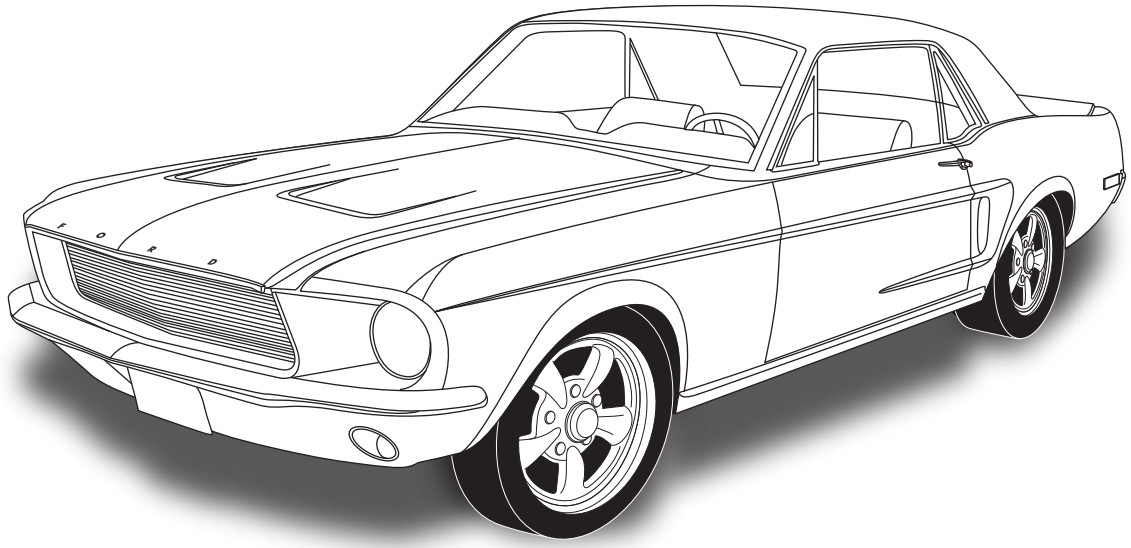
1967-68 Ford Mustang
Mercury Cougar

without **Factory Air**
Evaporator Kit
(551168)



18865 Goll St. San Antonio, TX 78266
Phone: 800-862-6658
Sales: sales@vintageair.com
Tech Support: tech@vintageair.com
www.vintageair.com

www.vintageair.com

Table of Contents

Cover....1
Table of Contents....2
Packing List/Parts Disclaimer....3
Information Page....4
Wiring Notice....5
Engine Compartment Disassembly, Condenser Assembly and Installation, Compressor and Brackets, Passenger Compartment Disassembly....6
Defrost Duct and Fresh Air Cap Installation....7
Firewall Cover Installation....8
Evaporator Installation....9
Vintage Air Center Louver Installation, (Optional) Center Louver Installation Using OEM Center Vent Trim....10
Drain Hose Installation, Lubricating O-rings, A/C Hose Installation....11
Heater Hose & Heater Control Valve Installation....12
A/C and Heater Hose Routing....13
Under Dash Louver Installation....14
Final Steps....15
Control Panel & Duct Hose Routing....16
Evaporator Hardline Installation....17
Wiring Diagram....18
Gen IV Wiring Connection Instruction....19
Operation of Controls....20
Troubleshooting Guide....21
Troubleshooting Guide (Cont.)....22
OEM Center Vent Trim Louver Template....23
Packing List....24

Additional Parts and Components:

- When upgrading to 492057 or 492058 Reproduction Louver Kit, Control Panel Conversion Kit 474266 must be used.

492057
Reproduction Louver Kit with Hose Adapters

474266
Control Panel Replacement Kit w/AC

492096
Center Louver Kit

492058
Reproduction DR/PS Louver Kit with Hose Adapters

492095
Reproduction Center Louver

32067-VFF
Fan Shroud

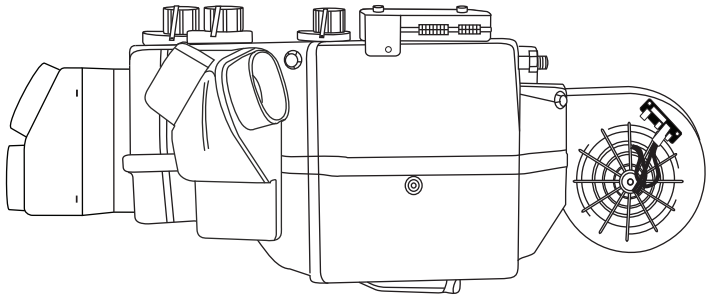
www.vintageair.com

Packing List: Evaporator Kit (551168)

No.	Qty.	Part No.	Description
1.	1	744004-VUE	Gen IV 4-Vent Evaporator Sub Case
2.	1	781067	Accessory Kit

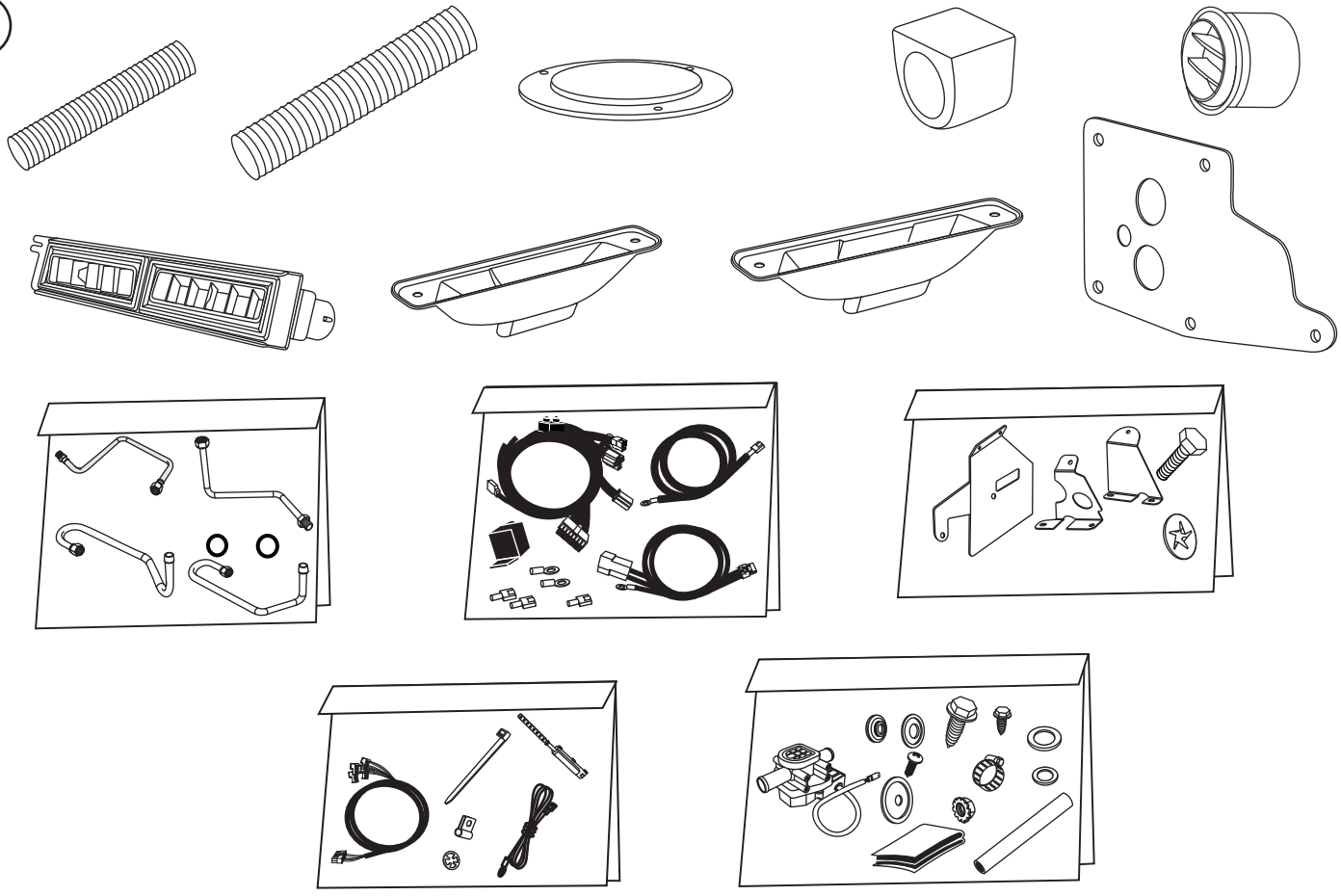
**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

1



Gen IV 4-Vent Evaporator Sub Case 744004-VUE

2



Accessory Kit 781067

NOTE: Images may not depict actual parts and quantities. Refer to packing list for actual parts and quantities.

www.vintageair.com

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 remain 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.

www.vintageair.com

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 and 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 and 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 or 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.
2. Remove battery (retain).
3. Drain radiator.
4. Remove radiator (retain).
5. Remove the OEM heater hoses (discard).

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.

Passenger Compartment Disassembly

Perform the Following:

1. Remove the glove box (retain) (See Figure 1, below).
2. Remove the center console (if equipped).
3. Remove the heater assembly and all related ducting (discard, but retain screws) (See Figure 2, below).
4. Remove OEM control panel assembly (retain) (See Figure 1, below). **NOTE: Refer to control panel conversion kit instructions for installation of controls.**
5. Remove the radio (retain) (See Figure 1, below).
6. Remove the OEM defrost ducts (discard) (See Figure 2, below).
7. Remove the dash brace (discard) (See Figure 2, below).

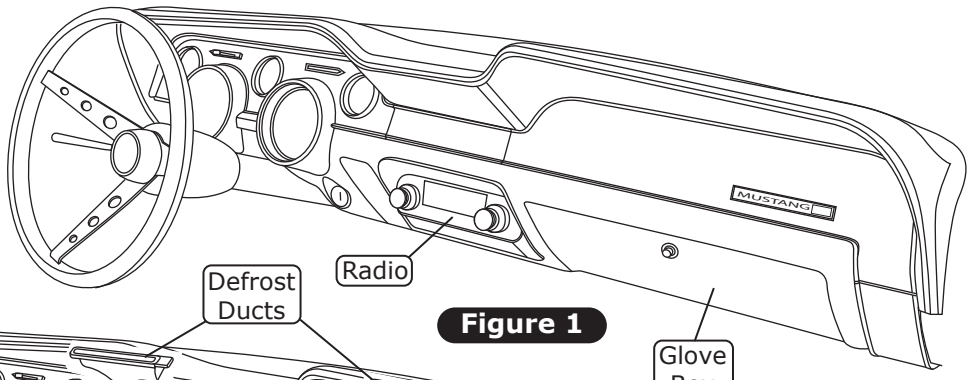


Figure 1

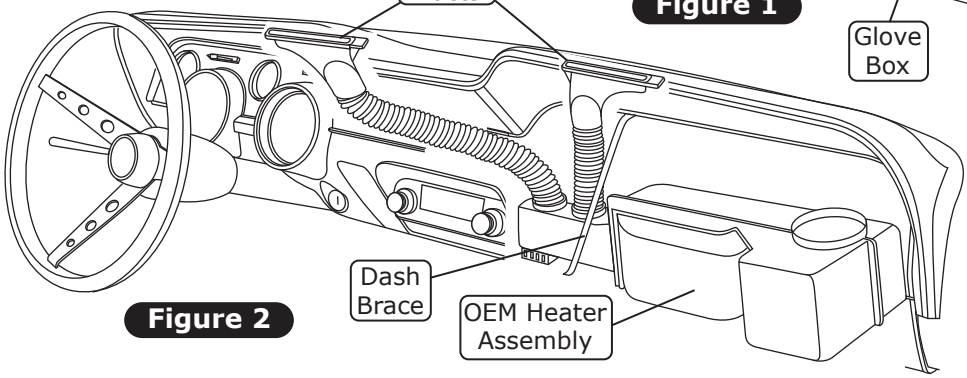


Figure 2

Defrost Duct and Fresh Air Cap Installation

1. Install the defrost ducts under the dash, and secure using (4) OEM nuts as shown in Figure 3, below.
2. Hold the fresh air cap under the dash and mark the (3) mounting holes.
3. Drill (3) 1/8” mounting holes under the dash (See Figure 3, below).
4. Apply a 1/4” bead of silicone around the mating surface of the fresh air cap as shown in Figure 3, below.
5. Secure the fresh air cap to the fresh air hole using (3) #10 x 1/2” sheet metal screws as shown in Figure 3, below.

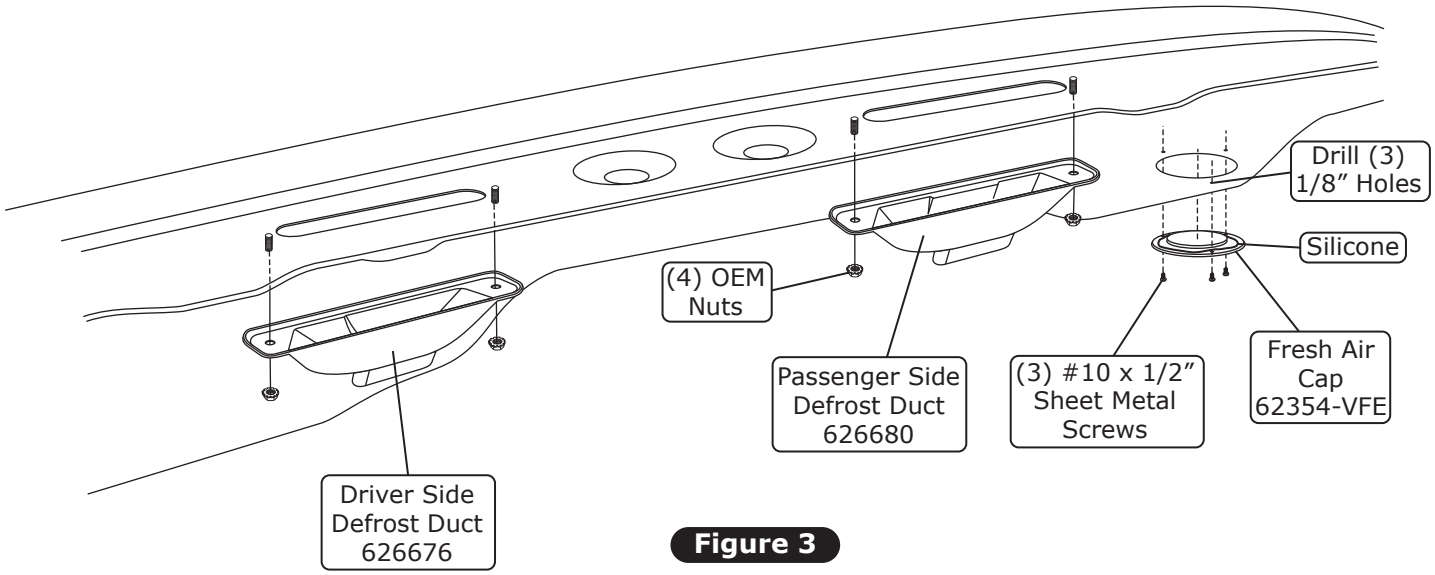


Figure 3

Firewall Cover Installation

1. Install (3) grommets onto the firewall cover as shown in Figure 4, below.

2. Apply a 1/4" bead of silicone around the mating surface of the firewall cover as shown in Figure 4a, below.

3. Secure the firewall cover to the firewall using (4) 1/4-20 x 1" hex bolts, flat washers and nuts, and (1) #10 x 1/2" sheet metal screw (See Figure 4, below). **NOTE: The firewall cover installs on the engine compartment side of the firewall.**

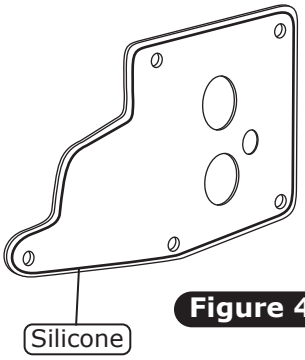


Figure 4a

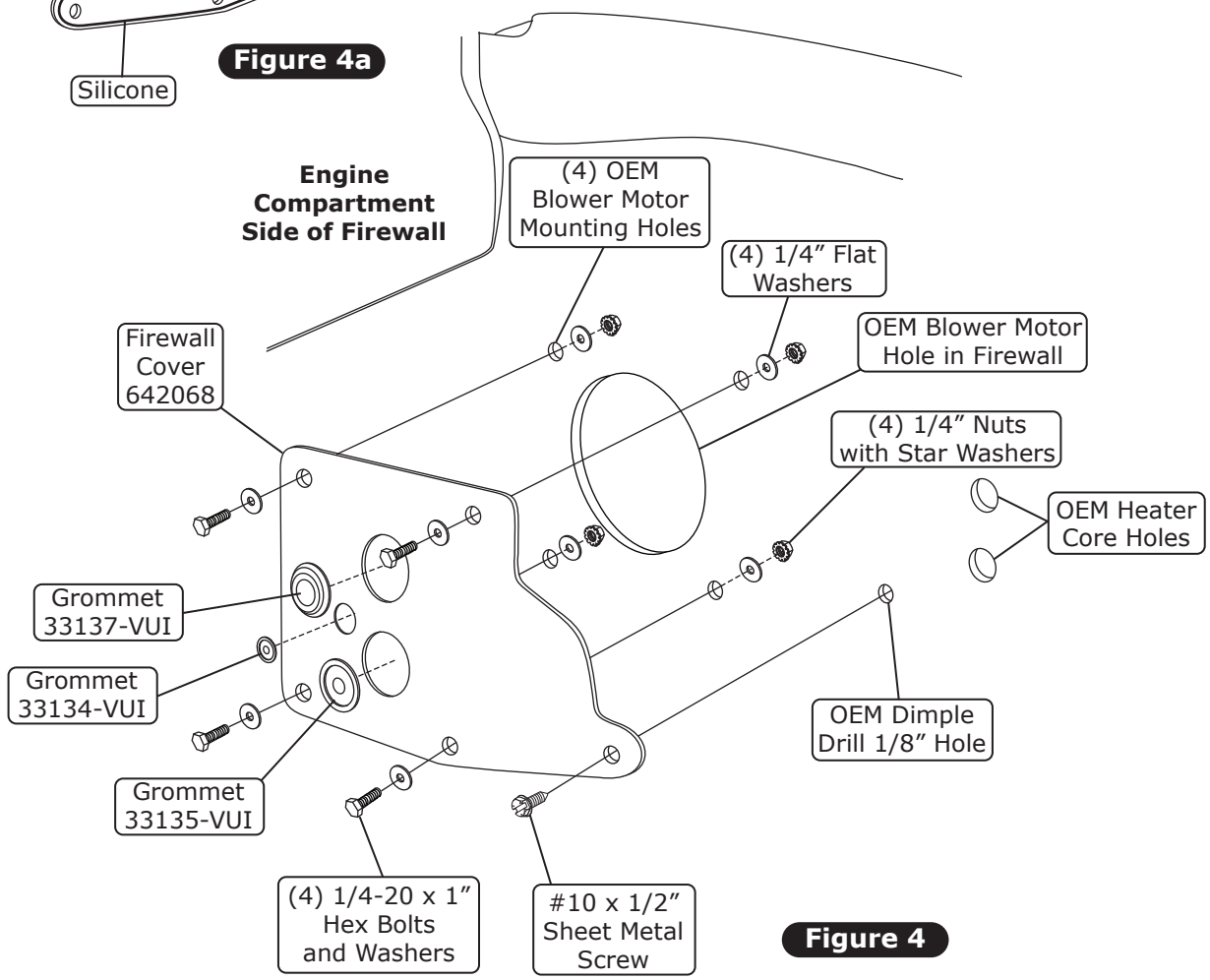


Figure 4

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. On a workbench, install the evaporator rear brackets and hardlines with properly lubricated O-rings (See Figure 9, Page 11, and Figure 16, Page 17).
2. Install the front mounting bracket onto the evaporator using (2) 1/4-20 x 1/2" hex bolts, and tighten as shown in Figure 5, below.
3. Drill (2) 9/32" holes in firewall using OEM dimples (See Figure 5a, below).
4. Lift the evaporator unit up under the dashboard. Secure loosely to the firewall from the engine compartment side using (2) 1/4-20 nuts and washers (See Figure 5a, 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.**
5. Using the front evaporator bracket as a guide, mark and drill (2) 3/16" holes in the cowl (See Figure 5b, below).
6. Using (2) #14 x 3/4" sheet metal screws, secure the front evaporator mounting bracket to the inner cowl (See Figure 5b, below).
7. 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 sheet metal screws.**

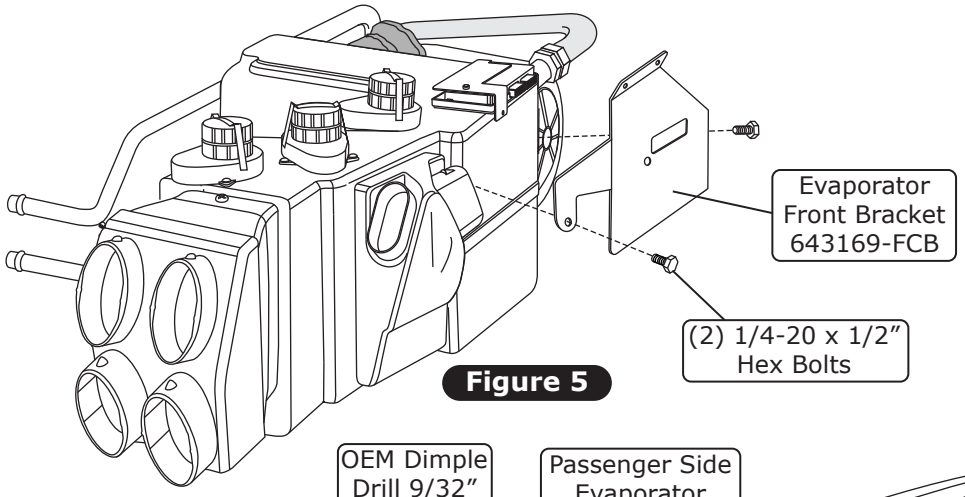


Figure 5

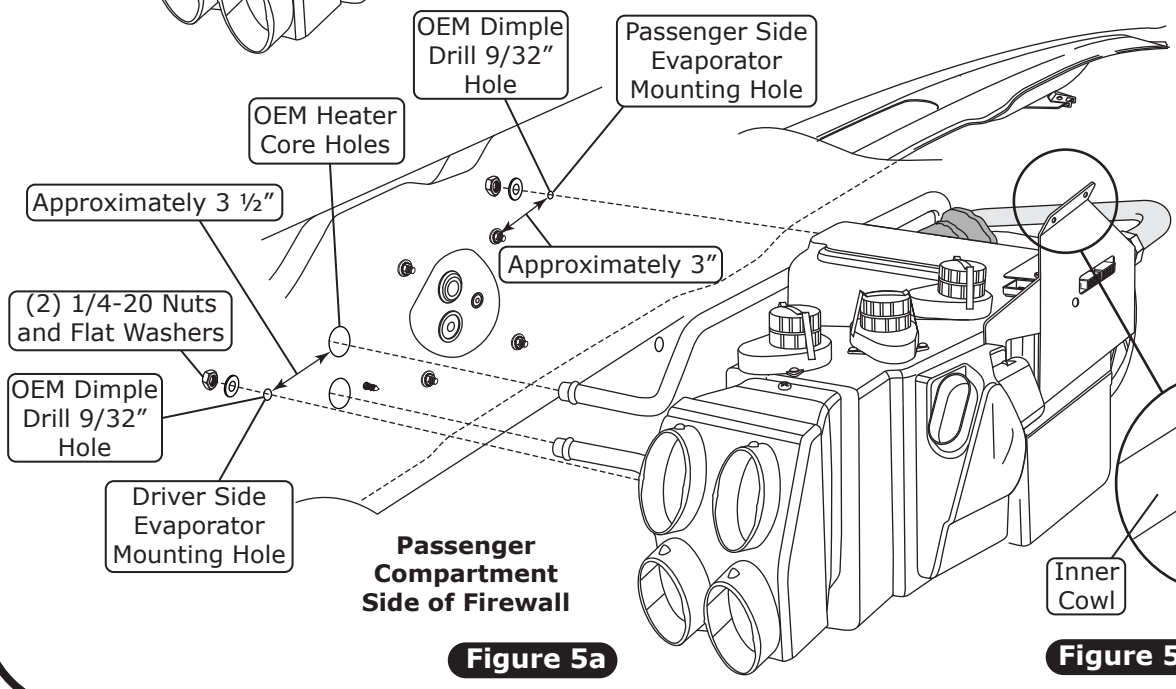


Figure 5a

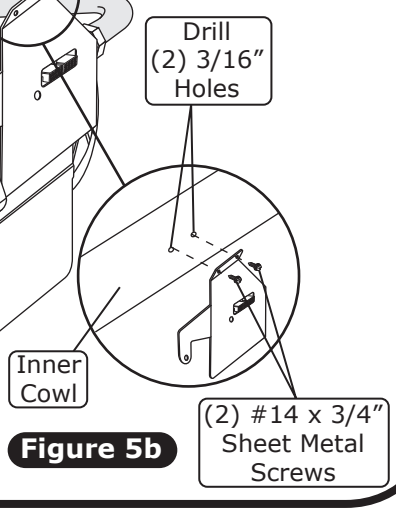


Figure 5b

Vintage Air
Center Louver Installation

1. Remove the OEM center vent trim from the dash as shown in Figure 6, below.
2. Modify the center louver opening on the dash as shown in Figure 6a, below.
3. Install the center louver assembly into the dash as shown in Figure 6b, below.

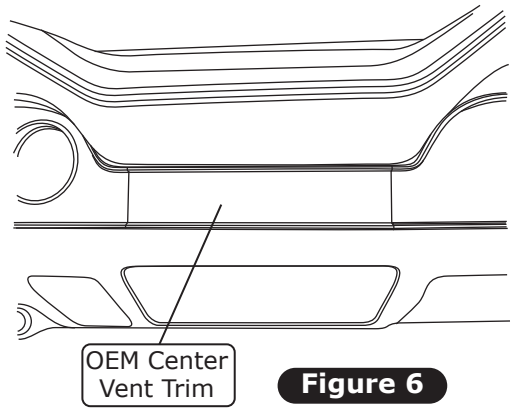


Figure 6

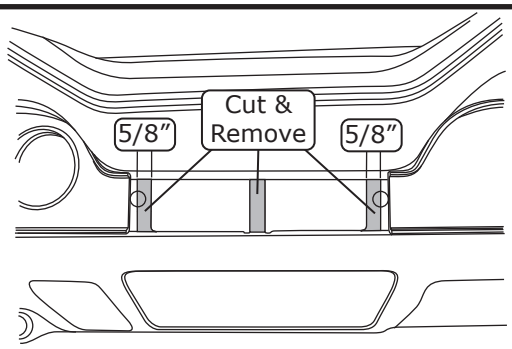
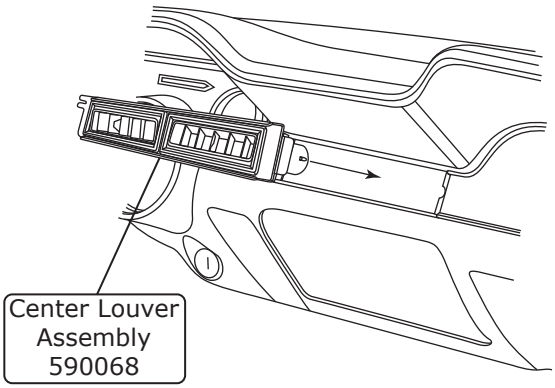
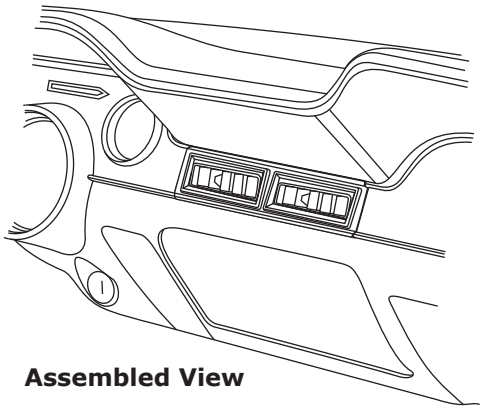


Figure 6a





Assembled View

Figure 6b

(Optional)
Center Louver Installation, Using OEM Center Vent Trim

1. Cut the OEM center vent trim using the template provided on Page 23 (See Figure 7, below). **NOTE: Remove the louver from the center louver assembly.**
2. Install the louvers into the OEM center vent trim as shown in Figure 7, below.
3. Reinstall the OEM center vent trim into the dash as shown in Figure 7, below.

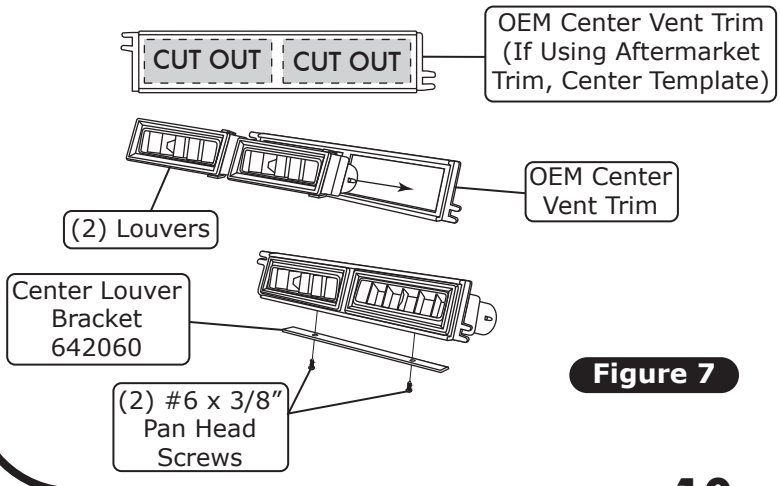
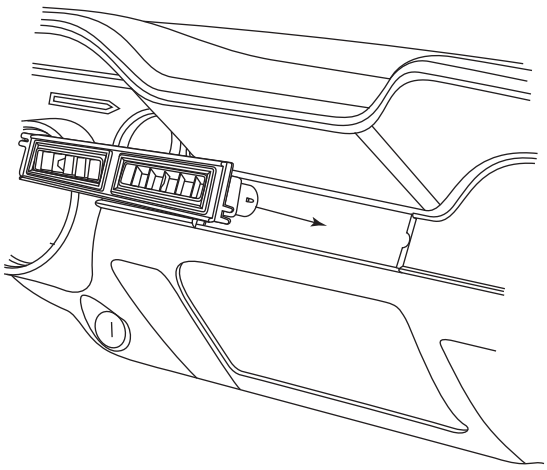


Figure 7



Drain Hose Installation

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. Then, measure 1” down and drill a 5/8” hole through the firewall (See Figure 8, below).
3. Install the drain hose onto the evaporator drain on the bottom of the unit, and route it through the firewall.
4. Install a 1/2” 90° drain elbow onto the drain hose (See Figure 8, below).

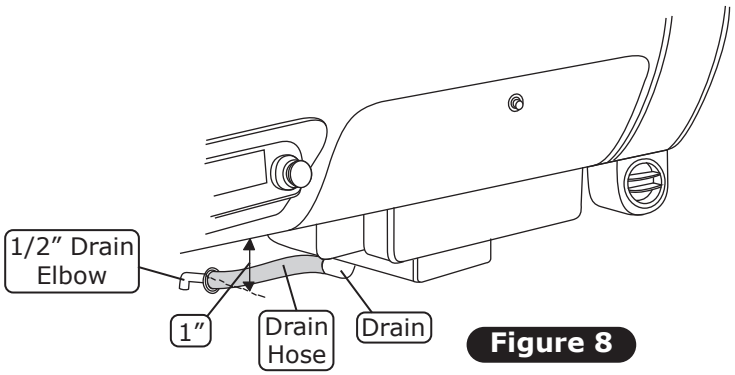
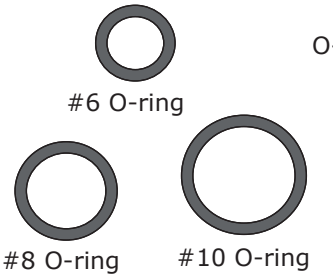
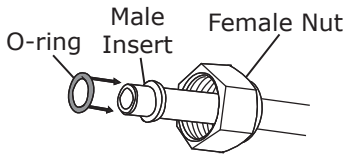
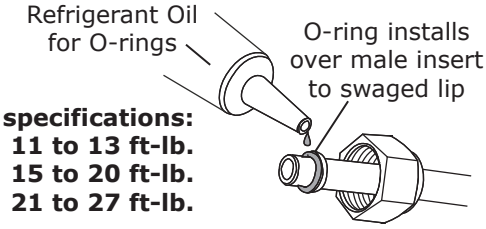


Figure 8

Lubricating O-rings



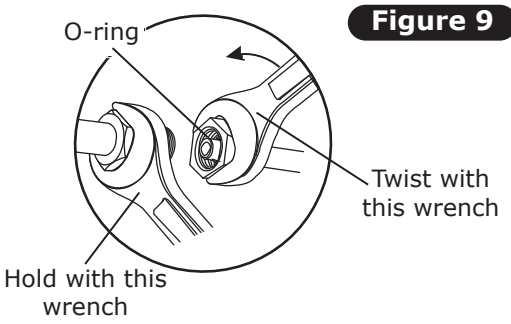




NOTE: Standard torque specifications:
#6: 11 to 13 ft-lb.
#8: 15 to 20 ft-lb.
#10: 21 to 27 ft-lb.

For a proper seal of fittings: Install supplied O-rings as shown and lubricate with refrigerant oil.

Figure 9



A/C Hose Installation

Standard Hose Kit:

1. Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 9, above) and connect the 45° fitting to the #8 discharge port on the compressor. Then route the straight female fitting with service port to the #8 condenser hardline coming through the radiator core support (See Figure 11, Page 13). Tighten each fitting connection as shown in Figure 9, above.
2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Figure 9, above) and connect the 90° female fitting with service port to the #10 suction port on the compressor. Then route the 90° female fitting to the #10 evaporator hardline coming through the firewall (See Figure 10, Page 12, & Figure 11, Page 13). Tighten each fitting connection as shown in Figure 9, above. Wrap the #10 fitting connections with press tape (See Figure 10, Page 12).
3. Locate the #6 evaporator/drier hose. Lubricate (2) #6 O-rings (See Figure 9, above) and connect the straight female fitting to the #6 drier hardline coming through the radiator core support. Then route the 90° female fitting to the #6 evaporator hardline coming through the firewall (See Figure 10, Page 12 and Figure 11, Page 13). Tighten each fitting connection as shown in Figure 9, above.
4. Use (6) tie wraps to secure the #6 A/C hose to the brace as shown in Figure 11, Page 13.

Modified Hose Kit:

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

Heater Hose & Heater Control Valve Installation

1. Route a piece of heater hose from the water pump to the lower heater line coming through the firewall as shown in Figure 10, below. Secure using hose clamps.

2. Route a piece of heater hose from the intake to the upper heater line coming through the firewall as shown in Figure 10, below. **NOTE: Install the heater control valve in line with the intake manifold (pressure side) heater hose, and secure using hose clamps. Also note proper flow direction.**

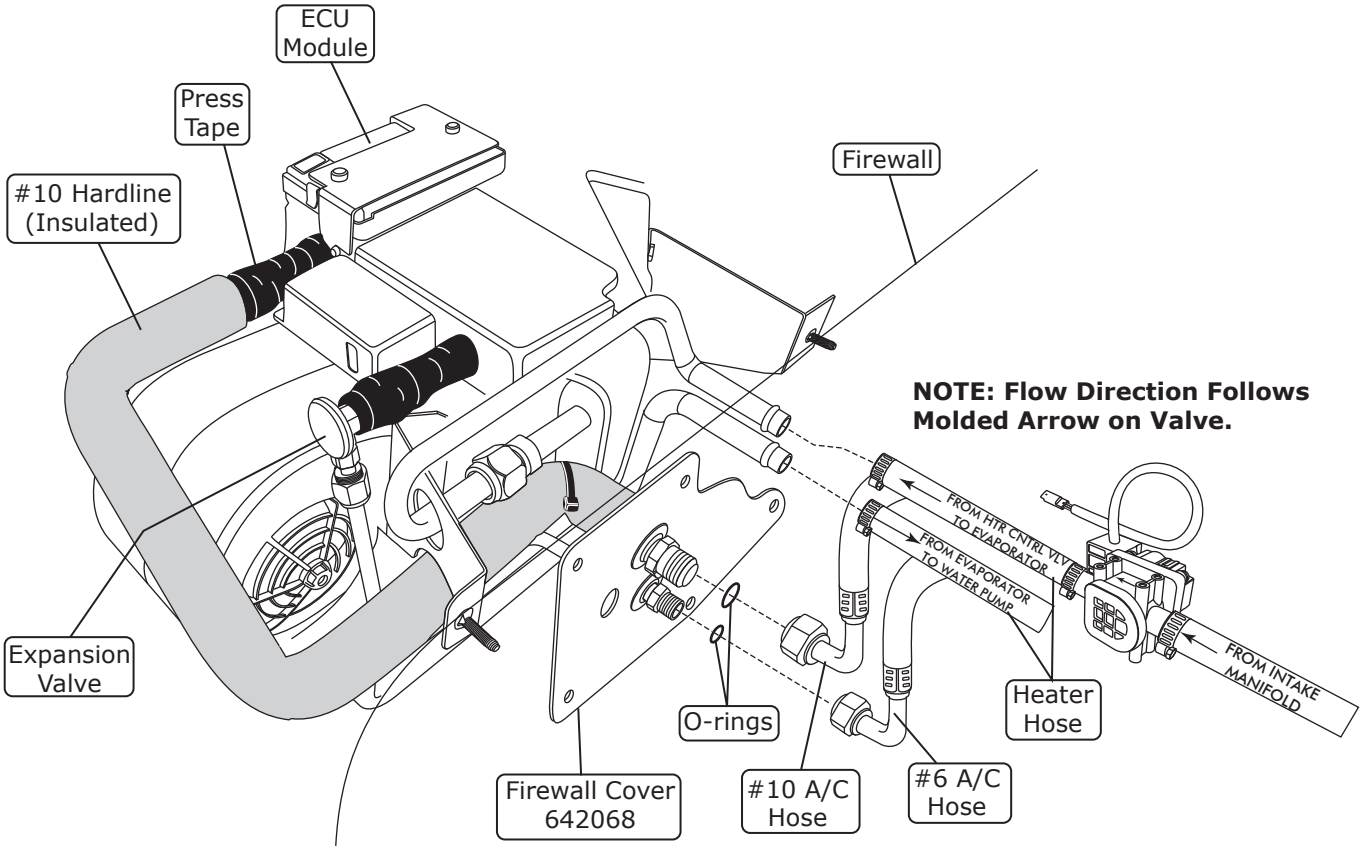


Figure 10

A/C and Heater Hose Routing

NOTE: Vintage Air Systems use 5/8" heater connections. On engines equipped with 3/4" hose nipples, these will need to be removed and replaced with 5/8" nipples (not supplied). For water pumps with a cast-in 3/4" heater outlet, a 3/4" x 5/8" reducer fitting (not supplied) will need to be installed in the heater hose.

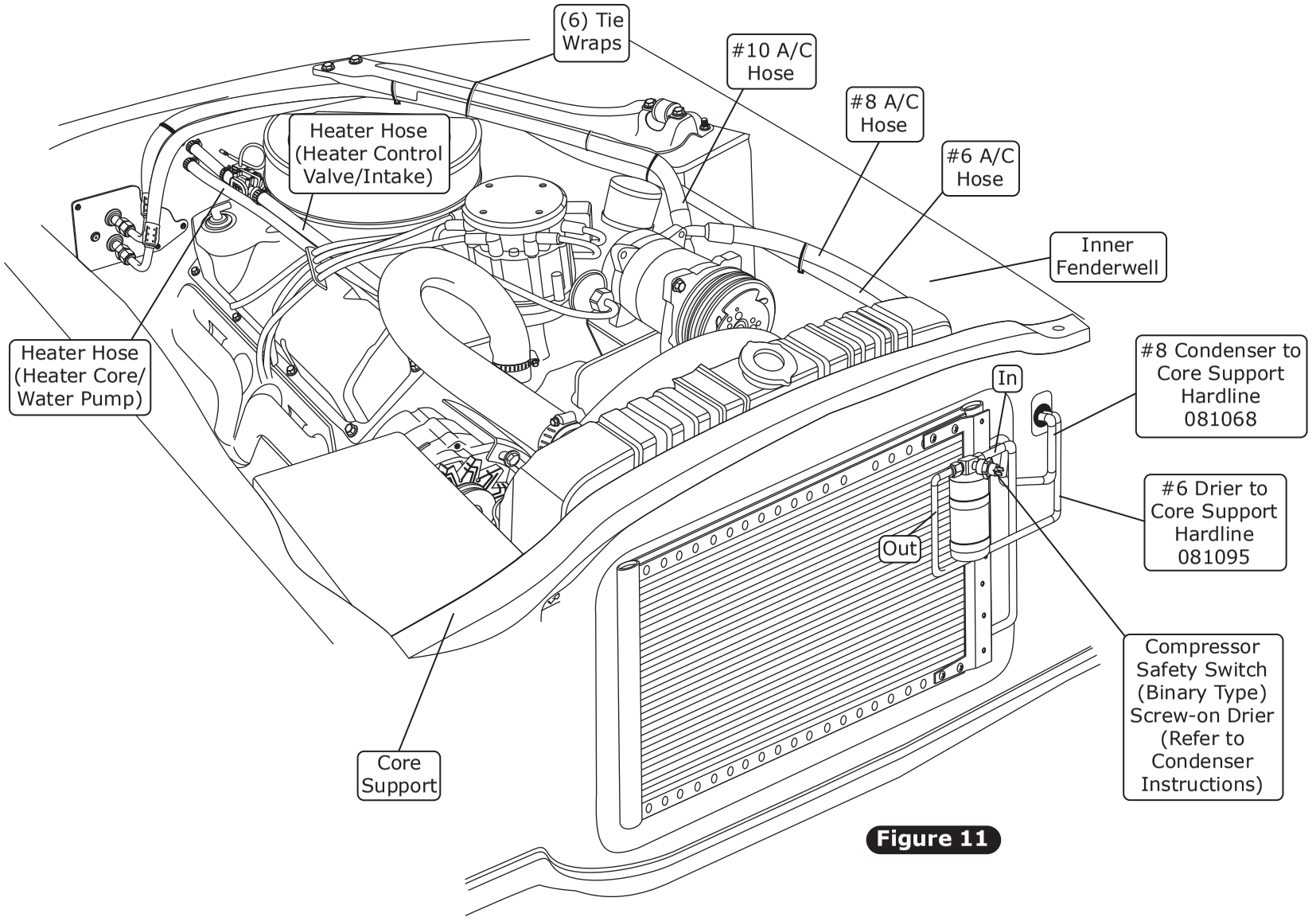


Figure 11

Under Dash Louver Installation

1. Install the driver and passenger side louver housings under the dash using OEM screws as shown in Figure 12, below.

2. Install the louvers into the driver and passenger side louver housings as shown in Figure 12, below.

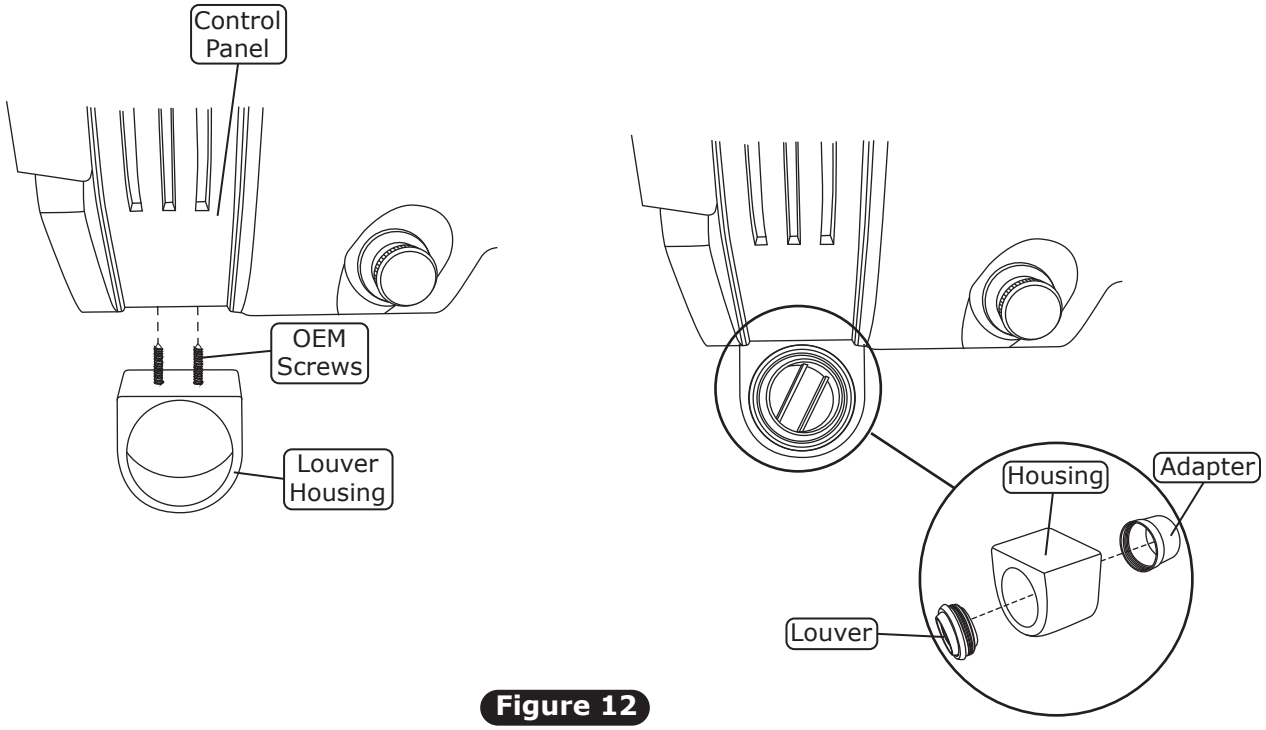
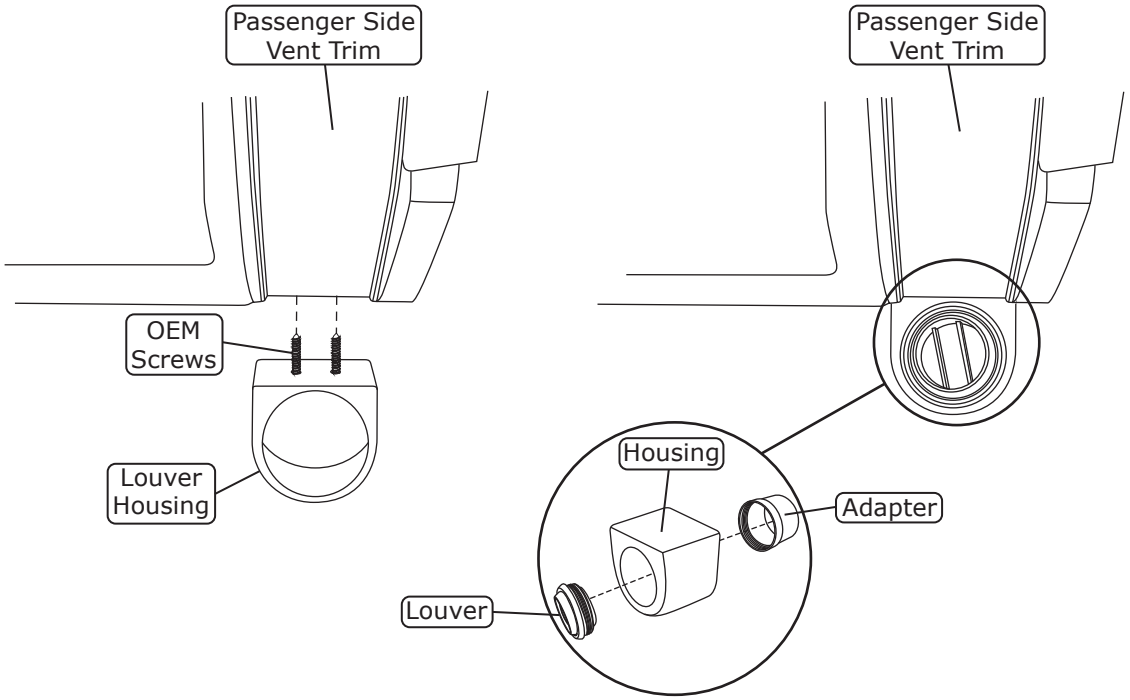


Figure 12



Final Steps

1. Install duct hoses as shown in Figure 15, Page 16.
2. Route A/C wires (12 volt/grounds/binary switch/heater valve) through 3/8” grommet as shown in Figure 13, below.
3. Install the 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 15, Page 16. Wire according to the wiring diagrams on Pages 18 and 19.
5. Reinstall the glove box.
6. Reinstall the center console (if equipped). Modify the console as shown in Figures 14 & 14a, 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.

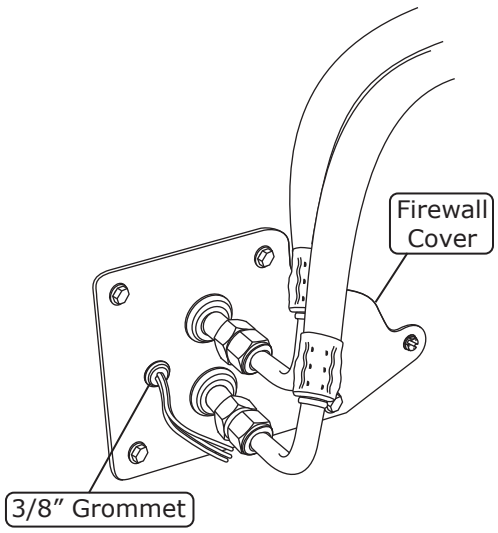


Figure 13

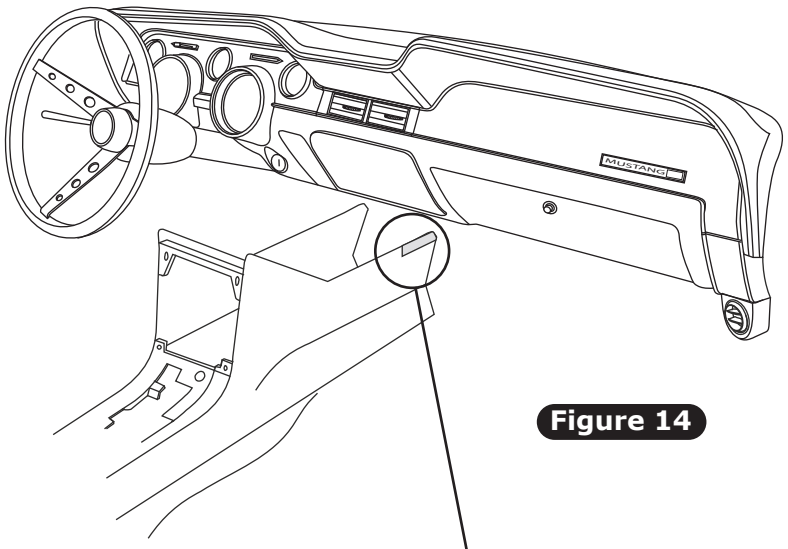


Figure 14

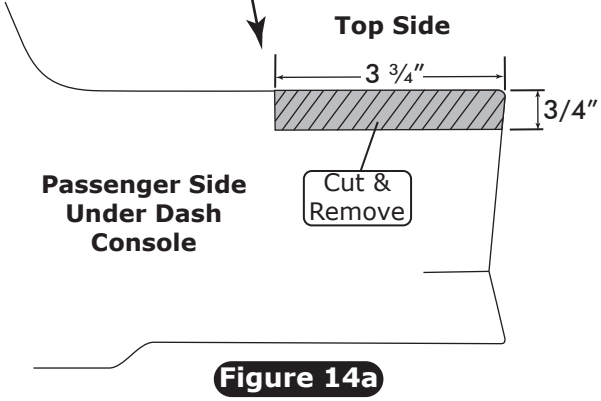


Figure 14a

Control Panel & Duct Hose Routing

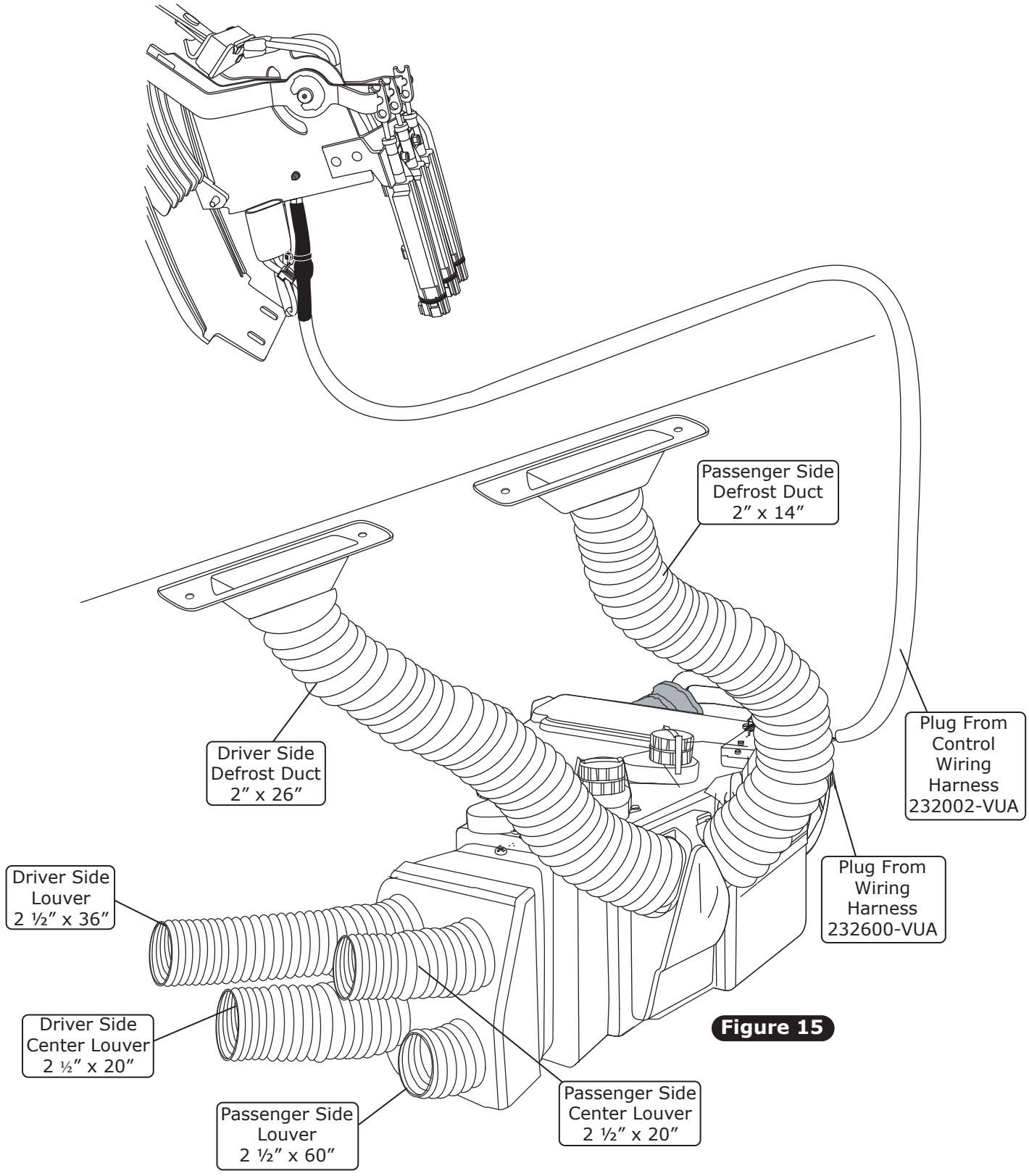


Figure 15

Evaporator Hardline Installation

NOTE: After installing the #10 hardline, wrap all exposed metal (fittings & tubes) inside the passenger compartment with the supplied press tape.

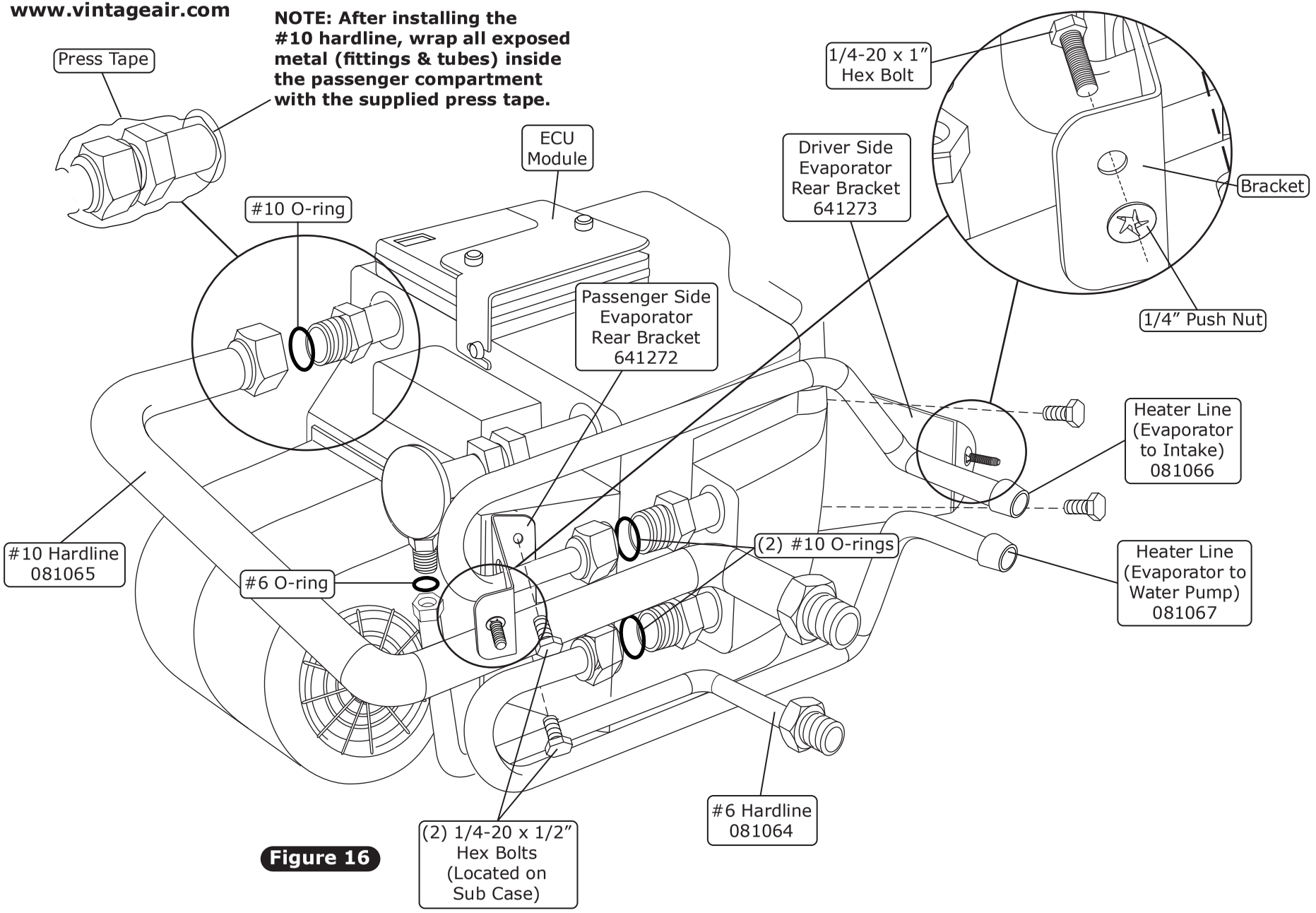
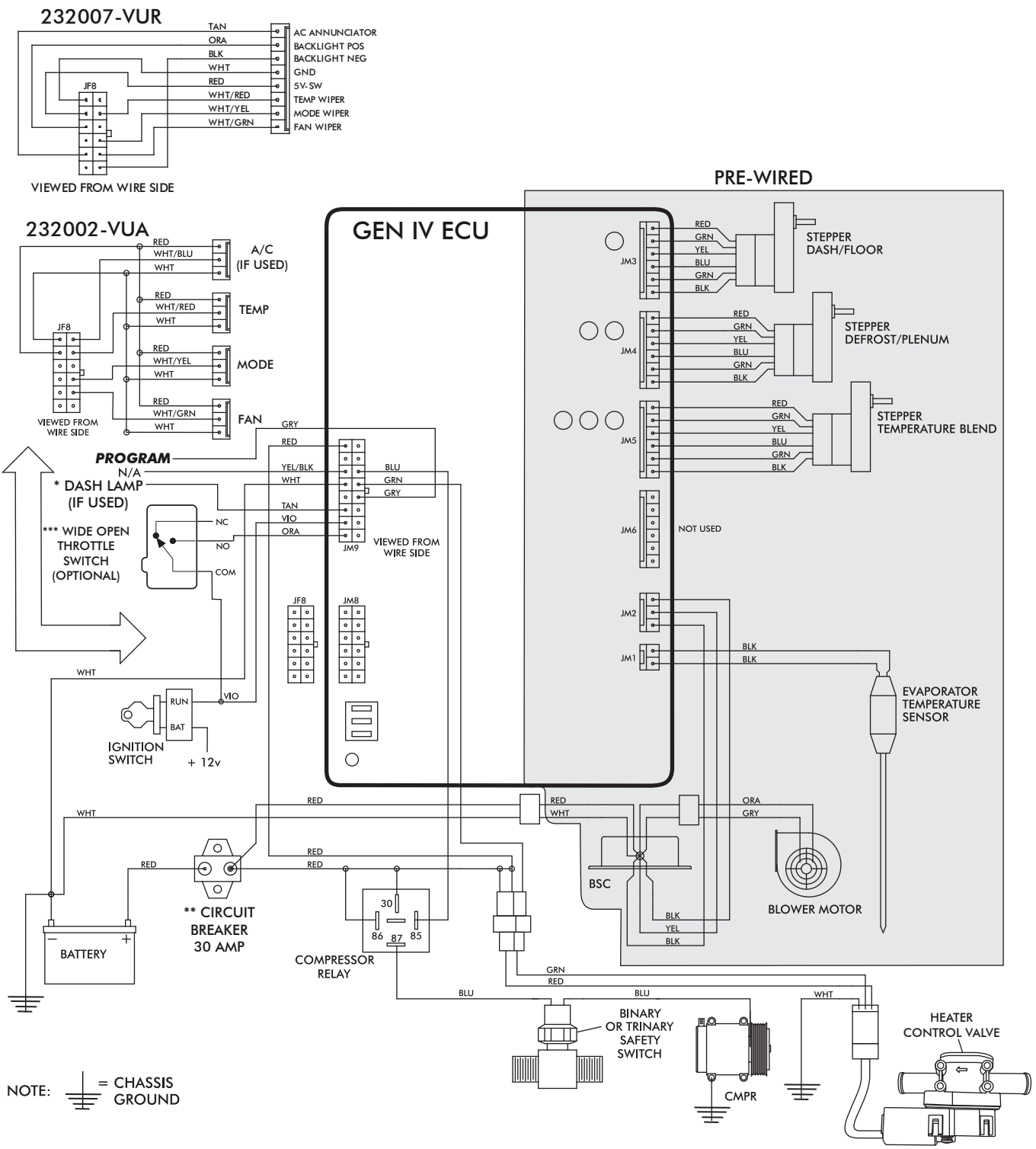


Figure 16

Gen IV Wiring Diagram



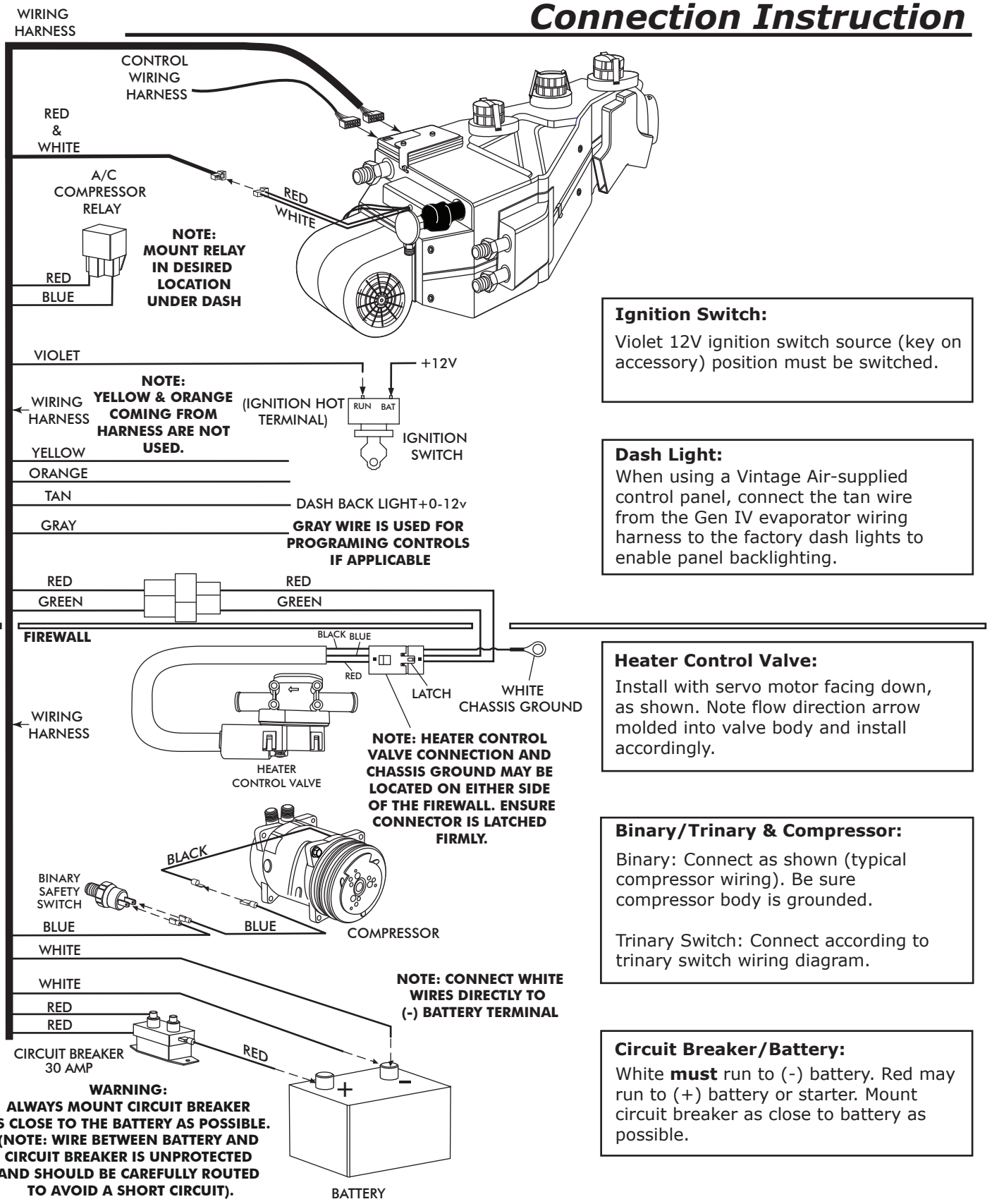
*** Dash lamp is used only with type 232007-VUR harness.**

**** 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.**

www.vintageair.com

Gen IV Wiring Connection Instruction



Ignition Switch:

Violet 12V ignition switch source (key on accessory) position must be switched.

Dash Light:

When using a Vintage Air-supplied control panel, connect the tan wire from the Gen IV evaporator wiring harness to the factory dash lights to enable panel backlighting.

Heater Control Valve:

Install with servo motor facing down, as shown. Note flow direction arrow molded into valve body and install accordingly.

Binary/Trinary & Compressor:

Binary: Connect as shown (typical compressor wiring). Be sure compressor body is grounded.

Trinary Switch: Connect according to trinary switch wiring diagram.

Circuit Breaker/Battery:

White **must** run to (-) battery. Red may run to (+) battery or starter. Mount circuit breaker as close to battery as possible.

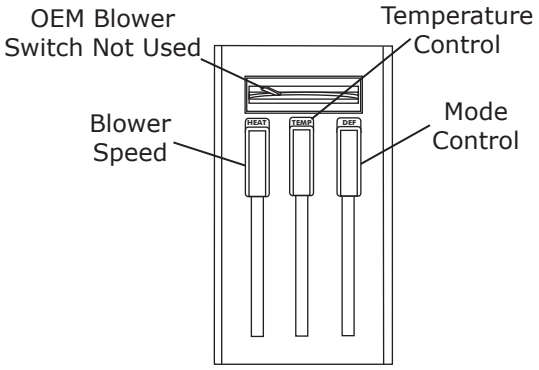
Operation of Controls

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.**

Blower Speed
This lever/knob controls blower speed, from OFF to HI.

Mode Control
This lever/knob controls the mode positions, from DASH to FLOOR to DEFROST, with a blend in between.

Temperature Control
This lever/knob controls the temperature, from HOT to COLD.

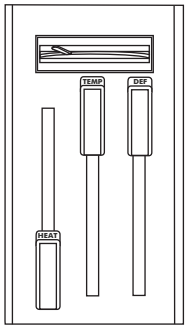


A/C Operation

Blower Speed
Adjust to desired speed.

Mode Control
Adjust to desired mode position (DASH position recommended).

Temperature Control
For A/C operation, adjust to coldest position to engage compressor (Adjust between HOT and COLD to reach desired temperature).

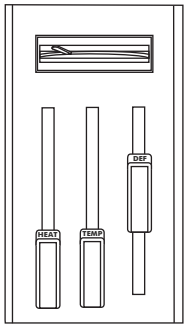


Heat Operation

Blower Speed
Adjust to desired speed.

Mode Control
Adjust to desired mode position (FLOOR position recommended).

Temperature Control
For maximum heating, adjust to hottest position (Adjust between HOT and COLD to reach desired temperature).

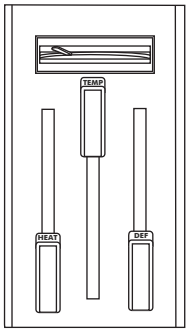


Defrost/De-fog Operation

Blower Speed
Adjust to desired speed.

Temperature Control
Adjust to desired temperature.

Mode Control
Adjust to DEFROST position for maximum defrost, or between FLOOR and DEFROST positions for a bi-level blend (Compressor is automatically engaged).



www.vintageair.com

Troubleshooting Guide

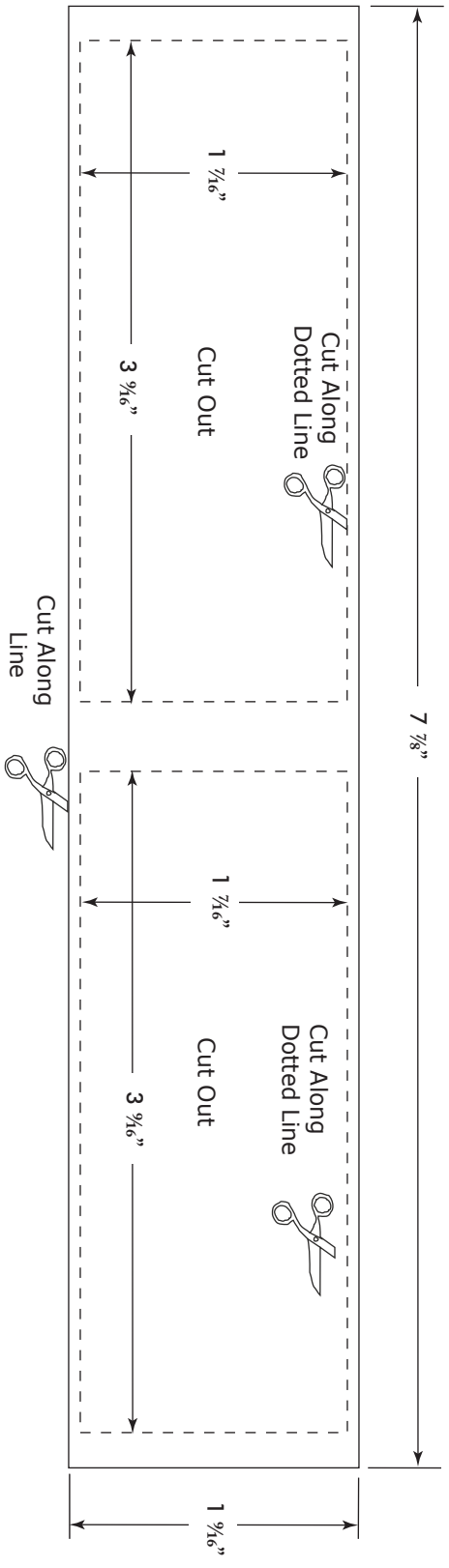
Symptom	Condition	Checks	Actions	Notes
1a. Blower stays on high speed when ignition is on.	No other functions work.	Check for damaged pins or wires in control head plug.	Verify that all pins are inserted into plug. Ensure that no pins are bent or damaged in ECU.	
		Check for damaged ground wire (white) in control head harness.	Verify continuity to chassis ground with white control head wire at various points.	Loss of ground on this wire renders control head inoperable.
	All other functions work.	Check for damaged blower switch or potentiometer and associated wiring.		See blower switch check procedure.
1b. 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.	Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU.	
		Unplug 3-wire BSC control connector from ECU. If blower stays running, BSC is either improperly wired or damaged.	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 "ground" side of 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.
2. Compressor will not turn on (All other functions work).	System is not charged.	System must be charged for compressor to engage.	Charge system or bypass pressure switch.	**Danger: Never bypass safety switch with engine running. Serious injury can result.**
	System is charged.	Check for faulty A/C potentiometer or associated wiring (not applicable to 3-pot controls).	Check continuity to ground on white control head wire. Check for 5V on red control head wire.	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.
		Check for disconnected or faulty thermistor.	Check 2-pin connector at ECU housing.	Disconnected or faulty thermistor will cause compressor to be disabled.
3. Compressor will not turn off (All other functions work).		Check for faulty A/C potentiometer or associated wiring.	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.
		Check for faulty A/C relay.	Replace relay.	

Troubleshooting Guide (Cont.)

Symptom	Condition	Checks	Actions	Notes
4. System will not turn on, or runs intermittently.	Works when engine is not running; shuts off when engine is started (typically early Gen IV, but possible on all versions).	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 is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut down the ECU. Install a radio capacitor at the positive post of the ignition coil (see radio capacitor installation bulletin). A faulty alternator or worn out battery can also result in this condition.
	Will not turn on under any conditions.	Verify connections on power lead, ignition lead, and both white ground wires.	Check for positive power at heater valve green wire and blower red wire. Check for ground on control head white wire.	
		Verify battery voltage is greater than 10 volts and less than 16.	Verify proper meter function by checking the condition of a known good battery.	
5. Loss of mode door function.	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 vehicle. Be sure all mounting locations line up and don't have to be forced into position.
	Partial function of mode doors.	Check for obstructed or binding mode doors.		
		Check for damaged stepper motor or wiring.		
6. Blower turns on and off rapidly.	Battery voltage is at least 12V.	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 weak battery can cause shutdown at up to 11V.
	Battery voltage is less than 12V.	Check for faulty battery or alternator.	Charge battery.	
7. Erratic functions of blower, mode, temp, etc.		Check for damaged switch or pot and associated wiring.	Repair or replace.	
8. 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.	

OEM Center Vent Trim Louver Template

NOTE: Tolerances are extremely tight on the OEM center vent trim. Due to printing variances, measure the line below before using this template. If template is scaled properly, the line should measure 6 inches.



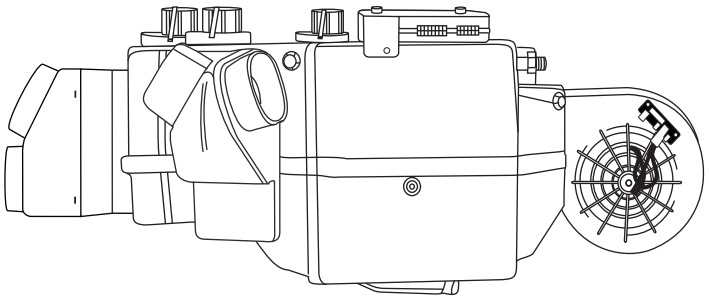
Packing List: Evaporator Kit (551168)

No.	Qty.	Part No.	Description	
1.	1	744004-VUE	Gen IV 4-Vent Evaporator Sub Case	_____
2.	1	781067	Accessory Kit	_____

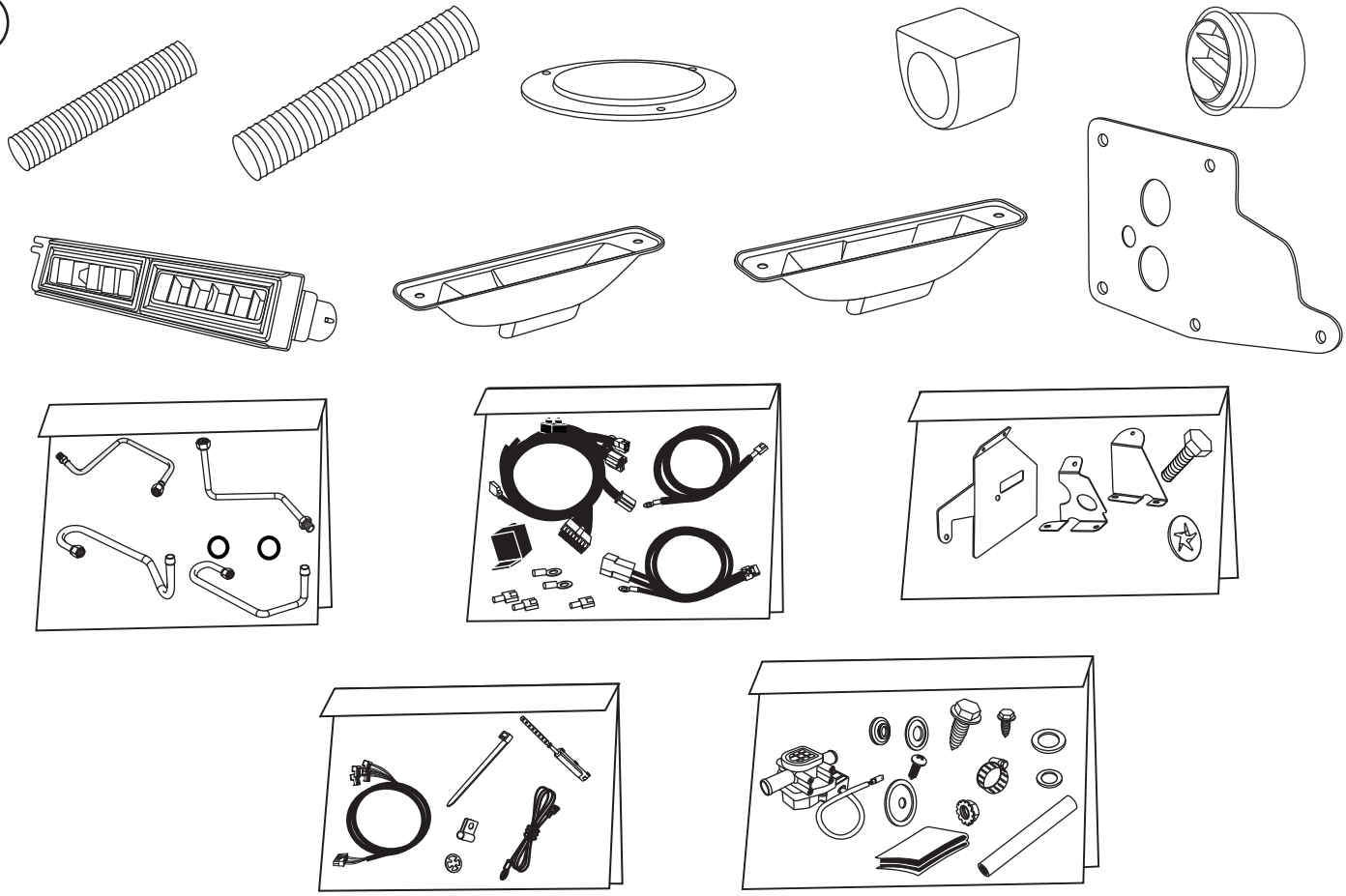
Checked By: _____
Packed By: _____
Date: _____

1

Gen IV 4-Vent Evaporator Sub Case 744004-VUE



2



Accessory Kit 781067

NOTE: Images may not depict actual parts and quantities. Refer to packing list for actual parts and quantities.