STEP® Snowmelt
Installation Manual

STEP® Snowmelt System
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**STEP® SNOWMELT SYSTEM**

**STEP® Snowmelt** is a heating solution to melt snow and ice on entrances, walkways, driveways, ramps, patios, etc. The snow melt system eliminates shoveling snow and protects pedestrians from slippery ice or snow covered driveways and sidewalks.

**STEP® Snowmelt** systems consist of thin, flat and flexible heating elements that operate at extra-low voltage (AC or DC) and are custom designed for each individual application. These durable, lightweight heating elements can be stapled or nailed through as long as the two embedded bus braids on each side of the element are not penetrated.

**STEP® Snowmelt** heating elements are powered by an extra-low voltage (24 V) EPI-LX-R power supply. The heating elements, which can be cut to size on site are available in different widths and protected by a chemically, inherently inert and dielectric insulation. This liner protects against physical damages and aggressive materials and allows heating elements to be installed under concrete or selected other surfaces.

**STEP® Snowmelt** heating elements are made of a homogeneous, semi-conductive polymer, which by nature is self-regulating. This self-regulating, positive temperature coefficient (PTC), Nano-technology allows them to heat with maximum power in cold environments and use less electricity as their temperature increases. This minimizes power consumption and reduces operating costs by as much as 60% compared to conventional electric cable systems.

**BENEFITS**

- **STEP® Snowmelt** is a flat, flexible and thin heating element.
- The heating element can be cut to length at the jobsite.
- The element can be stapled/nailed without affecting the conductivity (just avoid penetrating the two conductors on each side).
- The element is strong and has no failure rate during installation.
- **STEP® Snowmelt** has the ability to self-regulate - as the material gets warmer, less electricity passes through the plastic - therefore it is extremely energy-efficient.
- The element acts on its whole surface as a sensor and cannot overheat.
- This heating system is very versatile and can be used for residential, commercial and industrial applications.
- Avoid shoveling snow, and keep pedestrians safe.
- Low operating expenses compared to alternative snow melting systems.
**INSTALLATION GUIDELINES**

**IMPORTANT INSTALLATION GUIDELINES**

- Choose qualified personnel who are familiar with the STEP® heating system.
- This is an electric heating system and requires trained personnel in the National Electrical Code that understands the importance of preventing mistakes that can cause an electrical fire.
- The installation shall be made in accordance with local codes, ordinances, trade practices, and manufacturers’ instructions.
- Make sure that all materials used are approved for the specific application and have no adverse compatibility with the heating elements.
- Use only components recommended by the manufacturer.
- Read and follow the installation instructions to assure having the best satisfaction for a comfortable and energy efficient heating system.

**CAUTION**

- STEP® Heating Elements should not touch, cross, or overlap at any point. This could cause the elements to overheat and melt and could result physical injury, risk of fire, and damage your roof.
- Do not energize rolled up heating elements.
- Make sure to note the locations of the bus braid wires for each heating element so to avoid fastening through them. Penetrating through the element is fine, provided those fasteners do not go through a bus braid wire.
- An electrical inspection may be required before, during, and/or after installation of the STEP® Snowmelt electrical system. Consult your local electrical and/or building authorities for more information.
- These instructions have been prepared for use with standard North American building construction practices. If your building construction differs, consult an appropriate electrical professional.

These installation instructions assume that the STEP Snowmelt™ system being installed has been designed by Electro Plastics, Inc. or a distributor of Electro Plastics, Inc. and is being installed according to the proposed Design Specifications, all Terms & Conditions of Sale, and Limited Warranty provided with a STEP® Snowmelt quotation.

If you need a new copy of your Design Specifications, call Electro Plastics, Inc. at 877-783-7832 or the STEP® Snowmelt distributor that originally provided the quotation. To obtain a quotation, contact Electro Plastics, Inc. or an authorized distributor by visiting [www.warmfloor.com](http://www.warmfloor.com).
BEFORE STARTING

DESIGN AND CALCULATIONS

- The installation shall be calculated and a layout made to determine the materials required.
- The more specific the layout the easier will be the installation. Indicate for each area:
  - Exact measurements of the area(s) to be heated.
  - Placement and number of strips of elements.
  - Length and wattage per element strip.
  - Location of power source, including control and power supply(s).
  - If required, location of electrical box and terminal block(s).
  - Wire size and length according to load and distance to the power source.
  - Size of power supply and load distribution on the interface board.

SUPPLIED PARTS

- **STEP® Heating Element**
  - MEP-30-70W-24V
  - MEP-23-80W-24V

- **STEP® Power Supply 24V**
  - EPI-LX-R-500 120 - 230V
  - EPI-LX-R-1000 120 - 230V
  - EPI-LX-R-1500 120 - 230V

- **Extension Wire**
  - TCu12-xxx-B/-W Tinned copper
  - TCu10-XXX-B/-R Tinned copper
  - B=black; W=white; R=red
  - Length: xxx=100, 150, 250, 500ft

- **STEP® Connectors & Sealant Tape**
  - CON-DB Tinned copper connectors
  - Tape-R Sealant Tape - roll

- **Other Components**
  - Terminal Block (T-BLOCK)
  - STEP® Touch Thermostat
  - STEP® External Sensor

REQUIRED TOOLS

- STEP® crimp tool
- Utility knife or scissors
- Wire stripper
- Screw driver
- Multi-meter (clamp meter preferred)
**DESIGN AND CALCULATION**

**ELEMENT TYPE AND WATTAGE**

<table>
<thead>
<tr>
<th>Width</th>
<th>Element Type</th>
<th>Ohms /ft.</th>
<th>Linear W/ft.</th>
<th>Density W/sqft.</th>
<th>Max. length @ 450W feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>MEP-30-70W</td>
<td>24</td>
<td>24.0</td>
<td>24.0</td>
<td>19</td>
</tr>
<tr>
<td>9&quot;</td>
<td>MEP-23-80W</td>
<td>21</td>
<td>27</td>
<td>36.0</td>
<td>17</td>
</tr>
</tbody>
</table>

*Table: Element type and wattage*

**ELEMENT LENGTH AND WATTAGE PER POWER SUPPLY**

The EPI-LX-R power supply series consist of one to three 500 watts circuits.

Designed wattage is 90% or 450 watts.

1) Do not exceed the maximum length @ 450W for the selected element in table “Element type and wattage”

2) Combine element strips from the layout to optimize distribution for each 450 watt circuit in the power supply.

<table>
<thead>
<tr>
<th>POWER SUPPLY</th>
<th>DIMENSIONS</th>
<th>PRIMARY CIRCUIT BREAKER</th>
<th>SECONDARY CIRCUIT BREAKER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Height (inch)</td>
<td>Width (inch)</td>
<td>Depth (inch)</td>
</tr>
<tr>
<td>EPI-LX-R-500</td>
<td>14.0</td>
<td>6.25</td>
<td>3.5</td>
</tr>
<tr>
<td>EPI-LX-R-1000</td>
<td>22.0</td>
<td>6.25</td>
<td>3.5</td>
</tr>
<tr>
<td>EPI-LX-R-1500</td>
<td>28.0</td>
<td>6.25</td>
<td>3.5</td>
</tr>
</tbody>
</table>
### DESIGN AND CALCULATION

#### WIRE GAUGE AND TERMINAL BLOCK USAGE

Minimize voltage drop by planning the wire runs as short as possible. Use larger wire gauge for more power output.

Refer to the following chart for maximum secondary wire length, both wires included, per circuit in feet.

<table>
<thead>
<tr>
<th>Power Watts</th>
<th>Wire Gauge an Wire Length (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14 AWG</td>
</tr>
<tr>
<td>60 VA</td>
<td>40</td>
</tr>
<tr>
<td>90 VA</td>
<td>27</td>
</tr>
<tr>
<td>120 VA</td>
<td>20</td>
</tr>
<tr>
<td>150 VA</td>
<td>16</td>
</tr>
<tr>
<td>180 VA</td>
<td>14</td>
</tr>
<tr>
<td>210 VA</td>
<td>12</td>
</tr>
<tr>
<td>240 VA</td>
<td>10</td>
</tr>
<tr>
<td>270 VA</td>
<td>9</td>
</tr>
<tr>
<td>300 VA</td>
<td>8</td>
</tr>
<tr>
<td>330 VA</td>
<td>8</td>
</tr>
<tr>
<td>360 VA</td>
<td>7</td>
</tr>
<tr>
<td>390 VA</td>
<td>7</td>
</tr>
<tr>
<td>420 VA</td>
<td>6</td>
</tr>
<tr>
<td>450 VA</td>
<td>6</td>
</tr>
</tbody>
</table>

To simplify distribution to the elements use a terminal block when you have multiple elements.

Keep each terminal block to maximum 450W and then calculate the appropriate wire size used to run to the power supply.


#### ELECTRICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>MEP-30-70W</th>
<th>MEP-23-80W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amperage draw @ 32°F (0°C), 24V</td>
<td>1 A</td>
<td>1,125 A</td>
</tr>
<tr>
<td>Nominal resistance @ 32°F (0°C)</td>
<td>24 Ω</td>
<td>21 Ω</td>
</tr>
<tr>
<td>Maximum continuous element length:</td>
<td>19 ft. (5,8 m)</td>
<td>16 ft. (4,9 m)</td>
</tr>
</tbody>
</table>
## MEP-30-70W / MEP-23-80W

### PRODUCT SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>MEP-30-70W-24V</th>
<th>MEP-23-80W-24V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating element type</td>
<td>Positive Temperature Coefficient (PTC) semi-conductive polyethylene</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Width:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MEP-30-70W-24V: 12” (30 cm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MEP-23-80W-24V: 9” (23 cm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thickness:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/64” (1.2 mm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cut to order with a standard spool length of 174ft (53m)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.21 lb./ft. (0.3 kg/m)</td>
<td></td>
</tr>
<tr>
<td>Output wattage</td>
<td>24 W/ft. (78.7 W/m) @ 32°F (0°C) – see power output curve and 27W/ft. (88.6 W/m) @ 32°F (0°C)</td>
<td></td>
</tr>
<tr>
<td>Watt density</td>
<td>MEP-30-70W-24V: 24.0 W/ft² (78.7 W/m²) @ 32°F (0°C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MEP-23-80W-24V: 36.0 W/ft² (88.6 W/m²) @ 32°F (0°C)</td>
<td></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24V AC or DC</td>
<td></td>
</tr>
<tr>
<td>Bus braid</td>
<td>15 AWG tinned copper flat braid</td>
<td></td>
</tr>
<tr>
<td>Dielectric liner</td>
<td>Thermally bonded to heating element</td>
<td></td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>3/16” (~5mm) @ 32°F (0°C)</td>
<td></td>
</tr>
<tr>
<td>Maximum exposure temperature</td>
<td>176°F (80°C)</td>
<td></td>
</tr>
<tr>
<td>Chemical Compatibility</td>
<td>The MEP element is resistant to most chemicals and adhesives.</td>
<td></td>
</tr>
</tbody>
</table>

### POWER OUTPUT CURVE

[Graph showing power output curves for MEP-30-70W-24V and MEP-23-80W-24V]
ELECTRICAL GUIDLINES

ELECTRIC RADIANT HEATING EQUIPMENT OPERATING AT 30 VOLTS OR LESS

General

1. Scope. This installation instruction covers electric equipment and associated components operating at 30 volts or less for indoor and outdoor use. For the purpose of this manual heating equipment shall include heating elements, heating panels and power supplies.

2. Definition. Heating Systems Operating at 24 Volts. A complete heating system consisting of components such as low-voltage isolating power supplies and heating elements, including associated components that are all identified for the use. The output circuits of the power supply are rated for not more than 25 amperes and operate at 30 volts or less under all load conditions (SELV – Safety Extra Low Voltage).

3. Listing Required. Heating systems operating at 24 volts shall comply with (A) and (B).
   (A) Listed System. Heating systems operating at 30 volts or less shall be listed as a complete system. The heating elements, power supply and fittings shall be listed for the use as part of the same identified heating system.
   (B) Assembly of Listed Parts. The listed system and approved system components shall be installed in accordance with the manufacturer's instructions.

4. Specific Location Requirements. Floors, Walls, Ceilings and Roofs.
   (A) Extension wires (non-heating leads) from the heating elements can be routed on the subfloor to the wall provided they do not cross one another in the floor.
   (B) Conductors extended through a wall, ceiling or roof shall be in accordance with NEC Chapter 3. Wires shall be run in conduits through building structure.

5. Secondary Circuits.
   (A) Grounding. Secondary circuits shall not be grounded.
   (B) Isolation. The secondary circuit shall be insulated from the branch circuit by an isolating transformer.
ELECTRICAL GUIDELINES


(A) Electric Radiant Heating Panels and Heating Panel Sets. Installation shall be made in accordance with NEC 424.90 through 424.99 with the following exceptions on 424.93 (B) (3) and 424.99 (C) (5) described in (a) and (b) respectively:

a. PTC Polymer Heating Panel Sets. Nailing or stapling of PTC polymer heating panel sets shall be done through the polymer material but at least 6mm (1/4 Inch) from the bus conductors. Nails, staples or other fasteners shall not penetrate the current-carrying bus conductors.

b. Fault Protection. A device to open all ungrounded conductors supplying the heating panel sets, provided by the manufacturer shall function when short circuit occurs, such as a result of penetration of both bus conductors or extension wires with a metal device.

(B) Fixed Outdoor Electric Deicing and Snow-Melting Equipment. Installation shall be made in accordance with NEC Article 426 with the exceptions of grounding and ground-fault protection requirements described under 426.22, 426.27 and 426.28. Secondary circuit shall not be grounded according to 5 (A).

ELEMENT CONSTRUCTION: MEP-30-70W / MEP-23-80W

The MEP-30-70W and MEP-23-80W STEP® Snowmelt heating elements are designed to prevent ice and snow on walkways and driveways. The element is constructed of two parallel bus braids embedded in semi-conductive PTC polymer.

A polymeric dielectric liner is applied at the time of manufacturing so that the liner is thermally fused to the heating element. This creates a heating element that features a solid and homogeneous construction which is chemically inert.

NOTE: SLOTS ARE OPTIONAL.

APPLICATION

Snow and Ice Prevention System Suitable for ice and snow prevention on concrete, stone or asphalt walkways and driveways, commercial and residential. The element is not made to be exposed to weather.
**SOWMELT INSTALLATION OPTIONS**

STEP® Thermal Bed system is designed for continuous duty on 24 volts and will melt ice or snow provided the substrate has been continuously heated. This maintenance heat keeps the ground temperature constant and reduces the expansion and contraction in substrates.

**THERMAL BED CONCEPT**

**THERMAL BED CONCEPT (WITH WING INSULATION)**
INSTALLATION

1. PLAN

- Design system, and make a layout. For guidance, see attached layout and wiring diagram.
- When deciding on a snowmelt system it is essential to decide on the purpose of the system and how effective the system should be. Do you want the ground completely dry or is it acceptable with some snow slush on the ground shortly after a snowfall? ASHRAE classifications split snowmelt systems into three groups:
  - **Class I** (snow free ratio 0): Designed not to melt snow while it is falling, but afterwards.
  - **Class II** (snow free ratio 0.5): 50% of snow is melted while falling, the rest afterwards.
  - **Class III** (snow free ratio 1): All snow and ice is melted while falling.
- When designing a snowmelt system it is essential to know the area conditions; snowfall days, temperature, surface type, heat loss to ground, atmospheric loss and perimeter insulations are some of the parameters needed to create a snowmelt solutions according to expectations.
- An on demand de-icing system may be favorable in places with few snowfall days. Areas with frequent snowfall may benefit from the thermal bed concept which is a low power de-icing system that is switched on prior to frost and kept energized all winter.
- Wherever underlying soils are susceptible to frost, pavements will suffer damaging effects from frost heave and spring breakup. There are different techniques to reduce frost action, such as:
  - Removing frost-susceptible soil and using thick base courses to spread the load during spring thaw.
  - Providing adequate drainage for free water through ditching.
  - Placing a layer of insulation in the embankment section to keep sub-grade soil temperatures above freezing. Maintaining the soil above freezing temperatures by placing heating elements in the upper soil or pavement section.
- Installation should conform to local building codes, ordinances, and trade practices.

2. INSTALL

- Roll element out, and cut to length according to layout.
- Place a low water absorption and high compressive strength insulation, e.g. "Styrofoam*Hi" or equivalent, vertical along the walls of a trench or foundation to protect against frost penetration.
- Care should be taken to prevent vehicles and heavy equipment from bearing directly on the vertical insulation.
- Make sure that the insulation is properly butted together to avoid the transfer of heat / cold migration and transfer of moisture.
- Lay the STEP® elements onto an even layer of granular material and secure them in place to prevent displacement of panels.
- Apply subsequent lifts, pavement or soil layers taking care not to damage the heating panels.

**NOTE:** Avoid overlap or contact between heating elements. **DO NOT puncture the bus braids.**
INSTALLATION

3. CONNECT

- Connect extension wires to the heating element according to the drawing and electrical diagram. If fail safe wiring is required, see how it is done in the diagram “Fail Safe Wiring”.

- Determine wire gauge versus load and length of wire from the element to the power supply. The wire gauge for a circuit fully loaded is 10 AWG by default but if the distance is longer than 14 feet, connect the extension wires to a terminal block and then route to the power supply using higher gauge wires as shown in the sample wiring diagram. Make sure wiring is done according to NEC code.

- Route the wires through the ground in a conduit. Connect wires in parallel to the 24 volt, EPI-LX-R power supply. Use only stranded tinned copper wires, and do not twist wire ends when connecting to the interface board in the power supply.

- Distribute the load evenly; the maximum load per circuit is 450 watts or 19 feet (5.8 m) of Snowmelt element (MEP-30-70W-24V).

- The power supply must be installed in a well-ventilated area and wired in accordance with the National Electrical Code. Place the power supply vertically using rubber bumpers between the back heat sink plate and wall for better cooling and quiet operation.

- Connect the line voltage to a two-pole on/off switch. Use stranded wires from the switch to the power supply.

- To make the system operational, connect the three signal wires COM, TRG and ~24V from the power supply terminals to the thermostat. The system will start when the switch makes contact between the two wires.

- The heating elements must be measured and the amp draw noted by a certified electrician before being covered. The warning label must be placed in the service panel and the caution label on the electrical box, or on the low-voltage power supply.

NOTE: This system is in the category of Safety Extra Low Voltage (SELV) and the heating elements must NOT be grounded.

4. COVER

- The heating elements should be placed on top of gravel and compacted sand. Then secured in a way that the elements do not shift position when concrete is poured.

- Lift the metal mesh so it does not rest on the heating elements.

- Do not pour more than 8 inches of concrete over the heating elements. If more is needed consult manufacturer or a thermic engineer.

NOTE: These installation guidelines are general in nature. Specific project information is provided by the distributor.
ATTACHING EXTENTION WIRES

• **Expose the bus braid** by making an angled score in the plastic, front and back, and along the bus braid above the angled score with a utility knife. Bend the element where the cuts are made and pull off the corners to remove the surplus of plastic. **Make sure that the bus braid is not cut or damaged.** Should this occur, re-cut the element and re-strip the bus braid. Repeat on the other side.

• **Make a strain relief connection** by punching three holes with a hand drill or punch tool. Weave a stranded tinned copper extension wire in the holes. Strip the wire end, and join the wire with the bus braid in the STEP® tinned copper crimp connector. Crimp the joint using the required crimp tool. Using components not recommended by the manufacturer will void the warranty.

• **Seal all connections** by using the required sealant tape on the connector side of the element. Cut two pieces of tape slightly longer than the width of the element. Enclose the wire joints and strain relief connections with the two pieces of tape and firmly press the pieces together while overlapping the element to form a flat and smooth splice. If the opposite end is not connected use the same vulcanizing tape to seal the open end of the element.
FAIL SAFE WIRING

- The Fail Safe Wiring method is used whenever there may be a risk of damaging the bus braids located on each side of the heating elements. Also, supplying electricity from both ends reduces voltage drop.
SNOWMELT WIRING DIAGRAM

Testing (without Control Unit)
- System ON: jump TRG and 24~
- System OFF: disconnect TRG and 24~

Lengthy Wire Runs
- Terminal Block (T-BLOCK) set screw lug terminals are sized for 4-14 AWG wires.
- Power Supply PCB terminals are rated for up to 30A.
- It is safe to cut a few wire strands to properly fill Power Supply PCB terminals.

Link elements with 12 AWG wires to change direction
SNOWMELT CONTROLS

INSTALL

The STEP® Touch thermostat can be used in conjunction with all the EPI-LX-R power supply series and the STEP DC Controllers

- Install the thermostat inside and the temperature sensor exterior.
- Measure the distance from the power supply to the thermostat to identify the length of the thermostat wire.

The low-voltage (24V) thermostat is connected to the power supply using a 3-conductor cable and can control up to 20 power supplies or 20 DC Controllers.

SETTINGS
Set dip-switches in the back to snowmelt mode:
- Pos.1 (C°) or F°: ▶ displays Celsius or Fahrenheit
- Pos.2 or DIM: ▶ display is lit or dimmed
- Pos.3 to EXT: ▶ displays the external temperature when an exterior temperature sensor is attached.
- Pos.4 to SM: ▶ snowmelt with remote external temperature sensor

FUNCTION
The STEP® Touch thermostat collects temperature information every 1.5 second for 10 minutes before deciding to add or reduce heat. This cycle is repeated endlessly.

OPERATION
When the settings are done the thermostat is operated by two touch buttons only; up or down or press both buttons simultaneously to switch the system off.
WARRANTY REGISTRATION AND COVERAGE

LIMITED WARRANTY:

Electro Plastics’ limited warranty is valid from date of original purchase, as follows (not included in this warranty are OEM and specialty products):

- 20 years for the STEP Warmfloor® Heating Elements.
- 10 years for the STEP Snowmelt™ and Deicing Heating Elements.
- 10 years for the STEP® Transformer Coils in the Power Supplies.
- 2 years for the Interface Electronics in the Power Supplies.
- 2 years for the STEP® Controls

Electro Plastics sole obligation under its warranty shall be, at its option, to either issue a credit for the purchase price, or repair or replace any article or part thereof, which is proved to be other than as warranted. For this warranty to be valid, a copy of the STEP® Labels shall be delivered to ELECTRO PLASTICS, INC., with a diagram indicating to which branch circuit the system is connected, the location of the element strips, the routing of the wires and their different measurements, voltage, amperage, elements and wire length. Electro Plastics warrants the products to be free from defects in material or manufacturing and to perform under normal use. For the warranty to be valid, qualified personnel who are familiar with the construction and operation of the system must install the equipment and a certified electrician has to verify and measure the STEP® elements BEFORE they are covered.

Exclusions

Electro Plastics shall not be responsible for any loss or damage that may arise due to:

- Non-compliance with installation and/or usage of the STEP® elements and accessories as recommended. It shall be Buyer’s and End User’s duty to read and follow carefully the STEP® Installation Manual. Technical assistance services, e.g. design and layout are to be used as GUIDELINES ONLY, as each application is specific to local conditions and construction
- Dissatisfaction due to improper Installation of the floor covering. All floor covering shall be installed in conformance with the manufacturer’s instructions and shall conform to all applicable trade practices, local codes and manufacturer’s specifications.
- Usage of inadequate or non-specified materials with the STEP® heating system or products.
- Any and all defects, deficiencies or failures resulting from improper handling of the product; e.g., cuts made to the STEP® elements, or the wires, etc.
- Tampering with the STEP® heating system or products; e.g., removing, altering or overloading the circuit breakers, overcurrent protectors, etc.
- Installation of merchandise with obvious visible defects.

How to claim this warranty

In order to obtain warranty service, Buyer shall return the unit to the dealer from whom the unit was originally purchased, with a dated sales receipt. The dealer will forward the unit to Electro Plastics. Upon receipt of the defective unit, paperwork and explanation of application, Electro Plastics will inspect and test the unit in order to determine the reason for the alleged failure. If it is determined that the unit was properly installed and failed during normal use, as a result of a manufacturing defect, Electro Plastic will repair or replace the unit, or issue a credit or refund of the purchase price, at its sole discretion. The warranty period for any replacement unit will fulfill the warranty of the original unit and will not be extended.
WARRANTY REGISTRATION AND COVERAGE

Limitations
Under no circumstances will Electro Plastics be liable for labor or other charges related to the installation and use of the STEP® heating system or products. This warranty does not cover labor or removal or reinstallation of the product and is void on any product installed improperly, or in an improper environment, overloaded, misused, abused or altered in any manner. THE WARRANTIES STATED HEREIN ARE EXCLUSIVE OF ALL OTHER WARRANTIES, WRITTEN OR ORAL, STATUTORY EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, NONE OF WHICH SHALL APPLY TO THE SALE OF THE COMPANY’S PRODUCTS HEREUNDER. THIS WARRANTY ALSO EXCLUDES INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY WARRANTY ON THE PRODUCTS. Products which are replaced by Electro Plastics in accordance with the foregoing shall become the property of Electro Plastics and shall be returned to it by the purchaser f.o.b. point of shipment. The maximum liability of this warranty is limited to the replacement or repair or purchase price of the defective unit. If a unit is returned and found that no defect exists, or that the user misused the unit, Electro Plastics will inform the user. If the user chooses to have the unit repaired (if possible), labor and shipping charges will apply.

Limitation of Liability
ELECTRO PLASTICS SHALL NOT BE LIABLE FOR ANY LOSS, CLAIM, EXPENSE OR DAMAGE CAUSED BY, CONTRIBUTED TO OR ARISING OUT OF THE ACTS OR OMISSIONS OF BUYER OR THIRD PARTIES, WHETHER NEGLIGENT OR OTHERWISE, IN NO EVENT SHALL ELECTRO PLASTICS’ LIABILITY FOR ANY CAUSE OF ACTION WHATSOEVER EXCEED THE COST OF THE PRODUCT GIVING RISE TO THE CLAIM, WHETHER BASED IN CONTRACT, WARRANTY, INDEMNITY OR TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR OTHERWISE. IN NO EVENT SHALL ELECTRO PLASTICS BE LIABLE OR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL OR OTHER SUCH INDIRECT DAMAGES (INCLUDING, WITH-OUT LIMITATION, LOSS OF REVENUES, PROFITS OR OPPORTUNITIES), WHETHER ARISING OUT OF OR AS A RESULT OF BREACH OF CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE

WARRANTY REGISTRATION CARD

Ref. No. ..................................

CUSTOMER INFORMATION

Owner’s Name

Address

City / State / Zip

Phone

Email

PURCHASE AND PROJECT INFORMATION

Purchased From

Date

Address

Product Purchased: □ Snowmelt □ Deicing

Heating Elements

Installed on :

□ Driveway □ Pathway

Heating Elements

Installed under:

□ Concrete □ Stone □ Other

Type of Project: □ New Construction □ Renovation Project
To activate warranty complete and return this warranty registration card signed with a complete checklist and layout showing element distribution as installed to: 11147 Dorsett Road, Maryland Heights, MO 63043, U.S.A.

**WARRANTY REGISTRATION AND COVERAGE**

**CHECK LIST**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Page of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control :</td>
<td>□ Air</td>
</tr>
<tr>
<td>STEP® Element Model No. :</td>
<td></td>
</tr>
<tr>
<td>MEP-..........-..........W-24V</td>
<td>Total Length Installed :</td>
</tr>
<tr>
<td></td>
<td>............ Linear Feet</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MEASUREMENT INSTRUCTIONS**

Measure primary and secondary volts and amps at the transformer terminals. One sheet per transformer.

---

Installed / measured by:  
Date:  

Name  
Signature
TROUBLESHOOTING

If the following procedures do not solve and relieve the problems encountered, please check with our Technical Service Department.

POWER SUPPLY

<table>
<thead>
<tr>
<th>Problem: Power Supply/DC Controller will not start:</th>
<th>Solution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) No current</td>
<td>• Reset circuit breaker in service panel and switch on line voltage branch circuit.</td>
</tr>
<tr>
<td>b) Current is present</td>
<td>• Reset mini circuit breaker in power supply, push plunger in until it stays in.</td>
</tr>
</tbody>
</table>
| c) PC board in AC Power Supply / DC Controller has current | • Make sure the thermostat settings are correct and that the thermostat calls for heat. Set the temperature to maximum and wait a couple of minutes for the system to turn on.  
• If this does not work, eliminate thermostat; disconnect thermostat cable from PCB (printed circuit board) and put a jump wire from terminal TRG to 24. The load active should now be lit and the system is on. The fault is in the thermostat cable or its connections. |

<table>
<thead>
<tr>
<th>Problem: Power Supply becomes hot:</th>
<th>Solution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Poor ventilation</td>
<td>• Power Supply should be mounted vertical for the cooling fins to extract heat from the enclosure and it must be placed in a well-ventilated area.</td>
</tr>
<tr>
<td>b) High voltage conditions</td>
<td>• A service technician can rewire Power Supply to accept higher voltage. Call customer service for guidance.</td>
</tr>
<tr>
<td>c) High ambient temperature</td>
<td>• Power supply must be de-rated; decrease load.</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

HEATING ELEMENTS

Problem: Insufficient temperature:

1. 

   a) Thermostat setting
   
      • Set temperature to desired level and leave it on day and night. This is the best energy saving mode. Temperature will build up in walls, floor and ceiling and the self-regulating heating elements will effortlessly maintain a warm comfortable environment.

   b) Cold spots in the floor
   
      • The most common cause is lack of insulation, humid or wet insulation or an air gap between flooring layers.
      • Cold strips are also noticed between elements if they are spaced out too far.

   c) Hot spots in the floor
   
      • Hot water tubing and hot air ducts, etc., would contribute to hot spots. STEP® heating elements are self-regulating and cannot overheat by themselves.

   d) Low supply voltage
   
      • Some regions or locations may have a low supply voltage and some may take electricity from sub-panels with reduced voltage. This results in a proportionally lower heat output. It is possible to boost up the voltage so the elements can pull more amps but this requires engineering.
APPROVALS AND CERTIFICATIONS

UL 1693 3rd Edition
UL 5085-1 & 2
CSA-C22.2 No. 66.1 & 2-06

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