Installation Guide

T-Zone System

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

RoofHeat

Table of Contents

Installation Guide.....1
Plan Your System Layout.....3
Material Preparation.....4
System Installation.....5
Power or Plumbing Connections.....13
Operation of System.....13
Troubleshooting.....14
Warning.....14

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 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: If installing 3/8-inch tube in your panels for a liquid heated system, do not exceed recommended section lengths for your incorporated boiler/pump. Warmzone doesn't recommend heating gutters and downspouts with radiant heated tubes. If using a self-regulating heat cable, 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). 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)

If you are retro fitting a T-Zone system onto existing roofing, determine how your eave panels and transition will sit on your roof relative to your shingle course. Ideally, the flat portion of the transition pieces should be installed under a course of shingles. If you are sliding the transitions 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 install.

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.

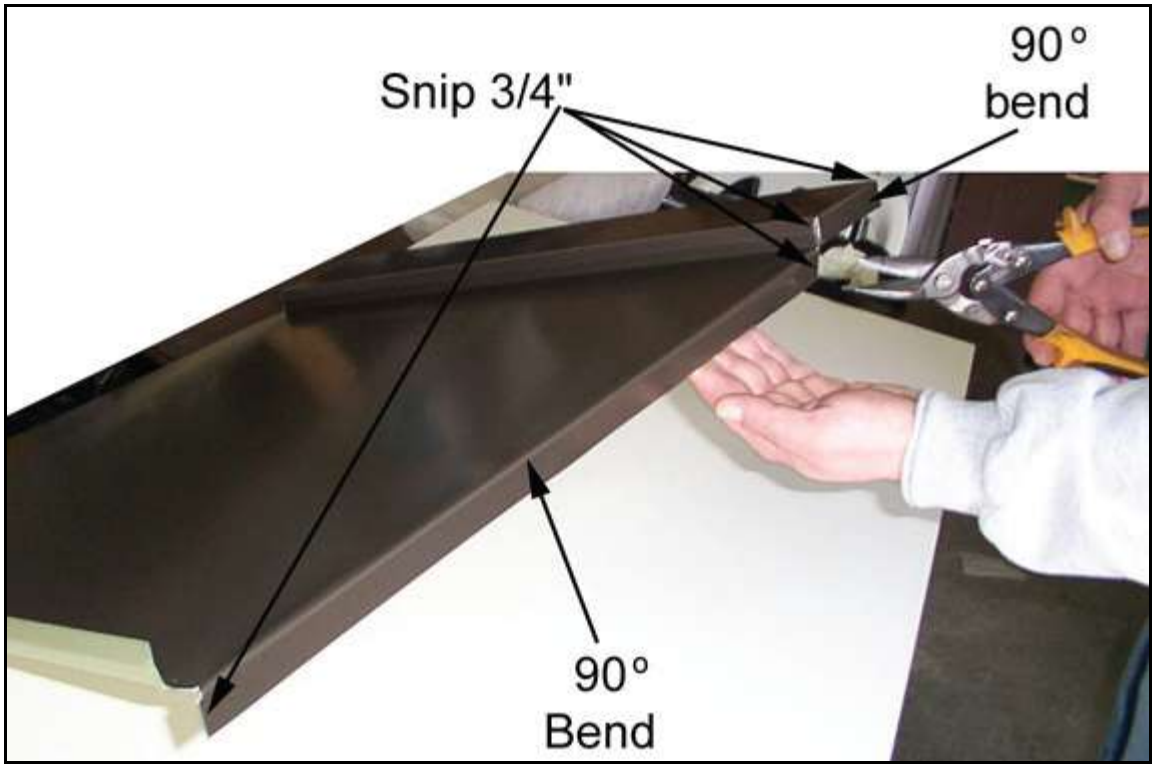


Figure 1

Material Preparation

A. Eave Panel Preparation

Locate the edge of the eave panel that will be the front (drip edge) side of the panel. Use snips to cut a ¾ inch slit in the appropriate folds in the panel. Remove excess metal that the slits created.

Use a bending tool to fold a 90° downward bend along the leading edge of the panel. Bend the flap on the raised area of the panel down to close off the opening. Repeat this step with all of your eave panel sheets (Figure 1).

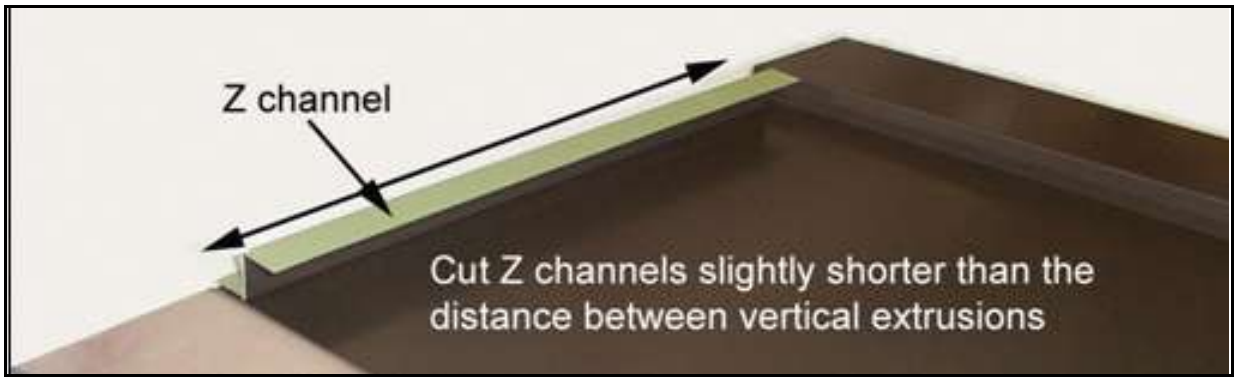


Figure 2

B. Z channel

Z channel should be cut slightly shorter than the width between the vertical extruded panels. Cut one piece of Z channel for every segment of T-Zone panel you will be installing. (See Figure 2.)

C. Extruded Panel Preparation

Extruded panels consist of a bottom/base portion and a snap in top. These panels come in 6-inch lengths and will have to be cut and drilled for the different pieces of the system as described below. (See Figure 3.)

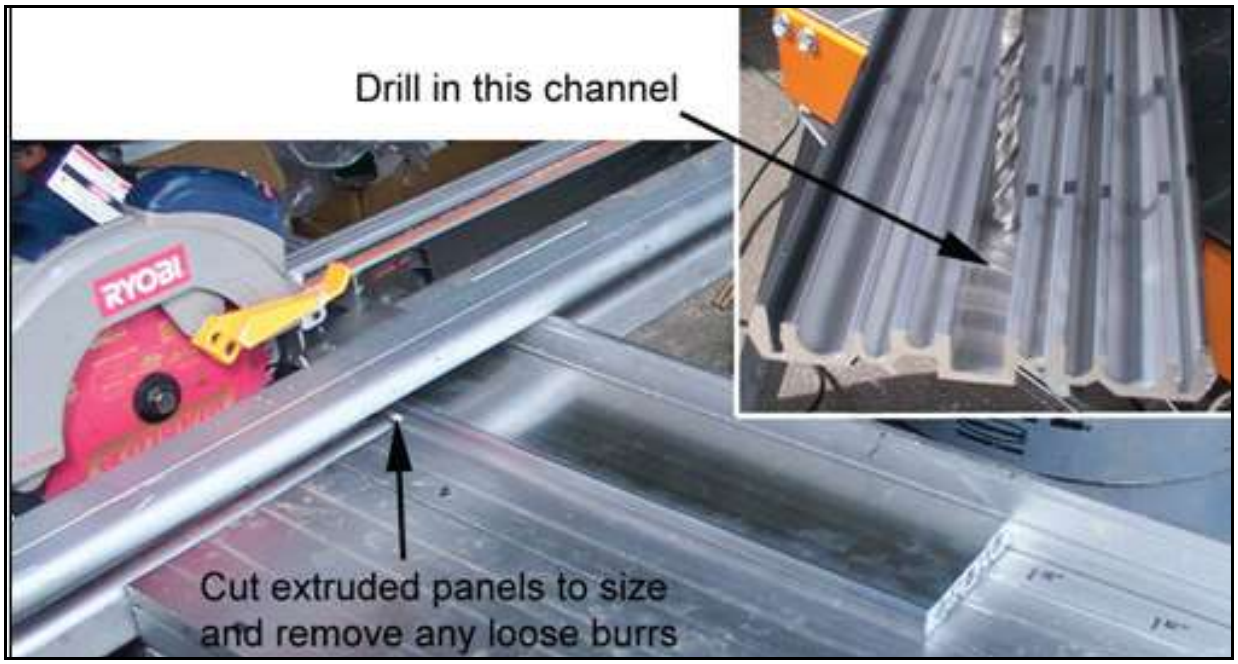


Figure 3

(I) Vertical Eave Extrusion: Using a saw appropriate for cutting metal, cut sections of the extruded panel tops and bottoms so the pieces are 6 to 8 inches shorter than the vertical surface area of your folded Eave panels. Cut one of these pieces for every segment of T-Zone panel you will be installing.

(II) Horizontal Eave Extrusion: Cut extruded panel tops and bottoms in sections that are 2 to 3 inches shorter than your 'Z' channel pieces for installing under the transition. Cut one of these pieces for every segment of T-Zone panel you will be installing.

(III) Valley Panel Extrusion: Use extruded panels in full lengths up valleys until you reach an area where a full panel will not fit. Cut a custom sized piece of extruded panel to finish the valley system coverage area.

Pre-drill holes in the center channel of your panel bases (at least one hole for every two feet of panel and a minimum of two holes). Diameter of holes should be determined by the size of your mounting hardware. Remove any metal burrs or sharp edges from your cut pieces. (See Figure 3.)

System Installation

Installation of this system should be done after roof is completely dried in, or as a retrofit on top of existing roofing material.

A. T Zone Double Heated Valley Metal

(I) Starting at the bottom of the roof valley, place W channel into position in roof valley. Allow W channel to overhang drip edge and snip off excess. Tack into place with roofing nails toward the outer concave edges of W channel and seal nail heads. Install more W channel pieces up the roof valley overlapping the previously installed piece until you reach the top of the roof valley. (See Figure 4.)

(II) Apply sealant/adhesive to the pre-drilled holes on the bottom of an extrusion base. Position the extrusion to outside concave edge of W channel. The panel should be positioned 2 or 3 inches above the drip edge. Press panel snugly against concave lip on W channel and attach extrusion with screws through the pre-drilled holes. Continue mounting extruded panel bases on both sides of W channel to the top of the valley with a 2 to 3 inch gap between extruded lengths.

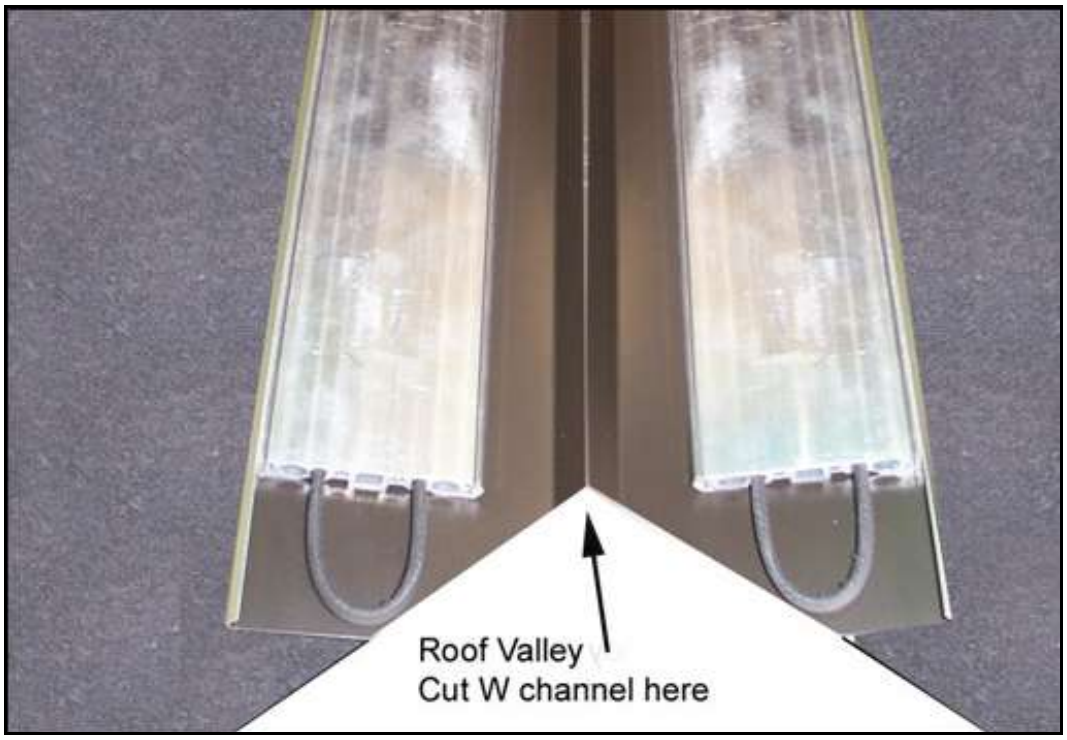


Figure 4

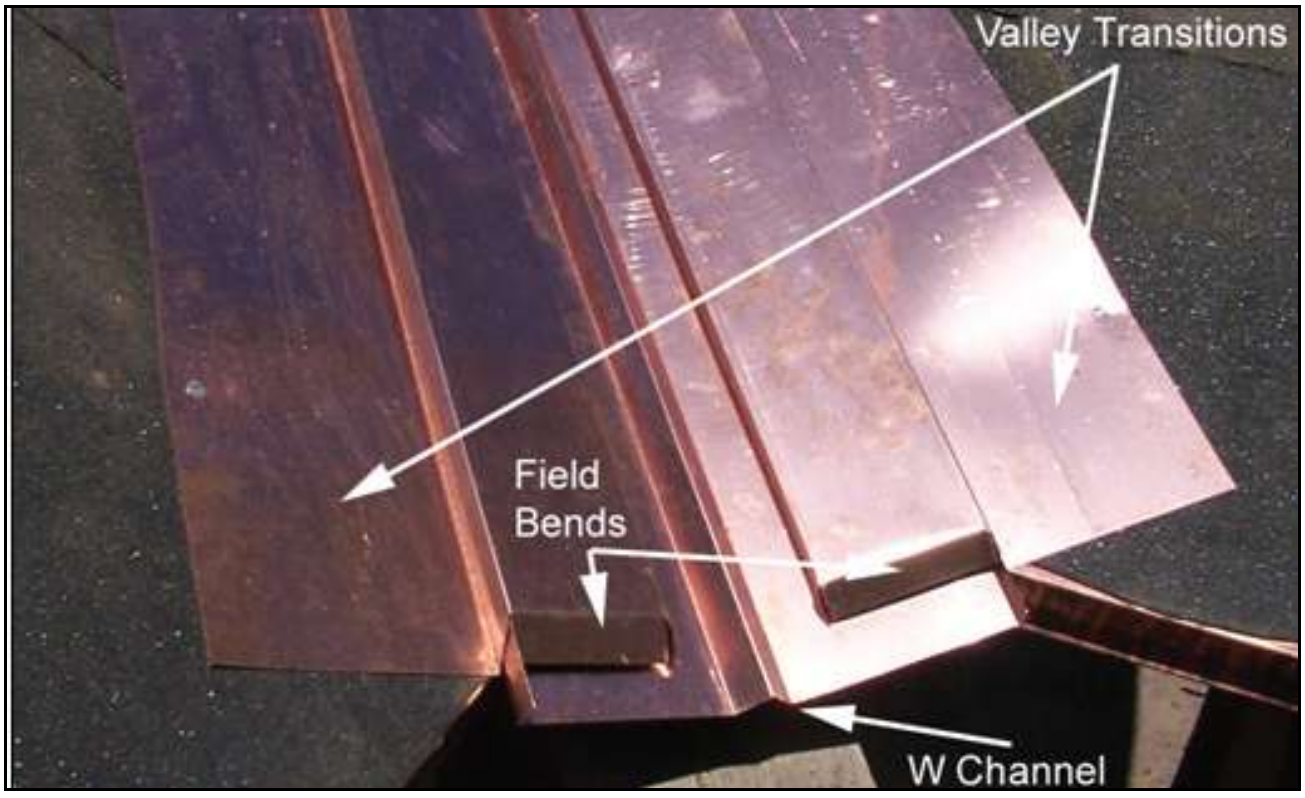


Figure 5

(III) Install heat source into the appropriate channels in the extruded bases and snap in the panel tops. If installing a liquid heated system with tubing, use 90° angled fittings as needed for multiple passes of tube within the extruded panels. If installing an electrically

heated system, make loops in heat cables at the bottoms of the extruded panels that will extend to the outer edge of the roofline (Figure 4).

(IV) Install valley transition pieces by fitting them over the installed extruded panels and the outer concave edge of the W channel with the flat side of transition facing away from the center of the W channel. Field cuts and bends may be needed to finish off the top and bottoms of the T-Zone valley system. Attach transition pieces to roof with roofing nails driven through the outer edge of the flat area. Seal nail heads with sealant/adhesive. Install ice and water shield strips on outer edges of transitions if desired. (See Figure 5.)



Figure 6: Install and seal drip edge on roof eave.

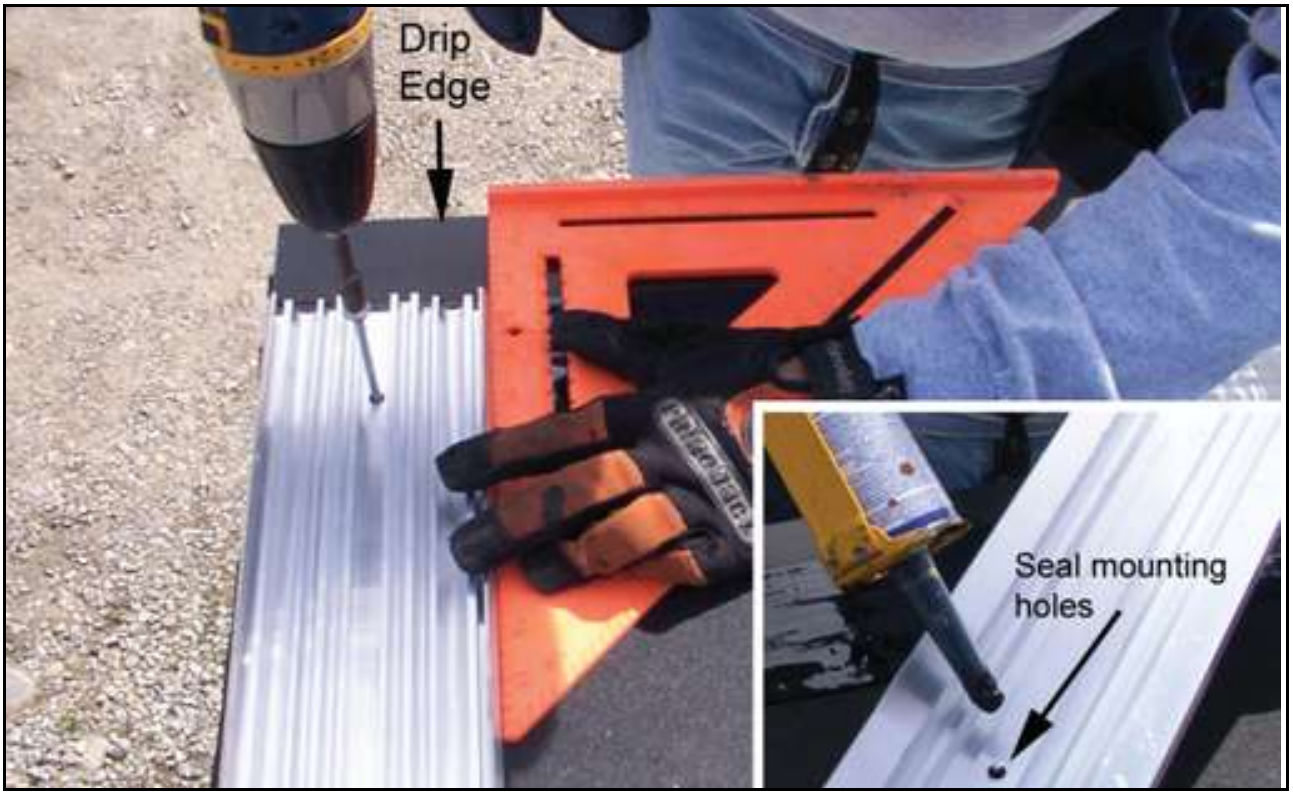


Figure 7

B. T-Zone Eave Installation

Drip edge installation

After roof is dried in, install T-Zone drip edge on the eaves where the system is to be installed. If drip edge exists, install T-Zone drip edge over existing drip edge. Install drip edge by laying down a bead of adhesive where drip edge is to go, then nail the drip edge to the roof. Ice and water shield strip can be laid over drip edge if desired (Figure 6).

(I) Begin installation at the far edge of the eave. Install an extruded panel by applying sealant/adhesive to the pre-drilled holes in the panel base (Figure 7.1). and align panel parallel with outer edge of roof. Front edge of panel should be 3 to 4 inches away from drip edge. Panel must be installed as close to a 90° angle to the installed drip edge as possible to ensure that the eave panels will be square to roofline. Screw extruded panel into place (Figure 7).

(II) 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.

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.

NOTE: *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.*

(III) Install heat source into mounted extruded panel in the appropriate channel. Loop heat source at the front edge all the way to the front of the drip edge. If installing a liquid heated system with tubing, use 90° angled fittings at the front drip edge end of the extrusion to allow tube to return to the transition end of panel. Once the heat source is installed and coming out of the transition side, snap extruded panel top into place (Figure 8).

(IV) Take a T-Zone eave panel that has the front edge prepared with the drip edge hem and raised area closed off. Align raised area with the installed extrusion panel and the front edge with the installed drip edge. Snap eave panel over extruded panel and fold front hem under drip edge lip.

(Figure 9) ***Note:*** *During this step, be careful to keep heat source away from any metal edges that could compromise its integrity.*

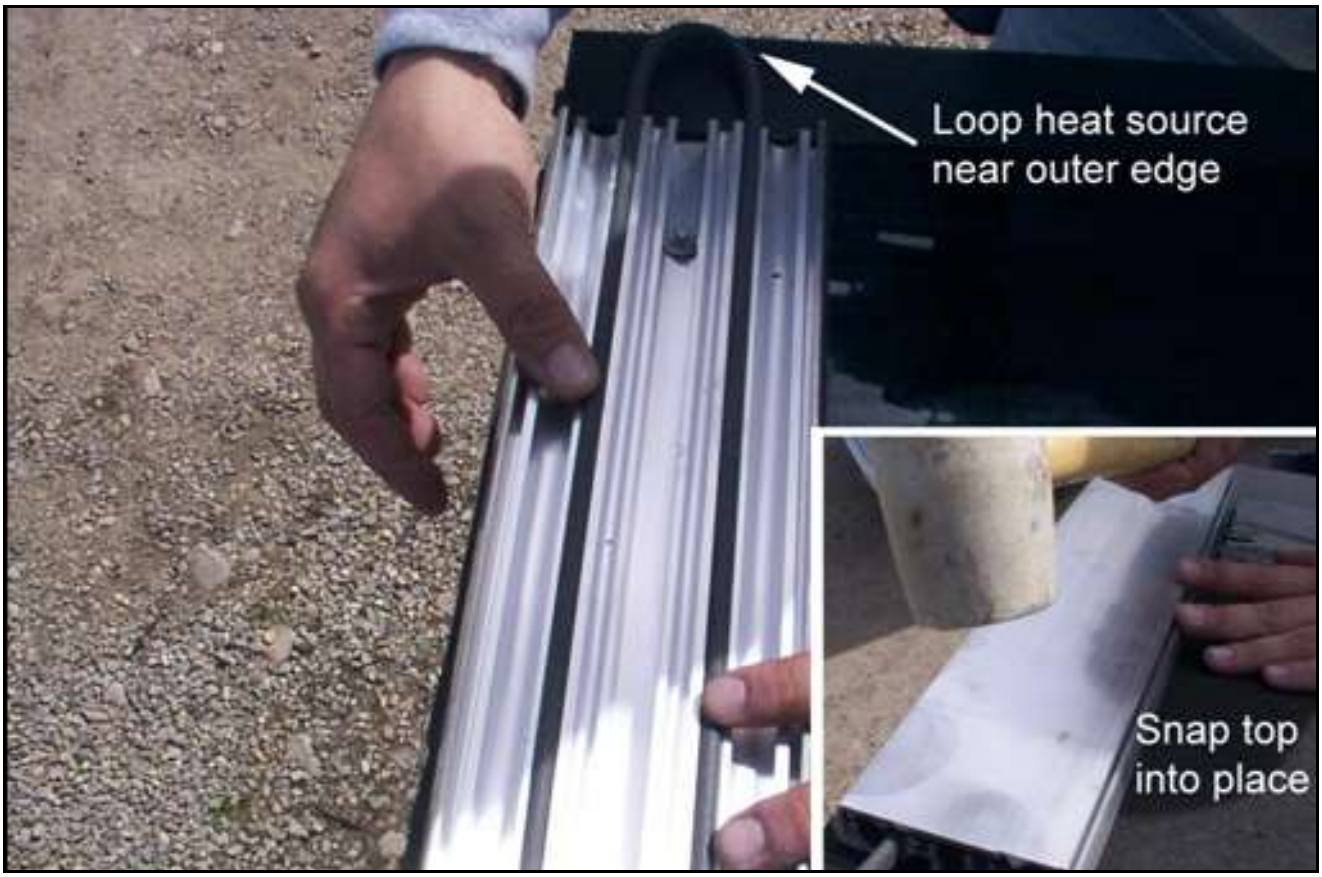


Figure 8

(V) Install a vertical extruded base panel on top of the installed T-Zone eave panel allowing 3 to 4 inches of space from the drip edge and transition sides of eave panel. Press extrusion as tight against outer concave edge of eave panel as possible. Drive screws into pre drilled and sealed holes in extruded panel base penetrating the installed eave panel underneath. (See Figure 10).



Figure 9

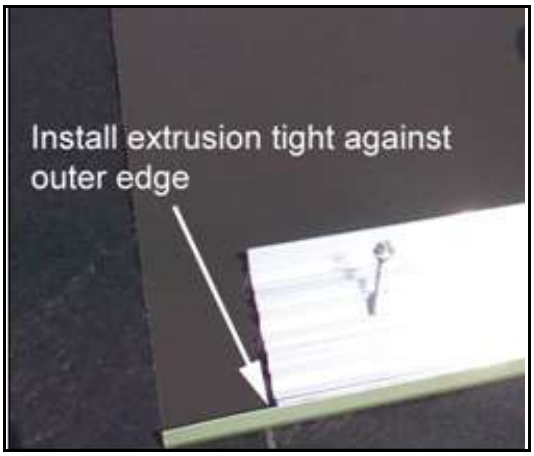


Figure 10

(VI) Install a piece of Z channel to the top (transition) side of eave panel centered between the mounted vertical extruded panels. With the colored side of the Z channel facing downward, align the back edge of the Z channel with the edge of the eave panel. Use two roofing nails to attach Z channel through the eave panel and roofing. Seal nail heads with sealant/adhesive. Carefully align Z channels horizontally with all other previously installed Z channels to ensure that the hem on the transition pieces to be installed later will insert properly. (See Figure 11.)



Figure 11



Figure 12

(VII) Install one of the shorter extruded base panels horizontally on top of the flat area of the installed Z channel. Center extrusion base between outer edges of Z channel. Drive screws through the pre-drilled and sealed holes in extrusion base. (See Figure 12.)

(VIII) Install heat source into the appropriate channel in the horizontally mounted extrusion base and snap the extruded panel top into place. Continue routing the heat source down and back up through the vertically mounted extrusion base (Figure 12). If installing a liquid heated system with tubing, use 90° angled fittings at the front drip edge end of the extrusion to allow tube to return to the transition end of panel. Snap the extruded panel top into place on the vertically mounted extrusion panel.



Figure 13

(IX) Repeat steps IV through VIII until the end of the roofline or the valley area is reached (see Fig.13). Depending on the system's layout, field cutting of eave panels and shorter extrusions may be necessary to accommodate roof hips, inside corners, and roof transitions etc. Use your best judgment to achieve a functional and aesthetic system.

(X) Terminate or leave leads of the heat source for later connection, or lay cable of tubing aside if continuing segment through another section of the system.

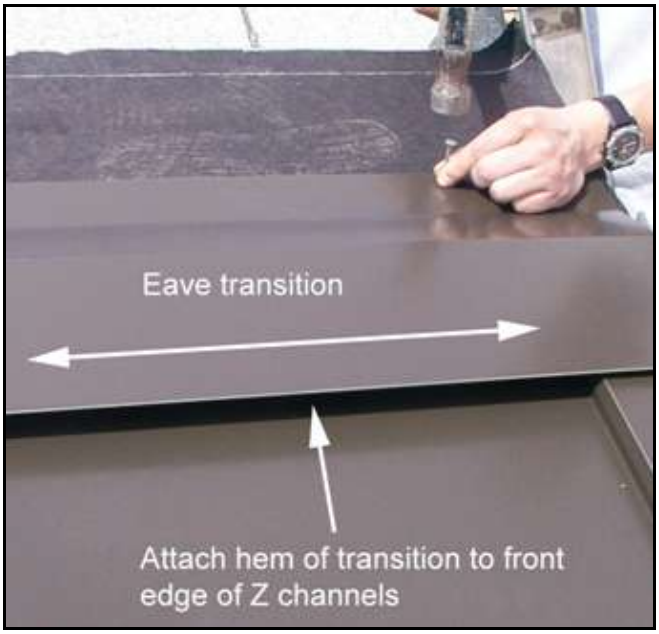


Figure 14

(XI) Install transition pieces to the upper area of the T-Zone system by sliding the hem of the transition onto the installed Z channels, covering the horizontally mounted extrusion panels. Drive roofing nails through the top flat edge of transition piece to attach to roof. Seal nail heads with adhesive/sealant. Overlap the next piece of transition over the previously installed one by snipping off a small amount of the hem. Lay ice and water shield strip over top edge of transition to seal to roof if desired. (See Figure 14.)

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 T-Zone 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 the *Troubleshooting* section in this guide.

Operation of System

A. System Usage

Your T-Zone 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 refreeze 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 ON A SWITCHED OUTLET: 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 TEMPERATURE THERMOSTAT: 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 hydronic system: Make sure boiler and circulator system and any associated controls are operating properly. Refer to their manufacturer's operating information.

Warning

If your T-Zone system incorporates a heat cable as the heat source, we strongly recommend using only a factory pre-terminated or cut to length self-regulating heat cable with the T-Zone 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.

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: 123966620

Drexan Pipeguard 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/Pipeguard 10 Watt 10-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)	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 inch
Wall Thickness	SDR 9
ASTM Standard	ASTM F876/F877/F1960
Flow Rate	5.44
Tube Type	PEX 3/8 inch
Water Source	5.44 USGPM @ 13.1 ft. (H_2O) Head
RFH Glycol Level	40% Glycol
Temperature and 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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