

DELTA-THERM

Installation Instructions

DELTA-THERM PCK-HLC Electrical Connection Kit

For Use With Delta-Therm IN and HT Series of Heating Cables

Description

The kit contains components needed to make one power input connection and one end termination in Ordinary or Division 2 locations; or one power input connection in Division 1 locations; or one end termination in Division 1 locations. Slices and power input splices can be made by using 2 kits.

KIT CONTENTS

QUANTITY	DESCRIPTION
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1	Connector Body
1	Connector Cap
2	Connector Gland Washers
1	Grommet
1	Termination Boot
1	Strain Relief Grip
1	Standoff Bracket
1	Locknut
1	Termination Block
1	Roll of Fiberglass Tape
1	Silicone Sealant
1	Pipe Strap (for 2" to 6" O.D. Pipes)
1	Ring Tongue Terminal
1	End Seal Kit

Additional Items Required But Not Supplied:

Weather Tight Junction Box (3/4" NPT Hubs)*
Sealing Fitting (Division 1)*
Pipe Strap (for pipe sizes other than 2" to 6" O.D.)
Additional Fiberglass Tape

* The hazardous location designation of the complete cable set is governed by the lowest hazardous location rating of the sealing fitting and outlet box.

Tools Required:

Flat-Head Screwdriver	Needle-nose Pliers
Wire Cutters	Utility Knife or Razor Blade
Diagonal Cutting Pliers	Crimp Tool

General Installations Precautions

1. If the heating cable has a stainless steel braid, the following caution applies: The metal covering shall not be used as the bonding-to-ground means. Alternative means of protection shall be provided per CE Code part I.
2. Ground metal structures used for support on which the cable is installed in accordance with CE Code part I, Section 10.
3. For cables installed in outdoor or wet indoor locations, use a suitable weather-proofing cover (such as aluminum jacketing) to protect the thermal insulation.
4. After installation of thermal insulation is complete, the insulation resistance of the system should not be less than 10 Mohms when measured at 500 V dc between each circuit and ground with set de-energized and all circuit neutrals isolated from ground.
5. Install at -30° C or above.
6. Do not install heater closer than 13mm to any exposed combustible surface unless the cable has a metal shield or sheath and is provided with a positive temperature control which will limit the surface temperature to a value not exceeding 72°C.
7. Minimum bending radius for the heater is 1/4".

Technical Information HT Series of Self-Regulating Heating Cables

Specifications

Part Number	Thermal Rating @ 50°F (Watts/ft.)	Service Voltage (Volts)	Maximum Circuit Length (ft.)	Bus Wire Size (AWG)	Exposure Temperature	Maintenance Temperature
HT120-5	5	120	240	16	366°F (185°C)	250°F(120°C)
HT240-5	5	240	480	16	150 PSIG	
HT120-10	10	120	180	16	Saturated	
HT240-10	10	240	280	16	Steam	
HT120-15	15	120	135	16		
HT240-15	15	240	200	16		

120 Volt Circuit Breaker Sizing vs. Max Circuit Length (ft.)

Max. Circuit Length (ft.)	15A	20A	30A
HT120-5 If started at: 50°F (10°C)	150	200	240
0°F (-20°C)	150	200	240
-40°F (-40°C)	130	170	210
HT120-10 If started at:50°F (10°C)	90	120	180
0°F (-20°C)	85	110	165
-40°F (-40°C)	80	105	160
HT120-15 If started at:50°F (10°C)	70	90	135
0°F (-20°C)	65	85	125
-40°F (-40°C)	60	80	120

240 Volt Circuit Breaker Sizing vs. Max Circuit Length (ft.)

Max. Circuit Length (ft.)	15A	20A	30A
HT240-5 If started at: 50°F (10°C)	250	330	480
0°F (-20°C)	230	305	440
-40°F (-40°C)	220	295	420
HT240-10 If started at:50°F (10°C)	140	190	280
0°F (-20°C)	130	175	260
-40°F (-40°C)	125	170	250
HT240-15 If started at:50°F (10°C)	100	135	200
0°F (-20°C)	95	125	185
-40°F (-40°C)	90	120	180

Technical Information IN Series of Self-Regulating Heating Cables

Specifications

Part Number	Thermal Rating (Watts/ft.) @ 50°F	Service Voltage	Maximum Circuit Length (ft.)	Bus Wire Size (AWG)	Maximum Maintain Temperature (°F)	Maximum Exposure Temperature (°F)
IN120-3	3	120	330	16	150	185
IN240-3	3	240	660	16	150	185
IN120-5	5	120	270	16	150	185
IN240-5	5	240	540	16	150	185
IN120-8	8	120	210	16	150	185
IN240-8	8	240	420	16	150	185
IN120-10	10	120	180	16	150	185
IN240-10	10	240	360	16	150	185

120 Volt Circuit Breaker Sizing vs. Max Circuit Length (ft.)

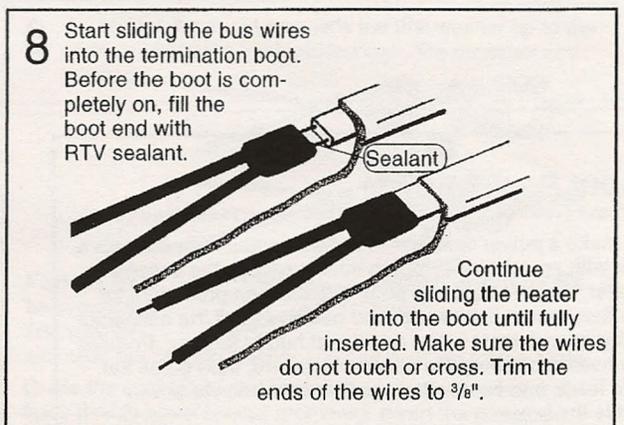
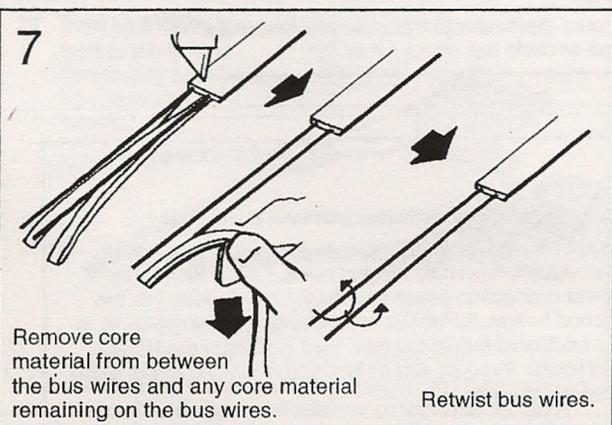
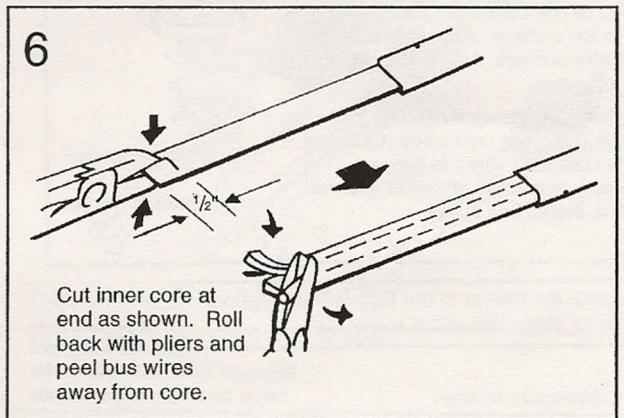
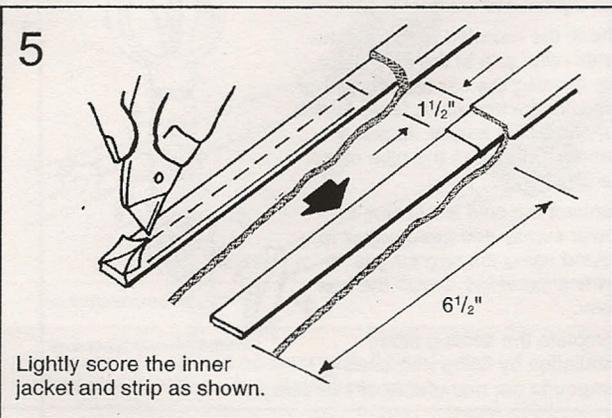
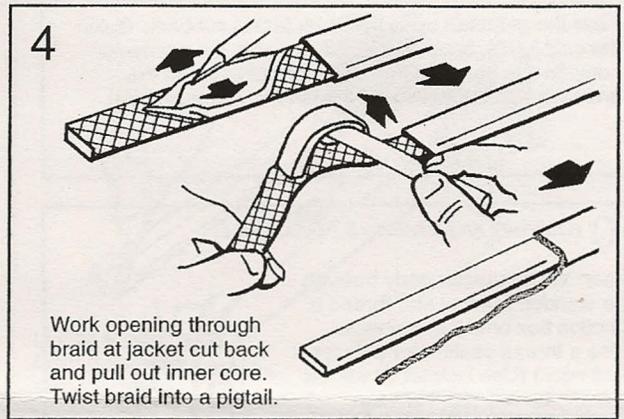
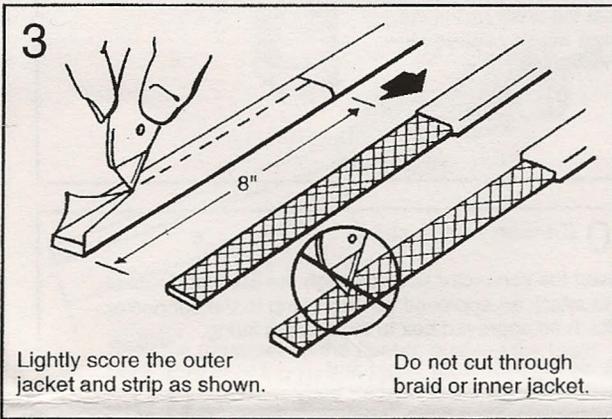
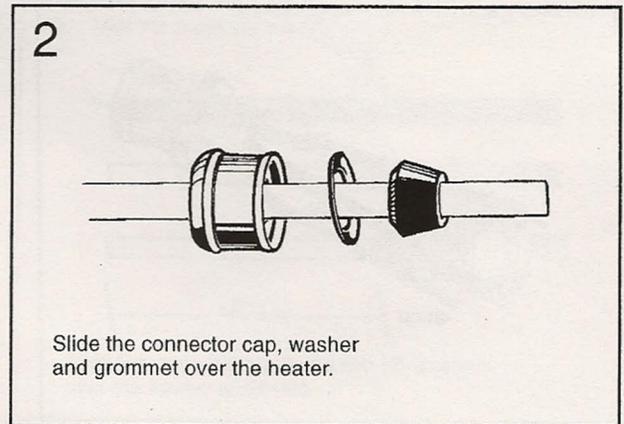
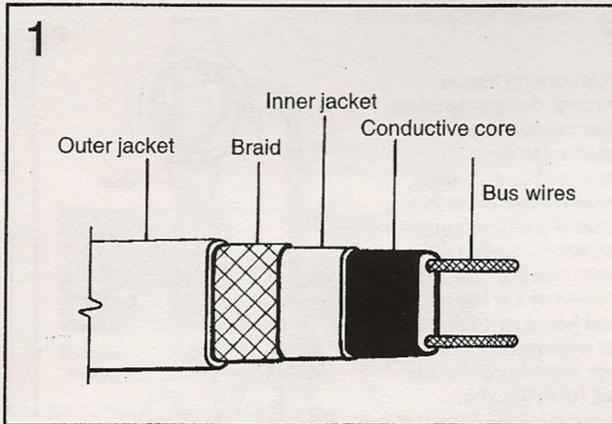
Max. Circuit Length (ft.)	15A	20A	30A	40A
IN120-3 If started at: 50°F	300	-	-	-
0°F	200	270	330	-
-20°F	180	230	330	-
IN120-5 If started at: 50°F	230	270	-	-
0°F	150	200	270	-
-20°F	130	175	260	270
IN120-8 If started at: 50°F	150	200	210	-
0°F	95	125	190	210
-20°F	85	100	170	210
IN120-10 If started at: 50°F	115	150	180	-
0°F	70	95	145	180
-20°F	60	85	120	165

240 Volt Circuit Breaker Sizing vs. Max Circuit Length (ft.)

Max. Circuit Length (ft.)	15A	20A	30A	40A
IN240-3 If started at: 50°F	660	-	-	-
0°F	410	560	660	-
-20°F	360	480	660	-
IN240-5 If started at: 50°F	460	540	-	-
0°F	300	400	540	-
-20°F	260	345	520	540
IN240-8 If started at: 50°F	295	390	420	-
0°F	195	250	375	420
-20°F	170	225	340	420
IN240-10 If started at: 50°F	230	305	360	-
0°F	150	200	300	360
-20°F	130	175	260	360

Recommended circuit breakers to minimize effect of transit startup currents.
 Westinghouse: Types BA, EB, EHB, FB, HFB
 General Electric: E100 Type TEB, E150 Types TED, THED
 Square D: Types EH, FA, IF

Power Connection Instructions for Heater with Braid and Outer Jacket

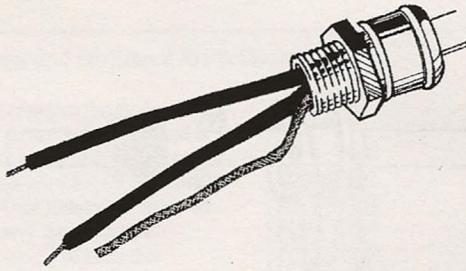


Power Connection Instructions for Heater with Braid and Outer Jacket (continued)

↓ Ordinary and Division 2 Applications ↓

↓ Division 1 Applications ↓

9 (Ordinary and Division 2 Applications)

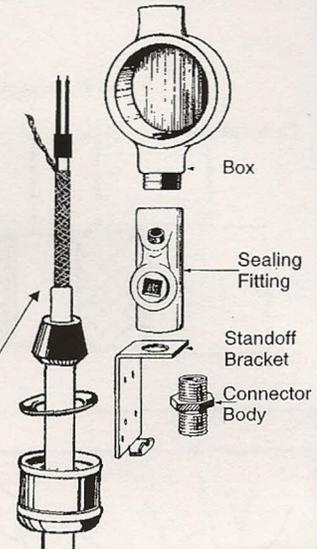


Slide the grommet up to the outer jacket cut back. Guide the cold leads, braid and heater through the connector body (inside bevel end toward grommet), insert the grommet into the body and tighten the connector cap.

9 (Division 1 Applications)

Pull enough heater through the grommet so that the cold leads and heater can be guided through the connector body (inside bevel end toward grommet) and an approved sealing fitting such that the heating portion of the heater will end just prior to entering an approved connection box and the cold leads will be in the box.

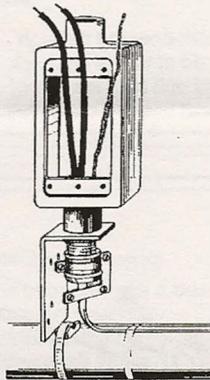
Score and remove enough additional outer jacket so that the outer jacket cut back will be centered in the sealing fitting.



10 (Ordinary and Division 2 Applications)

Insert the connector body through the standoff bracket and thread a junction box onto the connector. (Use a thread sealant for a water-tight seal.) (Use locknut if needed to make up any gap between bracket and box.) Attach the rounded portion of the strain relief grip to the connector cap aligning the flat surface of the grip with the heater surface. Attach the grip to the heater.

Attach the standoff bracket to the pipe using the pipe strap. Connect the cold lead wires to power supply and braid pigtail to ground wire. Install box cover.



Secure the heater to the pipe with fiberglass tape or cable ties about every 12".

10 (Division 1 Applications)

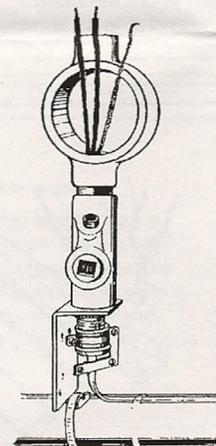
Insert the connector body through the standoff bracket and attach an approved sealing fitting to the connector. Attach an approved box to the sealing fitting.

Guide the cold leads, braid and heater through the connector body and sealing fitting into the box. Insert the grommet into the body and tighten the connector cap.

Attach the rounded portion of the strain relief grip to the connector cap aligning the flat surface of the grip with the heater surface. Attach the grip to the heater. Attach the standoff bracket to the pipe using the pipe strap.

Connect the cold lead wires to power supply and braid pigtail to ground using the ring tongue terminal provided. Install the box cover.

Complete the sealing fitting installation by filling with sealing compound per manufacturer's directions.



Secure the heater to the pipe with fiberglass tape or cable ties about every 12".

Input Power Splice

(for power connection to two lengths of heater) (additional kits required)

To make a power connection to two lengths of heater use a box with an additional hub to accommodate the second heater. Follow the above power connection procedure for the first heater. For the second heater, install the connector fitting components in the additional hub in the box. Prepare the heater following the above procedure; then guide the cold leads and heater through for connection to power inside the box.

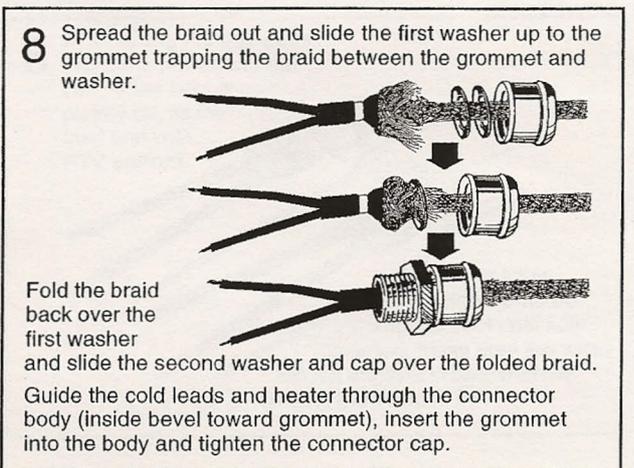
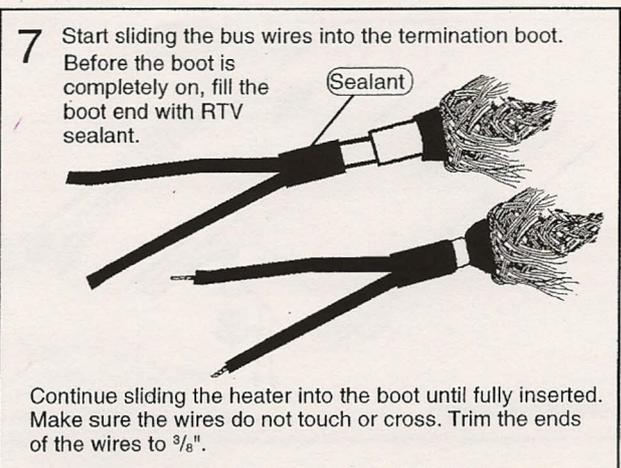
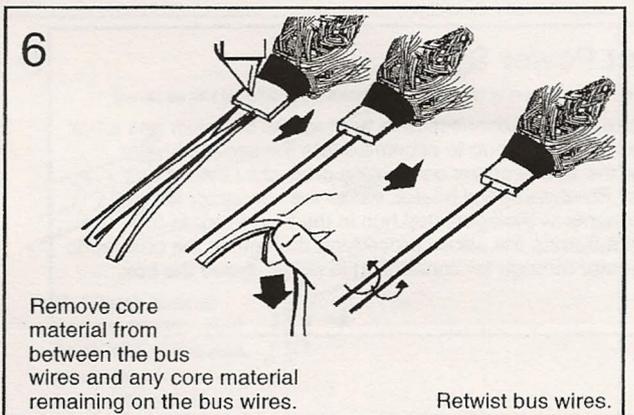
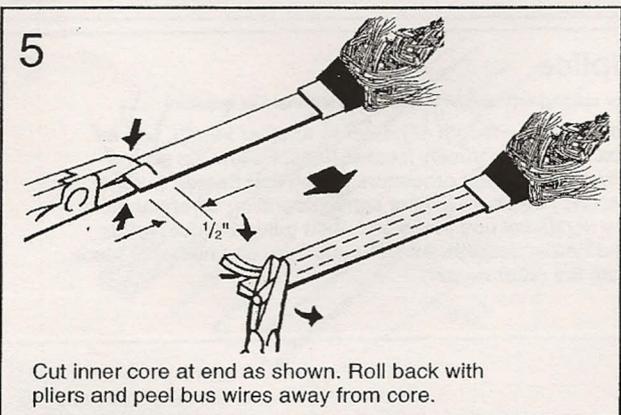
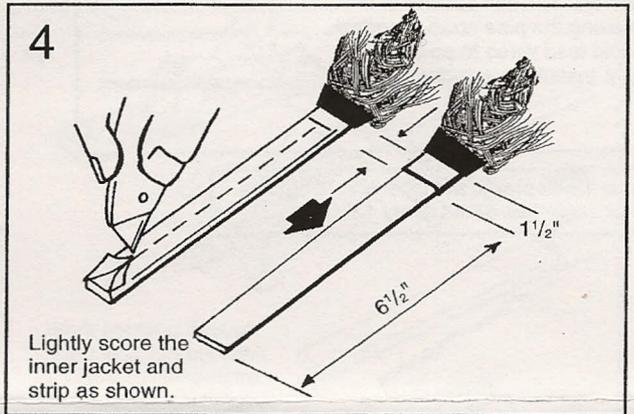
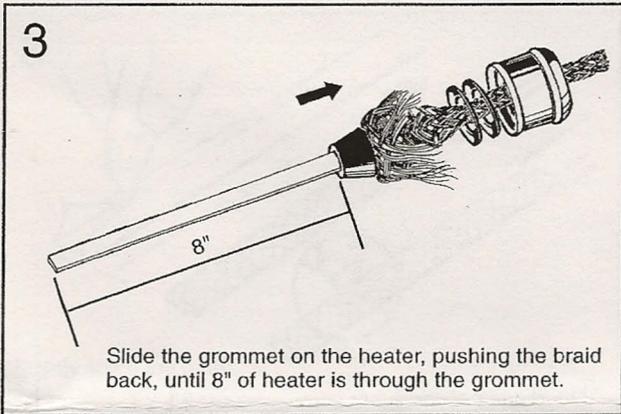
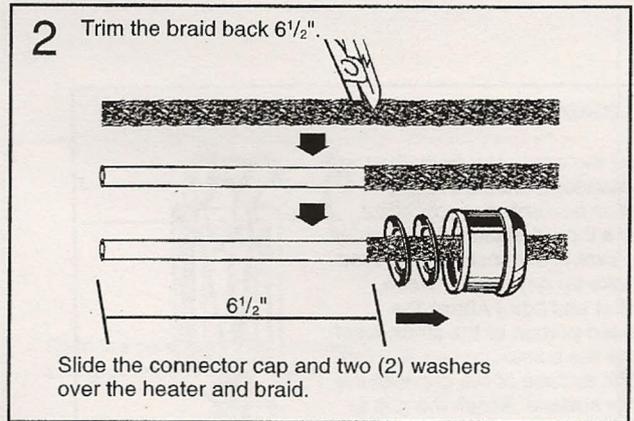
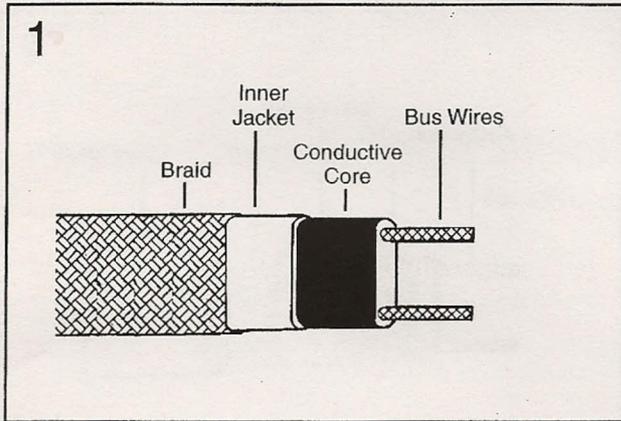
Splice

(for splicing two lengths of heater) (additional kits required)

To splice one length of heater to another length, use a box with appropriately located hubs. Follow the above power connection procedure for the first heater. For the second heater, install the connector fitting components in the additional hub in the box; then guide the cold leads and heater through. Attach leads from one heater to leads from the other heater.

Power Connection Instructions for Heater with Braid Only (no outer jacket)

(Ordinary and Division 2 Applications)

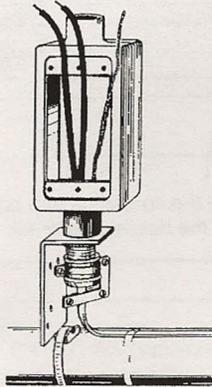


Power Connection Instructions for Heater with Braid Only (no outer jacket) (continued)

9 (Ordinary and Division 2 Applications)

Insert the connector body through the standoff bracket and thread a junction box onto the connector. (Use a thread sealant for a water-tight seal.) (Use locknut if needed to make up any gap between bracket and box.) Attach the rounded portion of the strain relief grip to the connector cap aligning the flat surface of the grip with the heater surface. Attach the grip to the heater.

Attach the standoff bracket to the pipe using the pipe strap. Connect the cold lead wires to power supply. Install box cover.



Secure the heater to the pipe with fiberglass tape or cable ties about every 12".

Input Power Splice

(for power connection to two lengths of heater) (additional kits required)

To make a power connection to two lengths of heater use a box with an additional hub to accommodate the second heater. Follow the above power connection procedure for the first heater. For the second heater, install the connector fitting components in the additional hub in the box. Prepare the heater following the above procedure; then guide the cold leads and heater through for connection to power inside the box.

Splice

(for splicing two lengths of heater) (additional kits required)

To splice one length of heater to another length, use a box with appropriately located hubs. Follow the above power connection procedure for the first heater. For the second heater, install the connector fitting components in the additional hub in the box; then guide the cold leads and heater through. Attach leads from one heater to leads from the other heater.

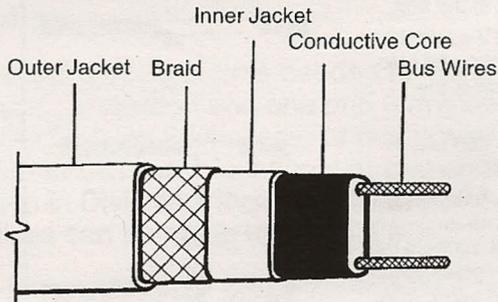
End Termination Instructions

↓ Ordinary and Division 2 Applications ↓

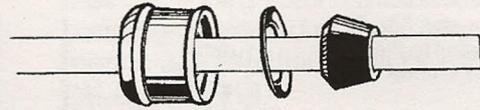
Follow the instructions included with the End Seal Kit.

↓ Division 1 Applications ↓

1

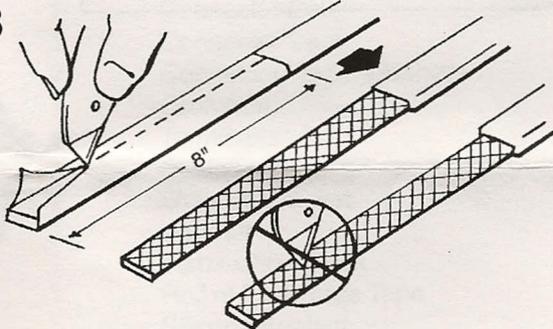


2



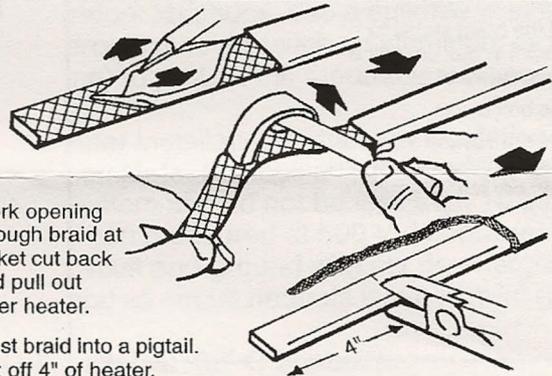
Slide the connector cap, washer and grommet over the heater.

3



Lightly score the outer jacket and strip as shown. Do not cut through braid or inner jacket.

4



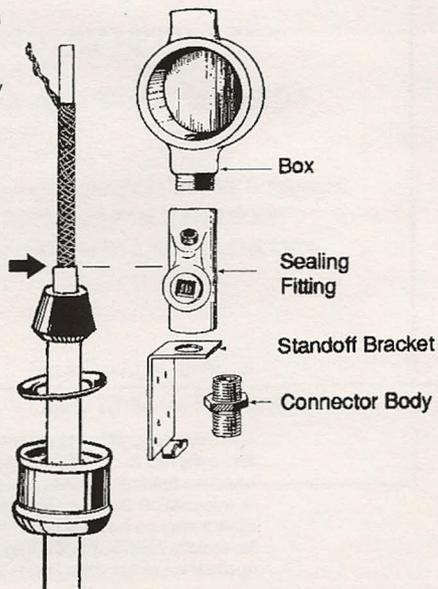
Work opening through braid at jacket cut back and pull out inner heater.
Twist braid into a pigtail.
Cut off 4" of heater.

5

Pull enough heater through the grommet so that the heater end can be guided through the connector body (inside bevel end toward grommet) and an approved sealing fitting and into a box.

Score and remove enough additional outer jacket so that the outer jacket cut back will be centered in the sealing fitting.

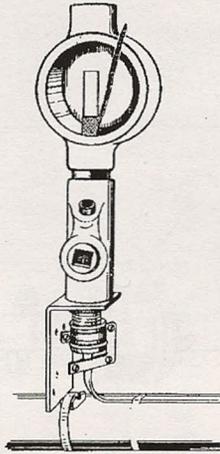
Insert the connector body through the standoff bracket and attach an approved sealing fitting to the connector. Attach an approved box to the sealing fitting.



End Termination Instructions (Division 1 Applications) (Continued)

6 Guide the heater and braid through the connector body and sealing fitting into the box. Insert the grommet into the body and tighten the connector cap.

Attach the rounded portion of the strain relief grip to the connector cap aligning the flat surface of the grip with the heater surface. Attach the grip to the heater. Attach the standoff bracket to the pipe using the pipe strap.



8 Connect the braid pigtail to ground point in box using the ring tongue terminal provided. Install the box cover.

Complete the sealing fitting installation by filling with sealing compound per manufacturer's instructions.

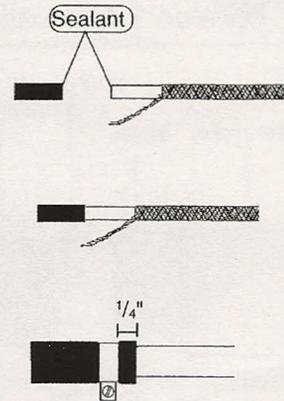
7 Install end seal components.

Trim the end of the heater if needed so that once the end seal cap is on it will be centered in the box.

Apply RTV sealant into the end cap and also on the end of the heater.

Slide the end cap on the heater.

Slide the clamp over the end cap and position it $\frac{1}{4}$ " from the heater entrance point. (Note: the screw may have to be completely removed in order to get the clamp over the cap, and then reinstalled.) Tighten the clamp until the cap deforms.



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