

# SNO\*MELTER Mat Installation Instructions



## READ CAREFULLY

- Read and follow all instructions carefully.
- As with all electrical apparatus, misuse or damage during installation or operation could cause a potentially hazardous situation.
- For additional information concerning the use or installation of this equipment, contact Easy Heat immediately.
- All installations must conform to Article 426 of the National Electrical Code or Part 1 of the Canadian Electrical Code and the paver manufacturer's instructions and the guidelines of the Interlocking Concrete Pavement Institute (ICPI), Tech Spec Number 12.

## DESCRIPTION

Easy Heat Sno\*Melter Mats are designed to melt snow and ice in outdoor locations, such as driveways, parking ramps, sidewalks, steps, etc. The mats are expected to be completely embedded in asphalt or concrete surfaces. For other types of surface materials, contact Easy Heat for application advice.

Easy Heat Snow Melting mats can be installed under pavers. The intended installations are residential walks, patios, and driveways. For heavier duty commercial applications, please consult Easy Heat.

Sno\*Melter mats contain an electrical heating element designed to provide a fixed amount of heat. When connected to appropriate system voltage, and when a system control detects the presence of ice or snow, Sno\*Melter mats are energized. Then, heat from Sno\*Melter mats increases the surface temperature of the pavement to above freezing, melting snow or ice on the surface. When controlled by Easy Heat controls, Sno\*Melter mats provide economical and reliable snow and ice melting performance.

Sno\*Melter mats are embedded in conjunction with the paving installation. Some control and accessory devices may also require installation at this same time. Sno\*Melter mats are comprised of a single length of heating cable formed into a rectangular shape (except custom mats can be almost any shape) and secured in this shape by polymer carrier strands fused to the cable. Cold leads are factory connected to the mat and are available in various lengths to suit the location of electrical connection boxes. Sno\*Melter mats are available in both standard and custom sizes (length, width, power, voltage, etc.).

Thermal insulation is not required beneath Sno\*Melter mats, but will improve the performance and operating cost efficiency of the installation by reducing back losses. Consult with architect/engineer to ensure structural integrity of any thermal insulation.

## PLANNING

### P1. INFORMATION

Each installation must have a Mat Layout Plan (MLP) and Mat Wiring Plan (MWP) prior to beginning the installation. This information will ensure that all necessary mats are available at the site prior to paving, and that all mats correspond to the installation requirements (shape, power supply voltage, etc.).

The MLP must clearly identify the following:

- location and tag number of each mat
- routing of cold leads for each mat
- location of all junction boxes
- routing of all conduit
- location of all controls/sensors
- location of all drains, pipes, and similar obstructions.
- pavement type
- expansion and control joints
- areas which may be drilled in the future for fastening of surface mounted structures, such as hand railings, signs, bollards, parking bumpers, etc.

The MWP must clearly identify the following:

- connection details of heat mats, controls/sensors and power supply
- identification of each mat, control/sensor, junction box, etc.
- branch circuit ratings.

Contact Easy Heat if this information is not available or is incomplete.

### P2. MAT SIZES

The Sno\*Melter mat layout must be designed to cover the area to be protected, and allowance must be made for obstructions, such as light poles, expansion joints, control joints, etc. In some cases such obstructions can be accommodated by modifying mat shape see "Mat Shape Alterations" Figures, 3 & 4.

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## STANDARD MAT DESIGN

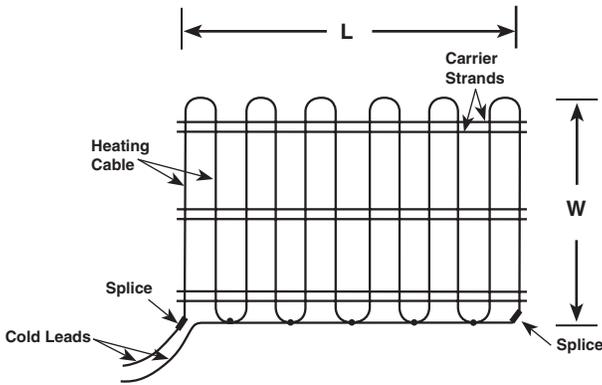


FIGURE 1

### P3. MAT LAYOUT

Mats must be laid in accordance with the Mat Layout Plan (MLP) to which they were manufactured: this plan must be available at the job site. Identify location for expansion and control joints. Mats must not be positioned through expansion and control joints. Concrete forms may be inaccurate, so allow 2-4" (50-100mm) on each side of the mats for clearance. Allow approximately 4 inches (100mm) between adjacent mats at expansion and control joints. For asphalt, mats must be placed at least 12" (300mm) in from edges to accommodate variations in edging. Adjacent mats may be positioned within 2" (50mm), but must not touch or overlap. Mats must not be placed under areas to be drilled in the future for fastening of surface mounted structures, such as hand railings.

### P4. CONTROL / EXPANSION JOINTS

Control joints are typically indentations in a concrete surface along which cracks are intended to form. The indentations may be formed by special trowel prior to hardening of the concrete, or by cutting with a special concrete saw after concrete has set. Cracking at control joints and subsequent movement of adjacent sections could damage a mat crossing a control joint; therefore, mats must not be intentionally positioned through control joints. In case of unintentional shifting of mats during pour, control joints must not be sawn closer than one inch (25mm) above mats to ensure that mat heater cable is not damaged by the saw.

Expansion joints are, typically, formal separations between sections of concrete, with some flexible material forming the separation which then absorbs any thermal expansion in the concrete section. Movement of adjacent sections could damage a mat crossing an expansion joint, hence, mats must not be positioned through expansion joints.

### P5. WIRING

Appropriate wiring of all mats must be completed according to the Mat Wiring Plan (MWP). Conduit must be used to protect the non-heating leads at the exit from the installation area to the junction boxes. All necessary conduit and other wiring devices to be installed within the surface must be available prior to beginning mat/ surface installation.

### P6. JUNCTION BOXES/CONDUIT

In most cases the ideal location for junction boxes is indoors with at least 18" (450mm) of accessible mat leads within the box. When planning the location of the junction boxes it is important that at least one foot (300mm) of mat cold lead remains embedded in the asphalt or pavement. Junction boxes and conduit should be located so that they can accommodate the maximum number of mat leads expected to be routed to/ through them. Insulating bushing must be used to protect the cold lead where it enters conduit.

### P7. CONTROLS/WIRING

Controls/wiring must be installed according to the MWP and MLP. (Some controls include devices required to be installed in the heated surface). All wiring must conform to Local and National Electrical Codes. If the mats are controlled simply by manual electrical switches, it is recommended that a pilot lamp be installed on the load side of each switch so that there is a visual indication when the mats are energized.

### P8. ASPHALT/CONCRETE INSTALLATION

The pavement must be installed in accordance with proper construction practices, including allowance for drainage, reinforcement, etc. Improper pavement installations can result in unstable surfaces which can crack/move and break mat heating cables; warranty is void in such situations. Concrete installations must not contain aggregate greater than .75" (20mm).

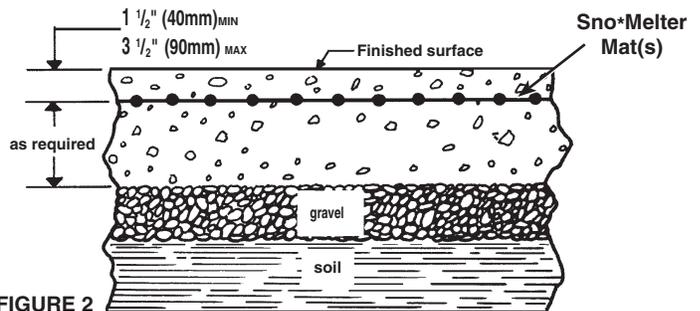


FIGURE 2

CANADIAN INSTALLATIONS: 2" (50mm) MIN concrete, 1" (25mm) MIN asphalt

The distance from the finished surface to the level at which the mats are placed is defined as the "mat placement depth." The mat placement depth must not be greater than 3½" (90mm) (to ensure adequate surface heating) nor less than 1½" (40mm) (Canadian installations are subject to a 2" (50mm) minimum in concrete and 1" (25mm) minimum in asphalt) to ensure complete containment of the mats within the surface covering as shown in Figure 2.

Typically, a base layer of concrete is poured and leveled, then the mats are immediately positioned, and then the remaining concrete is poured. It is also possible to allow the base layer of concrete to set, then position the mats and complete the pour. If the second pour is inordinately delayed, a binder or binding agent should be employed to minimize shear plane formation.

Asphalt installations must not contain aggregate larger than 3/8" (10mm) and must be delivered to the job site at a temperature less than 340°F (170°C)—larger aggregate and/or higher temperatures will damage cable and result in failure. Typically, a base layer of asphalt is laid and allowed to set, then the mats are positioned, and then the final layer of asphalt is laid. (It is also possible to lay mats on an existing layer of asphalt that is being resurfaced). The mats must be located between 3½" and 1½" (90mm and 40mm) (Canadian installations are subject to a 2" (50mm) minimum in concrete and 1" (25mm) minimum in asphalt) of the finished surface to ensure adequate surface heating.

**CAUTION** Extreme care must be used when machinery such as wheelbarrows, rollers, front-end loaders, tractors, paving machines, etc., is involved in the installation of heating cables/mats in asphalt or concrete surfaces. Such machinery must not have cleats of any type nor metal tracking of any type, as such cleats/tracking can sink into the asphalt and contact the mat, possibly damaging the cable.

**CAUTION** The use of sharp implements, such as rakes, shovels, etc., is usually required during surface installations. However, unless care is taken, these can damage mats during installation. All workers must be advised to avoid contacting the mats with such implements, and that, if they do, the mat must be immediately checked for damage.

**CAUTION** Do not route wheelbarrows, rollers, trucks, etc. over uncovered mats. It is recommended that workers not walk on the mats. When mats are installed on rebar or in other situations where weight on the mats would be highly concentrated, damage to the cable is possible that would result in immediate or later operational failure.

**P9. ELECTRICAL INSPECTION**

Local electrical inspectors may require inspection prior to, during and/or after surface installation. Be certain that they are contacted prior to beginning mat installation.

**P10. IDENTIFICATION**

Electrical panels and controls must be identified as to their snow melting function. Snow melting areas must be identified by clearly visible signs or marking. Pavement identification nameplates are available from Easy Heat (Part Number NMPLT); contact Easy Heat for details.

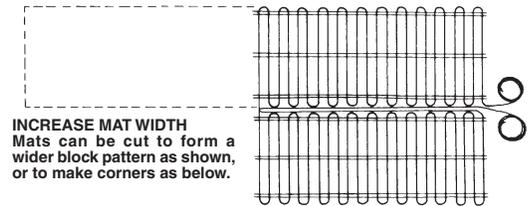
**CAUTION** Do not use admixtures or chemical compounds that may be harmful to copper or PVC.

**CAUTION** Sno\*Melter units are approved for use in wet locations. The heater-to-cold-lead wire splices made at the factory are designed and tested to be waterproof. To ensure a completely waterproof installation, it is also important that all field connections must be waterproof. The use of approved exterior type junction boxes, fittings and bushings plus care in waterproofing splices will assure a reliable and trouble-free electric performance.

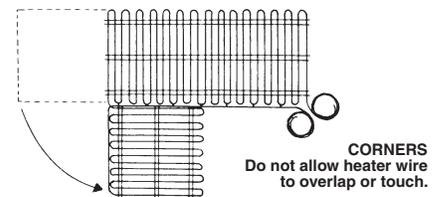
**CAUTION** It is required that all products Listed by UL and CSA be properly identified. Therefore, if the leads on these mats are shortened, ensure that a minimum 6" (150mm) of cold lead with the identification tag is retained within the junction box.

**MAT SHAPE ALTERATIONS**

Mats may be tailored to follow contours of curves and other obstructions by making a series of cuts to the mat carrier strands as shown in Figures 3 & 4. Extreme care should be exercised to prevent cutting the mat heater wire during this operation.

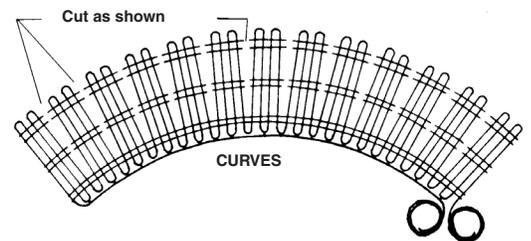


**FIGURE 3**



**M1.** Start all cuts on the side opposite the cold lead and cut strands towards the cold lead side.

**M2.** To make a curve, cut strands as shown in Figure 4. The number of strand cuts will depend on the mat length and surface curvature. In the same way, mat shape can be altered to form a wider block pattern or to go around an object. See illustrations. To ensure adequate heating, do not allow cable spacing at outer edge of curve to be more than 2 times the standard cable spacing.



**FIGURE 4**

## SITE/MAT PREPARATION

### S1. EXCAVATION/INSULATION

Excavate and compact surface area and, if applicable, install appropriate thermal insulation. Complete surface area preparation.

### S2. WIRING/CONTROLS

Lay mats in position according to the MLP. Install all wiring, conduit and control devices associated with the surface installation and according to the MLP and MWP. Do not connect power supply at this time. Conduits must extend into surface to ensure no wiring is exposed.

Position all control/sensors to be installed within the surface and connect all wiring/conduit. If necessary, provide appropriate protection for these devices during surface installation.

### S3. INITIAL TESTING

The continuity and insulation resistance of each mat must be tested prior to paving. Record readings on Installation Test Record Form included with this instruction.

Connect a megger between the copper grounding braid and the inner conductor on one lead of a mat. Ensure the other lead of the mat is isolated and that the heating element is not in contact with the ground braid. Set the megger at 500 V (minimum) and measure the resistance. The resistance must be 10 Megohms minimum. This test assures that the mat has not been damaged during shipment or subsequent handling.

Next connect an ohmmeter between the inner conductors of the two leads of the mat. Measure the resistance of the mat. Be certain that the mat resistance is appropriate for the marked wattage and voltage. Repeat above test for each mat used in the installation.

### S4. CONNECTIONS

Position all mats associated with the surface installation according to the MLP and MWP. Thread mat cold lead wires through conduit into associated junction box. Lay mats in position to check original layout and spacing. Leave sufficient slack in lead wires to permit handling of mats. Lay mats aside temporarily to allow for installation of base layer of surface material. If necessary, provide protection for any controls which may get damaged or dislocated during pour.

## INSTALLATION IN CONCRETE

### C1. BASE POUR

Pour concrete to mat placement depth (see Figure 5). Distribute concrete such that top surface is roughly level.

### C2. MAT POSITIONING

Reposition mats, in accordance with MLP, with all lead wires secured within the concrete and maintaining appropriate clearances to edges of forms and between adjacent mats.

### C3. CONTROLS/SENSORS

Reposition all controls as required.

### C4. SURFACE COMPLETION

Complete the pavement pour and level.

### C5. FINAL TESTING

Retest mats according to initial testing (S3).

## CONCRETE SLAB

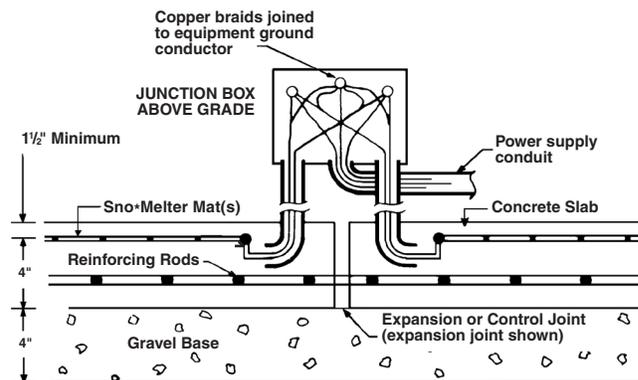


FIGURE 5

## INSTALLATION IN ASPHALT

### A1. BASE LAYER

Pour and roll the base layer (see Figure 6). If mats are to be placed on an existing surface, make sure the surface is clean and free from any sharp material that could puncture mat heating cable during installation.

### A2. MAT POSITIONING

If necessary, apply a coat of bituminous binder to the base layer. Reposition each mat according to MLP, allowing clearance to edges and between adjacent mats. If necessary, apply a coating of binder over each mat.

### A3. CONTROLS/SENSORS

Reposition all controls as required.

### A4. PROCEED WITH THE TOPCOAT

It is advisable to cover the entire mat in one continuous layer. Note: Do not dump large quantities of hot asphalt on the mats. The temperature at the base of the pile may damage heater wire. Maximum asphalt temperature is 340°F (170°C); higher temperature will damage the cable and result in failure.

### A5. FINAL TESTING

Once asphalt has cooled to below 100°F (38°C), again check the mats according to initial testing (S3) to be sure no damage has occurred during installation.

## ASPHALT SLAB

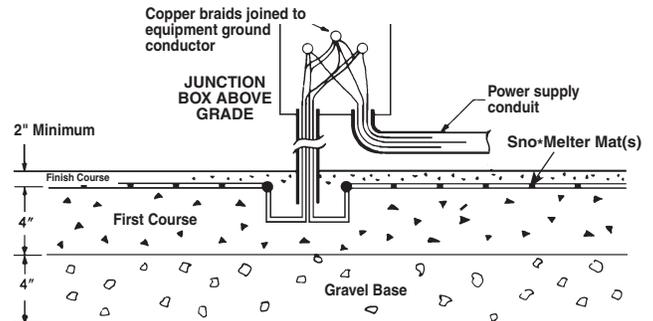


FIGURE 6

## INSTALLATION IN CONCRETE STEPS

### L1. BASE POUR

Pour concrete to within 2 inches (50mm) of finished step surface and roughly level (see Figure 7).

### L2. MAT POSITIONING

Position mat section for first step according to MLP, and ensure any excess cold lead wire is secured within the concrete. Allow 2" (50mm) clearance to front edge of step.

### L3. RISER WIRE POSITIONING

Ensure cable in riser portion of step is embedded in concrete. Mat cable may not touch forms.

### L4. SURFACE COMPLETION

Complete the surface pour and level.

### L5. FINAL TESTING

Retest mats according to Initial Testing (S3).

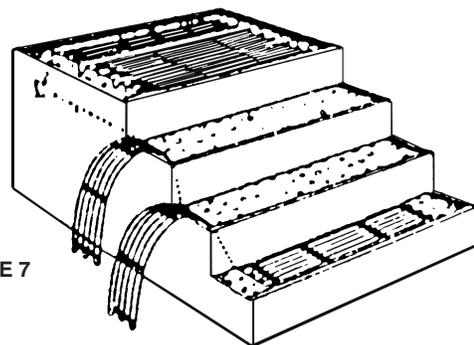


FIGURE 7

## INSTALLATION UNDER PAVERS

**CAUTION** Carefully follow the paver manufacturer's instructions and the guidelines of the Interlocking Concrete Pavement Institute (OCPI), Tech Spec Number 12, for installing electric snow melting mats under pavers.

**CAUTION** Do not install a mat within the compacted aggregate base, as this may damage the mat and result in mat failure and will void the warranty.

**CAUTION** Do not install a mat in a concrete base under pavers, as this may not provide sufficient heat or may result in a much longer time to melt any snow or ice.

**CAUTION** It is highly recommended that an experienced paver contractor do the paver installation in coordination with an electrical contractor for the mat installation. Paver design and installation varies with local climate, materials, soil conditions including drainage, and expected use loads.

### V1. BASE PREPARATION

Proper preparation of the soil and aggregate base and the use of edge restraints to prevent loss of sand are critical. Loss of sand may result in mat failure.

### V2. MAT PREPARATION

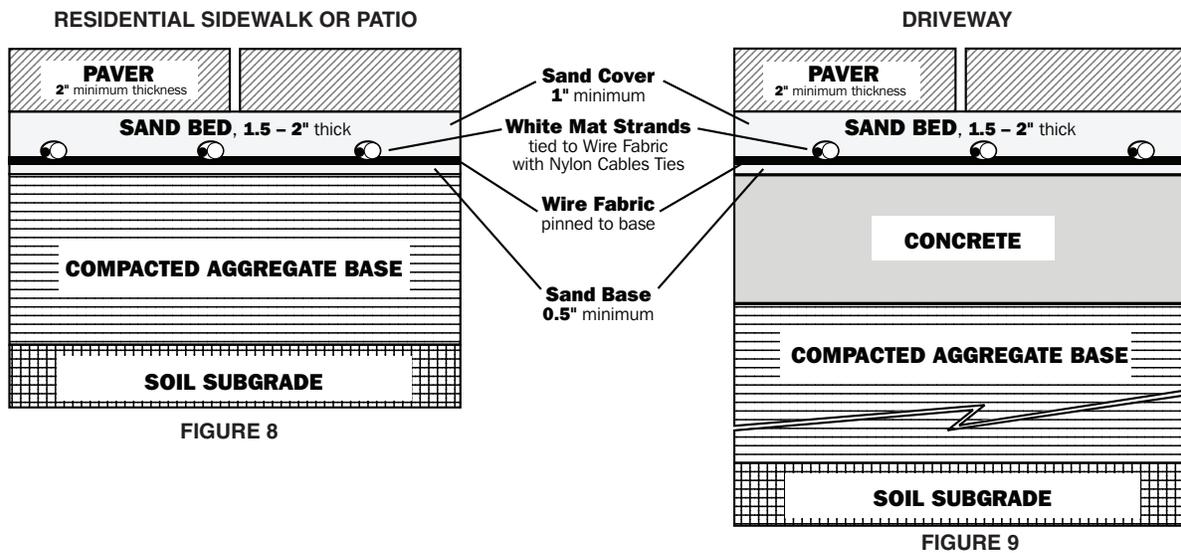
Secure the mat to a wire fabric (not provided) with nylon cable ties attached to the WHITE MAT STRANDS ONLY wherever possible. If ties must be used on the black heating cable, leave slightly loose, DO NOT fully tighten or the tie may cut into the cable and result in failure of mat in operation.

### V3. MAT INSTALLATION

Lay the mats on top of either the compacted aggregate base (patio/walkway type installation) or the concrete base (driveway type installation) and cover with sand as shown. The mat heating cable and splice to the non-heating leads must be fully contained in the sand bed. Typical installation cross sections for a residential sidewalk or patio figure 8, and a driveway, figure 9 are shown.

### V4. FINAL TESTING

Retest mats according to initial testing (S3).



## WIRING CONNECTIONS

When the surface is cured, connections to the controls and power supply can be completed according to the MWP.



**WARNING:** All lead wires of all mats contain identification labels when shipped from the factory. This identification must be maintained within all connection boxes to ensure ease of identification of individual mats at any time in the future.

The MWP and MLP must be maintained for future reference.

## IDENTIFICATION

Apply warning labels "CAUTION – ELECTRIC SNOW AND ICE MELTING" to power supply and adjacent to the heated surface.

## MAINTENANCE

Surfaces should be inspected annually for cracks, exposed cable, etc., and sealed as required with suitable cementitious or asphalt-compatible material.

Should grass or weeds develop in the gaps between pavers, care must be taken when using tool to remove them or the mat may be damaged.

## LIMITED WARRANTY AND LIABILITY

Easy Heat warrants that if there are any defects in material or workmanship in any heating cable or accessory during the first year after the date of purchase. We will provide new products to replace any defective items, or we will refund the purchase price paid for the accessory or cable, not including any labor or other installation costs. As an alternate, we may elect to repair the cable or accessory at our factory with all shipping and other removal costs borne by the purchaser.

We further warrant that for a period of twelve (12) months after the date of performance any services performed hereunder will be in a good and skillful manner, based on our understanding of pertinent technical data as of the date of performance of such services. Easy Heat's sole responsibility and liability in the event of any defect, error, omission, or failure in the services rendered hereunder shall be to provide corrected services of the type provided for herein, designed to correct such defect, error, omissions, or failure, and in no event shall Easy Heat's liability with respect to such warranty exceed the amount received by it from the Buyer on account of such services.

Our obligation to provide corrected services, new products, refund the purchase price, or perform the repair described above is conditioned upon (a) the installation of the accessory or cable conforming to the specifications set forth in our installation instructions and (b) the accessory or cable not having been damaged by mechanical or electrical activities unrelated to the operation of the accessory or cable.

**A refund of your purchase price, provision of replacement products, repair of the accessory or cable or provision of corrected services as described above, shall be your sole and exclusive remedy for a breach of this warranty. THESE ARE THE SOLE AND EXCLUSIVE WARRANTIES GIVEN BY EASY HEAT WITH RESPECT TO THE GOODS AND SERVICES AND ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO EASY HEAT IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT EASY HEAT'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY EASY HEAT FOR YOUR USE OR PURPOSE.**

This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, negligence, unauthorized modification or alteration, use beyond rate capacity, or improper installation, maintenance or application. To the extent that you or your agents have supplied specifications, information, representation of operating conditions or other data to Easy Heat in the selection or design of the Goods and the preparation of Easy Heat's quotation, and in the event that actual operating conditions or other conditions differ from those represented by you, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

If within thirty (30) days after your discovery of any warranty defects within the warranty period, you notify Easy Heat thereof in writing, Easy Heat shall, at its option, repair, correct or replace F.O.B. point of manufacture, or refund the purchase price for, that portion of the Goods found by Easy Heat to be defective. Failure by you to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of your claim for such defects. Goods repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period or ninety (90) days from the date of shipment of the repaired or replaced goods, whichever is longer.

**This limited warranty does not cover any costs relating to the repair or replacement of any accessory or cable at the installation site.** Our accessories and cables are not easily accessible. A failed accessory or cable usually cannot be easily repaired. Replacement of a failed accessory or cable will require that the materials under which it is installed be removed to permit replacement of the accessory or cable. **We will not reimburse any costs relating to the repair or replacement of any accessory or cable at the installation site.**

**IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL EASY HEAT'S LIABILITY TO YOU AND/OR YOUR CUSTOMERS EXCEED THE PRICE PAID BY YOU FOR THE SPECIFIC GOODS PROVIDED BY EASY HEAT GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. YOU AGREE THAT WE SHALL NOT BE LIABLE TO YOU OR YOUR CUSTOMERS FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL OR PUNITIVE DAMAGES. No agent, employee or representative of ours has authority to bind us to any affirmation, representation or warranty concerning the goods sold unless such affirmation, representation or warranty is specifically incorporated by written agreement.**

To obtain new products, arrange repair of existing product, or a refund under this warranty, please contact Easy Heat with a description of the defect and proof of purchase at the address noted herein.

ATTN: WARRANTY DEPARTMENT:  
In US - EasyHeat Inc; 2 Connecticut South Drive, East Granby, CT 06026  
In CANADA - EasyHeat Ltd; 99 Union Street, Elmira, ON N3B 3L7

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