



## **Gutter and Downspout Heating Ribbons INSTALLATION INSTRUCTIONS**

Heating Solutions International Heating Ribbons utilize amorphous metal heating technology. It is essential to follow the installation instructions and safety precautions in order to guarantee the best possible results.

Heating Solutions International Heating Ribbons are easy to install.

### **Product Description**

- Product is designed and intended for ice dam prevention, in outdoor exposed environments.
- Product is UV rated and flame retardant.
- Product is available in 12, 24, 48, 120 and 240 Volts
- The product cannot be cut or modified. The power is fed to each element through one end only. Cutting or altering the product will void the warranty.

### **Mechanical considerations in the planning stage:**

1. The minimum bending radius of the heating ribbon is 5/8 inch or 15 mm at a temperature > 5 C/ 41 F.



2. If the gutter is wider than 6 inches, multiple runs of heating cable are required.
3. Heat ribbons in downspouts should extend beyond the frost line if tied into a drainage system.
4. All electrical junction boxes should be located in a protected area. In all cases a drip loop should be installed.
5. Installation of the product should not affect the overall integrity of the gutter.

### **Special Considerations:**

1. The maximum exposure temperature (not working) of the gutter element is 140F / 60 C
2. For any application that is not mentioned in this document, consult your distributor or dealer for recommendations.



## Controls:

HSI recommends a controller system based on a combination of ambient air temperature and moisture sensors.

- 1) The temperature sensor should be installed at the coldest area near the gutter and in a place not exposed to direct sun.
- 2) The moisture sensor should be located at the lowest point of the gutter to ensure when it is dry the entire gutter is dry.

For simple small applications, a manual on/off switch is an adequate solution. It is recommended to use a timer based switch in order to ensure that the system will not be unnecessarily left under power.

## Electrical components:

Installation of Electrical Connections must be made by a certified licensed electrician and in accordance with NEC National electric Code Section 426 – fixed outdoor electric de-icing and snow melting equipment, ANSI/NFPA 70. Ground fault protection for equipment must be provided. It is recommended a local permit be obtained prior to installation.

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## Installation Procedures

1. Prior to installation of the Heating Ribbon:
  - a. A resistance check should be performed and recorded before installing the product.



Figure A



- b. Look for any physical damage which may have occurred during shipping.
- c. Verify that you use the correct product in terms of wattage output and voltage rating.
- d. Clean all debris from the gutter and downspout.
- e. Inspect the mounting surface for sharp edges where the heating cable will be located.

**2. During installation:**

- a. Begin the installation at the power connection by unrolling product.
- b. Anchor the heating ribbon using the provided clips. Keep even distance between the clips.



- c. Location of power connection should be in a protected area when possible

**Specific statements**

"Protect all cable that protrudes past the lower opening of the downspout."

"Do not cross or overlap cable heating section." (This statement may be omitted in the case of any cable unit shown by test not to exceed the prescribed temperature limits.)

"Use only watertight construction or enclosure Type 3, 3S, 4, 4X, 6, or 6P junction box when installing."

"Make certain the gutters and downspouts are free of leaves and other debris prior to the winter season."

**3. Testing:**

- a. After installation and before powering the system, perform a second resistance check to ensure integrity of the heat ribbon. Note and record the measured values on the enclosed forms

<i>type</i>	<i>Length</i>	<i>Resistance</i>	<i>Amps</i>	<i>Wattage</i>
<i>GH15-205W120V</i>	<i>15 ft</i>	<i>65-80 Ohm</i>	<i>1.5 – 1.8 A</i>	<i>200 W</i>
<i>GH20-175W120V</i>	<i>20 ft</i>	<i>68-90 Ohm</i>	<i>1.2 – 1.6 A</i>	<i>175 W</i>



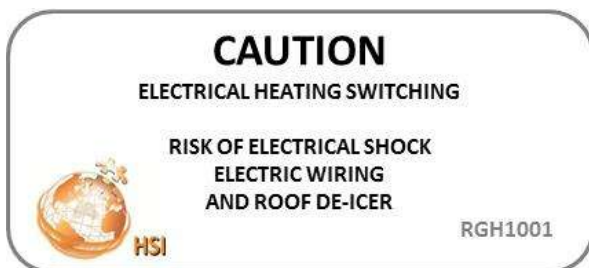
<i>GH25-270W120V</i>	<i>25 ft</i>	<i>45-60 Ohm</i>	<i>2.1 – 2.7 A</i>	<i>270 W</i>
<i>GH35-585W120V</i>	<i>35 ft</i>	<i>22-31 Ohm</i>	<i>4.0 – 5.3 A</i>	<i>585 W</i>
<i>GH50-410W120V</i>	<i>50 ft</i>	<i>30-39 Ohm</i>	<i>3.0 – 3.7 A</i>	<i>410 W</i>
<i>GH50-410W240V</i>	<i>50 ft</i>	<i>110-125 Ohm</i>	<i>1.9 – 2.2 A</i>	<i>410 W</i>
<i>GH70-1080W240V</i>	<i>70 ft</i>	<i>45 – 53 Ohm</i>	<i>4.5 – 5.3 A</i>	<i>1080 W</i>
<i>GH100-960W240V</i>	<i>100 ft</i>	<i>60 – 80 Ohm</i>	<i>3.0 – 4.0 A</i>	<i>960 W</i>

**4. Recording:**

- a. Record all lengths of heat ribbons in duplicate on enclosed Warranty Registration Forms
- b. Keep one form and return the 2<sup>nd</sup> form to register the Warranty.

**5. Place Warning Labels:**

Apply warning stickers provided with the product on appropriate locations as indicated below. These labels are an integral part of this heating system and must be installed for warranty to be in force.



RGH1001 To be affixed on or next to the on/ off switching of the Heating system.



RGH1002 To be affixed to the location of the installed electrical gutter heating cables



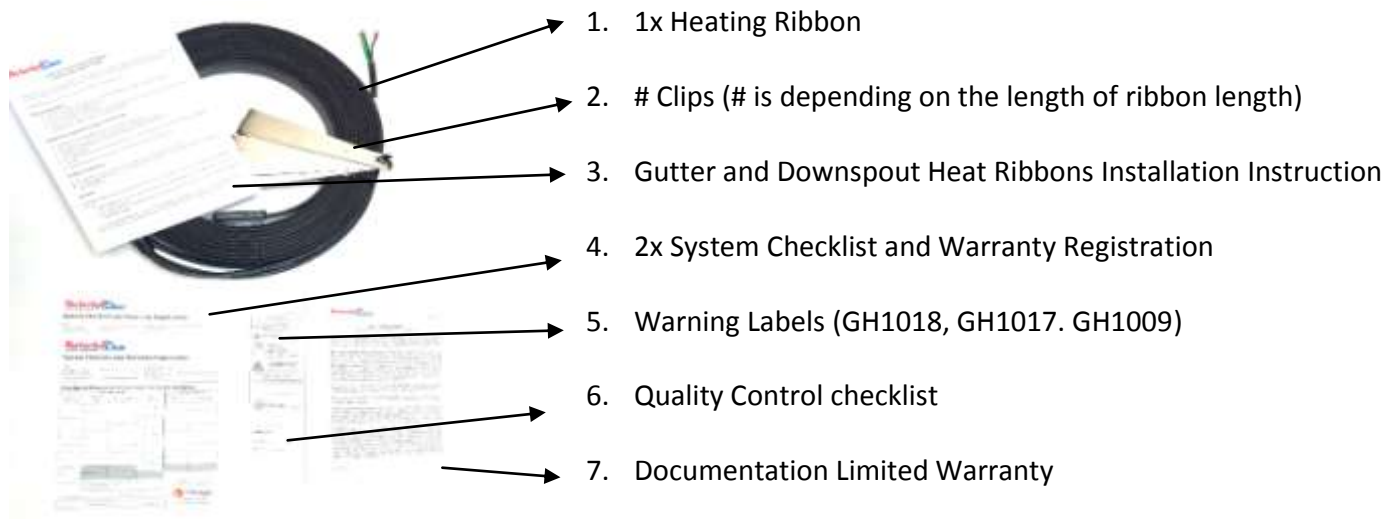
RGH1003 To be affixed to the outside of the Control Unit/ fuse or circuit breaker panel (Control unit not delivered by HSI)



## Trouble Shooting the System

1. Turn off the power to the system.
2. Check the Resistance Readings. See pic A.
3. Check controller for its operation.
4. Check the functionality of the GFEP. (Ground Fault Equipment Protector Device)
5. Check the electrical junction boxes to verify that they are free of moisture and water.
6. Clear the gutters and downspouts of any debris.

## Contents of this kit



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For more information, contact:

Heating Solutions International  
Molendijk Zuid 23C  
5482 WZ Schijndel  
The Netherlands  
0031-(0)881300200  
[info@hsi-heating.com](mailto:info@hsi-heating.com)