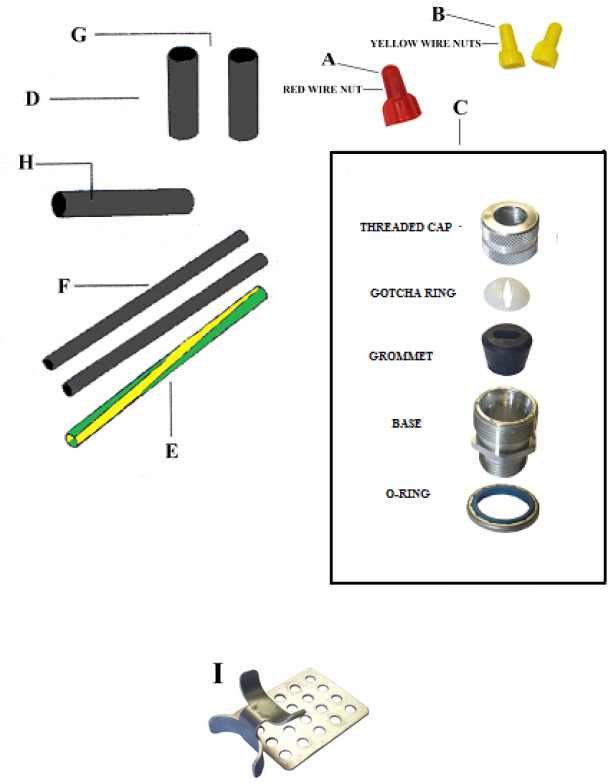
PTK-RG, Roof & Gutter Termination Kit

Tools Required: Diagonal cutters; screw driver; needle nose pliers; utility knife; heat gun or propane torch.

Power Connection Kit

Kit Contents:

Item	Quantity	Description
A	1	Red Wire Nut
B	2	Yellow Wire Nuts
C	1	Seal Fitting (see parts list)
D	1	Black heat-shrink tube 1/2" x 1 1/2"
E	1	Green/Yellow heat-shrink tube 1/4"x 5 1/2"
F	2	Black heat-shrink tubes 1/8"x 5 1/2"
End Seal		
G	1	Black heat-shrink tube 1/2" x 1 1/2"
H	1	Black heat-shrink tube 3/4" x 6"
I	1	A90 Roof Clip



WARNING: The contents of this kit must be installed correctly to ensure proper operation and to prevent shock or fire. Read these important warning and carefully follow all the installation instructions.

- To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed use a ground fault protection device. Arcing may not be stopped by conventional circuit breakers.
- Component approvals and performance are based on the use of specified parts only. Do not substitute parts or use vinyl electrical tape.
- The black heating-cable core is conductive and can short. It must be properly insulated and kept dry
- Damaged bus wires will short if they contact each other. Keep bus wires separated.
- Heat-damaged components can short. Use a heat-gun or torch with a soft yellow low-heat flame; not a blue focused flame. Keep the flame moving to avoid overheating, blistering, or charring the heat-shrink tubes. Avoid heating other components. Replace any damaged parts.
- **PTK-RG KIT IS ONLY FOR USE WITH THE BTT SERIES HEATING CABLE**

Leave these installation instructions with the user for future reference.

WARNING: Overheating heat-shrink tubes will produce fumes that may cause irritation. Use adequate ventilation and avoid charring or burning.

Installation Instructions

1. ThermaTrace BTT Roof and Gutter Deicing System is suitable for use on roofs made from standard roofing materials, including shake, asphalt shingle, rubber, tar, wood, metal, and plastic. Gutters made from standard materials, including metal, plastic, and wood. Downspouts made from standard materials, including metal and plastic or wood.
2. The components, PTK-RG Termination Kit, A90 Roof Clip and DSH90 Downspout Hanger Clip are approved for use only with the BTT Series Roof and Gutter Deicing system.
3. Ground Fault Equipment Protection is required for each circuit, unless applicable codes permit otherwise.
4. **Shock or Fire Hazard: De-energize all power circuits before installation or servicing, or testing**
5. Keep ends of heating devices and kit components dry before and during installation.
6. The conductive layer of this heating device must be connected to a suitable grounding/earthing terminal.
7. The presence of the heating devices shall be made evident by the posting of caution signs or markings where clearly visible.

Heaters and component mounting -

1. Terminate and install all cables according to the manufacturer's instructions.
2. When possible, all power connection boxes should be located in a protected area (such as under eaves) and entry should be at the bottom of the box. In all cases, a drip loop should be provided.
3. Construction of an ice/snow fence above the tracing system is desirable to prevent damage from ice or snow slides.
4. All actual lengths installed should be recorded. The manufacturer or installer should provide as built drawings and data.
5. All penetrations made on the surface of any style of roof should be moisture proofed by using a suitable sealant or sealing type fasteners. The installation of any heating system should not affect the overall integrity of the roof or gutter.

Installation - Before installation, the heating cable should be verified that it is the correct factory fabricated unit or bulk cable. The layout of the heating cables on roofs and in gutters and drains will vary depending on the roof type (such as tile, asphalt, shake, or metal) and the width of the gutter.

1. Gutters and downspouts shall be cleared of debris.
2. The mounting surface shall be inspected for sharp edges where the heating cable will be located (and removed as necessary).
3. A UL Listed weatherproof power connection should be located and mounted in a sheltered area.
4. The cable installation should begin at the power connection and be routed as indicated on the manufacturer's drawings.
5. When heating cable installation is complete, an insulation resistance test should be conducted with a test voltage of at least 500 V dc. However, for polymer insulated heating cables, 2500 V dc is recommended. The measured value should not be less than 20 MW.

Maintenance - A system inspection is recommended before each winter season. All observations and measured values as appropriate should be recorded on a log sheet. The checklist consists of the following:

1. Junction boxes should be inspected for water or evidence of previous water ingress. If moisture is present, the box should be restored to dry condition and the cause of ingress should be eliminated.
2. Gutters and/or downspouts shall be cleared of any debris.
3. Control and monitoring devices should be checked for functionality as per the manufacturer's specifications.
4. Functionality of overcurrent protection devices should be checked.
5. The insulation resistance of each heater circuit should be measured and recorded. Major charges in insulation resistance should be resolved.

IMPORTANT:

Two copies of a caution notice indicating the presence of electric de-icing and snow-melting equipment on the premises are packed with this unit. One notice must be posted at the fuse or circuit-breaker panel and the other on or next to the on/off control for the cable unit. Both notices must be clearly visible.

IMPORTANT SAFEGUARDS:

*****De-Energize and Lock-out/Tag-out all electrical circuits prior to commencing installation, testing or maintenance of the Roof & Gutter De-Icing System.**

WARNING: FIRE AND SHOCK HAZARD.

The following Pre-cautions should be followed to ensure a proper installation.

1. Ground-fault equipment protection must be used on each heating cable branch circuit to comply with UL certifications, and national electrical codes. Fire or Shock hazard can occur with damaged or improperly installed heat trace cable or components.
2. Damaged heating trace cable or connection kits can cause electrical shock, arcing or fire. Replace damaged connection kits and cable with ThermaTrace BTT Roof & Gutter De-Icing Cable and/or Components.
3. Protect all cable that protrudes past the lower opening of the downspout.
4. Use only UL Listed watertight enclosure Type 4X, junction box when installing.
5. Make certain the gutters and downspouts are free of leaves and other debris prior to the winter season.

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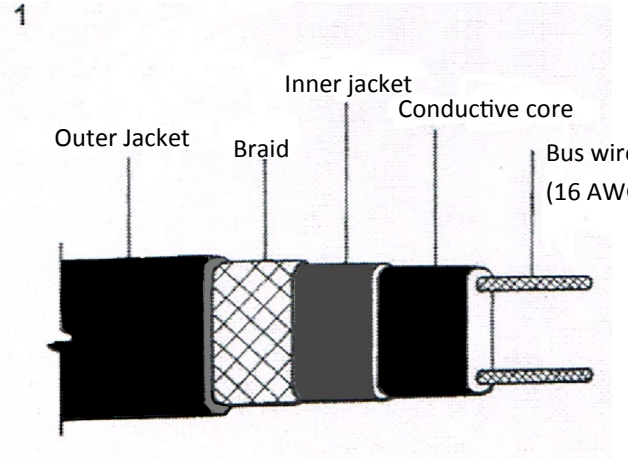

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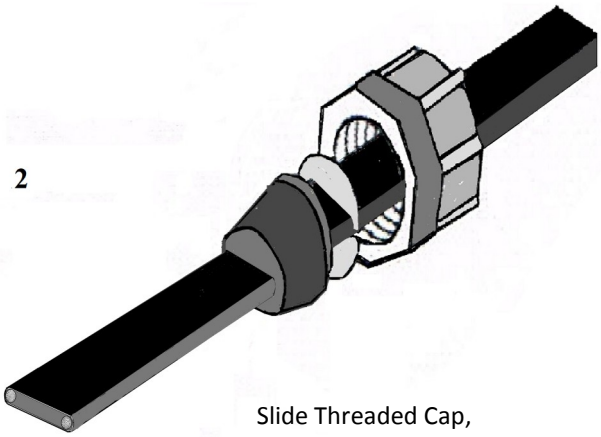

Slide Threaded Cap, Gotcha Ring, and Grom-met onto heating cable.

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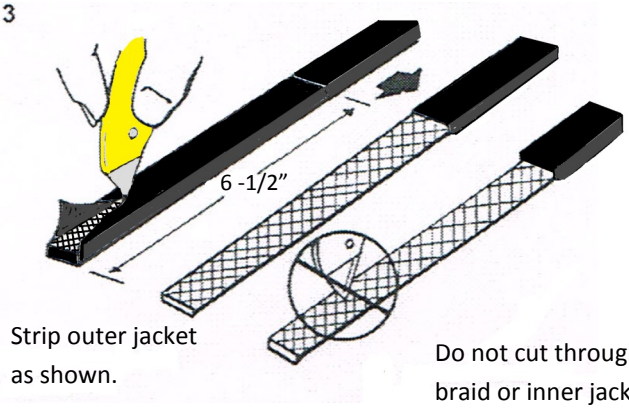

Strip outer jacket as shown.

Do not cut through braid or inner jacket

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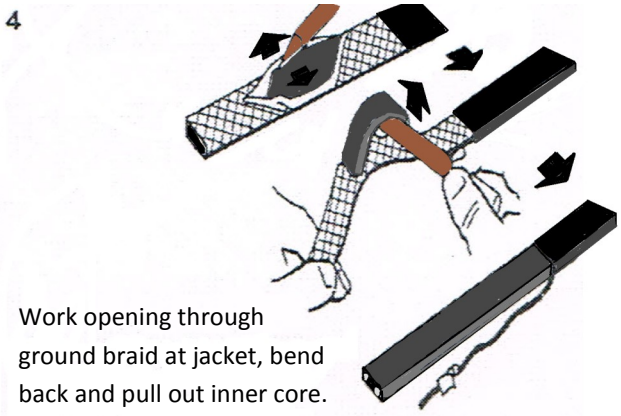

Work opening through ground braid at jacket, bend back and pull out inner core. Twist braid into a pigtail.

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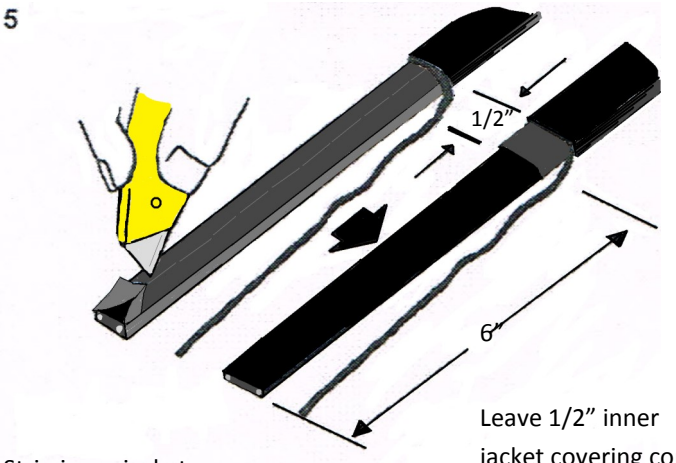

Strip inner jacket as shown.

Leave 1/2” inner jacket covering core.

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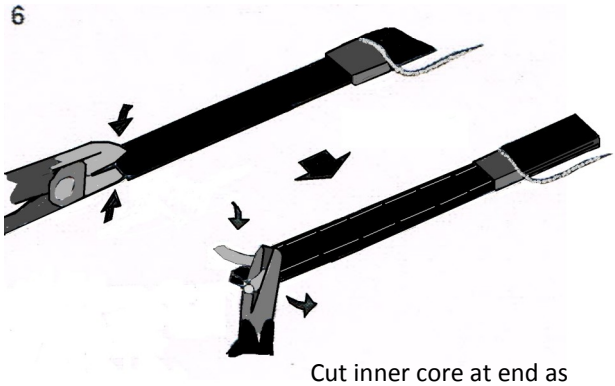

Cut inner core at end as shown. Roll back with pliers and separate the bus wires from the core.

HEAT SHRINK TOOLS AND PROCEDURES:

Tools:

For Small Tubing (3/8" to 1/4"): Use the Steinel HG3000SLE heat gun (or equal) with reflector nozzle #07061. Air flow and temperature can be adjusted to operator preference for the particular tubing.

For Mid-Sized Tubing (3/8" to 3/4") and Small Molded Shapes: Use the Steinel HG3000SLE heat gun (or equal) with a reflector nozzle #07051. Air flow and temperature can be adjusted to operator preference for the particular tubing.

Procedure:

1. Begin shrinking at one end, and gradually work your way down to the other. To ensure that the tubing shrinks evenly and without air bubbles, rotate the cable as you're applying heat.

2. Evenly apply heat over the length and around the diameter of the tubing, until it is uniformly shrunken and conforms to the shape of the cable that it's covering. Immediately remove the heat source, and allow the tubing to cool slowly before you apply physical stress to it.

3. Make sure to avoid over-heating. The last thing you want is charred, brittle heat shrink tubing..

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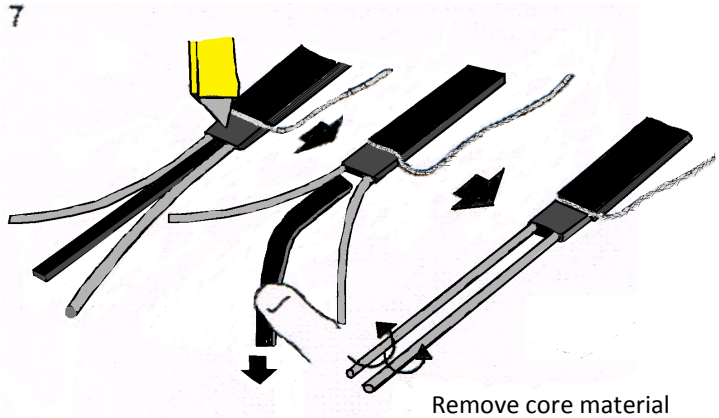

Remove core material from bus wires. Re-twist bus wires.

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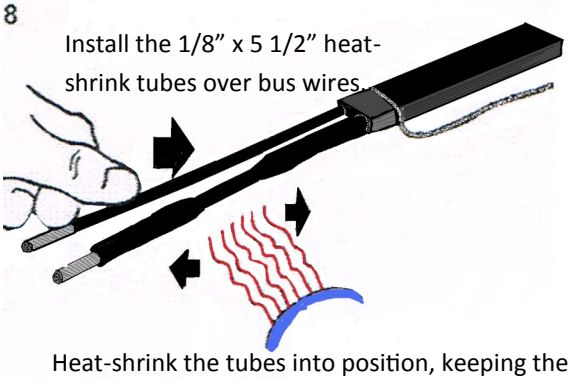
Install the 1/8” x 5 1/2” heat-shrink tubes over bus wires.



Heat-shrink the tubes into position, keeping the heat source moving from side to side. Apply heat evenly until the tube shrinks snugly onto the cable and the glue begins to ooze from the end of the heat shrink tube. Remove heat and let cool.

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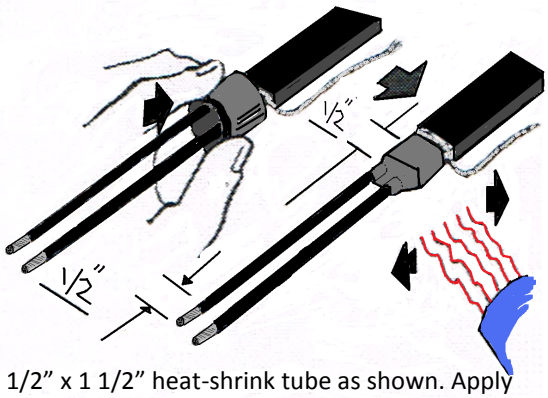

Install black 1/2” x 1 1/2” heat-shrink tube as shown. Apply heat evenly until the tube shrinks snugly onto the cable and the glue begins to ooze from the end of the heat shrink tube. Remove heat.

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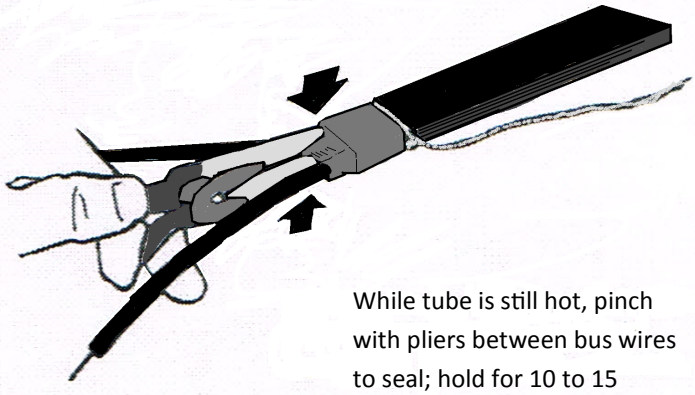

While tube is still hot, pinch with pliers between bus wires to seal; hold for 10 to 15 seconds.

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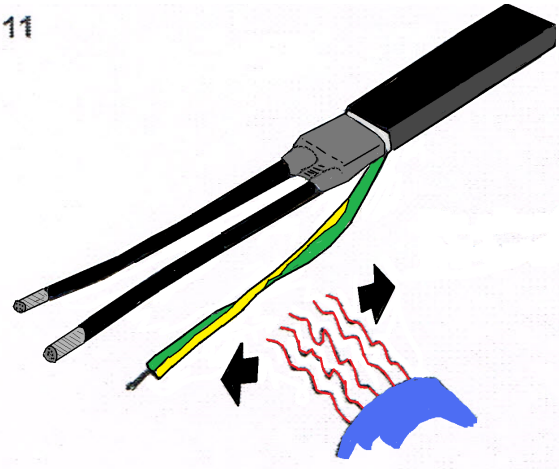

Slip green/yellow tube over braid and apply heat evenly until the shrink tube shrinks snugly onto the braid. Remove heat and let cool.

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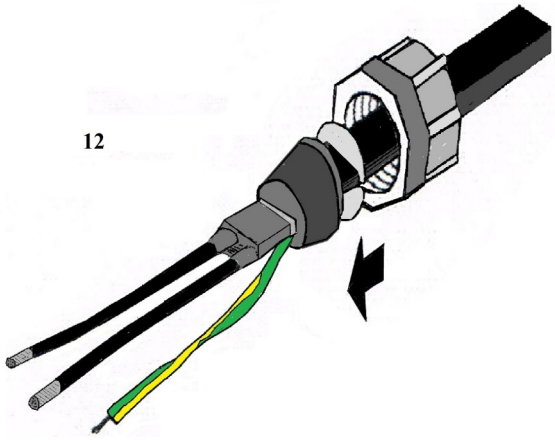

Slide rubber grommet up to the shoulder of outer jacket cutback. Apply Gotcha Ring over cable and slide Threaded Cap up to the grommet.

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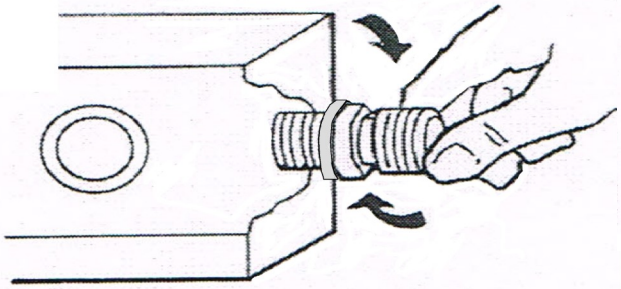

Install O-Ring onto Base Sealing fitting and thread into **UL Listed Watertight Junction**

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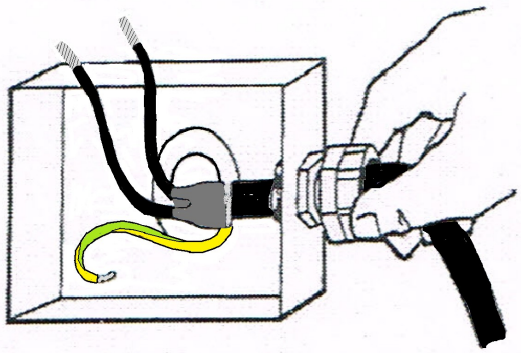

Insert heating cable through sealing fitting and fully tighten components into place.

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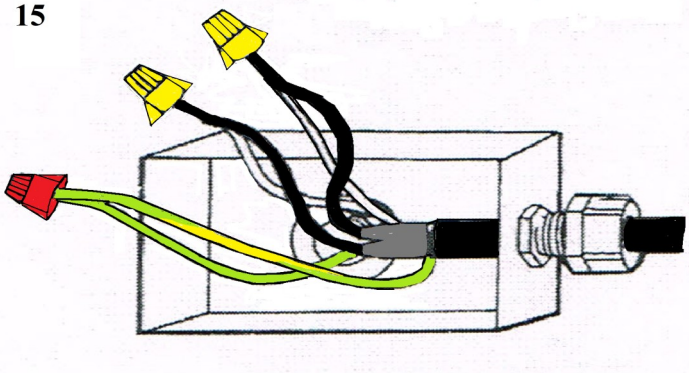

Connect heating cable leads to power wire leads. One bus wire to Line, one bus wire to Line/(Neutral) .

Ground Braid pigtail to ground wire.

Carefully, push wires into junction box.

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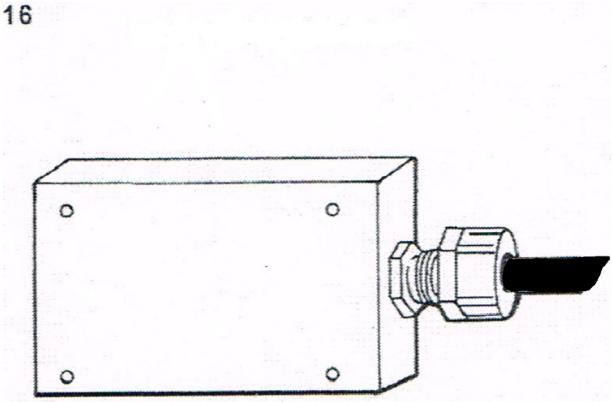
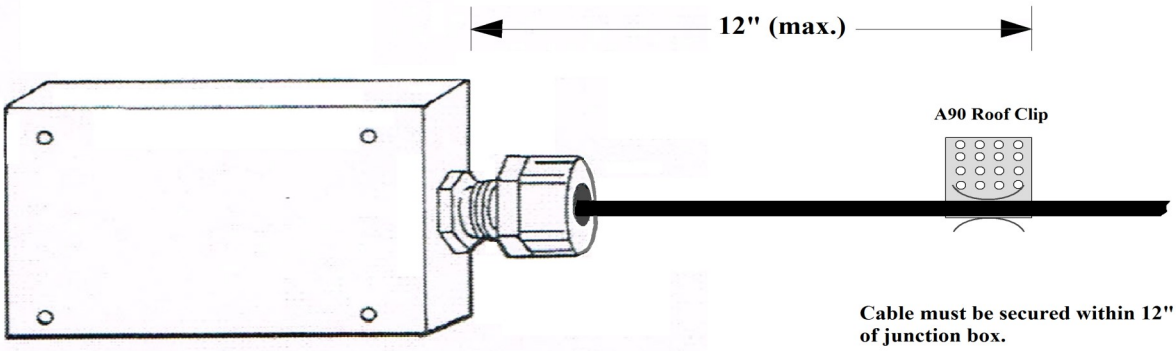


Install weathertight cover

17 **Heating Cable Securement:**

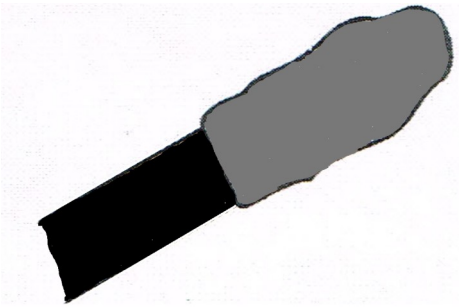
Per UL, the Heating Cable must be secured to the structure, within 12" of the NEMA 4X Junction Box with an A90 Roof Clip or similar.



End Seal

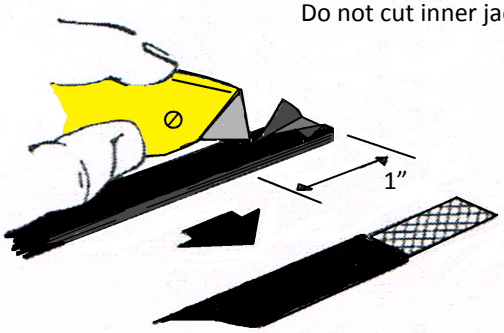
Tools Required

Diagonal cutters; needle-nose pliers; utility knife; heat gun or propane torch.

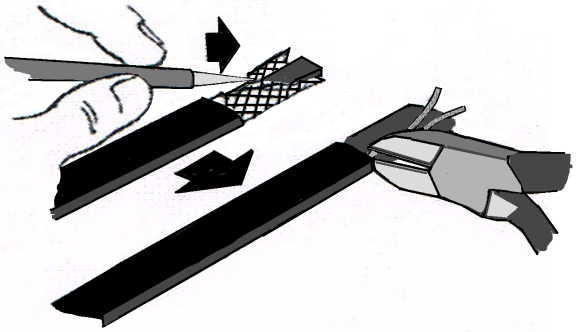


1 Strip outer jacket as shown.

Do not cut inner jacket



2 Unravel ground braid and trim at outer jacket; cut back



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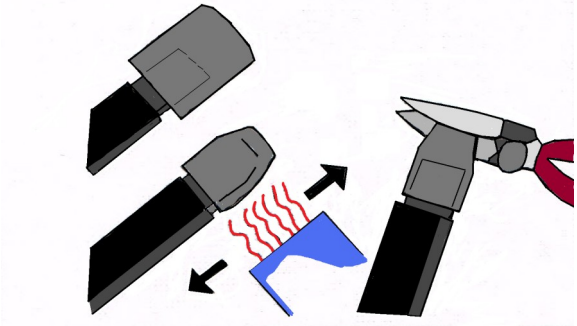

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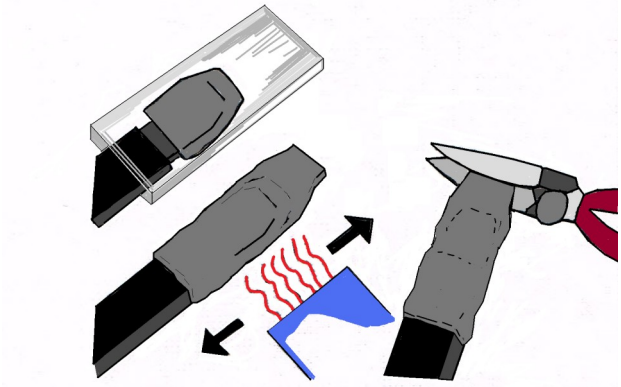

Heat-shrink 1 1/2” heat-shrink tube in place with 3/8” over end of heating cable. Apply heat evenly until the tube shrinks snugly onto the cable and the glue begins to ooze from the end of the heat shrink tube. Remove heat. Squeeze end with needle-nose pliers. Hold for 10 to 15 seconds.

Heat-shrink 3/4” x 6” heat-shrink tube in place with 3/8” over end of smaller heat-shrink tube. Apply heat evenly until the tube shrinks snugly onto the cable and the glue begins to ooze from the end of the heat shrink tube. Remove heat, re-squeeze at end of smaller heat-shrink tube, then squeeze at end of outer heat-shrink tube. Hold for 10 to 15 seconds.