WarmlyYours
Radiant Heating Systems
Experts since 1999

SR-PLUG-KIT Plug-in Conversion Kit with GFCI for Self-Regulating Heating Cable (Includes End-Seal Kit) (part #JSR08)

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage. Retain instructions for future reference.

Description:

The SR-PLUG-KIT Plug-in Conversion Kit with Ground Fault Circuit Interrupter (GFCI) for Self-Regulating Heating Cable (part #JSR08) includes materials to facilitate plug-in installation for self-regulating (otherwise hardwired) roof & gutter de-icing or pipe freeze protection systems. This kit provides ground-fault protection and is cULus Listed for 120V (only) ET-SR or PT-SR series cables. An end-termination kit is included. One required for each individual run of cable of 140' maximum cable length in 120V.

Assembly Tools Needed

- Crimp tool
- Utility knife
- Needle-nose pliers
- Scissors
- Wire cutter
- Heat gun

Additional Materials Required

1. Grounded, UL Listed 15A, 120V receptacle (receptacle must be approved for wet locations if exposed to weather)
2. Additional cable ties may be required for roof and gutter applications.
3. Depending on the type of application, additional accessories may be required. For roof and gutter deicing applications: roof clips, mounting tape, and primer (ET-CL-AP-P25 Aluminum 3-Prong Roof Clips, ET-VHB-PAD-P25 Double-Sided Tape Pads, and ET-94-PRIMER may be purchased separately from WarmlyYours).

Approvals

46DV PIPE HEATING CABLE & 4FB1 DEICING
AND SNOW MELTING EQUIPMENT

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LISTED

Warning

These components are electrical devices. They must be installed correctly to ensure proper operation and to prevent shock or fire. Carefully follow all the installation instructions and read these important warnings before beginning installation.

1. To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with the requirements of the National Electrical Code, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection.
2. Component approvals and performance are based on the use of specified parts only. Do not substitute parts or use vinyl electrical tape. Circuit must be protected by a GFCI breaker.
3. The black heating cable core is conductive. To prevent the possibility of a short, it must be properly insulated and kept dry.
4. Do not embed the heating cable in the thermal insulation.
5. The cable should not be twisted during installation.
6. Keep components and heating cable ends dry before and during installation.
7. Damaged bus wires can overheat or short. Do not break braid or bus wire strands when scoring the jacket or core.
8. Bus wires will short if they contact each other. Keep bus wires separated.
9. Heat-damaged components can short. Use a heat gun or a 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-shrinkable tubes. Avoid heating other components. Replace any damaged parts.
10. Use only fire-resistant insulation materials such as fiberglass wrap.
11. Leave these installation instructions with the user for future reference.
12. De-energize all power circuits before installation or servicing.
13. The conductive layer of this heating device must be connected to a suitable grounding terminal.
14. This kit provides ground-fault protection and is cULus Listed for 120V (only) ET-SR or PT-SR series cables. An end-termination kit is included. One required for each individual run of cable of 140' maximum cable length in 120V.

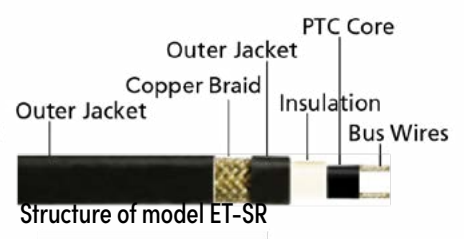
CAUTION: *Charring or burning the heat-shrinkable tubes in this kit will produce fumes that may cause eye, skin, nose, and throat irritation.*

Receptacle Code Compliance (NEC 210.8(A)(3)): All 120V outdoor receptacles supplying plug-in de-icing equipment must be Class A GFCI-protected (4–6 mA trip threshold) for personnel safety. Standard GFCI protection at the receptacle may only be omitted if the outlet is supplied by a dedicated branch circuit, is installed in a location that is not readily accessible (such as high in an eave or soffit), and is protected by Ground-Fault Equipment Protection (GFEP) in accordance with NEC 426.28.

Item	Description	Quantity
A	Black cloth tape (6 in. long x 1in. wide)	1
B	Clamp ties	2
C	Black heat-shrinkable tube (8 in. long x 3/4 in. dia.)	1
D	Black heat-shrinkable tube (5 in. long x 3/4 in. dia.)	1
E	Uninsulated braid crimp	1
F	Insulated bus wire crimps	2
G	Black heat-shrinkable tube (1 in. long x 1/8 in. dia.)	2
H	Black heat-shrinkable tube (1 in. long x 1/2 in. dia.)	1
I	Black heat-shrinkable tube (1½ in. long x 1/3 in. dia.)	1
J	Mastic strips	2
K	Warning labels for pipe-trace application	2
L	Deicing and snow melting equipment labels	2
M	Plug-in, ground-fault equipment protection device	1

Power Connection Kit Installation Instructions

Identify Heating Cable



Structure of model ET-SR

Note: In all locations, route and secure cable to avoid possible mechanical damage, such as from ladders or other sources. Neither the ground-fault unit nor the power connection splice can be submerged.

ET-PLUG-END-KIT Installation Instructions

1. Slide the 5-inch (127mm) tube and 8-inch (203mm) black heat-shrinkable tube over end of the plug-in cord.

Figure 1

2. Cleanly cut off the end of each cable. Lightly score completely around the cable 2 3/4 inches (70mm) from the end and then down the outer jacket. Do not cut braid or inner jacket.

Figure 2

3. Bend heating cable to break jacket at score, then peel off outer jacket.

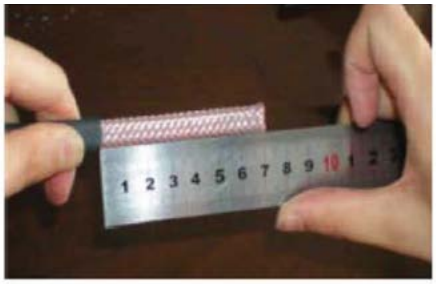


Figure 3

4. Straighten the braid and twist into a "pigtail."

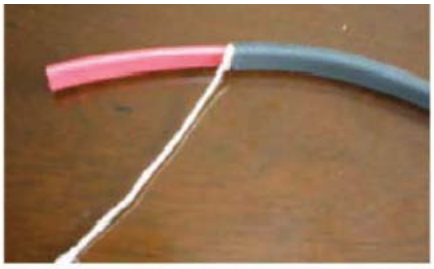


Figure 4

5. Lightly score completely around the cable 1 4/5 inches (45mm) from the end then down the inner jacket. Do not cut bus wires!

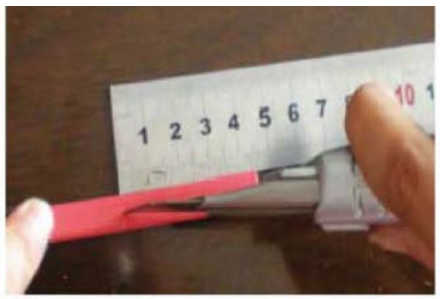


Figure 5

6. Bend heating cable to break jacket at score, then peel off inner jacket.

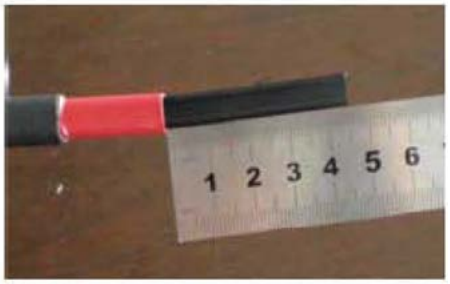


Figure 6

Power Connection Kit Installation Instructions (continued)

7. Remove outer matrix material from conductors with utility knife.

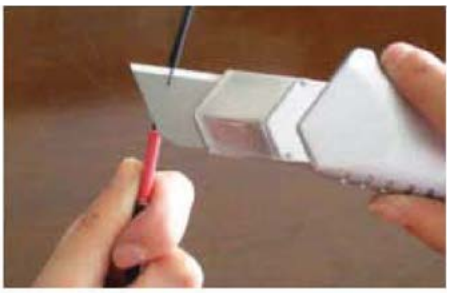


Figure 7

8. Peel exposed wires back from center matrix.

Figure 8

9. Cut center matrix away, leaving bare conductors. Do not cut bus wires!

Figure 9

10. Slide the 1/8 in. (3.2mm) x 1 in. (25mm) shrink tubes over bus wires. To shrink tubing, move heat source continuously from side to side. While shrinking, ensure that tubes remain up against black core.

Figure 10

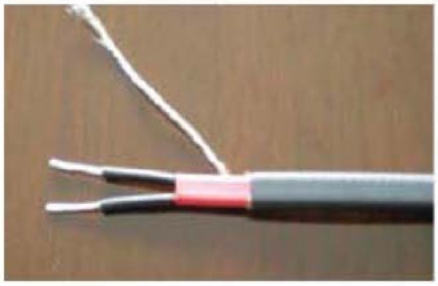


Figure 10-1

11. Center the 1/2 in. (12.7mm) x 1 in. (25mm) heat-shrinkable tube over the end of heating cable as shown. Heat tube evenly until it shrinks and adhesive flows out both ends. Shrink the tube completely. Immediately after shrinking, pinch with pliers between wires while tube is still hot. Hold for 10 seconds to ensure seal.

Figure 11

Figure 11-1

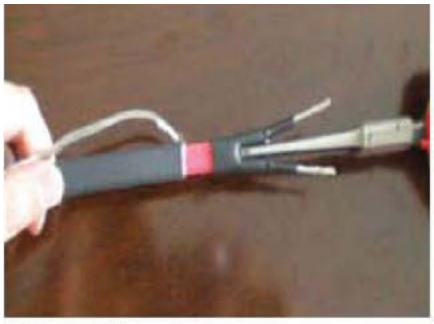


Figure 11-2

Power Connection Kit Installation Instructions (continued)

12. Trim the bus wires to ¼ inch (7mm).

Figure 12

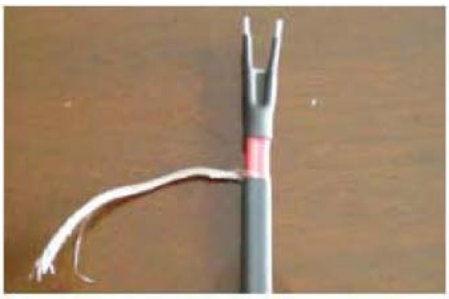


Figure 12-1

13. Use insulated bus wire crimps and crimp tool to connect black and white wires of the plug assembly to the bus wires of heating cable.

Figure 13

14. Remove release paper from mastic strips. Wrap one mastic strip around the black wire against the end of the splice to provide a water block, then repeat for the white wire.

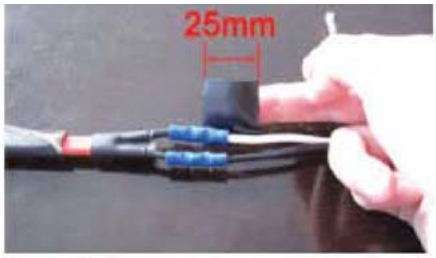


Figure 14

15. Squeeze the mastic together.

Figure 15

16. Center the 5-in. (127mm) heat-shrinkable tube over the splice. Make sure tube extends over the end of each heating cable and the cord. Shrink the tube completely. Start at the middle and work toward each end. Keep heating after tube has shrunk to melt mastic and adhesive inside tube. Total heating time should be about 3 minutes.

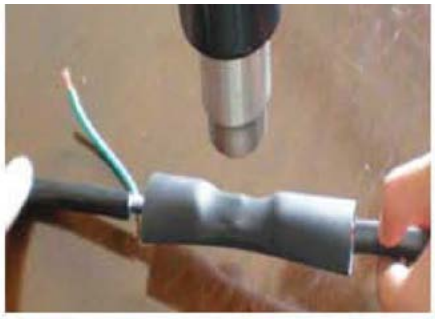


Figure 16

17. Make sure the adhesive appears at both ends. Immediately after shrinking, pinch both ends of the tube with needle-nose pliers until the ends stay sealed.

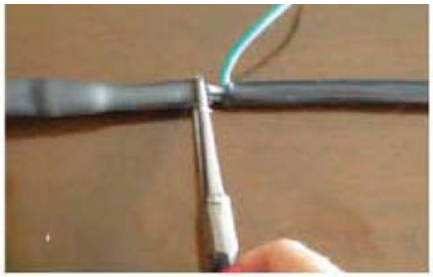


Figure 17

18. Slide one end of an uninsulated crimp connector over the end of the green wire.

Figure 18

Power Connection Kit Installation Instructions (continued)

19. Crimp using crimp tool.

Figure 19

20. Slide the 1/3 in. (7.4mm) x 1 1/2 in. (37mm) shrink tubes over the ground wire, but do not shrink the

Figure 20

tube.

21. Twist the braid pigtails together. Position the metal braided pigtail on top of the splice. Cut the pigtail so that it just reaches the midpoint of the splice.

Figure 21

22. Fold the other metal braid pigtail over 1/4" and insert into the open end of the uninsulated crimp connector. Crimp using the crimp tool.

Figure 22

23. Center the heat-shrinkable tube over the uninsulated crimp connector. Shrink the tube completely. Start at the middle and work toward each end. Keep heating after tube has shrunk to melt adhesive inside tube. Make sure a ring of adhesive appears at both ends of the heat-shrinkable tube.

Figure 23

24. Wrap black cloth tape evenly around crimp and splice. Cover crimp completely.

Figure 24

25. Center the 8-in. (203mm) heat-shrinkable tube over the splice. Make sure tube extends over the end of each heating cable and the cord. Shrink the tube completely. Start at the middle and work toward each end. Keep heating after tube has shrunk to melt mastic and adhesive inside tube. Total heating time should be about 5 minutes.

Figure 25

Figure 25-1

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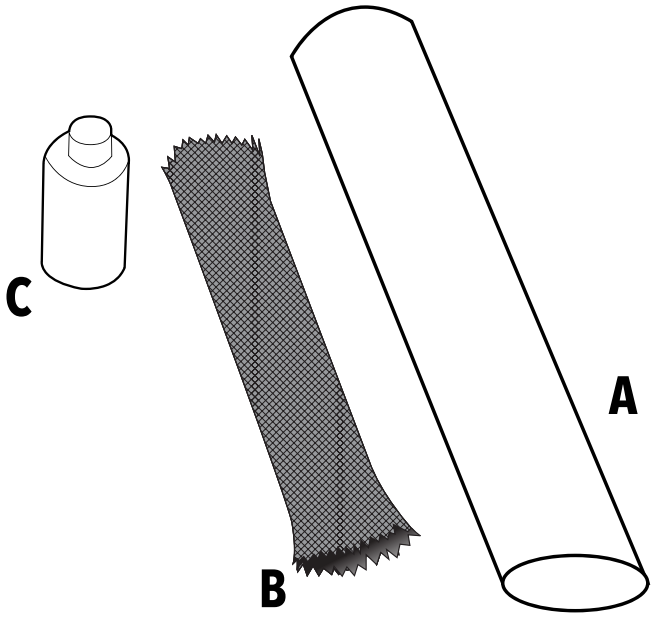
ET-END-KIT End Seal Kit Installation Instructions

(part #JSR12)



Item	Description	Quantity
A	Heat-Shrink Tube (5 in. long x ¾ in. dia.)	1
B	Woven Braid Sleeving (4 in. long x ½ in. dia.)	1
C	Heat-Shrink Cap (½ in. dia)	1

WARNING:

ELECTRIC SHOCK HAZARD: Disconnect all power before installing or servicing heating cable and accessories. A qualified person must perform installation and service of heating cable and accessories. Heating cable must be effectively grounded in accordance with the National Electrical Code. Failure to comply can result in personal injury or property damage.

Note:

1. All electrical wiring, including GFCI (Ground-Fault Circuit Interrupters), must be done according to the National Electrical Code or local codes by a qualified person.
2. Article 426 of ANSI/NFPA 70 of the National Electrical Code (NEC) and Section 62 of CAN/CSA-C22.1, Canadian Electrical Code, Part I (CEC) govern the installation of this heat system.
3. The ET-END-KIT End Seal Kit is suitable for use with ET-SR heating cables.
4. Keep ends of heating devices and kit components dry before and during installation.

ELECTRIC SHOCK HAZARD: To prevent short circuits, do not connect the bus wires together. Keep braid out of heat shrink cap.

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46DV PIPE HEATING CABLE &
4FB1 DEICING AND SNOW MELTING EQUIPMENT

END SEAL KIT INSTALLATION INSTRUCTIONS

1. Score the outer jacket 2 in. from the end of the cable. Remove the jacket to expose the braid.
   CAUTION: When removing the outer jacket, be careful not to damage the braid or the base cable insulation.

Figure 1

2. Push the braid back and cut ¾ in. off the end of the base cable.

Figure 2

3. Slide the heat-shrink cap over the end of the cable. Apply heat evenly until it shrinks around the cable.

Figure 3

4. Pull the pushed-back braid over the sealed end cap and twist the braid end together.

Figure 4

5. Slide the 4 in. woven braid sleeving over the end of the cable, allowing at least ½ in. to extend past the end of the cable.

Figure 5

6. Slide the 5-in. heat-shrink tube over the woven braid piece, allowing ½ in. to extend past the end of each end of the woven sleeving.

Figure 6

7. Apply heat evenly to the heat shrink tube until it shrinks around the cable.

Figure 7

8. While the shrink tubing is still hot, gently squeeze the end of the shrink tube with pliers and hold until cool. The end must remain visibly sealed when the pliers are removed. If the tube does not remain sealed, then repeat steps 7 and 8.

Figure 8-1

Figure 8-2