



an ISO 9001:2015 Registered Company

1970-72 Pontiac GTO

without Factory Air
Evaporator Kit
(561084)



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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 (561084)

No.	Qty.	Part No.	Description
1.	1	744021	Gen IV Evaporator Sub Case
2.	1	781084	Accessory Kit

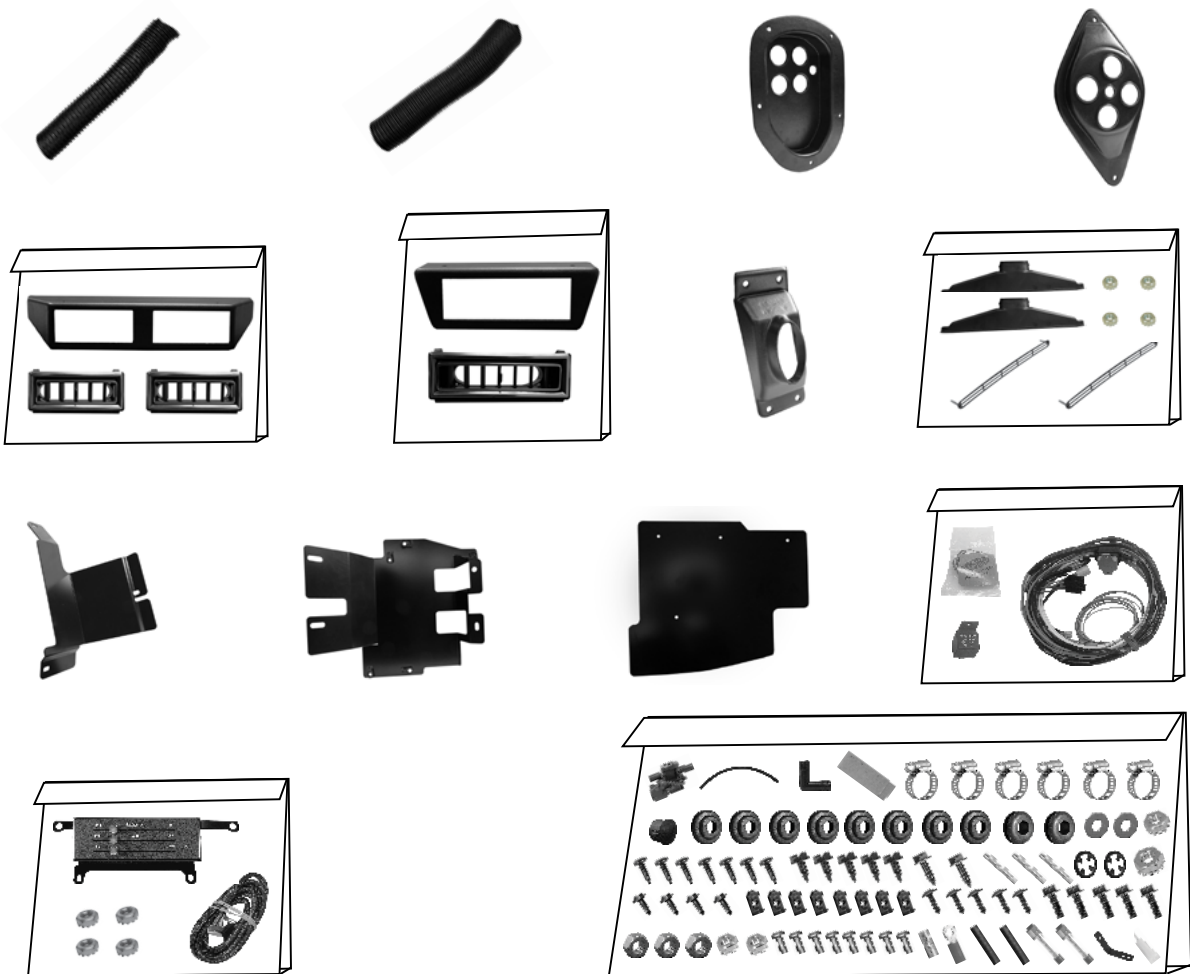
**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

1



Gen IV Evaporator
Sub Case
744021

2



Accessory Kit
781084

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.

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. Remove the OEM heater hoses.
4. Jack up the front of the vehicle and support with jack stands (See Photo 1, below).
5. Remove the passenger-side wheel.
6. Remove (12) inner fender bolts and (2) under fender bolts.
7. Carefully lower the inner fender to gain access to the OEM blower assembly.
8. Disconnect the power wire from the fan and remove (5) OEM retaining nuts and (2) bolts (See Photo 2, below).
9. Remove the blower housing from the firewall (See Photo 3, below).
10. Remove the (3) fresh air duct assembly mounting screws from the engine side (See Photo 4, below).

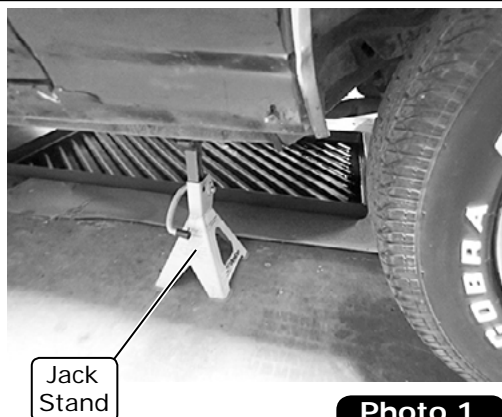


Photo 1

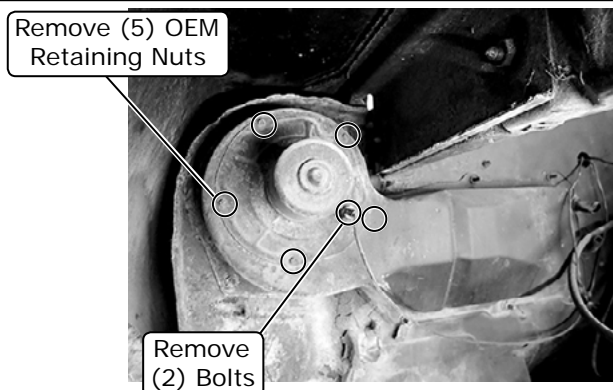


Photo 2

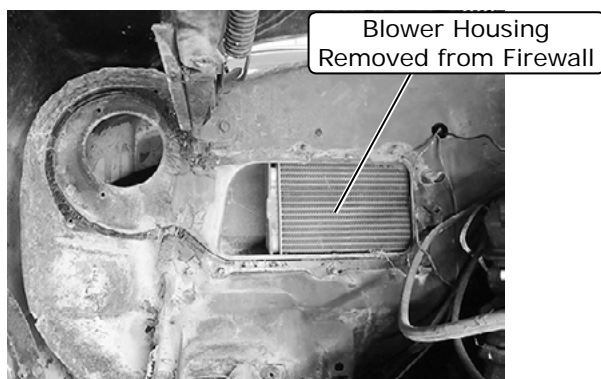


Photo 3



Photo 4

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.



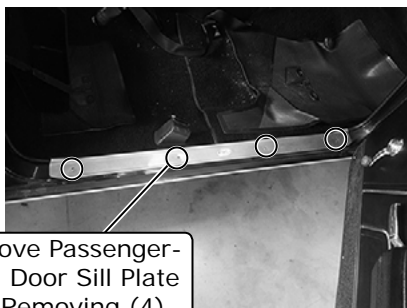
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Passenger Compartment Disassembly

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

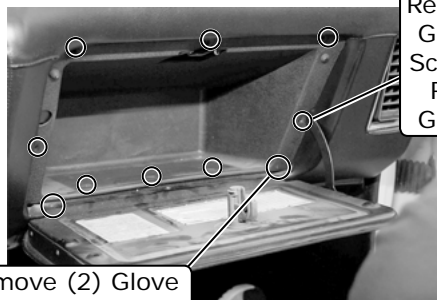
Perform the following:

1. Remove the passenger-side door sill plate by removing (4) screws (retain) (See Photo 1, below). **NOTE: In order to remove the OEM kick panel, the door sill plate must be removed.**
2. Remove (8) glove box screws and remove the glove box (See Photo 2, below).
3. Remove (2) glove box door screws and remove the door (See Photo 2, below).
4. Unplug the radio connections and remove the radio. **NOTE: The radio must be removed for clearance when installing new A/C components.**
5. Remove the kick panel grille (See Photo 3, below).
6. Remove (5) kick panel screws (See Photo 4, below), and remove the kick panel from the vehicle (See Photo 5, below).



Remove Passenger-Side Door Sill Plate by Removing (4) Screws

Photo 1



Remove (8) Glove Box Screws and Remove Glove Box

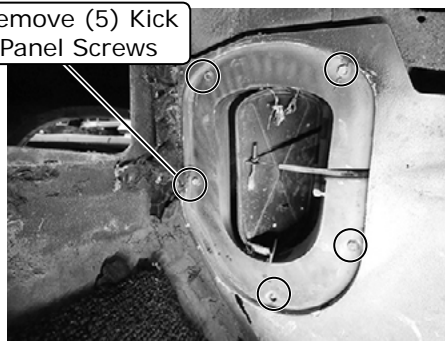
Remove (2) Glove Box Door Screws and Remove Door

Photo 2



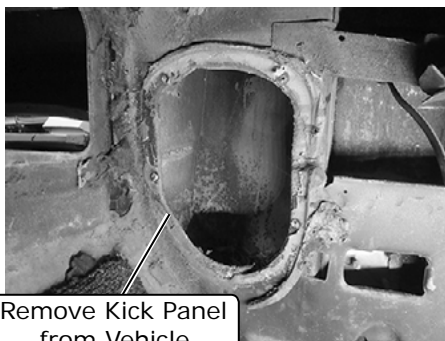
Remove Kick Panel Grille

Photo 3



Remove (5) Kick Panel Screws

Photo 4



Remove Kick Panel from Vehicle

Photo 5



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Passenger Compartment Disassembly (Cont.)

7. Remove (1) mounting screw from the defrost plenum (See Photo 6, below).
8. Remove the heater core case from the vehicle.
9. Remove the defrost plenum from the vehicle.

Remove (1) Mounting
Screw from
Defrost Plenum



Photo 6

Kick Panel Modification

1. Disconnect and remove the fresh air door cables from the kick panel (See Photos 1 and 2, below).
2. Enlarge the (2) cable holes to 1/2" and install the (2) 1/2" plugs (See Photos 3 and 4, below).
3. Trim the fresh air door housing to make it flush with the kick panel (See Photos 5 and 6, below).

Disconnect and
Remove Fresh Air Door
Cables from Kickpanel

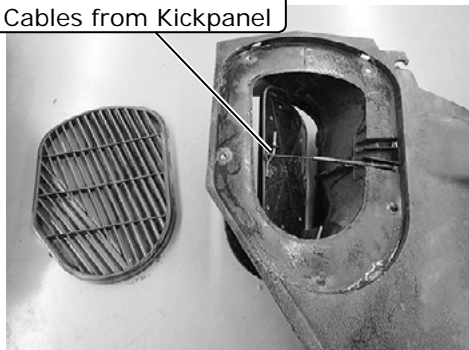


Photo 1

Fresh Air
Door Cables

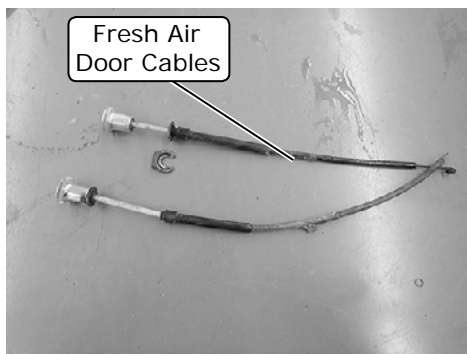


Photo 2

Enlarge (2) Cable
Holes to 1/2"

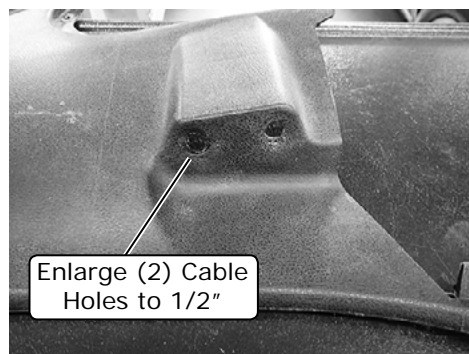


Photo 3

Install (2)
1/2" Plugs

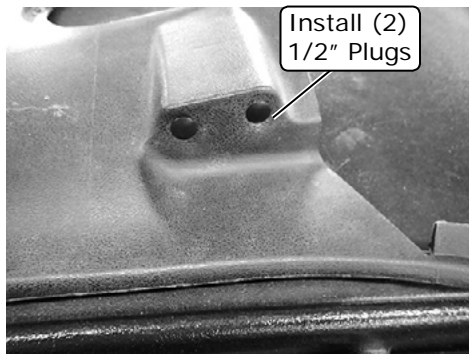


Photo 4

Trim Fresh Air
Door Housing



Photo 5

Make Housing Flush
with Kick Panel

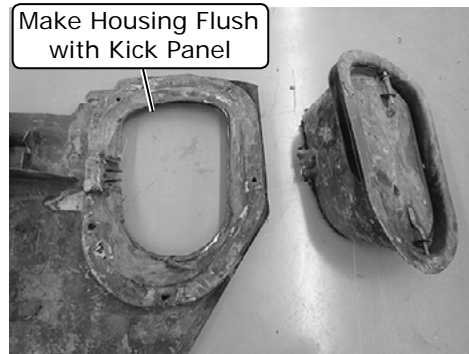


Photo 6



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Firewall Cover Preparation

Perform the following on a workbench:

1. Install (2) 1/4-20 x 3/4" hex washer bolts with (2) 3/16" push-on rings into the firewall cover as shown in Photo 1, below.
2. Install (3) 1/4-20 full-length studs into the evaporator firewall bracket (See Photo 2, below).

NOTE: Verify correct location of studs.

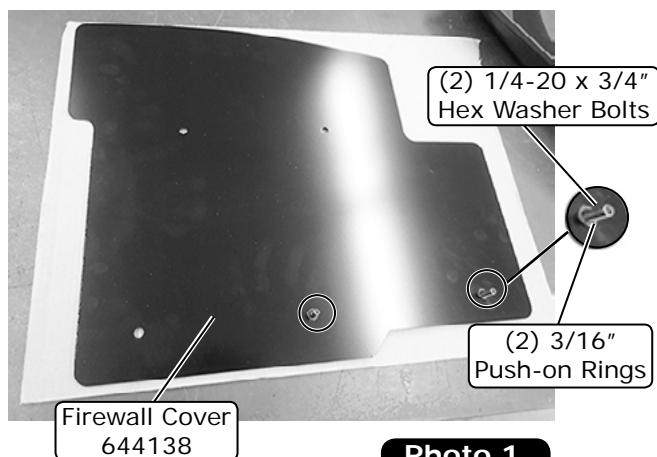


Photo 1

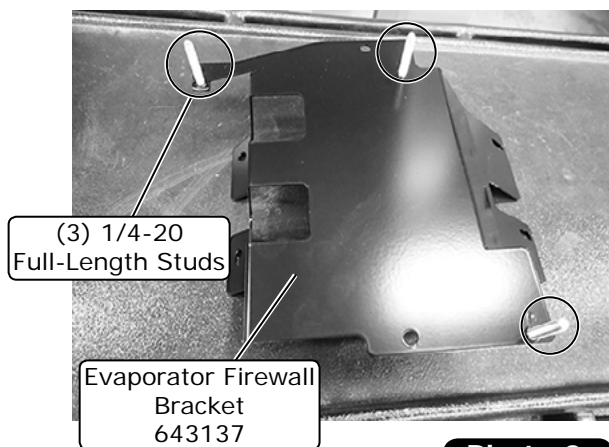


Photo 2

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. Under the firewall opening, directly below the crease and to the left of the stamping, measure 1/2" down and 1/2" to the left. Mark and drill a 5/8" hole for the drain tube. (See Photos 2 and 3, below). **NOTE: To ensure a tight fit for the drain hose, do not enlarge the hole to more than 5/8".**

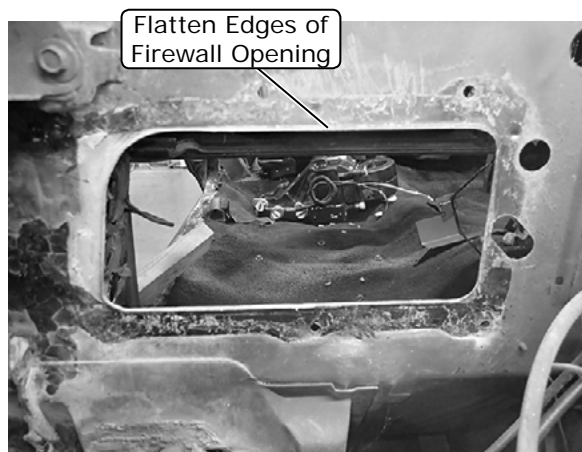


Photo 1

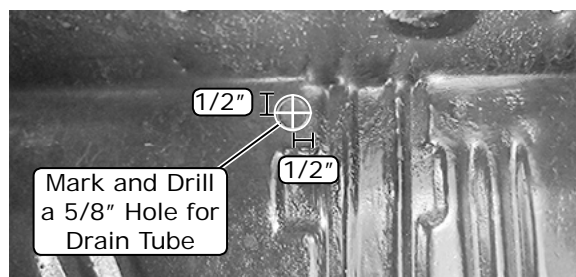


Photo 2

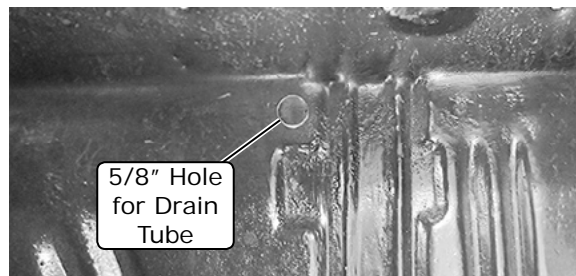


Photo 3

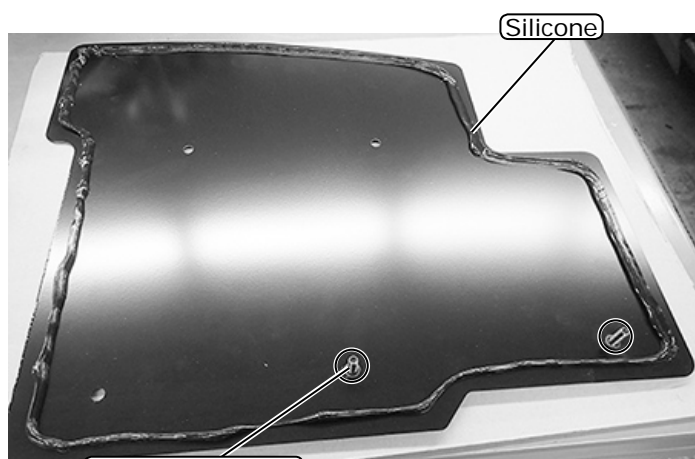


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Firewall Cover Installation

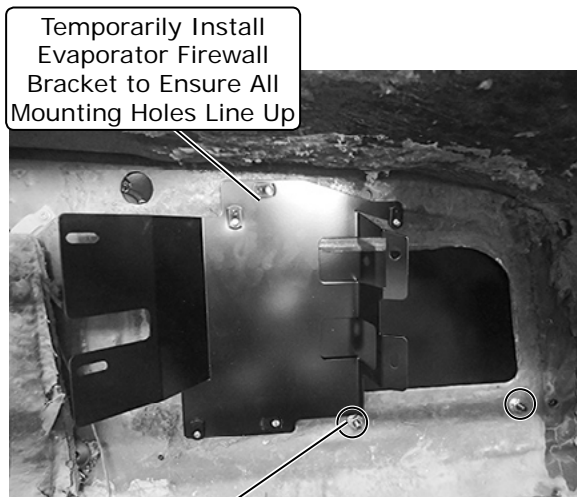
NOTE: For proper system operation, Vintage Air recommends using heat-blocking insulation in the area around the evaporator unit (firewall, kick panel, inner cowl, firewall covers). To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the 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 (2) 1/4-20 x 3/4" hex washer bolts that were previously installed. From the passenger compartment, install (2) 9/32" washers and (2) 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 2, below), then tighten the (2) 1/4-20 nuts with star washers. **NOTE: From the engine compartment, install (3) 1/4-20 nuts with star washers onto the (3) 1/4-20 full-length studs temporarily until the silicone cures, then remove the evaporator firewall bracket and continue with the installation. Discard the (3) 1/4-20 nuts with star washers as they will no longer be needed.**



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

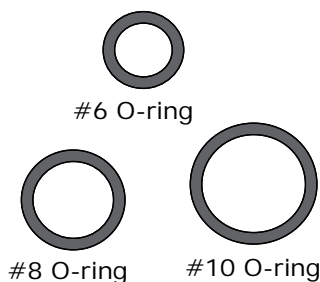
Photo 1



(2) 9/32" Washers
and 1/4-20 Nuts with
Star Washers

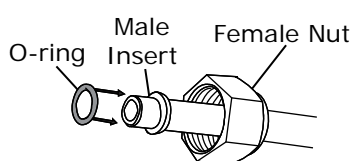
Photo 2

Lubricating O-rings

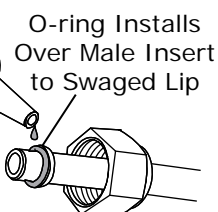


NOTE: Standard torque specifications:

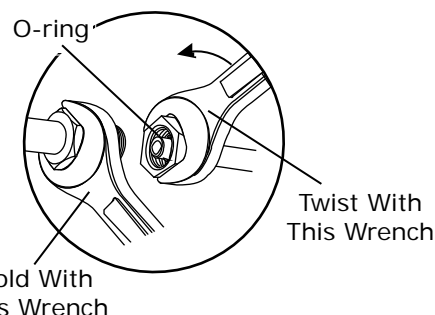
- #6: 11 to 13 ft-lb.
- #8: 15 to 20 ft-lb.
- #10: 21 to 27 ft-lb.



Supplied Oil
for O-rings



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 the cap is removed, be sure 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 10).
2. Install the evaporator firewall bracket using (4) 1/4-20 x 1/2" bolts supplied on the evaporator unit (See Photo 4, below).

Use Caution When Removing
Caps, Lines Under Pressure



Photo 1

Ensure Rubber
Insert is Removed



Photo 2

Install Upper and
Lower Heater
Hardlines
121004

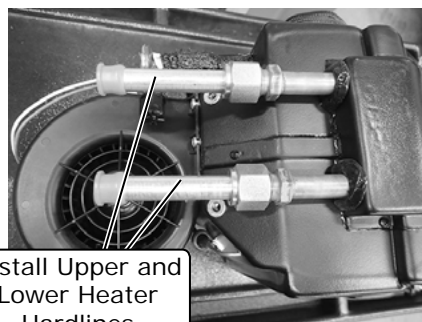


Photo 3

Install Evaporator
Firewall Bracket

(4) 1/4-20 x 1/2" Bolts
(Supplied on Evaporator)

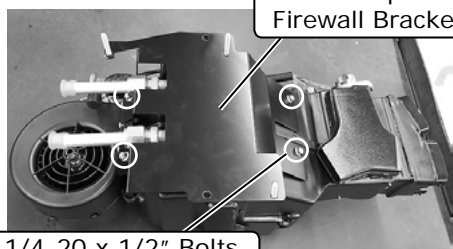
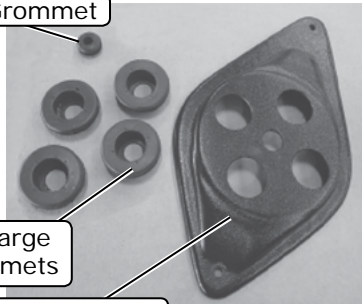


Photo 4

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).

7/8" Grommet



(4) Large
Grommets

Fresh Air Cap
622230

Photo 1

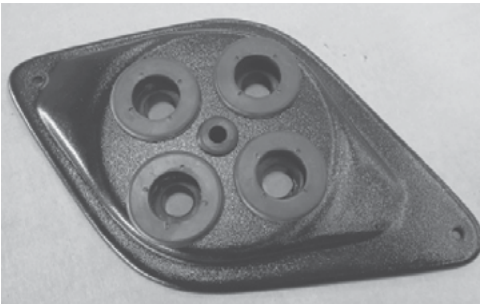


Photo 2

"T" Indicates
Top Mounting Hole

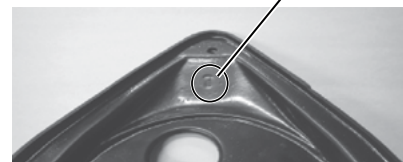


Photo 3



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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

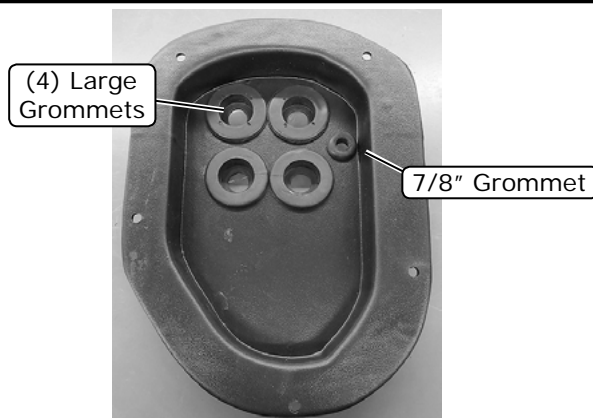


Photo 5

Defrost Duct and Grille Installation

NOTE: 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 (1) of the grilles into the dash opening from the top of the dash as shown in Photo 1, below. Install the defrost duct from under the dash through 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.

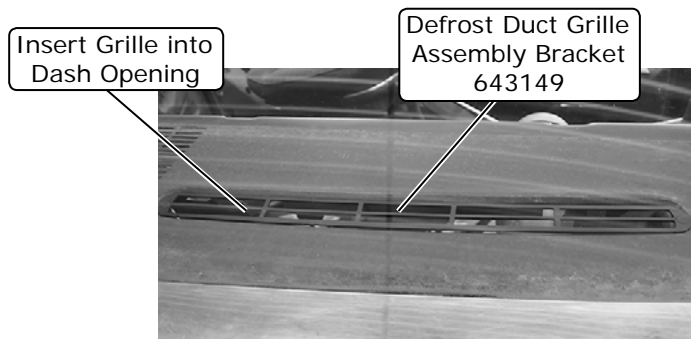


Photo 1

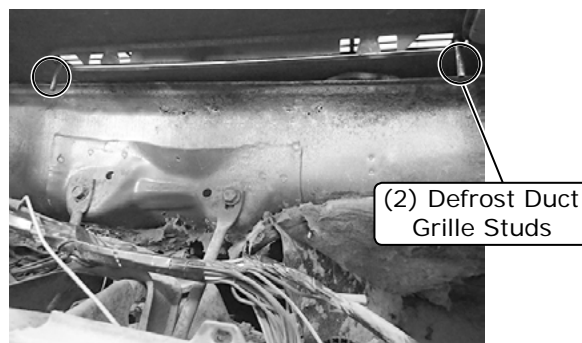


Photo 2

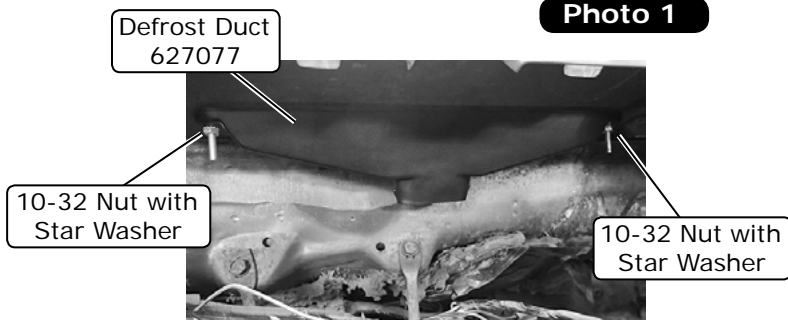


Photo 3

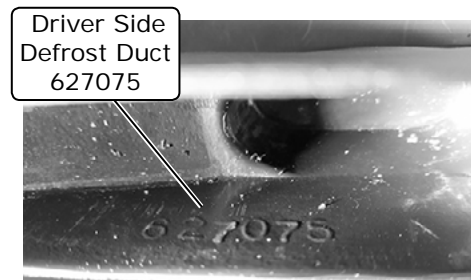


Photo 4



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Side Louver Hose Adapters

NOTE: On the 1970-72 GTO there are two different dash options for non-factory A/C vehicles. The first option does not have any louvers in the dash and the second option has the side louvers in the dash. If using the dash option with the side louvers in the dash, follow Step 1, below. If there are no louvers in the dash, skip Step 1 and continue with Wiring Installation. The under dash center and side louver installation will be shown on Page 19.

1. 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 1 and 2, below).

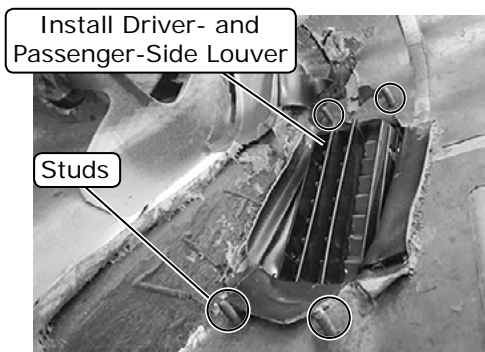


Photo 1

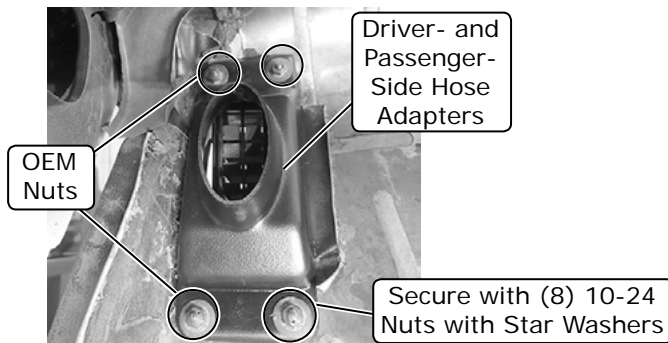


Photo 2

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).**

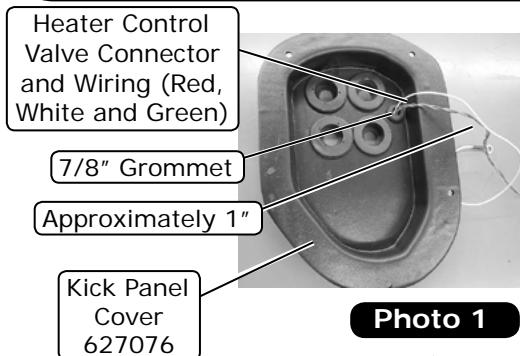


Photo 1

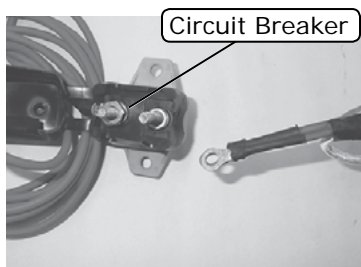


Photo 2

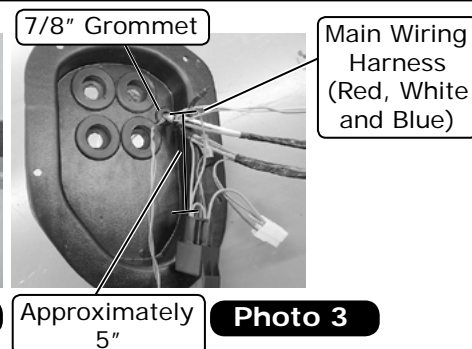


Photo 3



Photo 4

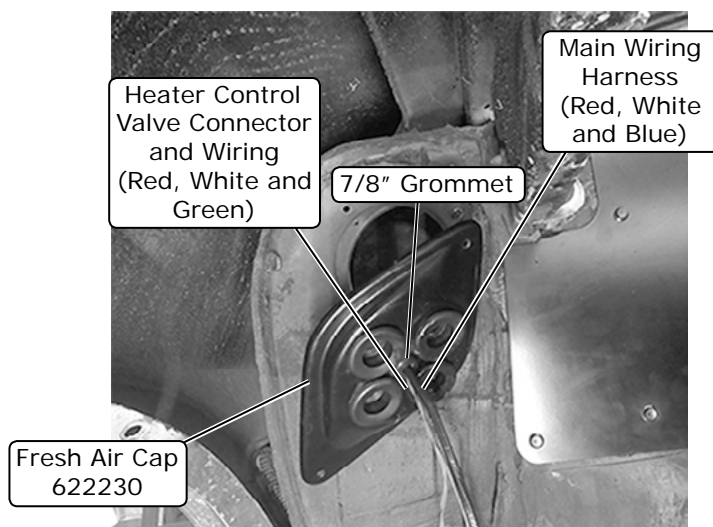
Passenger
Compartment View



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Wiring Installation (Cont.)

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).



Engine Compartment View

Photo 5

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).

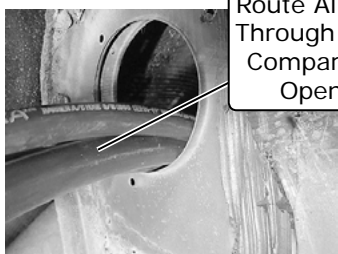
1. Insert a length of heater hose through the bottom-left large grommet on the kick panel cover.
2. Insert a length of heater hose through the top-left large grommet on the kick panel cover.
3. Insert the straight fitting of the #6 drier/evaporator A/C hose through the top-right large grommet on the kick panel cover.

Fresh Air Cap
622230



Install All Hoses
Through Fresh
Air Cap

Photo 1



Route All Hoses
Through Engine
Compartment
Opening

Photo 2

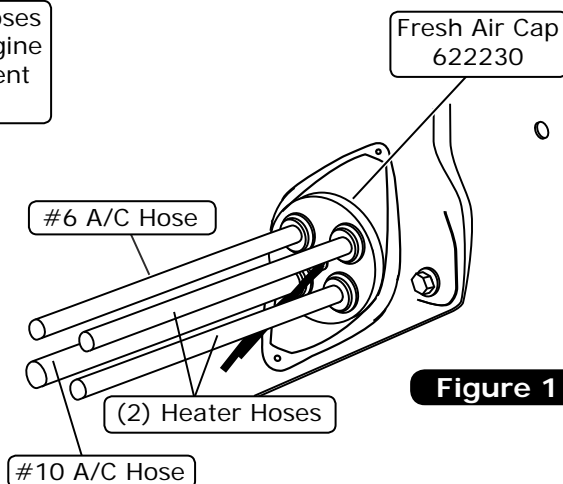


Figure 1



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A/C & Heater Hoses and Kick Panel Cover Installation (Cont.)

4. Insert the 90° fitting on the #10 compressor/evaporator A/C hose through the bottom-right large grommet on the kick panel cover (See Photo, 3 below). **NOTE: Temporarily remove the large grommet from the kick panel cover to ease the insertion of the #10 hose fitting.**
5. Apply a 1/4" bead of silicone around the mating surface of the kick panel cover (See Figure 2, below).
6. Secure the kick panel cover using (5) #8 x 3/4" countersunk washer screws. **NOTE: Let the silicone cure, then remove the (5) #8 x 3/4" countersunk washer screws.**
7. Install the kick panel and trim plate over the A/C lines and hoses (See Photo 4, below), then secure them using the previously removed #8 x 3/4" countersunk washer screws (See Photo 5, below).

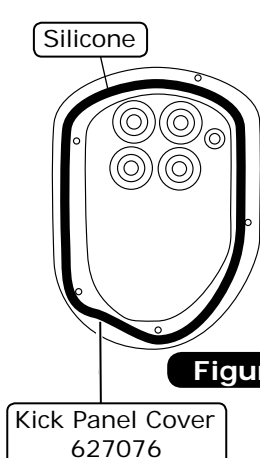


Figure 2

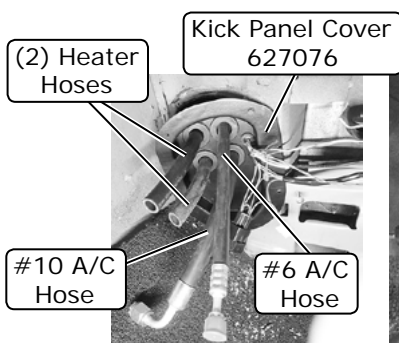


Photo 3

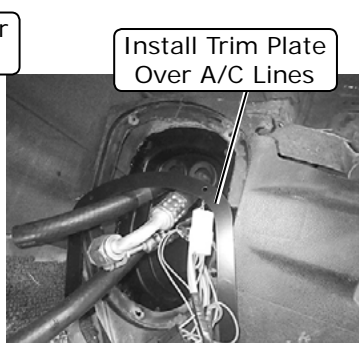


Photo 4

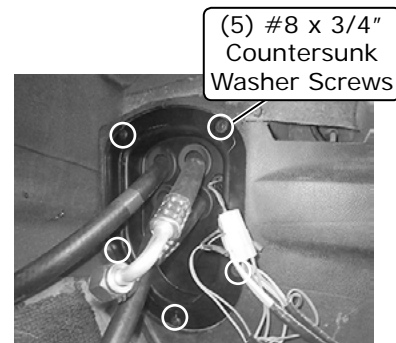


Photo 5

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).



Photo 1

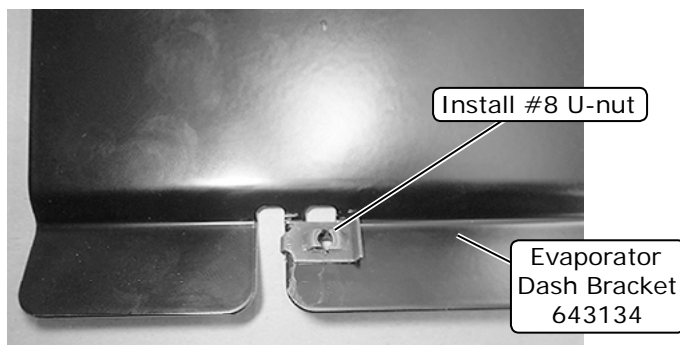


Photo 2



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Evaporator Installation (Cont.)

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 10).
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 1/2" bolts (See Photo 6, below).
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 10).

Expansion Valve

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

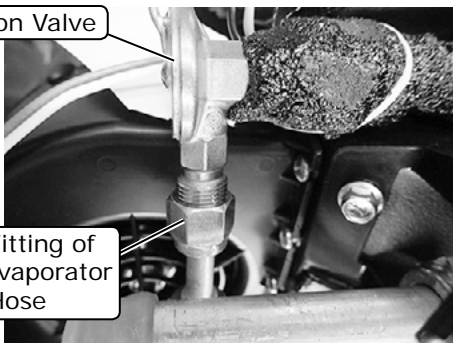


Photo 3

Install Upper and
Lower Heater
Hoses and Secure
Using Hose Clamps

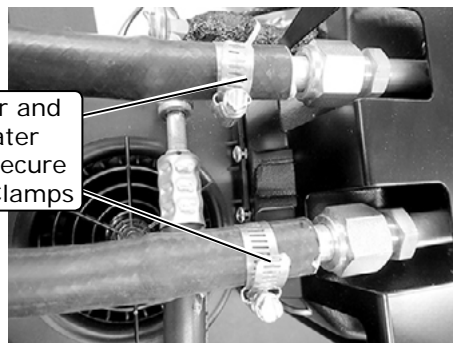


Photo 4

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 1/2" Bolts



Photo 6

Install #8 x 1/2"
Pan Head Screw

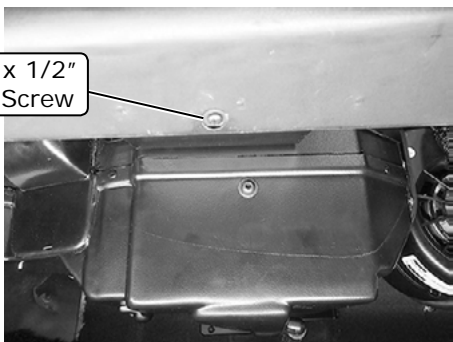


Photo 7

#10 Evaporator
Unit Fitting

90° Fitting

#10 Compressor/
Evaporator
A/C Hose

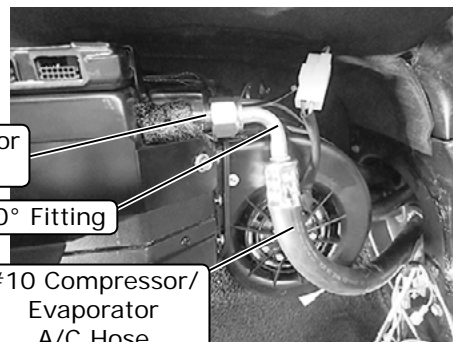


Photo 8



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Evaporator Installation (Final)

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 (See Photo 10, below). **NOTE: Do not fully tighten at this time.**

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

Drain Hose Installation

1. Cut the drain hose at 9 1/2", 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 1/2" 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).

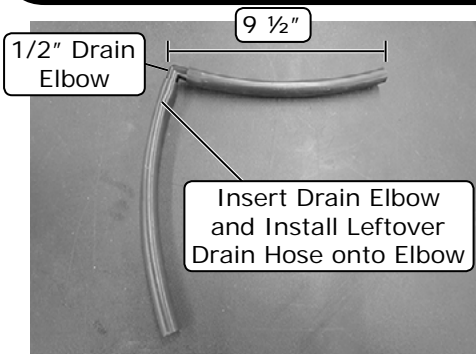


Photo 1

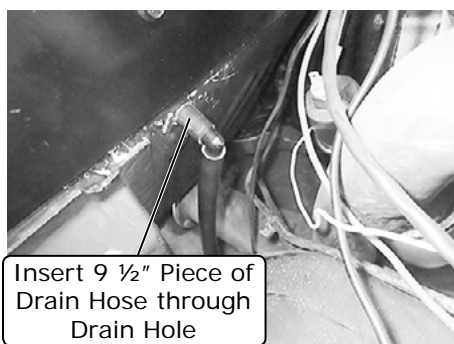


Photo 2



Photo 3



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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.

Attach Violet Wire to Switched Power Source

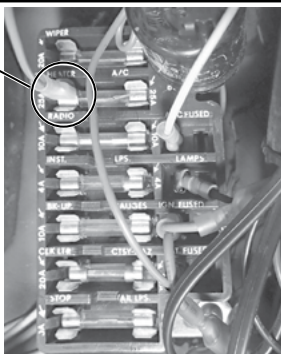
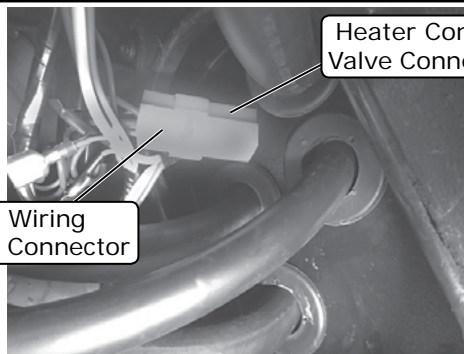


Photo 1

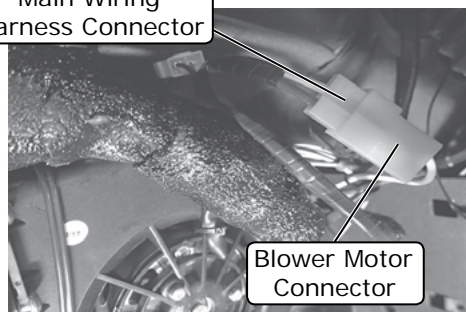
Heater Control Valve Connector



Main Wiring Harness Connector

Photo 2

Main Wiring Harness Connector



Blower Motor Connector

Photo 3

Plug Main Wiring Harness into ECU

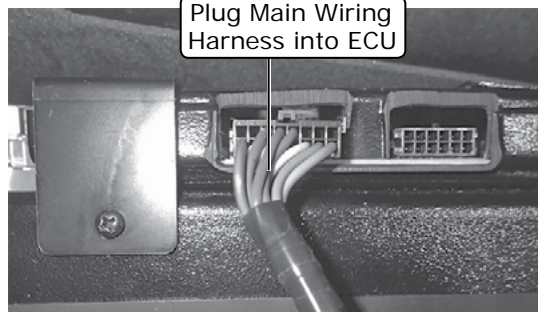
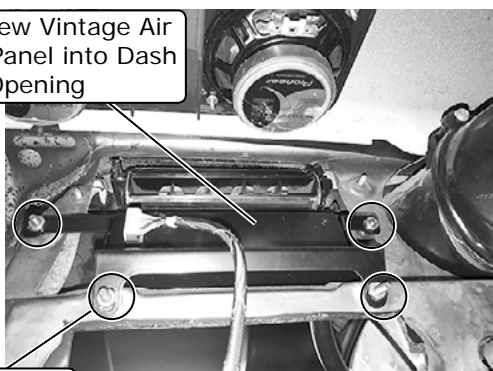


Photo 4

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

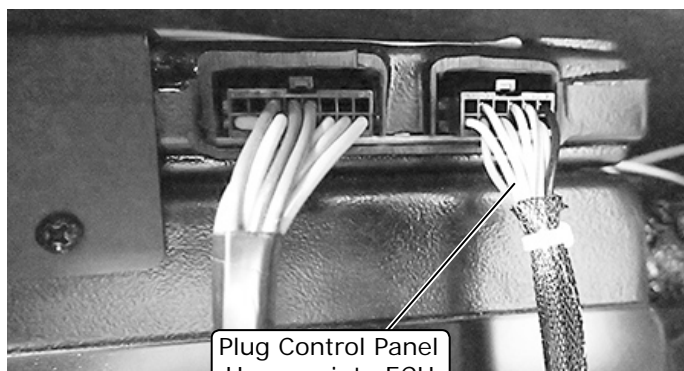


Photo 2



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Center and Side Under Dash Louver Installation

1. Place the under dash center louver bezel under the dash in the desired location (See Photo 1 and Figure 1, below). Using the louver bezel as a template, mark and drill (2) 1/8" mounting holes into the bottom lip of the dash (See Figure 1, below).
2. Secure the louver bezel under the dash using (2) #8 x 1/2" pan head screws (See Figure 1, below).
3. Insert (2) lengths of 2 1/2" duct hose (See Figure 1, Page 20, for duct hose lengths) through the back of the louver bezel (See Photo 2, below).
4. Attach the (2) duct hoses to the hose adapters on the (2) louvers (See Photos 3 and 4, below).
5. Insert the (2) louvers into the under dash center louver bezel and push until fully secured (See Photo 5, below).
6. For the driver- and passenger-side single louvers, repeat the same process. **NOTE: If using side louver hose adapters, skip this step.**

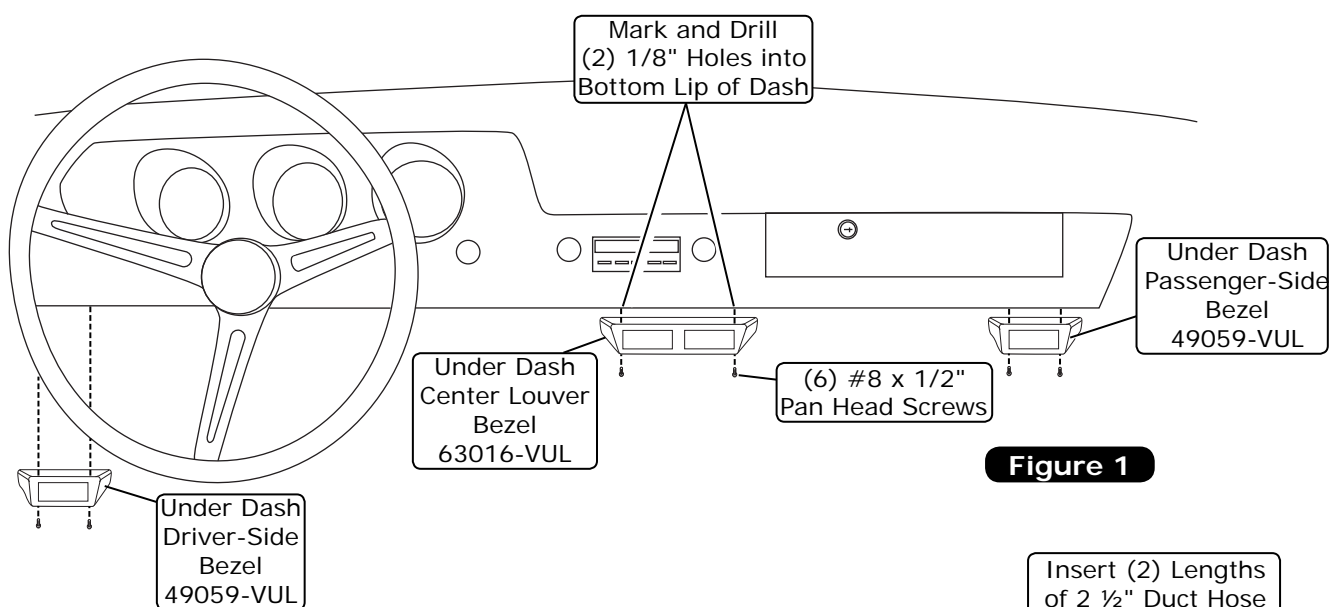
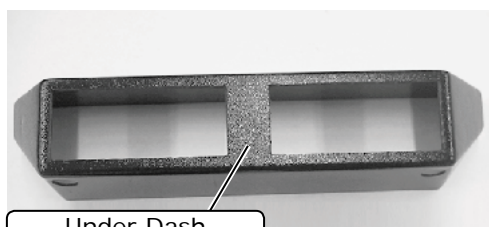
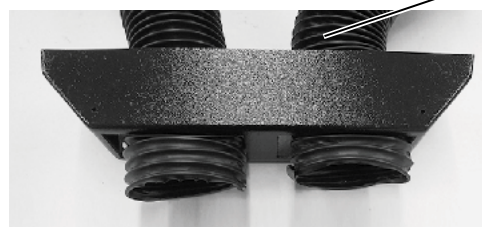


Figure 1



Under Dash
Center Louver Bezel
63016-VUL

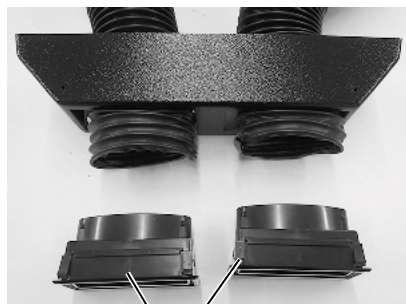
Photo 1



Top View

Photo 2

Insert (2) Lengths
of 2 1/2" Duct Hose

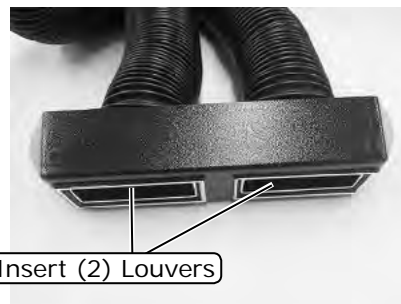


(2) Louvers

Photo 3



Photo 4



Insert (2) Louvers

Bottom View

Photo 5



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Duct Hose Routing

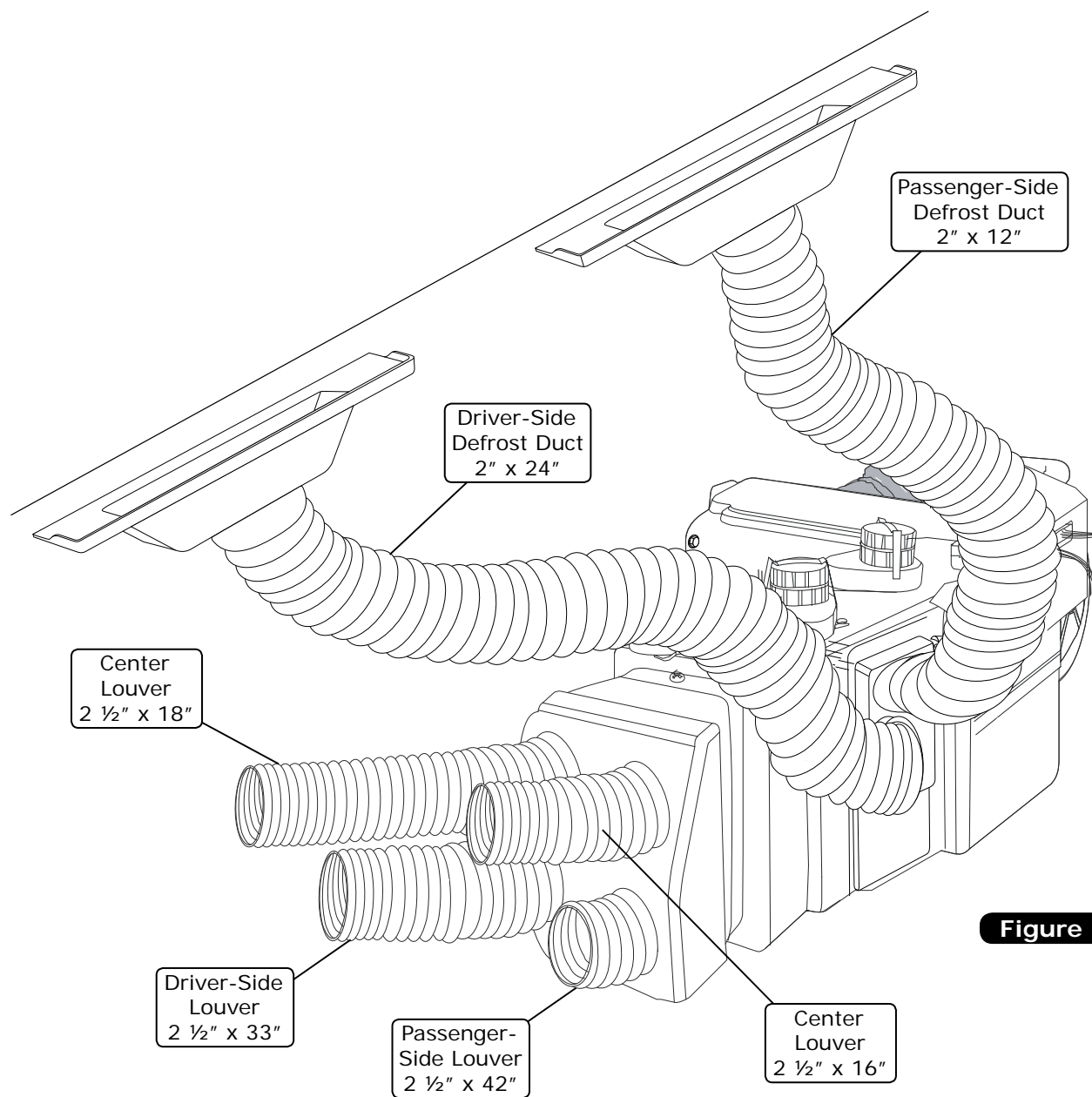


Figure 1



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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

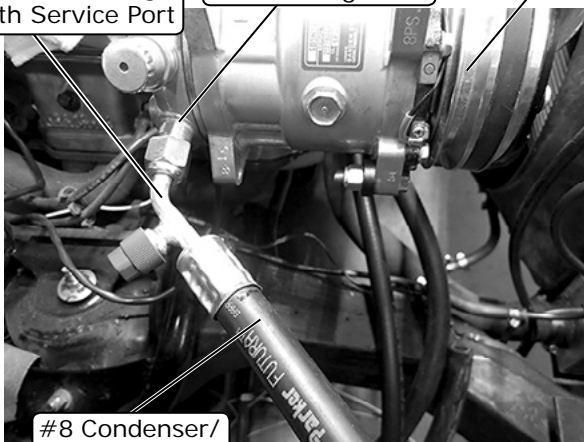
A/C Hose Installation

1. Locate the #8 condenser/compressor A/C hose. Lubricate (2) #8 O-rings (See Lubricating O-rings, Page 10), 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 10.

#8 45° Fitting
with Service Port

#8 Discharge Port

Compressor

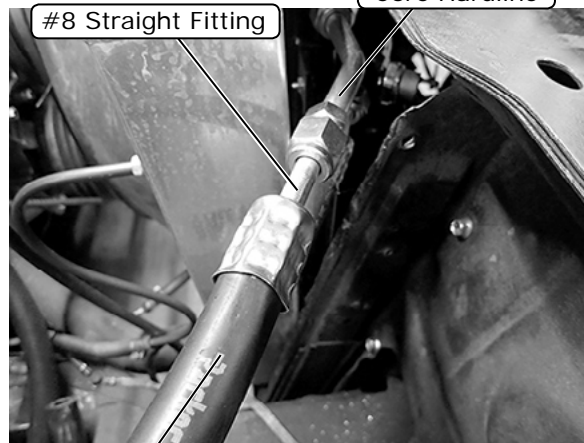


#8 Condenser/
Compressor
A/C Hose

Photo 1

#8 Straight Fitting

#8 Condenser/
Core Hardline



#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 10) 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 10.
3. Locate the #6 drier/evaporator A/C hose (See Photo 4, below). Lubricate a #6 O-ring (See Lubricating O-rings, Page 10), and connect it to the drier. Tighten the fitting connection as shown in Lubricating O-rings, Page 10. **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).

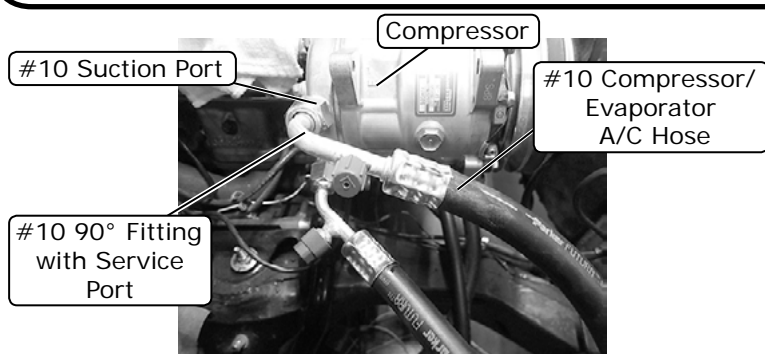


Photo 3

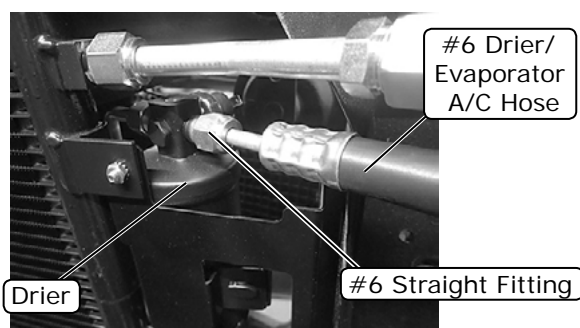


Photo 4

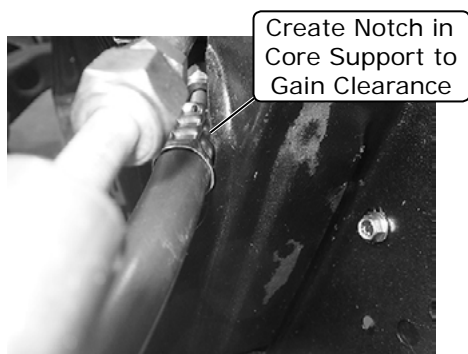


Photo 5

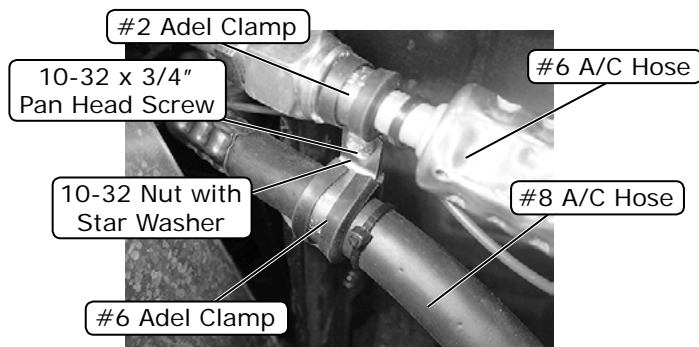


Photo 6

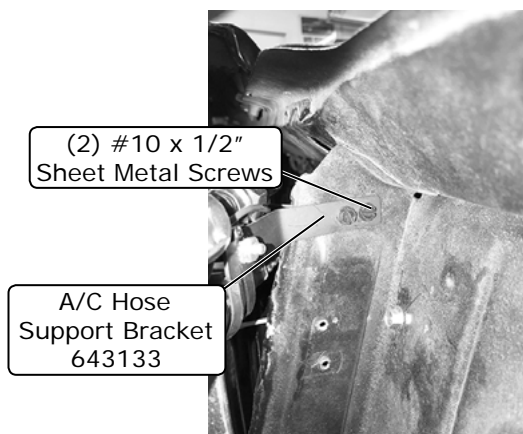


Photo 7



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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).**

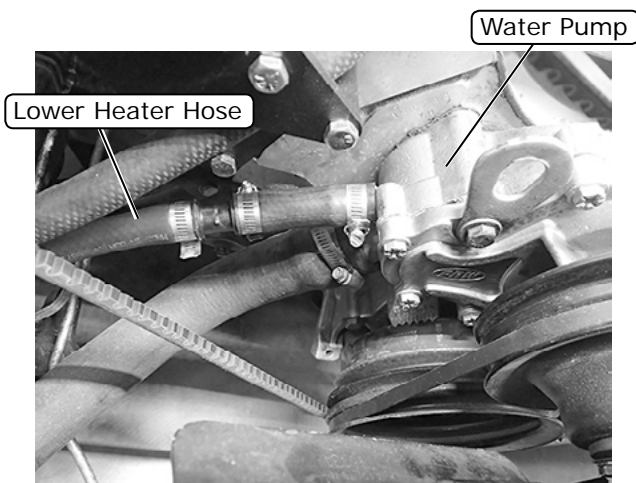


Photo 1

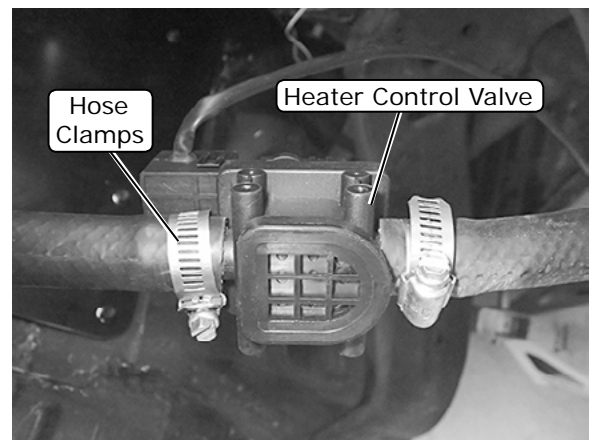


Photo 2



Photo 3

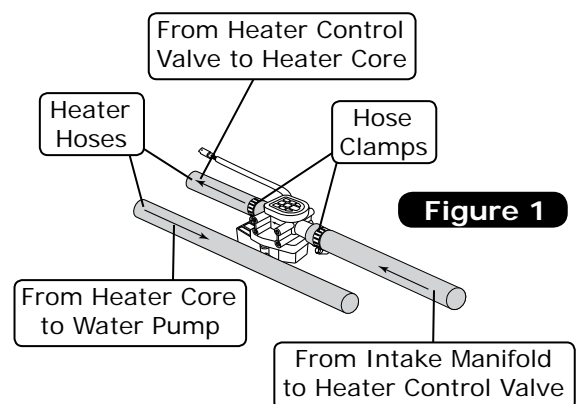


Figure 1

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).

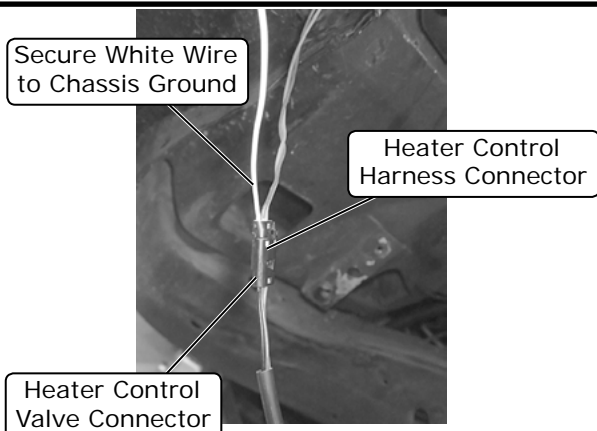


Photo 4

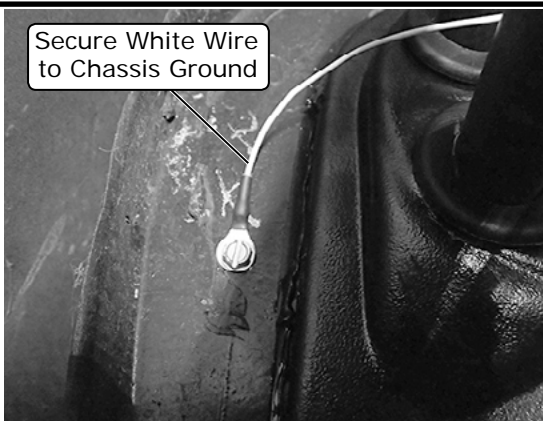


Photo 5

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 bullet 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).

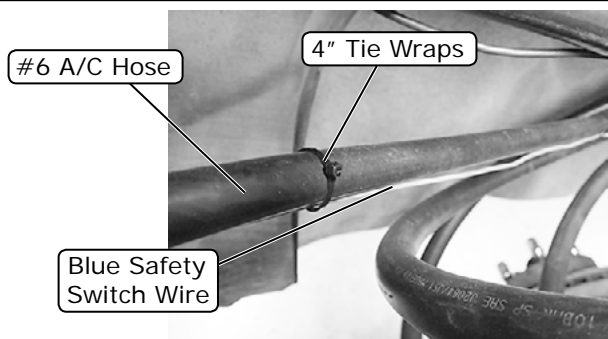


Photo 1

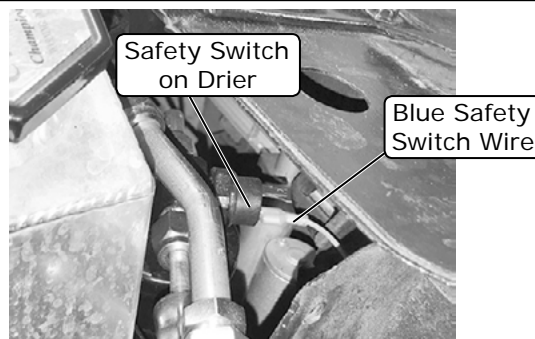


Photo 2

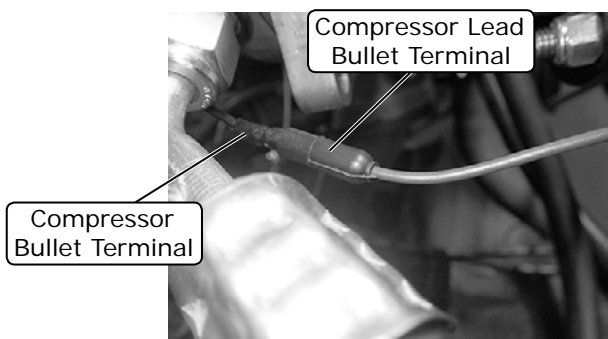


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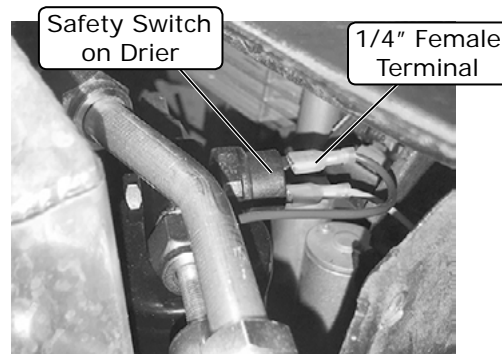


Photo 4



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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).

Cut Existing
Eyelets from Red
Power Wires

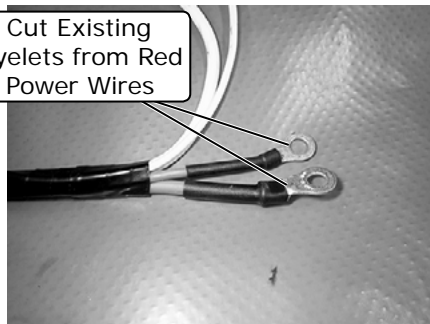


Photo 1



Photo 2

Crimp Supplied
Butt Connector

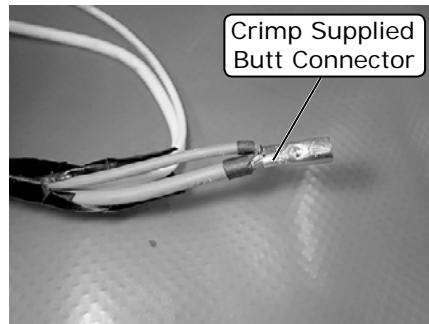


Photo 3

Slide Supplied Heat
Shrink Over Power Wire

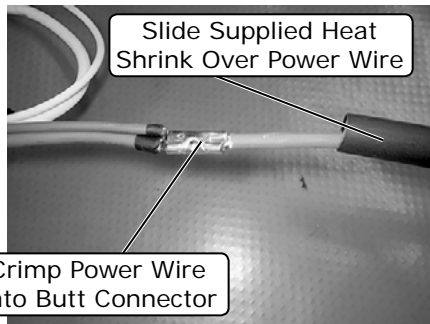


Photo 4

Apply Heat
Shrink

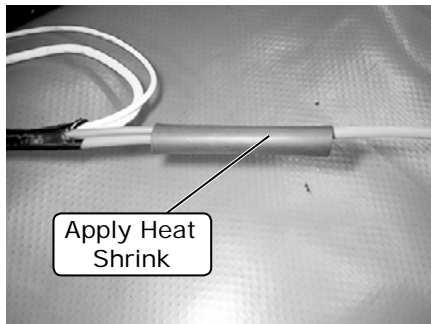


Photo 5

Circuit
Breaker (2) #10 x 1/2"
Sheet Metal Screws

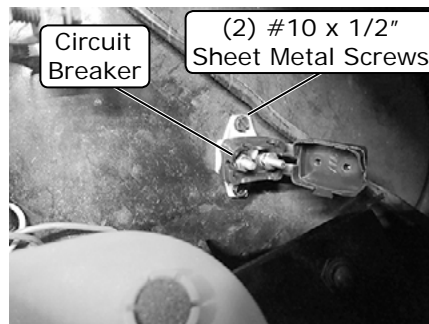


Photo 6

Crimp Power Wire
into Butt Connector

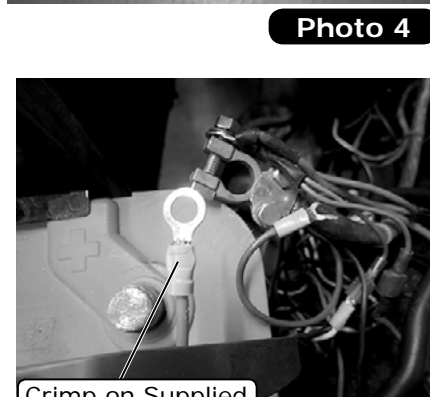


Photo 7

Connect Red Power Wire
Outlet onto Silver Stud



Photo 8

Connect Red Power
Wire Ring Terminal
onto Copper Stud

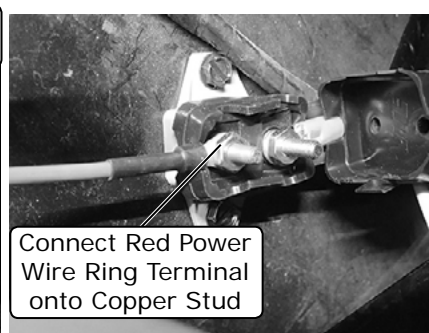


Photo 9



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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

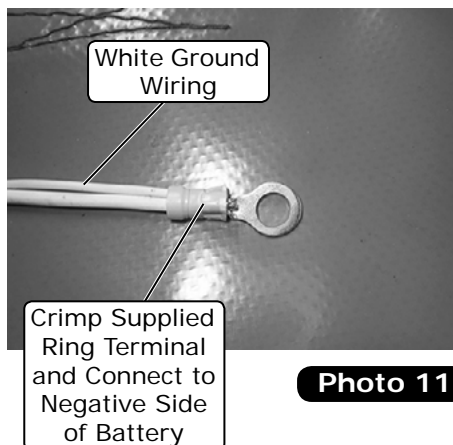


Photo 11

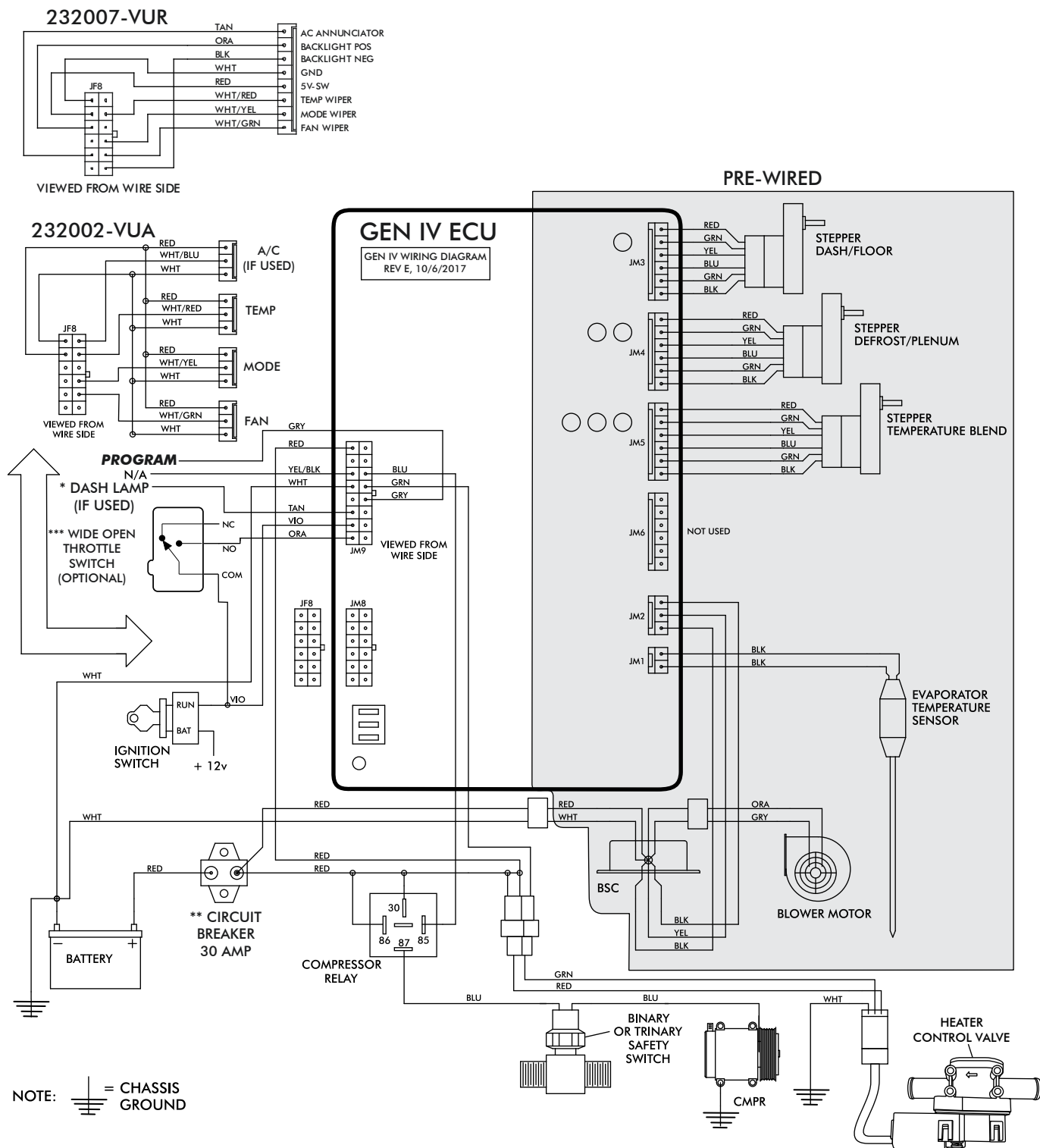
Final Steps

1. Reinstall glove box door and OEM glove box using OEM hardware.
2. Reinstall all previously removed items.
3. 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.
4. Double-check all fittings, brackets and belts for tightness.
5. Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
6. Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
7. Charge the system to the capacities stated on Page 4 of this instruction manual.
8. See Operation of Controls procedures on Page 29.



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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).

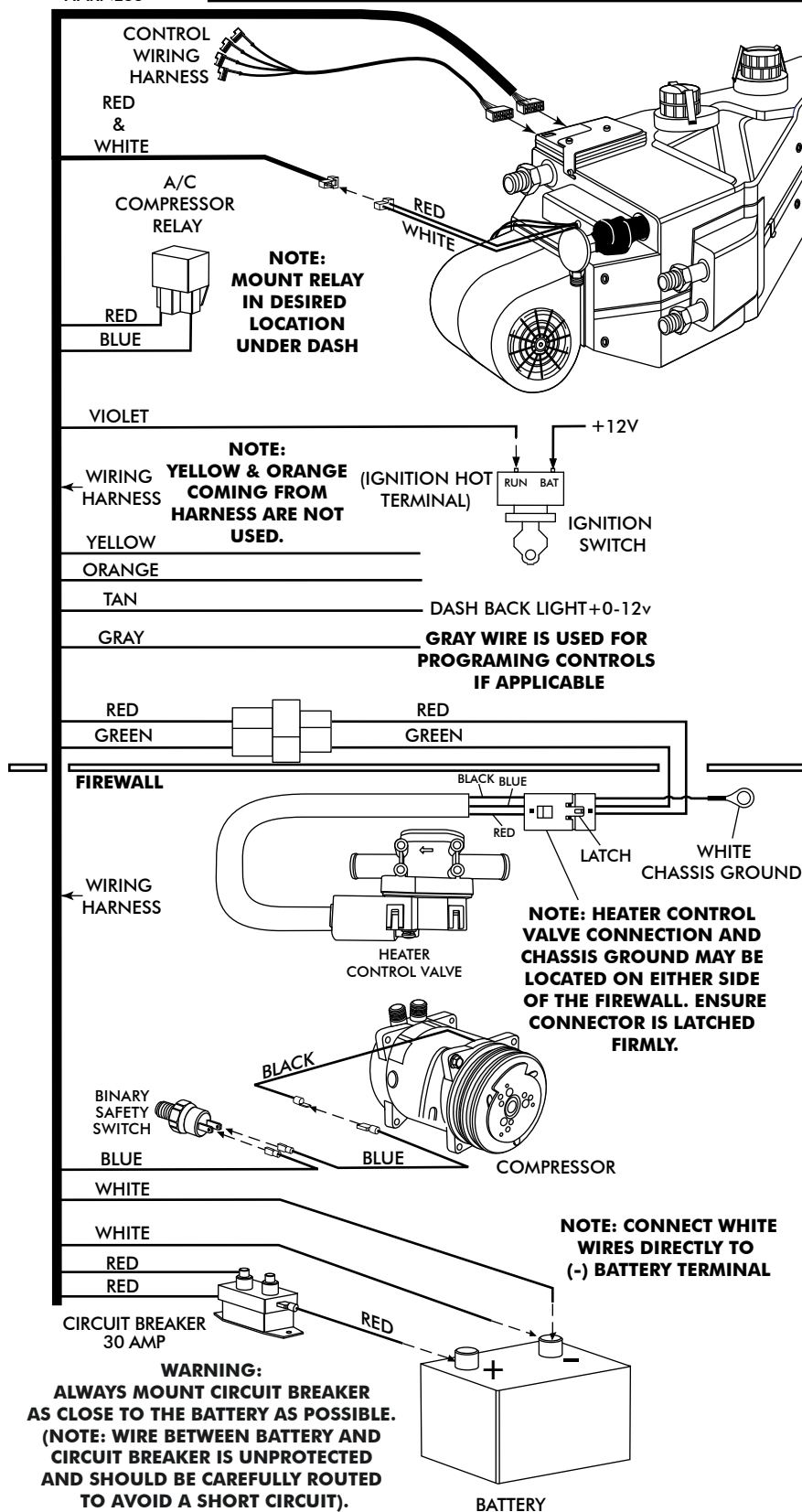
*** Wide open throttle switch contacts close only at full throttle, which disables A/C



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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

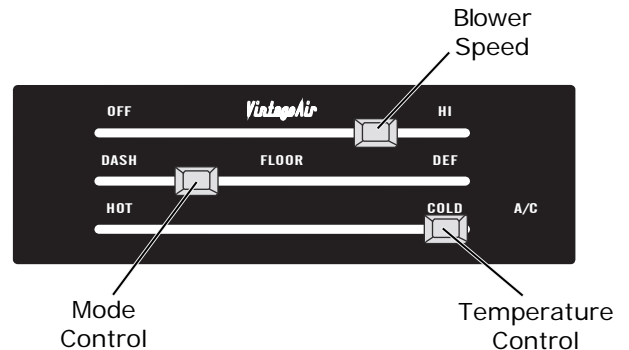
This lever/knob controls blower speed, from OFF to HI.

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.	
		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 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.
		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.
				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.
			Repair or replace pot/control wiring.	
3. Compressor will not turn off (All other functions work).		Check for faulty A/C potentiometer or associated wiring.		
		Check for faulty A/C relay.	Replace relay.	



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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.	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.	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.		Ensure all system grounds and power connections are clean and tight.
					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 (561084)

No.	Qty.	Part No.	Description
1.	1	744021	Gen IV Evaporator Sub Case
2.	1	781084	Accessory Kit

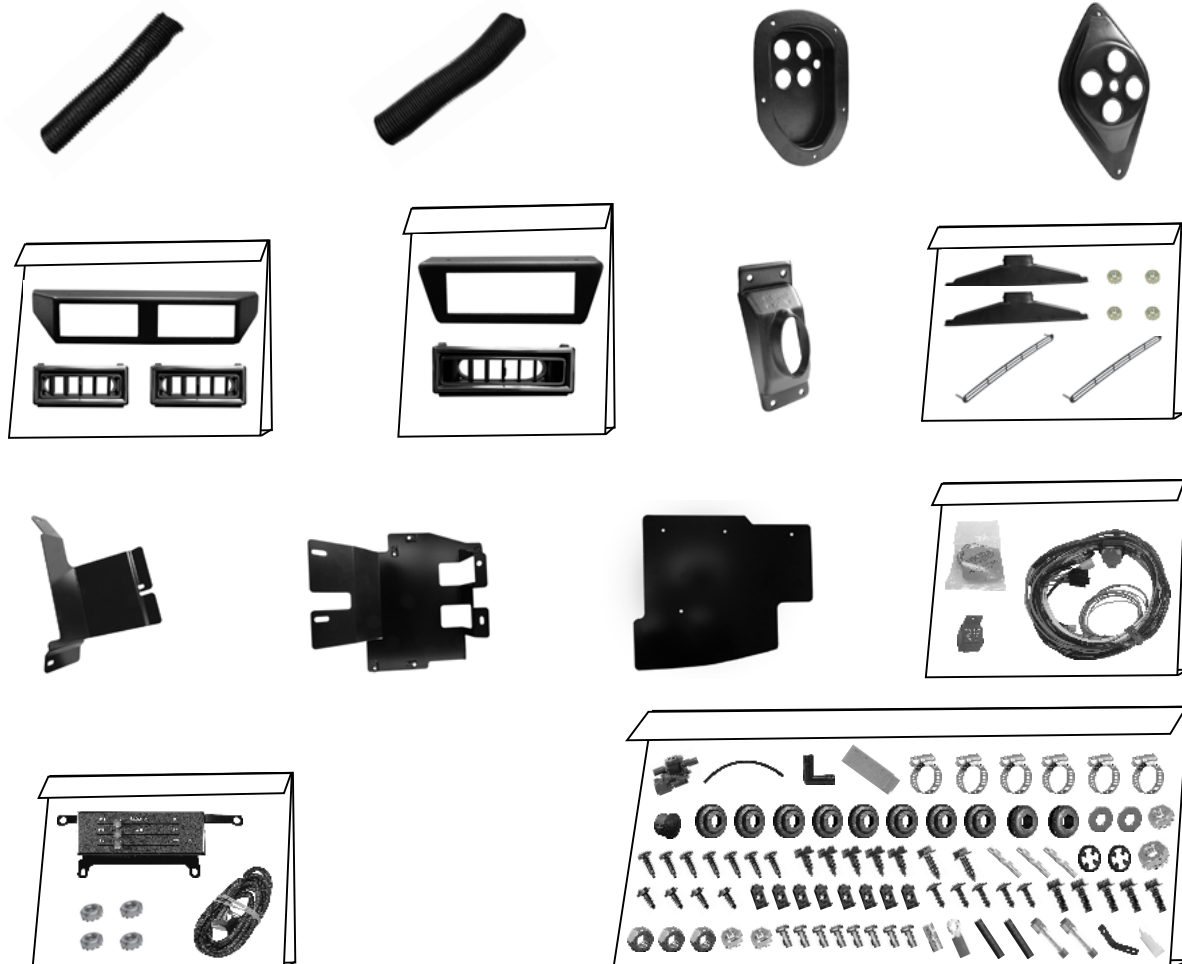
Checked By: _____
Packed By: _____
Date: _____

1



Gen IV Evaporator
Sub Case
744021

2



Accessory Kit
781084

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