

Peel & Stick Radiant Heat Film for Tile Floors

INSTALLATION AND OPERATION INSTRUCTIONS

CAUTIONS:

THIS EQUIPMENT SHALL BE INSTALLED ONLY BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE APPARATUS AND THE RISKS INVOLVED.

THE INSTALLATION OF THIS HEATING PRODUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND LOCAL AND NATIONAL CODES.

WARNING - AS DESCRIBED IN THESE INSTRUCTIONS, LEAD WIRES ARE NOT TO BE ROUTED OVER PADS OR COME INTO CONTACT WITH THE HEATING ELEMENTS AS DAMAGE TO SUPPLY CONDUCTOR INSULATION MAY OCCUR IF CONDUCTORS ARE ROUTED TO CONTACT HEATING ELEMENTS. REFER TO INSTALLATION INSTRUCTIONS FOR RECOMMENDED MEANS OF ROUTING SUPPLY CONDUCTORS.

THE TYPE AND THICKNESS OF FLOOR COVERING MATERIALS USED WITH THIS PRODUCT MUST NOT EXCEED A THERMAL INSULATION "R" VALUE OF 2.0.

CAUTION: USE COPPER ONLY AS SUPPLY CONDUCTORS. THERE ARE NO SPECIAL CRIMPING TOOLS REQUIRED FOR THIS PRODUCT.

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NORTH AMERICAN LAMINATE
FLOORING ASSOCIATION

nwfa
NATIONAL WOOD
FLOORING ASSOCIATION

RPA
MEMBER

wfca
WORLDWIDE FLOORING CONFERENCE ASSOCIATION

TCNA
THE COUNCIL ON TILE INSTALLATION, INC.

UL[®] **US**
UL FILE NUMBER E514642
Conforms to UL 499 and IEC
60335-2-10
UL RECOGNIZED



Peel & Stick Radiant Heat Film for Tile Floors

Installation and Operation manual

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Peel & Stick Radiant Heat Film for Tile Floors

UL RECOGNIZED  US UL FILE NUMBER E514043
Conforms to UL 499 and
CSA C22.2 No.72

INSTALLATION AND OPERATION

The Peel & Stick Radiant Heat Film 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 and especially the outside walls remain relatively cool.



The heating mat's edge is left unsealed from the factory so that it can be cut to fit and then sealed for proper moisture proofing. If cutting is not needed, sealing the edge of the mat is still required. Familiarize yourself with sealing the mat's edge on page 10, step 3. Failing to do this step can result in undesired GFCI tripping and will void the warranty.

CAUTION



Read and follow all the installation instructions in this manual before attempting to install Peel & Stick Radiant Heat Film. 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 electricians.

The heating product shall not be installed in closets, on walls, or partitions that extend to the ceiling. Also, should not be installed under or on top of cabinets whose clearance from the ceiling is less than the minimum horizontal dimension of the cabinet to the nearest cabinet edge that is open to the room or area.



The intended use of this product is for floor warming underneath tile, stone, marble and other approved hard surface floor coverings.



25 YEAR LIMITED WARRANTY

MP GLOBAL PRODUCTS, LLC (THE “MANUFACTURER”) WARRANTS TO THE ORIGINAL PURCHASER (THE “OWNER”) THAT THIS RADIANT HEAT FILM FOR USE UNDER FLOATING OR TILE FLOORS (THE “PRODUCT”) will be free of defects in workmanship and materials and will conform in all material respects to any written specification that the Manufacturer 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 the Manufacturer 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 the Manufacturer postage prepaid. If The Manufacturer reasonably determines through examination of the returned shipment that the shipment did not satisfy the above warranty, then AS THE MANUFACTURER EXCLUSIVE LIABILITY AND THE CUSTOMER’S SOLE REMEDY, THE MANUFACTURER 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 THE MANUFACTURER MAY ELECT IN ITS SOLE DISCRETION. If the Manufacturer determines that the function of the Product caused the failure of the overlying finished floor covering, and installation instructions were properly followed during installation, the Manufacturer will repair or replace the finished floor covering at no cost to the customer.

This warranty does not apply if the Manufacturer reasonably determines that the product has been cut improperly, added to or otherwise altered, stored improperly, misused, damaged, or installed not in accordance with the instruction manual supplied by the Manufacturer. The Manufacturer 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 the Manufacturer. Components such as attaching hardware, connecting parts, wire, tape, and other items included in kits or assemblies that are not manufactured by the Manufacturer 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 THE MANUFACTURER WHETHER BY STATUTE, CONTRACT, STRICT LIABILITY, TORT OR OTHERWISE.

THE MANUFACTURER 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. THE MANUFACTURER 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 THE MANUFACTURER’S MAXIMUM LIABILITY EXCEED THE PURCHASE PRICE FOR THE RELEVANT SHIPMENT OF PRODUCT, EXCEPT TO THE EXTENT MADE MANDATORY BY LAW.

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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 the Peel & Stick Radiant Heat Film, 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 Peel & Stick Radiant Heat Film 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 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 place futons, beanbag chairs, or similar furniture on heated floors. Furniture must have a one inch clearance from the floor.

SECTION 1. Introduction

The Peel & Stick Radiant Heat Film mats are a unique floor heating system with anti-fracture membrane installed under thin-set installations of tile, stone, and marble. Completely unseen, Peel & Stick Radiant Heat Film combines easy release liner installation with anti-fracture protection to provide warmth and comfort to tile, stone, and marble. Peel & Stick Radiant Heat Film is a safe and efficient electric floor warming product for interior applications. It cannot be used for exterior snow melting applications. It is intended for installation below tile, stone, marble, and other masonry flooring materials in residential and moderate commercial installations.

Peel & Stick Radiant Heat Film 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. Peel & Stick Radiant Heat Film 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. Peel & Stick Radiant Heat Film’s efficiency is maximized with a well insulated sub floor.

Features:

- 0.03” 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” and 36” widths in standard kit lengths or custom lengths
- 2-in-1 Kits are available in 18” and 36” widths and feature factory attached leads on both ends of mat. Designed to be cut apart to desired lengths for less waste and versatile coverage.
- 120V or 240V
- Thermostat controlled
- Warranted to be free of defects in manufacture for a period of 25 years



How to Use This Manual

This manual is organized into four sections:

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

Before You Begin

- The heating mat's edge is left unsealed from the factory so that it can be cut to fit and then sealed for proper moisture proofing. If cutting is not needed, sealing the edge of the mat is still required. Familiarize yourself with sealing the mat's edge on page 10, step 3.
- Peel & Stick Radiant Heat Film should be installed on properly prepared stable subfloors. Do not use glue, nails, or other mechanical fasteners
- Peel & Stick Radiant Heat Film 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 underlayment.
- All wiring, fuses and/or circuit breakers must conform to National Electrical Code requirements.
- Maximum thermal resistance permitted above Peel & Stick Radiant Heat Film is R-1.5.
- Materials which may not contact Peel & Stick Radiant Heat Film include any sheet vinyl or linoleum floor coverings.
- All wiring must run through conduits to junction boxes.

1. Introduction Continued

NEVER Do the Following:

- Never band a trowel on the heating mat or lead wires to remove excess mortar from it.
- Never attempt to repair Peel & Stick Radiant Heat Film. If it is damaged, call 888-379-9695 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 remove the nameplate label from the power leads.
- Never allow solvent based products such as sealers or sealants (including silicone) to come in contact with the membrane.
- Never install mats on subfloors where moisture vapor emissions rate is above 4 lbs per 1000 sqft per 24 hours per a Calcium Chloride test method.

ALWAYS Do the Following:

- Protect the circuit supplying power to the Peel & Stick Radiant Heat Film mats with a ground fault circuit interrupter (GFCI).
- Install floor sensor.
- Completely cover the heating mats and factory connections in mortar (tile and stone) or glue (wood and LVT that is 4mm or thicker) or self-leveling underlayment (laminated and non-masonry) materials.
- 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.



CAUTION:

The heating mat's edge is left unsealed from the factory so that it can be cut to fit and then sealed for proper moisture proofing. Even if cutting is not needed, sealing the edge of the mat is still required as it is not pre-sealed out of the box! Familiarize yourself with sealing the mat's edge on page 10, step 3. Failing to do this step can result in undesired GFCI tripping and will void the warranty.

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 up to 5” 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. Accurate dimensions are required for the proper size selection.

For installations over wooden sub-floors, be certain the sub-floor is free from any defects, excess wear, warping, cracks, or damage of any kind; and it complies with the required building code specifications. After confirming the sub-floor is satisfactory, clean it thoroughly so it is free from any debris and is smooth for the anti-fracture membrane to completely adhere. There should not be any air bubbles or creases in the mat prior to completing the tile insulation caused by an unclean or uneven sub-floor surface.

If the sub-floor is not useable to attain a proper installation a backer board should be placed on top and the material installed on a clean backer board.



NOTE:

The heating mats can only be cut to fit length. Do not cut or notch to fit around any obstructions or penetrations such as door openings or floor registers.

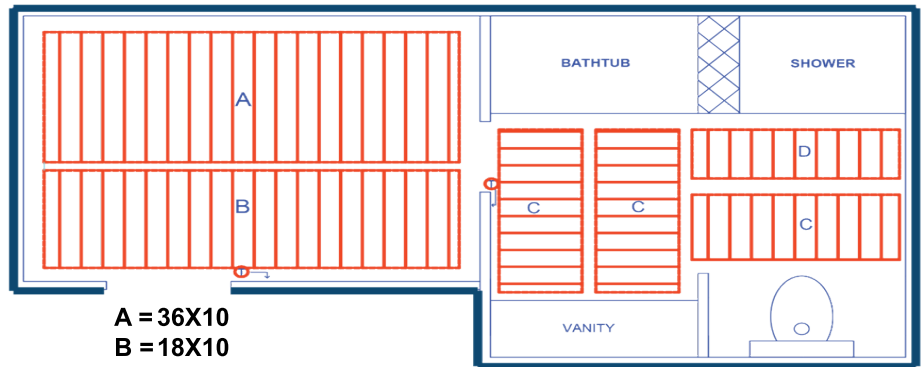
Sketch the System Layout

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 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.



- A = 36X10
- B = 18X10
- C = 18X5
- D = 18 X5

2. Designing the Installation Continued

Sketch the System Layout

The fuse or circuit breaker used must be rated for a maximum of 20 amperes (no greater than 15 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 Peel & Stick Radiant Heat Film.



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, near the center of the room to allow the connection leads to reach. A 3” deep box is recommended for the thermostat.

Heat Loss Calculations

For installations where Peel & Stick Radiant Heat Film 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 & ventilation specialist. The building professional must determine if the output of product 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.

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.



NOTE:

The product must be installed using a thermostat which is approved by the manufacturer. For a list of approved thermostat devices, contact manufacturer. USE OF ANY OTHER THERMOSTAT OR CONTROL DEVICE WILL VOID THE MANUFACTURER'S WARRANTY.

SECTION 3. Installation

Preparing the Job Site

1. Ensure the job site is clean before working with the Peel & Stick Radiant Heat Film, free of any nails, screws and other sharp debris that could damage the mats.
 2. Tile flooring installations must meet subfloor requirements set forth by the Tile Council of North America (TCNA).
-



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 not be used.



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



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).

Installations over non-insulated concrete subfloors may require a longer period of time to adjust to your desired temperature.

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 UL1683.



CAUTION:

The heating mat's edge is left unsealed from the factory so that it can be cut to fit and then sealed for proper moisture proofing. Even if cutting is not needed, sealing the edge of the mat is still required as it is not pre-sealed out of the box! Familiarize yourself with sealing the mat's edge on page 10, step 3. Failing to do this step can result in undesired GFCI tripping and will void the warranty.

3. Installation Continued

What You Will Need

- Peel & Stick Radiant Heat Film mats
- Thermostat: An approved thermostat
- Kapton Discs and Warning Labels (included in kits)
- GFCI Breaker (if not part of the thermostat)
- Junction Boxes: Minimum of two boxes required for each room or area. One box (2x4 inch) required for thermostat, one box (4x4 inch) required for electrical connections.
- Tools: Digital ohm meter (multi-meter), wire stripper, screw driver, wood chisel, knife
- Tile installation products (3/8" x 1/4" or greater plastic trowel, mortar, backer board, tile, etc.)
- 12/2 Romex

Electrical Installation



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.

Step 1. GFCI Installation

Peel & Stick Radiant Heat Film mats must be protected by a Class A 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. Never double protect the circuit with a GFCI at the thermostat and at the circuit breaker box. Follow all local building and electrical codes. Typical Amperage Requirement: 120 VAC Peel & Stick Radiant Heat Film : 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. A power module is a relay or non-controlling thermostat and must be treated as such. It allows the expansion of the controlled area that the main thermostat can control, but it must be placed on it's own 20 amp dedicated circuit and do not load the thermostat control with more than 15 amps. The National Electrical Code specifics 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 Peel & Stick Radiant Heat Film Tile Heat.

Step 3. Install Electrical Boxes

Install Junction box for the control device (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.

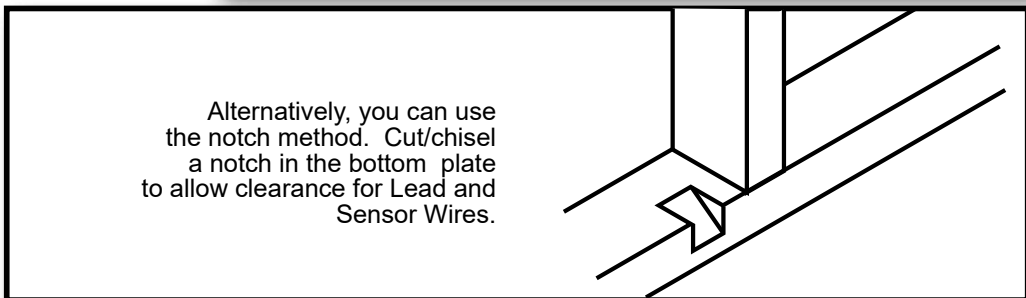
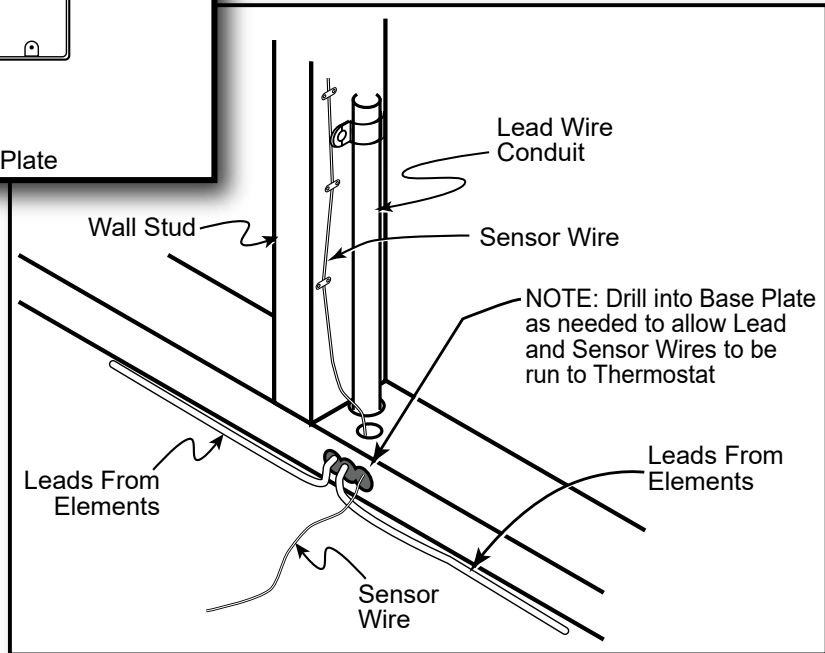
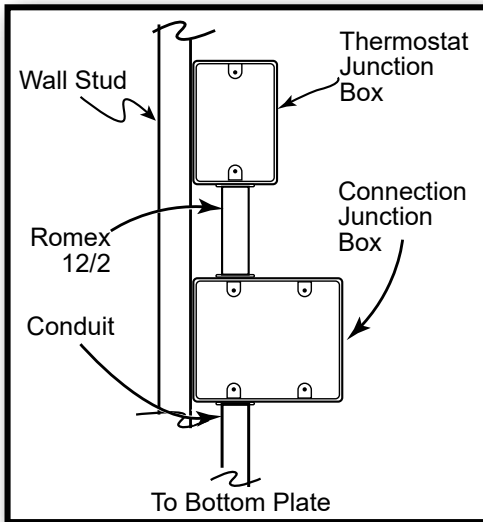
Step 4. Bottom Plate Work

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

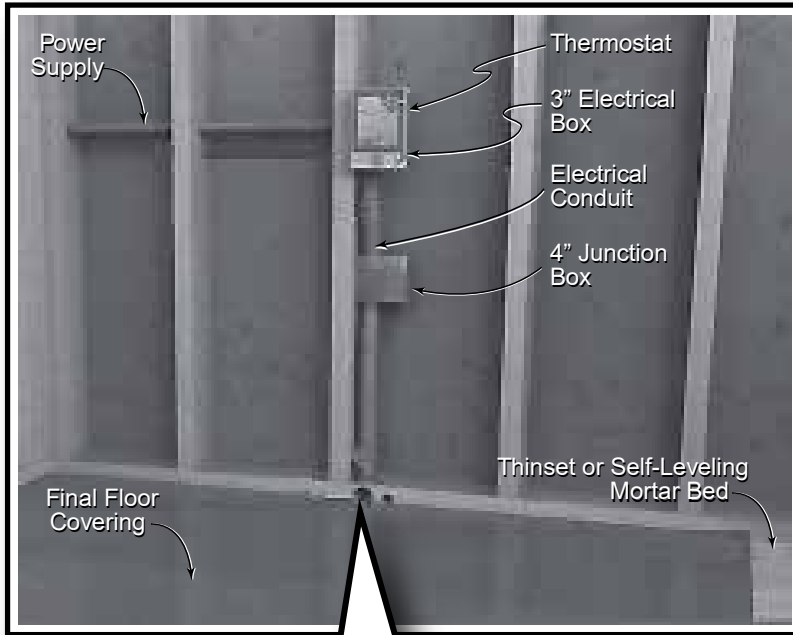
Route the power leads from the thermostat down the wall cavity through opening in the bottom of plate to connect the mats.

3. Installation Continued

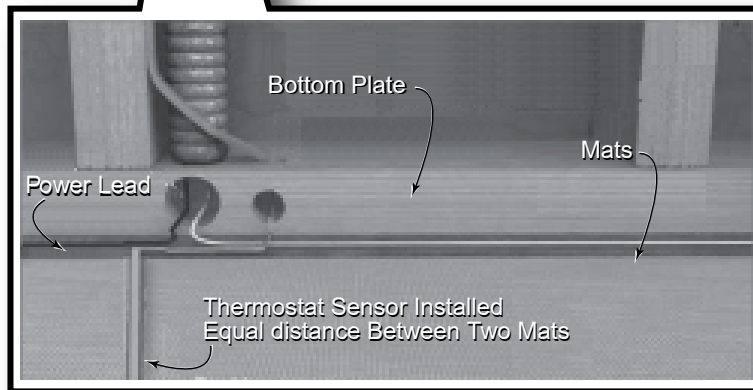


3. Installation Continued

Typical Installation



Bottom Plate Cutouts



3. Installation Continued

Step 6. Install Thermostat Sensor

** if thermostat comes with floor 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. 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. Butt the sensor up against the side of the mat for best results. **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.

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 $\pm 3\%$ from the recorded readings on each mat, do not install the mat and contact your supplier for assistance. ***The heating mat's edge is left unsealed from the factory so that it can be cut to fit and then sealed for proper moisture proofing. Even if cutting is not needed, sealing the edge of the mat is still required as it is not pre-sealed out of the box! Familiarize yourself with sealing the mat's edge on page 10, step 3. Failing to do this step can result in undesired GFCI tripping and will void the warranty.***

Step 2. Preparing the Stable Sub-floor

Clear the floor of all debris, nails, etc. so the floor is smooth, clean and dry. After confirming the sub-floor is satisfactory, clean it thoroughly so it is free from any debris and is smooth for the anti-fracture membrane to completely adhere. There should not be any air bubbles or creases in the mat caused by an unclean or uneven sub-floor surface. *Please refer to Page 3 for proper sub-floor requirements.*



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.

Cutting & Customizing

Step 1



Cut the mat to the required length

It is important to only cut BETWEEN the Black Stripes. Do NOT cut into them as this will cause the GFCI to trip.

Step 2



Terminate the end with green insulating discs

Cut back one black heat stripe from both sides of the panel making sure not to cut into black stripe. Fold one Kapton Insulating Disk, (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 figure.



Step 2a. 2-in-1 Radiant Film Mat for Tile Preparations

Since the boxed kit for the 2-in-1 mat is designed to create 2 mats, both ends of the kit length have factory installed lead wires. The end result is it will create 2 mats out of 1 boxed length. The mat MUST be cut into 2 desired lengths and the flap edges must be sealed properly in order for the two mats to operate correctly (See step 3 for sealing the heater). Similar to all the previous steps in the cutting and customizing section you will need to properly prepare the 2-in-1 as follows:

1. Using the diagram you made earlier, cut the heating element into 2 desired lengths using a scissors. Ensure not to cut into any black stripes and stay only on the dotted line when cutting to lengths.
2. Cut back one black heat stripe from both ends of the panel as shown above. Insulate the 2 created mat cut ends with the supplied Kapton Disks on the exposed bus bars. There will be 4 bus bars to cover after the cut.
3. Seal the heater by removing the flap release liners as explained in step 3 in the cutting and customizing section.

Step 3 Sealing the heater by removing the liners.

**This step must be done regardless if you are cutting the mat or not. Otherwise it will lead to nuisance tripping of the GFCI and void the warranty.*



Fold back and crease the top "flap" on each end of the heating panel(s).



Peel back the bottom release liner on the inside of the flap and adhere the heating element by pressing down firmly.



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.

Proceed with the rest of the steps for installation on the following pages.

Check the resistance reading again to the new customized size.

3. Installation Continued

Step 3. Laying the Mats

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.
7. Make sure to seal the flaps on each side of the mat(s).
See page 10, Step 3 for directions.



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.

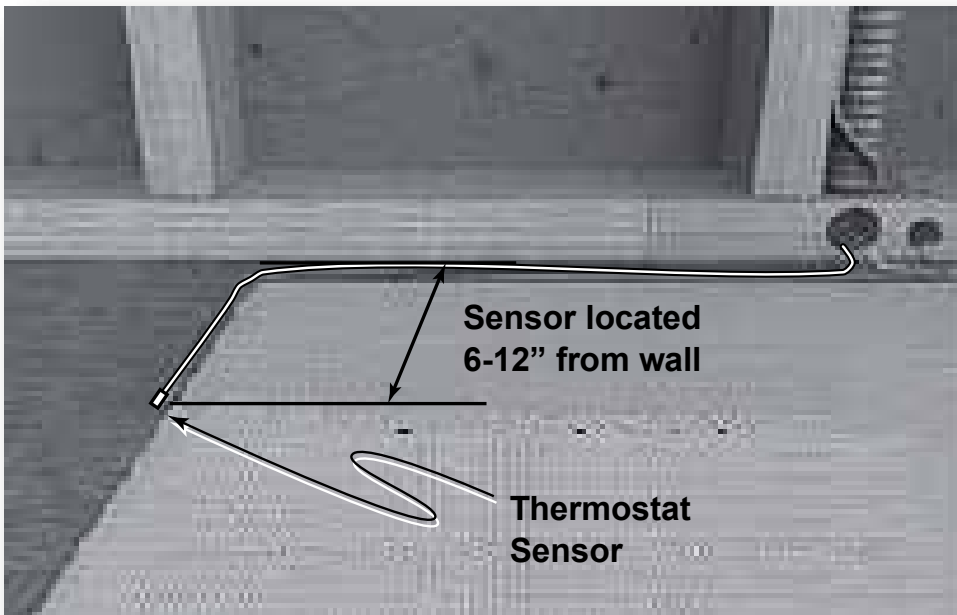
3. Installation Continued

Step 4. 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. The sensor should be placed within 1 inch from the edge of the side of the mat. 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 5. Connect the Electrical Leads

Now, depending upon your wire lead installation, route the lead wires from each of the 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. If thinsetting over backer board or slab, 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 the technical hotline at 888-WARM-PAD or email info@MPGlobalProducts.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 $\pm 5\%$ of the indicated value on the mat then call 888-WARM-PAD. 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.

120V

Size	Amps	Watts	Resistance (Ohms)		
			Low Limit	Nominal	High Limit
1.5x1	0.15	18	760.00	800.00	880.00
1.5x2	0.3	36	380.00	400.00	440.00
1.5x3	0.45	54	253.33	266.67	293.33
1.5x4	0.6	72	190.00	200.00	220.00
1.5x5	0.75	90	152.00	160.00	176.00
1.5x6	0.9	108	126.67	133.33	146.67
1.5x7	1.05	126	108.57	114.29	125.71
1.5x8	1.2	144	95.00	100.00	110.00
1.5x9	1.35	162	84.44	88.89	97.78
1.5x10	1.5	180	76.00	80.00	88.00
1.5x11	1.65	198	69.09	72.73	80.00
1.5x12	1.8	216	63.33	66.67	73.33
1.5x13	1.95	234	58.46	61.54	67.69
1.5x14	2.1	252	54.29	57.14	62.86
1.5x15	2.25	270	50.67	53.33	58.67
1.5x16	2.4	288	47.50	50.00	55.00
1.5x17	2.55	306	44.71	47.06	51.76
1.5x18	2.7	324	42.22	44.44	48.89
1.5x19	2.85	342	40.00	42.11	46.32
1.5x20	3	360	38.00	40.00	44.00
3x1	0.3	36	380.00	400.00	440.00
3x2	0.6	72	190.00	200.00	220.00
3x3	0.9	108	126.67	133.33	146.67
3x4	1.2	144	95.00	100.00	110.00
3x5	1.5	180	76.00	80.00	88.00
3x6	1.8	216	63.33	66.67	73.33
3x7	2.1	252	54.29	57.14	62.86
3x8	2.4	288	47.50	50.00	55.00
3x9	2.7	324	42.22	44.44	48.89
3x10	3	360	38.00	40.00	44.00
3x11	3.3	396	34.55	36.36	40.00
3x12	3.6	432	31.67	33.33	36.67
3x13	3.9	468	29.23	30.77	33.85
3x14	4.2	504	27.14	28.57	31.43
3x15	4.5	540	25.33	26.67	29.33
3x16	4.8	576	23.75	25.00	27.50
3x17	5.1	612	22.35	23.53	25.88
3x18	5.4	648	21.11	22.22	24.44
3x19	5.7	684	20.00	21.05	23.16
3x20	6	720	19.00	20.00	22.00
3x21	6.3	756	18.10	19.05	20.95
3x22	6.6	792	17.27	18.18	20.00
3x23	6.9	828	16.52	17.39	19.13
3x24	7.2	864	15.83	16.67	18.33
3x25	7.5	900	15.20	16.00	17.60

240V

Size	Amps	Watts	Resistance (Ohms)		
			Low Limit	Nominal	High Limit
1.5x1	0.075	18	3040.00	3200.00	3520.00
1.5x2	0.15	36	1520.00	1600.00	1760.00
1.5x3	0.225	54	1013.33	1066.67	1173.33
1.5x4	0.3	72	760.00	800.00	880.00
1.5x5	0.375	90	608.00	640.00	704.00
1.5x6	0.45	108	506.67	533.33	586.67
1.5x7	0.525	126	434.29	457.14	502.86
1.5x8	0.6	144	380.00	400.00	440.00
1.5x9	0.675	162	337.78	355.56	391.11
1.5x10	0.75	180	304.00	320.00	352.00
1.5x11	0.825	198	276.36	290.91	320.00
1.5x12	0.9	216	253.33	266.67	293.33
1.5x13	0.975	234	233.85	246.15	270.77
1.5x14	1.05	252	217.14	228.57	251.43
1.5x15	1.125	270	202.67	213.33	234.67
1.5x16	1.2	288	190.00	200.00	220.00
1.5x17	1.275	306	178.82	188.24	207.06
1.5x18	1.35	324	168.89	177.78	195.56
1.5x19	1.425	342	160.00	168.42	185.26
1.5x20	1.5	360	152.00	160.00	176.00
3x1	0.15	36	1520.00	1600.00	1760.00
3x2	0.3	72	760.00	800.00	880.00
3x3	0.45	108	506.67	533.33	586.67
3x4	0.6	144	380.00	400.00	440.00
3x5	0.75	180	304.00	320.00	352.00
3x6	0.9	216	253.33	266.67	293.33
3x7	1.05	252	217.14	228.57	251.43
3x8	1.2	288	190.00	200.00	220.00
3x9	1.35	324	168.89	177.78	195.56
3x10	1.5	360	152.00	160.00	176.00
3x11	1.65	396	138.18	145.45	160.00
3x12	1.8	432	126.67	133.33	146.67
3x13	1.95	468	116.92	123.08	135.38
3x14	2.1	504	108.57	114.29	125.71
3x15	2.25	540	101.33	106.67	117.33
3x16	2.4	576	95.00	100.00	110.00
3x17	2.55	612	89.41	94.12	103.53
3x18	2.7	648	84.44	88.89	97.78
3x19	2.85	684	80.00	84.21	92.63
3x20	3	720	76.00	80.00	88.00
3x21	3.15	756	72.38	76.19	83.81
3x22	3.3	792	69.09	72.73	80.00
3x23	3.45	828	66.09	69.57	76.52
3x24	3.6	864	63.33	66.67	73.33
3x25	3.75	900	60.80	64.00	70.40

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, 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 heat is a gentle heat and will only heat up slightly until the floor is installed. It will not get hot to the touch. Just a slight warm feeling. 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 maximum 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 or cold lead wires. A continuous circuit monitor alarm can be used to alarm you if the cold lead wires have been cut during the installation. Damaged cold leads can lead to GFCI tripping issues and/or the mat not working. It is best to be sure you haven't damaged the cold leads before the floor is installed.

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 resistance of the mat(s) and sensor(s) before, during and after the installation of the finished floor covering. Record the reading of Peel & Stick Radiant Heat Film[®] Peel & Stick Radiant Heat Film 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 Peel & Stick Radiant Heat Film under tile, stone, or marble, we highly recommend Tile Council 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.


Use full coverage of thin set with no voids. Spot Bonding (Dot Mounting), and leaving large voids, is unacceptable and will lead to a crunching noise where the heat mats are installed. Thin set must be installed following TCNA/ANSI standards. Spot bonding of tile that only gives partial contact leaving large voids is not an acceptable method for tile installed on floors with thin-set mortars.

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.

Affix to the electrical panel box. In the space provided, record the numbers of all circuits to which floor heating mats are attached.	Affix adjacent to points of access to all concealed areas in which installed heating products are accessible.	Affix adjacent to the thermostat.
 WARNING RISK OF ELECTRIC SHOCK ELECTRIC WIRING AND HEATING PANELS CONTAINED WITHIN THE FLOOR. DO NOT PENETRATE FLOOR WITH NAILS, SCREWS OR SIMILAR DEVICES. CIRCUITS WITH HEATING MATS : _____ _____ _____	CAUTION RADIANT HEATING PRODUCTS INSTALLED IN THIS AREA. AVOID ACTIONS WHICH MAY RESULT IN MECHANICAL DAMAGE TO THE PRODUCT.	RADIANT FLOOR HEATING

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 Peel & Stick Radiant Heat Film, 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 Peel & Stick Radiant Heat Film 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.

Radiant Heat Film System Checklist and Warranty Registration

Installation Location: _____ Name of Installer: _____
 City / State / ZIP / Country: _____ Installer Company Name: _____
 Installation / Inspection Dates: _____ / _____ Street Address: _____
 Purchase Order Number: _____ City / State / ZIP / Country: _____
 Purchased From: _____
 Electrical Permit Number: _____ Heat Loss Calculated by: _____
 Electrical Inspector: _____
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.

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 <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Dining Room				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Entrance				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Kitchen				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Family Room				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Bedroom 1				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Bedroom 2				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Bedroom 3				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Bathroom 1				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Bathroom 2				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Den				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Other				A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/>				
Panel Box ***				D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/>				
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).
 E — All Circuits Properly Labeled.

*** Panel Box: D — Warning Label is attached to panel box. 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.

Radiant Heat Film

NAME (please print) _____ SIGNATURE _____ DATE _____

4. Inspection/Testing Continued

Troubleshooting

The heating elements used in the individual Peel & Stick Radiant Heat Film 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 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 circuit breaker is not tripped at the main service panel. Ensure the right voltage is applied to the purchased mats.
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 cuts have occurred during construction that may be causing a short. For further assistance with GFCI problems call 1-800-922-9276.
Thermostat Issues	Refer to the thermostat manufacturer's documentation.

SECTION 5. Operation

How the System Works

The 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 (and especially the outside walls) 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 888-379-9695.

- 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 inspecting 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 must be disconnected from power to avoid a potential for overheating.

Sketch Grid





Peel & Stick Radiant Heat Film for Tile Floors

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