

# Roof/Gutter De-Icing



## Roof/Gutter De-icing Systems

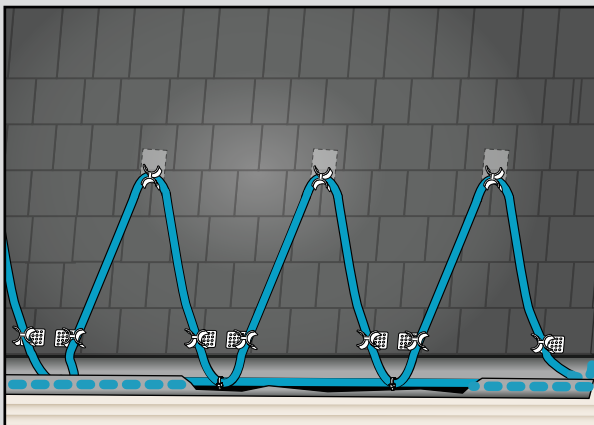
King's Roof/Gutter De-icing systems helps prevent snow and ice build-up on roofs and gutters. Whether installed on a shake, shingle or metal roof, the SRP & SR will give you the desired results you are looking for. The system is reliable and will not overheat or burn out if overlapped.

SR Series Self-Regulating Heating Cable is designed for commercial and industrial pipe trace applications. The cable is constructed so that it will not burn out or overheat when overlapped, and can be used on metal and plastic pipes. The cable is available in 100 and 250 ft coils and also 500 and 1,000 ft reels.

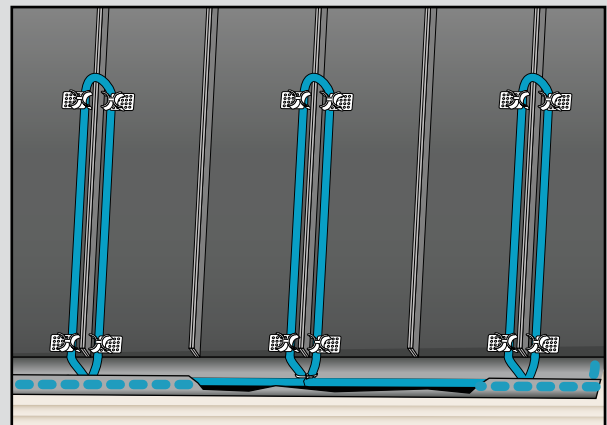
SRP Series Self-Regulating Pre-Assembled Heating Cable is designed for a variety of gutter and roof de-icing applications. The cable is constructed so that it will not burn out or overheat when overlapped, and can be used on metallic and nonmetallic downspouts and gutters. The cable is pre-terminated with a 30 inch cold lead and grounded plug

CWR Series is designed to prevent costly roof damage caused by ice dams forming and helps maintain free flowing water through gutters and downspouts to the ground level. Requires no special wiring or assembly. Simply run cable per the instructions for both shingle and metal roofs. Sizes range from 20ft - 240ft to accommodate most roofs. System includes roof clips and spacers.

### Shake/Shingle Roof Installation



### Metal Seam Roof Installation



## Heating Cable Selection for Roof/Gutter De-Icing

### Calculation For Heating Cable Length

Total heating cable length = A+B+C+D+E+F+G

**A** (Roof edge) x (heating cable multiplier)

**B** (Roof edge x 0.5)

**C** (Total gutter length)

**D** (Total downspout length + 1 ft.)

**E** (1 ft. for each power connection)

**F** (2 ft. for each splice)

**G** (3 ft. for each tee connection)

=Total heating cable length required.

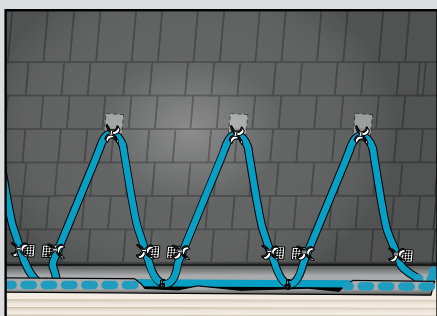
#### Example:

1. Roof edge = 48 ft.
2. Eave overhang = 1 ft. (Refer to cable table 6)
3. Gutter = 48 ft.
4. Downspout = 22 ft.
5. Power connection = 2 each
6. Splice = 3 each

#### Heating Cable Required:

<b>A</b> Roof edge:	48 ft. x 2.8 (From table 6)	= 134.4 ft.
<b>B</b> Roof extension*:	48 ft. x 0.5	= 24.0 ft.
<b>C</b> Roof gutter:	48 ft.	= 48.0 ft.
<b>D</b> Downspout:	22 ft. + 1 ft.	= 23.0 ft.
<b>E</b> Power Connection:	2 x 1 ft.	= 2.0 ft.
<b>F</b> Splice Connection:	3 x 2 ft.	= 6.0 ft.
<b>G</b> Tee Connection:	0 x 3 ft.	= 0 ft.
Total heating cable length required:		= 237.4 ft.

\*Roof extension is the length of cable required to prevent ice dams between the roof edge and the gutter. When there are no gutters present it forms a drip loop to prevent ice dams at the roof edge.



### Table 7 - Tracing Heights for Shake/Shingle Roof

Eave Overhang	Tracing Width	Tracing Height	Cable/Roof Edge
None	24"	18"	2.0 ft.
12"	24"	18"	2.8 ft.
24"	24"	30"	3.8 ft.
36"	24"	42"	4.8 ft.

The last column gives the amount of cable required per foot of roof edge for standard shake and shingle roof (table 7) or a metal seam roof (table 8).

### Table 6 - Heating Cable Multiplier

Eave Overhang	Standard Roof	Metal Roof 18" Seam	Metal Roof 24" Seam
None	2.0	2.5	2.0
12"	2.8	2.8	2.4
24"	3.8	3.6	2.4
36"	4.8	4.3	3.6

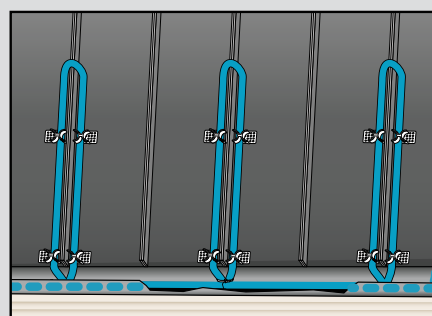
Use the number in the table and multiply it by the length of the roof

#### Calculations for Gutters, Downspout and Valley

1. For standard non-metal roofs, add 1 foot of heating cable for each foot of gutter.
2. Add 1 foot of heating cable per foot of downspout.
3. If the downspout is in the middle of the run, loop the cable down and back up. Double the length of the downspout for determining the length of the cable to install.
4. For valleys, run the heating cable two thirds of the way up and down the valley. Add this additional length to the overall cable.
5. For gutters 6 inches wide use two cable runs.

#### Design Notes

1. In-line splices and tee splices should be avoided where possible.
2. Heating cable in downspouts should be looped and extend below the frost line if tied into a drainage system.
3. End terminations should not be located in an area where moisture is present. End terminations should not be located at the lowest point of downspouts.
4. For roof drains leading into a heated area, a loop of heating cable should be installed to a depth of 3 ft.



### Table 8 - Tracing Heights for Metal Seam Roof

Eave Overhang	Tracing Width	Tracing Height	Cable/Roof Edge
None	18"	18"	2.5 ft.
12"	18"	24"	2.8 ft.
24"	18"	36"	3.6 ft.
36"	18"	48"	4.3 ft.
None	24"	18"	2.0 ft.
12"	24"	24"	2.4 ft.
24"	24"	36"	2.9 ft.
36"	24"	48"	3.6 ft.

# Charts & Tables SR Self Regulating Cable Roof/Gutter De-Icing

### Table 9 - Circuit Breaker Protection for De-icing

Cable	Volts	Start up Temp.	15 Amp (ft.)	20 Amp (ft.)	30 Amp (ft.)	40 Amp (ft.)
SR123	120V	32°F (0°C)	273	273	273	273
		20°F (-7°C)	254	268	273	273
		0°F (-18°C)	213	255	273	273
		-20°F (-29°C)	182	248	273	273
SR243	240V	32°F (0°C)	547	547	547	547
		20°F (-7°C)	501	547	547	547
		0°F (-18°C)	426	547	547	547
		-20°F (-29°C)	368	492	547	547
SR125	120V	32°F (0°C)	188	216	216	216
		20°F (-7°C)	166	216	216	216
		0°F (-18°C)	144	193	216	216
		-20°F (-29°C)	127	173	216	216
SR245	240V	32°F (0°C)	381	432	432	432
		20°F (-7°C)	331	432	432	432
		0°F (-18°C)	292	387	432	432
		-20°F (-29°C)	258	347	432	432
SR128	120V	32°F (0°C)	126	168	171	171
		20°F (-7°C)	118	157	171	171
		0°F (-18°C)	103	136	171	171
		-20°F (-29°C)	92	123	168	171
SR248	240V	32°F (0°C)	257	342	347	347
		20°F (-7°C)	235	311	347	347
		0°F (-18°C)	204	268	347	347
		-20°F (-29°C)	184	244	347	347
SR1210	120V	32°F (0°C)	102	143	152	152
		20°F (-7°C)	97	126	152	152
		0°F (-18°C)	88	117	152	152
		-20°F (-29°C)	76	104	152	152
SR2410	240V	32°F (0°C)	172	226	312	312
		20°F (-7°C)	159	215	312	312
		0°F (-18°C)	150	197	298	312
		-20°F (-29°C)	138	182	273	312

#### Technical Data Notes:

1. The maximum single cable run is the longest length of heating cable before there is a significant voltage drop which will lower the wattage rating of the cable.
2. The circuit breaker sizes in Table 9 are per the National Electric Code (NEC).

### Table 10 - Technical Data Ratings

Technical Data Table	
Maximum operating temp.	150°F (65°C)
Maximum exposure temp.	185°F (85°C)
Minimum installation temp.	0°F (-18°C)
Minimum bending radius	1" (24mm)
Dimensions	0.496" x 0.236" (12.6mm x 6mm)
Service voltage	110-120V, 208V-277V

### Table 11 - Maximum Single Run Length

Model	Volts	Output at 32°F (0°C)	Maximum Single Run Length
SR123	120V	5.0 w/ft.	273 ft. (83M)
	208V	4.1 w/ft.	530 ft. (129M)
SR243	240V	5.0 w/ft.	547 ft. (161M)
	277V	5.9 w/ft.	590 ft. (180M)
SR125	120V	8.0 w/ft.	216 ft. (66M)
	208V	7.1 w/ft.	397 ft. (121M)
SR245	240V	8.0 w/ft.	432 ft. (132M)
	277V	9.0 w/ft.	466 ft. (142M)
SR128	120V	12.1 w/ft.	171 ft. (52M)
	208V	11.4 w/ft.	312 ft. (95M)
SR248	240V	12.1 w/ft.	347 ft. (106M)
	277V	13.0 w/ft.	385 ft. (117M)
SR1210	120V	14.8 w/ft.	152 ft. (46M)
	208V	14.2 w/ft.	274 ft. (83M)
SR2410	240V	14.8 w/ft.	312 ft. (95M)
	277V	15.8 w/ft.	346 ft. (106M)

### Table 12 - Circuit Length Adjustments

Model	208V	277V
SR243	0.97	1.08
SR245	0.92	1.08
SR248	0.90	1.11
SR2410	0.88	1.11

Circuit length adjustments for 240V cables operated 208V and 277V are noted in Table 12

3. The NEC requires ground-fault equipment protection (GFEP) for fixed outdoor de-icing equipment. All electrical connections should be made by a licensed electrician.