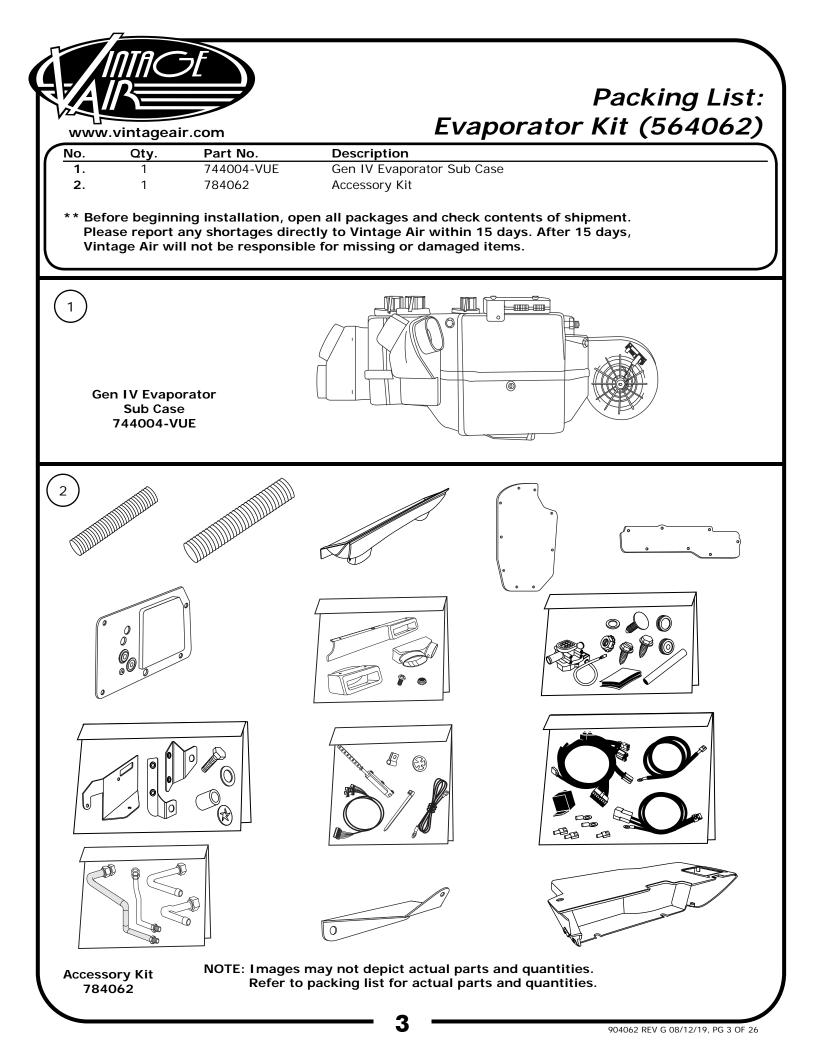




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Important Notice—Please Read

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.

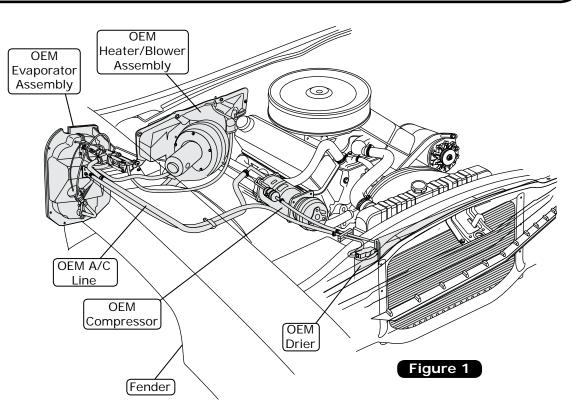


Engine Compartment Disassembly

NOTE: Before starting the installation, check the function of the vehicle (horn, lights, etc.) for proper operation, and study the instructions, illustrations, & diagrams.

Perform the Following:

- 1. Disconnect battery.
- Remove battery.
- 3. Drain radiator.
- 4. Evacuate the A/C system if necessary.
- 5. Remove the OEM condenser and drier (discard) (See Figure 1, below).
- 6. Remove the OEM A/C lines from the compressor to the evaporator (discard) (See Figure 1, below).
- 7. Remove the OEM A/C compressor and compressor bracket (discard) (See Figure 1, below).
- 8. Remove the OEM blower assembly (discard) (See Figure 1, below).
- **9.** To remove the OEM evaporator assembly, the factory manual indicates doing the following: Remove the right fender and skirt.



Condenser Assembly and Installation

1. Refer to separate instructions included with the condenser kit to install the condenser.

2. Binary switch installation (Refer to condenser instructions).

Compressor and Brackets

1. Refer to separate instructions included with the bracket kit to install the compressor bracket.

Pulleys

1. In most instances, the belt lengths will remain the same.

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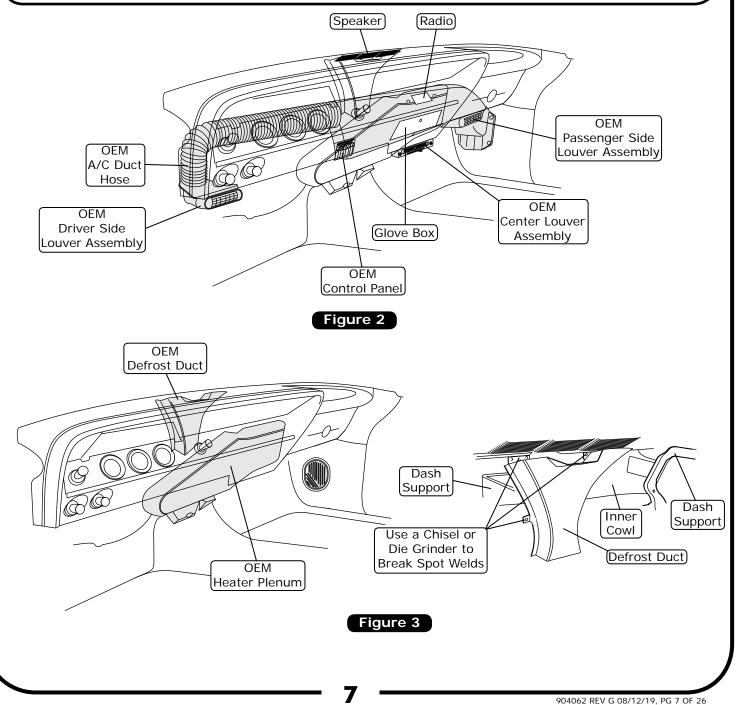


Passenger Compartment Disassembly

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Perform the Following:

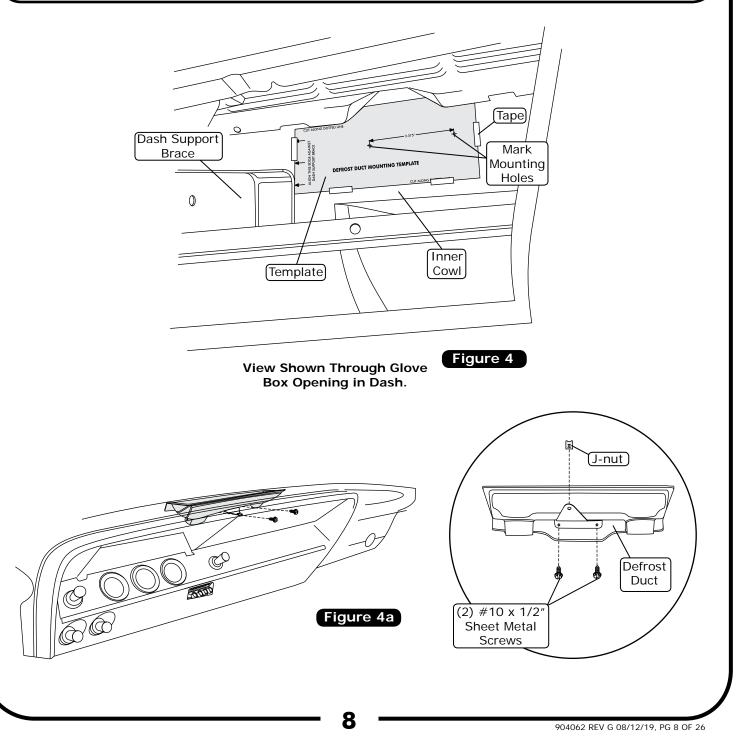
- 1. Remove the passenger side OEM A/C duct assembly (See Figure 2, below).
- 2. Remove the driver side OEM A/C duct and louver (See Figure 2, below).
- 3. Remove the OEM center louver assembly (See Figure 2, below).
- 4. Remove the OEM control panel assembly (See Figure 2, below).
- 5. Remove the OEM heater assembly (See Figure 2, below).
- 6. Remove the glove box (discard).
- 7. Remove the radio and speaker (retain) (See Figure 2, below).
- 8. Remove the OEM defrost duct assembly (discard) (See Figure 3, below).
- 9. Remove the (3) spot welds on the defrost duct using a chisel or die grinder (See Figure 3, below).

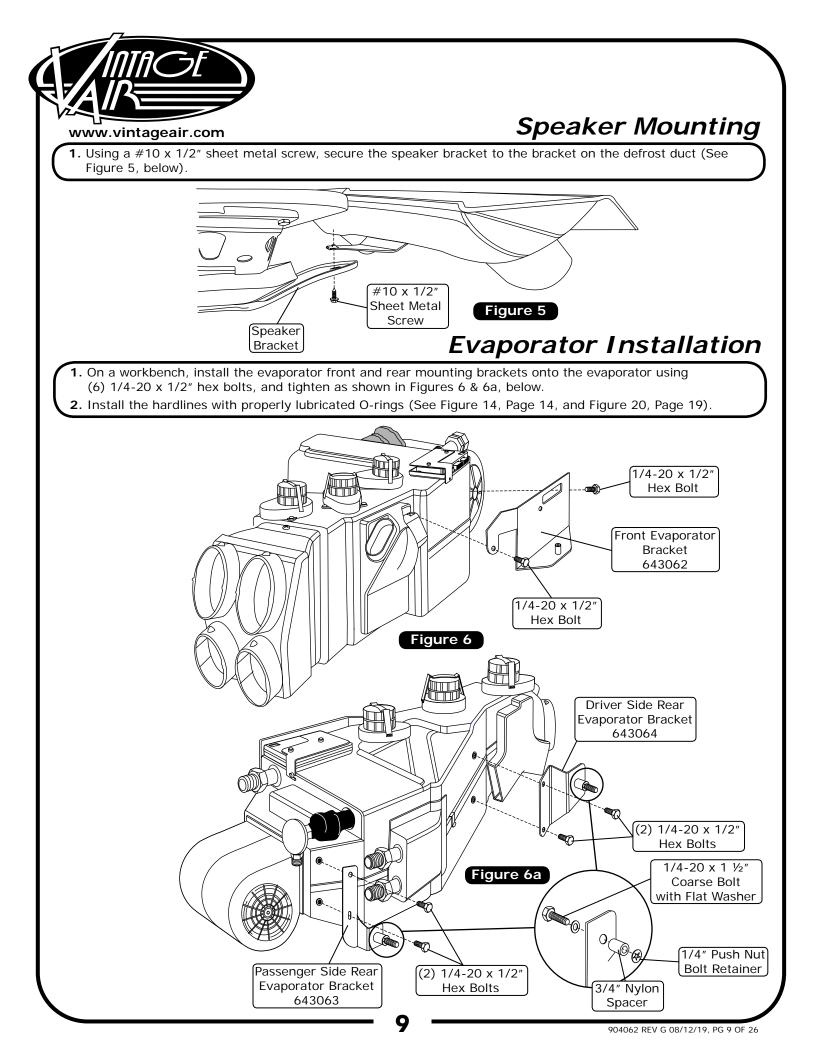


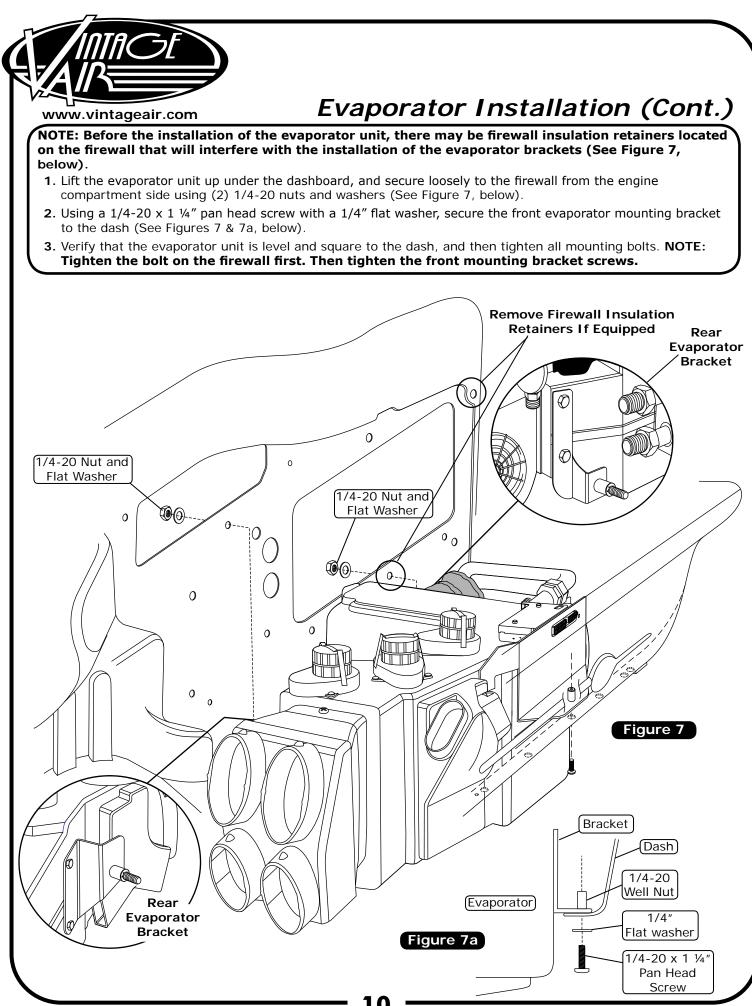


Defrost Duct Installation

- 1. Cut out the defrost duct mounting template on Page 25.
- 2. Place the template onto the inner cowl. Once aligned, tape the template into place (See Figure 4, below).
- **3.** Using a center punch or scribe, mark the (2) mounting holes on the inner cowl (See Figure 4, below).
- 4. Once the holes are marked, remove the template and drill (2) 1/8" holes into the inner cowl.
- 5. Install a J-nut onto the end of the speaker bracket as shown in Figure 4a, below.
- 6. Place the defrost duct under the dash, and align it with the OEM defrost opening in the dash and the mounting holes in the inner cowl.
- Once the defrost duct and speaker bracket are aligned, secure the defrost duct and the speaker bracket to the inner cowl using (2) #10 x 1/2" sheet metal screws (See Figure 4a, below).





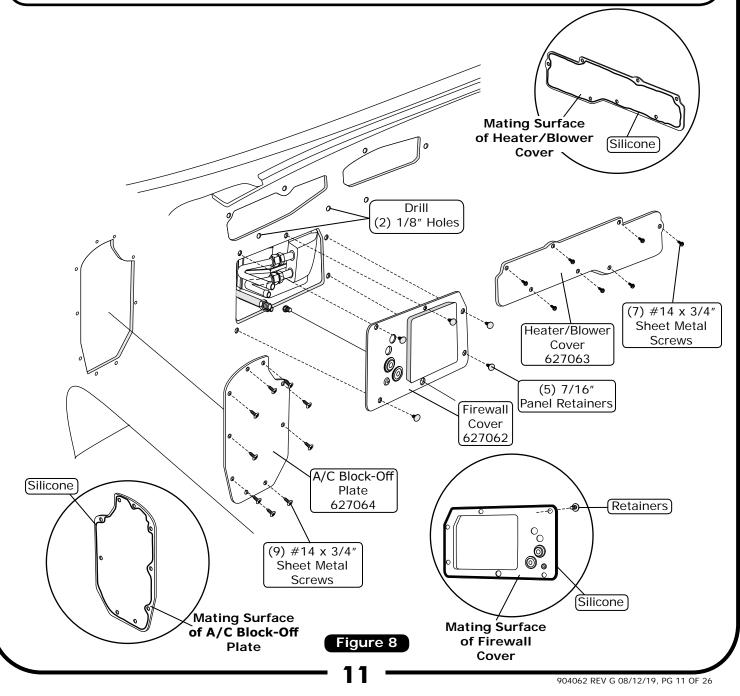


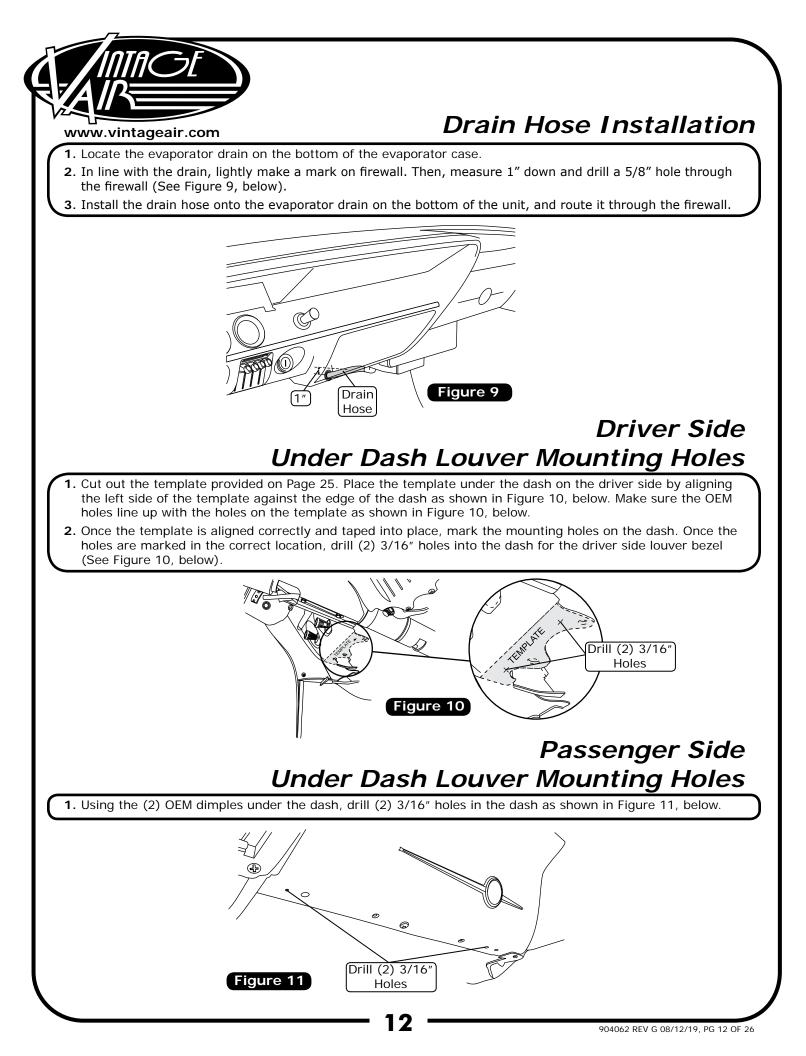
Firewall Cover Installation

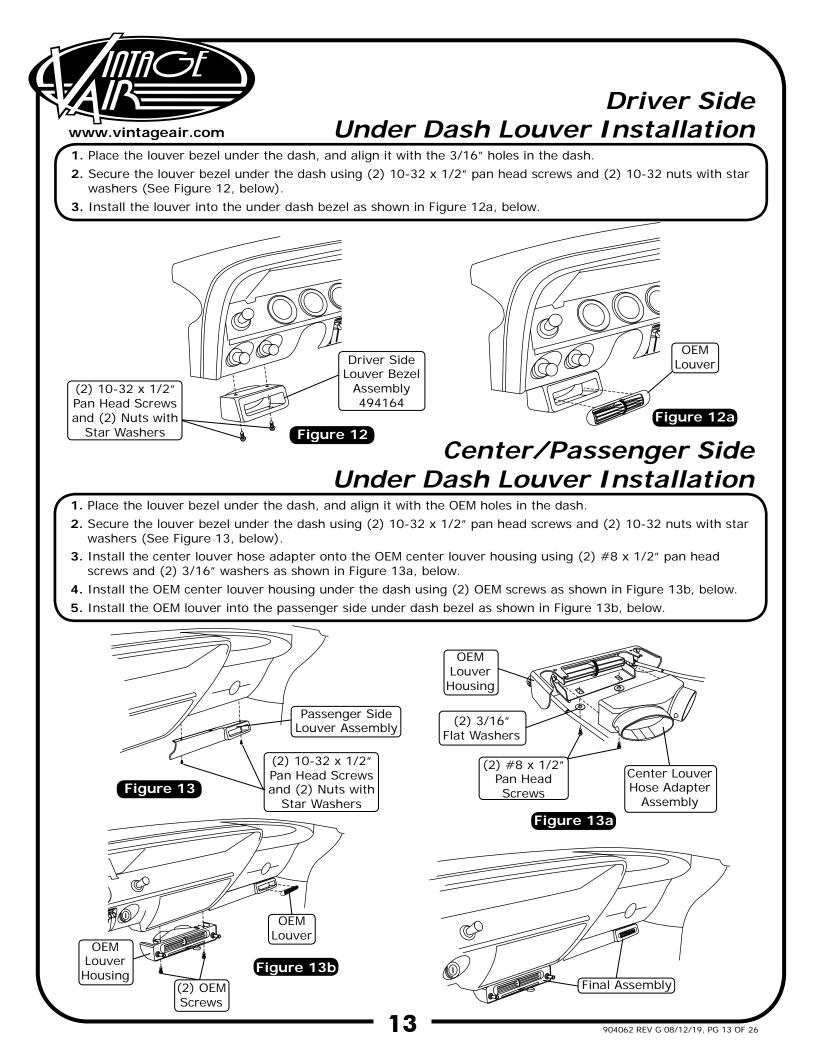
1. Apply a 1/4" bead of silicone around the mating surface of the A/C block-off plate as shown in Figure 8, below.

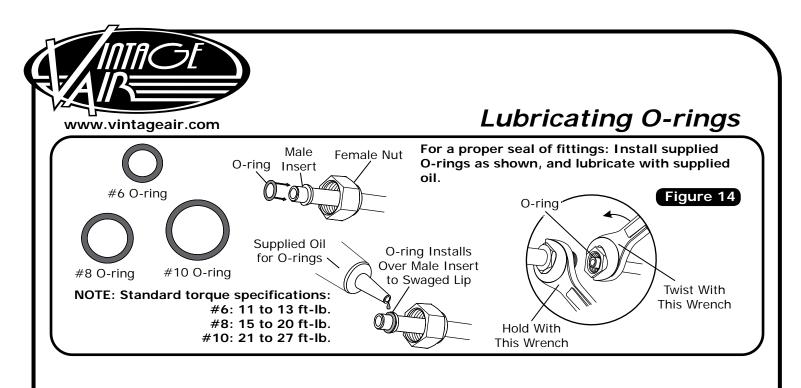
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- Install the A/C block-off plate onto the firewall using (9) #14 x 3/4" sheet metal screws as shown in Figure 8, below.
- **3.** Apply a 1/4" bead of silicone around the mating surface of the heater/blower cover as shown in Figure 8, below.
- Install the heater/blower cover onto the firewall using (5) #14 x 3/4" sheet metal screws as shown in Figure 8, below.
- 5. Drill (2) 1/8" holes into the firewall using the heater/blower cover as a template (See Figure 8, below).
- **6.** Use the remaining (2) $\#14 \times 3/4''$ sheet metal screws to finish securing the heater/blower cover to the firewall.
- **7.** Apply a 1/4" bead of silicone around the mating surface of the firewall cover as shown in Figure 8, below.
- **8**. Pass lines through the firewall cover, and secure the cover to the firewall using (5) 7/16" panel retainers (See Figure 8, below).









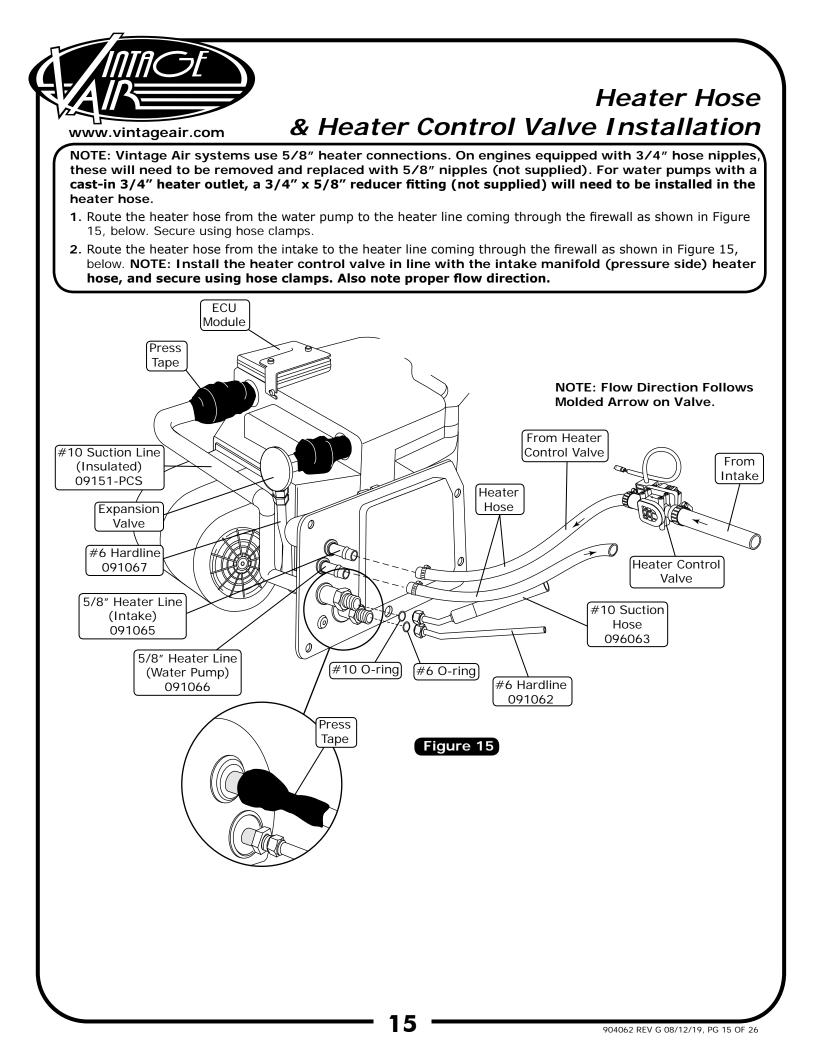
A/C Hose Installation

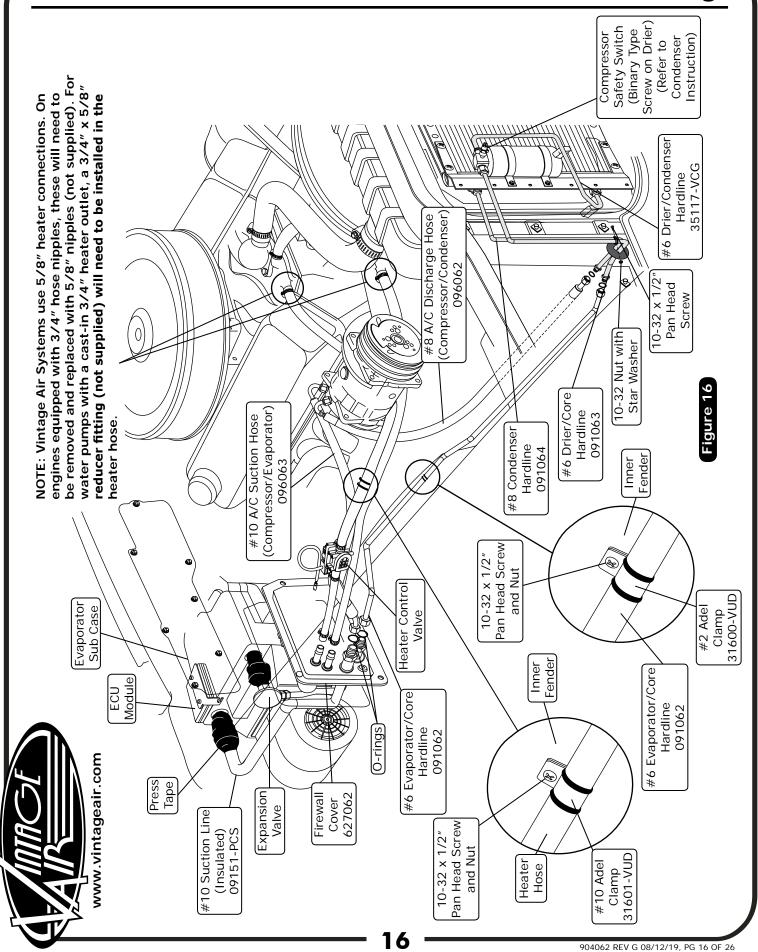
Standard Hose Kit:

- Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 14, above) and connect the 135° female fitting with 134a service port to the #8 discharge port on the compressor. Then route the straight female fitting to the #8 condenser hardline coming through the core support (See Figure 16, Page 16). Tighten each fitting connection as shown in Figure 14, above.
- 2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Figure 14, above) and connect the #10 135° female fitting with 134a service port to the #10 suction port on the compressor. Then route the 45° female fitting to the #10 evaporator hardline coming through the firewall (See Figure 16, Page 16). Tighten each fitting connection as shown in Figure 14, above. NOTE: Wrap the #10 fitting connections with press tape (See Figure 15, Page 15).
- **3.** Locate the #6 evaporator/core hardline. Lubricate (2) #6 O-rings (See Figure 14, above) and connect the hardline to the #6 hardline coming through the core support from the drier. Then attach the other end of the hardline with lubricated O-ring to the #6 evaporator hardline coming through the firewall (See Figure 16, Page 16). Tighten each fitting connection as shown in Figure 14, above.
- 4. Use a #2 and a #10 Adel clamp to secure the #6 evaporator/core hardline and the 5/8" heater hose to the inner fenderwell as shown in Figure 16, Page 16. Secure the Adel clamps to the inner fender using
 (2) 10-32 x 1/2" pan head screws with nuts.

Modified Hose Kit:

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





Final Steps

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- 1. Install duct hoses as shown in Figure 19, Page 18.
- **2.** Route A/C wires (12 volt/grounds/binary switch/heater control valve) through 3/8" grommet as shown in Figure 18, below.
- 3. Install control panel assembly. Refer to control panel instructions.
- **4.** Plug the wiring harnesses into the ECU module on the sub case as shown in Figure 19, Page 18. Wire according to wiring diagrams on Pages 20 & 21.
- 5. Install supplied glove box, and secure using (3) OEM screws through the OEM holes as shown in Figure 17, below.
- 6. Reinstall glove box door.
- 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 22.

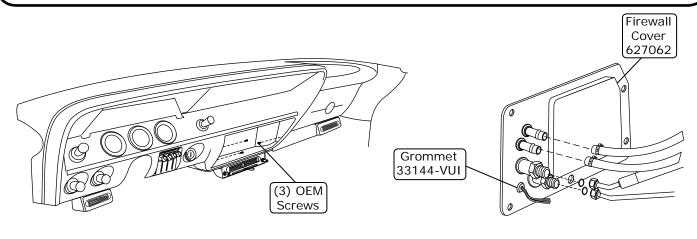
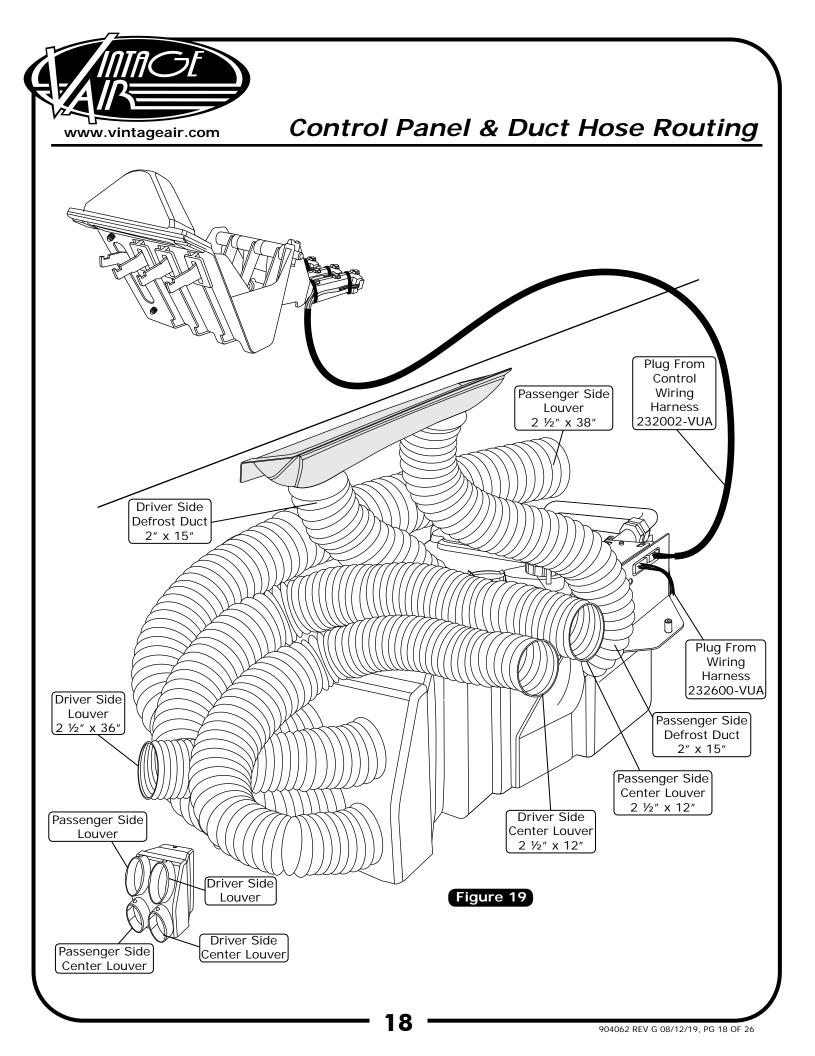


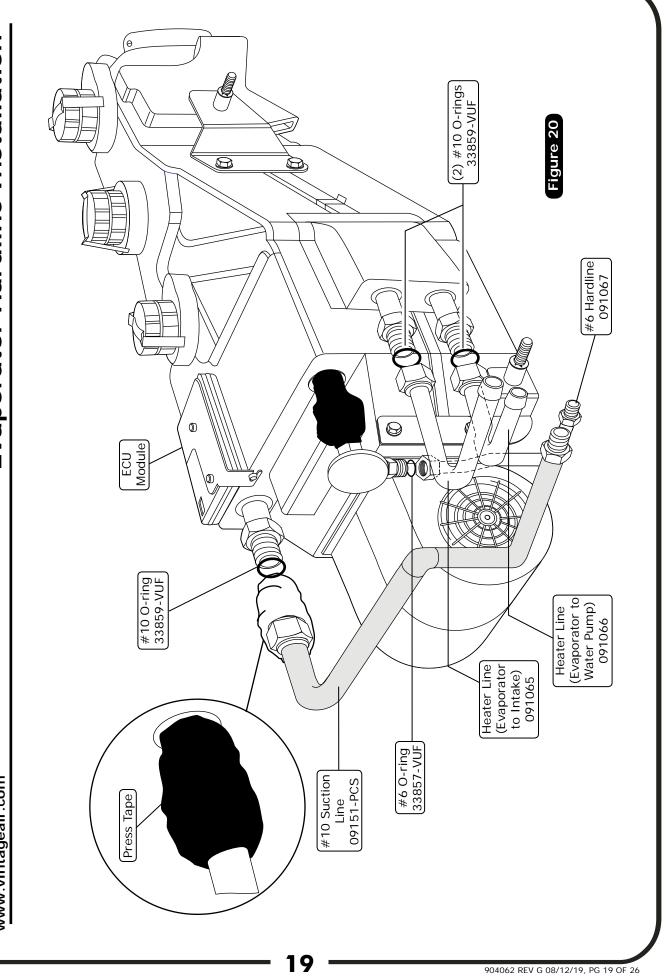
Figure 17

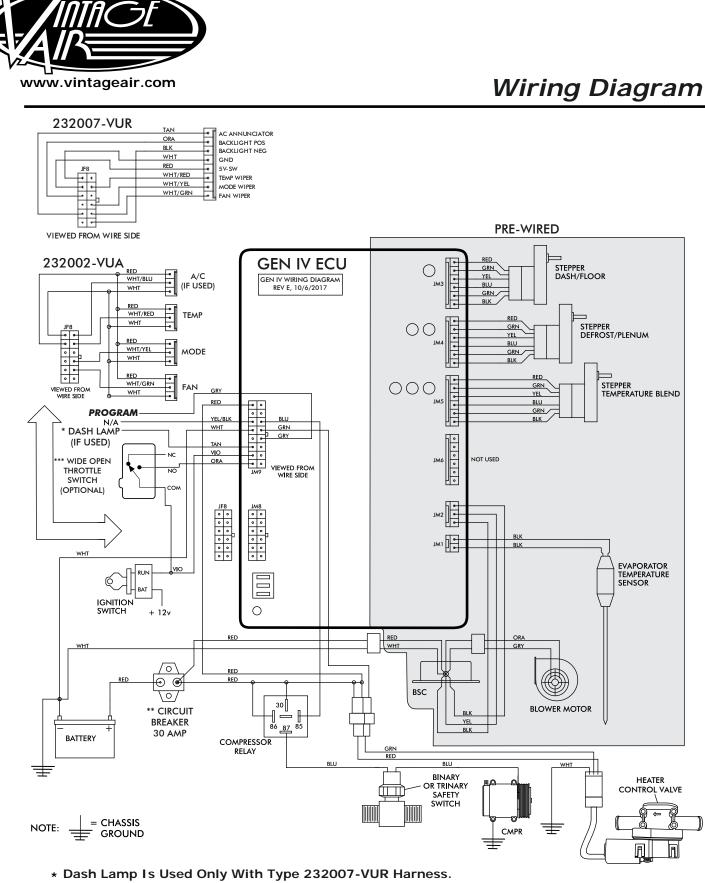
Figure 18



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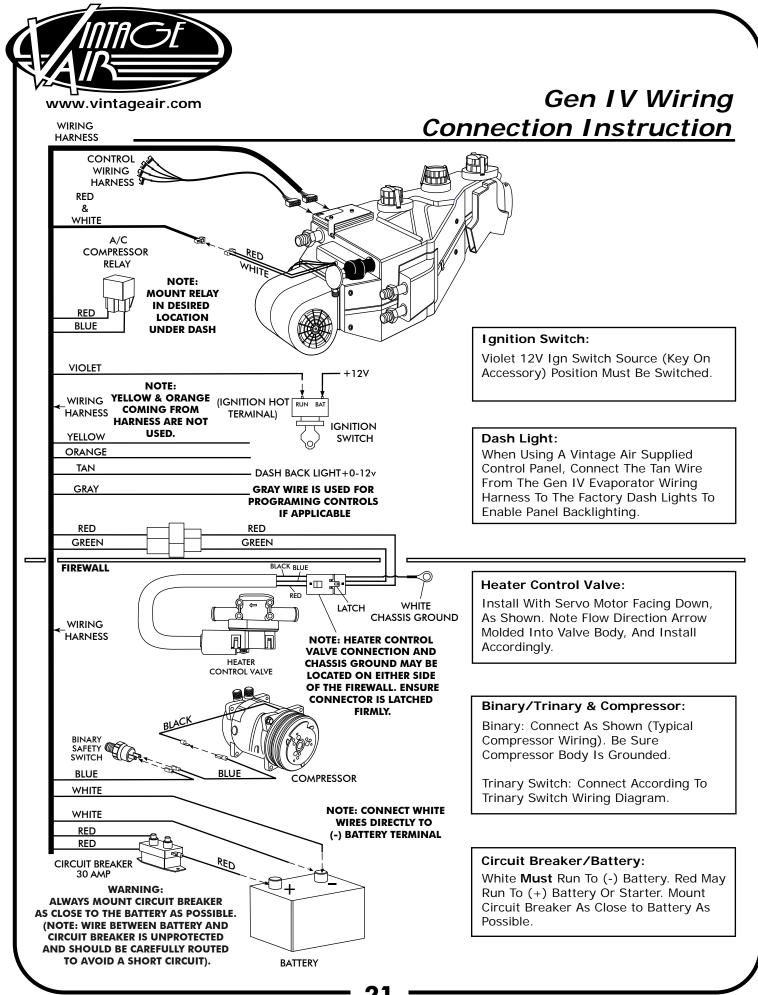






- ** Warning: Always Mount Circuit Breaker As Close to the Battery As Possible. (NOTE: Wire Between Battery and Circuit Breaker Is Unprotected and Should Be Carefully Routed to Avoid a Short Circuit).
- *** Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C Compressor.

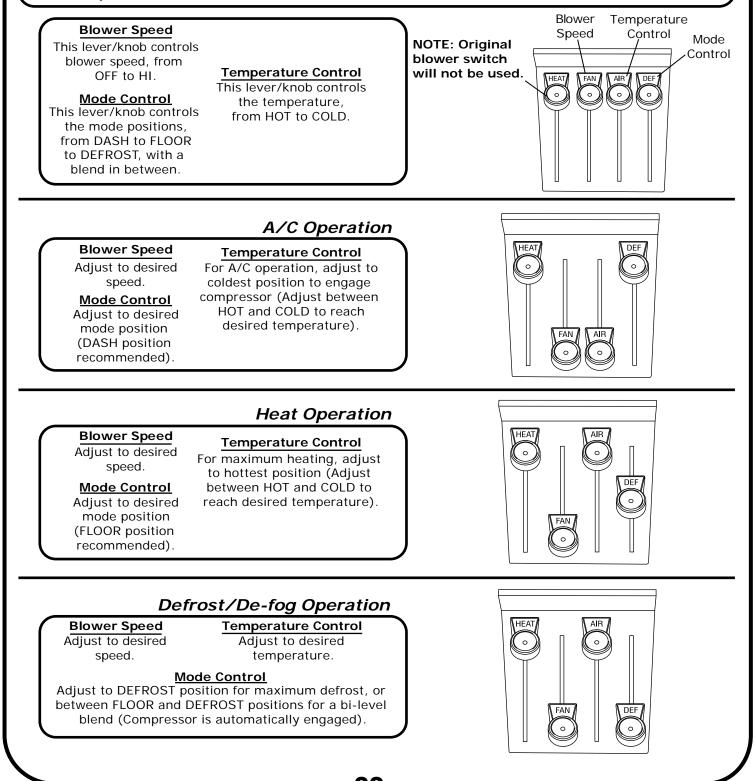
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Operation of Controls

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	Troubleshooting Guide
Symptom	Condition	Checks	Actions	Notes
la. 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.	Loss of ground on this wire renders control head inoperable. See blower switch check procedure.
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.	 Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU. 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. Replace BSC (This will require removal of evaporator from vehicle). 	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.	 Charge system or bypass pressure switch. Check continuity to ground on white control head wire. Check for 5V on red control head wire. Check 2-pin connector at ECU housing. 	 Danger: Never bypass safety switch with engine running. Serious injury can result. To check for proper pot function, check voltage at white/blue wire. Voltage should be between 0V and 5V, and will vary with pot lever position. Disconnected or faulty thermistor will cause compressor to be disabled.
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.

Symptom	Condition	Checks	Actions	Notes
4.	Works when engine is not running: shuts off when engine is started	Noise interference from either ignition or alternator.	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 Aversions).		Check for positive power at heater valve green wire and	is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut
System will not turn on, or runs intermittently.		Verify connections on power lead, ignition lead, and both white around wires	✓ blower red wire. Check for ground on control head white wire.	radio capacitor at the positive post of the ignition
	Will not turn on under any conditions.		 Verify proper meter function by checking the condition of a known good battery. 	coil (See radio capacitor installation bulletin). A faulty alternator or worn out battery can also result in this condition.
5. Loss of mode 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
function.	Partial function of mode	Check for obstructed or binding mode doors.		wehicle. Be sure all mounting locations line up and don't have to be forced into position.
	Battery voltage is at least	Check for at least 12V at circuit breaker.	Ensure all system grounds and power connections are clean and tight.	System shuts off blower at 10V. Poor connections or
Blower turns on and off rapidly.	Battery voltage is less	ty battery or	Charge battery.	weak battery can cause
7. Erratic functions of blower, mode, temp, etc.		Check for damaged switch or pot and associated wiring.	 Repair or replace. 	
3. When ignition is turned on, blower momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.		This is an indicator that the system has been reset. Be sure the red power wire is on the battery post, and not on a switched source. Also, if the system is pulled below 7V for even a split second, the system will reset.	Run red power wire directly to battery.	

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