



an ISO 9001:2015 Registered Company

1969 Pontiac GTO

with Factory Air
Evaporator Kit
(564483)



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



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A detailed tech video outlining the installation process is available on Vintage Air's YouTube channel at <https://bit.ly/2XLgzEq>.

Viewing the tech video along with the written instructions will provide the installer the most detailed installation procedure.



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Packing List: Evaporator Kit (564483)

| No. | Qty. | Part No. | Description |
|-----|------|----------|----------------------------|
| 1. | 1 | 744021 | Gen IV Evaporator Sub Case |
| 2. | 1 | 784483 | Accessory Kit |

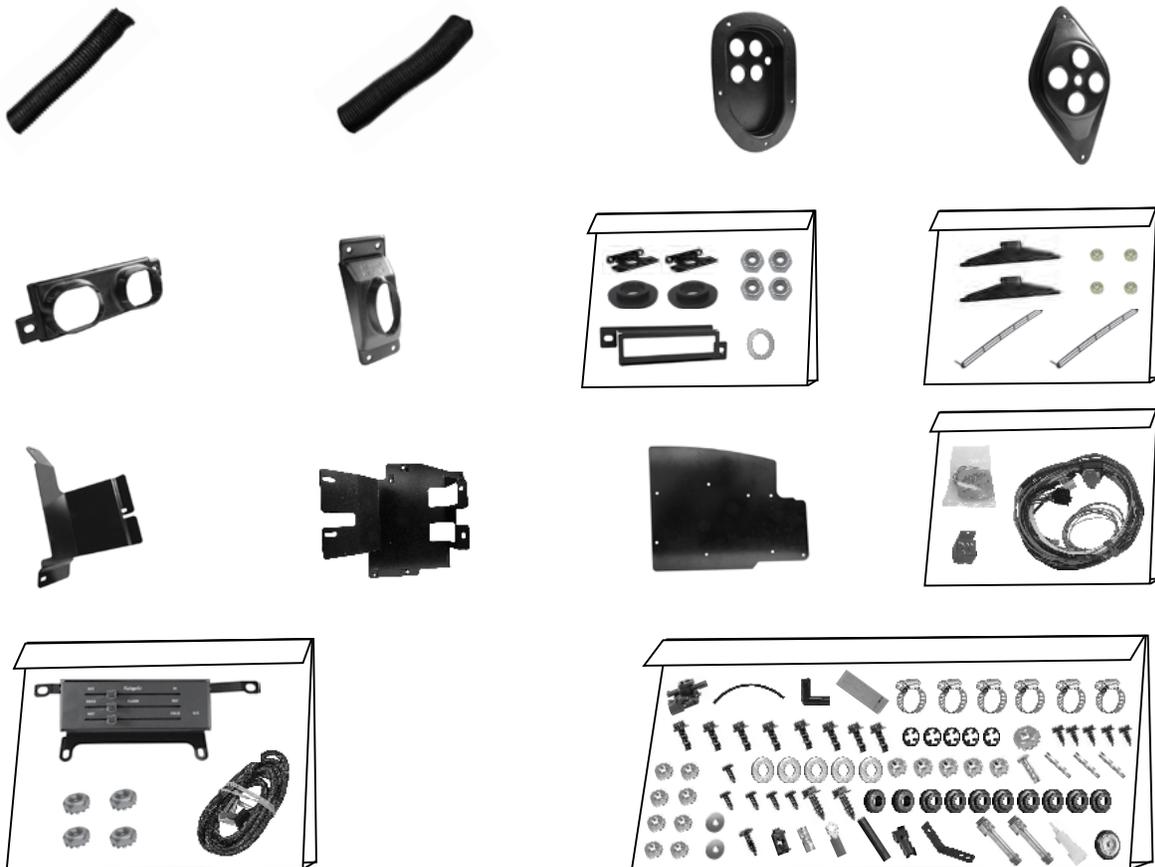
**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

1



Gen IV Evaporator
Sub Case
744021

2



Accessory Kit
784483

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



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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.



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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.



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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 the battery.
2. Drain the radiator.
3. Evacuate the A/C system (if necessary).
4. Disconnect the OEM condenser and drier A/C hose fittings (See Photo 1, below).
5. Remove the OEM condenser and drier (See Photo 1, below). **NOTE: Only discard if installing a new Vintage Air condenser kit.**
6. Remove the OEM A/C lines from the compressor to the evaporator (discard) (See Photo 1, below).
7. Remove the OEM compressor and bracket (discard) (See Photo 1, below).
8. Remove the OEM heater hoses, A/C hoses, hardlines and muffler (discard) (See Photo 1, below).
9. Remove the passenger-side wheel.
10. Remove (12) inner fender bolts and (2) under fender bolts.
11. Carefully lower the inner fender to gain access to the OEM blower assembly.
12. Remove the OEM evaporator blower assembly (discard) (See Photo 2, below). **NOTE: To remove the evaporator and blower assembly (under the hood), and the air distribution system (under the dash), the factory manual recommends removing the passenger-side inner fender.**
13. Remove the (3) fresh air duct assembly mounting screws from the engine side (See Photo 3, below).
14. Remove the A/C and heater wiring/vacuum harness, blower relay and molded grommet (discard) (See Photo 4, below).

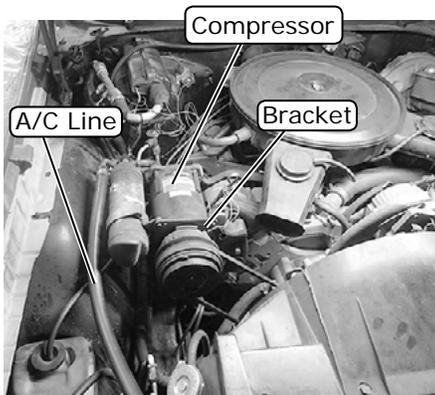


Photo 1

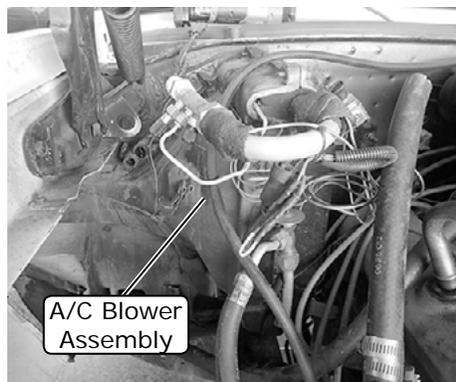


Photo 2



Photo 3

Remove A/C and Heater Wiring/
Vacuum Harness, Blower Relay
and Molded Grommet



Photo 4



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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

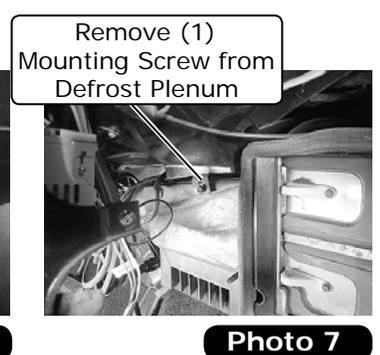
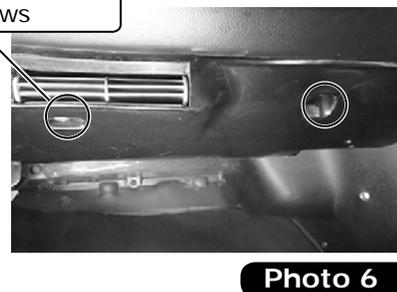
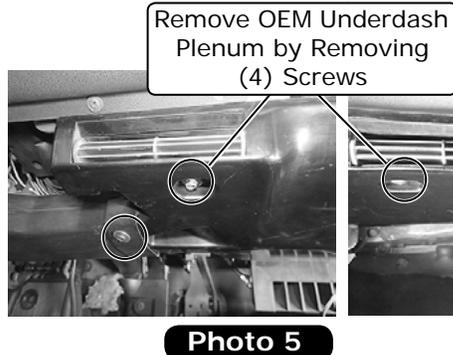
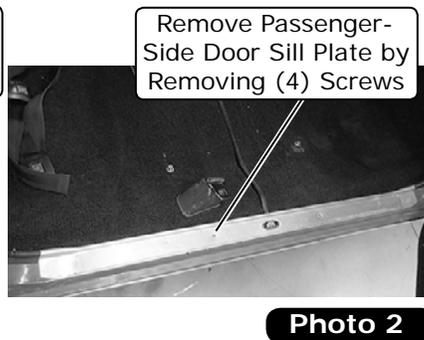
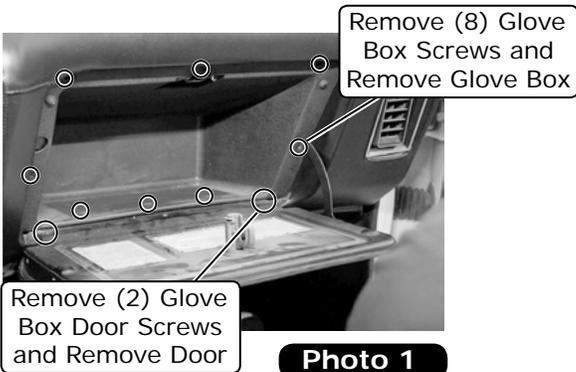
1. Refer to separate instructions included with the bracket kit to install the compressor bracket.

Passenger Compartment Disassembly

NOTE: For ease of installation, Vintage Air recommends removing the front seats.

Perform the following:

1. Remove (8) glove box screws and remove the glove box (See Photo 1, below).
2. Remove (2) glove box door screws and remove the door (See Photo 1, below).
3. Remove the passenger-side door sill plate by removing (4) screws (retain) (See Photo 2, below). **NOTE: In order to remove the OEM kick panel, the door sill plate must be removed.**
4. Remove the passenger-side kick panel by removing (2) screws (retain) (See Photo 3, below).
5. Remove the vacuum lines from the fresh air vent actuator. Remove the kick panel vent by removing (5) screws and the connected duct system (retain hardware) (See Photo 4, below).
6. Remove the OEM underdash plenum by removing (4) screws (discard) (See Photos 5 and 6, below). **NOTE: This part will not be reconnected.**
7. Remove (1) mounting screw from the defrost plenum (See Photo 7, below).





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Passenger Compartment Disassembly (Cont.)

8. Remove the A/C and heater assembly by removing (2) mounting screws (See Photos 8 and 9, below).
9. Remove the cables and plugs from the A/C and heater assembly. Remove the assembly from the vehicle (discard) (See Photos 10 and 11, below).
10. Unbend the defrost duct retaining clips and remove the defrost plenum (discard) (See Photo 12, below).
11. Unplug the radio connections, then remove the radio. **NOTE: The radio must be removed for clearance when installing new A/C components.**
12. Remove the A/C control panel light by pulling the light from the housing (See Photo 13, below).
13. Disconnect all control panel switches and plugs (See Photo 14, below).
14. Remove (4) control panel mounting nuts ((2) on each side of the control panel) and (1) support bracket screw. Remove the control panel from the vehicle (discard control panel) (See Photos 15, 16, and 17 below).

Remove A/C and Heater Assembly by Removing (2) Mounting Screws

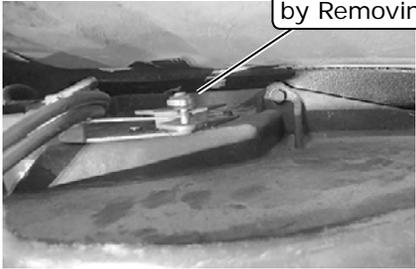


Photo 8

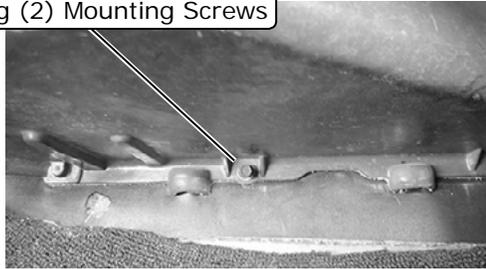


Photo 9

Remove Cables and Plugs from A/C and Heater Assembly

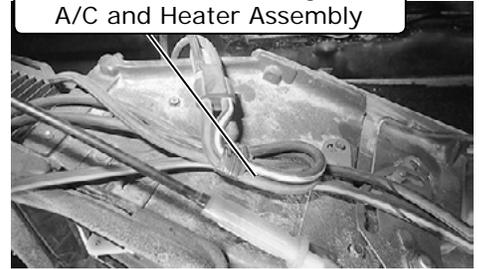
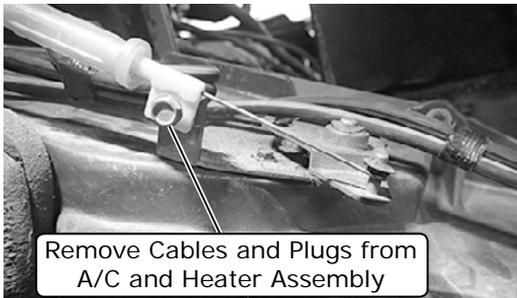


Photo 10



Remove Cables and Plugs from A/C and Heater Assembly

Photo 11

Unbend Defrost Duct Retaining Clips and Remove Defrost Plenum

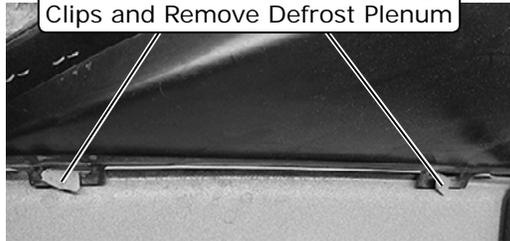
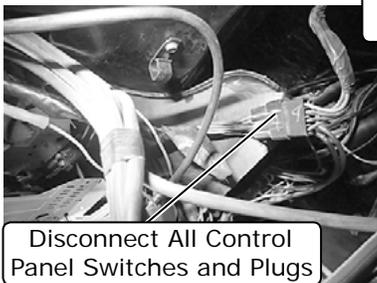


Photo 12



Remove A/C Control Panel Light by Pulling Light from Housing

Photo 13



Disconnect All Control Panel Switches and Plugs

Photo 14

Remove (4) Control Panel Mounting Nuts ((2) on Each Side of the Control Panel)

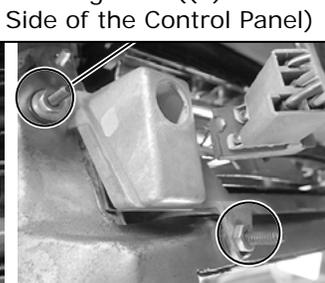


Photo 15

Remove (4) Control Panel Mounting Nuts ((2) on Each Side of the Control Panel)



Photo 16

Remove (1) Support Bracket Screw

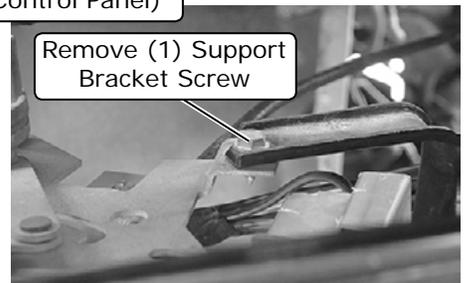


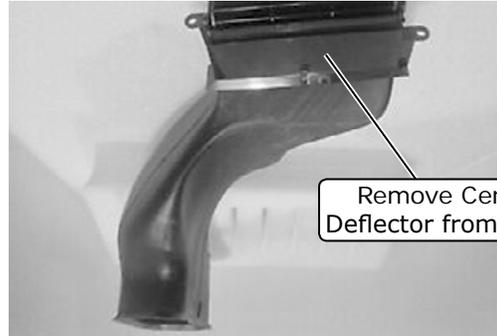
Photo 17



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Passenger Compartment Disassembly (Final)

15. Remove the OEM center vent A/C duct from the back of the dash by removing (2) nuts. Remove the center louver deflector from the OEM housing (See Photo 18, below). **NOTE: The center louver deflector will be reused, and the center duct will be discarded.**



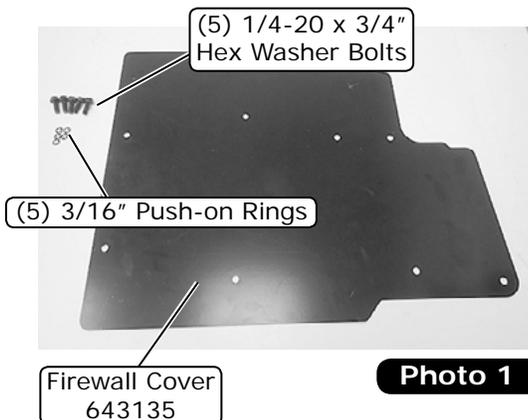
Remove Center Louver Deflector from OEM Housing

Photo 18

Firewall Cover Preparation

Perform the following on a workbench:

1. Install (5) 1/4-20 x 3/4" hex washer bolts with (5) 3/16" push-on rings as shown in Photos 1 and 2, below.



Firewall Cover 643135

Photo 1

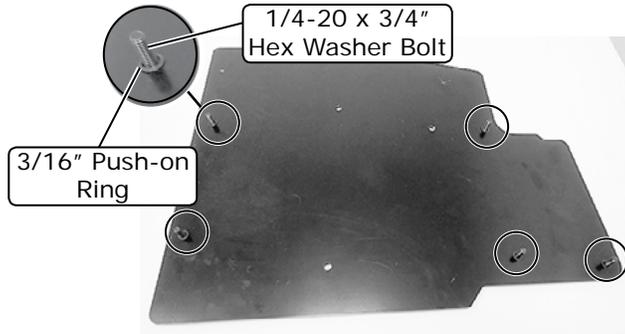


Photo 2

Firewall Modification

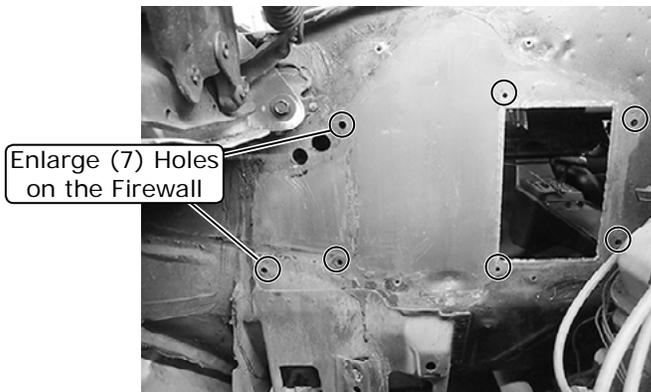
NOTE: The firewall requires a modification for the firewall cover and drain hose to be installed.

1. Flatten the edges of the firewall opening (See Photo 1, below).
2. Enlarge (7) holes on the firewall using a 19/64" drill bit (See Photo 2, below). **NOTE: Some holes may already be at 19/64" or larger.**



Flatten Edges of Firewall Opening

Photo 1



Enlarge (7) Holes on the Firewall

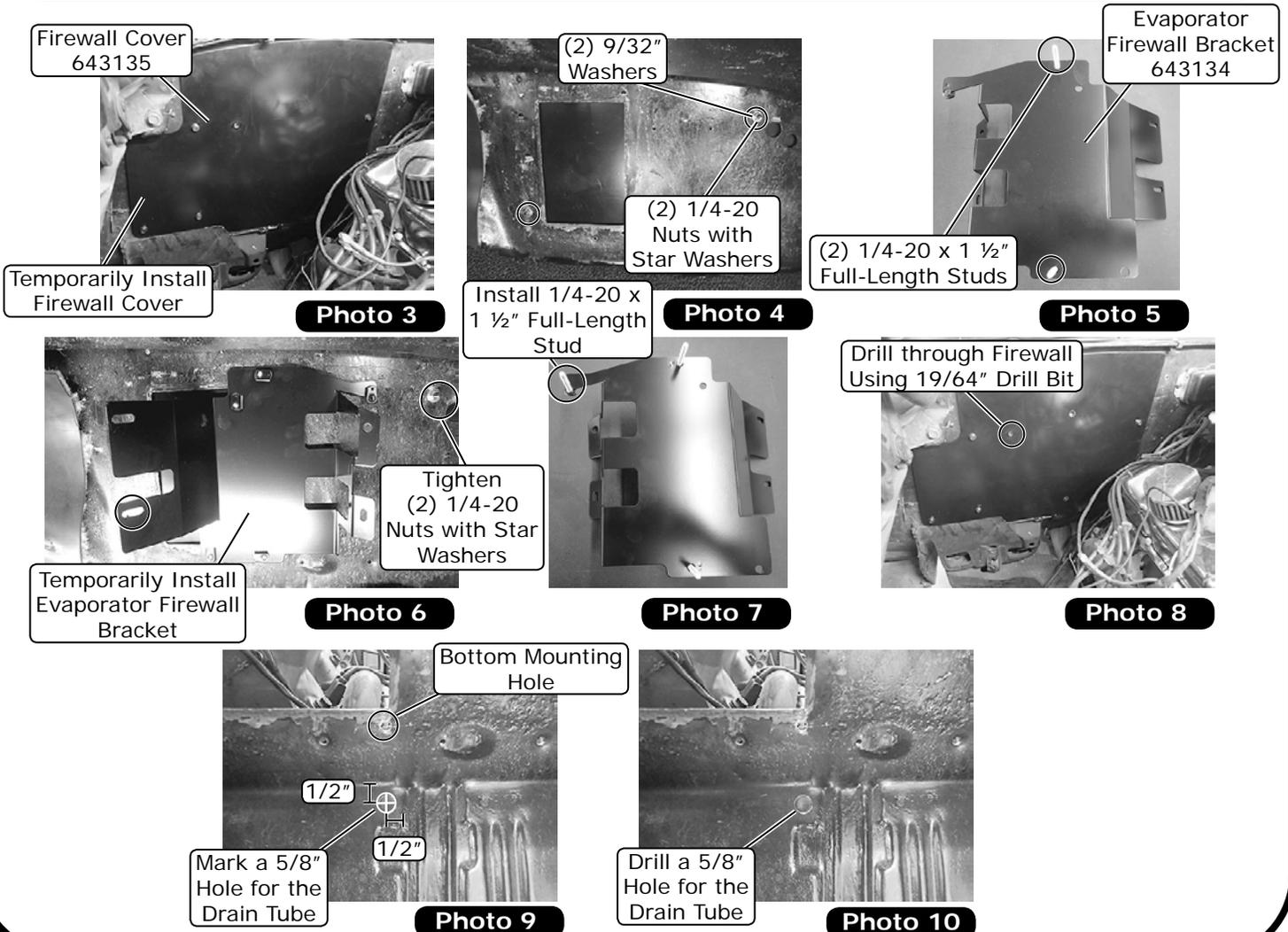
Photo 2



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Firewall Modification (Cont.)

3. Temporarily install the firewall cover onto the firewall (See Photo 3, below).
4. From the passenger compartment, loosely secure the firewall cover using (2) 9/32" washers and (2) 1/4-20 nuts with star washers (See Photo 4, below).
5. Install (2) 1/4-20 x 1 1/2" full-length studs into the evaporator firewall bracket (See Photo 5, below).
NOTE: Verify correct location of studs.
6. From inside the passenger compartment, temporarily install the evaporator firewall bracket onto the firewall as shown in Photo 6, below.
7. Once the evaporator firewall bracket is in place, tighten the (2) 1/4-20 nuts with star washers that were previously installed. **NOTE: This is to confirm all the components will line up correctly before the final installation.**
8. Remove the evaporator firewall bracket and install a 1/4-20 x 1 1/2" full-length stud into the remaining weld nut on the bracket (See Photo 7, below).
9. From the engine compartment, drill the remaining mounting hole using a 19/64" drill bit, using the firewall cover as a template (See Photo 8, below).
10. Remove the (2) 1/4-20 nuts with star washers and (2) 9/32" washers from the firewall cover.
11. Remove the firewall cover from the engine compartment.
12. Using the bottom mounting hole next to the firewall opening as a reference and, directly below the crease to the left of the stamping, measure 1/2" down and 1/2" to the left (See Photo 9, below). Mark and drill a 5/8" hole for the drain tube (See Photo 10, below). **NOTE: To ensure a tight fit for the drain hose, do not enlarge the hole to more than 5/8".**





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Firewall Cover Installation

NOTE: For proper system operation, Vintage Air recommends using heat-blocking insulation in the area around the evaporator unit (firewall, kick panel, inner cowl, firewall covers). 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 bead of silicone around the mating surface of the firewall cover (See Photo 1, below).
2. Install the firewall cover onto the firewall using (5) 1/4-20 x 3/4" hex washer bolts that were previously installed. From the passenger compartment, install (5) 9/32" washers and (5) 1/4-20 nuts with star washers (See Photo 2, below). **NOTE: Do not fully tighten nuts at this time.**
3. Temporarily install the evaporator firewall bracket to ensure all mounting holes line up (See Photo 3, below), then tighten all hardware. **NOTE: Wait until the silicone cures on the firewall cover, then remove the evaporator bracket.**

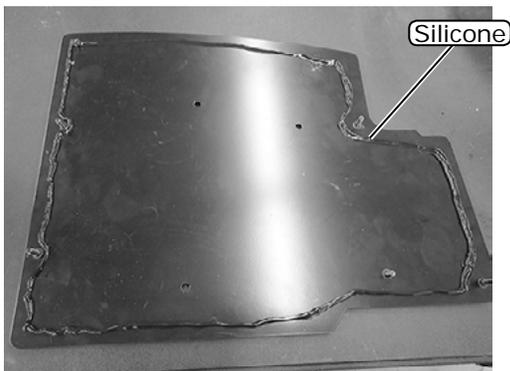


Photo 1

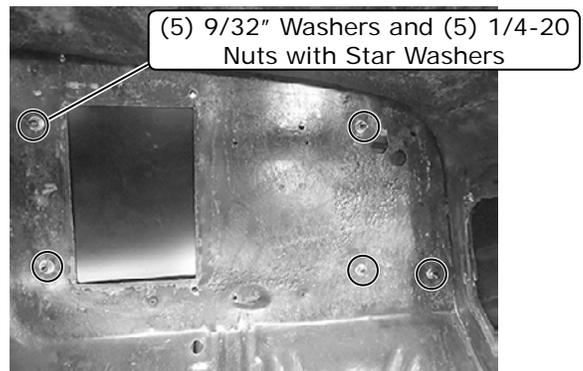


Photo 2

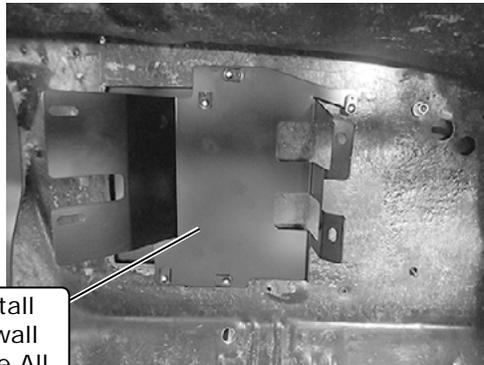
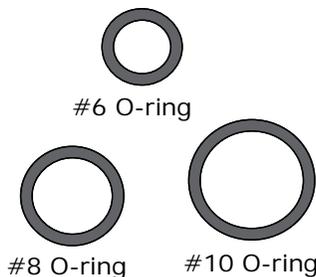
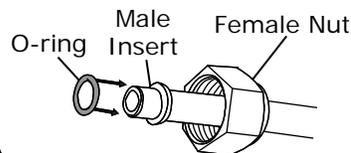


Photo 3

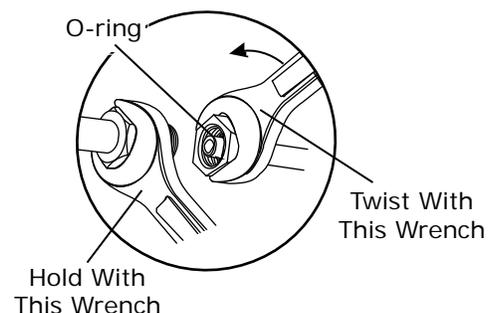
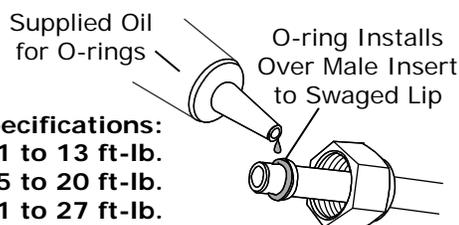
Lubricating O-rings



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 supplied oil.





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Evaporator Bracket & Heater Hardline Installation

NOTE: Use caution while removing heater core caps; they are under pressure. After cap is removed, be sure that the rubber insert is also removed (See Photos 1 and 2, below).

Perform the following on a workbench:

1. Install the upper and lower heater hardlines onto the evaporator unit using (2) properly lubricated #10 O-rings (See Photo 3, below, and Lubricating O-rings, Page 11).
2. Install the evaporator firewall bracket using (4) 1/4-20 x 1/2" bolts supplied on the evaporator unit (See Photo 4, below).



Photo 1



Photo 2

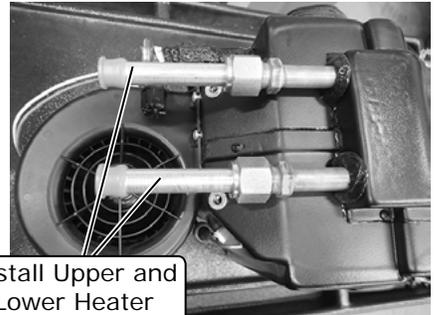
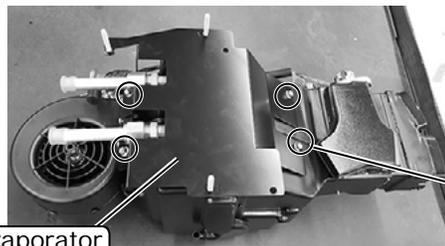


Photo 3

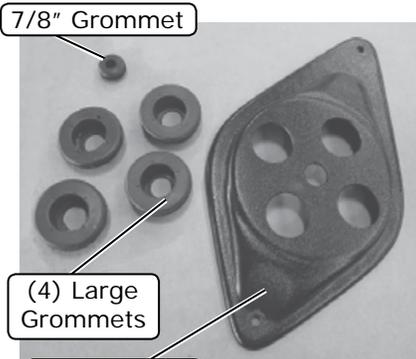


Install Evaporator Firewall Bracket

Photo 4

Fresh Air Cap & Kick Panel Cover Preparation

1. Install (4) large grommets and a 7/8" grommet into the fresh air cap (See Photos 1 and 2, below).
2. On the inside of the fresh air cap, the letter "T" indicates the top mounting hole for the firewall (See Photo 3, below).



Fresh Air Cap 622230

Photo 1

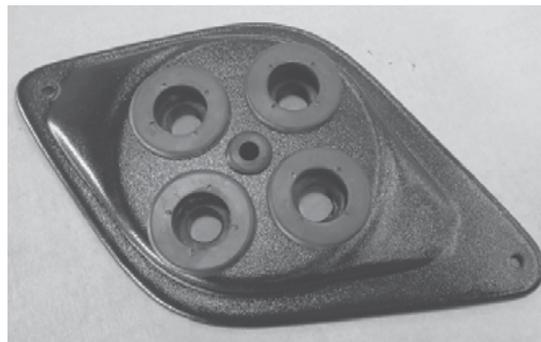


Photo 2

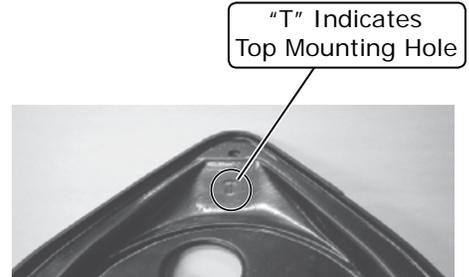


Photo 3



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Fresh Air Cap & Kick Panel Cover Preparation (Cont.)

3. Install (4) large grommets and a 7/8" grommet into the kick panel cover (See Photos 4 and 5, below).

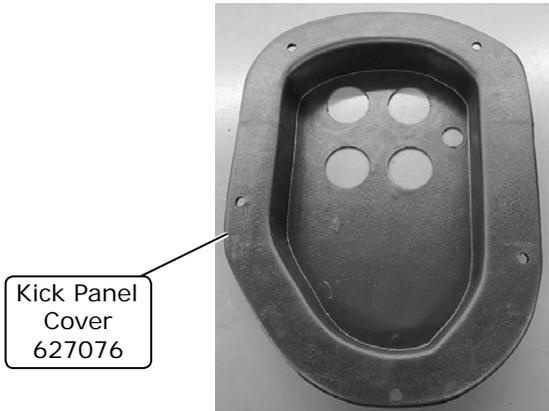


Photo 4

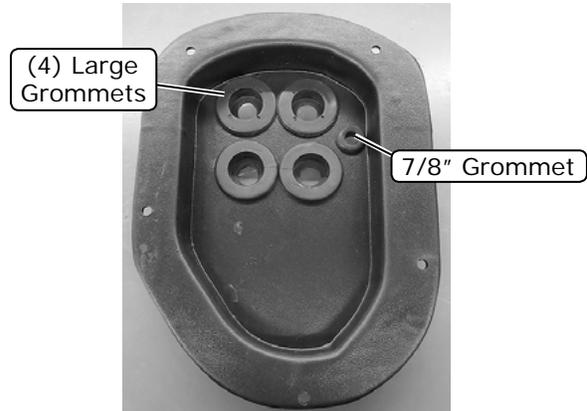


Photo 5

Defrost Duct and Grille Installation

NOTE: The 1969 GTO has limited space behind the gauge cluster. If you find it difficult to secure the driver side defrost duct, the gauge cluster must be removed for clearance. For an easier installation of the duct hose onto the defrost ducts, Vintage Air recommends connecting a piece of duct hose onto the defrost duct before securing the hose adapters under the dash. Duct hose routing is shown on Page 20.

1. Remove the grilles from the defrost ducts by removing (2) 10-32 nuts with star washers on each duct.
2. Insert the driver side grille into the dash opening from the top of the dash as shown in Photo 1, below. Install the defrost duct from under the dash over the defrost duct grille studs as shown in Photo 2, below. Center the duct and grille, then tighten the nuts with star washers (See Photo 3, below). **NOTE: The driver side defrost duct has more angle for gauge cluster clearance (627075 stamped in plastic as shown in Photo 4, below). When securing, do not overtighten the mounting hardware. This will cause the defrost grille to bow and not sit flush in the dash opening.**
3. Repeat steps for other grille.

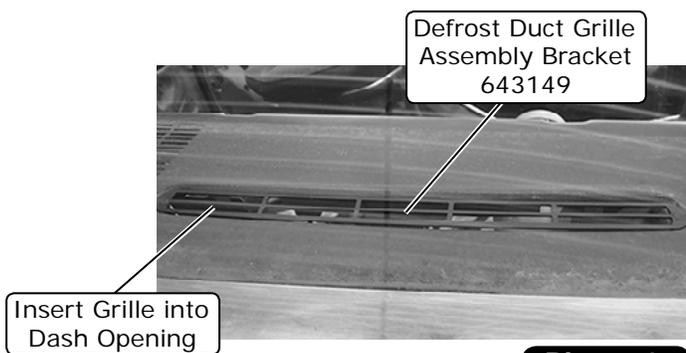


Photo 1

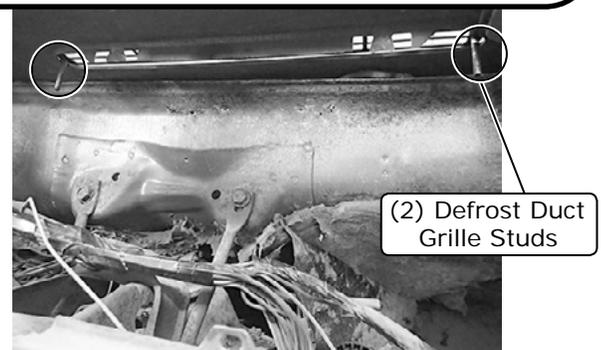


Photo 2

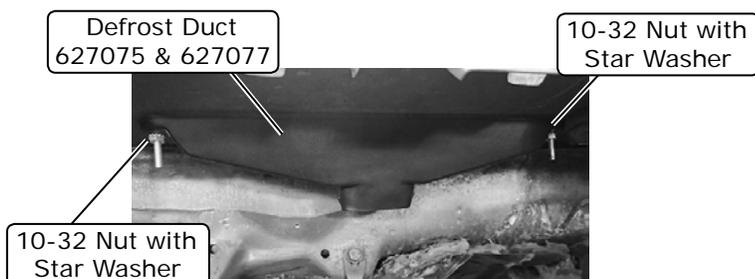


Photo 3

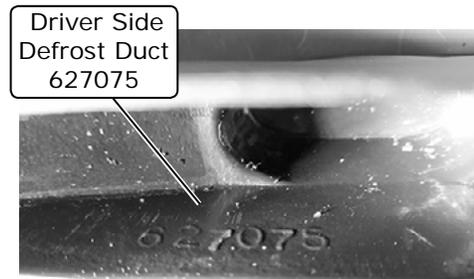


Photo 4



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Center and Side Louver Hose Adapter Installation

1. Locate the center louver housing kit part #593124.
2. Install (2) nylon sleeve washers onto the OEM louver ((1) on each side) (See Photo 1, below).
3. Slide the louver with sleeve washer into the center louver ear bracket that is secured to the main assembly bracket (See Photo 2, below).
4. Install the second center louver ear bracket onto the OEM louver, and insert it into the main assembly bracket. Secure the bracket using (2) 4-40 nylon locknuts (See Photo 3, below).
5. Once the louver is secured and the locknuts are fully tightened, rotate the louver to make sure it is not too loose or it will rotate with the air flow. If the louver is too loose, install the additional nylon flat washer provided between the nylon sleeve washer and the louver (See Photo 4, below).
6. Install the center louver bracket assembly into the dash opening on the OEM dash studs (See Photo 5, below).
7. Install the dual hose adapter over the OEM studs, and secure using (2) #8 flat washers and (2) 10-24 nuts with star washers (See Photos 6 and 7, below).
8. Install the driver- and passenger-side louver hose adapters over the OEM studs and secure them with (8) 10-24 nuts with star washers (See Photos 8 and 9, below).

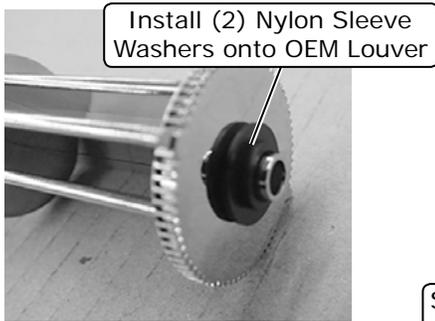


Photo 1

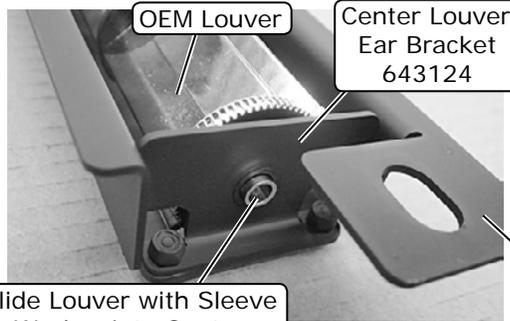


Photo 2

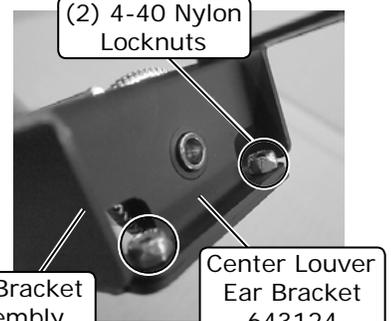


Photo 3



Photo 4

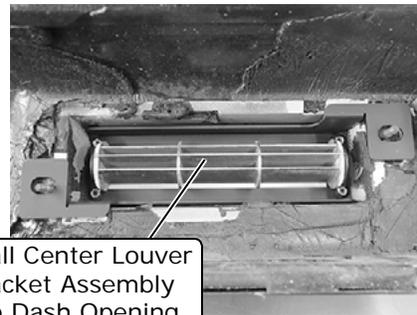


Photo 5

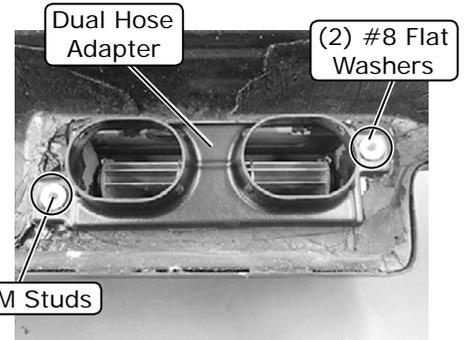


Photo 6

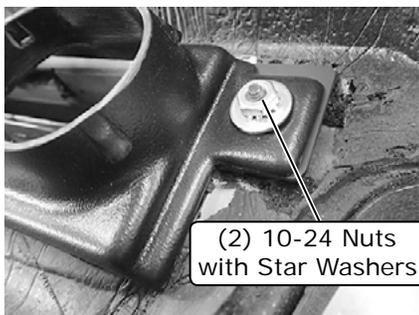


Photo 7

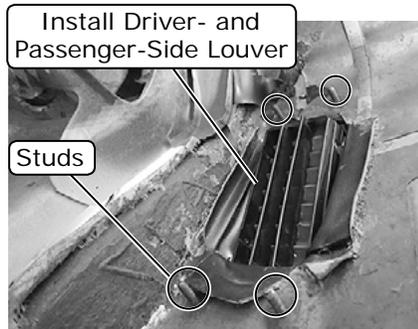


Photo 8

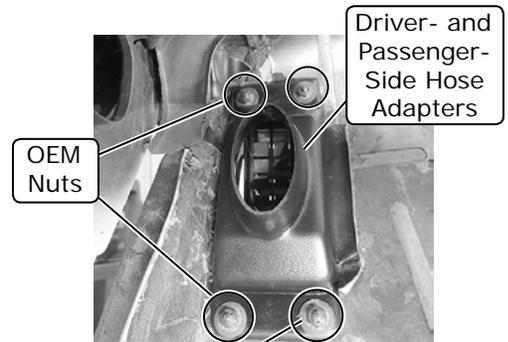


Photo 9
Secure with (8) 10-24 Nuts with Star Washers



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Wiring Installation

1. From the passenger compartment, route the heater control valve connector and wiring (red, white and green) through the 7/8" grommet in the kick panel cover (See Photo 1, below). **NOTE: Leave approximately 1" of wiring between the kick panel cover and the harness connector. This allows enough wiring to reach the harness (See Photo 1, below).**
2. Disconnect the circuit breaker from the main wiring harness (See Photo 2, below).
3. Route the red, white and blue wires from the main wiring harness through the 7/8" grommet in the kick panel cover, into the kick panel opening, and then into the engine compartment. **NOTE: Leave approximately 5" of wiring between the relay and the kick panel cover. This allows enough wiring to secure the relay to the mounting position (See Photos 3 and 4, below).**
4. Route the heater control valve wiring (red, white and green) through the 7/8" grommet in the fresh air cap (See Photo 5, below).
5. Route the main harness wiring (red, white and blue) through the 7/8" grommet in the fresh air cap (See Photo 5, below).

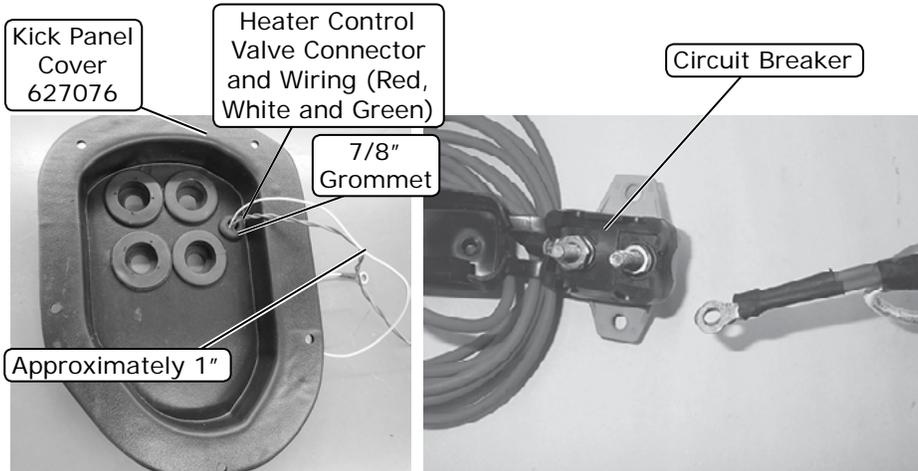


Photo 1

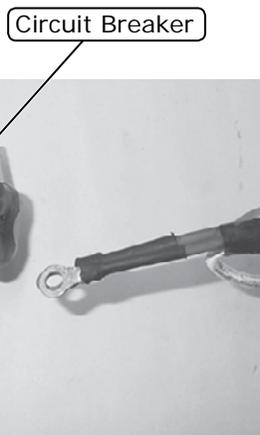


Photo 2

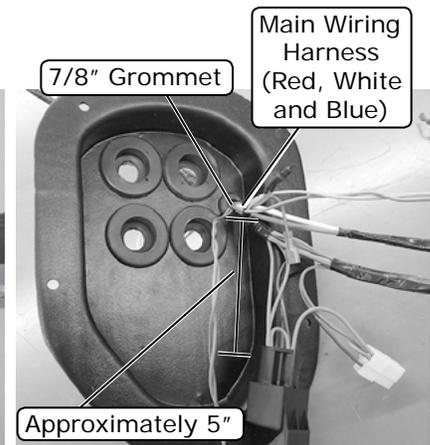
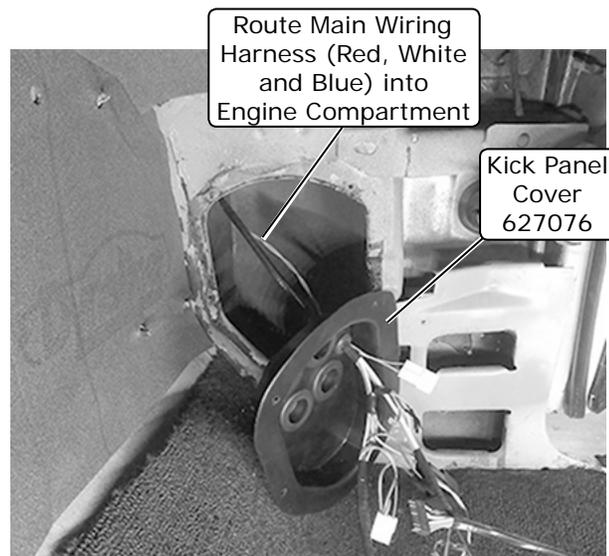
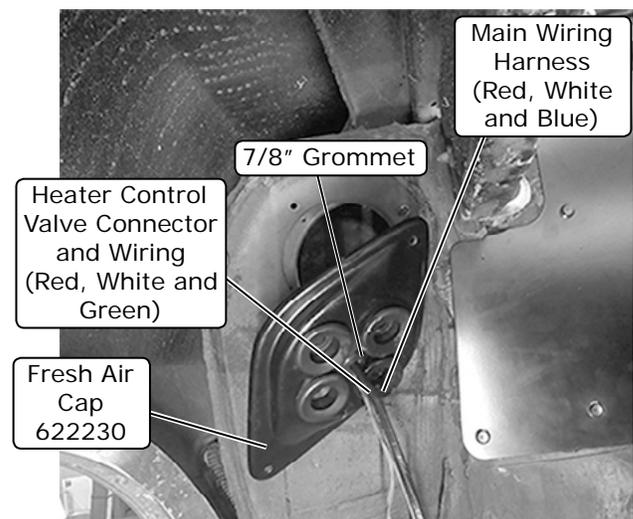


Photo 3



Passenger Compartment View

Photo 4



Engine Compartment View

Photo 5

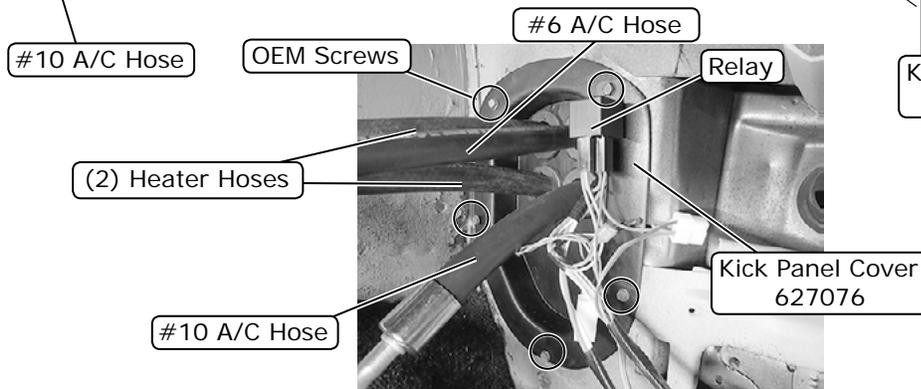
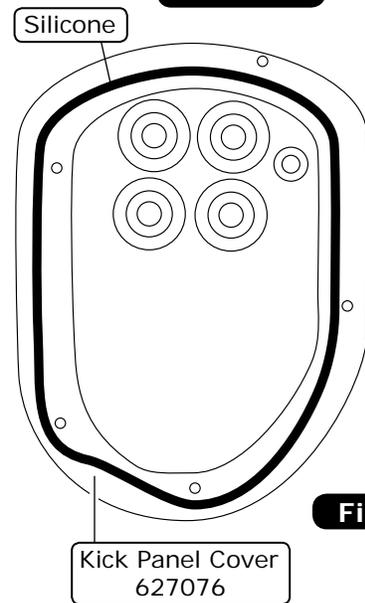
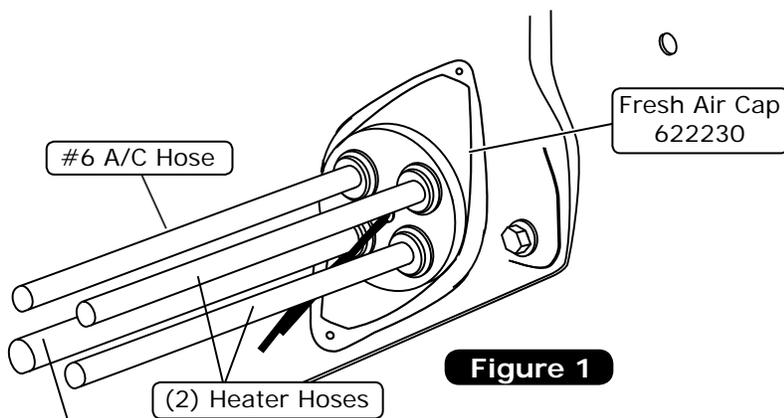
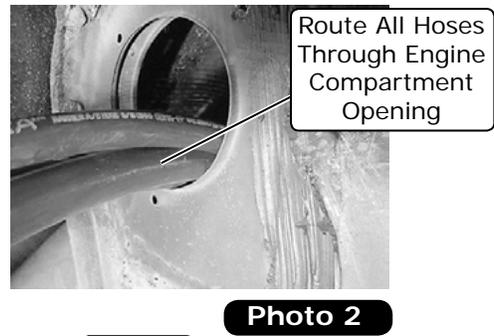
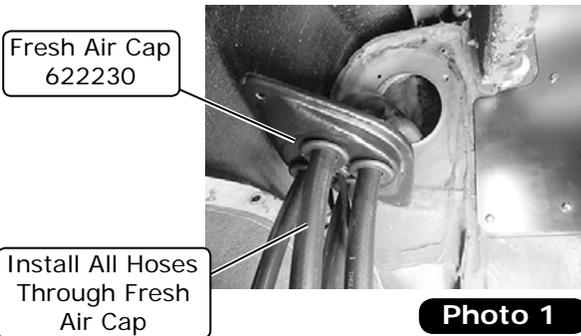


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A/C & Heater Hoses and Kick Panel Cover Installation

NOTE: Install all hoses through the fresh air cap grommets (See Photo 1, below), then into the opening in the engine compartment through the kick panel opening (See Photo 2 and Figure 1, below).

1. Insert a length of heater hose through the bottom-left large grommet on the kick panel cover.
2. Insert a length of heater hose through the top-left large grommet on the kick panel cover.
3. Insert the straight fitting of the #6 drier/evaporator A/C hose through the top-right large grommet on the kick panel cover.
4. Insert the 90° fitting on the #10 compressor/evaporator A/C hose through the bottom-right large grommet on the kick panel cover. **NOTE: Temporarily remove the large grommet from the kick panel cover to ease the insertion of the #10 hose fitting.**
5. Apply 1/4" bead of silicone around the back side of the kick panel cover (See Figure 2, below).
6. Secure the kick panel cover using OEM screws and attach the relay to upper-right mounting hole when securing (See Photo 3, below).



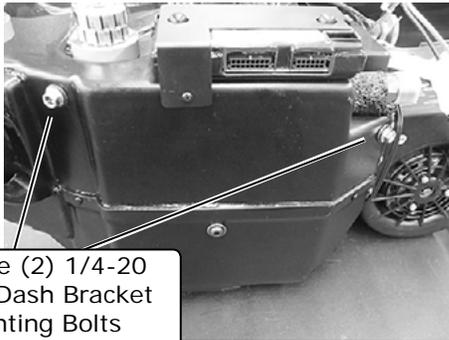


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Evaporator Installation

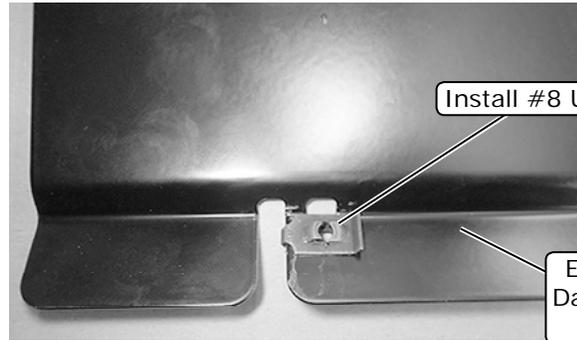
NOTE: Remove the (2) 1/4-20 x 1/2" dash bracket mounting bolts supplied on the evaporator (See Photo 1, below). To ensure a watertight seal between the passenger compartment and the exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

1. Install a #8 U-nut onto the evaporator dash bracket (See Photo 2, below).
2. Place the evaporator unit on the passenger-side floorboard, and install the straight fitting of the #6 drier/evaporator A/C hose onto the expansion valve on the evaporator unit using a properly lubricated O-ring (See Photo 3, below and Lubricating O-rings, Page 11).
3. Install the upper and lower heater hoses onto the upper and lower heater hardlines on the evaporator unit, then secure using (2) hose clamps (See Photo 4, below).
4. Lift the evaporator unit into place, using the 1/4-20 x 1 1/2" full-length studs on the evaporator firewall bracket to locate the mounting holes.
5. Place the evaporator dash bracket into position between the evaporator and the dash (See Photo 5, below).
6. Loosely install the evaporator dash bracket to the evaporator with the (2) previously removed 1/4-20 x 1/2" bolts (See Photo 6, below).



Remove (2) 1/4-20 x 1/2" Dash Bracket Mounting Bolts (Supplied on Sub Case)

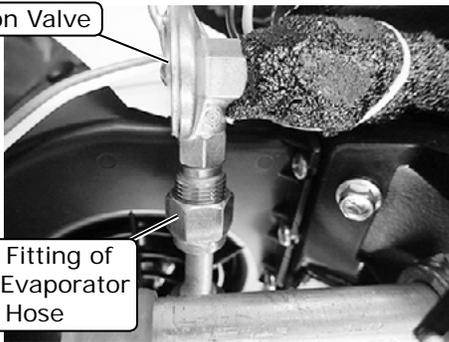
Photo 1



Install #8 U-nut

Evaporator Dash Bracket 643134

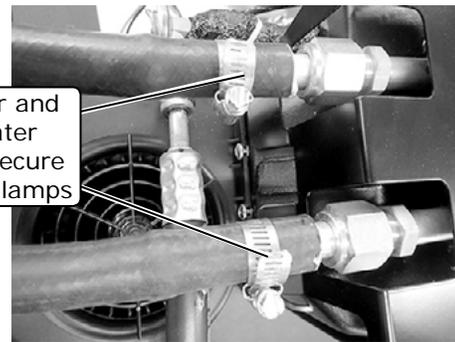
Photo 2



Expansion Valve

Straight Fitting of #6 Drier/Evaporator A/C Hose

Photo 3



Install Upper and Lower Heater Hoses and Secure Using Hose Clamps

Photo 4



Place Evaporator Dash Bracket into Position Between Evaporator and Dash

Photo 5



Loosely Install Evaporator Dash Bracket to Evaporator with (2) 1/4-20 x 1/2" Bolts

Photo 6



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Evaporator Installation (Cont.)

7. Install a #8 x 1/2" pan head screw through the lower dash into the dash bracket #8 U-nut (See Photo 7, below).
8. Install the 90° fitting of the #10 compressor/evaporator A/C hose onto the #10 fitting on the evaporator unit using a properly lubricated #10 O-ring (See Photo 8, below and Lubricating O-rings, Page 11).
9. Once the #10 fitting is installed, wrap all exposed metal with the supplied press tape (See Photo 9, below).
10. From the engine compartment, replace the (3) 1/4-20 x 1 1/2" full-length studs with (3) 1/4-20 x 3/4" hex washer bolts. **NOTE: Do not fully tighten at this time.**

Install #8 x 1/2"
Pan Head Screw

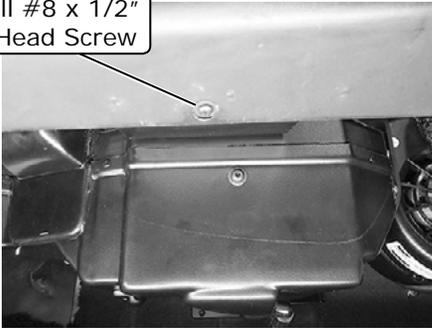


Photo 7

#10 Evaporator
Unit Fitting

90° Fitting

#10 Compressor/
Evaporator
A/C Hose

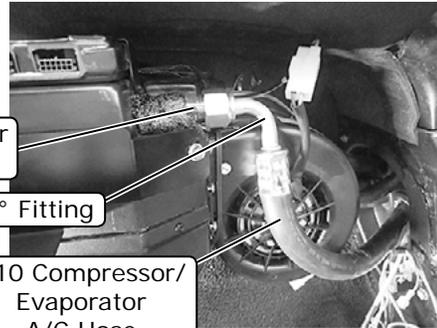


Photo 8

Wrap All Exposed
Metal with Supplied
Press Tape

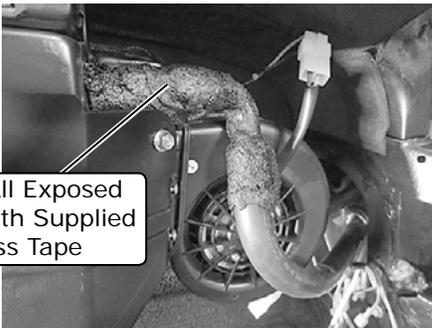


Photo 9

Replace (3) 1/4-20 x
1 1/2" Studs with (3)
1/4-20 x 3/4" Hex
Washer Bolts



Photo 10

Leveling

NOTE: To ensure proper drainage, it is 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 (See Photos 1 and 2, below).

1. Once the evaporator unit is leveled, tighten all mounting hardware ((3) bolts on the firewall and (2) on the dash bracket).



Photo 1



Photo 2



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Drain Hose Installation

1. Cut the drain hose at 9 ½", then insert the 1/2" drain elbow. Install the leftover drain hose onto the other outlet of the drain elbow (See Photo 1, below).
2. Insert the 9 ½" piece through the drain hole opening from the engine compartment and install it onto the drain outlet on the evaporator unit (See Photos 2 and 3, below).

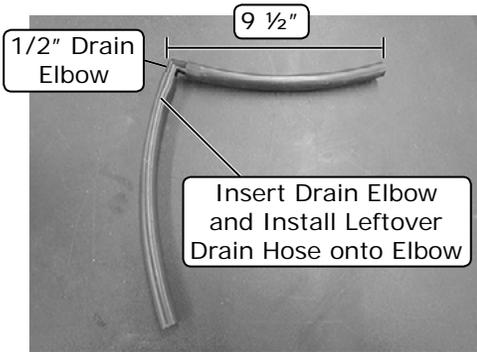


Photo 1

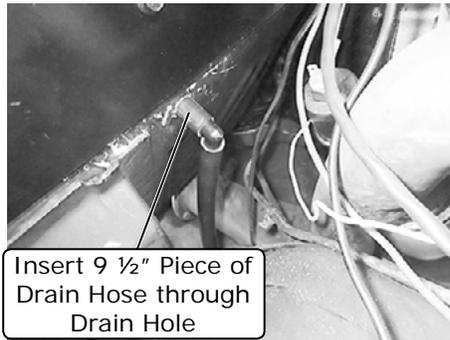


Photo 2



Photo 3

ECU Wiring Harness Installation

1. Route the violet power wire to a switched 12v power source on the fuse panel (See Photo 1, below).
2. Plug the white connector from the heater control valve into the white connector on the main wiring harness (See Photo 2, below).
3. Plug the white two-wire connector from the main wiring harness into the white connector on the blower motor (See Photo 3, below).
4. Plug the main wiring harness into the ECU (See Photo 4, below).
5. Connect the tan wire to the factory dash lights to enable control panel backlighting.

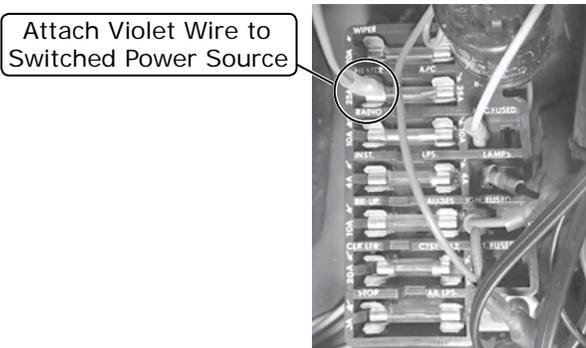


Photo 1

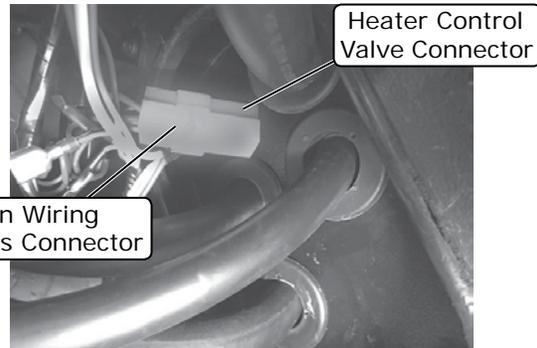


Photo 2

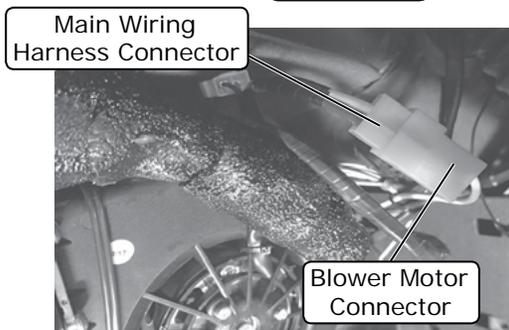


Photo 3

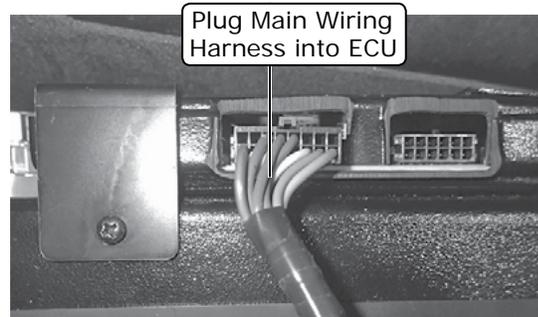


Photo 4



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Control Panel Installation

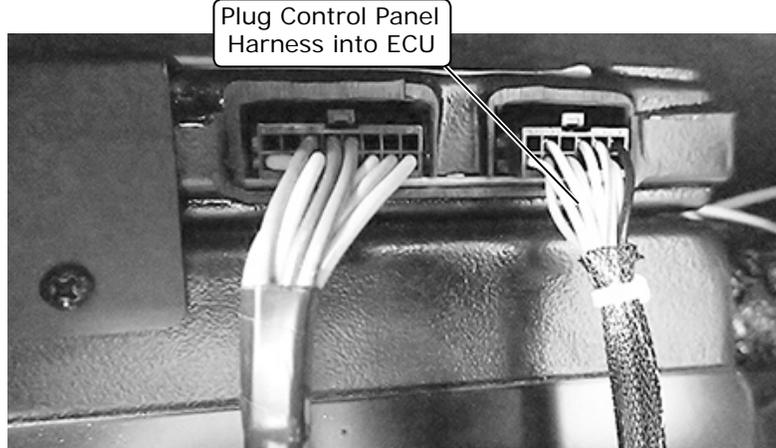
1. Install the new Vintage Air control panel into the dash opening and secure it using OEM hardware (See Photo 1, below). **NOTE: An additional (4) 10-24 nuts with star washers are included in the kit if OEM hardware is missing.**
2. Plug the control panel harness into the ECU (See Photo 2, below).



Install New Vintage Air Control Panel into Dash Opening

Secure Using OEM Hardware

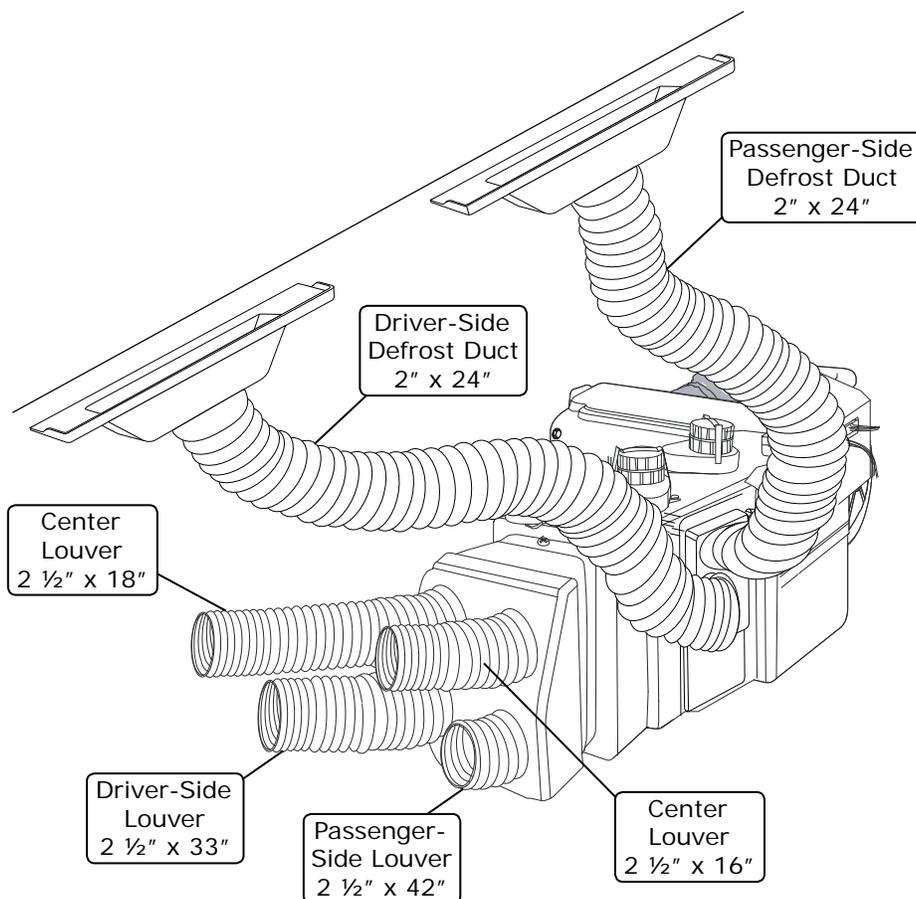
Photo 1



Plug Control Panel Harness into ECU

Photo 2

Duct Hose Routing





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Fresh Air Cap Installation

NOTE: The fresh air cap installs on the engine side of the firewall.

1. Gently pull the slack from the hoses in the passenger compartment, making sure the hoses are not kinked.
2. Slide the fresh air cap into position, and secure it to the firewall using (2) #14 x 3/4" sheet metal screws (See Photo 1, below).
3. Apply silicone around the outer edge of the fresh air cap (See Photo 1, below).

Apply Silicone
Around Fresh
Air Cap



Secure Fresh Air Cap
with (2) #14 x 3/4"
Sheet Metal Screws

Photo 1

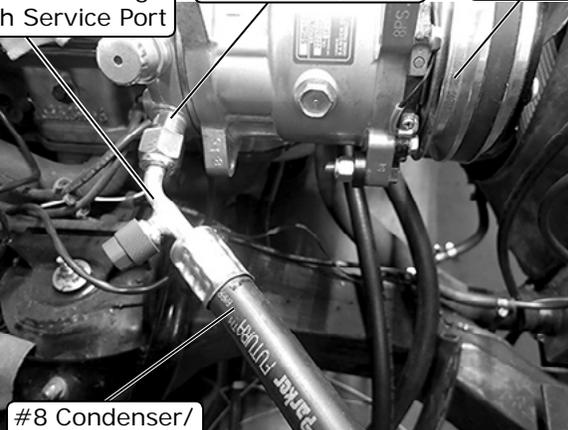
A/C Hose Installation

1. Locate the #8 condenser/compressor A/C hose. Lubricate (2) #8 O-rings (See Lubricating O-rings, Page 11), and connect the 45° fitting with service port to the #8 discharge port on the compressor (See Photo 1, below). Then route the straight fitting to the #8 condenser/core hardline coming from the condenser (See Photo 2, below). Tighten each fitting connection as shown in Lubricating O-rings, Page 11.

#8 45° Fitting
with Service Port

#8 Discharge Port

Compressor

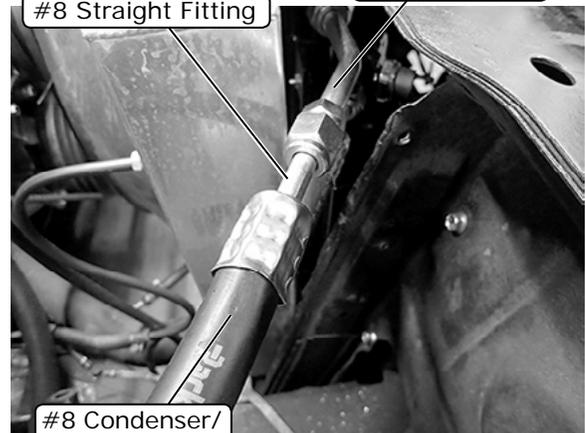


#8 Condenser/
Compressor
A/C Hose

Photo 1

#8 Condenser/
Core Hardline

#8 Straight Fitting



#8 Condenser/
Compressor
A/C Hose

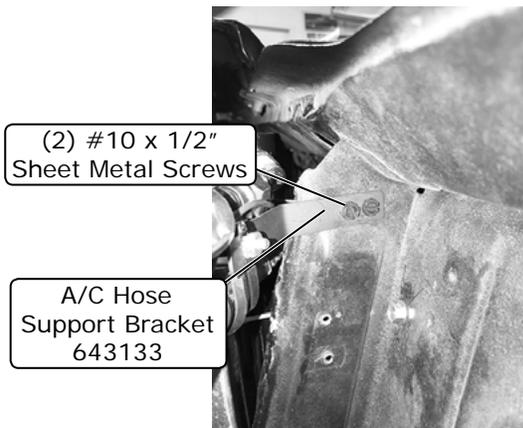
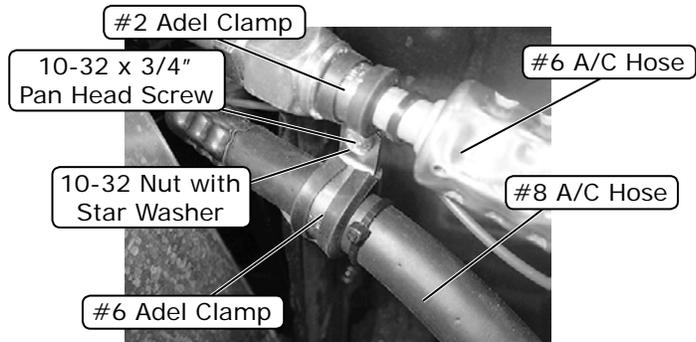
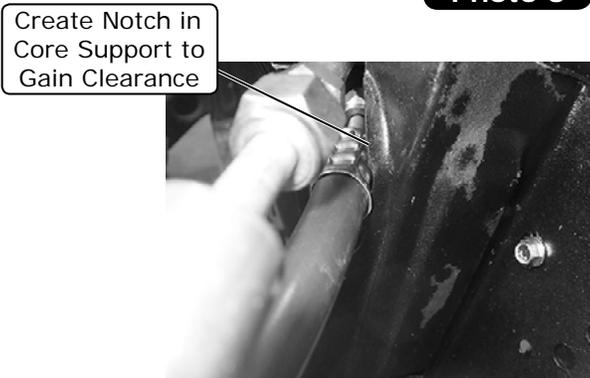
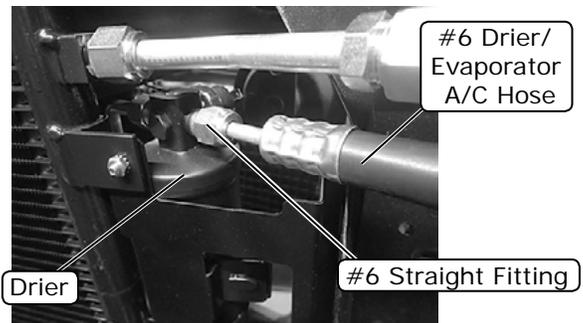
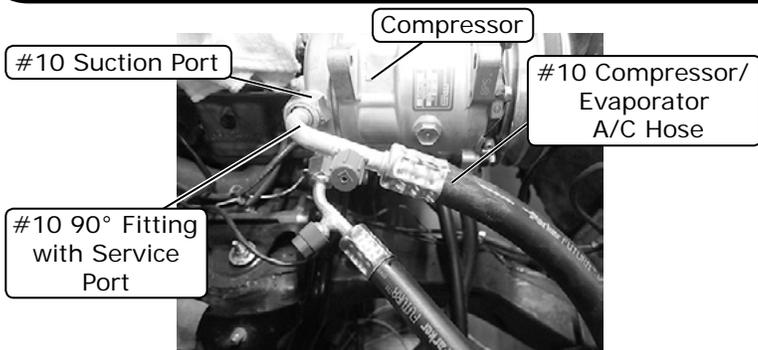
Photo 2



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A/C Hose Installation (Cont.)

2. Locate the #10 compressor/evaporator A/C hose. Lubricate a #10 O-ring (See Lubricating O-rings, Page 11) and connect the 90° fitting with service port to the #10 suction port on the compressor (See Photo 3, below). Tighten the fitting connection as shown in Lubricating O-rings, Page 11.
3. Locate the #6 drier/evaporator A/C hose (See Photo 4, below). Lubricate a #6 O-ring (See Lubricating O-rings, Page 11), and connect it to the drier. Tighten the fitting connection as shown in Lubricating O-rings, Page 11. **NOTE: Before fully tightening the #6 straight fitting to the drier, ensure that the fitting is not against the core support. If the fitting is against the core support, a small notch will have to be made to gain clearance and avoid damage to the hose (See Photo 5, below).**
4. Install a #2 and #6 Adel clamp onto the #6 and #8 A/C hoses. Secure the Adel clamps to the A/C hose support bracket with a 10-32 x 3/4" pan head screw and 10-32 nut with star washer (See Photo 6, below).
5. Secure the A/C hose support bracket to the core support using (2) #10 x 1/2" sheet metal screws (See Photo 7, below).





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Heater Control Valve Installation

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) or molded hose will need to be installed in the heater hose.

1. Route the previously installed lower heater hose from the lower heater core fitting to the water pump. Secure using hose clamps (See Photo 1, below).
2. Route a piece of heater hose (not provided) from the intake manifold to the heater control valve. Connect the heater hose from the upper heater core fitting to the heater control valve. Secure using hose clamps (See Photos 2 and 3, below). **NOTE: Ensure proper flow direction through the heater control valve - the flow direction follows the molded arrow on the valve (See Figure 1, below).**



Photo 1

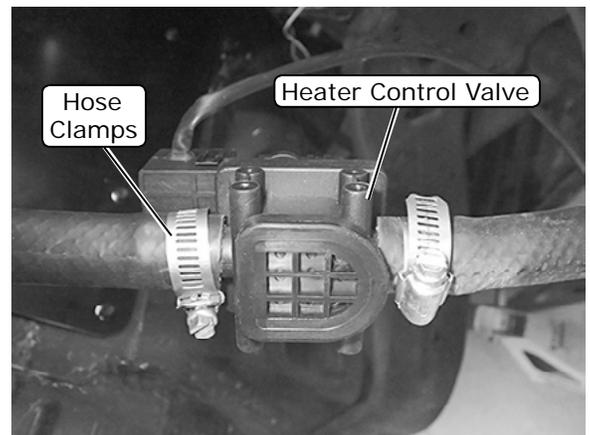


Photo 2

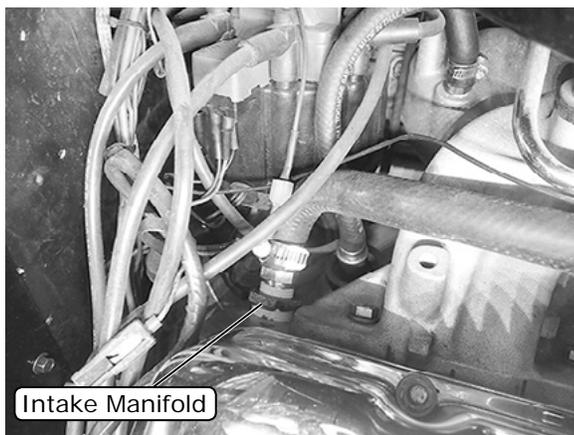


Photo 3

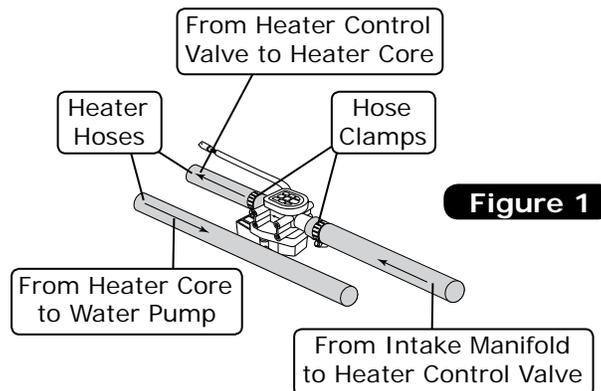


Figure 1

NOTE: Flow Direction Follows Molded Arrow on Valve



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Heater Control Valve Installation (Cont.)

3. Plug the heater control valve connector into the connector on the main wiring harness. Secure the white wire from the heater control valve portion of the main wiring harness to a suitable chassis ground (See Photos 4 and 5, below).

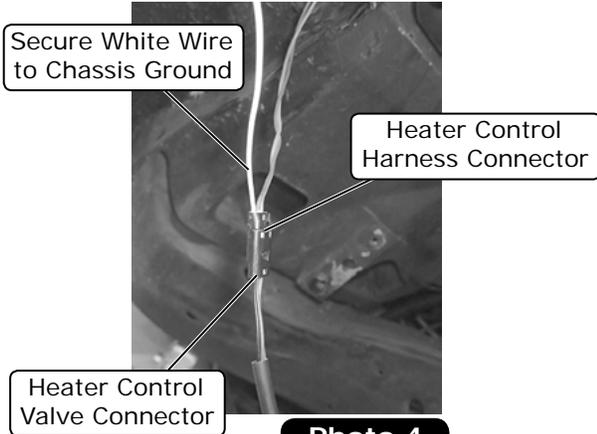


Photo 4



Photo 5

Wiring

1. Route the blue safety switch wire along the #6 A/C hose toward the drier, securing it using the supplied 4" tie wraps (See Photo 1, below).
2. Strip the blue safety switch wire and crimp the supplied 1/4" female terminal onto it. Connect the blue safety switch wire to the safety switch on the drier (See Photo 2, below).
3. Connect the blue terminal of the compressor lead to the compressor bullet terminal (See Photo 3, below).
4. Route the compressor lead along the #8 A/C hose and secure it using supplied 4" tie wraps.
5. Connect the 1/4" female terminal of the compressor lead to the safety switch on the drier (See Photo 4, below).

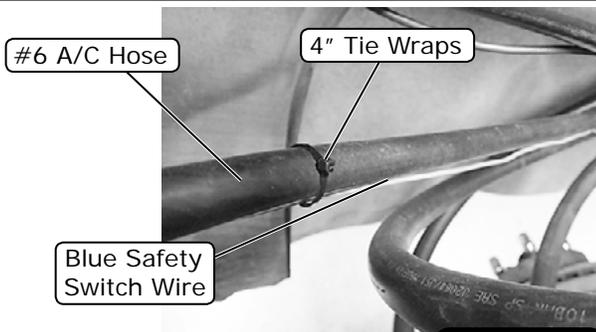


Photo 1

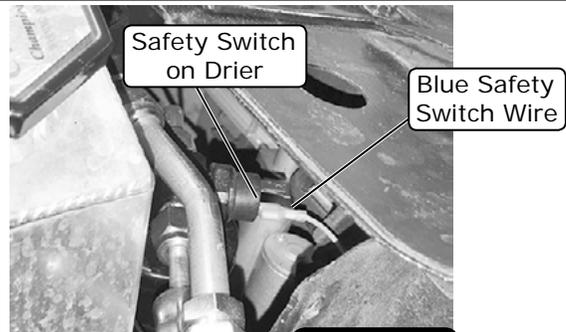


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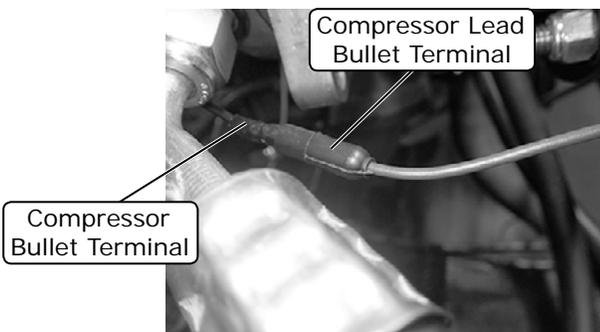


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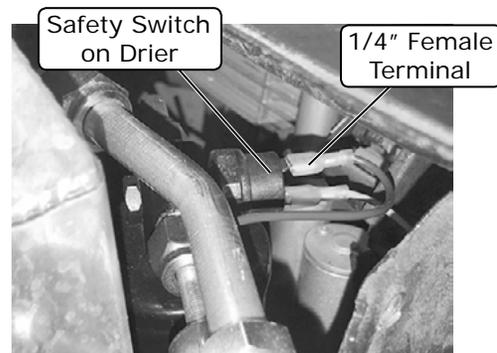


Photo 4



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Wiring (Cont.)

6. The power wire must be extended to reach the battery. Perform the following steps:
 - a. Cut the existing eyelets from the red power wires on the main harness (See Photos 1 and 2, below).
 - b. Strip the insulation from the red power wires, and crimp the supplied butt connector (See Photo 3, below).
 - c. Disconnect the red power wire from the circuit breaker. Strip the insulation from the red power wire, and slide the supplied heat shrink over the power wire. Crimp the power wire into the butt connector, and apply heat shrink (See Photos 4 and 5, below).
 - d. Route the red power and white ground wires toward the battery. **NOTE: Before the next step, select a location as close as possible to the battery to mount the circuit breaker.**
 - e. Mark, drill and mount the circuit breaker, secure it using (2) #10 x 1/2" sheet metal screws (See Photo 6, below). **NOTE: The copper stud on the circuit breaker goes to the battery.**
 - f. Cut the red power wire where needed, strip the insulation and crimp on the supplied ring terminal (See Photo 7, below).
 - g. Connect the red power wire outlet onto the silver stud on the circuit breaker (See Photo 8, below).
 - h. Connect the leftover red power wire eyelet onto the copper stud on the circuit breaker (See Photo 9, below).

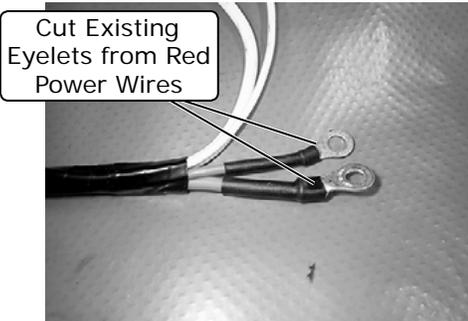


Photo 1



Photo 2

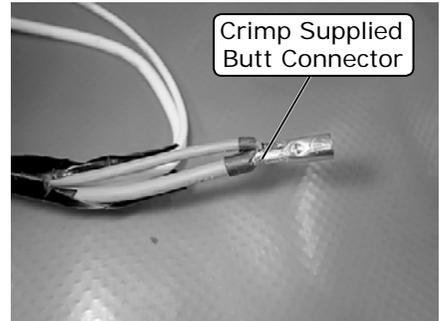


Photo 3

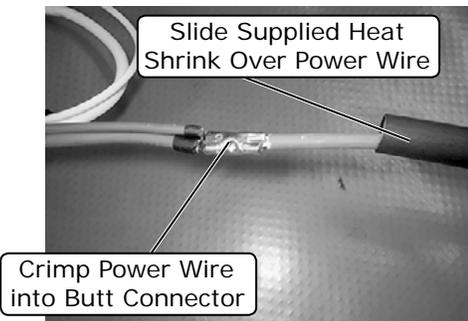


Photo 4

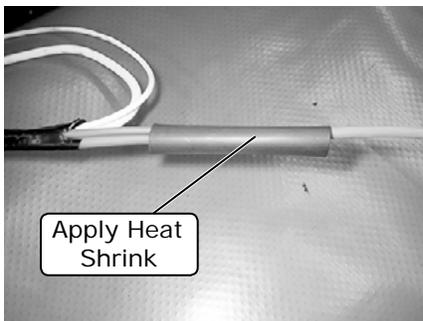


Photo 5

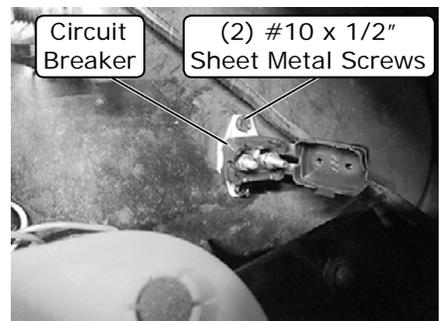


Photo 6

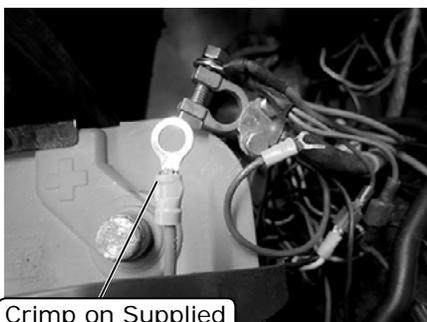


Photo 7



Photo 8



Photo 9



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Wiring (Final)

- i. Strip the insulation and crimp on the ring terminal supplied in the wiring kit. Connect the terminal to the positive side of the battery (See Photo 10, below).
- j. Strip the insulation from the white ground wiring, and crimp the supplied ring terminal onto it (See Photo 11, below). Connect it to the negative side of the battery.

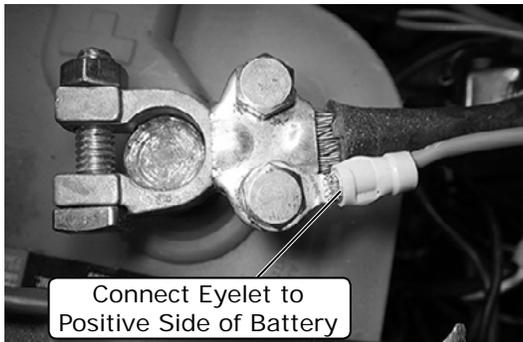


Photo 10

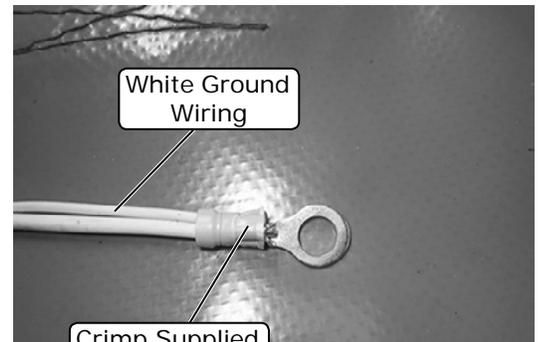


Photo 11

Final Steps

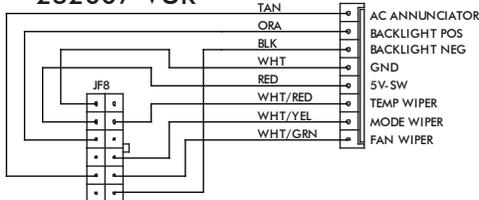
1. Modify the OEM passenger kick panel to clear all A/C and heater hoses and reinstall using OEM hardware.
2. Reinstall glove box door and OEM glove box using OEM hardware.
3. Reinstall all previously removed items.
4. Fill radiator with at least a 50/50 mixture of approved antifreeze and distilled water. 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.
5. Double-check all fittings, brackets and belts for tightness.
6. Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
7. Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
8. Charge the system to the capacities stated on Page 4 of this instruction manual.
9. See Operation of Controls procedures on Page 29.



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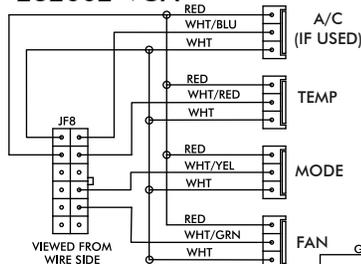
Wiring Diagram

232007-VUR



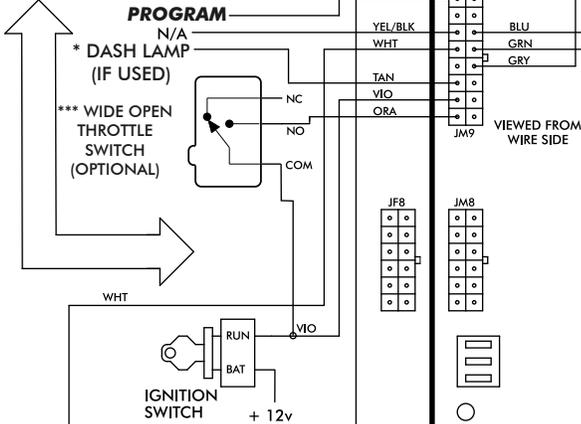
VIEWED FROM WIRE SIDE

232002-VUA



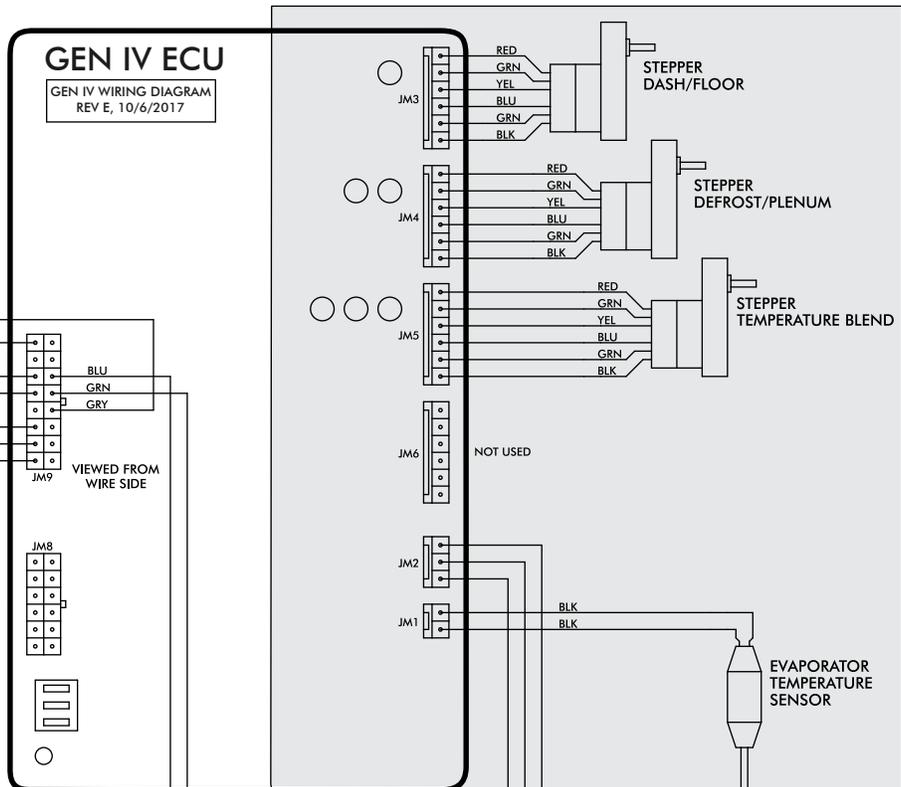
VIEWED FROM WIRE SIDE

PROGRAM

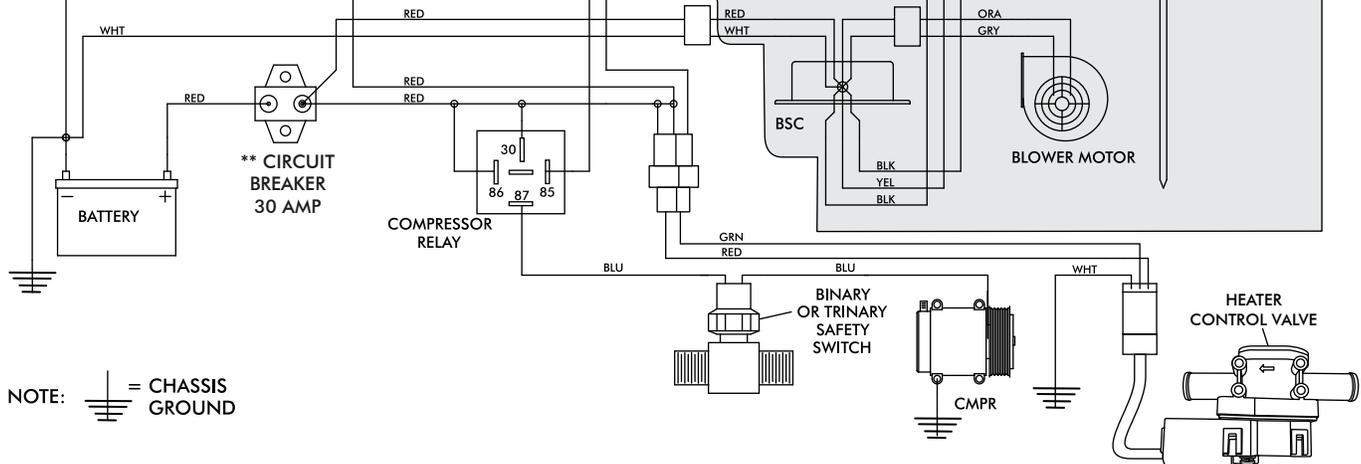


GEN IV ECU

GEN IV WIRING DIAGRAM
REV E, 10/6/2017



PRE-WIRED



NOTE: = CHASSIS GROUND

* 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).

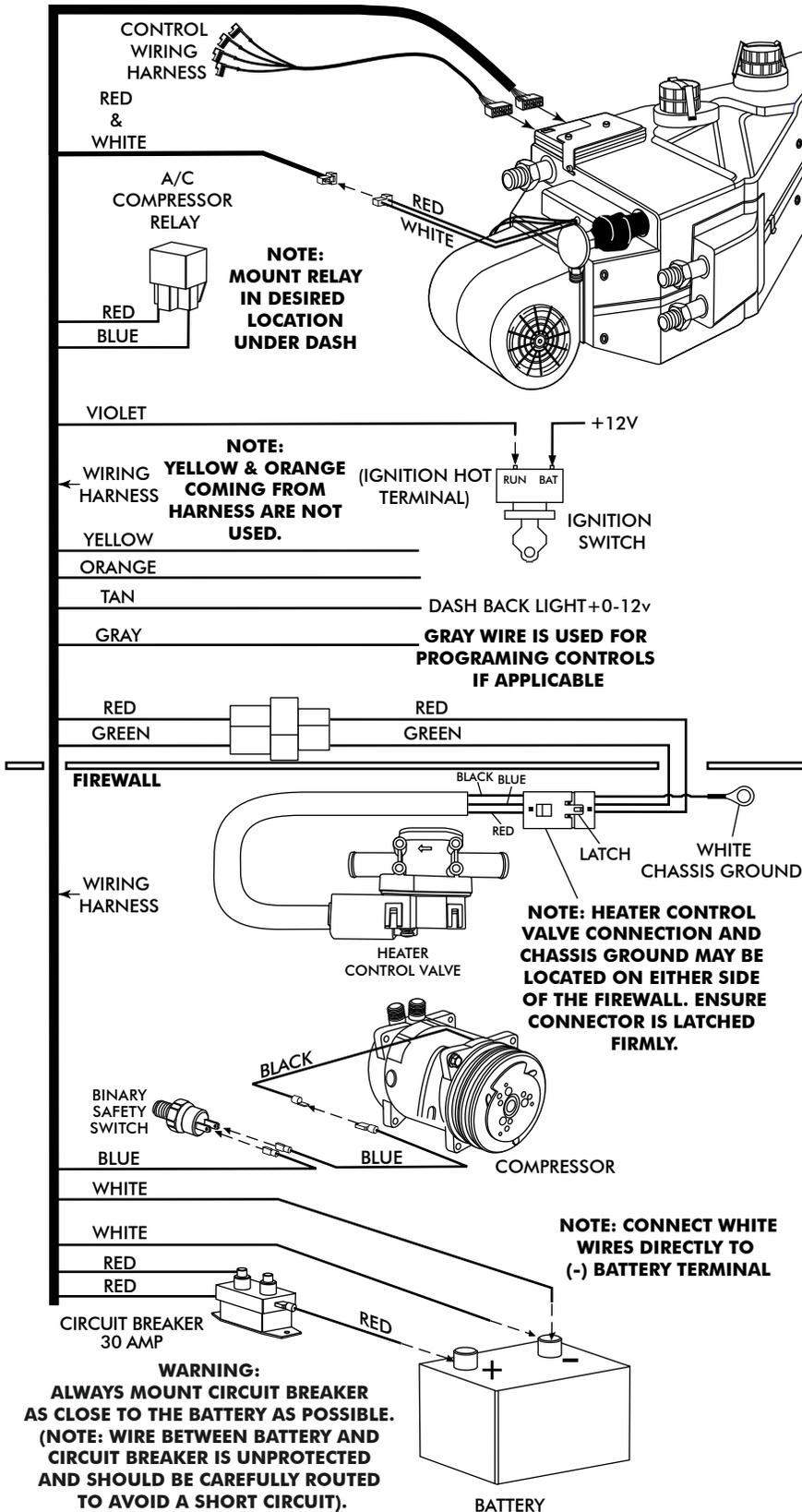
*** Wide open throttle switch contacts close only at full throttle, which disables A/C



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Gen IV Wiring Connection Instruction

WIRING HARNESS



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.



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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.

Blower Speed

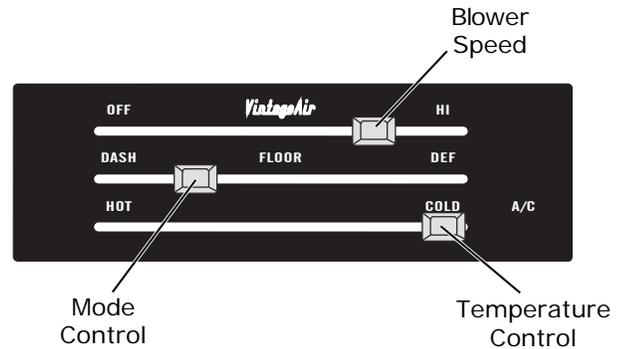
This lever/knob controls blower speed, from OFF to HI.

Mode Control

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

Temperature Control

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



A/C Operation

Blower Speed

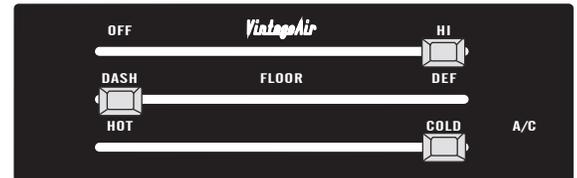
Adjust to desired speed.

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).





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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. | Loss of ground on this wire renders control head inoperable. See blower switch check procedure. |
| | All other functions work. | Check for damaged ground wire (white) in control head harness. | Verify continuity to chassis ground with white control head wire at various points. | |
| | | Check for damaged blower switch or potentiometer and associated wiring. | | |
| 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. | No other part replacements should be necessary. |
| | | 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). | | |
| 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. 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. |
| | | 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. | |
| | | Check for disconnected or faulty thermistor. | Check 2-pin connector at ECU housing. | |
| 3. Compressor will not turn off (All other functions work). | System is charged. | 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. | |



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Troubleshooting Guide (Cont.)

| Symptom | Condition | Checks | Actions | Notes |
|---------|--|--|---|--|
| 4. | 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. |
| | System will not turn on, or runs intermittently. | Will not turn on under any conditions. | Check for positive power at heater valve green wire and blower red wire. Check for ground on control head white wire. | |
| | | Verify connections on power lead, ignition lead, and both white ground wires. | | |
| | | 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. | 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. |
| | Loss of mode door function. | Check for obstructed or binding mode doors. | | |
| | | Check for damaged stepper motor or wiring. | | |
| 6. | 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. |
| | Blower turns on and off rapidly. | Battery voltage is less than 12V. | 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. | |



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Packing List: Evaporator Kit (564483)

| No. | Qty. | Part No. | Description |
|-----|------|----------|----------------------------|
| 1. | 1 | 744021 | Gen IV Evaporator Sub Case |
| 2. | 1 | 784483 | Accessory Kit |

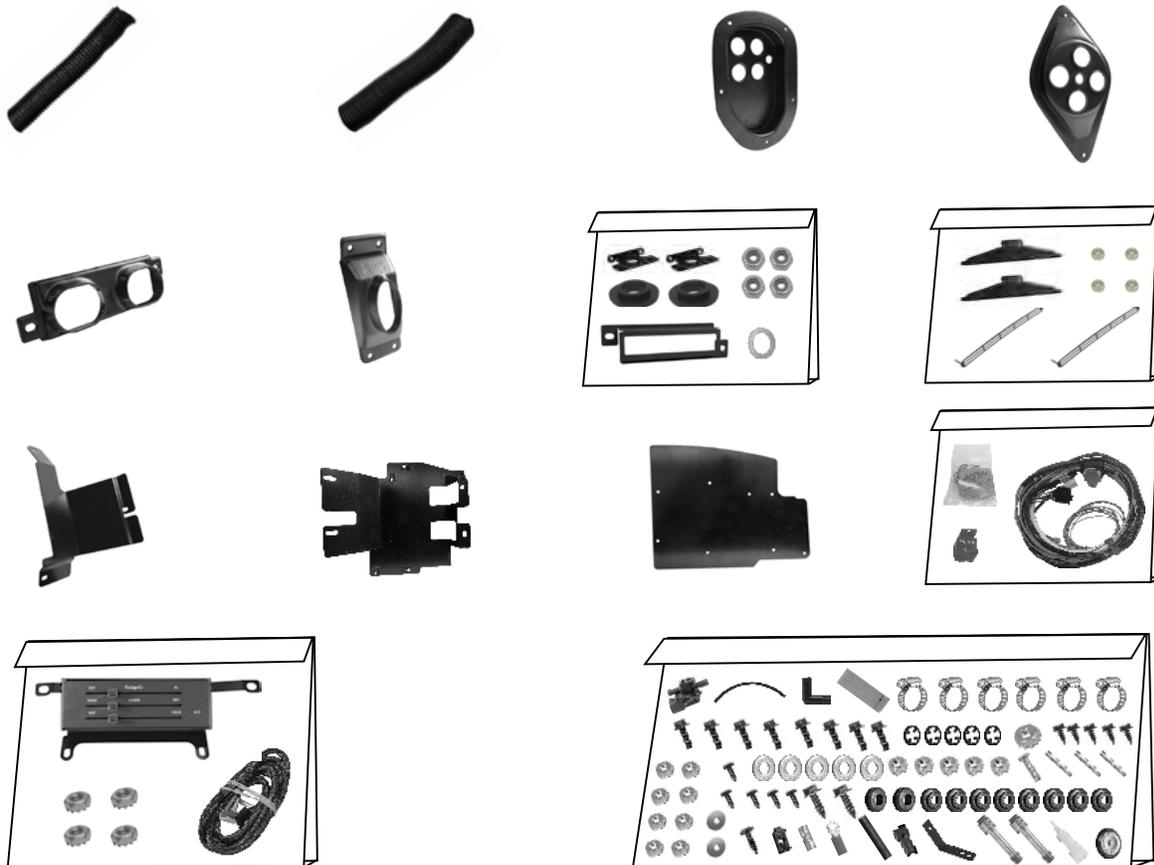
Checked By: _____
 Packed By: _____
 Date: _____

1



Gen IV Evaporator
Sub Case
744021

2



Accessory Kit
784483

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