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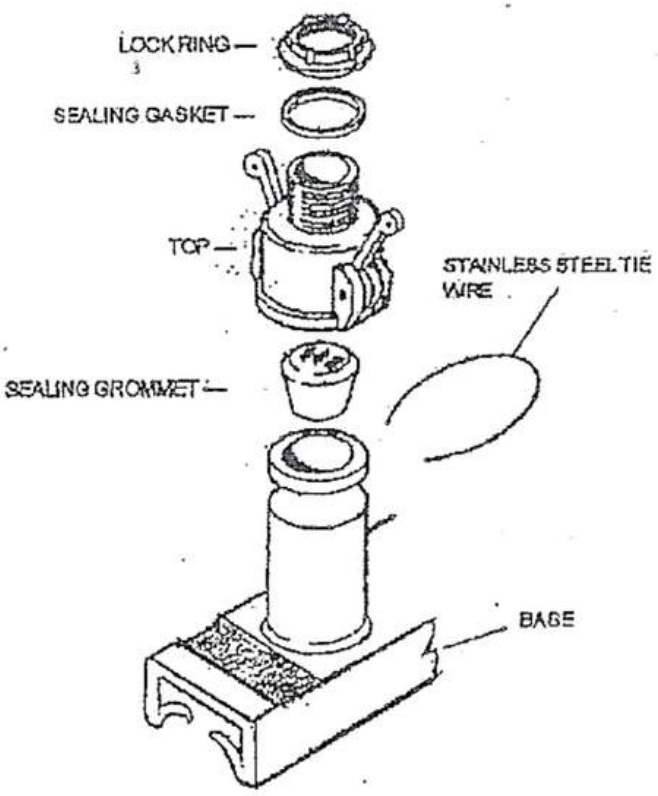

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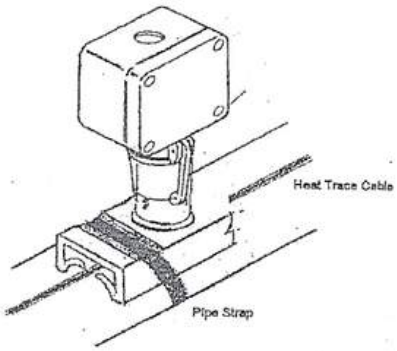

INSTALLATION INSTRUCTIONS

These installation instructions are for use with HTS Self-Regulating heater products: For use with LXR, MXR, HXR Families of Heating Cable.

For technical support call HTS.

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PARTS LIST

Description	Quantity
Base	1
Top	1
Grommet (3 large holes) 2708, 2710, 2300 Series	1
Grommet (3 small holes) 2703, 2705, 2000 Series	1
Grommet hole plugs	2
Sealing Gasket	1
Locking Ring	1
Tie Wire	1
Termination Boot (with clear inserts)	3
Roll of Fiberglass Tape	1
Silicone Sealant	1
Pipe Straps (for 2" to 6" OD pipes)	2
Electrical Junction Box	1

PARTS LIST

Description	Quantity
Pipe Strap (for pipe sizes other than 2" to 6")	1
Additional Glass Tape	1

TOOLS LIST

Description
Screwdrivers
Wire Cutters
Razor Blade or Utility Knife
Diagonal Cutting Pliers
Needle Nose Pliers

GENERAL INSTALLATION INSTRUCTIONS

1. If the heating cable has stainless steel braid, the following caution applies: The metal covering shall not be used as the binding — to— ground 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 !.
3. For cables installed in outdoor or wet indoor locations, use a suitable weatherproofing 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 megohms when measured at 500 VDC between each circuit and ground with set de-energized all circuit neutrals isolated from ground.
5. Install at -30 degrees Celsius or above.
6. Do not install heater closer than 13 mm to any 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 degrees Celsius,
7. Minimum bending radius for the heater is 1/4".

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TECHNICAL INFORMATION 2305/2310/2315 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
2305-1	5	120	240	16	366°F (185°C) 150 PSIG Saturated Steam	250°F(120°C)
2305-2	5	240	480	16		
2310-1	10	120	180	16		
2310-2	10	240	260	16		
2315-1	15	120	135	16		
2315-2	15	240	200	16		

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

Max. Circuit Length (ft.)	15A	20A	30A
2305-1 If started at:50°F (10°C)	150	200	240
0°F (-20°C)	150	200	240
-40°F (-40°C)	130	170	210
2310-1 If started at:50°F (10°C)	90	120	180
0°F (-20°C)	85	110	165
-40°F (-40°C)	80	105	160
2315-1 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
2305-2 If started at:50°F (10°C)	250	330	480
0°F (-20°C)	230	305	440
-40°F (-40°C)	220	295	420
2310-2 If started at:50°F (10°C)	140	190	280
0°F (-20°C)	130	175	260
-40°F (-40°C)	125	170	250
2315-2 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 2703/2705/2710 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)
2703-1	3	120	330	16	150	185
2703-2	3	240	660	16	150	185
2705-1	5	120	270	16	150	185
2705-2	5	240	540	16	150	185
2708-1	8	120	210	16	150	185
2708-2	8	240	420	16	150	185
2710-1	10	120	180	16	150	185
2710-2	10	240	360	16	150	185

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

Max. Circuit Length (ft.)	15A	20A	30A	40A
2703-1 If started at:50°F	300	-	-	-
0°F	200	270	330	-
-20°F	180	230	330	-
2705-1 If started at:50°F	230	270	-	-
0°F	150	200	270	-
-20°F	130	175	260	270
2708-1 If started at:50°F	150	200	210	-
0°F	95	125	190	210
-20°F	85	100	170	210
2710-1 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
2703-2 If started at:50°F	660	-	-	-
0°F	410	560	660	-
-20°F	360	480	660	-
2705-2 If started at:50°F	460	540	-	-
0°F	300	400	540	-
-20°F	260	345	520	540
2708-2 If started at:50°F	295	390	420	-
0°F	195	250	375	420
-20°F	170	225	340	420
2710-2 If started at:50°F	230	305	360	-
0°F	150	200	300	360
-20°F	130	175	260	360

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TECHNICAL INFORMATION HXR05/HXR10/HXR15/HXR20/HXR25/HXR30 SELF-REGULATING HEATING CABLES SPECIFICATIONS

Part Number	Thermal Rating @ 50°F (Watts/ft.)	Service Voltage (Volts)	Maximum Circuit Length (ft.)	Bus Wire Size (AWG)	Intermittent Exposure Temperature Maximum	Maintenance Temperature
2005-1	5	120	335	16	450°F (232°C) 190 PSIG Saturated Steam	375°F(190°C)
2005-2	5	240	540	16		
2010-1	10	120	180	16		
2010-2	10	240	360	16		
2015-1	15	120	135	16		
2015-2	15	240	270	16		
2020-1	20	120	120	16		
2020-2	20	240	230	16		
2025-1	25	120	85	16		
2025-2	25	240	170	16		
2030-1	30	120	70	16		
2030-2	30	240	140	16		

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

Max. Circuit Length (ft.)	15A	20A	30A
2005-1 If started at:50°F (10°C)	180	240	335
0°F (-20°C)	165	220	330
-50°F (-45°C)	150	200	300
2010-1 If started at:50°F (10°C)	120	160	180
0°F (-20°C)	105	140	180
-50°F (-45°C)	90	120	180
2015-1 If started at:50°F (10°C)	80	105	135
0°F (-20°C)	70	90	135
-50°F (-45°C)	60	80	120
2020-1 If started at:50°F (10°C)	60	90	120
0°F (-20°C)	55	70	110
-50°F (-45°C)	50	65	100
2025-1 If started at:50°F (10°C)	45	60	85
0°F (-20°C)	40	50	80
-50°F (-45°C)	40	50	80
2030-1 If started at:50°F (10°C)	40	50	70
0°F (-20°C)	35	45	70
-50°F (-45°C)	35	45	70

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

Max. Circuit Length (ft.)	15A	20A	30A
2005-1 If started at:50°F (10°C)	360	480	540
0°F (-20°C)	325	430	540
-50°F (-45°C)	290	385	540
2010-2 If started at:50°F (10°C)	240	320	360
0°F (-20°C)	230	305	360
-50°F (-45°C)	225	300	360
2015-2 If started at:50°F (10°C)	160	210	270
0°F (-20°C)	140	185	270
-50°F (-45°C)	120	160	240
2020-2 If started at:50°F (10°C)	115	150	230
0°F (-20°C)	110	145	220
-50°F (-45°C)	105	140	210
2025-2 If started at:50°F (10°C)	90	120	170
0°F (-20°C)	80	100	160
-50°F (-45°C)	80	100	160
2030-2 If started at:50°F (10°C)	80	100	140
0°F (-20°C)	70	90	140
-50°F (-45°C)	70	90	140

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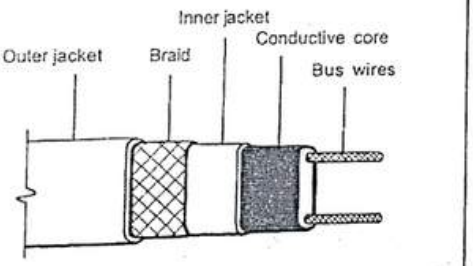
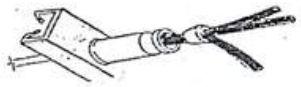
1



2

Note: Use grommet with larger holes for 2708, 2710 and 2300 series heaters. Slide heaters through the base and grommet.



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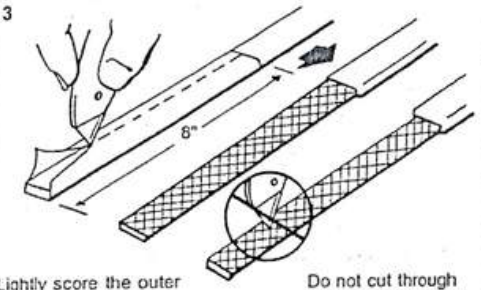
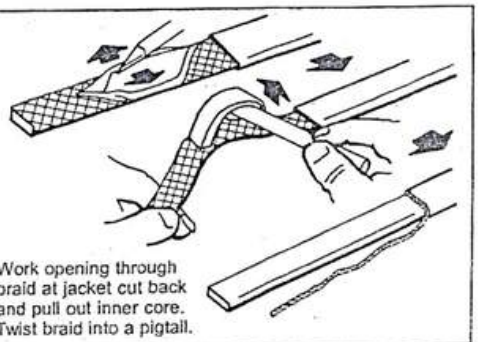


Lightly score the outer jacket and strip as shown.

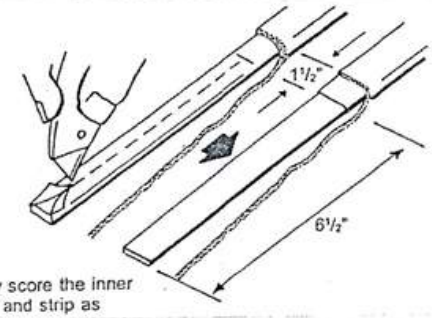
Do not cut through braid or inner jacket.

4



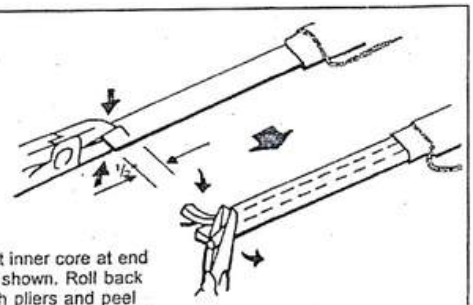
Work opening through braid at jacket cut back and pull out inner core. Twist braid into a pigtail.

5



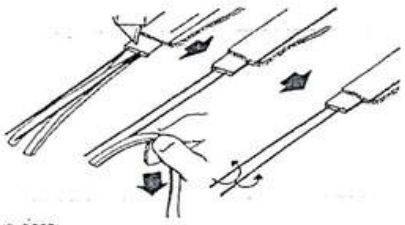
Lightly score the inner jacket and strip as shown.

6



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

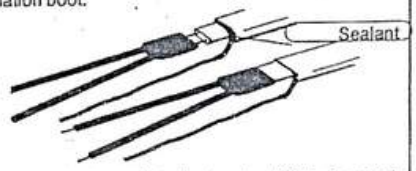
7



Remove core material from between the bus wires and any core material remaining on the bus wires.

Retwist bus wires.

8 Start sliding the bus wires into the clear tubes (these function as guide tubes) that are inside the termination boot. Before the boot is completely on, fill the boot end with RTV sealant. Pull the clear tubes out of the termination boot.

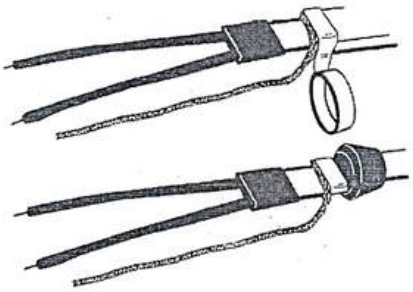


Continue sliding the heater into the boot until fully inserted. Make sure the wires do not touch or cross. Trim the ends of the wires to $^{1}/_{2}$".

POWER CONNECTION INSTRUCTIONS FOR HEATER WITH BRAID AND OUTER JACKET (CONTINUED)

9

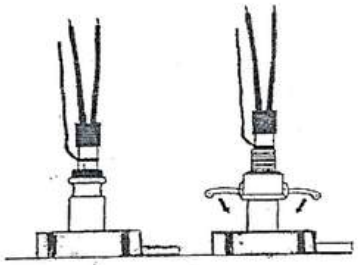
Wrap 3 layers of glass tape around the outer jacket at the cut back point.



Slide grommet up to tape.

Repeat steps 3 through 9 for the remaining heating cables.

10



When using enclosure 1595-10000:
Position the grommet in the base and attach the base to pipe with pipe straps as shown above. **Goto step 11 part A.**

When using threaded metal enclosure:
Slide the top into place and push and lock the cam levers into position. Insert tie wire through holes in cam levers and twist ends together to lock levers down. **Goto step 11 Part B**

11 Part A

Place black sealing gasket over the threaded top of the cam locking device. Next, place the metallic sealing ring with blue polymer sealing surface on top of the black sealing gasket. Make sure the metallic sealing gasket is facing upward with the wider blue polymer sealing surface exposed. Place the 1595-10000 electrical enclosure over top of the cam locking treads and on top of the blue sealing gasket surface. (The threaded top of the cam locking device should be protruding though the junction box.) Place the other metallic sealing ring with blue polymer sealing surface over top of the cam locking device threads. Make sure that the wider blue surface is facing downward toward the electrical enclosure surface. (The electrical enclosure bottom wall is sandwiched between the metallic sealing gaskets with blue polymer sealing surfaces.) Now place the lock ring onto the cam locking device threads. Tighten the assembly such that the cam locking arms are perpendicular to the junction box so that this assembly can be placed on top of the standoff and securely locked in place. (If the arms fall under the enclosure, they will not lift up high enough to place the assembly onto the T standoff.)

Place the assembly on top of the T standoff and push cam lever arms down to lock the apparatus. The wire supplied is to be run through the holes in each of the arms and twisted such that the arms cannot lift up and loosen the assembly.

The locking ring has three holes to accommodate a self-tapping bonding screw. Green ground wire is supplied to bond both the T standoff and the conduit hub on the side of the enclosure. Bare the conductor on each end of the supplied green wire. On one side of each wire, crimp the supplied ring terminal to the exposed conductor. Leave one side on each wire exposed. Remove the screw on the conduit hub and connect the ring terminal of one of the prepared green wires to this position. Reinstall the removed screw and connect the other end of the wire to the grounding terminal strip in the junction box. the conduit hub is now bonded. Next, choose the hole in the locking ring that is most convenient for attaching the second prepared green grounding wire. Place self tapping screw through the ring terminal and tighten into one of the holes in the locking ring. Take the other end of the green wire and connect to the grounding terminal strip in the junction box. The T standoff is now electrically bonded. Each of the heating cables are to be attached to the terminal strip: One leg of each heater is connected to one terminal, supplied by one leg of power.

Refer to the separate instructions for the electrical connection specifics. They are enclosed as part of this kit.

Part B

Using other metallic threaced enclosures: (Must be approved by appropriate agency (FM, CSA, UL) for system approval.)
When using a metal junction box with a 1 1/4" inside threaded hub - use a thread sealant for a watertight seal. Thread onto top of camlocking device and make power and grounding connections.

Once the proper electrical connections are made, install the cover on the enclosure.

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

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INSTALLATION INSTRUCTIONS FOR CONNECTIONS MADE INSIDE OF THE ELECTRICAL ENCLOSURES

Spring cage connectors are utilized inside of the electrical enclosures to simplify the heating cable installations.

Tools required:

Screwdriver — size 0.8mm x 4.00mm (head)
Wire stripper/cutter

1. Continuing from step 11 in both the CID1 and CID2 (and ordinary) assembly instructions:
2. Insure each of the conductors has 12mm (0.4724") of wire exposed from the insulation.
3. Connect each of the heating cables to the power terminals first and corresponding pigtailed braids to each grounding terminal.
4. A simple insertion of a screwdriver (of proper size) into the actuation opening allows for the stripped wire to be inserted in to the open terminal. Removing the screwdriver insures that the stripped wire is reliably clamped. The following illustration is provided.