Infrared DR.HEATER™

Self-Regulating Heating Cables For Pipes and Roof De-Icing





Owner's Manual
PLEASE READ AND
SAVE THESE INSTRUCTIONS

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Please read and save these instructions. Read carefully before installation, 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.*

Plug-In Self-Regulating Heating Cables

Product Introduction

These heating cables provide pipes, roof and gutter systems protection from damage due to freezing, and can be used in residential and commercial applications. The cables automatically adjust heat output according to the ambient temperature conditions. Under cooler conditions the heat output increases, and as the temperature rises the output decreases to save on energy. The cables operate on 120V / 240V and are available in various pre-assembled lengths.



120V



240V

Features

- Pre-assembled cable lengths include a 6ft power cord and plug
- Suitable for plastic or metal pipes, gutters and downspouts
- Ease of installation, as the cable can be overlapped without the risk of becoming overheated or burnt.

General Safety Information

Read and understand all instructions in this manual and the following installation instructions and Safety Warnings. Electrical cables, if not installed correctly or are damaged, can present a fire, shock and arcing hazard.

1. Installation must be in compliance with National Electrical Codes (NEC).
2. Use 30 mA ground fault protection on each heating cable branch circuit for maximum protection.
3. Use only fire-resistant insulation, such as fiberglass or preformed foam. Do not embed heating cable in the insulation.
4. Use 1/2” to 1” fiberglass tape or plastic cable ties when attaching cable to pipe. Do not use wire or metal clamps.
5. Before installing or servicing, ensure that all power to circuits is OFF.
6. Do not twist cable during installation.
7. Do not install heating cable under roofing material.
8. Do not expose cable to temperatures above 150°F, as this will damage the cable.
9. Do not use extension cords.
10. Save all instructions for future reference.

⚠ WARNING

Do not use damaged heating cables, power cord or plug. Remove and replace immediately to prevent a fire, shock, or arcing hazard.

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Specifications

Cable #	Model No.	length(ft)	Volt(V)	Power Output(W)		
				On Pipe @50°F / 10°C	On Pipe @5°F / 40°C	In-Ice water @32°F / 0°C
A	DR-9RC1006	6	120V	48	54	72
B	DR-9RC1012	12	120V	96	108	144
C	DR-9RC1018	18	120V	144	162	216
D	DR-9RC1024	24	120V	192	216	288
E	DR-9RC1050	50	120V	400	450	600
F	DR-9RC1075	75	120V	600	675	900
G	DR-9RC1100	100	120V	800	900	1200
H	DR-9RC1125	125	120V	1000	1125	1500
I	DR-9RC2200	200	240V	1600	1800	2400
J	DR-9RC2250	250	240V	2000	2250	3000

Self-Regulating Heating Cables for Pipes

CHOOSING A CABLE – Make sure to choose a cable longer than the pipe ensure coverage.

NOTE: For each valve or spigot on pipe an additional foot of cable is needed. When the cable is longer than the pipe, spiral the excess cable around the pipe length evenly.

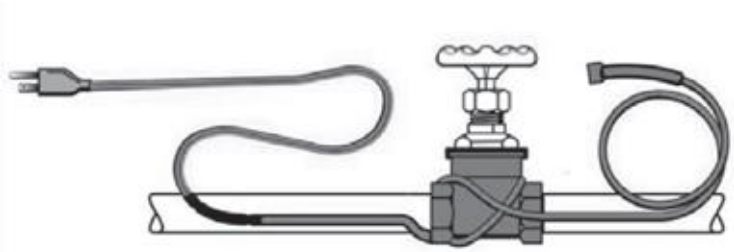


Figure 2

ATTACHING CABLE TO PIPE

1. Prior to installing the cable, be sure all piping is dry, and any sharp surfaces are removed.
2. Attach heating cable to pipe with straight, spiraling or multiple tracing.
3. If the heating cable is the same length as the pipe, run it straight along the bottom of the pipe. If two cables are required, position them in the 4 and 8 o'clock positions. If three cables are required, position them in the 11 o'clock k or 1 o'clock positions and 4 o'clock and 8 o'clock positions.
4. If the cable is less than double the pipe length, spiral the cable over the length of pipe.
5. Any excess cable remaining at the end of the pipe can be doubled back along the pipe.
6. Be sure to include any additional heating cable required for valves, spigots, etc.
7. Secure the cable to the pipe with DR-003 fiberglass application tape or nylon cable ties. Do not use vinyl tape, metallic products or wire.

INSTALLING THERMAL INSULATION

1. Before insulating, inspect the cable to ensure that it is free of mechanical damage, such as gouges or cuts, etc.
2. Cover the pipe, cables, connections, valves with at least 1/2" (12.7 mm) thick fiberglass insulation or equivalent. DO NOT leave the cables exposed.
3. Use fire-resistant materials such as fiberglass wrap. Make sure the insulation is waterproofed (with polyethylene or other vapor barriers) in areas where water may come in contact with the insulation.
4. Place the two warning labels on the outer surface of the pipe insulation where clearly visible and at suitable locations to indicate the presence of electric heating cable.
5. After installation is complete, turn the circuit breaker on to give power to the cable. Standing water in the pipe should feel warm within one hour.

MAINTENANCE CHECKS

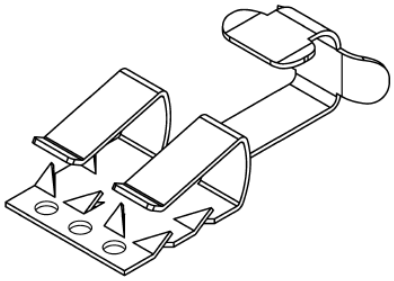
1. Only qualified persons should service or install the system.
2. Check yearly for any damage to the heating cable and check any ground fault protection device for proper operation. If any damage to cable is found, DO NOT operate until it is replaced.

Self-Regulating Heating Cables for Pipes Package Content

1. Self-Regulating Heating Cable (DR-9RCxxxx)
2. Warning label x 2

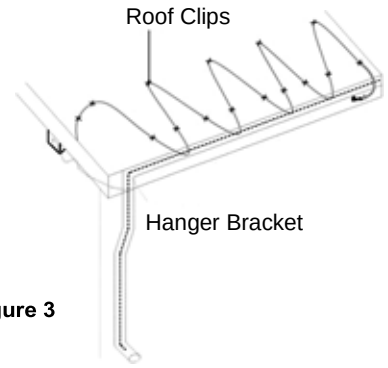
Fiberglass tape (DR-003) *sold separately

Roof Clips



DR-006 (*sold separately)

Shingle Roof



Metal Roof

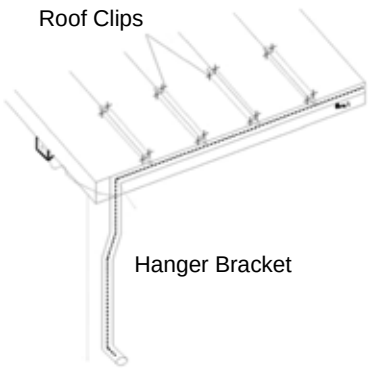


Figure 3

Self-Regulating Heating Cables for Roofs, Gutters and Downspouts

Estimate the Cable Length You Need

An accurate estimate of the cable length you need is important because you cannot change the cable length by cutting, splicing or altering it in any way. Doing so may result in fire, electrocution, or ice dam formation. Cable should be installed on roof areas where ice dams form. This can be the entire roof edge or specific areas such as beneath skylights, in valleys or around dormers. Cable should also be installed in any nearby gutters, downspouts and/or valleys.

- If you need to apply the cable on a roof with gutter, downspouts, valleys, and/or dormers, follow "A. For Typical Roof Applications" below.
- If you only need to install the cable in the gutters only, follow "B.
- If you need to install the cable on a roof with special roof areas such as a roof with skylights, follow "C. For Roofs with Special Roof Area Applications"

A. For a Typical Roof Application

Step 1. For each area listed in Table B-1, measure the required dimensions (see Figures 4 and 5 and calculate the length of cable needed. Add each "area" calculation to determine the total cable length needed.

Table 1 Cable Length Estimation Formula for Typical Roof Applications

Area	What to measure	How to calculate
Along Roof	Overhang (A) Length along roof (B)	Length of roof (B) X Overhang Multiplier (see Table B-2)
Dormer	Distance around dormer (C)	Number of dormers X Distance around dormer(s) (C)
Valley	Number of valleys (D)	Number of valleys (D) X 6 feet or 1.8 meters
Downspouts	Number of downspouts Length of downspouts (E)	Number of downspouts X Length of downspout (E) X 2

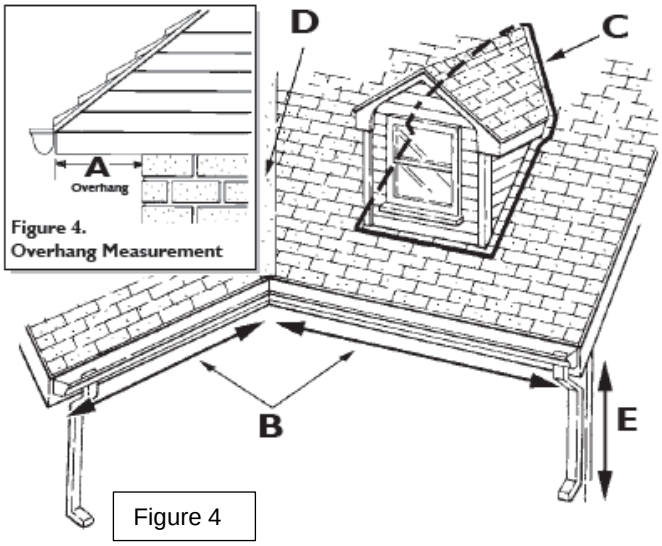


Figure 4. Overhang Measurement

Figure 4

Table 2 Overhang Multiplier

ROOF OVERHANG Inches	ROOF OVERHANG Centimeters	Multiplier For roof *with* gutter	Multiplier For roof *without* gutter
less than 12	less than 30	4.0	3.0
12	30	4.0	3.0
24	60	5.3	4.3
36	90	6.8	5.8
48	120	8.1	7.1
60	150	9.6	8.6
72	180	11.2	10.2

Note: For overhangs not listed, estimate multiplier. For example, for an 18" overhang with a gutter, multiplier will be about 4.7.

Figure 5 – Roof Measurement

Step 2. Use the estimated cable length calculated above to select the proper de-icing cable from Table 3. In general, choose the longer cable if the length you need is between the sizes offered. If the difference is small (less than 5 feet or so), the shorter cable can be used. You cannot change the cable length by cutting, splicing or altering it in any way.

If ice dams are occurring on roof areas that are significant distance apart, you may want to use a separate cable for each location, rather than choosing one large cable. Also, if roof areas are large, separate cables for the roof area and gutter should be used.

Table 3 - Self-Regulating De-Icing Heating Cables

Cable #	Model No.	length(ft)	Volt(V)	Power Output(W)		
				On Pipe @50°F / 10°C	On Pipe @5°F / 40°C	In-Ice water @32°F / 0°C
A	DR-9RC1006	6	120V	48	54	72
B	DR-9RC1012	12	120V	96	108	144
C	DR-9RC1018	18	120V	144	162	216
D	DR-9RC1024	24	120V	192	216	288
E	DR-9RC1050	50	120V	400	450	600
F	DR-9RC1075	75	120V	600	675	900
G	DR-9RC1100	100	120V	800	900	1200
H	DR-9RC1125	125	120V	1000	1125	1500
I	DR-9RC2200	200	240V	1600	1800	2400
J	DR-9RC2250	250	240V	2000	2250	3000

B. For Problem in The Gutter Only

If ice dams are occurring in gutters only, measure the required dimensions (see Figure 5) and calculate the length of the cable needed for each area listed in Table 4. Add each "area" calculation to determine the total cable length needed.

Table 4 Cable Needed for Gutter Only Ice Problems

Area	How to Calculate
Gutter	Length of gutter (B) X 2
Downspouts	Number of downspouts X Length of downspout (E) X 2

C. For Roofs with Special Roof Area Applications

STEP 1. For each area listed in Table 5, measure the required dimensions (see Figure 4 and Figure 6) and calculate the length of cable needed. Add each "area" calculation to determine the total cable length needed.

Table 5 Cable Length Estimation Formula for a Roof with Special Roof Areas

Area	What to measure	How to calculate
Along Roof	Overhang (A) Length along roof (B)*	Length of roof (B) X Overhang Multiplier (see Table 2)
Dormer	Distance around dormer (C)	Number of dormers X Distance around dormer(s) (C)
Valley	Number of valleys (D)	Number of valleys (D) X 6 feet or 1.8 meters
Downspouts	Number of downspouts Length of downspouts from roof to ground (E)	Number of downspouts X Length of downspout (E) X 2
Special roof areas (such as skylights)	Distance from roof edge to bottom of special roof area (F) Width of ice dams that form along special roof area (G)	Distance from roof edge to bottom of special roof area (F) X Width of ice dams that form along special roof area (G) X Special Roof Area Multiplier (see Table 6)

*Note: Do not include the width of special areas (G) in this measurement.

STEP 2. Use the estimated cable length calculated above to select the proper de-icing cable from Table 3. In general, choose the longer cable if the length you need is between the sizes offered. If the difference is small (less than 5 feet or so), the shorter cable can be used. You cannot change the cable length by cutting, splicing or altering it in any way.
If ice dams are occurring on roof areas that area significant distance apart, you may want to use a separate cable for each location, rather than choosing one large cable. Also, if roof areas are large, separate cables for the roof area and gutter should be used.

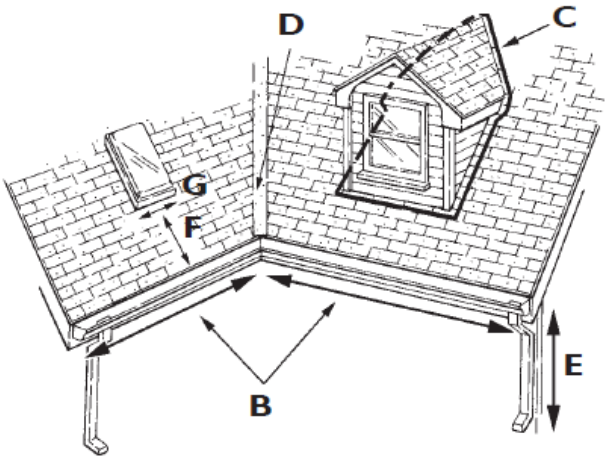


Figure 6 – Roof Measurement

Table 6 Special Roof Area Multiplier

Multiplier for roof *with* gutter	Multiplier for roof *without* gutter
2.6	1.6

D. EXAMPLE #1 – EXAMPLE OF TYPICAL ESTIMATION

Consider a roof section (See Figure 4) that you want to treat that has:

- 32 feet of roof
- an overhang of 12 inches with a gutter
- 1 dormer (30 feet around)
- 1 valley
- 2 downspouts (each 10 feet long)

From Table 2, the multiplier for a roof with a gutter and an overhang of 12 inches is 4.
Using Table 1, the cable length needed = (32 x 4) + (1 x 30) + (1 x 6) + (2 x 10 x 2) = 204
Using Table 3, you would select the DR-9RC2200 (200 feet of cable). You would select the smaller cable because the difference between the cable length and your calculation is less than 5 feet.

E. EXAMPLE #2 – EXAMPLE OF SPECIAL ROOF AREA ESTIMATION

This example shows how to estimate the cable length needed for a limited problem roof area – a skylight (see Figure 6). For this roof, you would like to treat only the problem area underneath the skylight.
This roof section has:

- 1 downspout (l0 feet long)
- 1 skylight (the distance from the bottom of the skylight to the roof edge is 12.5 feet, and the width of the ice dams that form beneath the skylight is about 6 feet)
- 1 gutter

From Table 6, the special roof area multiplier for a roof with a gutter is 2.6.
Using Table 5, the cable length needed = (1 x 10 x 2) + (12.5 x 6 x 2.6) = 215
From Table 3, you would select the DR-9RC2250 (240 feet of cable) to ensure complete coverage.
Note: If you are only treating one special roof area and the problem area is a significant distance from the downspout, you may wish to add extra cable to your estimation to account for the cable in the gutter.

Installing the Cable

Planning the Cable Arrangement

Before laying out and attaching the cable to your roof, it is important to plan how the cable will be arranged.

To prevent ice dams, the cable pattern must be arranged so that it routes meltwater to flow from “warm areas” of the roof through the “cold areas” and down to the ground. A “warm area” of your roof is one where snow and ice on the roof thaws because of heat loss through inadequate roof venting and/or insufficient ceiling insulation. “Cold areas” of your roof are areas where ice typically builds up, such as the roof surfaces above over-hangs and in gutters.

See Figures Below for Typical Cable Patterns

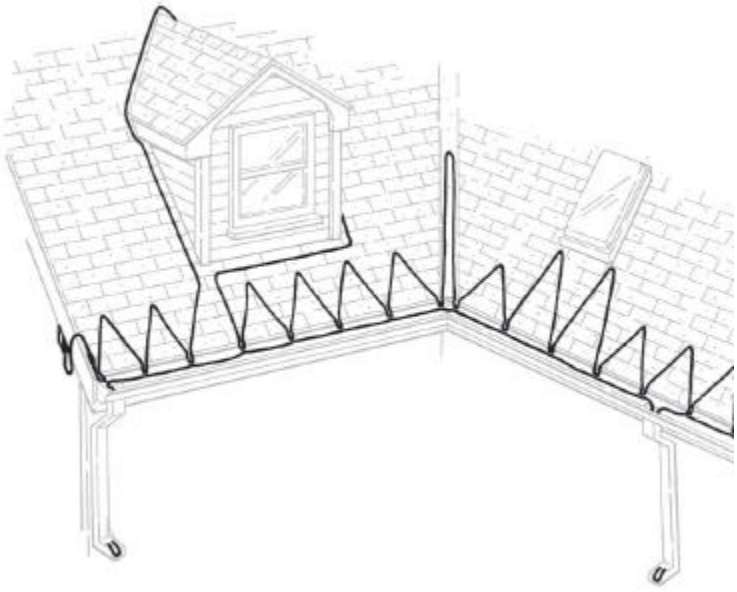


Figure 7 – Typical pattern along roofline and gutters downspouts

TIP: If you will be working directly on the roof during the installation, you may want to mark the cable pattern with chalk before attaching the cable. If working from a ladder, you will probably want to lay out the pattern as you attach the cable with the clips. Making a drawing of your roof and your planned pattern on paper may be helpful.

Pattern for the Roofline: Cable laid along the roofline is arranged in a triangular pattern (see Figure 4). The cable must extend above the overhang into the warm section of the roof. To determine the height of the triangles, measure the depth of the overhang. The triangle heights are measured by the number of shingle rows from the roof edge (based on the standard 5 1/2 inches tab shingles). Using Table 7, determine the height of each triangle. Using this method, the triangles will extend at least one shingle row (5 1/2 inches) into the warm roof area.

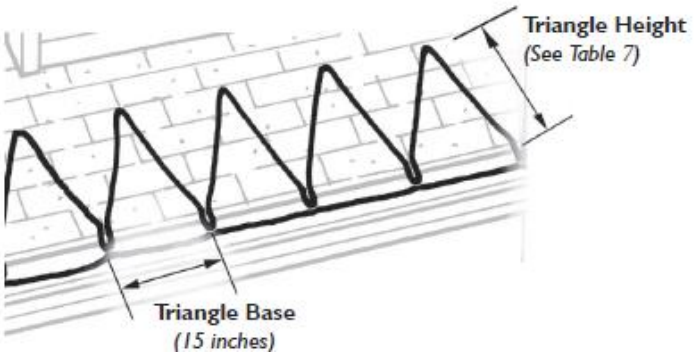


Figure 8 – Triangle patter along roofline

Table 7 Triangle Heights for Various Overhangs

Overhang (inches)	Triangle Height (Shingle Rows)
12 or less	3
12 – 18	4
18 – 24	5
24 – 30	6
30 – 36	7
36 – 42	8
42 – 48	9
48 – 54	10
54 – 60	11
60 – 66	12
66 – 72	13

Installing the Cable (Continues…)

Gutter and Downspouts Only Routing Pattern: If your icing problems are only in the gutter, cable would be routed only in the gutter and downspouts using the recommended “double run” of cable, as shown in Figure 9. This figure shows an alternate “single end of run”.

1. Determine the best route for the heating cable on roofs and gutters.
2. Route the heating cable to avoid mechanical damage from ladders, etc.
3. Before installing the heating cable, make sure the roof, gutter and downspouts are free from debris, leaves, pine needles or any combustibles.
4. Check the maximum exposure temperature rating of all roof, gutter and downspouts, and select a heater that will not exceed their temperature ratings.

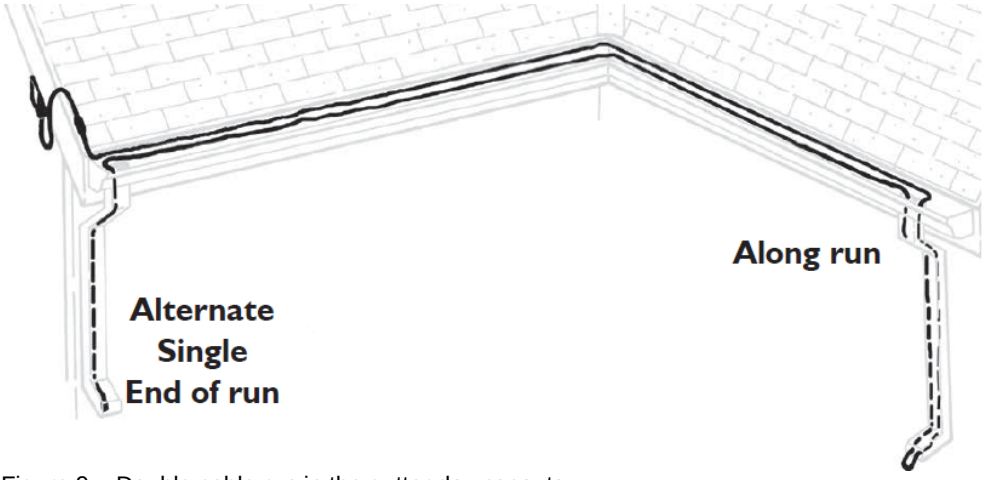


Figure 9 – Double cable run in the gutter downspouts

1. Use hanger bracket to support the heating cable where it enters a downspout to prevent cable from being damaged by gutter edge. It also can be used as spacers in wider gutters.
2. Run heating cable over top of hanger and secure to hanger using UV resistant cable ties.
3. Use roof clips for attaching the heating cable to the roof.
4. For roof valleys, measure the distance two thirds of the way up and double it. Add this additional length to the overall cable length.
5. Field assembled end terminations should not be located in an area where moisture is present or, at the lowest point of downspouts.
6. Attach the two warning labels (included with the heating cable). The labels must be clearly visible on the premises.

MAINTENANCE CHECKS

1. Only qualified persons should service or install the system.
2. Check yearly for any damage to the heating cable and check any ground fault protection device for proper operation. If any damage to cable is found, DO NOT operate until it is replaced.

Limited Warranty

This heating cable comes with a TWO-YEARS LIMITED COMPONENT WARRANTY. If your unit does not appear to be working properly, please contact our service center by calling 1-800-317-1688. Prior to your call, we encourage you to visit our service-related website www.DrHeaterUSA.com for troubleshooting tips and service instructions if needed.

Self-Regulating Heating Cables for Pipes Package Content

1. Self-Regulating Heating Cable (DR-9RCxxxx) x 1
2. Warning label x 2
3. UV resistant cable ties

Roof clips (DR-006) *sold separately

Warranty Information

Register your product at our website:

Register Or visit DrHeaterUSA.com/register-your-heater

Feedback

Love it? Help us make the product more for you.

Let us know with a customer review. Rate us

Please visit: https://www.amazon.com/review/review-your-purchases#

At Dr. Heater USA, we are committed to bringing top quality alternative & supplemental heating products to our customers.

Dr. Infrared Heater
860 Mahler Rd，Burlingame
CA 94010
Tel: 1-800-317-1688
EMAIL: SERVICE@DRHEATERUSA.COM

Dr Heater USA
@DrHeaterUSA
Dr. Heater USA
Dr. Heater USA