Installation Guide

T-Panel System

Self regulating heat cables inside aluminum panels
or liquid heated tubing inside aluminum panels.

Contents

Installation Guide 1
Plan Your System Layout 3
Panel Attachment 5
Heat Cable or Hydronic Tubing Installation 6
Panel Top Installation 7
Expansion Joint Cap (EJC) Installation 7
Power or Plumbing Connections 9
Operation of System 9
Troubleshooting 10
Warranty 10

WARNING

We strongly recommend using only a factory pre-terminated or cut to length self-regulating heat cable with the RoofHeat systems. We also recommend that any cables or related accessories used with our systems have UL and/or CSA listing and approval. Do not use a constant wattage cable as these types of cables may overheat in enclosed conditions.

NOTE: *Because roofs and buildings are all somewhat different, we recommend you use your best judgment when installing our products to attain the best possible results for appearance, safety, and effective operation. Please use all safety precautions when using ladders, tools and when working on rooftops.*

IMPORTANT LEGAL NOTICE

Area laws differ concerning the handling and installation of heat cables, building materials, electrical connections, plumbing etc. Please check and comply with your local laws. Warmzone RoofHeat will not be held responsible for those who do not comply with their local or national laws while installing our products.

Plan Your System Layout

A. Plan your heat cable or hydronic tubing segments

Using roofline, gutter/downspout, and panel measurements, and your involved electrical circuit or plumbing connection areas, plan your heat cable or tubing runs.

IMPORTANT: Each individually powered section of cable must not exceed your heat cable manufacturers recommended maximum segment lengths for your circuit (See back section of this guide). If you are using a pre-terminated heat cable segment, plan your cable run to best utilize the segment length(s). Keep in mind that your system will utilize two feet of cable/tubing per foot of panel for T2 (2 panel sections) panels and valley panels, and three feet of cable/tubing per foot of panel for T3 (3 panel sections) panels. Depending on your system layout, double looping of gutters or downspouts, extra runs in panels or 'T' splices, may be needed to get cable/tube to desired areas. Be sure to add additional footage for loops at the ends of panel sections, cable/tubing to go from one panel to the next, and any downspouts or gutter you wish to double loop. ***Note:*** *Remember that the N.E.C. requires a 30MA GFCI breaker for any circuit powering a heat cable.*

B. Roof Layout (Figure 1)

Using an assembled eave panel or measuring tape, determine how your eave panels will sit on your roof relative to your shingle course. Decide if you will mount top of panel transition under a shingle course or mount panels completely over shingles. If you are sliding transition under a course of shingles, you will need to use a scraper or spatula type tool to gently lift that row of shingles as you mount panels. If you are incorporating valley panels in your system, decide where best to mount your valley panels by where water will flow on your roof. At roof valley, panel must be mounted flatly against one side or the other of the valley angle. (Figure 3.1)

C. Roof Preparation

Make sure that the installation areas of the roof are free of debris, loose roofing materials, ice and snow etc. Do not install a RoofHeat system on a roof that is damaged.

D. Cutting Panels (Figure 1)

Use a miter saw, radial arm saw or any saw appropriate for cutting aluminum, to cut panel bottoms, panel tops and transitions to length for your rooflines. Be sure to allow for 2 to 3 inch gaps between mounted panels and also at the roofline ends. Panels can be cut to size as you go to ensure a better fit. If desired, custom angled cuts in panels can be made to accommodate roof angles and transitions as long as angles will not damage heat cable or tubing once installed. Remove any burrs or loose metal from panels to prevent any damage to cables or tubing.

E. Panel Preparation

Pre-drill holes in the center channel of your panel bottoms (at least one hole for every 2 feet of panel). See Figure 1.1 inset in Figure 1.

The diameter of the holes should be determined by the size of your mounting hardware. If installing eave panels directly over all shingles or for added strength on a tucked under-shingle installation, pre-drill holes in transition (1 to 2 inches down from top edge of transition and about one hole for every 2 feet of panel). Do not drill holes too close to outer sides of transitions because mounting hardware may interfere with Expansion Joint Caps. (Figure 4)

F. Panel Assembly

Slide dovetailed eave panel, extension panel (T3), and transition connections together. It is usually a good idea to connect the transition to the panel prior to having eave panel mounted. If dovetail connections seem tight when sliding together, try lubricating contact areas with a spray lubricant. (Figure 1.1)

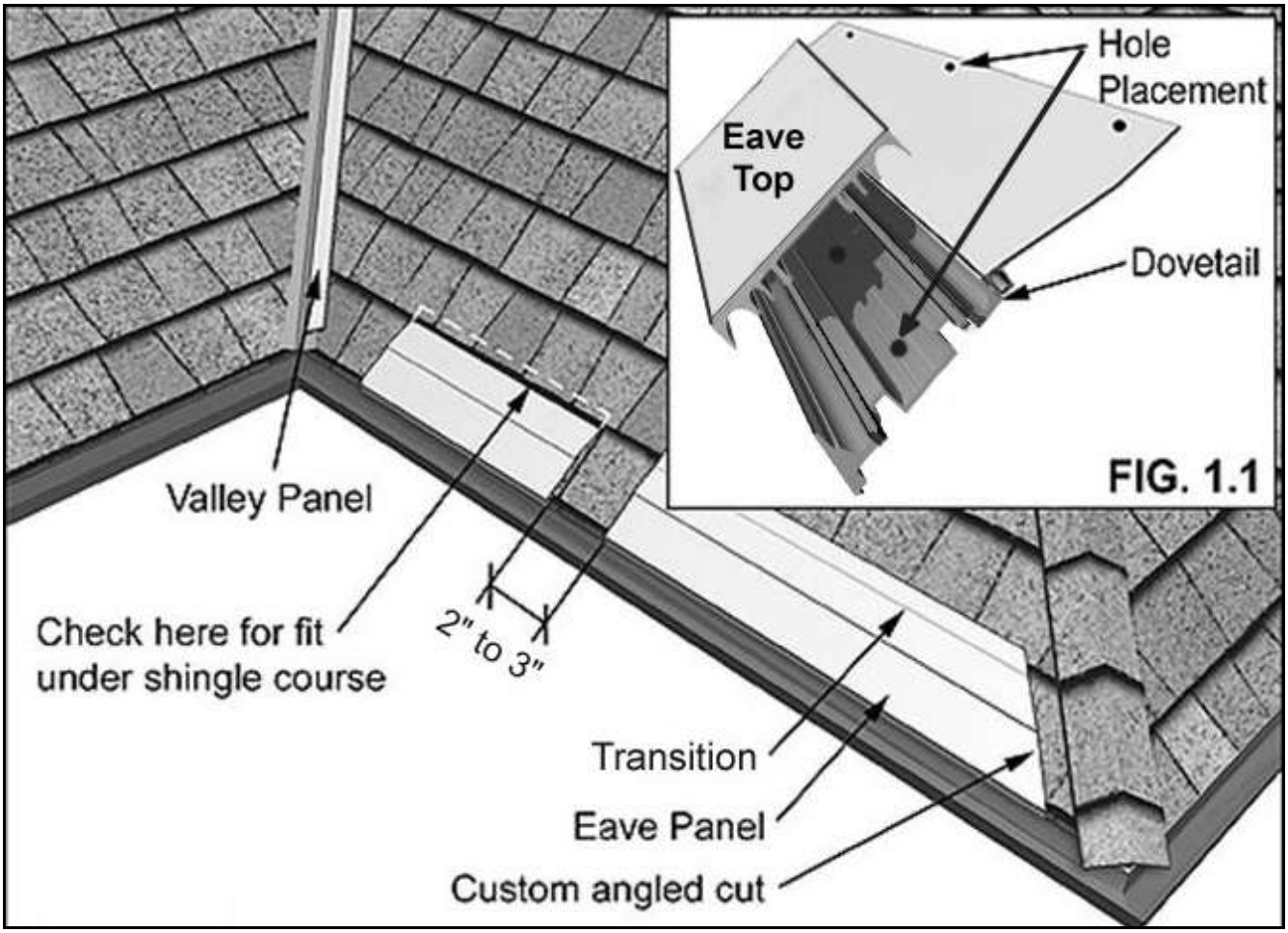

Hole
Placement
Eave
Top
Dovetail
FIG. 1.1
Valley Panel
Check here for fit
under shingle course
2" to 3"
Transition
Eave Panel
Custom angled cut

Figure 1

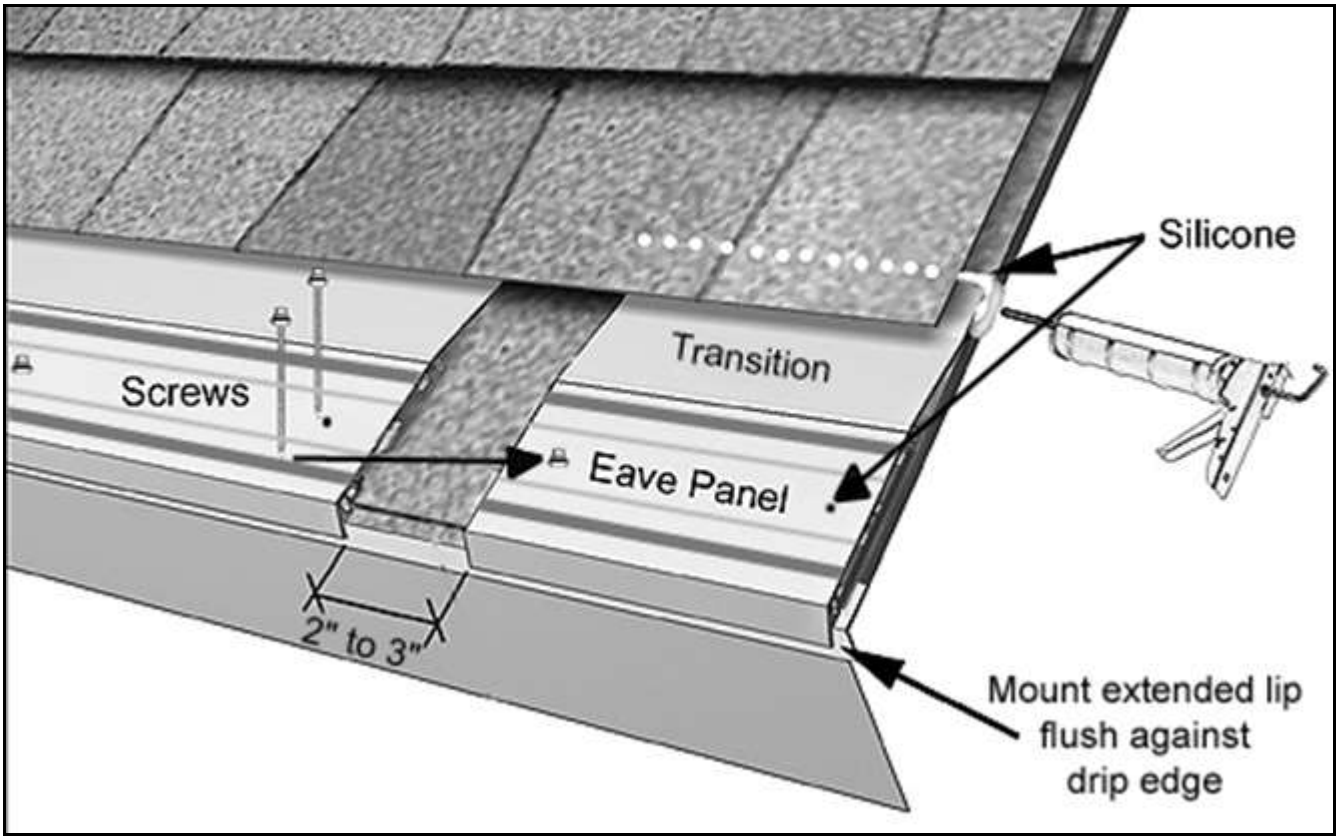


Figure 2

Panel Attachment

A) Eave Panel Attachment (Figure 2)

(i) Set eave panel tops aside until later in the installation. Lay panel bottom/transition on roof where it is to be mounted. Allow for a 2 to 3 gap between mounted panels and at the end of the roofline. Slide transition under shingle if you are installing under a shingle course. Extended lip of panel should sit flush against drip edge of the roof. Run a bead of clear silicone, or similar sealant/adhesive, along the underside top edge of transition and/or between shingles and top edge of transition.

(ii) Apply silicone to the predrilled holes in the center channel of the Eave panel bottom. Make sure that holes are sealed between the panel and the roof.

(iii) Carefully align eave panels horizontally and vertically with previously installed panels as this will make heat cable/tubing installation easier and allow expansion joint caps to sit flush against front face of the eave panels. Drive screws or nails through the predrilled and pre-sealed holes to attach panel bottom directly to roof. We recommend a 2 ½ or 3 inch long hex head screw with a neoprene washer.

(iv) If applicable, nail or screw through holes made in the top of transition.

(v) Repeat these steps until all the eave panel bottoms are mounted to the roof.7

B) Valley Panel Attachment (Figure3)

(i) Set valley panel tops aside until later in the installation. Lay valley panel bottom on roof where it is to be mounted. Allow for a 2 to 3 inch gap between mounted panels and at the end of the roofline. Panel bottom should sit as flat as possible against the roof and close to the inner angle of the valley. (Figure 3.1) Use silicone or similar sealant/adhesive to seal predrilled holes between panel and roof. Be careful that sealant doesn't spread beyond bottom edges of panel when mounted.

(iii) At roof transitions, allow enough room for cable or tubing to easily make the transition

bend. Two expansion joint caps may be necessary in these areas.

(iii) Carefully align valley panels horizontally and vertically with previously installed panels as this will make heat cable/tubing installation easier and allow expansion joint caps to sit flush between the valley panels. Drive screws or nails through the predrilled and pre-sealed holes to attach panel bottom directly to roof. We recommend a 2½ or 3 inch long hex head screw with a neoprene washer.

(iv) Repeat these steps until all the valley panel bottoms are mounted to the roof.

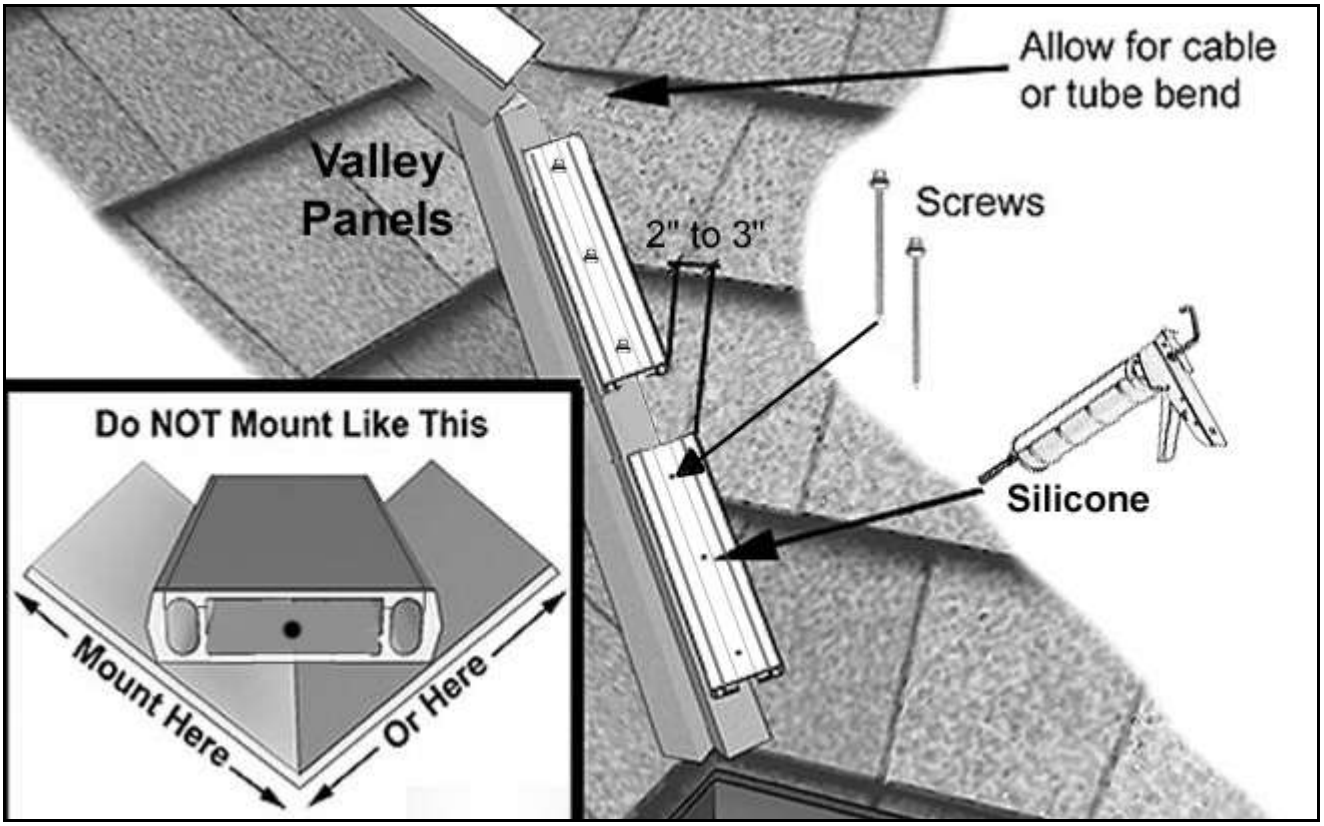


Figure 3

Heat Cable or Hydronic Tubing Installation

A. Inspect Panels, Gutters and Downspouts

Check over ends of all panels gutters and downspouts to ensure that no metal edges or burrs will damage your heat cable or tubing. Remove and smooth if necessary.

B. Roll Out and Cut Heat Cables or Tubing

Cut your heat cable or tubing into desired lengths for your segment runs. If your layout allows, you can install the cable or tubing starting with one end and then cut after it is installed to prevent cutting too short or long of a piece. When rolling out heat cable, roll off of a spool or roll out in a way that will prevent cable from getting loops and kinks in it as this will make installing it into the panels much more difficult and make heat cable damage much more likely to occur. If cable is pre terminated, power it on and check for warming prior to installation in panels.

C. Installing Cable or Tubing in Panels

Extra caution should be taken during this step. Damage to heat cable or hydronic tubing could prevent your system from working or create safety concerns.

Only install heat cable in the channel designed for it. Installing the cable in one of the larger channels in the panels would greatly reduce

surface contact between the cable and metal and the system would be ineffective.

After determining your cable or tubing layout, start laying your cable or tube through the appropriate channel in the panel. A small amount of tape may be used to temporarily hold the cables or tubes in place until you can install the panel tops. A panel top may be installed after both runs of cable or tubing are in the channels (see *Panel Top Installation* section). Avoid twists or kinks in your cable or tube. Run cable or tube through gutters and downspouts as determined by your segment layout. Use cable clips and zip ties as needed to secure the cable in place.

Panel Top Installation

A. Attaching Panel Tops (Figure 4)

Check that the cables or tubes are properly seated into channels. Gently lay the panel tops into place and press down until they snap into place. If the top does not seat into place, lift it back up and check that the cables or tubes are still in place. Do not force the top down as this may pinch and damage the cable or tube. This process may be done as you install your cables or tubes to help hold them in place. Continue until all the panel tops are installed.

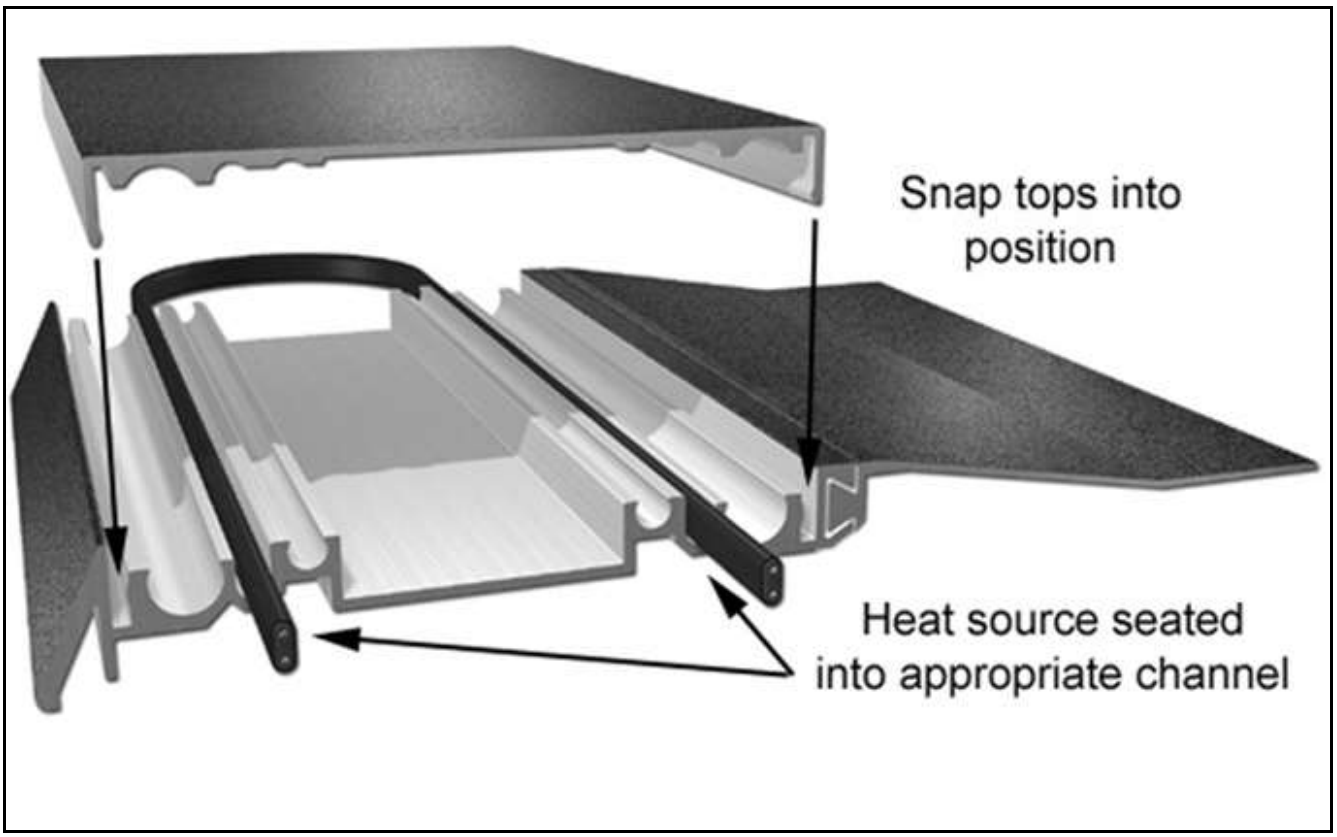


Figure 4

Expansion Joint Cap (EJC) Installation

A. Trimming and Field Bends

Trimming and/or bending of expansion joint caps may be desired for fit or for decorative trim (roof corners, transitions, etc.) Trimming EJC's at points in your installation layout where heat cable or tube will come out might be necessary.

IMPORTANT: Use caution to not allow sharp edges on EJC's to sit against heat cable or tubes. Use metal snips or similar tool as needed for trimming. Flat bending tools can create nice folds in EJC's where desired for a more finished look to your system installation.

B. Eave EJC Installation (Figure 5)

(i) Run a bead of clear silicone or similar sealant along edge of eave panels where EJC will cover.

(ii) Slide EJC under shingle between eave panels or at end of last panel, and seat flush against front edge of eave panel.

(iii) Using two nails or screws, attach top edge of EJC to roof. Attach either under or through shingle depending on desired look.

(iv) Seal heads of nails or screws with clear silicone.

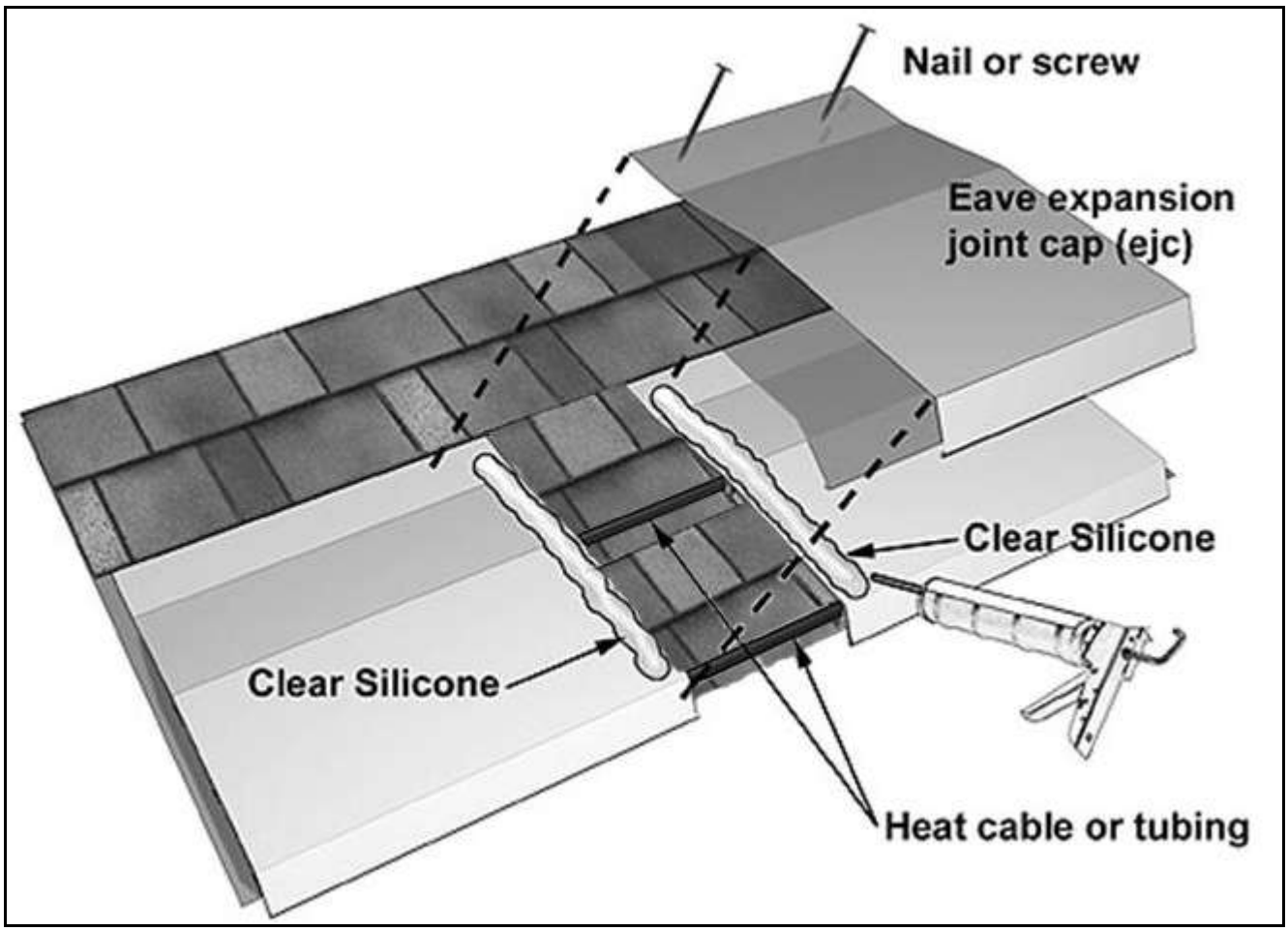


Figure 5

C. Valley EJC Installation (Figure 6)

(i) Run a bead of clear silicone or similar sealant along edge of valley panels where EJC will cover.

(ii) Slightly squeezing side walls of valley EJC before installing will create a tighter fit if needed.

(iii) Gently snap EJC into position between panels or at the end of a panel. Remove any excess sealant.

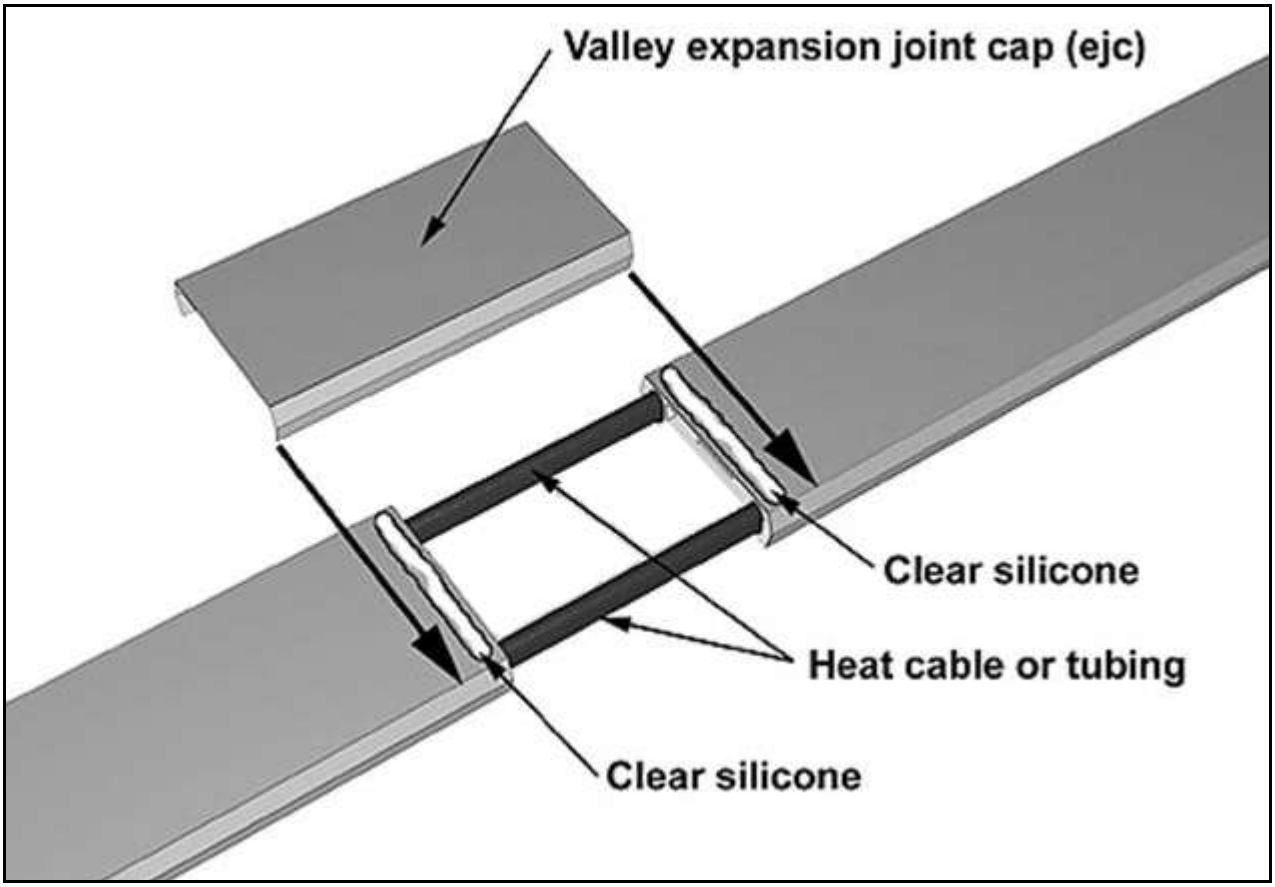


Figure 6

Power or Plumbing Connections

A. Connecting of Heat Cable Segments

(i) Install waterproof cable termination ends as per heat cable manufacturer's recommendations.

(ii) Complete any hardwiring, splices, controllers or junction box connections at this time. These connections may require a qualified electrician.

(iii) Use roof clips zip ties or similar hardware to secure any loose cable.

B. Connecting of Hydronic Tubing

Make all pluming connections and seals to tie system into existing or dedicated liquid radiant heat system. This requires a qualified plumber or technician.

C. Testing

Apply power or radiant heat to your RoofHeat system. If optional controllers are incorporated into your system, make sure they are enabled. Check that your cables and panels begin to get slightly warm to the touch after a period of time. If not, please refer to *Operation of System* section in this guide.

Operation of System

A. System Usage

Your RoofHeat system is designed to work best for the removal and prevention of ice dams, icicles and snow AS the moisture accumulates on the panel areas and freezing or near freezing temperatures are present. Even during periods without stormy conditions, snow melted during the day can re-freeze in the evenings or if the temperatures drop below freezing. Keep your system powered on and operating during these times. Your panel system will not be as effective if not powered on until after large ice dams have formed.

B. Controls

If your system incorporates…

GFCI PLUG KIT ON AN UNSWITCHED OUTLET

Plug or unplug cord from outlet as needed. Check power indicator light (if equipped). Use test/reset buttons as necessary.

GFCI PLUG KIT ONASWITCHEDOUTLET

Leave cord plugged in and use switch to operate outlet and system as needed. Check power indicator light (if equipped). Use test/reset buttons as necessary.

AMBIENT TEMPERATURETHERMOSTAT

System will automatically power on when ambient temperature around thermostat reaches factory specified temperature (around 38°F). Thermostat will automatically shut system off awhile after specified temperature is exceeded. Use circuit breaker(s) utilized to power your system to disable or enable all power to your system.

MOISTURE/ TEMPERATURE CONTROLLER

System will automatically power on when ambient temperature around thermostat reaches factory specified temperature (around 38°F) *AND* moisture is present on sensor. System will not power on unless *BOTH* conditions are present. Controller will automatically shut system off awhile after specified temperature is exceeded or moisture is no longer present on sensor. Use circuit breaker(s) utilized to power your system to disable or enable all power to your system.

ANY OTHER CONTROL SYSTEM

Refer to manufacturer operation instructions and specifications to operate.

Troubleshooting

- Check for properly operating controllers.
- If accessible, check that heat cable or hydronic tubing is warm to the touch.
- Check for tripped circuit breakers, reset if needed. If breaker resets and cable and panels warm up, system is working. A breaker that trips immediately after resetting could indicate a short in the cable or splices. Troubleshoot connections and splices or contact a licensed electrician to repair the problem. A breaker that trips intermittently may indicate a load problem (too much cable for the circuit). Cross reference your heat cable segment lengths to the cable manufacturer's length to circuit chart (see charts at the back of this guide), or contact a licensed electrician to repair the problem.
- **On a radiant system:** Make sure boiler and circulator system and any associated controls are operating properly. Refer to their manufacturer's operating information.

Warranty

Warmzone RoofHeat products are covered by a 10-year warranty on materials including and limited to: aluminum alloy panels, expansion joint caps, mounting brackets, heat cables or hydronic tubing and powder coating finish. Warranty is voided by any modification, adjustment, or reconfiguration of materials not recommended by manufacturer. Improper or faulty installation or usage of panels, cables or incorporated accessories will also void said warranty.

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The following are recommended maximum segment length guides from manufacturers of self regulating heat cable.

Relevant UL number for recommended cables: E33597

Relevant CSA number for recommended cable: 1239666

Drexan Pipe Guard Heater Cable

Maximum continuous circuit length (in feet) per circuit breaker

Drexan MultiTrace/Pipeguard 8 Watt 8-SJ/SJP Max Length segment lengths in Feet									
Ambient temp at start-up		15 A @120 V	20 A @120 V	30 A@120 V	40 A @120 V	15 A @240 V	20 A @240 V	30 A @240 V	40 A @240 V
50°F	(10°C)	132’	172’	183’	183’	258’	342’	363’	363’
0°F	(-18°C)	89’	115’	173’	183’	166’	227’	343’	363’
-20°F	(-29°C)	77’	102’	153’	182’	151’	204’	302’	363’
-40°F	(-40°C)	72’	94’	134’	182’	132’	200’	272’	363’

Drexan MultiTrace/Pipe Guard 10 Watt 10-SJ/SJP Maximum length segments (in feet)									
Ambient temp at start-up		15 A @120 V	20 A @120 V	30 A @120 V	40 A @120 V	15 A @240 V	20 A @240 V	30 A @240 V	40 A @240 V
50°F	(10°C)	106’	133’	154’	155’	207’	268’	310’	365’
0°F	(-18°C)	68’	95’	139’	153’	132’	187’	276’	310’
-20°F	(-29°C)	60’	79’	119’	153’	126’	162’	240’	310’
-40°F	(-40°C)	55’	72’	106’	153’	108’	149’	217’	310’

Hydronic Cable Specifications

Dimensions	3/8”
Wall Thickness	SDR9
ASTM Standard	ASTMF876/F877/F1960
Flow Rate	5.44
Tube Type	PEX3/8
Water Source	5.44 USGPM@ 13.1 ft(H2O) Head
RFH Glycol Level	40% Glycol
Temp & Pressure Ratings	200°F at 80 psi, 180°F at 100 psi, and 73.4°F at 160 psi
Approvals	ICBO, NSF-rfh
Codes	2000 Uniform Mechanical Code (UMC)

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