

New!

# Clear View II Defrosters Instructions - Before you start

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## Clear View Installation Instructions

To assure proper installation and maximum performance, care must be taken when installing Clear View Defrosters. Reading these instructions is a good start.



### Step-by-Step

Clear View instructions come in two parts. The General Instructions show the main steps and electrical set up while Attachment Two is specific to each defroster.



#### TWO PART INSTRUCTIONS

Do not install without Attachment 2

Take a few minutes to read through these instructions, identify the defroster components and understand the sequence of installation steps.

### Defroster

The heating elements come on pre-spaced rolls which are trimmed to the size of the window for a custom fit. After cleaning the window, the defroster elements are applied to the surface, side buss bars installed and the defroster is ready to be connected electrically.

### Electrical

In the electrical section, connecting power, ground and the defroster to the ThermaSync control will be accomplished. Installing the fuse and defroster activation switch are important steps.

### Secrets to Defroster Success

Clear View defrosters are easy to install but there are a few things critical to success.

1. Select a defroster that fits the window. Respect the minimum and maximum allowed widths.
2. Layout the parts and buss bars as shown prior to starting the installation.
3. Do NOT add or remove heating elements from Clear View Defrosters. Removing elements changes the defrosters resistance and it will not function.
4. Follow the layout in the instructions regarding the number of heating elements for each buss bar section.
5. Make sure the window is CLEAN and DRY before installing the defroster.
6. For best results the defroster grid MUST be applied at temperatures above 60° F (16° C).

Read the instructions carefully before beginning the installation

### Important!

**ThermaSync 2812/2824 Controls are required for defrosters with less than 100% power modulation. Only ThermaSync controls provides this modulation.**

#### Complete or Stick – What is the difference?

**Complete Defrosters** includes the Clear View defroster, ThermaSync control (configured for the defroster) and switch, wire harness, installation pack and full instructions. Ideal for new defroster installations.

**Stick Defrosters** includes the defroster and instructions only. Stick Kits connect to existing wiring but are only available for defrosters with 100% power modulation. Ideal for defroster replacement.



**PLEASE READ THIS PAGE**

## Clear View instructions come in two parts

Clear View defrosters are high performance devices and rely on accurate installation to reliably melt snow and ice.

These instructions come in two parts, General Instructions and Attachment Two which is specific to each defroster.



Clear View Defrosters must be installed EXACTLY as shown in the instructions including Attachment Two.

Failure to follow the instructions will cause the defroster or control to fail and **voids any and all warranty and replacement policies.**

**Read the instructions carefully before beginning the installation**

## Of special importance when installing Clear View Defrosters:

### Select a defroster that fits the window

Respect the minimum and maximum allowed widths for the defroster.

### All heating elements delivered with the kit **MUST** be used

Adding or removing heating elements from will cause the defroster to fail.

### Follow the defrosters bus bar layout exactly

The elements per buss bar and tab locations cannot be changed.

### Make sure the window is **CLEAN** and **DRY** before installing

Use the GAP-1 adhesion promoter supplied.

### Apply the defroster grid at temperatures above 60° F (16° C)

This helps the bonding tape to cure properly.

### Review both the General Instructions and Attachment Two

Do not rush into the installation. Review both instructions before starting installation.

**Do not attempt to install a Clear View defroster without Attachment 2.**



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# Clear View II Defroster Installation

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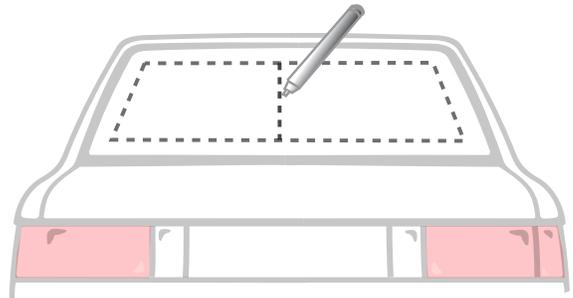
## STEP 1 Element alignment and sizing

### Defroster alignment is best done on the outside of the window

On the OUTSIDE of the window use a felt tip pen to mark the exact window center and approximate top, bottom and sides of the defroster.

Layout and tape the defroster elements on the outside of the window to quickly test the approximate positioning of the defroster. DO NOT SEPARATE LAYERS.

Starting at the top, allow 1-2 inches (2.5-5 cm) of clearance between the top of the window and the first grid line. Position so that the bottom element clears the lower window frame or backup light by 1-2 inches (2.3 - 5 cm) or more.

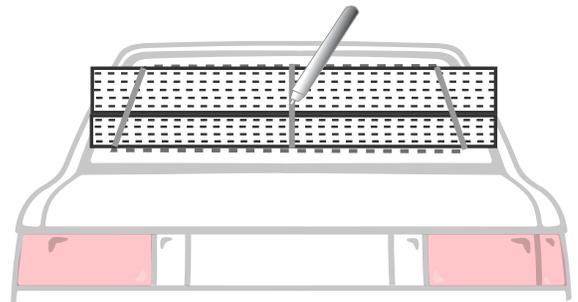


*Generally the defroster should be mounted on the upper portion of the window. Do not place the defroster in an area with tight radius bends.*

## STEP 2 Mark defroster rolls

If using more than one roll of elements place the next roll below the first maintaining even element spacing of 1.25 inch (3.2 cm) between elements.

Now mark the paper rolls with the window center and approximate top, bottom and sides established in Step 1.

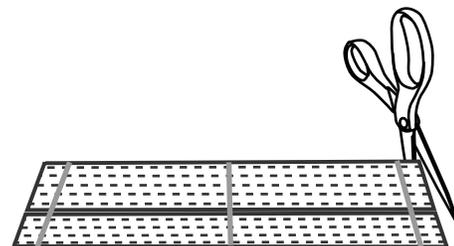


## STEP 3 Trim defroster rolls

### Allow at least three inches (8 cm) extra on both sides of the defroster

With scissor, trim the defroster rolls to length allowing at least 3 inches (7.6 cm) or more on each side of the defroster edge marked in Step 2.

**Important!** The final defroster width (side-to-side) size must be between the minimum and maximum width shown in the instruction attachment.



## STEP 4

## Cleaning and preparation

### Cleaning the window is critical to a successful defroster installation

Clean the **inside** of the window with any high quality glass cleaner to remove oils, waxes and silicones that may have accumulated. Then wipe down the surface completely with a clean towel to dry.

Using the GAP-1 Glass Primer towelette to wipe the glass surface completely. Be sure the pad is wetting the glass surface.



Make sure the glass is wiped dry. The heating elements must be applied within 30 minutes of drying. Any GAP-1 film can be cleaned after Step 6.



### IMPORTANT!

*Failure to clean the window will cause the defroster to fail. After cleaning the window dry it with a clean towel.*

**TIP!** *Dry the window with a hot air gun or hair dryer. Avoid touching the glass.*

*The glass must be DRY and warm prior to Step 5.*

## STEP 5

## Preparing the grids

This step involves separating the protective paper liners, cutting one side of the liner and replacing the two parts back together.

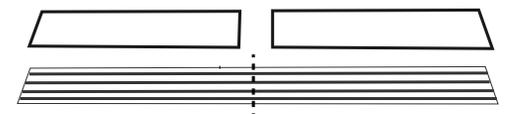
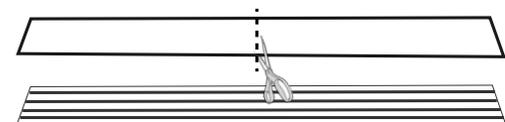
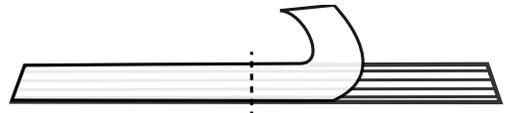
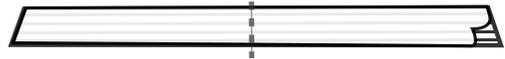
Place all the defroster grids on a clean flat surface, carefully separate and peel back a small corner of each and inspect the copper elements.

**The elements have a dark adhesive on one side and are bright copper on the other. Remove white protective liner so that the dark adhesive side of the grid is exposed.**

Now cut the white protective liner in half and replace the liners back together leaving approximately a 2-3 (5-8 cm) inch gap in the center.

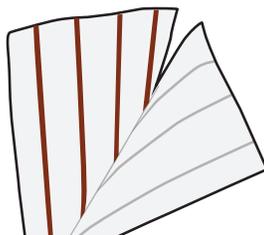
### DO NOT CUT THE GRIDS!

Repeat this process for each strip of heat elements just before installation. Keep the exposed grid area clean and do not touch the grids.



### Separating the Paper

Remove white protective liner so that the dark sticky adhesive side of the grid is exposed.



## STEP 6

## Attaching grids to the window

### Do not change the number of heating elements

It is time to move inside the vehicle. In this step you will be attaching the defroster heating elements to the window.

When the glass is warm and clean, position the upper element first, aligning it carefully along the upper marks previously made on the outside of the glass. The center line should align with the center of the bare 2 -3 inch (5-8 cm) portion of the defroster and the ends should extend at least 3 inches (7.6 cm) past the defroster area on each side.

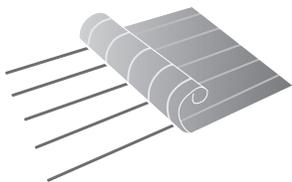
Then press the center strip (adhesive side) firmly against the glass. Working from the center outward, slowly peel back one half of the cut inner liner, while pressing and smoothing the defroster onto the glass until reaches the window edge. Repeat the process on the other side.

**DO NOT WRINKLE THE PAPER AS THIS WILL RESULT IN KINKED HEATING ELEMENTS.**

Using your thumb, carefully press each element firmly against the window to insure a good bond

**Repeat additional element rolls, aligning the roll along the bottom of the installed grid for even spacing between elements at 1 1/4 inches ( 3.17 cm).**

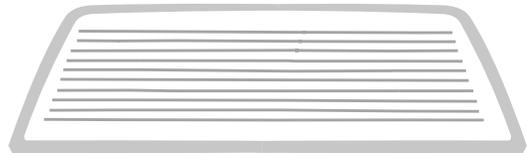
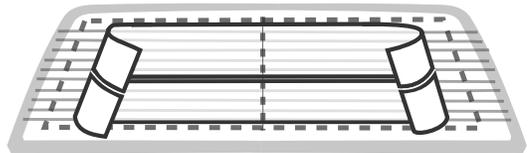
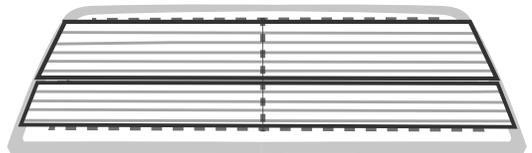
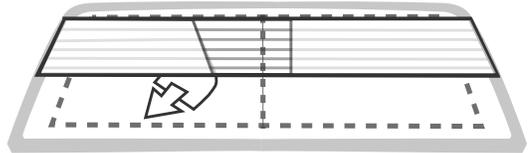
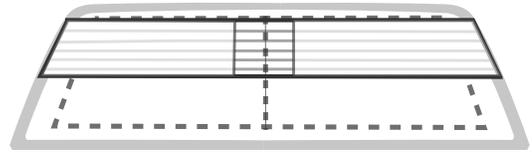
Now, carefully peel the backing paper from the elements starting at the window edge. Remove all the backing paper. At this stage only the elements should be on the window.



**TIP!** Use a hair dryer to heat the backing paper when removing it from the window. Go slowly and pull at a small angle. If the paper begins to stick to the window stop and fix the problem immediately.

#### Right or Left Tabs?

Clear View defrosters can be reversed (rotated) as needed for installation.



**DO NOT USE SOAPY WATER TO POSITION THE DEFROSTERS.**

**TIP!** Use a hair dryer to heat the surface when removing release paper from glass.

## STEP 7

### Apply buss bar foam bonding tape

Determine the exact location of the bus bars before attaching the foam mounting strips to the window. The ends with the integral terminals must extend beyond the elements and require the foam mounting strips should extend 5/8 inches (1.6 cm) beyond the top and bottom of the elements.

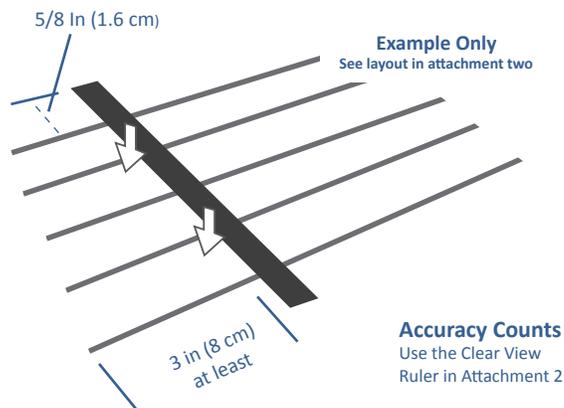
The mounting strip should be placed parallel to the side of the window clearance between the mounting strip and the window edge molding. Allow much more clearance if the glass sides are tightly curved. Mark the bus bar position using a felt-tip pen on the OUTSIDE of the glass.



The foam mounting strips go OVER THE TOP of the elements. Remove the backing paper from one side of the foam mounting strip and press it firmly into place in the pre-determined position. Repeat the process on the opposite side.

Rub down the bonding strips to insure a good bond to the window.

DO NOT STRETCH THE MOUNTING STRIP DURING INSTALLATION.



*Do not stretch the bonding strips when applying them to the window. Rub down the strips to insure a good bond with the window.*

**TIP!** The heating elements should go at least three inches beyond the double stick bonding strips.

**Important!**

*The final defroster width (side-to-side) size must be between the minimum and maximum width shown in the instruction attachment.*

## STEP 8

### Apply side buss bars

In this step apply the Buss Bars to the foam mounting strips. **This is a CRITICAL STEP, please refer to the Buss Bar Layout drawing prior to installing the buss bars.**

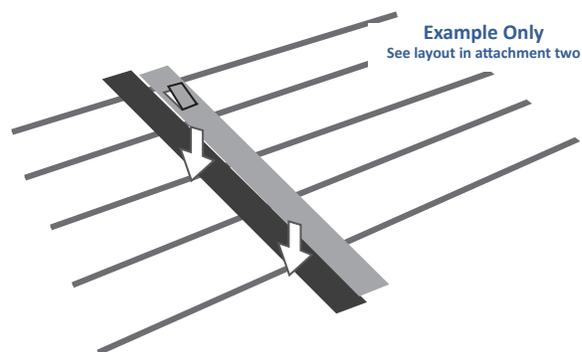
The Buss bars should be centered on the mounting strip. Remove the red protective film from the foam mounting strip, press bus bar in place.

There are several buss bars. Allow for a 1/8 inch (.31 cm) gap between the bus bars.

Avoid touching the buss bar. Use a paper towel over fingers to protect the brass.

**IMPORTANT!** When attaching the bus bar be sure that the ends of the heating elements pass under the foam and extend at least 3 inches (8 cm).

THE HEATING ELEMENTS MUST EXTEND BEYOND THE BUS BARS AT THIS STAGE!



*Hold the buss bars by the edge and do what is possible not to TOUCH THE BUSS BARS on their surface.*

*Lightly heating the foam mounting strip and glass using a hot air blower or hair dryer will accelerate the adhesive process and insure a firmer, more durable bond and should be used on all bus bars.*

**TIP!** The buss bars are treated with an adhesion promoter so do not clean them prior to installation.

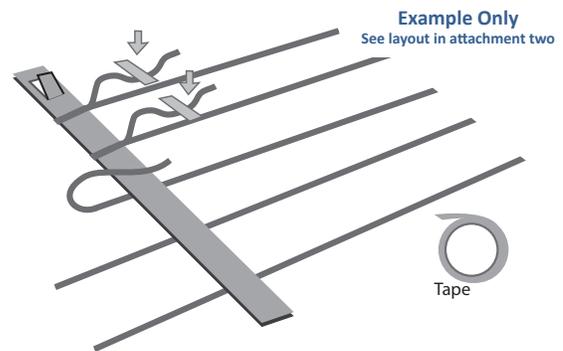
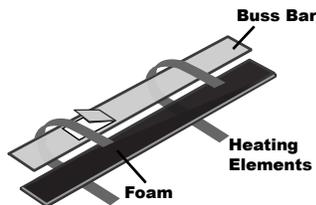
## STEP 9

### Fold over heating elements

This step makes the critical electrical connection with the heating elements.

Gently peel up the first element and bring it over the top of the buss bar without twisting. It is **CRITICAL** to make a metal-to-metal contact between the bus bar and the copper (shiny) side of the heating element. Do not pull the elements overly tight on the bus bar edge.

**Important!** The sticky side of the heating elements are **NOT** conductive. Twisted elements that allow the sticky side to contact the bus bar will cause the grid to fail.



*Do not change the layout of the elements on the Buss Bars.*

**TIP!** Use a small piece of tape to hold the defroster elements in place for a secure metal-to-metal contact while the cover is put in place. Do not pull the elements tight across the buss bar.

*Do what is possible not to TOUCH THE BUSS BAR surface.*

## STEP 10

### Apply buss bar cover

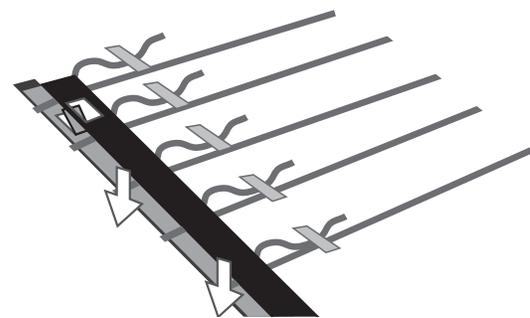
Remove the protective red inner liner of the plastic buss bar cover. Position the slotted end over the integral buss bar terminal.

Carefully align the cover and press the cover firmly against the buss bar and over the heat elements to insure proper adhesion.

Repeat procedure for all covers and heating elements.

**On defrosters with both tabs on one side a small plastic extension is used over one of the tabs.**

Using your thumb (or a roller) apply a good deal of pressure along the plastic cover to seat the cover and bonding tape.



*It is recommended that the foam liner of the bus bar covers be heated. Use a hot air blower or hair dryer before installation, then mount the cover over the bus bar.*

**TIP!** Use your thumb to apply pressure on each element/ buss bar junction to seat the heating elements in place.

## STEP 11

### Trim defrost elements and seat adhesive

Excess lengths of the heat elements will extend out from under the buss bar cover. Carefully removed by cutting using a small scissor. See caution below when using a sharp edge tool.

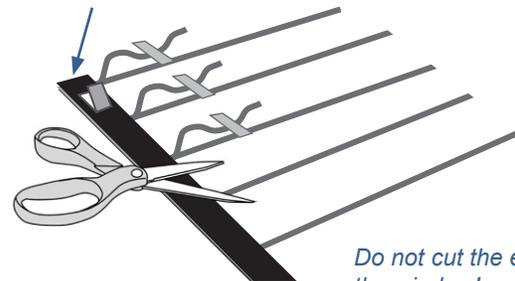
**DO NOT CUT THE ELEMENTS ON THE WINDOW.**

Use paper under the thumb to apply pressure and seat the adhesives.

Congratulations! You have installed the defroster. Now it is time to connect the defroster electrically.

Stick Kits simply connect the vehicles existing connectors to the tabs on the Clear View defroster.

Trim foam ends as needed



*Do not cut the elements on the window!*

**Adhesive should stay warm for 1-2 hours to insure best bonding**

# Clear View II Electrical and wiring

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## Wiring Harness

Important! The vehicle must be running to operate the defroster.

Clear View defrosters come complete with the wire harness and connectors needed to install the defroster. All wires are labeled and color coded for easy identification. Match the "W" number on the wire with the description below.

No.	Connection	Terminals		Length
		End 1	End 2	
W-1	Defroster to control (H)	205 x 032 Faston + Green Cover	250 x 020 Faston + Black Cover	15 Feet (4.6 m)
W-2	Control (-) to ground	187 x 032 Faston + Blue Cover	Spade Terminal	19 in (48 cm)
W-3	Defroster to ground	250 x 020 Faston + Black Cover	Spade Terminal	42 in (107 cm)
W-4	Control (+) to fuse tap	250 x 032 Faston + Red Cover	Bare, Not Striped	30 in (76 cm)
W-5	Fuse to power tap	250 Male Faston + Insulated	Bare, Not Striped	14 in (35.5 cm)
W-6	Cable from control to switch (H)	Attached to control	Plug for switch	38 in (96 cm)

## Wiring Diagram

Important! If replacing wire use only 14 awg or bigger.

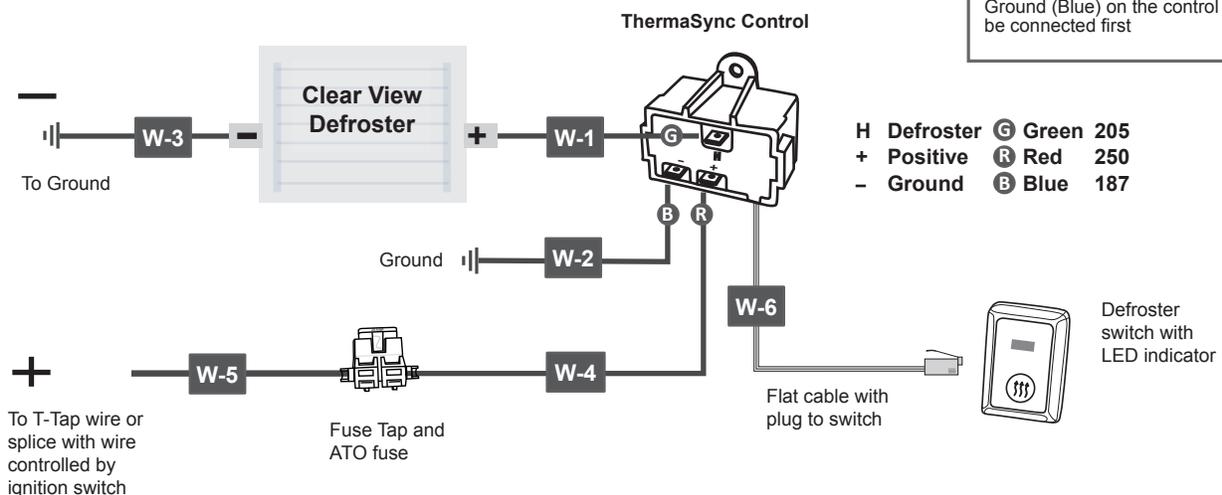
### Power Modulation and Volt Meters

Measuring the voltage from modulating power control is NOT possible using a standard volt meter. Low power readings and pulsing power readings are NORMAL.

### CAUTION!

Wiring the control in any other manner will damage the unit. The fuse must be used in all cases.

**Connect Ground First!**  
Ground (Blue) on the control must be connected first



**Important! Control must be placed inside vehicle.**

## STEP 12

## Wire ThermaSync Control

Start the installation by wiring the control module. The module has three terminals each with an identifying letter stamped in the plastic base. The legend for these letters is shown in the wiring diagram. Connectors are color coded and of different sizes.

1. Attach wire W-1 to the module terminal marked “H” using the faston with the **GREEN** cover.
2. Attach wire W-2 to the module terminal marked with the “-” symbol using the faston with the **BLUE** cover.
3. Attach wire W-4 to the module terminal marked with the “+” symbol using the faston with the **RED** cover.
4. Attach the spade terminal of wire W-2 to electrical ground in an area under the dash using one of the kits self tapping screws if needed.

**Warning:** Pulling on the wires to remove the faston connectors from the ThermaSync control can separate the module. Wiring the control in any other manner will damage the unit and is not a warranty item.



## STEP 13

## Mount Control and Switch

Once all three wires are attached to the ThermaSync control, secure it behind the dash using wire ties, or a self-taping screw. There are two ways to mount the remote activation switch.

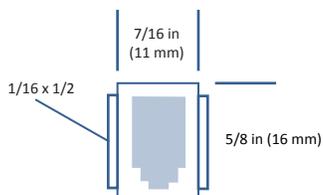
### Option 1. Under Dash Mount

1. File two small slots in the under dash switch mount to allow the connector the switch to pass.
2. Mount the dash switch plate in a convenient location with easy access to defroster on/off switch using the self tapping screws.
3. Insert the connector into the switch, peel away the release film, and adhere to plate with the red LED up.

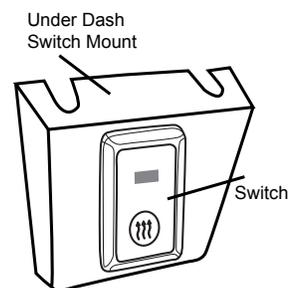


### Option 2. In Dash Mount

If an in-dash installation is preferred, drill 7/16 in. (11mm) hole in an appropriate area on the dash. File to fit the connector on the back of the switch. Next run the flat cable through the hole, remove release coating and connect to the switch. Press the switch into place.



*Switch mounting template. This is approximately the size hole needed to mount the switch in a dash.*



*Mount in the dash or use the under dash mounting plate.*

**Important! The vehicle must be running prior to testing the unit.**

## STEP 14

### Tap Vehicles Power

Tapping into the vehicle's power is a critical step in the installation process. There are several ways to go about tapping into vehicle power. The two most popular are:

#### Option 1. Wire Tap

Find an existing wire to tap and follow these instructions.

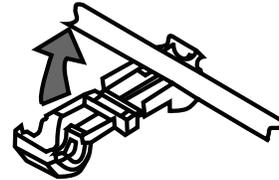
1. Near the fuse box, locate a wire that is about the size of the W-5 wire supplied (14 awg) and is activated when the ignition switch is turned on.
2. Place the wire in the open channel of the Wire Tap (016) supplied, fold the tap body and crimp with pliers.
3. Slide wire W-5 End 1 (blue terminal) onto the wire tap and secure any loose wire with a tie.

**WARNING:** In all cases the fuse and wire used must be adequate to handle 20 amps plus the amperage required by the other units on the same circuit. See wiring diagram.

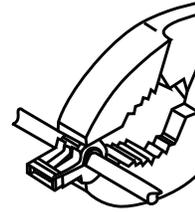
Do not use wire taps on wire under 16 awg, over 14 awg or on solid wire.

#### Option 2. Splice

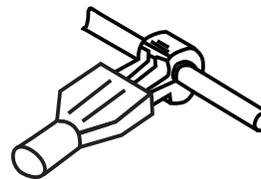
Cut off the connector (End 1) of wire W-5 and strip away insulation. Attach the end of wire W-5 to a fuse position or splice into wire which is activated when the ignition switch is turned on.



*Tap into power wire controlled by ignition.*



*Fold and crimp*



*Insert W-5 in wire tap*

## STEP 15

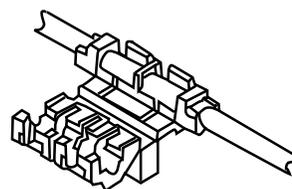
### Installing the Fuse

Once wire W-5 has been connected to the vehicle's power connect wire W-4 with W-5 using Fuse Tap (015).

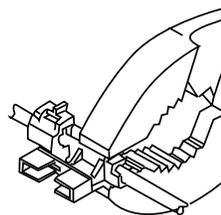
1. Locate the free ends of W-5 and W-4. Check wire lengths and trim to a comfortable length. Do not strip back insulation.
2. Insert the free end of W-4 into the Fuse Tap making sure to seat the wire through the tap so that it presses against the center stop in the Tap.
3. Repeat for wire W-5 End 2
4. Using pliers, fold the connector body and crimp.
5. Insert ATO fuse supplied and seat it firmly in the fuse tap. It can take some pressure to seat.

**WARNING:** In all cases the ATO fuse and fuse tap **MUST** be used.

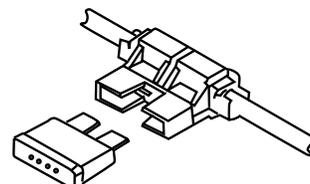
Vehicle power has been taped and now runs to the Control Module.



*Connecting both wires (W-4 & 5) with fuse tap.*



*Fold the fuse tap and crimp.*



*Insert and seat fuse.*

## STEP 16

### Run Wire to Defroster

Run wire W-1 (the long one), already attached to the control module back to the rear window defroster. Take a moment to consider on which side and where it will attach to the defroster.

Wire W-1 can be run under carpet, side molding or under overhead molding, whichever is the most feasible on your vehicle. Part of the wire may be concealed under the rear deck but will require drilling.

If the wire is too long do not cut the wire at this stage!

#### Grounding

A grounding strap may be needed, connecting the ground on the molding to a ground on the chassis itself in order to provide adequate grounding.

All grounding connections should be secure and the grounding points should be clean and clear of all insulating materials and paint. This is necessary to avoid shorting out the defroster circuit.

## STEP 17

### Connect Defroster

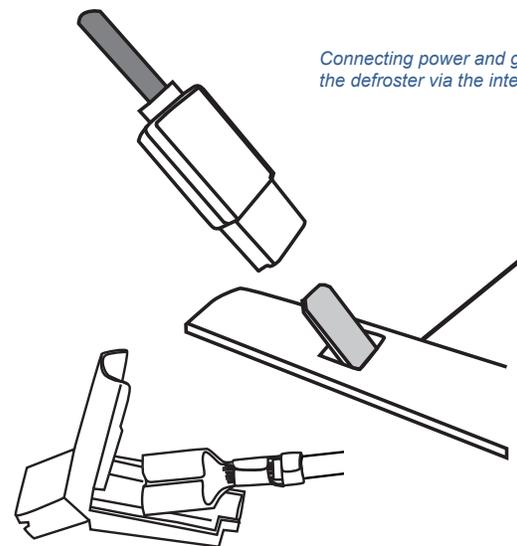
Connect wire W1 to one of the integral tabs on the bus bar. If wire W-1 is too long it can be shortened. Use the extra faston terminal (O17) supplied in your kit to attach in place of the one removed. Simply cut off attached faston and crimp on the new faston. Keep the cover on the wire when crimping.

Next attach wire W-3 (ground) to the other integral bus bar tab. Wire W-3 can be grounded in the trunk area by drilling a hole in the rear deck or it can be grounded to the rear window frame if it is metallic and grounds to the chassis.

If you wish to connect the grounding wire to the window molding area, care must be taken as the window molding screws will probably not supply sufficient grounding.

#### A good Ground is very important!

*Wire W-3 can be shortened and a forked terminal (O18) can be crimped to permit attachment to the window molding or grounding area inside the trunk.*



*Connecting power and ground to the defroster via the integral tabs*

*Slide the cover over the connector when connected.*

*TIP! It does not matter which tab is used for ground or power.*

## Break In

Run your defroster frequently during the first two or three days. This will improve the functioning of your defroster circuitry.

The defroster must be turned on three times to break in the timing switch. During the break-in period the timing switch will run approximately 10 minutes before turning off the defroster. Turn defroster switch on only while engine is running.

In winter it is advisable to remove excess snow or ice from the window before using the defroster.

#### Cleaning

Do not scratch or cut heat elements on inside of window. Do not use an abrasive cleaner. Do not apply alcohol or solvent directly to grid. Clean gently using horizontal motion. Allow window to air dry.

Do not clean during first three days of use and the window should always be cleaned carefully with a soft, lint-free cloth, lightly moistened with window cleaner.

## Troubleshooting

If defroster does not operate check the following:

- A. Switch light flashes but goes off. Start the vehicle.  
The vehicle must be running to operate defroster.
- B. See that the defroster switch is on.
- C. Allow sufficient time for heat elements to function, about 10 minutes.
- D. See if the fuse is blown: if so, replace with one of same type and current voltage rating.
- E. Verify that the light is on when you press the defrosters “on” switch. Of the light is not on there is no power to the Control Module. Check the wiring on the control module.
- F. Check to see if there is 12+ vdc on the bus bar faston connectors. To do this use a volt meter and connect the leads to the defroster bus bar tab/clips. If there is power to the connectors then the problem is in the defroster grid. Inspect the bus bar/copper element connection carefully.
- G. FIRMLY press the black plastic cover down on the bus bars concentrating pressure over each of the grid/bus bar junctions.
- H. If condition persists, contact The PipeKnife Company.

### ThermaSync Defroster Control Settings

The ThermaSync 2812/2824 controls allow for several timing options from 10 to 160 minutes or manual operation. The settings are selectable by changing the jumpers on the circuit board.

To make a change in the timing please contact The PipeKnife Company for the proper settings.



In addition to timing the control's power modulation is set by internal jumpers. DO NOT CHANGE THESE JUMPERS.

The defroster and control are matched. Changing the power modulation settings will cause the defroster to fail.

ThermaSync 2712/24 Controls do not feature power modulation, adjustable timing and are not SwitchBoss compatible.

**UNDER NO CIRCUMSTANCE CHANGE THE POWER MODULATION JUMPER SETTINGS ON THE PRINTED CIRCUIT BOARD.**

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