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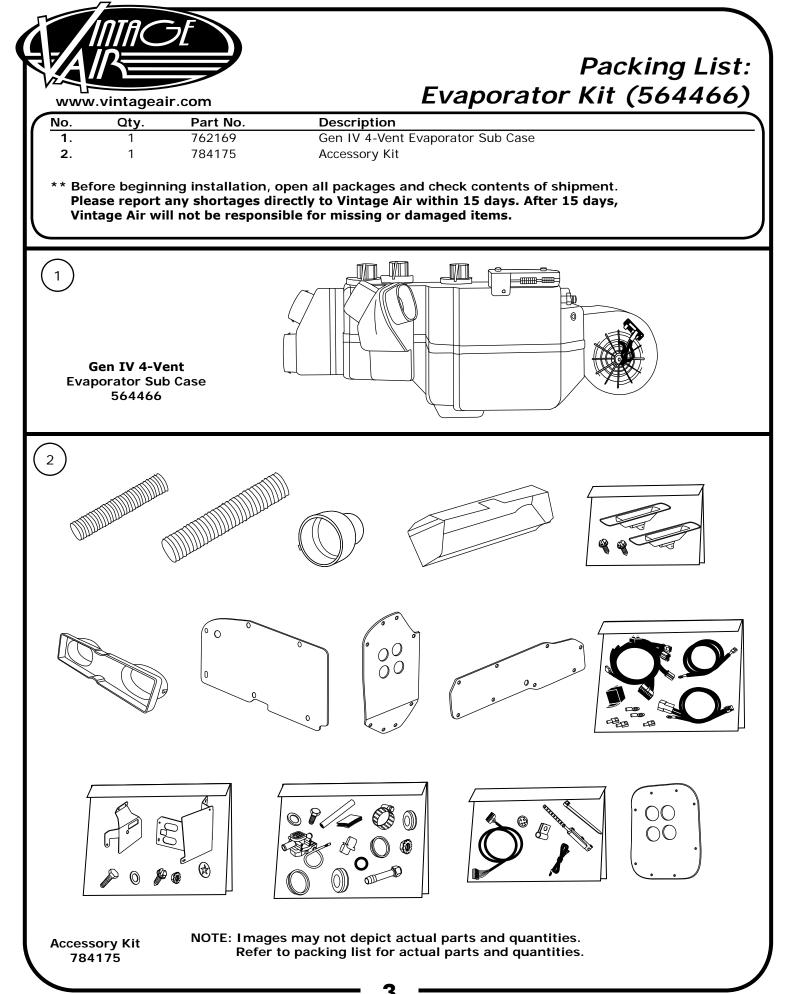


# Table of Contents

Cover
Table of Contents
Packing List/Parts Disclaimer
Information Page4
Wiring Notice5
Engine Compartment Disassembly
Condenser Assembly and Installation, Compressor and Brackets, Passenger Compartment Disassembly
Defrost Duct Installation, Hose Adapter Installation
Firewall Cover Installation, Evaporator Bracket & Heater Fitting Installation
Evaporator Hardline & Heater Fitting Installation (Cont.)10
A/C Block-off Plate & Heater/Blower Cover Installation11
Kick Panel Fresh Air Cap Installation 12
Evaporator Installation
Drain Hose Installation, Lubricating O-rings, A/C Hose Installation
Heater Hose & Heater Control Valve Installation, A/C and Heater Hose Routing
Final Steps
Control Panel & Duct Hose Routing17
Wiring Diagram
Gen IV Wiring Connection Instruction
Operation of Controls
Troubleshooting Guide
Troubleshooting Guide (Cont.)
Packing List

### Important Notice—Please Read

On some early 1966 Chevelle vehicle models, there may be a fitment issue with the A/C Block-Off Plate (648167) and the Center Louver Hose Adapter (626664). Please test fit these components before installing them to determine if your vehicle falls under this rare circumstance. Installation instructions for these components are located on Pages 8 and 11. If the components do not fit, please contact Vintage Air.





# Important Notice—Please Read

For Maximum System Performance, Vintage Air Recommends the Following:

NOTE: Vintage Air systems are designed to operate with R134a refrigerant only. Use of any other refrigerant could damage your A/C system and/or vehicle, and possibly cause a fire, in addition to potentially voiding the warranties of the A/C system and its components.

### Refrigerant Capacities:

Vintage Air System: 1.8 lbs. (28.8 oz.) or 816 grams of **R134a**, charged by weight with a quality charging station or scale. **NOTE: Use of the proper type and amount of refrigerant is critical to system operation and performance.** 

Other Systems: Consult manufacturer's guidelines.

### Lubricant Capacities:

New Vintage Air-supplied Sanden Compressor: No additional oil needed (Compressor is shipped with proper oil charge).

All Other Compressors: Consult manufacturer (Some compressors are shipped dry and will need oil added).

### Safety Switches

Your Vintage Air system is equipped with a binary pressure safety switch. A binary switch disengages the compressor clutch in cases of extreme low pressure conditions (Refrigerant Loss) or excessively high head pressure (406 PSI) to prevent compressor damage or hose rupture. A trinary switch combines Hi/Lo pressure protection with an electric fan operation signal at 254 PSI, and should be substituted for use with electric fans. Compressor safety switches are extremely important since an A/C system relies on refrigerant to circulate lubricant.

### Service Info:

**Protect Your Investment:** Prior to assembly, it is critical that the compressor, evaporator, A/C hoses and fittings, hardlines, condenser and receiver/drier remained capped. Removing caps prior to assembly will allow moisture, insects and debris into the components, possibly leading to reduced performance and/or premature failure of your A/C system. This is especially important with the receiver/drier.

Additionally, when caps are removed for assembly, **BE CAREFUL!** Some components are shipped under pressure with dry nitrogen.

**Evacuate the System for 35-45 Minutes:** Ensure that system components (Drier, compressor, evaporator and condenser) are at a temperature of at least 85° F. On a cool day, the components can be heated with a heat gun *or* by running the engine with the heater on before evacuating. Leak check and charge to specifications.

### Bolts Passing Through Cowl and/or Firewall:

To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the cowl and/or firewall, Vintage Air recommends coating the threads with silicone prior to installation.

### Heater Hose (Not Included With This Kit):

Heater hose may be purchased from Vintage Air (Part# 31800-VUD) or your local parts retailer. Routing and required length will vary based on installer preference.



### **Important Wiring Notice—Please Read**

Some Vehicles May Have Had Some or All of Their Radio Interference Capacitors Removed. There Should Be a Capacitor Found At Each of the Following Locations:

1. On the positive terminal of the ignition coil.

- 2. If there is a generator, on the armature terminal of the generator.
- 3. If there is a generator, on the battery terminal of the voltage regulator.

Most alternators have a capacitor installed internally to eliminate what is called "whining" as the engine is revved. If whining is heard in the radio, or just to be extra cautious, a radio interference capacitor can be added to the battery terminal of the alternator.

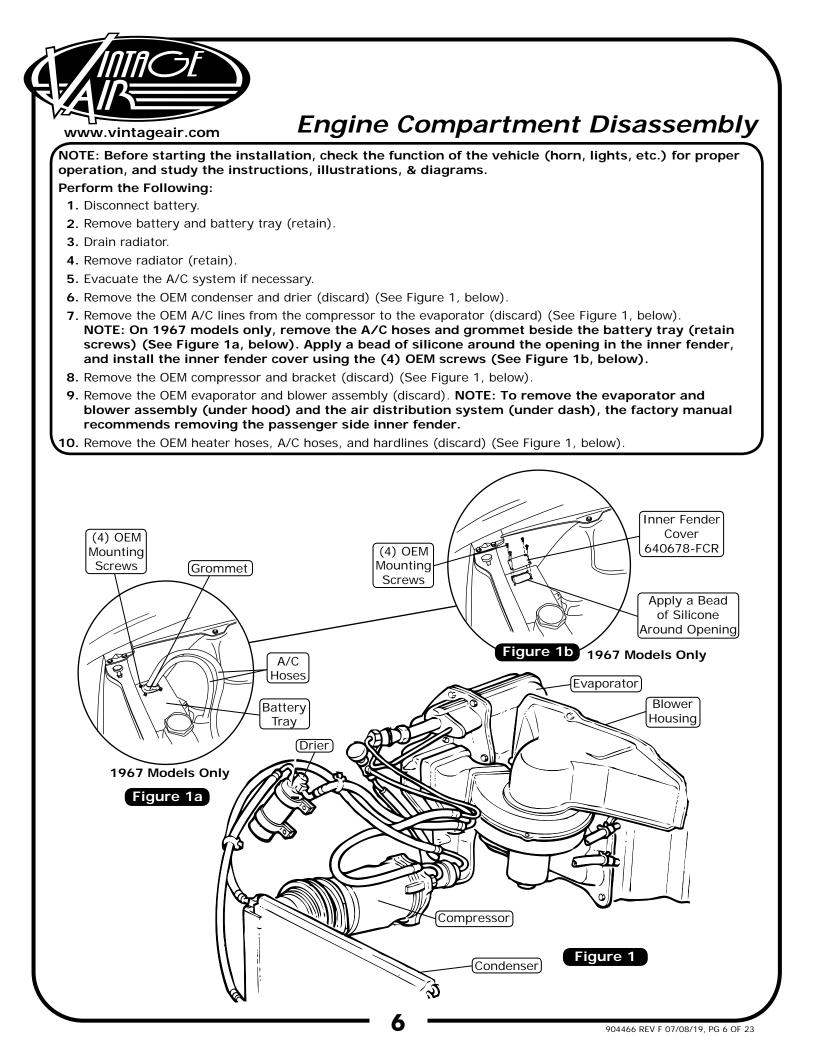
It is also important that the battery lead is in good shape and that the ground leads are not compromised. There should be a heavy ground from the battery to the engine block, and additional grounds to the body and chassis.

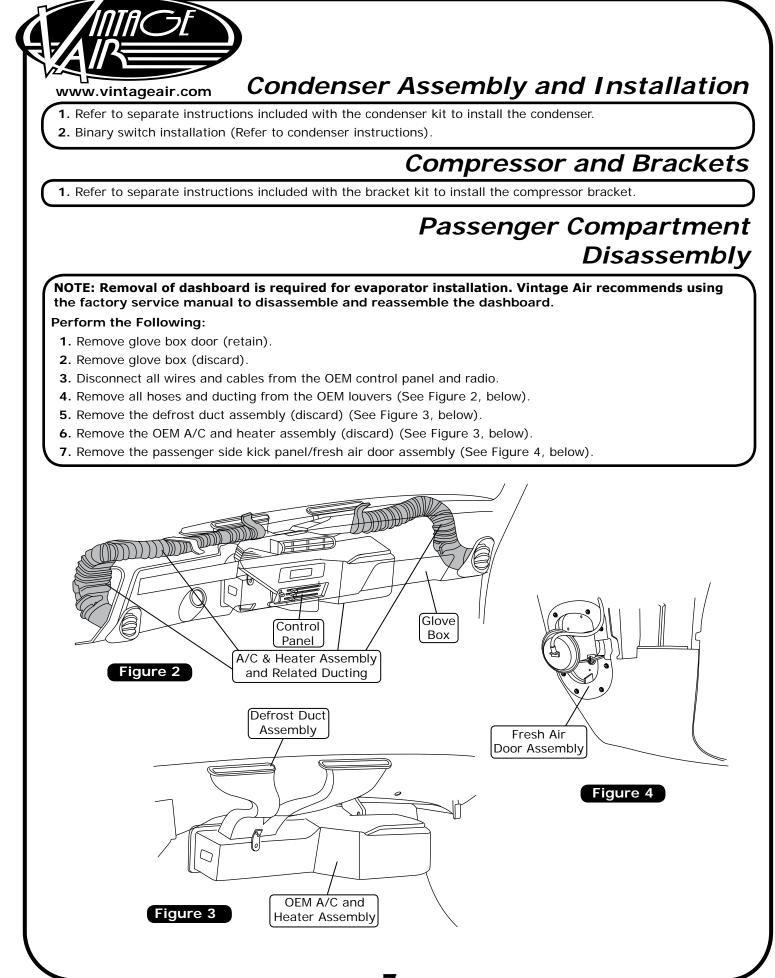
If these precautions are not observed, it is possible for voltage spikes to be present on the battery leads. These spikes come from ignition systems, charging systems, and from switching some of the vehicle's other systems on and off. Modern computer-operated equipment can be sensitive to voltage spikes on the power leads, which can cause unexpected resets, strange behavior, and/or permanent damage.

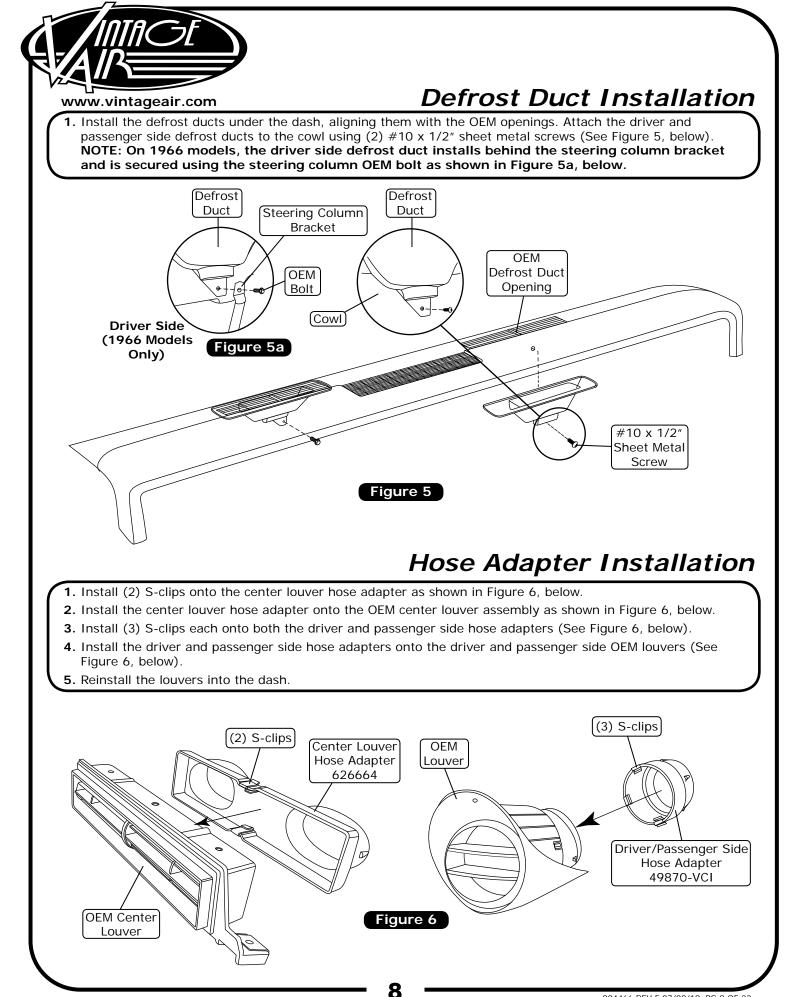
Vintage Air strives to harden our products against these types of electrical noise, but there is a point where a vehicle's electrical system can be degraded so much that nothing can help.

Radio interference capacitors should be available at most auto and truck parts suppliers. They typically are cylindrical in shape, a little over an inch long, a little over a half inch in diameter, and they have a single lead coming from one end of the cylinder with a terminal on the end of the wire, as well as a mounting clip which is screwed into a good ground on the vehicle. The specific value of the capacitance is not too significant in comparison to ignition capacitors that are matched with the coil to reduce pitting of the points.

- Care must be taken, when installing the compressor lead, not to short it to ground. The compressor lead must not be connected to a condenser fan or to any other auxiliary device. Shorting to ground or connecting to a condenser fan or any other auxiliary device may damage wiring, the compressor relay, and/or cause a malfunction.
- When installing ground leads on Gen IV systems, the blower control ground and ECU ground must be connected directly to the negative battery post.
- For proper system operation, the heater control valve must be connected to the ECU.





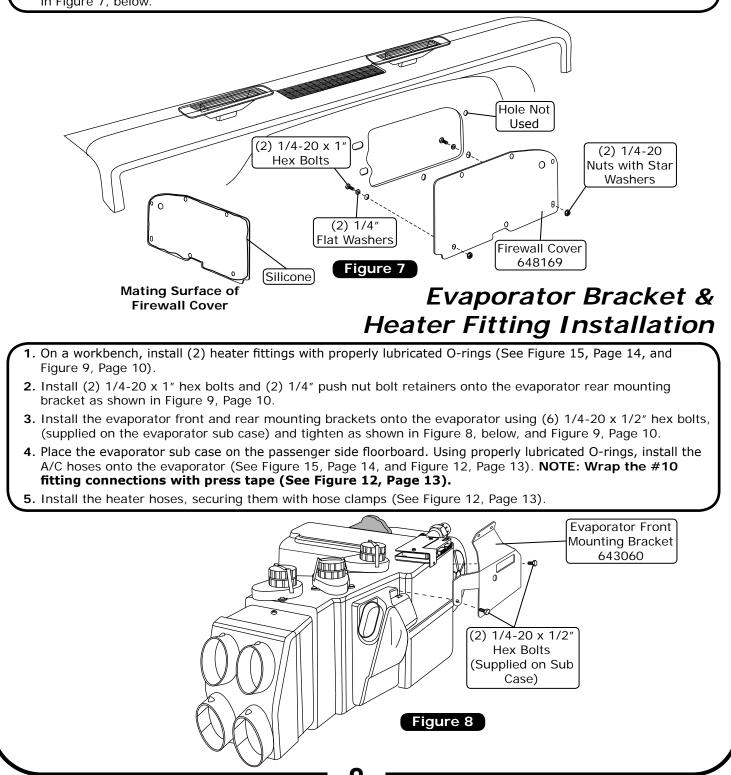


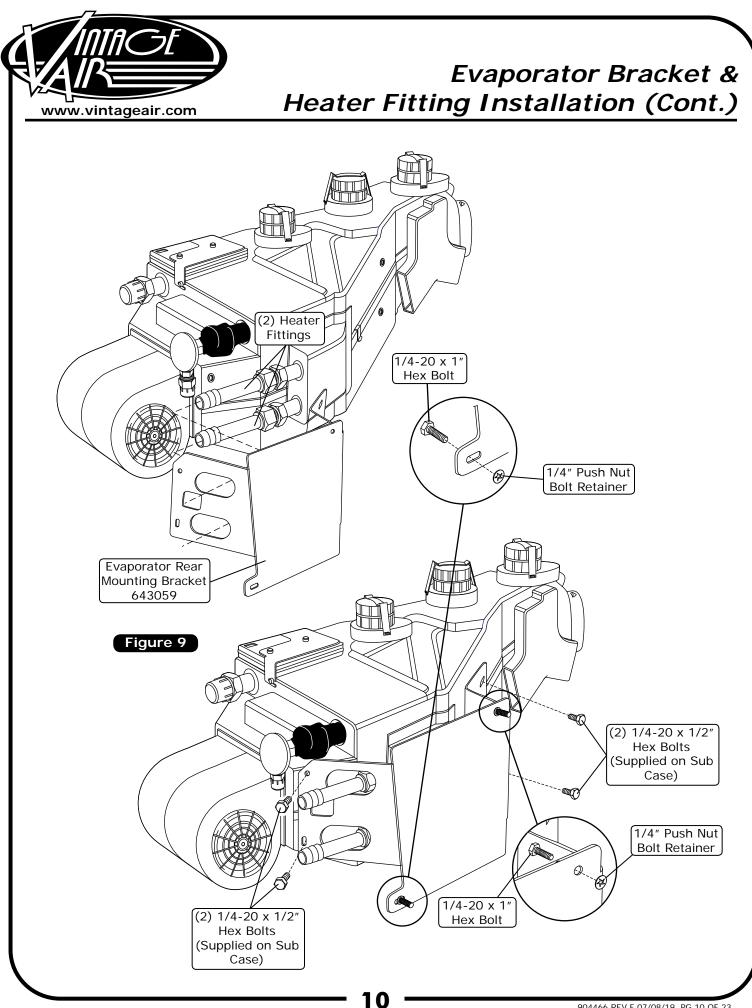
### Firewall Cover Installation

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NOTE: To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

- **1**. Apply a 1/4" bead of silicone around the mating surface of the firewall cover as shown in Figure 7, below.
- From the passenger compartment, install the firewall cover onto the firewall. Secure the firewall cover to the firewall using (2) 1/4-20 x 1" hex bolts, (2) 1/4" flat washers and (2) 1/4-20 nuts with star washers as shown in Figure 7, below.



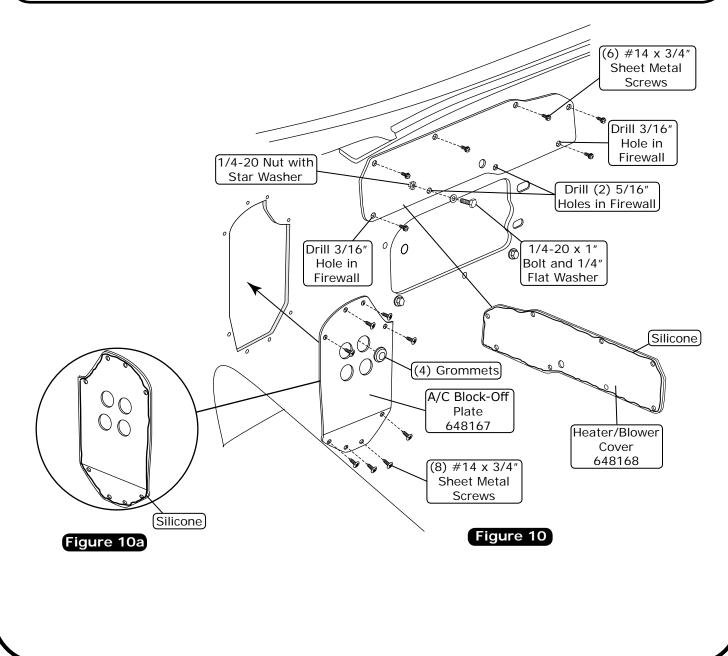


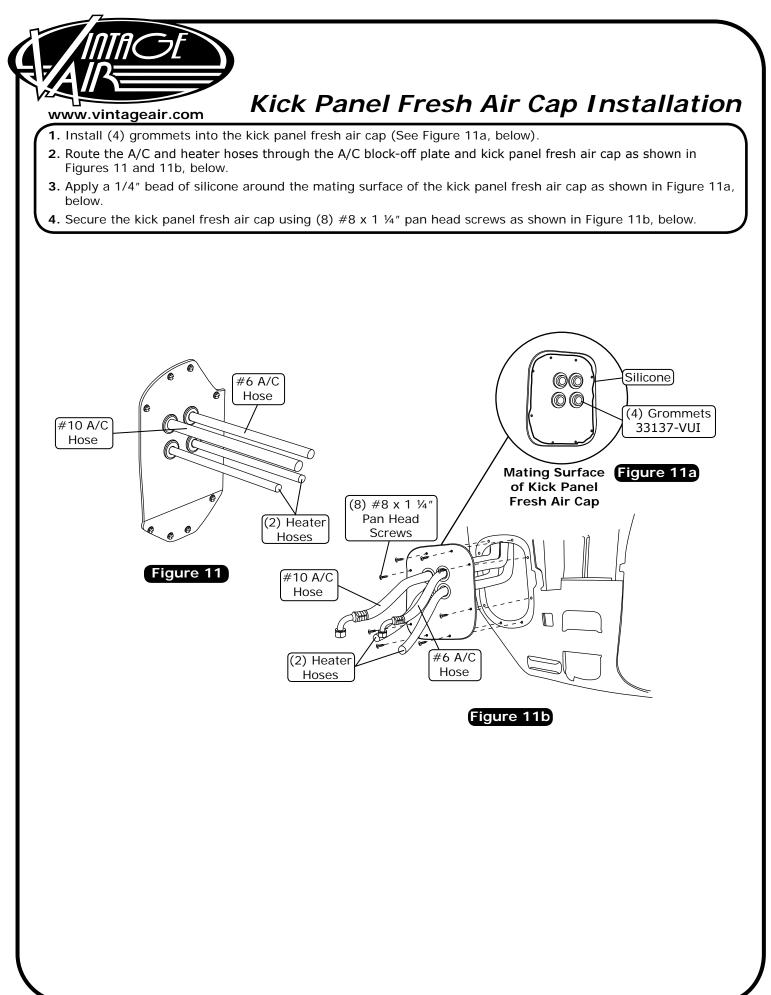
# **A/C Block-Off Plate &** Heater/Blower Cover Installation

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NOTE: To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

- **1**. Install (4) grommets into the A/C block-off plate as shown in Figure 10, below.
- Apply a 1/4" bead of silicone around the mating surface of the A/C block-off plate as shown in Figure 10a, below.
- **3**. Install the A/C block-off plate using (8)  $\#14 \times 3/4''$  sheet metal screws as shown in Figure 10, below.
- Apply a 1/4" bead of silicone around the mating surface of the heater/blower cover as shown in Figure 10, below.
- 5. Install the heater/blower cover using (4) #14 x 3/4" sheet metal screws as shown in Figure 10, below.
- 6. Drill (2) 3/16" and (2) 5/16" holes into the firewall using the heater/blower cover as a template. Install (2) #14 x 3/4" sheet metal screws, (1) 1/4-20 x 1" bolt, (1) 1/4" flat washer and (1) 1/4-20 nut with star washer (See Figure 10, below).







# **Evaporator Installation**

NOTE: To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation. 1. Lift the evaporator unit up under the dashboard. Secure loosely to the firewall using (2) 1/4-20 nuts and (2) flat washers (See Figure 13, below). NOTE: To ensure proper drainage, it is very important that the evaporator is level, both left-right and fore-aft. Check for level on the flat portions of the case around the drain. 2. Using (2)  $\#14 \times 3/4''$  sheet metal screws, secure the front evaporator mounting bracket to the cowl (See Figure 13, below). 3. Verify that the evaporator unit is level and square to the dash. Then, tighten all mounting bolts. NOTE: Tighten the bolt on the firewall first. Then tighten the front mounting bracket. Press Tape #6 A/C Hose ST HARON Hose (2) Heater Clamps Hoses #10 Figure 12 A/C Hose Kick Panel Fresh Air Cap 62182-VCI 6 (2) 1/4-20 Nuts & (2) #14 x 3/4" (2) 1/4" Flat Washers Sheet Metal Screws Figure 13

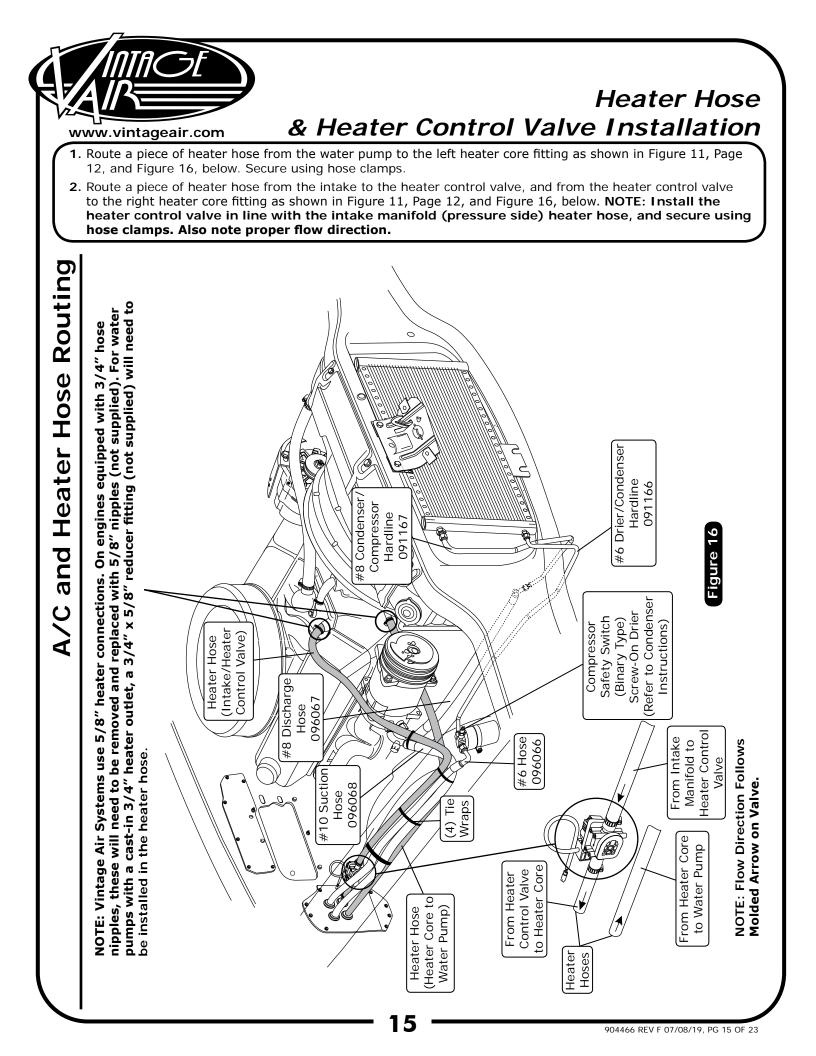
### Drain Hose Installation www.vintageair.com 1. Locate the evaporator drain on the bottom of the evaporator case. 2. In line with the drain, lightly make a mark on the firewall. Measure 1" down, and drill a 5/8" hole through the firewall (See Figure 14, below). **3.** Attach the drain hose to the outlet on the bottom of the evaporator unit, and route it through the firewall. **4.** Install a $1/2^{"}$ 90° drain elbow onto the drain hose (See Figure 14, below). Evaporator 1' Case Drain Figure 14 Hose Lubricating O-rings For a proper seal of fittings: Install supplied Male Female Nut O-ring Insert O-rings as shown, and lubricate with supplied oil. #6 O-ring O-rina Figure 15 Supplied Oil **O-ring Installs** for O-rings \ **Over Male Insert** #10 O-ring #8 O-ring to Swaged Lip Twist With **NOTE: Standard torgue specifications:** This Wrench #6: 11 to 13 ft-lb. #8: 15 to 20 ft-lb. Hold With #10: 21 to 27 ft-lb. This Wrench A/C Hose Installation

#### Standard Hose Kit:

- Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 15, above) and connect the 90° fitting to the #8 discharge port on the compressor. Then route the 45° fitting with service port to the #8 condenser hardline coming through the core support (See Figure 16, Page 15). Tighten each fitting connection as shown in Figure 15, above.
- 2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Figure 15, above) and connect the 45° fitting with service port to the #10 suction port on the compressor. Then route the 90° fitting to the #10 fitting on the evaporator (See Figure 12, Page 13, and Figure 16, Page 15). Tighten each fitting connection as shown in Figure 15, above.
- **3.** Locate the #6 evaporator A/C hose. Lubricate (2) #6 O-rings (See Figure 15, above) and connect the 90° fitting to the drier. Then route the 90° fitting to the #6 fitting on the evaporator (See Figure 12, Page 13, and Figure 16, Page 15). Tighten each fitting connection as shown in Figure 15, above.

#### Modified Hose Kit:

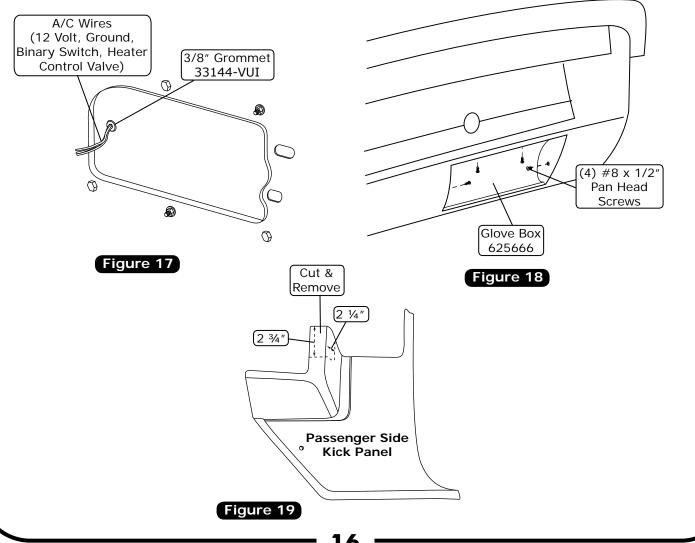
1. Refer to separate instructions included with modified hose kit.

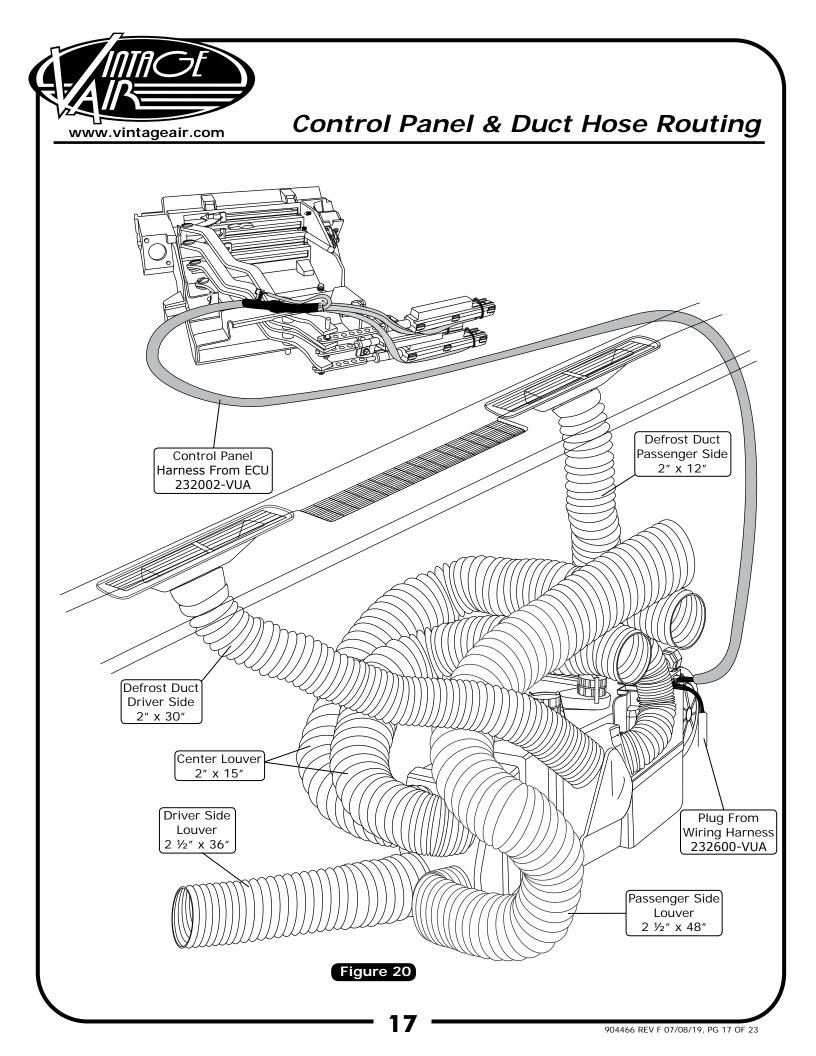


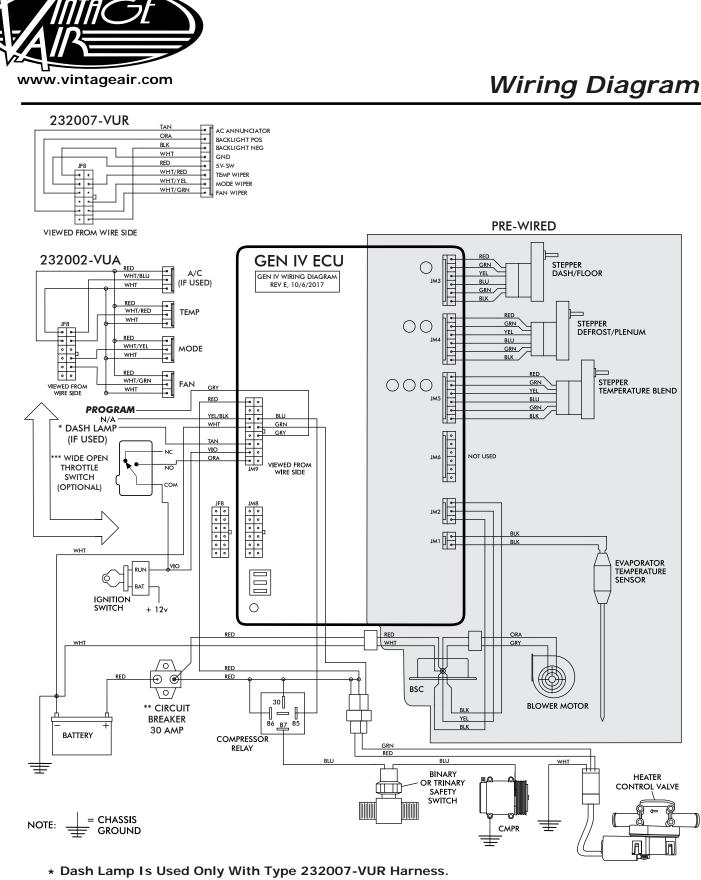
### Final Steps

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- **1.** Install the duct hoses as shown in Figure 20, Page 17.
- Route the A/C wires (12 volt/ground/binary switch/heater control valve) through the 3/8" grommet as shown in Figure 17, below.
- 3. Install the control panel assembly. Refer to the control panel instructions.
- **4.** Plug the wiring harnesses into the ECU module on the sub case as shown in Figure 20, Page 17. Wire according to the wiring diagrams on Pages 18 and 19.
- 5. Install the supplied glove box using (4) #8 x 1/2" pan head screws (See Figure 18, below).
- 6. Modify the passenger side kick panel as shown in Figure 19, below.
- 7. Reinstall all previously removed items.
- **8.** Fill radiator with at least a 50/50 mixture of approved antifreeze and distilled water. It is the owner's responsibility to keep the freeze protection at the proper level for the climate in which the vehicle is operated. Failure to follow antifreeze recommendations will cause heater core to corrode prematurely and possibly burst in A/C mode and/or freezing weather, voiding your warranty.
- 9. Double check all fittings, brackets and belts for tightness.
- **10.** Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
- **11.** Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
- 12. Charge the system to the capacities stated on Page 4 of this instruction manual.
- 13. See Operation of Controls procedures on Page 20.

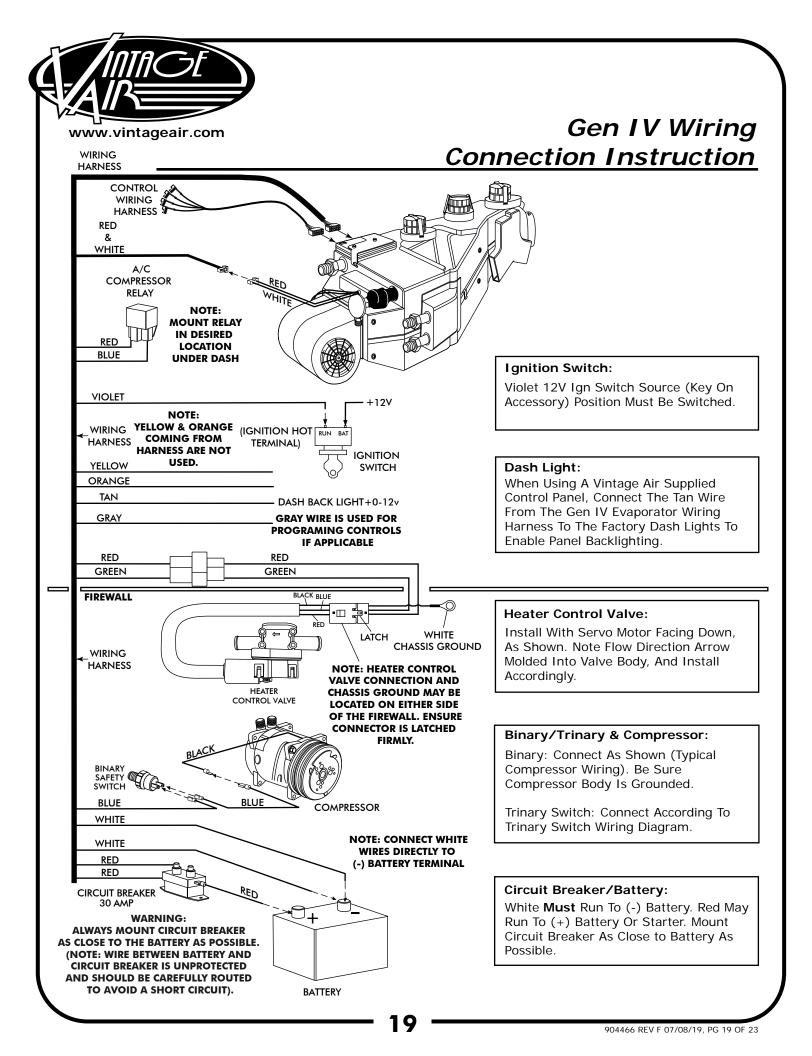






- \*\* Warning: Always Mount Circuit Breaker As Close to the Battery As Possible. (NOTE: Wire Between Battery and Circuit Breaker Is Unprotected and Should Be Carefully Routed to Avoid a Short Circuit).
- \*\*\* Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C Compressor.

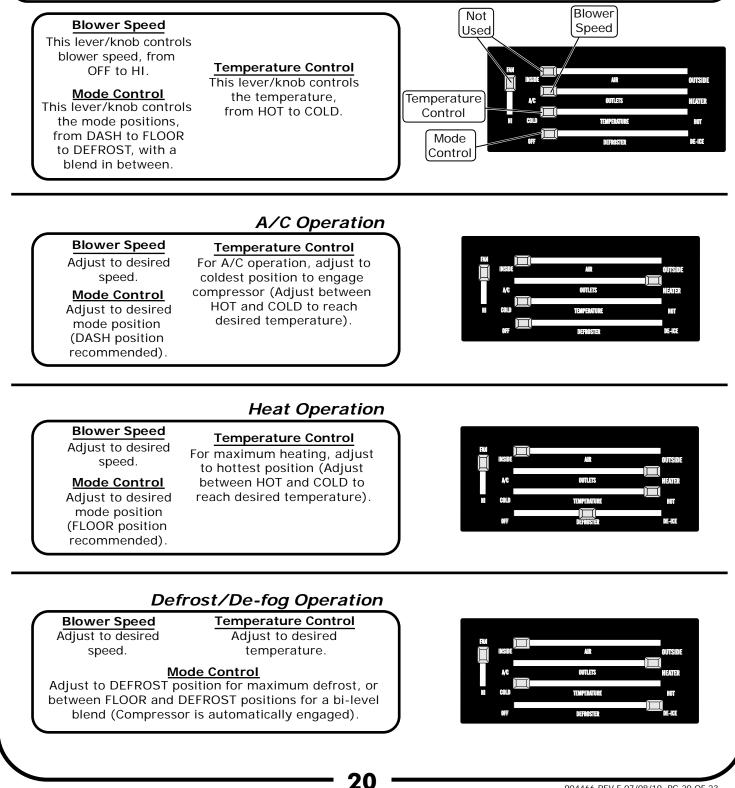
18





# **Operation of Controls**

On Gen IV systems with three lever/knob controls, the temperature control toggles between heat and A/C operations. To activate A/C, move the temperature lever/knob all the way to cold and then back it off to the desired vent temperature. For heat operation, move the temperature lever/knob all the way to hot and then adjust to the desired vent temperature. The blower will momentarily change speed, each time you toggle between operations, to indicate the change. NOTE: For proper control panel function, refer to control panel instructions for calibration procedure.



	www.vintageair.com		Troublesho	<b>Froubleshooting Guide</b>
Symptom	Condition	Checks	Actions	Notes
l <b>a.</b> Blower stays on high speed when ignition is on.	No other functions work.	Check for damaged pins or wires in control head plug. Check for damaged ground wire (white) in control head harness. Check for damaged blower switch or potentiometer and associated wiring.	Verify that all pins are inserted into plug. Ensure that no pins are bent or damaged in ECU. Verify continuity to chassis ground with white control head wire at various points.	<ul> <li>Loss of ground on this wire</li> <li>renders control head inoperable.</li> <li>See blower switch check procedure.</li> </ul>
<b>b.</b> Blower stays on high speed when ignition is on or off.		Unplug 3-wire BSC control connector from ECU. If blower shuts off, ECU is either improperly wired or damaged. Unplug 3-wire BSC control stays running, BSC is either improperly wired or damaged.	<ul> <li>Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU.</li> <li>Check to ensure that no BSC wiring is damaged or shorted to vehicle ground. The BSC operates the blower by ground side pulse width modulation switching. The positive wire to the blower will always be hot. If the positive wire to the blower is shorted to chassis ground, the blower will run on HI.</li> <li>Replace BSC (This will require removal of evaporator from vehicle).</li> </ul>	No other part replacements should be necessary.
Compressor will not turn on (All other functions work).	System is not charged.	System must be charged for compressor to engage. Check for faulty A/C potentiometer or associated wiring (Not applicable to 3-pot controls). Check for disconnected or faulty thermistor.	<ul> <li>Charge system or bypass pressure switch.</li> <li>Check continuity to ground on white control head wire.</li> <li>Check for 5V on red control head wire.</li> <li>Check 2-pin connector at ECU housing.</li> </ul>	<ul> <li>Danger: Never bypass safety switch with engine running. Serious injury can result.</li> <li>To check for proper pot function, check voltage at white/blue wire. Voltage at white/blue wire. Voltage should be between OV and 5V, and will vary with pot lever position.</li> <li>Disconnected or faulty thermistor will cause compressor to be disabled.</li> </ul>
8. Compressor will not turn off (All other functions work).		Check for faulty A/C potentiometer or associated wiring. Check for faulty A/C relay.	Repair or replace pot/control wiring.	Red wire at A/C pot should have approximately 5V with ignition on. White wire will have continuity to chassis ground. White/ Blue wire should vary between 0V and 5V when lever is moved up or down.

	Condition	Checks	Actions	Notes
	Works when engine is not running: shuts off when → engine is started	Noise interference from either	Install capacitors on ignition coil and alternator. Ensure good ground at all points. Relocate coil and associated wiring away from ECU and ECU wiring. Check for burned or loose plug wires.	Ignition noise (radiated or conducted) will cause the system to shut down due to high voltage spikes. If this
	(Typically early Gen IV, but possible on all versions).		Check for positive power at heater valve green wire and	is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut
turn on, or runs intermittently.		Verify connections on power lead, ignition lead, and both	blower red wire. Check for ground on control head white	down the ECU. Install a radio capacitor at the positive post of the ignition
Will not turn or any conditions.	Will not turn on under any conditions.		Verify proper meter function by checking the condition of	coil (See radio capacitor installation bulletin). A faulty alternator or worn out battery can also result
		than 16.	a hidwil good balled y.	in this condition.
node door	No mode change at all. →	Check for damaged mode switch or potentiometer and associated wiring.		Typically caused by evaporator housing installed in a bind in the
Tunction.	Partial function of mode	Check for obstructed or binding mode doors.		vehicle. Be sure all mounting locations line up
		Check for damaged stepper motor or wiring.		and don't have to be forced into position.
	Battery voltage is at least	Check for at least 12V at	Ensure all system grounds and power connections are	System shuts off blower at 10V. Poor connections or
Blower turns on Blower turns on Blower turns on Battery v and off rapidly. Battery v	Battery voltage is less →	Check for faulty battery or alternator.		<ul> <li>weak battery can cause</li> <li>shutdown at up to 11V.</li> </ul>
Erratic functions of blower, mode, temp, etc.		Check for damaged switch or pot and associated wiring.	▲ Repair or replace.	
<b>3.</b> When ignition is turned on, blower		This is an indicator that the system has been reset. Be		
momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.		on or	Run red power wire directly to battery.	

22

