Installation Instructions

SELF REGULATING (SR) ROOF AND GUTTER DEICING CABLES

INDUSTRIAL AND COMMERCIAL SERIES

Warning: Self Regulating Cable must be installed by a qualified electrician. All assembly, installation, and test instructions must be followed. Improper installation can result in property damage, serious injury, or death due to electric shock. Please call Delta-Therm Corporation at 1-800-526-7887 with any installation or operating questions.

ROOF AND GUTTER: The purpose and function of Roof and Gutter heating cable is to create an open drainage path for any water that would otherwise be stopped (by either ice or snow) from draining properly. It is not meant to melt all accumulated snow or ice.

PRECAUTIONS: Do not bend cable tighter than 3" inside diameter of bend or loop.

Do not twist, kink, or spiral the cable.

Test the cable before installation with a 500 volt Insulation Resistance tester and a multimeter.

All related components and controls should be properly rated for the specified location classification.

All systems must be grounded in accordance with the prevailing electrical code.

Self regulating cable has an inrush current. Please refer to back page for proper breaker sizing.

CABLE LABELING
Delta-Therm Self Regulating Cable is CSA Certified for wet location installations. Refer to operational voltage chart for part numbers.

CABLE TESTING
Unpack the cables and test for Insulation Resistance (IR). Insulation Resistance should read greater than 10 megohms. (Slightly less is acceptable for humid conditions.) To test IR, connect one lead to a conductor wire and the other to the braid. Test in accordance with the meter manufacturers instructions and record the readings on the warranty card.

CABLE STORAGE
All cables should be stored in a cool, dry location. Cables should be protected from damage.

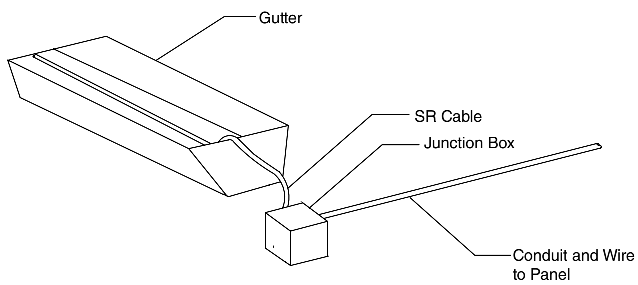
We recommend that you test any deicing cables removed from storage and record the IR readings on the warranty card before installing the cable.

PREPARING THE SITE
1. Be sure of ample branch circuit capacity to accommodate these additional circuits. The size of the branch circuit breaker should be 25% greater than the heater ampere load. To determine or confirm load or breaker size, find the circuit cable length and start-up temperature, 40°F is recommended, and then refer to Electrical Specifications Charts on the back page.
2. Be sure there is sufficient main panel-board capacity to accommodate this additional load. Typically, capacity for summer air conditioner load can handle this alternate winter load.

TOOLS REQUIRED
- 500 VDC insulation resistance tester
- Digital multimeter
- Adjustable wrench
- Flat head screwdriver
- Fish tape
- Nylon cable ties
- Pre-punched stainless steel strap
- Metal ties
- Wire rope (stainless steel or copper)

CONDUIT AND CIRCUIT WIRE
Delta-Therm's SR cables require a permanently wired and grounded conduit system to feed the cable for proper, safe performance. Use only UL Listed (CSA Certified) weatherproof junction boxes.

1. Install conduit and wire to a point within 1' of the start of the heated cable. Attach junction box to the end of the conduit. Refer to Detail 1.
2. Determine circuit length and load.
3. If you haven't already, verify that adequate breaker capacity is available. Please refer to the back page for breaker sizing.

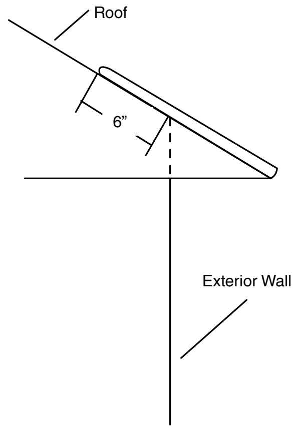


Detail 1. Typical location of junction box and conduit.

> Warning: Self Regulating Cable must be installed by a qualified electrician. All assembly, installation, and test instructions must be followed. Improper installation can result in property damage, serious injury, or death due to electric shock. Please call Delta-Therm Corporation at 1-800-526-7887 with any installation or operating questions.

INSTALLATION

1. Test cable before installation as described in Cable Testing.
2. Uncap conduit and swab if necessary to make sure it is dry. Assemble the power termination per PCK-RGP (CO Series cable) or PCK-RG (IN Series Cable) instruction sheet included with the kit.
3. Attach cable to roof as shown in Detail 2, or Detail 4. The junction box should be located as aesthetically as possible.
4. Cable loop should be 6" up the roof beyond the projected exterior wall line. Angle of installation is approximately 60 degrees. Refer to Detail 2.
5. Terminate the end of the cable per power connection kit instructions.



Detail 2.

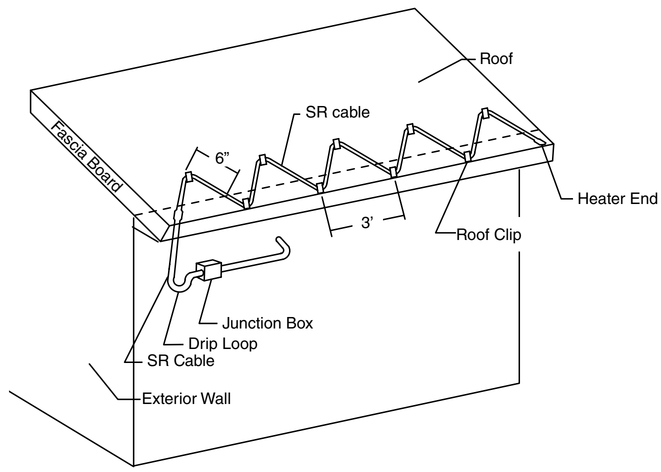
PERMANENT ATTACHMENT OF CABLE HEATER TO EAVES, GUTTERS AND DOWNSPOUTS

There are many ways to fasten cable to roof eaves. After determining the roof material, refer to the chart below. If the roofing material is not listed, consult the roofing manufacturer for proper attachment.

Roof Material	Clip	Fastening Method
Asphalt shingle	DT-AS-50	SB-190*
Metal roof	RM-25-AL	VHB Tape*
Slate	RS-STR	Clip with Extended Hook
Ceramic tile	Specialty	Clip with Extended Hook
Rubber membrane	Any	SB-190*

* Follow the cleaning, primer, minimum adhesion time (curing time before installing cable) and minimum adhesion temperature directions of the Adhesive being used.

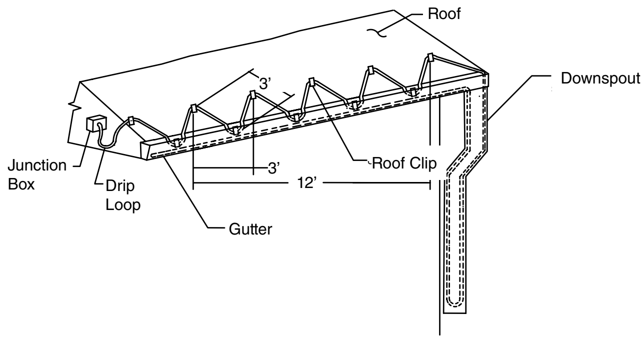
NOTE: If the clips are fastened to the sub-roof with screws, the screw entry points must be waterproofed.



Detail 3. Eave only

EAVES

1. Cable heaters should be permanently attached to the roof to insure retaining its position during severe weather. The bottom of the heater loops should meet the edge of the eave. Please refer to Detail 3.
2. To minimize piercing or cementing the roofing, install stainless steel, copper or copper plated wire ropes. Firmly anchor ropes at end walls. Lace each heater loop at the apex of each triangle, top and bottom. Tie, clip or tape the heater and wire rope together to insure minimum or no movement of the heater cable. Anchor the wire rope every 4'. to minimize movement of the heater cable. Refer to Detail 5.

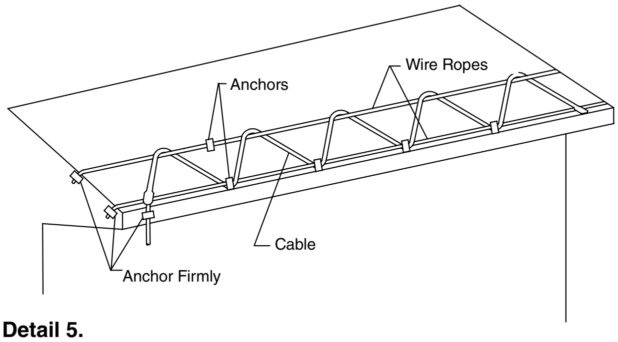


Detail 4. Eave and gutter

> Warning: Self Regulating Cable must be installed by a qualified electrician. All assembly, installation, and test instructions must be followed. Improper installation can result in property damage, serious injury, or death due to electric shock. Please call Delta-Therm Corporation at 1-800-526-7887 with any installation or operating questions.

GUTTERS AND DOWNSPOUTS

1. Cable heater passes in gutters and downspouts should also be anchored a minimum of every 4’ to prevent moving and flexing. Use mini-clips, jiffy clips or equivalent. Apply T-AL2 tape over cable for best results. Refer to Detail 6 When there are two passes of the cable heater in a gutter, they should be spaced at least 2” apart.
2. For downspouts, loop cable down the spout. Clip cable at the bottom of the downspout using your roof clips.
3. The bottom of the heater cable should remain within the downspout. If exposed, it must be protected.
4. Verify that any cable that extends over a gutter or roof is anchored using the downspout hanger (refer to DSH instructions) to insure that the heater cable will not be cut or worn through by the top edge of the gutter and to prevent chafing or abrading of the cable.



Detail 5.

FINAL TEST

Test all cables for insulation resistance as described in Cable Testing paragraph. Turn on cable and record current (amperes) readings. Also record outdoor temperature and cable lengths.

CONTROL

We recommend using automatic controls to activate/deactivate the cable with a monitor light indicating system status. Please refer to back page for available Delta-Therm roof deicing controls and accessories.

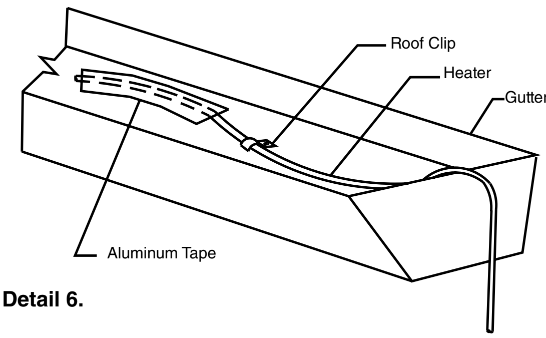
CAUTION LABELS

Two caution labels are included in each power connection kit:

1. Post one on the breaker panel.
2. Post one on the control panel or a junction box.

MAINTENANCE

1. Annually check heater system for loose or damaged cable.
2. Repair or replace clips as necessary.
3. Check that the gutters and downspouts are free of leaves and other debris prior to the winter season.



Detail 6.

Warning: Self Regulating Cable must be installed by a qualified electrician. All assembly, installation, and test instructions must be followed. Improper installation can result in property damage, serious injury, or death due to electric shock. Please call Delta-Therm Corporation at 1-800-526-7887 with any installation or operating questions.

CO Series Breaker Sizing And Maximum Circuit Length Ft. (m)

		Protective Device Rating		
		15A	20A	30A
Volts	Catalog Number			
120	CO 120-6	100' (30)	130' (40)	190' (58)
208	CO 240-6	200' (61)	260' (80)	380' (116)
240	CO 240-6	175' (54)	230' (70)	340' (104)
277	CO 240-6	150' (46)	190' (58)	285' (87)

Alternate Voltages
Delta-Therm 240V self regulating heating cable is multi-voltage. It can be used in 208V, 240V, and 277V applications. (Please refer to the thermal rating row in the Electrical Specifications Table.)

CO Series Electrical Specifications

Catalog Number	CO120-6	CO240-6	CO240-6	CO240-6
Service Voltage	120	240	277	208
Maximum Circuit Length Ft. (m)	190' (58)	340' (104)	285' (87)	380' (116)
Thermal Rating at 32°F Watts/Ft. In Air (Watts/m)	6 (20)	6 (20)	7 (23)	5 (16)
Thermal Rating At 32°F Watts/Ft. In H_2O (Watts/m)	9 (30)	9 (30)	10 (33)	8 (26)
Maximum Exposure Temperature °F (°C)	185° (85°)	185° (85°)	185° (85°)	185° (85°)

IN Series Breaker Sizing And Maximum Circuit Length Ft. (m)

		Protective Device Rating		
		15A	20A	30A
Volts	Catalog Number			
120	IN 120-5	125' (38)	150' (46)	205' (62)
240	IN 240-5	250' (76)	300' (91)	335' (102)
277	IN 240-5	160' (49)	210' (64)	320' (98)
208	IN 240-8	190' (58)	225' (69)	260' (79)

Alternate Voltages
Delta-Therm 240V self regulating heating cable is multi-voltage. It can be used in 208V, 240V, and 277V applications. (Please refer to the thermal rating row on the Electric Specifications Table)

IN Series Electrical Specifications

Catalog Number	IN120-5	IN240-5	IN240-5	IN240-8
Voltage	120	240	277	208
Maximum Circuit Length Ft. (m)	205' (62)	335' (102)	320' (98)	260' (79)
Thermal Rating At 32°F (Watts/Ft.) Air 0°C (Watts/m) Air	6 (20)	6 (20)	7 (23)	8 (26)
Thermal Rating At 32°F (Watts/Ft.) H_2O 0°C (Watts/m) H_2O	9 (30)	9 (30)	10 (33)	14 (46)
Maximum Exposure Temperature °F (°C)	185° (85°)	185° (85°)	185° (85°)	185° (85°)

Accessories

PCK-RG	Power Connection Kit
IMP	Ice Melt Panel
DT-AS-50	Roof Clips For Asphalt Or Metal Roofs (50 count)
RM-25-AL	Aluminum Clips For Metal Roofs (25 Count)
Specialty Clips	Specialty Clips Roof Materials Other Than Metal or Asphalt
DSH	Down Spout Hanger

Controls

DTC120-G	Roof Deicing Control
MPS	Roof Deicing Control

Panels

DT-XXPXXX	Enclosed Contactor Panel
GFPE-X-X	Power Control Panel w/GFPE
LNR-X	Low Noise Relay Panel
Custom Control/Monitor/Alarm Panels	

TECHNICAL SUPPORT
Please call us at (800) 526-7887 between 8:00 am - 5:00 pm C.S.T. if you have any questions when you are installing.