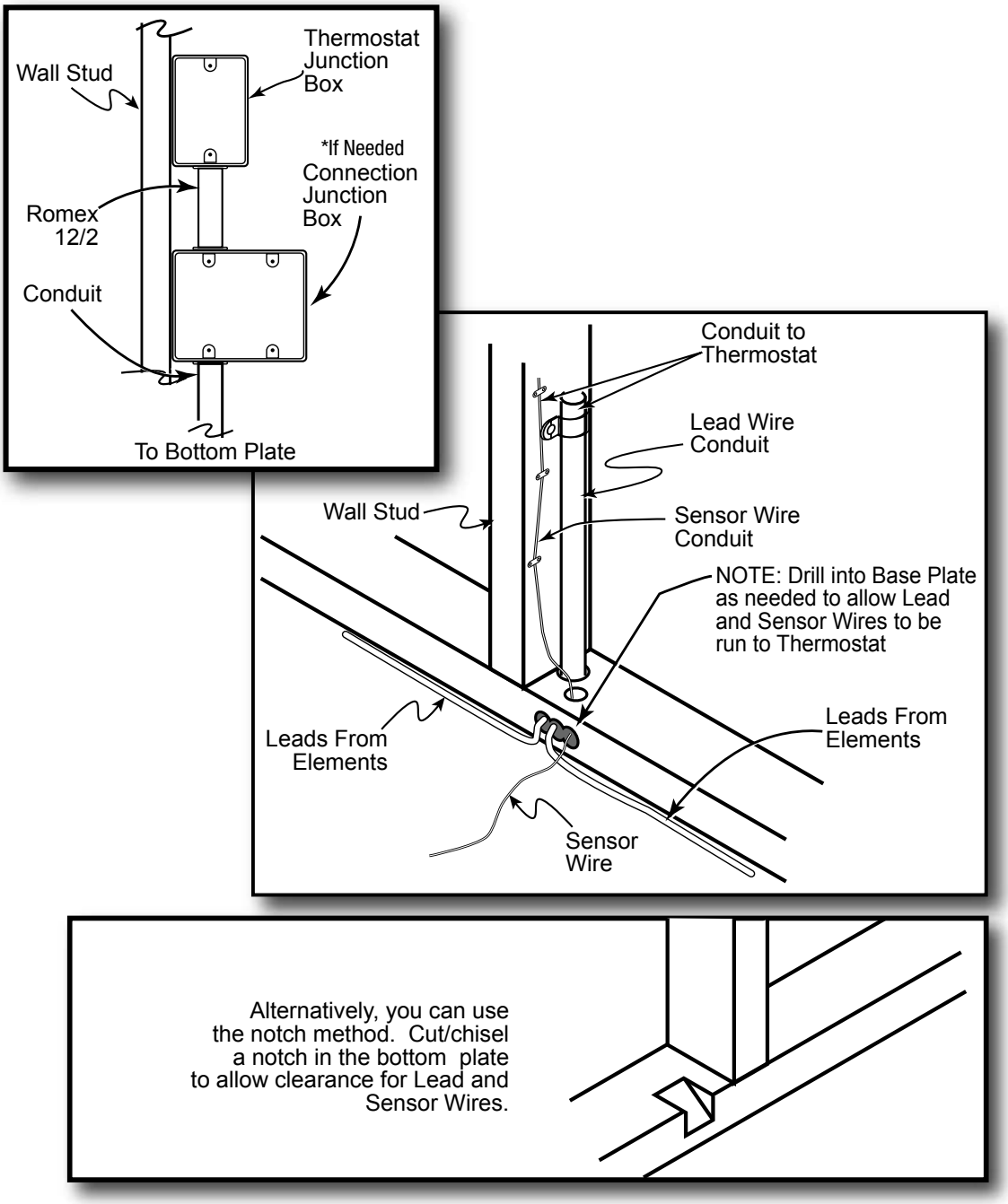
Step 5. Install Power Lead Conduit

Route the UL certified power leads from the thermostat down the wall cavity through opening in the bottom of plate to connect the mats. Use separate conduit for power leads and floor sensor.

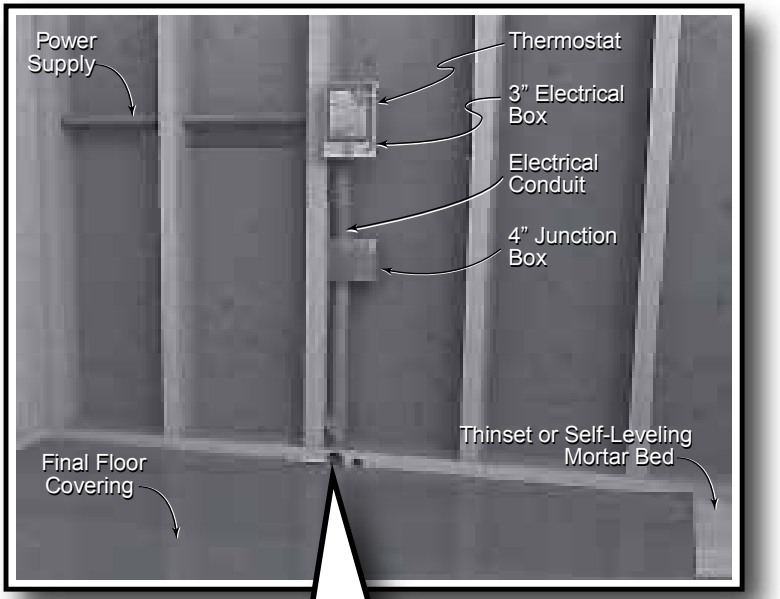
CAUTION:

RISK OF ELECTRIC SHOCK AND FIRE. DAMAGE TO SUPPLY CONDUCTOR INSULATION MAY OCCUR IF CONDUCTORS ARE ROUTED LESS THAN 2 INCHES (51mm) FROM THIS HEATING PRODUCT. REFER TO INSTALLATION INSTRUCTIONS FOR RECOMMENDED MEANS OF ROUTING SUPPLY CONDUCTORS.

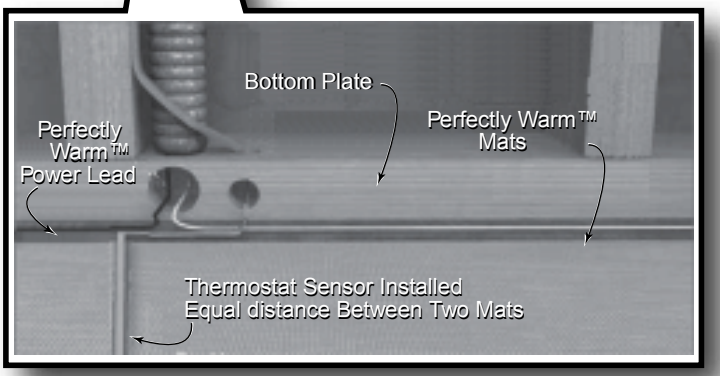
3. Installation Continued



Typical Installation



Bottom Plate Cutouts



Shows Perfectly Warm™ Peel & Stick Radiant Heat Installation Below Final Floor Covering

3. Installation Continued

Step 6. Install Thermostat Sensor

A floor sensor comes with the recommended thermostat control. The sensor wire can be installed without a conduit or in a conduit separate from the electrical power leads if conduit is required by code. Conduit is recommended for easy access to replace a defective floor sensor. Open a second knockout in the bottom of the thermostat box. Feed the sensor (and conduit, if including) through the knock-out, down the wall cavity, through the opening in the bottom plate. Temporarily tape the sensor to the slab or subfloor in a location approximately 6" to 12" from the wall---final location of sensor after mat installation will be taped down at the edge of or in between two mats so that the sensor is not directly above a heating mat. (NOTE: The sensor is located in the thermostat packaging.

Step 7. Rough in the Wiring

Install appropriate electrical wire (conductor) from the power source and breaker protection to the thermostat following all codes. Leave 6" to 8" extra wire at the thermostat box.

Before Installing the Mats

Step 1. Inspect and Test Heating Mats

Verification that the heating mats were received in operable condition is important prior to installation. When the heating mats are removed from the shipping box, test the resistance using ohm meter and record the information. If the resistance reading varies more than ±3% from the recorded readings on each mat, do not install the mat and contact your supplier for assistance.

Step 2. Preparing the Stable Sub-floor

Clear the floor of all debris, nails, etc. so the floor is smooth, clean and dry in accordance with TCNA.

NOTES:

It is EXTREMELY important to verify the resistance measurements for each mat and to record the readings on the system checklist (see page 16). If a defective mat is adhered to the floor it can be very difficult to remove it.

The heating product shall not extend beyond the room or area in which it originates.
The heating product is not to be installed in walls.

It is very important that the mats be installed ONLY after the sub-floor is complete and stable.
Adhering the mats to an unstable floor can result in damage to the mats and will void the manufacturer's warranty.

3. Installation Continued: Field Connection Installation

Step 1. Prepare a stable subfloor. Thermostat location and design layout plan

- Prepare a stable, smooth, dry sub floor free from dust, debris, and grease in accordance with TCNA.
- Pick desired location for Thermostat. See thermostat manufacturer's installation instructions for approved locations.
- Draw a sketch of the layout prior to installing Perfectly Warm Floor Heat. (Fig. 1)
- Identify minimum distances to walls, vents, and other fixed objects. See "Design Clearances" in the caution section at the beginning of this manual. It is a good idea to map these out on the floor with tape before you start laying the heat panels. (Fig. 2)

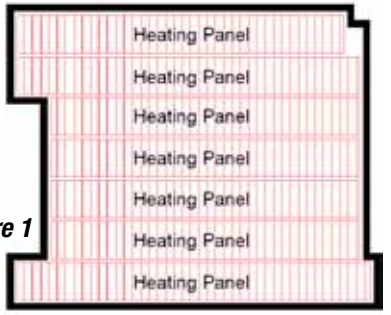


Figure 1

Figure 2

Step 2. Roll out panels, cut to length, make electrical connections and adhere to sub floor

- Start in the opposite end of the room from the thermostat location. (Fig. 3)
- Roll out Perfectly Warm Floor Heat with black stripes facing up. (Fig. 4)

continued....

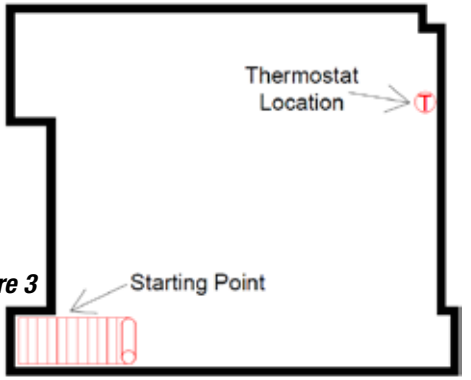


Figure 3

Figure 4

3. Installation Continued: Field Connection Installation

- Cut to length. IT IS IMPORTANT TO CUT ONLY BETWEEN THE BLACK STRIPES. DO NOT CUT INTO THEM AS THIS WILL CAUSE THE GFCI TO TRIP. (Fig. 5a "DO") (Fig. 5b "DON'T)
- Cut back one black heat stripe from both ends of the panel making sure not to cut into black stripe. (Fig. 6a "DO") (Fig. 6b "DON'T")
- Fold one Kapton Insulating Disk, UL E File number 363668 (Green dots supplied in kit) on the two silver bus bar endings on the panel on the opposite side from the thermostat location. Green insulating disk must be folded over the top and bottom of silver bus bar. Make sure the green kapton disk is covering the bus bar and the black ink area exactly as in the following figure. (Fig. 7a "DO") (Fig. 7b "DON'T")
- On the opposite end of the panel from the Kapton Insulating Disks (Green dots) make a mark 1/4" in from the end on the center of each silver bus bar. (Fig. 8) Punch a hole centered on both of your marks using the hole punch supplied. (Fig. 9a "DO") (Fig. 9b "DON'T")
- Carefully insert ring terminal connector model 3M MU10-14R/S, supplied in kit, in between the laminate layers. Gently bend the bus bar to get an opening to insert the Ring Terminal Connector. (Fig. 10a) (Fig 10b)
- Line the ring terminal inside the laminate layers with the hole you just punched and insert the taller half of the grommet through the hole. The ring must be in direct contact with the silver bus bar and sandwiched in between the laminate. (Fig. 11) ***continued....***

Figure 5a **DO**

Figure 5b **DON'T**

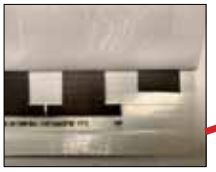


Figure 6a **DO**

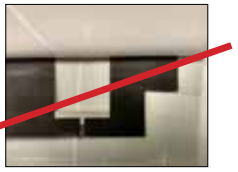


Figure 6b **DON'T**

Figure 7a **DO**

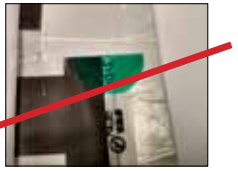


Figure 7b **DON'T**

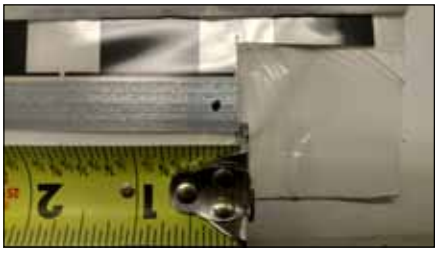


Figure 8

Figure 10a

Figure 10b

Figure 11

Figure 9a **DO**

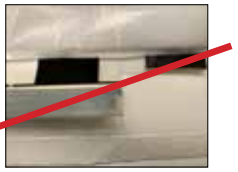


Figure 9b **DON'T**

Entire Length of Heating Panel

3. Installation Continued: Field Connection Installation

- Using the grommet tool supplied with the kit, crimp the grommet completely. Not using the supplied tool will void the warranty. (Fig. 12a) (Fig. 12b)
- There should be no movement of the Ring Terminal. If there is then you will need to crimp the grommet again. You CAN re-crimp if needed. DON'T SQUEEZE THE TOOL TOO HARD. (Fig. 13a No Movement) (Fig. 13b Movement – needs re-crimped)
- Repeat all the above steps in this section, part 2 for each additional panel.
- Flip the panels so that the black stripes are facing the sub floor and dry fit in place. (Fig. 14)
- Abut edges of each panel to the next panel. DO NOT OVERLAP PANELS AS THIS WILL CAUSE OVERHEATING AND BECOME A SAFETY HAZARD. (Fig. 15 "DO") (Fig. 16 DON'T))
- Peel and stick Perfectly Warm Floor Heat to the sub floor - Lift one side of the panel, peel back release liner and adhere to the subfloor. Once adhered in place peel back release liner and roll out to adhere the entire panel in place. (Fig. 17 and 18)

continued....

Figure 12a

Figure 12b

Figure 13a

Figure 13b

Figure 14

***Figure 15* DO**

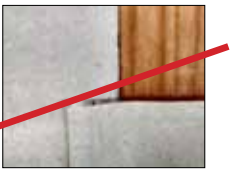


***Figure 16* DON'T**

Figure 17

Figure 18

3. Installation Continued: Field Connection Installation

Step 3. Test resistance of each the panel

- Use a Multi Meter/Ohm Meter to test the resistance of the panel and check against the resistance readings in this installing manual. Record result for registering warranty. (Fig. 19)

Figure 19

Step 4. Wiring panels in parallel

- When Perfectly Warm Floor Heat panels are adhered, in place, to the sub floor it is time to make the electrical connections from each heating panel to the next. The heating panel closest to the thermostat will have two wires going straight to the thermostat. Every other panel will be wired to the next panel. (Fig. 20)
- Start with the farthest panel from the thermostat location.
  - ◆ Measure the lengths of wire needed to reach the next panel. Leave some slack so as not to cause stress on the connector. (Fig. 21)
  - ◆ Strip the non-heating lead wire(s) (supplied with kit) that will be attached to the connector. Strip about 1/4 inch (6 mm). (Fig. 22)
  - ◆ Insert the wire(s) into the barrel section of the connector. (Fig. 23)
  - ◆ On the Pro Kit CP-413 Wire Stripper/Crimper use the notch identified as 22-10 non-insulated, to crimp the wire to the connector. (Fig. 24, 24a, 24b)
  - ◆ The two panels on each end of the room will only require one wire coming out of the panel. Strip ½ inch (12mm) to expose the wire and insert the wire into the barrel end of the ring terminal connector. (Fig. 25a) (Fig. 25b)
  - ◆ After crimping the wire into the barrel end of the ring terminal connector tug the wire to make sure the wire is firmly in place. (Fig. 26)
  - ◆ Once all the panels are wired in parallel the panel closest to the thermostat will have two wires going to the thermostat.
  - ◆ UL certified 14 AWG stranded copper wire where 2 wires are secured to the barrel end of the ring terminal and UL certified 12AWG stranded copper wire for locations where 1 wire is secured to the barrel end of ring terminal.

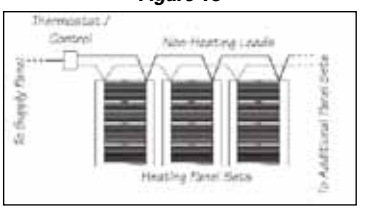


Figure 20

Figure 21

Figure 22

Figure 23

Figure 25a

Figure 25b

Figure 24a

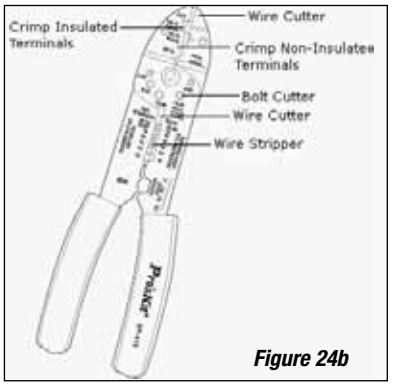


Figure 24b

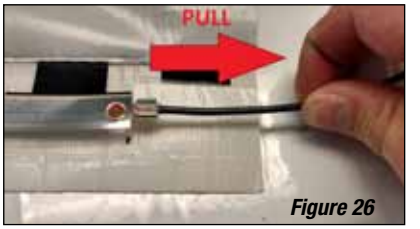


Figure 26

3. Installation Continued: Field Connection Installation

- Precut, two inch strips of, 3M, 22 Tape are supplied with the kit. Use these to sandwich the connections between the two pieces of 3M, 22 Tape (UL listed- E129200). Repeat this on both Grommet connections on every panel. Trim the electrical insulation tapes as required. (Fig. 27a) (Fig. 27b)

Figure 27a

Figure 27b

Step 5. Sealing the "flaps"

- Fold back and crease the top "flap" on each end of the heating panel(s). (Fig. 28)
- Peel back the bottom release liner on the inside of the flap and adhere the heating element by pressing down firmly. (Fig. 29)
- Once the heating element is adhered to the bottom of the flap carefully peel back the upper release liner and press down to seal the edges of the membrane. MAKE SURE TO PRESS OUT ANY AIR BUBBLES AS YOU ARE ADHERING THE TOP FLAP TO THE BOTTOM. (Fig. 30)

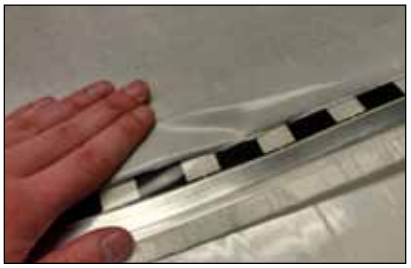


Figure 28

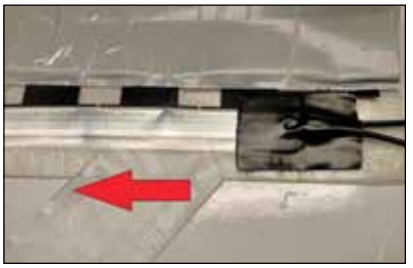


Figure 29

Figure 30

Step 6. Power the system

- Have your electrician power the system and allow to run for a half hour.
- Feel for warmth
- Turn off thermostat
- For thin set tile wait 28 days, or whatever the thin set manufacturer's instructions are for radiant heat, before turning the thermostat back on. Don't disconnect from power source just turn off the thermostat. A good practice is to add a post it note with the date 28 days after installation. Most thin sets state 28 days cure time but refer to manufacturer's instructions for early cure times.

3. Installation Continued - Laying the Mats

Step 1. Factory Attached Cold Leads

Connection leads from the mats are 15 feet long, and can be cut to desired length to connect at the junction box. The heating mats should be laid so the connection leads are running to the wall of the room where the thermostat/ junction box is located. The following steps will guide in the installation of the mats:

1. With the release liner still on, position all the mats into place. Make sure the leads are within reach of the junction box and that there are no obstructions or floor penetrations in the way. Make sure the position of ALL mats is satisfactory before the next step.
2. When all the mats are in proper position, roll the end with the connections back far enough to peel back approximately 12" (30cm) of the release paper to expose a portion of the adhesive surface.
3. Press this exposed section of the mat onto the surface and then roll the other end back to the point where the release paper was removed.
4. Begin pulling the release liner off and hand smooth the mat into position as it unrolls to achieve a positive bond while avoiding trapping air bubbles.
5. For adjacent mats, follow the same procedure starting with alignment of the side by side mats in a butt joint fashion. **DO NOT OVERLAP MATS.**
6. Peel off quick release liner and set mat in place, leaving clearance to walls or partitions at the connector end for wiring and final connections.

NOTE:

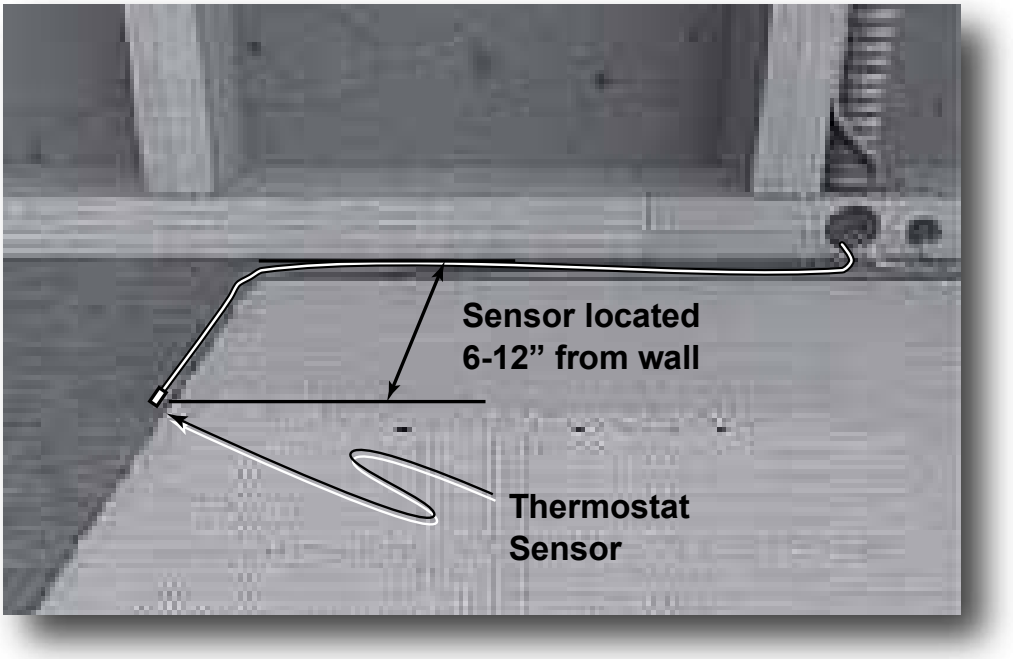
It is important to take care in the placement of the heating mats, as once the adhesive side of the heating mat comes in contact with the stable subfloor it will provide a tenacious bond, and will be very difficult to move.

Step 2. Install the Thermostat Sensor

As the mats are installed, locate the thermostat sensor probe. Sensor probe can be held in position with a small amount of tape or installed in conduit. The sensor should extend approximately 6” to 12” from wall adjacent to the mat shown. Be careful not to locate the sensor near other heating sources such as a heating duct below the floor.

Step 3. Connect the Electrical Leads

Now, depending upon your wire lead installation, route the lead wires from each individual mat along the base of the wall and up to the junction box. Depending on the thickness of the mortar bed, you may also need to chisel a space under the point where the wires connect with the mat in order to recess the connection. Be extremely careful not to damage the heating mat or connection.



NOTE:

The thermostat sensor is thicker than the heating mat. Saw a groove to recess the sensor to the level of the mat. Use duct tape to secure the sensor in the groove. Do not damage the sensor. Ensure the sensor is set down so it is level with the mat and not on top of the mat.

SECTION 4. Inspection and Testing

A visual and electrical check must be performed on the heating mats prior to activation.

Visual Inspection

Also perform a visual check to look for any signs of damage to the mat or electrical leads that may have occurred during installation. When visually checking the mats, look for any signs of damage, wear, or scratching that might have occurred during installation. If any portion of a mat appears damaged, replace the entire mat. If damage is found, call 508-291-2000 or email info@calorique.com for advice and/or replacement assistance.

Continuity/Resistance Check

Following installation, a second resistance check across the supply leads of each mat using a digital ohm meter must be made to detect any short or open circuits that may have resulted from the installation process.
If the resistance check is the same as the original reading shown on the mat label, the mat is installed properly and no further testing is required.

If the resistance readings are not within ±3% of the indicated value on the mat then call 508-291-2000. If the resistance is ZERO: This indicates a short circuit. Check the path that the wiring is taking and make sure that no wires are pierced or otherwise damaged. Mats with damaged non heating leads must be replaced.

NOTES:

Record the resistance measurements of each mat after installation. These measurements should be compared to the readings recorded on the product label for each mat to confirm a successful installation. These measurements are required for warranty registration.

If a mat fails the resistance check, it must be retested after any corrective actions.

PWT18-120V Wattage and Amperage Chart

Max Allowed Length = 99 ft.

Feet	Resistance	Wattage	Amps	Feet	Resistance	Wattage	Amps	Feet	Resistance	Wattage	Amps
1	1315.21	10.95	0.09	34	27.32	527.00	4.39	67	13.81	1043.05	8.69
2	541.63	26.59	0.22	35	26.54	542.63	4.52	68	13.60	1058.68	8.82
3	341.03	42.22	0.35	36	25.79	558.27	4.65	69	13.40	1074.32	8.95
4	248.87	57.86	0.48	37	25.09	573.91	4.78	70	13.21	1089.96	9.08
5	195.92	73.50	0.61	38	24.43	589.55	4.91	71	13.02	1105.60	9.21
6	161.55	89.14	0.74	39	23.79	605.19	5.04	72	12.84	1121.23	9.34
7	137.44	104.78	0.87	40	23.19	620.82	5.17	73	12.67	1136.87	9.47
8	119.59	120.41	1.00	41	22.63	636.46	5.30	74	12.49	1152.51	9.60
9	105.84	136.05	1.13	42	22.08	652.10	5.43	75	12.33	1168.15	9.73
10	94.93	151.69	1.26	43	21.57	667.74	5.56	76	12.16	1183.79	9.86
11	86.06	167.33	1.39	44	21.07	683.38	5.69	77	12.01	1199.42	10.00
12	78.70	182.96	1.52	45	20.60	699.01	5.83	78	11.85	1215.06	10.13
13	72.51	198.60	1.66	46	20.15	714.65	5.96	79	11.70	1230.70	10.26
14	67.21	214.24	1.79	47	19.72	730.29	6.09	80	11.55	1246.34	10.39
15	62.64	229.88	1.92	48	19.30	745.93	6.22	81	11.41	1261.97	10.52
16	58.65	245.52	2.05	49	18.91	761.56	6.35	82	11.27	1277.61	10.65
17	55.14	261.15	2.18	50	18.53	777.20	6.48	83	11.13	1293.25	10.78
18	52.02	276.79	2.31	51	18.16	792.84	6.61	84	11.00	1308.89	10.91
19	49.24	292.43	2.44	52	17.81	808.48	6.74	85	10.87	1324.53	11.04
20	46.74	308.07	2.57	53	17.47	824.12	6.87	86	10.74	1340.16	11.17
21	44.48	323.71	2.70	54	17.15	839.75	7.00	87	10.62	1355.80	11.30
22	42.43	339.34	2.83	55	16.83	855.39	7.13	88	10.50	1371.44	11.43
23	40.57	354.98	2.96	56	16.53	871.03	7.26	89	10.38	1387.08	11.56
24	38.85	370.62	3.09	57	16.24	886.67	7.39	90	10.27	1402.72	11.69
25	37.28	386.26	3.22	58	15.96	902.30	7.52	91	10.15	1418.35	11.82
26	35.83	401.89	3.35	59	15.69	917.94	7.65	92	10.04	1433.99	11.95
27	34.49	417.53	3.48	60	15.42	933.58	7.78	93	9.93	1449.63	12.08
28	33.24	433.17	3.61	61	1315.21	10.95	0.09	94	9.83	1465.27	12.21
29	32.08	448.81	3.74	62	14.92	964.86	8.04	95	9.72	1480.90	12.34
30	31.00	464.45	3.87	63	14.69	980.49	8.17	96	9.62	1496.54	12.47
31	29.99	480.08	4.00	64	14.46	996.13	8.30	97	9.52	1512.18	12.60
32	29.05	495.72	4.13	65	14.23	1011.77	8.43	98	9.43	1527.82	12.73
33	28.16	511.36	4.26	66	14.02	1027.41	8.56	99	9.33	1543.46	12.86

PWT48-240V Wattage and Amperage Chart

Max Allowed Length = 66 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	1749.51	240	32.92	0.14	23	53.96	240	1067.44	4.45	45	27.40	240	2101.96	8.76
2	720.48	240	79.95	0.33	24	51.68	240	1114.46	4.64	46	26.80	240	2148.98	8.95
3	453.65	240	126.97	0.53	25	49.59	240	1161.49	4.84	47	26.23	240	2196.01	9.15
4	331.05	240	173.99	0.72	26	47.66	240	1208.51	5.04	48	25.68	240	2243.03	9.35
5	260.61	240	221.02	0.92	27	45.88	240	1255.53	5.23	49	25.15	240	2290.05	9.54
6	214.89	240	268.04	1.12	28	44.22	240	1302.56	5.43	50	24.65	240	2337.08	9.74
7	182.82	240	315.06	1.31	29	42.68	240	1349.58	5.62	51	24.16	240	2384.10	9.93
8	159.08	240	362.09	1.51	30	41.24	240	1396.61	5.82	52	23.69	240	2431.12	10.13
9	140.79	240	409.11	1.70	31	39.90	240	1443.63	6.02	53	23.24	240	2478.15	10.33
10	126.28	240	456.14	1.90	32	38.64	240	1490.65	6.21	54	22.81	240	2525.17	10.52
11	114.48	240	503.16	2.10	33	37.46	240	1537.68	6.41	55	22.39	240	2572.19	10.72
12	104.69	240	550.18	2.29	34	36.35	240	1584.70	6.60	56	21.99	240	2619.22	10.91
13	96.45	240	597.21	2.49	35	35.30	240	1631.72	6.80	57	21.60	240	2666.24	11.11
14	89.41	240	644.23	2.68	36	34.31	240	1678.75	6.99	58	21.23	240	2713.26	11.31
15	83.33	240	691.25	2.88	37	33.38	240	1725.77	7.19	59	20.87	240	2760.29	11.50
16	78.02	240	738.28	3.08	38	32.49	240	1772.79	7.39	60	20.52	240	2807.31	11.70
17	73.35	240	785.30	3.27	39	31.65	240	1819.82	7.58	61	20.18	240	2854.33	11.89
18	69.20	240	832.32	3.47	40	30.85	240	1866.84	7.78	62	19.85	240	2901.36	12.09
19	65.50	240	879.35	3.66	41	1749.51	240	32.92	0.14	63	19.54	240	2948.38	12.28
20	62.18	240	926.37	3.86	42	29.37	240	1960.89	8.17	64	19.23	240	2995.41	12.48
21	59.17	240	973.39	4.06	43	28.69	240	2007.91	8.37	65	18.93	240	3042.43	12.68
22	56.45	240	1020.42	4.25	44	28.03	240	2054.93	8.56	66	18.64	240	3089.45	12.87

PWT24-120V Wattage and Amperage Chart

Max Allowed Length = 70 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	934.40	120	15.41	0.13	24	27.60	120	521.66	4.35	48	13.72	120	1049.93	8.75
2	384.80	120	37.42	0.31	25	26.49	120	543.67	4.53	49	13.43	120	1071.94	8.93
3	242.29	120	59.43	0.50	26	25.46	120	565.69	4.71	50	13.16	120	1093.95	9.12
4	176.81	120	81.44	0.68	27	24.50	120	587.70	4.90	51	12.90	120	1115.96	9.30
5	139.19	120	103.45	0.86	28	23.62	120	609.71	5.08	52	12.65	120	1137.97	9.48
6	114.77	120	125.47	1.05	29	22.79	120	631.72	5.26	53	12.41	120	1159.98	9.67
7	97.64	120	147.48	1.23	30	22.03	120	653.73	5.45	54	12.18	120	1181.99	9.85
8	84.96	120	169.49	1.41	31	21.31	120	675.74	5.63	55	11.96	120	1204.00	10.03
9	75.20	120	191.50	1.60	32	20.64	120	697.75	5.81	56	11.75	120	1226.01	10.22
10	67.44	120	213.51	1.78	33	20.01	120	719.76	6.00	57	11.54	120	1248.03	10.40
11	61.14	120	235.52	1.96	34	19.41	120	741.77	6.18	58	11.34	120	1270.04	10.58
12	55.92	120	257.53	2.15	35	18.85	120	763.78	6.36	59	11.15	120	1292.05	10.77
13	51.51	120	279.54	2.33	36	18.33	120	785.80	6.55	60	10.96	120	1314.06	10.95
14	47.75	120	301.55	2.51	37	17.83	120	807.81	6.73	61	10.78	120	1336.07	11.13
15	44.50	120	323.56	2.70	38	17.35	120	829.82	6.92	62	10.60	120	1358.08	11.32
16	41.67	120	345.58	2.88	39	16.90	120	851.83	7.10	63	10.43	120	1380.09	11.50
17	39.17	120	367.59	3.06	40	16.48	120	873.84	7.28	64	10.27	120	1402.10	11.68
18	36.96	120	389.60	3.25	41	16.07	120	895.85	7.47	65	10.11	120	1424.11	11.87
19	34.98	120	411.61	3.43	42	15.69	120	917.86	7.65	66	9.96	120	1446.12	12.05
20	33.21	120	433.62	3.61	43	15.32	120	939.87	7.83	67	9.81	120	1468.14	12.23
21	31.60	120	455.63	3.80	44	934.40	120	15.41	0.13	68	9.66	120	1490.15	12.42
22	30.15	120	477.64	3.98	45	14.64	120	983.89	8.20	69	9.52	120	1512.16	12.60
23	28.82	120	499.65	4.16	46	14.32	120	1005.91	8.38	70	9.39	120	1534.17	12.78
					47	14.01	120	1027.92	8.57					

PWT24-240V Wattage and Amperage Chart

Max Allowed Length = 140 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	3737.59	240	15.41	0.06	32	82.55	240	697.75	2.91	63	36.27	240	1587.99	6.62
2	1539.20	240	37.42	0.16	33	80.03	240	719.76	3.00	64	35.70	240	1613.30	6.72
3	969.16	240	59.43	0.25	34	77.65	240	741.77	3.09	65	35.15	240	1638.61	6.83
4	707.23	240	81.44	0.34	35	75.41	240	763.78	3.18	66	39.83	240	1446.13	6.03
5	556.76	240	103.45	0.43	36	73.30	240	785.80	3.27	67	39.23	240	1468.14	6.12
6	459.09	240	125.47	0.52	37	71.30	240	807.81	3.37	68	38.65	240	1490.15	6.21
7	390.57	240	147.48	0.61	38	69.41	240	829.82	3.46	69	38.09	240	1512.16	6.30
8	339.85	240	169.49	0.71	39	67.62	240	851.83	3.55	70	37.54	240	1534.17	6.39
9	300.78	240	191.50	0.80	40	65.92	240	873.84	3.64	71	37.01	240	1556.18	6.48
10	269.78	240	213.51	0.89	41	64.30	240	895.85	3.73	72	36.50	240	1578.19	6.58
11	244.56	240	235.52	0.98	42	62.75	240	917.86	3.82	73	36.00	240	1600.20	6.67
12	223.66	240	257.53	1.07	43	61.28	240	939.87	3.92	74	35.51	240	1622.21	6.76
13	206.05	240	279.54	1.16	44	59.88	240	961.88	4.01	75	35.03	240	1644.22	6.85
14	191.01	240	301.55	1.26	45	58.54	240	983.89	4.10	76	34.57	240	1666.24	6.94
15	178.02	240	323.56	1.35	46	57.26	240	1005.91	4.19	77	34.12	240	1688.25	7.03
16	166.68	240	345.58	1.44	47	56.04	240	1027.92	4.28	78	33.68	240	1710.26	7.13
17	156.70	240	367.59	1.53	48	54.86	240	1049.93	4.37	79	33.25	240	1732.27	7.22
18	147.84	240	389.60	1.62	49	53.73	240	1071.94	4.47	80	32.83	240	1754.28	7.31
19	139.94	240	411.61	1.72	50	52.65	240	1093.95	4.56	81	32.43	240	1776.29	7.40
20	132.84	240	433.62	1.81	51	51.61	240	1115.96	4.65	82	32.03	240	1798.30	7.49
21	126.42	240	455.63	1.90	52	50.62	240	1137.97	4.74	83	31.64	240	1820.31	7.58
22	120.59	240	477.64	1.99	53	49.66	240	1159.98	4.83	84	31.26	240	1842.32	7.68
23	115.28	240	499.65	2.08	54	48.73	240	1181.99	4.92	85	30.90	240	1864.33	7.77
24	110.42	240	521.66	2.17	55	47.84	240	1204.00	5.02	86	30.54	240	1886.35	7.86
25	105.95	240	543.67	2.27	56	46.98	240	1226.02	5.11	87	3737.59	240	15.41	0.06
26	101.82	240	565.69	2.36	57	46.15	240	1248.03	5.20	88	29.84	240	1930.37	8.04
27	98.01	240	587.70	2.45	58	45.35	240	1270.04	5.29	89	29.50	240	1952.38	8.13
28	94.47	240	609.71	2.54	59	44.58	240	1292.05	5.38	90	29.17	240	1974.39	8.23
29	91.18	240	631.72	2.63	60	43.83	240	1314.06	5.48	91	28.85	240	1996.40	8.32
30	88.11	240	653.73	2.72	61	3078.40	240	18.71	0.08	92	28.54	240	2018.41	8.41
31	85.24	240	675.74	2.82	62	36.86	240	1562.68	6.51	93	28.23	240	2040.42	8.50

continued on next page...

PWT24-240V Wattage and Amperage Chart *(continued)*

Max Allowed Length = 140 ft.

94	27.93	240	2062.43	8.59	110	23.85	240	2414.61	10.06	126	20.82	240	2766.79	11.53
95	27.63	240	2084.44	8.69	111	23.64	240	2436.62	10.15	127	20.65	240	2788.80	11.62
96	27.34	240	2106.46	8.78	112	23.43	240	2458.63	10.24	128	20.49	240	2810.81	11.71
97	27.06	240	2128.47	8.87	113	23.22	240	2480.64	10.34	129	20.33	240	2832.82	11.80
98	26.78	240	2150.48	8.96	114	23.02	240	2502.65	10.43	130	20.18	240	2854.83	11.90
99	26.51	240	2172.49	9.05	115	22.81	240	2524.66	10.52	131	20.02	240	2876.84	11.99
100	26.25	240	2194.50	9.14	116	22.62	240	2546.68	10.61	132	19.87	240	2898.85	12.08
101	25.99	240	2216.51	9.24	117	22.42	240	2568.69	10.70	133	19.72	240	2920.86	12.17
102	25.73	240	2238.52	9.33	118	22.23	240	2590.70	10.79	134	19.57	240	2942.87	12.26
103	25.48	240	2260.53	9.42	119	22.05	240	2612.71	10.89	135	19.43	240	2964.88	12.35
104	25.24	240	2282.54	9.51	120	21.86	240	2634.72	10.98	136	19.28	240	2986.90	12.45
105	24.99	240	2304.55	9.60	121	21.68	240	2656.73	11.07	137	19.14	240	3008.91	12.54
106	24.76	240	2326.57	9.69	122	21.50	240	2678.74	11.16	138	19.00	240	3030.92	12.63
107	24.53	240	2348.58	9.79	123	21.33	240	2700.75	11.25	139	18.87	240	3052.93	12.72
108	24.30	240	2370.59	9.88	124	21.15	240	2722.76	11.34	140	18.73	240	3074.94	12.81
109	24.07	240	2392.60	9.97	125	20.99	240	2744.77	11.44					

PWT18-120V Wattage and Amperage Chart

Max Allowed Length = 99 ft.

Feet	Resistance	Wattage	Amps	Feet	Resistance	Wattage	Amps	Feet	Resistance	Wattage	Amps
1	1315.21	10.95	0.09	34	27.32	527.00	4.39	67	13.81	1043.05	8.69
2	541.63	26.59	0.22	35	26.54	542.63	4.52	68	13.60	1058.68	8.82
3	341.03	42.22	0.35	36	25.79	558.27	4.65	69	13.40	1074.32	8.95
4	248.87	57.86	0.48	37	25.09	573.91	4.78	70	13.21	1089.96	9.08
5	195.92	73.50	0.61	38	24.43	589.55	4.91	71	13.02	1105.60	9.21
6	161.55	89.14	0.74	39	23.79	605.19	5.04	72	12.84	1121.23	9.34
7	137.44	104.78	0.87	40	23.19	620.82	5.17	73	12.67	1136.87	9.47
8	119.59	120.41	1.00	41	22.63	636.46	5.30	74	12.49	1152.51	9.60
9	105.84	136.05	1.13	42	22.08	652.10	5.43	75	12.33	1168.15	9.73
10	94.93	151.69	1.26	43	21.57	667.74	5.56	76	12.16	1183.79	9.86
11	86.06	167.33	1.39	44	21.07	683.38	5.69	77	12.01	1199.42	10.00
12	78.70	182.96	1.52	45	20.60	699.01	5.83	78	11.85	1215.06	10.13
13	72.51	198.60	1.66	46	20.15	714.65	5.96	79	11.70	1230.70	10.26
14	67.21	214.24	1.79	47	19.72	730.29	6.09	80	11.55	1246.34	10.39
15	62.64	229.88	1.92	48	19.30	745.93	6.22	81	11.41	1261.97	10.52
16	58.65	245.52	2.05	49	18.91	761.56	6.35	82	11.27	1277.61	10.65
17	55.14	261.15	2.18	50	18.53	777.20	6.48	83	11.13	1293.25	10.78
18	52.02	276.79	2.31	51	18.16	792.84	6.61	84	11.00	1308.89	10.91
19	49.24	292.43	2.44	52	17.81	808.48	6.74	85	10.87	1324.53	11.04
20	46.74	308.07	2.57	53	17.47	824.12	6.87	86	10.74	1340.16	11.17
21	44.48	323.71	2.70	54	17.15	839.75	7.00	87	10.62	1355.80	11.30
22	42.43	339.34	2.83	55	16.83	855.39	7.13	88	10.50	1371.44	11.43
23	40.57	354.98	2.96	56	16.53	871.03	7.26	89	10.38	1387.08	11.56
24	38.85	370.62	3.09	57	16.24	886.67	7.39	90	10.27	1402.72	11.69
25	37.28	386.26	3.22	58	15.96	902.30	7.52	91	10.15	1418.35	11.82
26	35.83	401.89	3.35	59	15.69	917.94	7.65	92	10.04	1433.99	11.95
27	34.49	417.53	3.48	60	15.42	933.58	7.78	93	9.93	1449.63	12.08
28	33.24	433.17	3.61	61	1315.21	10.95	0.09	94	9.83	1465.27	12.21
29	32.08	448.81	3.74	62	14.92	964.86	8.04	95	9.72	1480.90	12.34
30	31.00	464.45	3.87	63	14.69	980.49	8.17	96	9.62	1496.54	12.47
31	29.99	480.08	4.00	64	14.46	996.13	8.30	97	9.52	1512.18	12.60
32	29.05	495.72	4.13	65	14.23	1011.77	8.43	98	9.43	1527.82	12.73
33	28.16	511.36	4.26	66	14.02	1027.41	8.56	99	9.33	1543.46	12.86

PWT18-240V Wattage and Amperage Chart

Max Allowed Length = 199 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	5260.84	240	10.95	0.05	68	54.41	240	1058.68	4.41	134	27.55	240	2090.78	8.71
2	2166.50	240	26.59	0.11	69	53.62	240	1074.32	4.48	135	27.35	240	2106.42	8.78
3	1364.14	240	42.22	0.18	70	52.85	240	1089.96	4.54	136	27.14	240	2122.05	8.84
4	995.47	240	57.86	0.24	71	52.10	240	1105.60	4.61	137	26.94	240	2137.69	8.91
5	783.67	240	73.50	0.31	72	51.37	240	1121.23	4.67	138	26.75	240	2153.33	8.97
6	646.19	240	89.14	0.37	73	50.67	240	1136.87	4.74	139	26.56	240	2168.97	9.04
7	549.75	240	104.78	0.44	74	49.98	240	1152.51	4.80	140	26.37	240	2184.60	9.10
8	478.35	240	120.41	0.50	75	49.31	240	1168.15	4.87	141	26.18	240	2200.24	9.17
9	423.37	240	136.05	0.57	76	48.66	240	1183.78	4.93	142	25.99	240	2215.88	9.23
10	379.72	240	151.69	0.63	77	48.02	240	1199.42	5.00	143	25.81	240	2231.52	9.30
11	344.24	240	167.33	0.70	78	47.41	240	1215.06	5.06	144	25.63	240	2247.16	9.36
12	314.81	240	182.96	0.76	79	46.80	240	1230.70	5.13	145	25.46	240	2262.79	9.43
13	290.03	240	198.60	0.83	80	46.22	240	1246.34	5.19	146	25.28	240	2278.43	9.49
14	268.86	240	214.24	0.89	81	45.64	240	1261.97	5.26	147	25.11	240	2294.07	9.56
15	250.57	240	229.88	0.96	82	45.08	240	1277.61	5.32	148	24.94	240	2309.71	9.62
16	234.61	240	245.52	1.02	83	44.54	240	1293.25	5.39	149	24.77	240	2325.35	9.69
17	220.56	240	261.15	1.09	84	44.01	240	1308.89	5.45	150	24.61	240	2340.98	9.75
18	208.10	240	276.79	1.15	85	43.49	240	1324.53	5.52	151	24.44	240	2356.62	9.82
19	196.97	240	292.43	1.22	86	42.98	240	1340.16	5.58	152	24.28	240	2372.26	9.88
20	186.97	240	308.07	1.28	87	42.48	240	1355.80	5.65	153	24.12	240	2387.90	9.95
21	177.94	240	323.71	1.35	88	42.00	240	1371.44	5.71	154	23.96	240	2403.53	10.01
22	169.74	240	339.34	1.41	89	41.53	240	1387.08	5.78	155	23.81	240	2419.17	10.08
23	162.26	240	354.98	1.48	90	41.06	240	1402.71	5.84	156	23.66	240	2434.81	10.15
24	155.42	240	370.62	1.54	91	40.61	240	1418.35	5.91	157	23.51	240	2450.45	10.21
25	149.12	240	386.26	1.61	92	40.17	240	1433.99	5.97	158	23.36	240	2466.09	10.28
26	143.32	240	401.89	1.67	93	39.73	240	1449.63	6.04	159	23.21	240	2481.72	10.34
27	137.95	240	417.53	1.74	94	39.31	240	1465.27	6.11	160	23.06	240	2497.36	10.41
28	132.97	240	433.17	1.80	95	38.90	240	1480.90	6.17	161	22.92	240	2513.00	10.47
29	128.34	240	448.81	1.87	96	38.49	240	1496.54	6.24	162	22.78	240	2528.64	10.54
30	124.02	240	464.45	1.94	97	38.09	240	1512.18	6.30	163	22.64	240	2544.27	10.60
31	119.98	240	480.08	2.00	98	37.70	240	1527.82	6.37	164	22.50	240	2559.91	10.67
32	116.19	240	495.72	2.07	99	37.32	240	1543.45	6.43	165	22.36	240	2575.55	10.73
33	112.64	240	511.36	2.13	100	36.94	240	1559.09	6.50	166	22.23	240	2591.19	10.80
34	109.30	240	527.00	2.20	101	36.58	240	1574.73	6.56	167	22.10	240	2606.83	10.86
35	106.15	240	542.63	2.26	102	36.22	240	1590.37	6.63	168	21.96	240	2622.46	10.93
36	103.18	240	558.27	2.33	103	35.87	240	1606.01	6.69	169	21.83	240	2638.10	10.99
37	100.36	240	573.91	2.39	104	35.52	240	1621.64	6.76	170	21.71	240	2653.74	11.06
38	97.70	240	589.55	2.46	105	35.18	240	1637.28	6.82	171	21.58	240	2669.38	11.12
39	95.18	240	605.19	2.52	106	34.85	240	1652.92	6.89	172	21.45	240	2685.01	11.19
40	92.78	240	620.82	2.59	107	34.52	240	1668.56	6.95	173	21.33	240	2700.65	11.25
41	90.50	240	636.46	2.65	108	34.20	240	1684.19	7.02	174	21.21	240	2716.29	11.32
42	88.33	240	652.10	2.72	109	33.89	240	1699.83	7.08	175	21.08	240	2731.93	11.38
43	86.26	240	667.74	2.78	110	33.58	240	1715.47	7.15	176	20.96	240	2747.57	11.45
44	84.29	240	683.37	2.85	111	33.27	240	1731.11	7.21	177	20.85	240	2763.20	11.51
45	82.40	240	699.01	2.91	112	32.98	240	1746.75	7.28	178	20.73	240	2778.84	11.58
46	80.60	240	714.65	2.98	113	32.68	240	1762.38	7.34	179	20.61	240	2794.48	11.64
47	78.87	240	730.29	3.04	114	32.40	240	1778.02	7.41	180	20.50	240	2810.12	11.71
48	77.22	240	745.93	3.11	115	32.11	240	1793.66	7.47	181	20.38	240	2825.76	11.77
49	75.63	240	761.56	3.17	116	31.84	240	1809.30	7.54	182	20.27	240	2841.39	11.84
50	74.11	240	777.20	3.24	117	31.56	240	1824.94	7.60	183	20.16	240	2857.03	11.90
51	72.65	240	792.84	3.30	118	31.29	240	1840.57	7.67	184	20.05	240	2872.67	11.97
52	71.25	240	808.48	3.37	119	31.03	240	1856.21	7.73	185	19.94	240	2888.31	12.03
53	69.89	240	824.12	3.43	120	30.77	240	1871.85	7.80	186	19.84	240	2903.94	12.10
54	68.59	240	839.75	3.50	121	30.52	240	1887.49	7.86	187	19.73	240	2919.58	12.16
55	67.34	240	855.39	3.56	122	30.27	240	1903.12	7.93	188	19.62	240	2935.22	12.23
56	66.13	240	871.03	3.63	123	30.02	240	1918.76	7.99	189	19.52	240	2950.86	12.30
57	64.96	240	886.67	3.69	124	29.78	240	1934.40	8.06	190	19.42	240	2966.50	12.36
58	63.84	240	902.30	3.76	125	29.54	240	1950.04	8.13	191	19.32	240	2982.13	12.43
59	62.75	240	917.94	3.82	126	29.30	240	1965.68	8.19	192	19.21	240	2997.77	12.49
60	61.70	240	933.58	3.89	127	29.07	240	1981.31	8.26	193	19.11	240	3013.41	12.56
61	60.68	240	949.22	3.96	128	28.84	240	1996.95	8.32	194	19.02	240	3029.05	12.62
62	59.70	240	964.86	4.02	129	28.62	240	2012.59	8.39	195	18.92	240	3044.68	12.69
63	58.75	240	980.49	4.09	130	28.40	240	2028.23	8.45	196	18.82	240	3060.32	12.75
64	57.82	240	996.13	4.15	131	28.18	240	2043.86	8.52	197	18.73	240	3075.96	12.82
65	56.93	240	1011.77	4.22	132	27.97	240	2059.50	8.58	198	18.63	240	3091.60	12.88
66	56.06	240	1027.41	4.28	133	27.76	240	2075.14	8.65	199	18.54	240	3107.24	12.95
67	55.22	240	1043.04	4.35										

PWT36-120V Wattage and Amperage Chart

Max Allowed Length = 44 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	587.34	120	24.52	0.20	16	26.19	120	549.78	4.58	31	13.39	120	1075.04	8.96
2	241.87	120	59.53	0.50	17	24.62	120	584.80	4.87	32	12.97	120	1110.06	9.25
3	152.30	120	94.55	0.79	18	23.23	120	619.81	5.17	33	12.58	120	1145.08	9.54
4	111.14	120	129.57	1.08	19	21.99	120	654.83	5.46	34	12.20	120	1180.09	9.83
5	87.49	120	164.59	1.37	20	20.87	120	689.85	5.75	35	11.85	120	1215.11	10.13
6	72.14	120	199.60	1.66	21	19.87	120	724.87	6.04	36	11.52	120	1250.13	10.42
7	61.38	120	234.62	1.96	22	18.95	120	759.88	6.33	37	11.20	120	1285.15	10.71
8	53.40	120	269.64	2.25	23	18.12	120	794.90	6.62	38	10.91	120	1320.16	11.00
9	47.27	120	304.66	2.54	24	17.35	120	829.92	6.92	39	10.63	120	1355.18	11.29
10	42.39	120	339.67	2.83	25	16.65	120	864.94	7.21	40	10.36	120	1390.20	11.58
11	38.43	120	374.69	3.12	26	16.00	120	899.95	7.50	41	10.10	120	1425.22	11.88
12	35.15	120	409.71	3.41	27	15.40	120	934.97	7.79	42	9.86	120	1460.23	12.17
13	32.38	120	444.73	3.71	28	587.34	120	24.52	0.20	43	9.63	120	1495.25	12.46
14	30.02	120	479.74	4.00	29	14.33	120	1005.01	8.38	44	9.41	120	1530.27	12.75
15	27.97	120	514.76	4.29	30	13.85	120	1040.02	8.67					

PWT36-240V Wattage and Amperage Chart

Max Allowed Length = 89 ft.

Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps	Feet	Resistance	Voltage	Wattage	Amps
1	2349.34	240	24.52	0.10	31	53.58	240	1075.04	4.48	61	27.10	240	2125.57	8.86
2	967.50	240	59.53	0.25	32	51.89	240	1110.06	4.63	62	26.66	240	2160.58	9.00
3	609.19	240	94.55	0.39	33	50.30	240	1145.08	4.77	63	26.23	240	2195.60	9.15
4	444.55	240	129.57	0.54	34	48.81	240	1180.09	4.92	64	25.82	240	2230.62	9.29
5	349.97	240	164.59	0.69	35	47.40	240	1215.11	5.06	65	25.42	240	2265.64	9.44
6	288.57	240	199.60	0.83	36	46.08	240	1250.13	5.21	66	25.04	240	2300.65	9.59
7	245.50	240	234.62	0.98	37	44.82	240	1285.15	5.35	67	24.66	240	2335.67	9.73
8	213.62	240	269.64	1.12	38	43.63	240	1320.16	5.50	68	24.30	240	2370.69	9.88
9	189.06	240	304.66	1.27	39	42.50	240	1355.18	5.65	69	23.94	240	2405.71	10.02
10	169.57	240	339.67	1.42	40	41.43	240	1390.20	5.79	70	23.60	240	2440.72	10.17
11	153.73	240	374.69	1.56	41	40.41	240	1425.22	5.94	71	23.27	240	2475.74	10.32
12	140.59	240	409.71	1.71	42	39.45	240	1460.23	6.08	72	22.94	240	2510.76	10.46
13	129.52	240	444.73	1.85	43	38.52	240	1495.25	6.23	73	22.63	240	2545.78	10.61
14	120.06	240	479.74	2.00	44	37.64	240	1530.27	6.38	74	22.32	240	2580.79	10.75
15	111.90	240	514.76	2.14	45	36.80	240	1565.29	6.52	75	22.02	240	2615.81	10.90
16	104.77	240	549.78	2.29	46	35.99	240	1600.30	6.67	76	21.73	240	2650.83	11.05
17	98.50	240	584.80	2.44	47	35.22	240	1635.32	6.81	77	21.45	240	2685.85	11.19
18	92.93	240	619.81	2.58	48	34.48	240	1670.34	6.96	78	21.17	240	2720.86	11.34
19	87.96	240	654.83	2.73	49	33.78	240	1705.36	7.11	79	20.90	240	2755.88	11.48
20	83.50	240	689.85	2.87	50	33.10	240	1740.37	7.25	80	20.64	240	2790.90	11.63
21	79.46	240	724.87	3.02	51	32.44	240	1775.39	7.40	81	20.38	240	2825.92	11.77
22	75.80	240	759.88	3.17	52	31.82	240	1810.41	7.54	82	20.13	240	2860.93	11.92
23	72.46	240	794.90	3.31	53	31.21	240	1845.43	7.69	83	19.89	240	2895.95	12.07
24	69.40	240	829.92	3.46	54	30.63	240	1880.44	7.84	84	19.65	240	2930.97	12.21
25	66.59	240	864.94	3.60	55	2349.34	240	24.52	0.10	85	19.42	240	2965.99	12.36
26	64.00	240	899.95	3.75	56	29.53	240	1950.48	8.13	86	19.19	240	3001.00	12.50
27	61.61	240	934.97	3.90	57	29.01	240	1985.50	8.27	87	18.97	240	3036.02	12.65
28	59.38	240	969.99	4.04	58	28.51	240	2020.51	8.42	88	18.76	240	3071.04	12.80
29	57.31	240	1005.01	4.19	59	28.02	240	2055.53	8.56	89	18.54	240	3106.06	12.94
30	55.38	240	1040.02	4.33	60	27.55	240	2090.55	8.71					

4. Inspection/Testing Continued

Test for Heating

1. Install control device and connect to electrical panel box. Install and wire the control device according to manufacturer's instructions.
2. Wire the heating mat(s) to junction box (if needed), and wire the junction box to the thermostat according to the manufacturer's instructions.
3. Turn on the breaker and adjust the thermostat so that it is calling for heat. Refer to the installation sheets provided with the controls for proper setting. After all controls are installed, do not energize the system, except to briefly test operation of all components.
4. After the system has been on for several minutes, run your hand over the heating mats to ensure that they are warm. The system should now operate as designed. Please leave the instruction sheets for the thermostat in a safe place for future reference.
5. Once heating has been verified, turn off the system.

CAUTION:

Ensure that breaker supplying power to the heating mats has been turned off before making electrical connections.

NOTE:

After testing, do not turn on the system for 28 days to allow the thinset and grout to cure. Failure to do so may compromise installation and cause cracking or other damage.

Final Floor Installation

The mats are now ready for tile installation using a latex modified thin-set with a thickness of 3/8" after the tile is embedded. It is recommended to use a plastic notched trowel to help prevent damage to the heating mat surface. Take care during the troweling process to not nick or cut into the mat.

We recommend working with professional flooring installers to make sure proper materials are used and proper installation techniques are followed. Install the floor covering according to the manufacturer's instructions.
Use a digital ohm meter to check the rsistance of the mat(s) and sensor(s) before, during and after the installation of the finished floor covering. Record the reading of Perfectly Warm™ Radiant Heat on the Heating System Checklist & Warranty Registration Form, continuing to check for short circuits caused by nicks or pinches. If possible, take photographs of the mat installation before installing the flooring.

CAUTION:

Flooring materials must be rated for use with electric floor warming systems.

NOTE:

The mats will generate a low, comfortable warmth. If area is cold during installation it is likely that the mats will not seem warm so you will have to rely on the electrical tests. If the mats do not become warm, double-check all wiring and again perform the electrical tests above (after turning off power at the breaker).

4. Inspection/Testing Continued

Tile, Stone, and Marble Installation

When installing Perfectly Warm™ Radiant Heat under tile, stone, or marble, we highly recommend Tile Counil of North America (TCNA) guidelines or ANSI specifications for minimum standards of installation. We recommend latex-modified or epoxy modified mortar and grout, instead of water-based multi-purpose materials.

Select the proper size PLASTIC trowel for the installation of tile or stone. We recommend a minimum 3/8" x 1/4" trowel. This trowel works best for most 1/4" tile.

If you need more information on tile installation, contact TCNA at (864) 646-8453 or visit their Web site at www.tileusa.com.

Place Caution Stickers

Apply caution stickers provided with mats in appropriate locations, as shown below.

CAUTION:

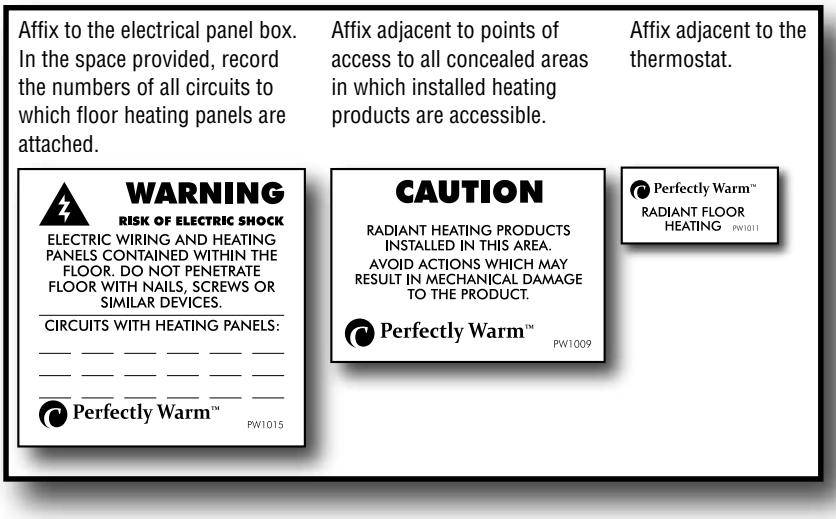
Flooring materials must be rated for use with electric floor warming system.

CAUTION:

Never bang a trowel on the mat to remove excess mortar from the trowel. This could damage the mat.

NOTE:

When installing tile, stone or marble over Perfectly Warm™ Radiant Heat, it is important to maintain a thin-set thickness of 3/8" or less after the tile is embedded, even if the mortar manufacturer allows for thicker installations. Thicker mortar beds can potentially provide sufficient moisture to cause some natural stones to warp or crown.

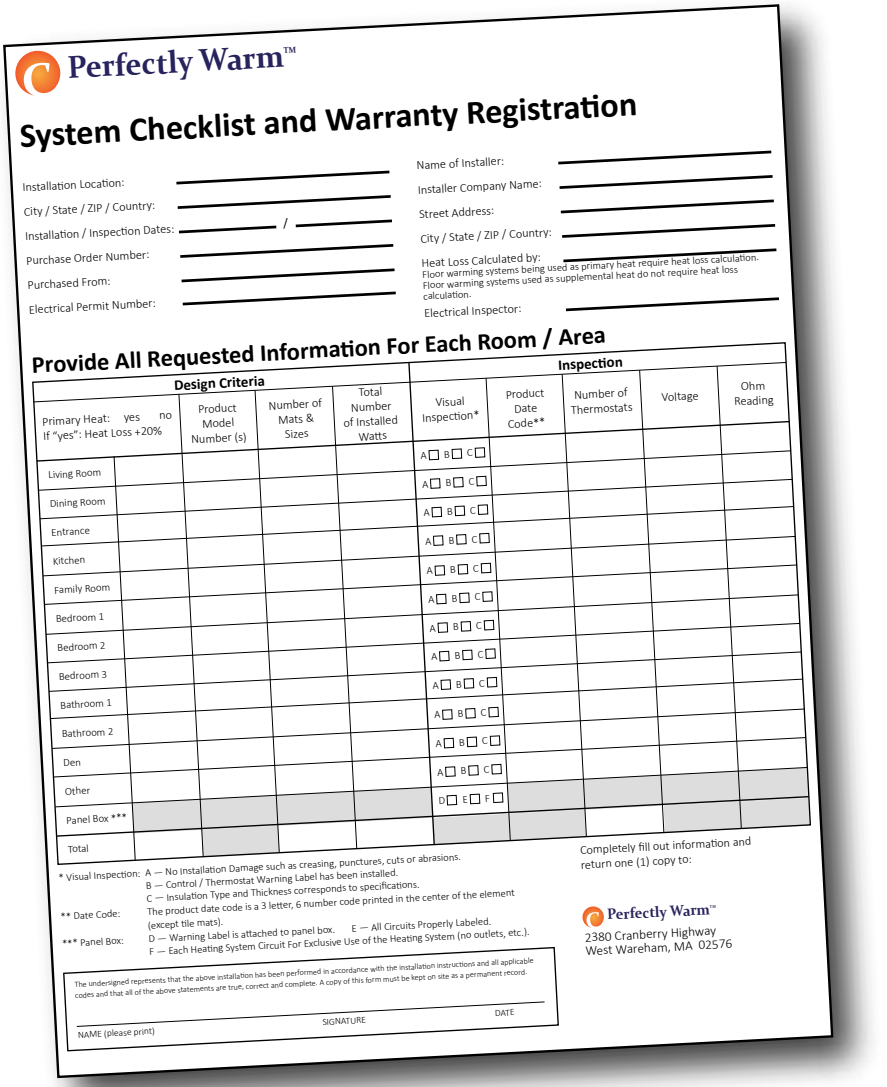


4. Inspection/Testing Continued

Documentation

The System Checklist and Warranty Registration form records vital information about your Perfectly Warm™ Radiant Heat installation. Fill out all requested information on BOTH copies. One copy is returned to the manufacturer to register the installation, and the second copy is for the homeowner's records.

This manual must be attached to the service panel so that it is easily accessible to the homeowner and any repair technicians.



Perfectly Warm™

System Checklist and Warranty Registration

Installation Location: _____
City / State / ZIP / Country: _____
Installation / Inspection Dates: _____ / _____
Purchase Order Number: _____
Purchased From: _____
Electrical Permit Number: _____

Name of Installer: _____
Installer Company Name: _____
Street Address: _____
City / State / ZIP / Country: _____
Heat Loss Calculated by: _____
Floor warming systems being used as primary heat require heat loss calculation. Floor warming systems used as supplemental heat do not require heat loss calculation.
Electrical Inspector: _____

Provide All Requested Information For Each Room / Area

	Design Criteria				Inspection				
Primary Heat: yes no If "yes": Heat Loss +20%		Product Model Number (s)	Number of Mats & Sizes	Total Number of Installed Watts	Visual Inspection*	Product Date Code**	Number of Thermostats	Voltage	Ohm Reading
Living Room					A☐ B☐ C☐				
Dining Room					A☐ B☐ C☐				
Entrance					A☐ B☐ C☐				
Kitchen					A☐ B☐ C☐				
Family Room					A☐ B☐ C☐				
Bedroom 1					A☐ B☐ C☐				
Bedroom 2					A☐ B☐ C☐				
Bedroom 3					A☐ B☐ C☐				
Bathroom 1					A☐ B☐ C☐				
Bathroom 2					A☐ B☐ C☐				
Den					A☐ B☐ C☐				
Other					A☐ B☐ C☐				
Panel Box ***					D☐ E☐ F☐				
Total									

* Visual Inspection: A — No Installation Damage such as creasing, punctures, cuts or abrasions.
B — Control / Thermostat Warning Label has been installed.
C — Insulation Type and Thickness corresponds to specifications.

** Date Code: The product date code is a 3 letter, 6 number code printed in the center of the element (except tile mats).

*** Panel Box: D — Warning Label is attached to panel box. E — All Circuits Properly Labeled.
F — Each Heating System Circuit For Exclusive Use of the Heating System (no outlets, etc.).

The undersigned represents that the above installation has been performed in accordance with the installation instructions and all applicable codes and that all of the above statements are true, correct and complete. A copy of this form must be kept on site as a permanent record.

NAME (please print) SIGNATURE DATE

Completely fill out information and return one (1) copy to:

Perfectly Warm™
2380 Cranberry Highway
West Wareham, MA 02576

4. Inspection/Testing Continued

Troubleshooting

The heating elements used in the Perfectly Warm™ Radiant Heat mats for under tile, stone or marble are laminated within the membrane. All Heating Element connections and terminations are crimped, insulated and well protected within the lamination making one of the most durable heating mat systems on the market. Problems with the system operation that are the result of a damaged or modified mat are not covered under warranty.

It is important that this manual be followed during the installation procedures and that all warnings be followed. Wiring should be performed by a licensed electrician in accordance with all applicable building and electrical codes during the installation as well as for any trouble shooting of the system. Failure to do so voids warranty.

The individual mats with factory connected lead wires provided with each system have ohm readings written on the mat. It is important that these readings be checked, verified and recorded upon receipt of the product and again after the mats have been installed (prior to tile installation). A test of the system to make sure all elements are heating properly is recommended prior to installation of tile. The manufacturer will not be responsible for the replacement of the floor tile if the system operation was not checked and verified prior to installation of the tile.

Symptom	Corrective Actions
Floor Not Warming	Verify power is connected to the system and that the GFCI is not tripped at the thermostat or the breaker is not tripped at the main service panel.
Mat Not Warming	Verify that all leads from all mats are connected together to power source. Areas within a mat that are not heating could be the result of damage and will require the mat to be replaced.
Slow to Heat	Installations on concrete slabs can require a period of several days to warm up to desired temperature especially if the slab is uninsulated in a cold climate. Set Thermostat to maximum heat to allow system to continue running until it becomes warm. Then adjust thermostat down if needed. Verify floor temperature sensor is not directly on top of heating element causing the thermostat to shut off more frequently.
System Too Hot	Adjust thermostat Verify that correct voltage is being applied to heating elements rated for 120V Service. Verify that thermostat has not been bypassed. If necessary, reposition floor temperature sensor.
Thermostat GFCI	If the thermostat trips and will not re-set, check the following: System MUST be on a dedicated branch circuit separate from any other electrical devices which could overload the circuit or create interference issues resulting in the GFCI to trip. Check electrical connections to verify leads from all mats are wired in parallel (black to black / white to white / red to red) and all connections are tight and properly insulated against grounding. Check leads from mats to verify no nicks or damage has occurred during construction that may be causing a short. For further assistance with GFCI problems call 508-291-2000.
Thermostat Issues	Refer to the thermostat manufacturer's documentation.

SECTION 5. Operation

How the System Works

Radiant heat warms your floor, and provides clean, even heat throughout the room by uniformly warming the objects while providing thermal comfort for occupants. There is no need to directly over-heat the air. This is the opposite of how conventional forced hot air or baseboard heating systems work. In other types of heating systems, the large mass of air in a home is heated while the objects remain relatively cool.

Operating the System

Operation of Variable is the same as other heating systems. Just set the thermostat to the desired temperature and the system warms your finished floors and the room. Keep the following things in mind:

- Since each room has its own thermostat, you can individually tailor room temperatures based on activity or occupancy. For instance, if a room is rarely used, you can set its thermostat lower to conserve electricity.
- Before you leave your home for an extended period of time, lower the temperature settings to reduce the power consumption.
- Setting the thermostat to a very high temperature will not make a room warm up faster – it will merely result in the occupants being too hot when the set temperature is ultimately reached.
- High airflow velocities (from open doors or windows or extreme drafts) may make occupants feel cold.
- Routinely test thermostats according to their manufacturer's instructions.

Precautions

Although the Variable system requires no maintenance, there are some things that must be taken into account to ensure that the systems are not damaged. Additional information for remodeling or repair is available by calling 508-291-2000.

- Hitting the electrically conductive portions of a heating panel can result in a potentially dangerous electric shock.
- Piercing the elements will damage them, may present fire hazard and may cause electrical shock.
- If a portion of the floor surface must be replaced, inspect any exposed heating mat for damage that may have occurred while removing the flooring. See page Variable for complete instructions on inspectig the mats.
- Never cover any heated portion of a floor with walls or other permanent structures. This may trap heat and create a potential for overheating.
- If new walls or partitions are added over heating portions of a new floor, the heating mats located under the walls or partitions mst be disconnected from power to avoid a potential for overheating.

5. Operation Continued

Repair/Remodel Information

Before performing any remodeling work near a heated floor, carefully read Sections 1 through 3 of this manual. These sections detail the clearances, procedures, and materials involved as well as the testing procedures required to ensure system safety.

CAUTION: 

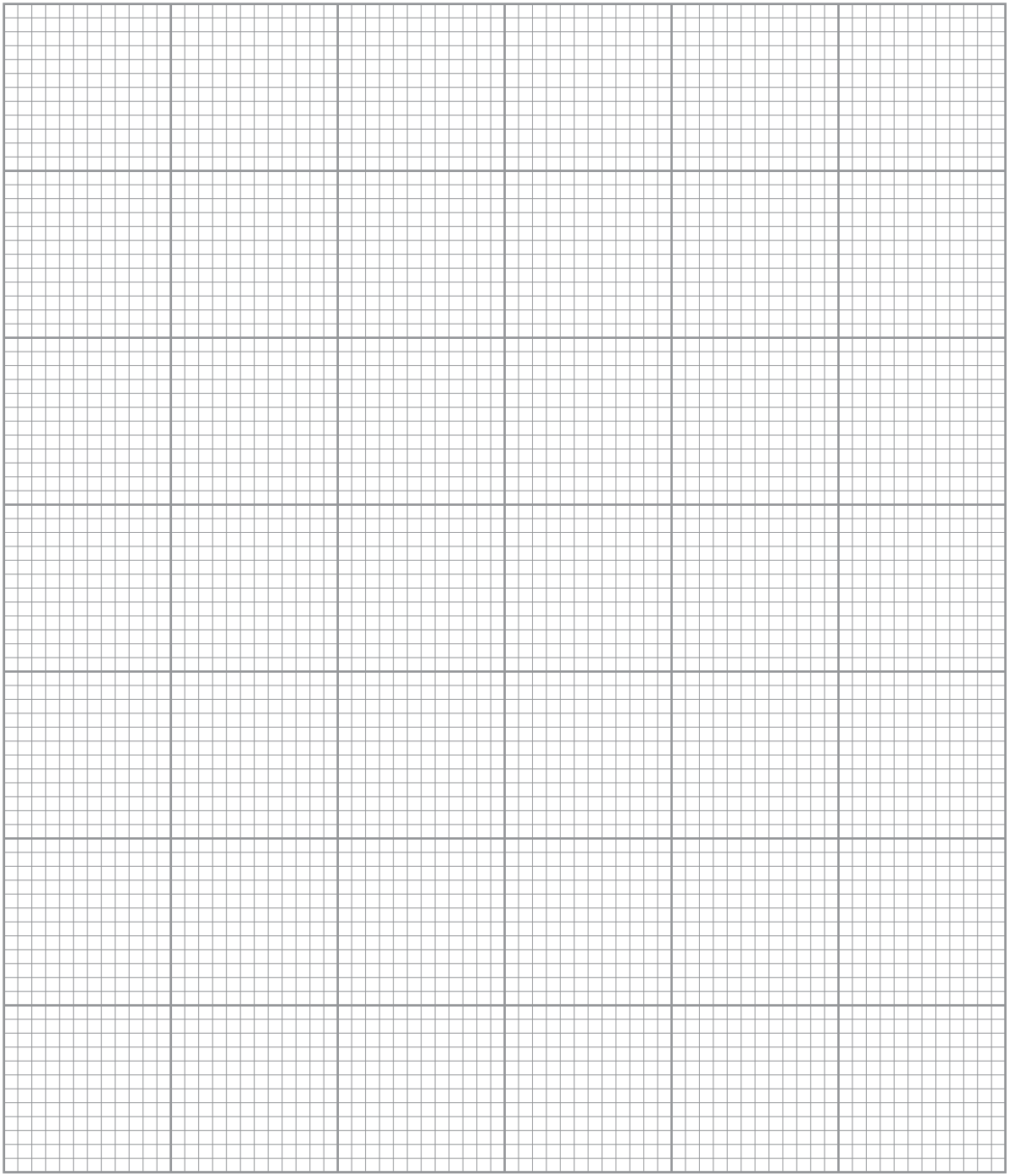
This information must be read and understood by all repair and remodeling technicians who will be working on the house structure in the area of an installed Perfectly Warm™ Radiant Heat or main electrical systems. Failure to follow these guidelines may result in a risk of electric shock or fire hazard.

CAUTION: 

When installing any other materials on or near a heated floor, ensure that no heating elements are punctured by nails, screws, etc.

Notes

Sketch Grid



Perfectly Warm™
Floor Heat

Perfectly Warm™ Radiant Floor heat
Installation and Operation manual
PWFH-A2016

2380 Cranberry Hwy
West Wareham, MA 02576
800-922-9276 (Toll Free) • 508-291-2000 (Ph) • 508-291-2299 (fax)
info@calorique.com • www.calorique.com

Calorique