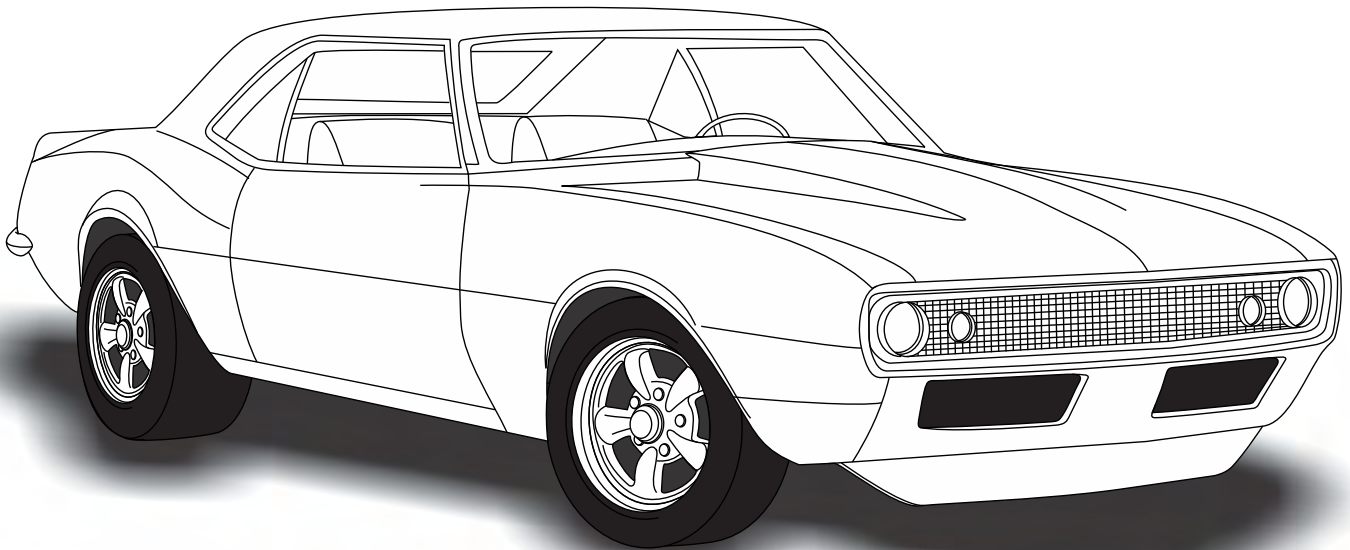




an ISO 9001:2015 Registered Company

1967-68 Chevrolet Camaro/ Pontiac Firebird

without **Factory Air
Evaporator Kit
(561190)**



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Tech Support: tech@vintageair.com
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A detailed tech video outlining the installation process is available on Vintage Air’s YouTube channel at <http://bit.ly/2GWaxWY>.

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



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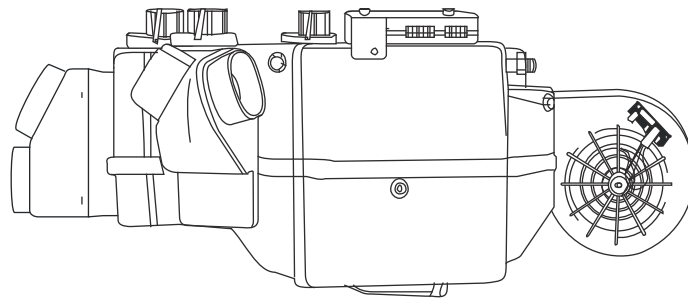
Packing List: Evaporator Kit (561190)

No.	Qty.	Part No.	Description
1.	1	744004-VUE	Gen IV Evaporator Sub Case
2.	1	781190	Accessory Kit

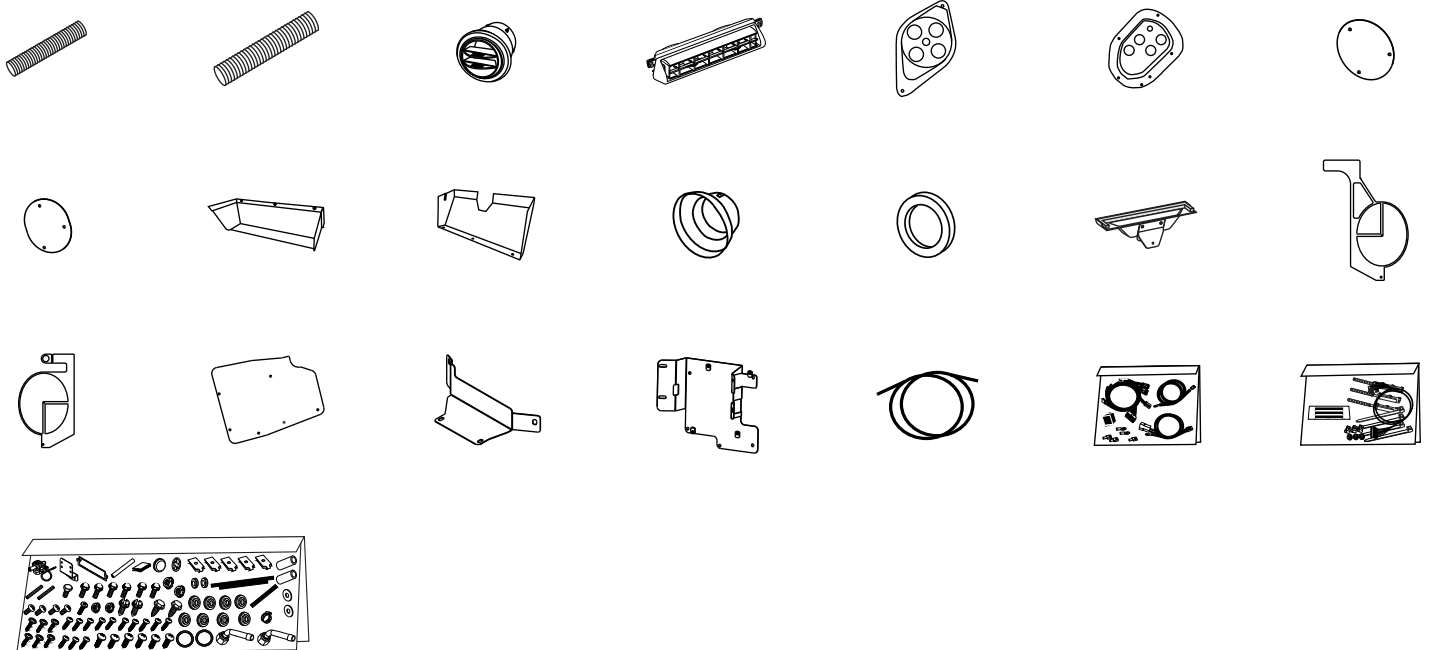
**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

1

Gen IV Evaporator
Sub Case
744004-VUE



2



Accessory Kit
781190

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, charging systems, and from switching some of the vehicle’s other systems on and off. Modern computer-operated equipment can be sensitive to voltage spikes on the power leads, which can cause unexpected resets, strange behavior, and/or permanent damage.

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

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

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



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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. Remove the battery and battery tray (retain) (See Figure 1, below).
3. Drain the radiator.
4. Remove the hood latch and hood latch support assembly (retain) (See Figure 1, below).
5. Remove the OEM heater hoses (discard) (See Figure 1, below).
6. Remove the OEM blower motor assembly (See Figure 1, below). **NOTE: To remove the blower assembly (under hood) and the air distribution system (under dash), the factory manual recommends the following: Remove the right lower rocker molding. Remove the fender attaching bolts. Remove the skirt-to-fender and skirt-to-reinforcement screws. Pull out on the lower portion of the fender, moving the skirt away from the fender flange and firewall. Block the skirt with a 2" x 4" block of wood. To avoid damage to the paint and sheet metal, and for ease of removal and replacement of components, Vintage Air recommends that the right fender be removed, and the inner panel lowered. Removing the right front tire will provide easier access to the inner fender bolts.**
7. Remove the OEM heater wiring/vacuum harness molded grommet (discard) (See Figure 1, below).
8. Install a 1 5/8" plug into the firewall to cover the OEM firewall hole (See Photo 1, below). **NOTE: A 1 1/2" plug is also provided. Use the plug that best fits the vehicle.**

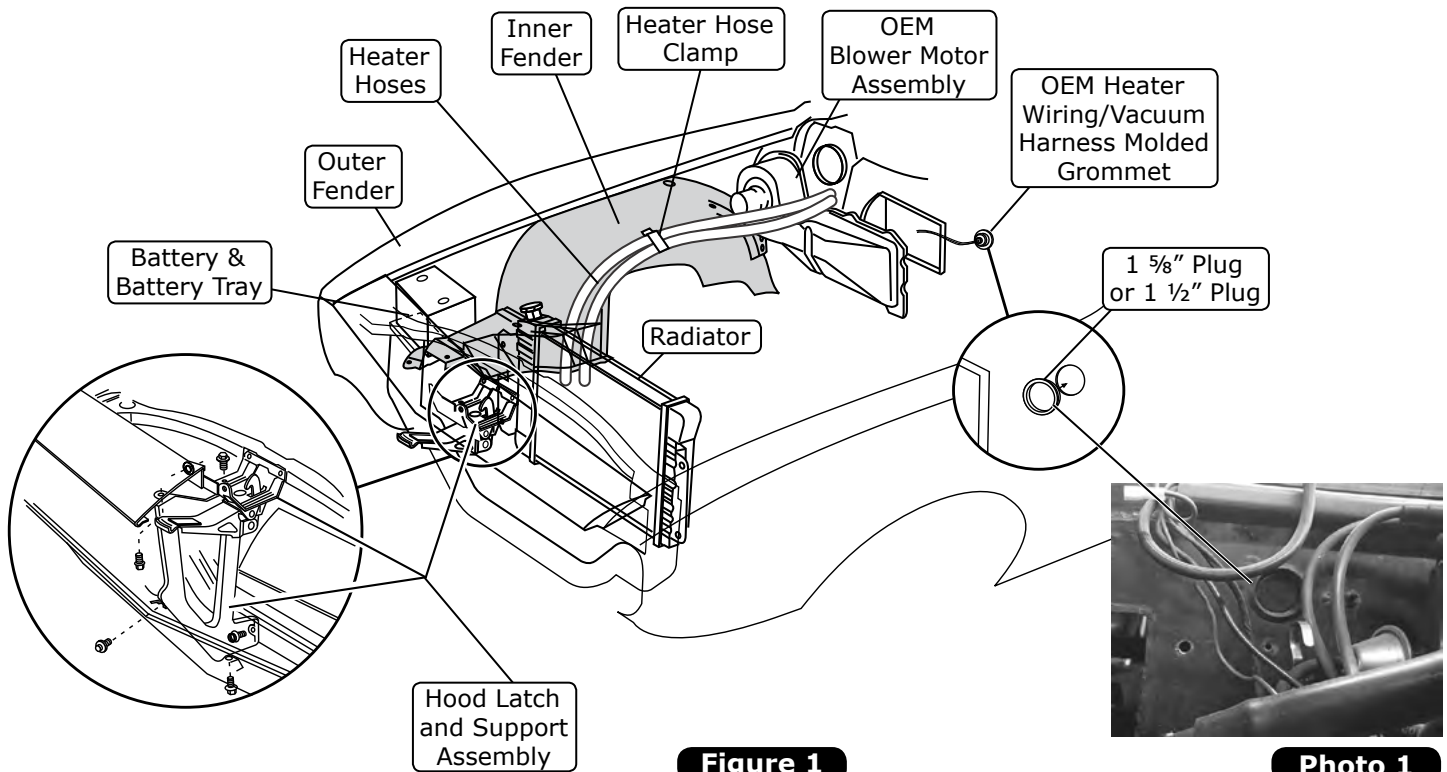


Figure 1

Photo 1

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).



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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.

1. On 1968 models equipped with astro ventilation, remove the astro vents and door assemblies (retain the astro vents, but discard the door assemblies) (See Figure 1, below).
2. Remove the ashtray (retain) (See Photo 1, below).
3. Remove the trim plate and (2) screws (retain) (See Photo 2, below). **NOTE: The center console may have to be loosened to gain access to the trim plate screws. The bottom (2) screws also retain the ashtray slider assembly (See Photo 3, below).**
4. Remove the ashtray slider assembly by removing the screw (retain) (See Photo 3, below).
5. Remove the glove box door by removing (3) screws (retain) (See Photo 4, below).
6. Remove the glove box by removing (4) screws ((2) on top & (2) on the sides) (discard) (See Photo 5, below).

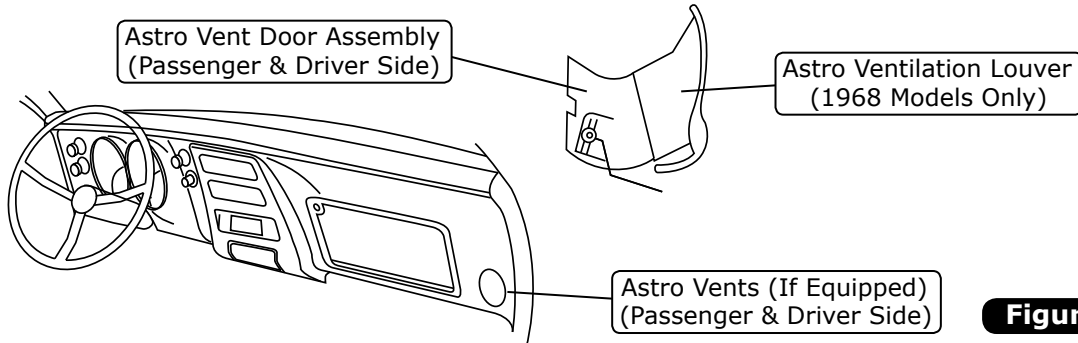


Figure 1

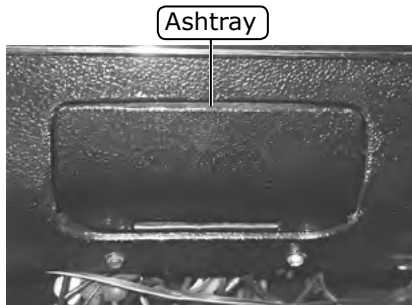


Photo 1

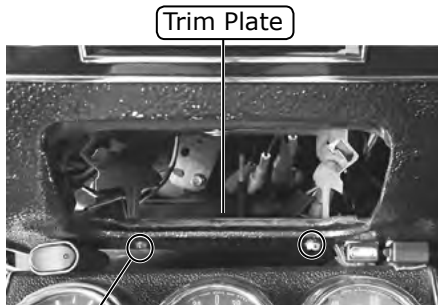


Photo 2

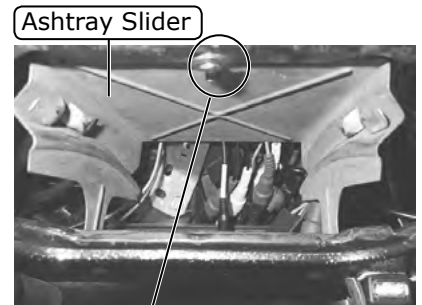


Photo 3



Photo 4



Photo 5



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Passenger Compartment Disassembly (Cont.)

7. Remove the radio by removing the knobs and retaining nuts (retain) (See Figure 2, below).
8. Disconnect the wiring and antenna cable from the radio (retain).
9. Remove the OEM control panel assembly by removing (4) screws from the dash (retain) and disconnecting the light socket (retain) and cables (discard) (See Photo 6, below).
10. Loosen and lower the steering column by removing the (2) nuts from under the column (retain) (See Photo 7, below).

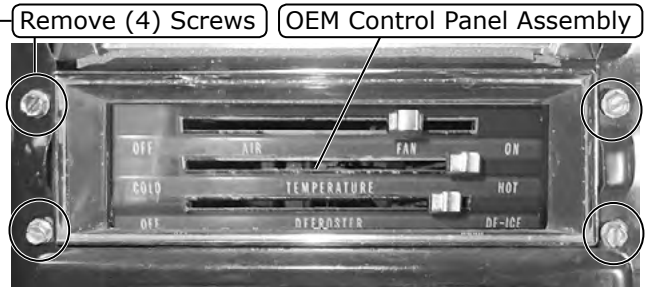


Photo 6

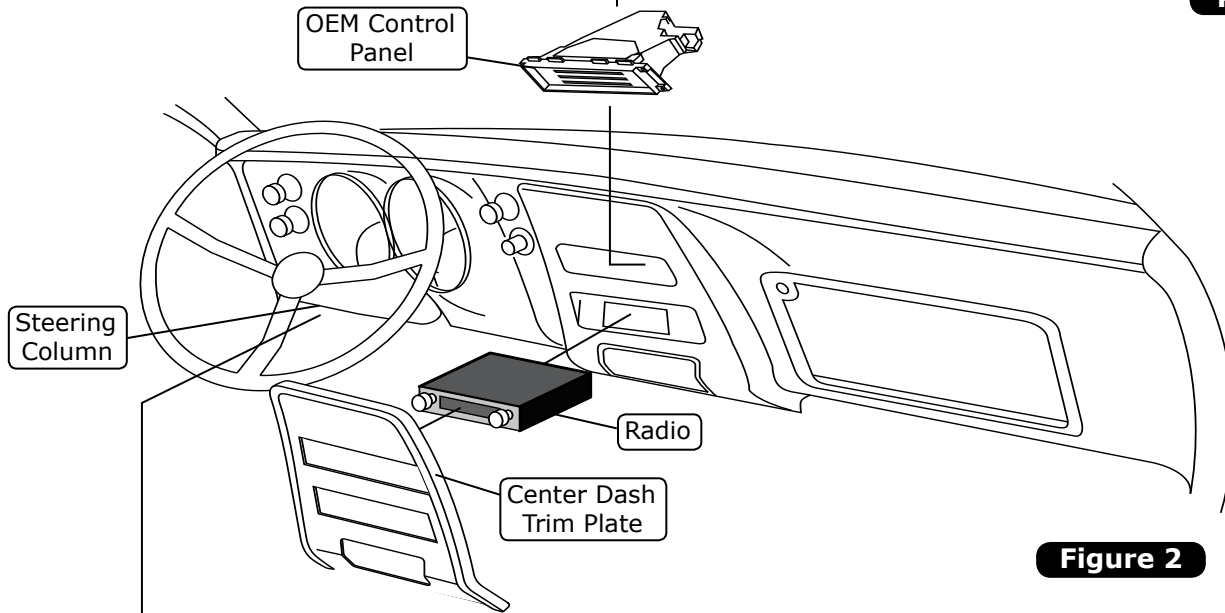


Figure 2

Remove (2) Nuts Under Steering Column



Under Steering Column View Photo 7



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Passenger Compartment Disassembly (Final)

11. Remove (3) screws from the top of the instrument panel and (4) screws from the bottom of the instrument panel ((2) from the left side and (2) from the right side) (retain) (See Photo 8, below).
12. Disconnect the speedometer cable and wiring plug.
13. Remove the instrument panel (retain).
14. Remove the OEM defrost duct (discard) (See Figure 3, below).
15. Remove the OEM heater assembly (discard) (See Figure 3, below).
16. Remove the passenger side kick panel by removing (5) screws (discard screws) (See Figure 4, below).
17. On 1968 models, remove the driver and passenger side louvers by removing (2) mounting screws from each louver bezel (See Photo 9, below).

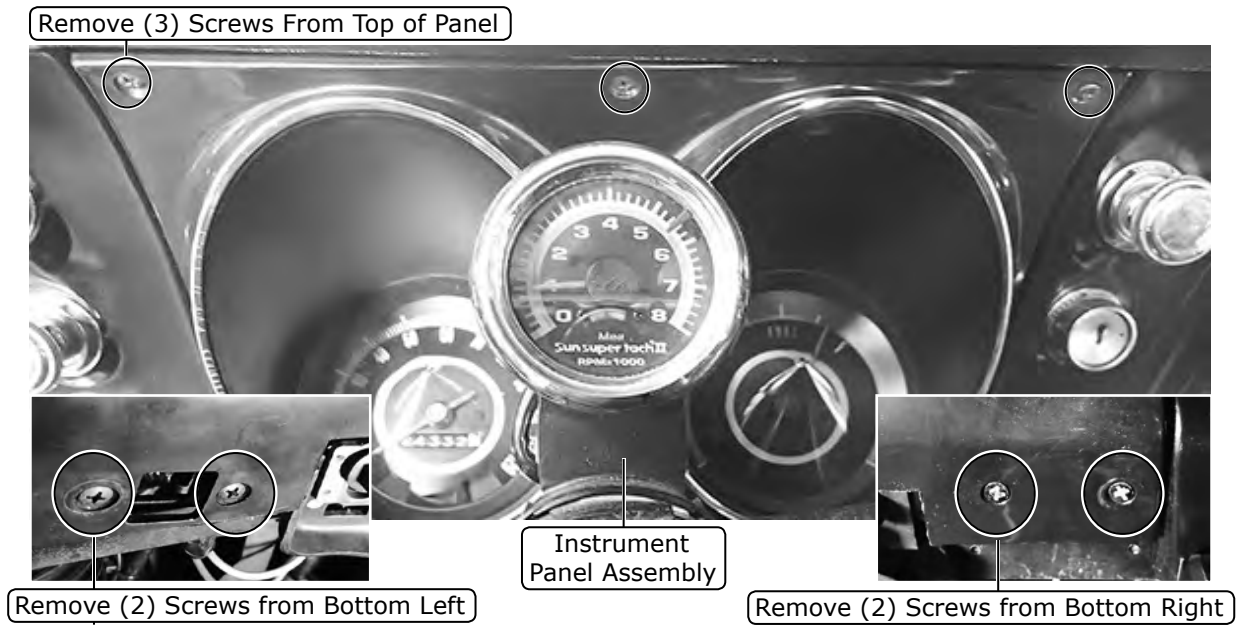


Photo 8

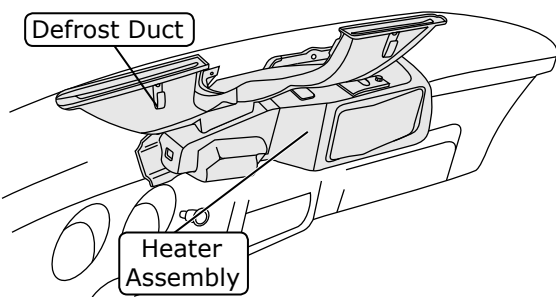


Figure 3

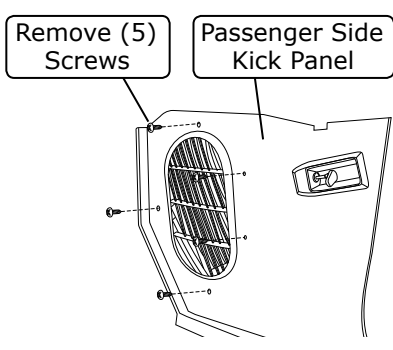


Figure 4

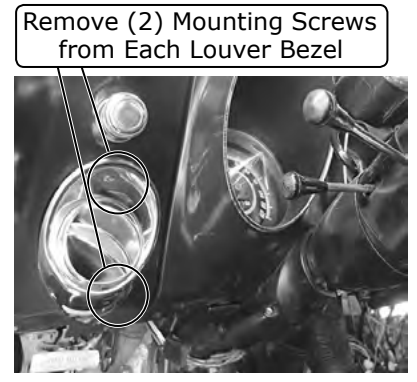


Photo 9



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Firewall Modification

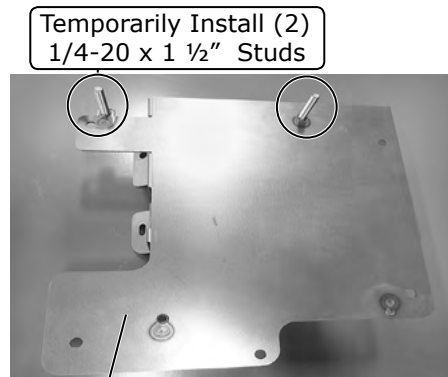
NOTE: Firewall modification is required for firewall cover and drain hose installation.

1. Flatten the edges of the firewall opening (See Photo 1, below).
2. Temporarily install (2) 1/4-20 x 1 1/2" studs into the evaporator firewall bracket as shown in Photo 2, below.
NOTE: This will align the bracket with the mounting holes in the firewall.
3. From inside the passenger compartment, temporarily install the evaporator firewall bracket. Using the bottom hole on the evaporator firewall bracket as a reference, mark and drill a 5/8" hole for the drain hose as shown in Photo 3, below. **NOTE: To ensure a tight fit, do not enlarge the hole to more than 5/8".**
4. Remove the evaporator firewall bracket.



Engine Compartment Side

Photo 1



Evaporator Firewall Bracket 640688

Photo 2



Passenger Compartment Side

Photo 3

Defrost Duct & Fresh Air Cover Installation

1. Locate the (2) defrost duct assemblies (See Photo 1, below)
2. Install the defrost ducts under the dash (See Figure 1, below). Align each defrost duct with the defrost opening in the dash, and hold it in place. Using the bracket as a template, drill a 7/64" hole for each duct as shown below. Secure each defrost duct using a #10 x 1/2" sheet metal screw (See Figure 1, below).
3. If the vehicle is equipped with astro ventilation, apply a 1/4" bead of silicone to the mating surface, and install the driver and passenger side fresh air covers, using OEM hardware to secure (See Figure 1, below).



Photo 1

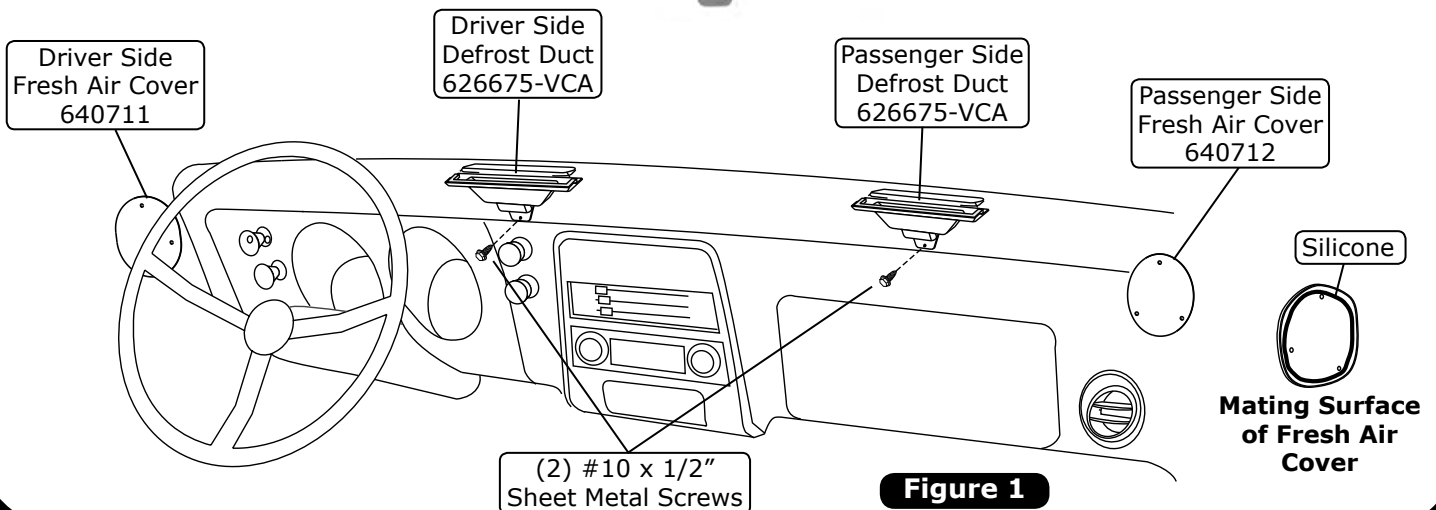


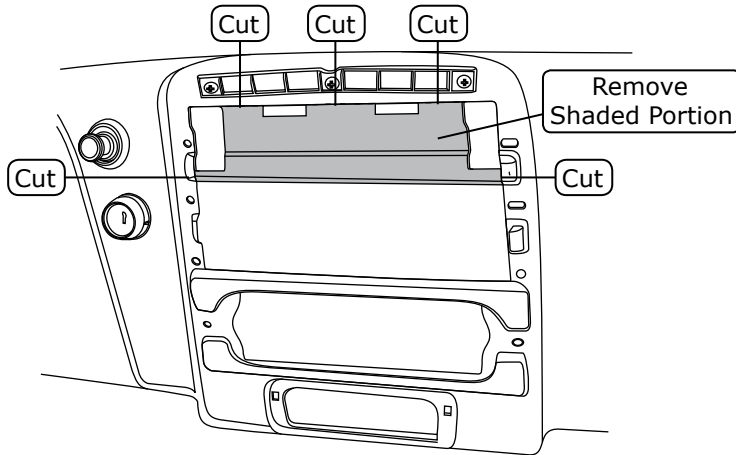
Figure 1



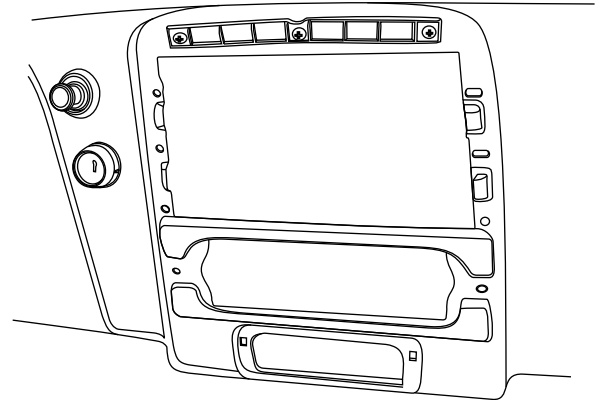
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Dash Frame Modification

1. Modify the dash as shown in Figure 1, below.



Before Modification



After Modification

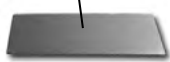
Figure 1

Trim Plate Modification

NOTE: For an upgraded chrome OEM-style center louver (Vintage Air Part # 493068), it will be necessary to purchase a factory A/C dash trim plate.

1. Locate the center louver template (See Photo 1, below).
2. Center the template onto the trim plate as shown in Photo 2, below.
3. Mark the center louver opening on the trim plate (See Photo 3, below).
4. Once the center louver opening is marked, remove the template and carefully cut out the opening in the trim plate. The finished modified trim plate is shown in Photo 4, below.

Center Louver Template 640702



OEM Trim Plate



Photo 1

Center Template on Trim Plate



Photo 2

Mark Louver Opening on Trim Plate



Photo 3

Trim Plate with Cutout



Photo 4



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Driver & Passenger Side Dash Modifications (1967 Models Only)

NOTE: To accommodate the driver and passenger side louvers, it will be necessary to modify the dash by cutting (2) holes using the templates provided with this kit. For standard 2 1/2" louvers (supplied with this kit), use the center hole on the appropriate template to drill a pilot hole before enlarging the hole as explained in the instructions below. For OEM-style louvers (NOT supplied with this kit but available for separate purchase (Part # 49306-VCL), scribe the dash around the outer part of the template holes as shown in Photos 1 & 2, below. To avoid scratching the paint, apply masking tape to the dash and templates.

1. Place the driver and passenger side louver templates onto the dash (See Photos 1 & 2, below). Use a clamp to hold the templates in place (See Photo 2, below).
2. Press on the templates to conform them to the shape of the dash. Once the templates are in place, use a center punch to mark the dash as shown in Photos 1 & 2, below. Once marked, remove the templates from the dash.
3. Using a 2 1/2" hole saw, cut holes in the dash for the driver and passenger side louvers. **NOTE: Before drilling, check for and secure any wiring behind the dash that may come into contact with the hole saw blade.**

Driver Side Louver Template
640701

Masking
Tape



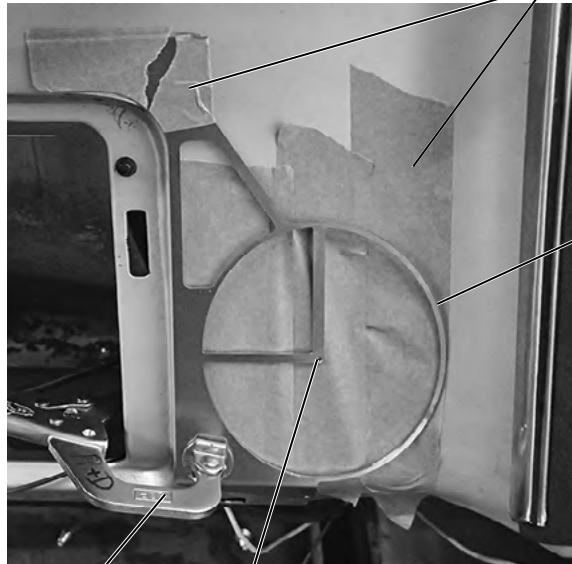
Use Center Punch to Mark
Dash (For Standard Louvers)

Photo 1

Scribe Outer Part of
Template Hole for
OEM-Style Louvers

Passenger Side Louver Template
640700

Masking
Tape



Scribe
Outer
Part of
Template
Hole for
OEM-Style
Louvers

Clamp

Use Center Punch
to Mark Dash
(For Standard
Louvers)

Photo 2



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Driver & Passenger Side Louver Installation (1967 Models Only)

1. Separate the double vane chrome louver assemblies, and insert the louvers into the dash openings. From behind the dash, install the hose adapters onto the louvers as shown in Figure 1, below.

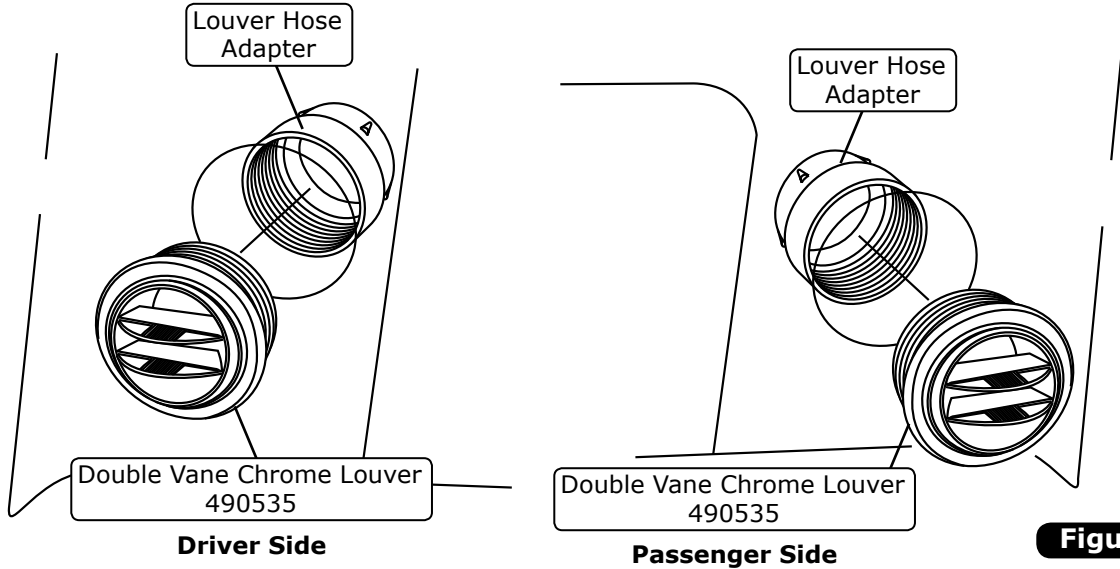


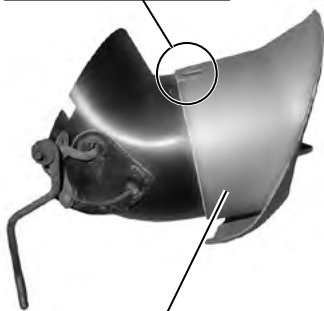
Figure 1

Driver & Passenger Side OEM Louver Modification

NOTE: To install the new 2 1/2" hose adapters, it will be necessary to modify the driver and passenger side OEM louvers.

1. Disassemble the OEM louver by unclipping the (3) tabs on the louver housing and pulling the assembly apart (See Photo 1, below).
2. Remove the ball louver from the louver housing (See Photo 2, below).
3. Measure and mark 1/4" from the edge of the louver housing (See Photos 3 & 4, below). **NOTE: Repeat the process (2) more times around the louver housing.**
4. Drill (3) 1/8" holes into the louver housing (See Photo 4, below).

Unclip (3) Tabs on Louver Housing



Louver Housing

Photo 1

Remove Ball Louver from Louver Housing



Photo 2

1/4"

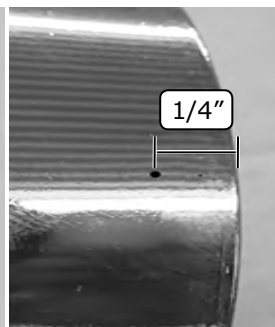


Photo 3

Mark and Drill (3) 1/8" Holes



Louver Housing

Photo 4



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OEM Louver Assembly

1. Adhere a length of the supplied felt strip to the beveled edge inside the inner louver hose adapter. **NOTE: Cut the felt strip to fit as needed (See Photo 1, below).**
2. Insert the OEM ball louver into the OEM louver housing (See Photo 2, below).
3. Install the inner louver hose adapter into the OEM louver housing (See Photo 3, below).
4. Install the outer louver hose adapter flush with the back of the louver housing as shown in Photo 4, below. **NOTE: Before continuing to the next step, ensure that the ball louver can be adjusted if it is too tight or too loose. If adjustment is required, it will need to be completed before the adapter is secured to the housing. If desired, for ease of assembly, (3) small pilot holes (approximately 5/64") can be drilled into the outer ring.**
5. Install (3) #6 x 3/8" pan head screws into the previously drilled holes on the louver housing (See Photo 5, below).

Inner Louver
Hose Adapter
49872-VCI



Install Felt Strip
200101

Insert Louver Ball
into Housing



Install Inner Louver
Hose Adapter into
Housing

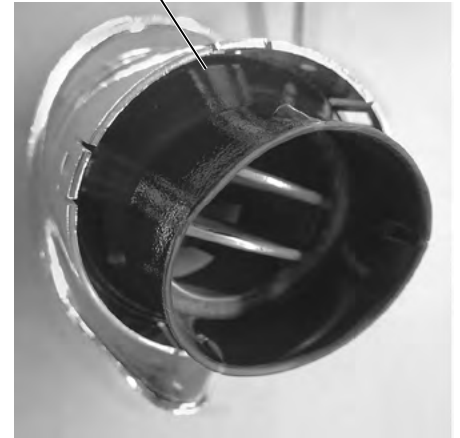


Photo 1

Photo 2

Photo 3

Install Outer Louver
Hose Adapter to
Back of Housing



Install (3) #6 x 3/8"
Screws into Previously
Drilled Holes

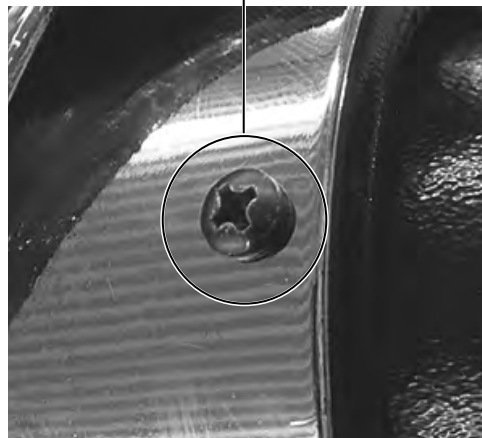


Photo 4

Photo 5



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Kick Panel Modification

1. Remove the fresh air door assembly from the OEM kick panel by lifting up on the door toward the spring and sliding it out of the hinge housing (See Photo 1, below).
2. Disconnect and remove the fresh air door cable from the OEM lever housing (discard) (See Photo 2, below).
3. Trim the fresh air door housing flush with the back of the OEM kick panel, and discard the excess material (See Photo 3, below).
4. Remove the kick panel vent (See Photos 4 & 5, below).

Fresh Air Door Assembly

Lift Door Toward Spring to Remove

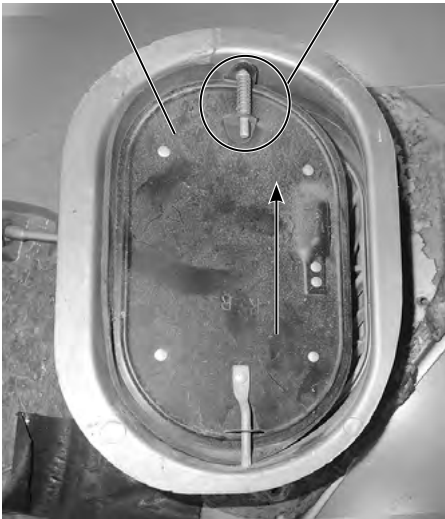


Photo 1

Disconnect Fresh Air Door Cable



Photo 2

Trim Flush with Kick Panel Housing

Fresh Air Door Housing

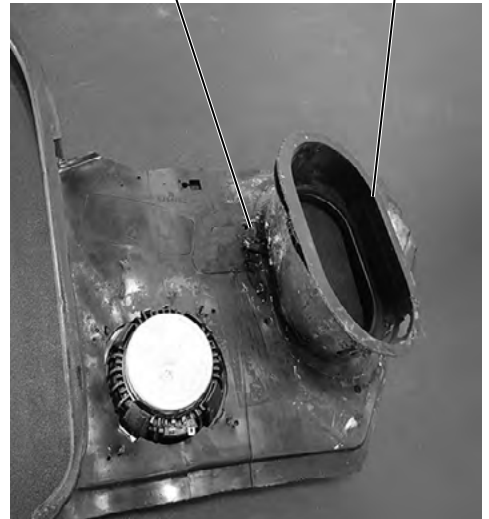


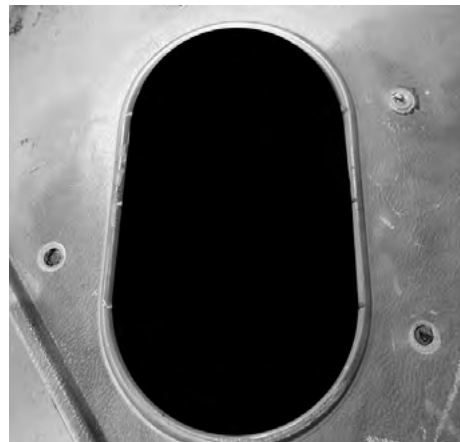
Photo 3

Remove Kick Panel Vent



Before Modification

Photo 4



After Modification

Photo 5



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Firewall Cover Insulation

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). Due to tight clearance for the evaporator unit between the firewall and dash, Vintage Air recommends an insulation thickness of no more than 1/4".

1. To apply insulation to the firewall cover, temporarily install the firewall cover onto the firewall using (2) 1/4-20 x 3/4" bolts and (2) 1/4-20 nuts with star washers (See Photo 1, below).
2. From the passenger compartment, trace the firewall opening onto the firewall cover (See Photo 2, below).
3. Remove the firewall cover, and apply insulation to the traced area (See Photo 3, below).

Temporarily Install Firewall Cover with (2) 1/4-20 x 3/4" Bolts & (2) 1/4-20 Nuts with Star Washers



Firewall Cover 640687

Photo 1

Trace Firewall Opening

Firewall Cover 640687



Passenger Compartment View

Photo 2

Apply Insulation to Traced Area

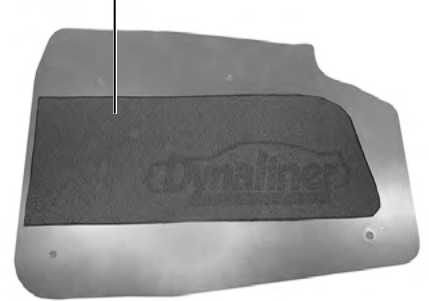
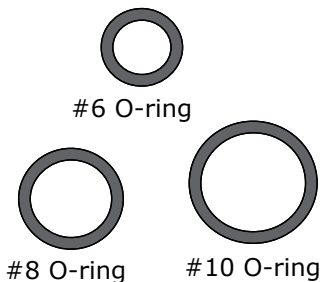
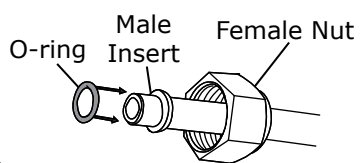


Photo 3

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.

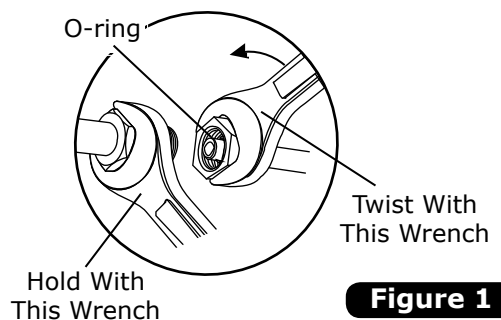
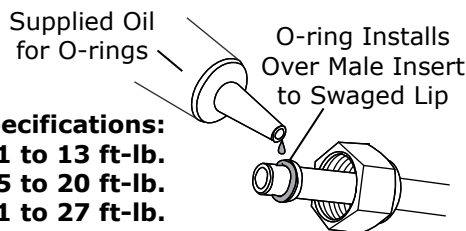


Figure 1



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Evaporator Bracket & Heater Hardline Installation

1. On a workbench, install the upper heater hardline onto the evaporator unit using a properly lubricated #10 O-ring (See Figure 1, Page 16, and Photo 1, below).
2. Install the lower heater hardline onto the evaporator unit using a properly lubricated #10 O-ring (See Figure 1, Page 16, and Photo 2, below). **NOTE: Install the upper and lower hardlines facing downward as shown in Photo 2, below.**
3. Install the evaporator firewall bracket using (4) 1/4-20 x 1/2" bolts (supplied on the evaporator unit) (See Photo 3, below).

Install Upper Heater Hardline

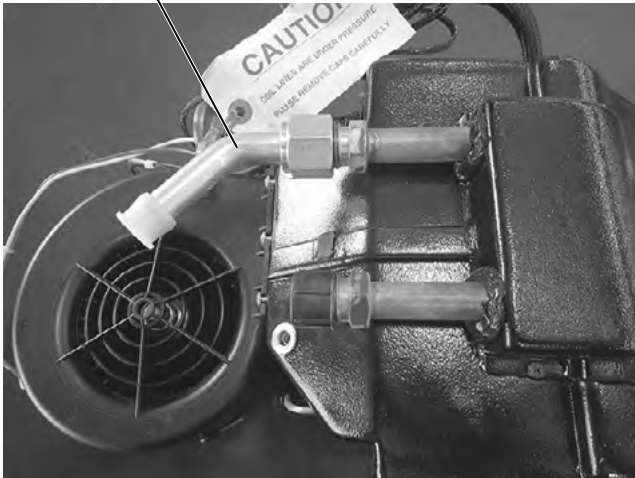
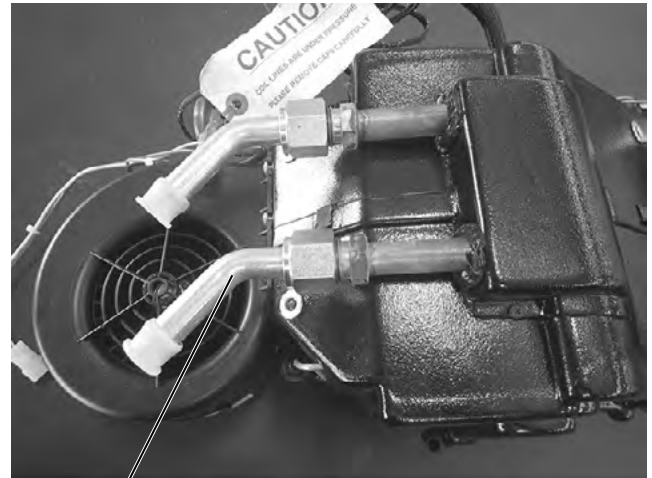


Photo 1



Install Lower Heater Hardline

Photo 2

Install Evaporator Firewall Bracket Using (4) 1/4-20 x 1/2" Bolts (Supplied on Evaporator Unit)



Evaporator Firewall Bracket 640682

Photo 3



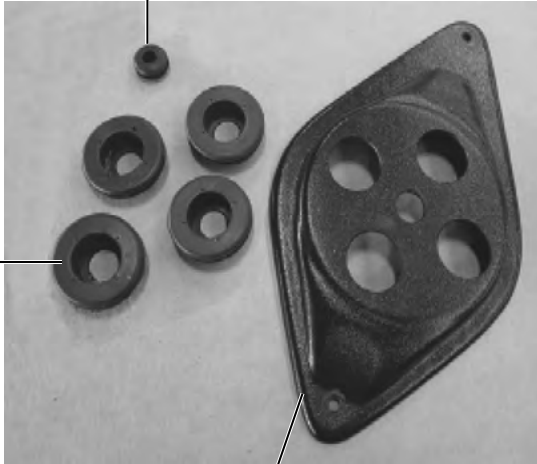
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Fresh Air Cap & Kick Panel Cover Preparation

1. Install (4) large grommets and a 7/8" grommet into the fresh air cap (See Photos 1 and 2, below).
2. Install (4) large grommets and a 7/8" grommet into the kick panel cover (See Photos 3 and 4, below).

7/8" Grommet
33144-VUI

(4) Large
Grommets
33137-VUI



Fresh Air Cap
622230

Photo 1



Completed Installation

Photo 2

7/8" Grommet
33144-VUI

(4) Large
Grommets
33137-VUI



Kick Panel Cover
622234

Photo 3



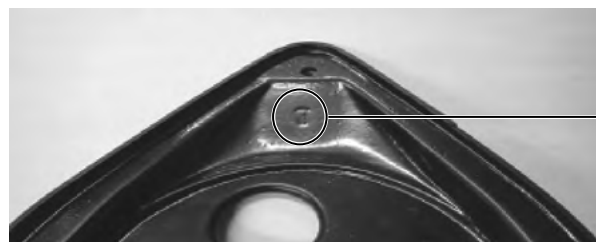
Completed Installation

Photo 4

Heater and A/C Hose Installation

NOTE: Soapy water may be used to ease insertion of A/C and heater hoses through the grommets, but be sure the hoses are capped to prevent water from getting inside.

1. On the inside of the fresh air cap, the letter "T" indicates the top mounting hole for the firewall (See Photo 1, below).



"T" Indicates
Top Mounting Hole

Photo 1



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Heater and A/C Hose Installation (Cont.)

1. Insert a length of heater hose through the bottom right large grommet on the fresh air cap (See Photo 2, below).
2. Insert a length of heater hose through the top right large grommet on the fresh air cap (See Photo 3, below).
3. Insert the straight fitting on the #6 drier/evaporator A/C hose through the bottom left large grommet on the fresh air cap (See Photo 4, below).
4. Insert the 45° fitting on the #10 compressor/evaporator A/C hose through the top left large grommet on the fresh air cap (See Photo 5, below). **NOTE: Temporarily remove the large grommet from the fresh air cap to ease insertion of the #10 hose fitting.**
5. From the passenger compartment, insert the lower heater hose through the bottom left large grommet on the kick panel cover (See Photo 6, below).
6. Insert the upper heater hose through the top left large grommet on the kick panel cover (See Photo 7, below).
7. Insert the #6 drier/evaporator A/C hose through the bottom right large grommet on the kick panel cover (See Photo 8, below).
8. Insert the #10 compressor/evaporator A/C hose through the top right grommet on the kick panel cover (See Photo 9, below). **NOTE: Temporarily remove the grommet from the kick panel cover for easier insertion.**

Fresh Air Cap
622230

Large Grommet
33137-VUI

Heater
Hose

#6 Drier/Evaporator
A/C Hose

#10 Compressor/
Evaporator A/C Hose



Heater
Hose

Photo 2



Photo 3



Photo 4



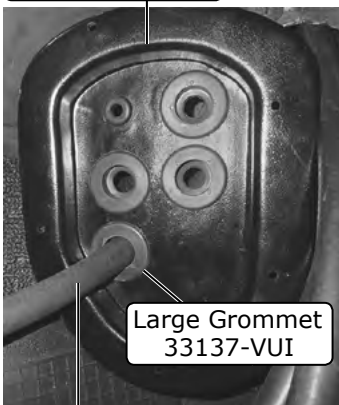
Photo 5

Kick Panel Cover
622234

Upper
Heater Hose

#6 Drier/Evaporator
A/C Hose

#10 Compressor/
Evaporator A/C Hose



Lower
Heater Hose

Photo 6



Photo 7



Photo 8



Photo 9



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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 and through the 7/8" grommet in the fresh air cap (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.**
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 (See Photo 3, below). **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.**
4. Route the heater control valve wiring (red, white and green) through the 7/8" grommet in the fresh air cap (See Photo 4, 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).

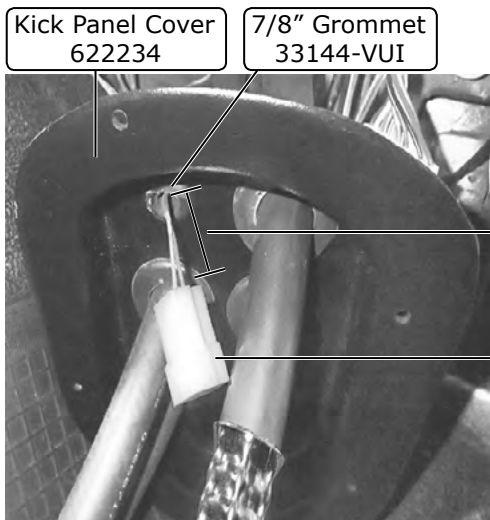


Photo 1

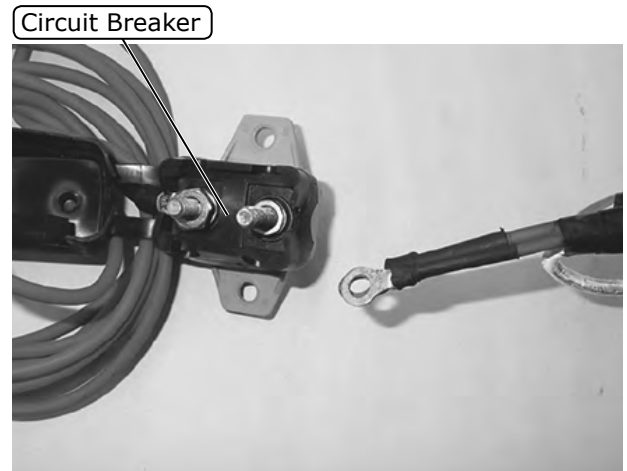


Photo 2

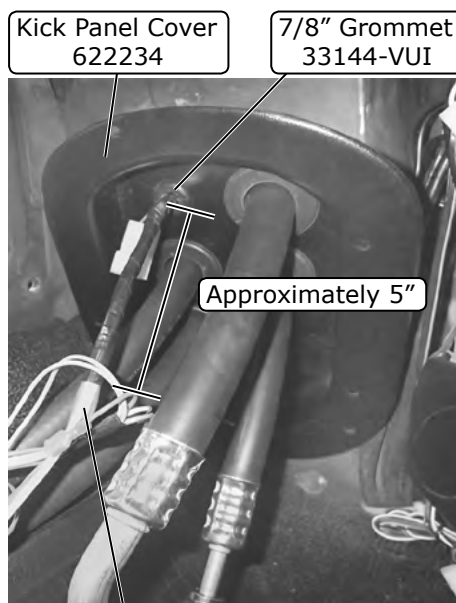


Photo 3

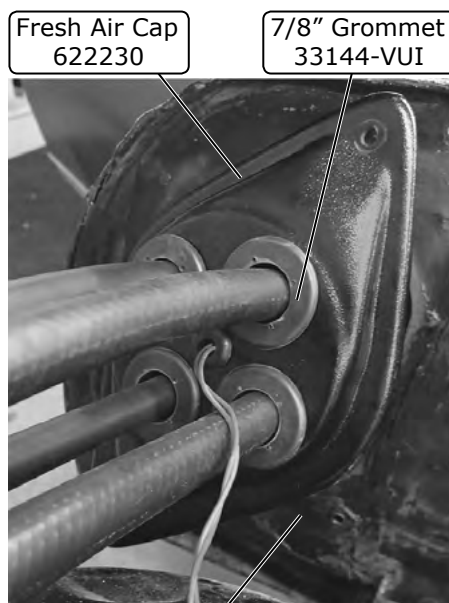


Photo 4

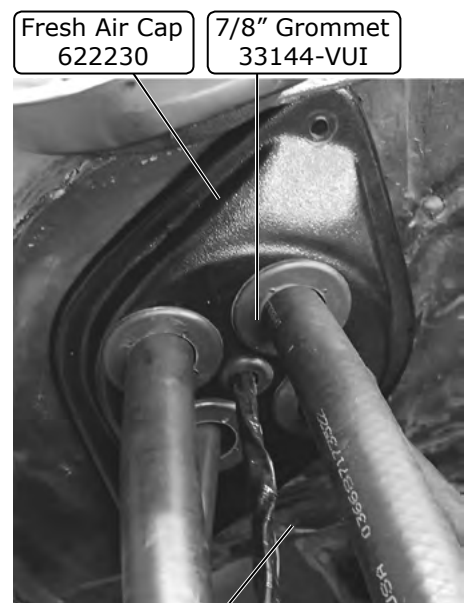


Photo 5



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Kick Panel Installation

1. Apply a bead of silicone around the mating surface of the kick panel cover (See Figure 1, below).
2. Install the kick panel cover into place, lining up the mounting holes on the cover with the OEM mounting holes on the kick panel opening.
3. Install the kick panel, routing the hoses and wiring through the opening. Secure the panel using (4) #8 x 1 1/4" screws with washers (See Photo 1, below).
4. Using a #8 x 1 1/4" screw with washer, secure the compressor relay to the upper OEM kick panel mounting hole as shown in Photo 2, below.

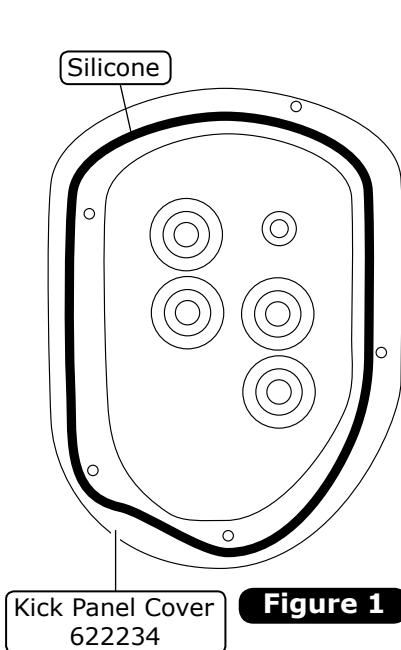


Figure 1

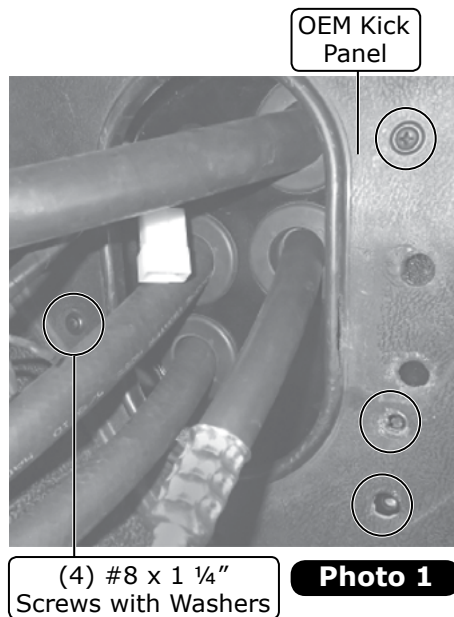


Photo 1

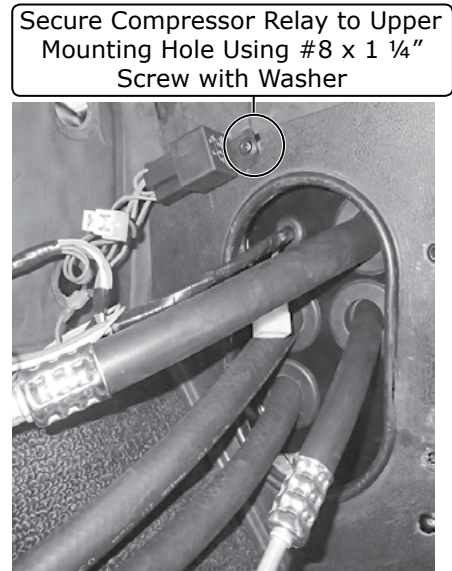


Photo 2

Evaporator Installation

NOTE: A 10" block of wood may be used to support the evaporator unit while the following steps are completed.

1. Place the evaporator unit under the dash (See Photo 1, below).
2. Install the straight fitting on the #6 drier/evaporator A/C hose onto the expansion valve on the evaporator unit using a properly lubricated #6 O-ring (See Figure 1, Page 16, and Photo 2, below).
3. Install the upper heater hose and a hose clamp onto the upper heater hardline on the evaporator unit (See Photo 3, below).

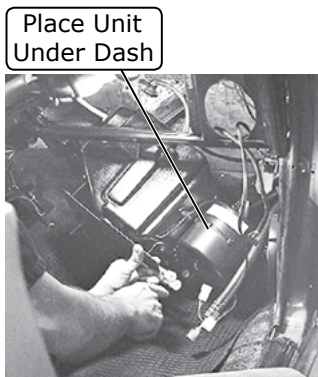


Photo 1

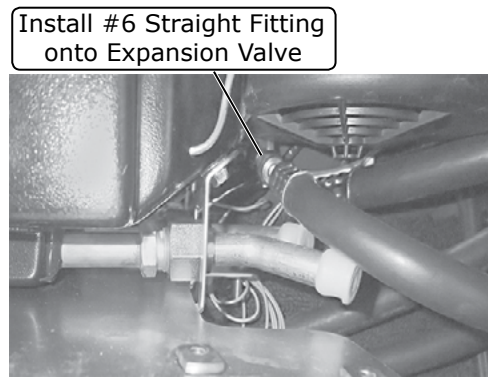


Photo 2

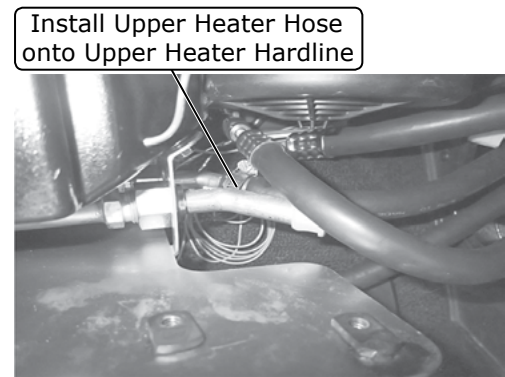


Photo 3



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Evaporator Installation (Cont.)

4. Install the lower heater hose and a hose clamp onto the lower heater hardline on the evaporator unit (See Photo 4, below).
5. Remove the support board (if used), and roll the evaporator into its mounting position. Insert the (2) 1/4-20 x 1 1/2" studs into the upper OEM mounting holes on the firewall (See Photo 5, below).
6. Install the 45° fitting on the #10 compressor/evaporator A/C hose onto the #10 fitting on the evaporator using a properly lubricated #10 O-ring (See Figure 1, Page 16, and Photo 6, below). **NOTE: After installing the #10 compressor/evaporator A/C hose, wrap all exposed metal with the supplied press tape (See Photo 7, below).**
7. Install (2) #8 U-nuts onto the evaporator dash bracket (See Photo 8, below). Position the evaporator dash bracket under the glove box door mounting holes, and install it onto the evaporator unit using (2) 1/4-20 x 1/2" bolts (supplied on the evaporator unit) (See Photos 9 & 10, below).

Install Lower Heater Hose onto Lower Heater Hardline

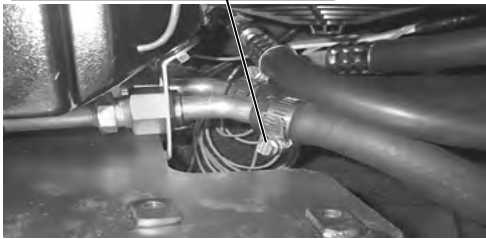


Photo 4

Insert (2) 1/4-20 x 1 1/2" Studs into Mounting Holes



Engine Compartment View

Photo 5

Install #10 A/C Hose 45° Fitting onto #10 Evaporator Fitting



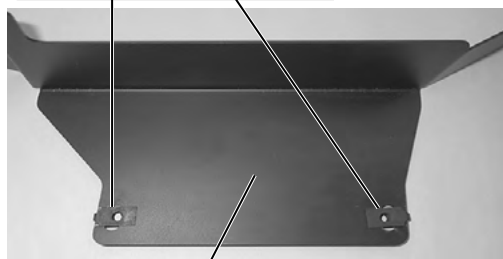
Photo 6

Wrap All Exposed Metal with Press Tape



Photo 7

Install (2) #8 U-nuts onto Evaporator Dash Bracket



Evaporator Dash Bracket 640683

Photo 8

Evaporator Dash Bracket 640683

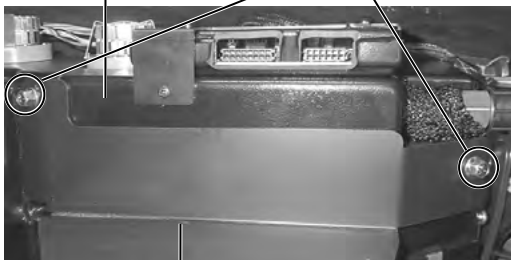


Photo 9

Glove Box Door Mounting Holes

Evaporator Unit

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



Evaporator Dash Bracket 640683

Photo 10



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Drain Hose Installation

1. Install the drain hose through the previously drilled 5/8" hole in the firewall. Attach the drain hose onto the drain outlet on the bottom of the evaporator unit (See Photo 1, below).

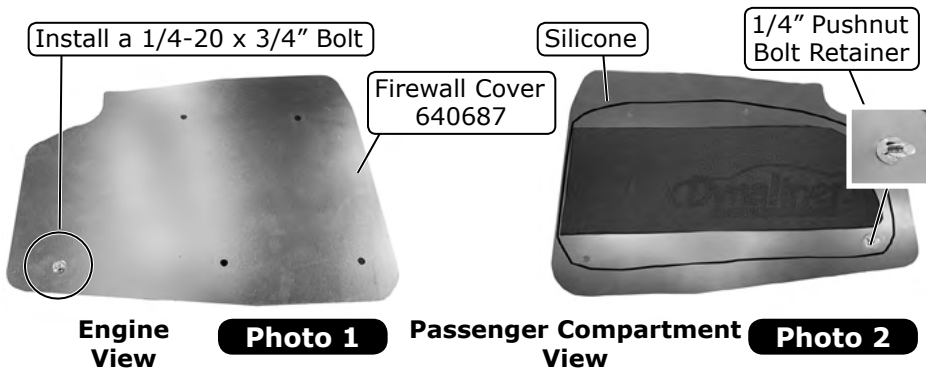


Photo 1

Firewall Cover Installation

NOTE: 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. Locate the bottom left mounting hole on the firewall cover, and install a 1/4-20 x 3/4" mounting bolt and a 1/4" pushnut bolt retainer (See Photos 1 & 2, below).
2. Apply a bead of silicone around the mating surface of the firewall cover (See Photo 2, below).
3. Install the firewall cover over the (2) 1/4-20 x 1 1/2" studs, and secure it using (2) 1/4-20 nuts with star washers to keep the firewall cover and evaporator unit in place (See Photo 3, below).
4. Install (2) 1/4-20 x 3/4" bolts into the remaining open mounting holes in the firewall cover and into the evaporator firewall bracket (See Photo 4, below). **NOTE: Do not tighten at this time.**
5. Remove the (2) 1/4-20 nuts with star washers and (2) 1/4-20 x 1 1/2" studs from the firewall cover, and replace them with (2) 1/4-20 x 3/4" bolts (See Photo 5, below). **NOTE: Do not tighten at this time.**
6. In the passenger compartment, install a 9/32" washer and a 1/4-20 nut with star washer onto the bottom right firewall cover bolt as shown in Photo 6, below. **NOTE: Do not tighten at this time.**

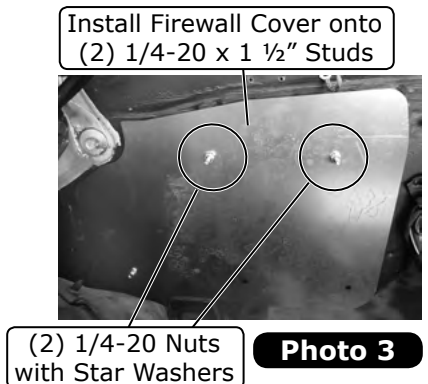


Engine View

Photo 1

Passenger Compartment View

Photo 2



(2) 1/4-20 Nuts with Star Washers

Photo 3



Photo 4

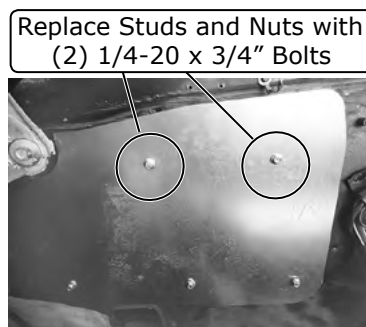


Photo 5



Photo 6



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Firewall Cover Installation (Cont.)

7. Verify that the evaporator unit is level and square to the dash. **NOTE: To ensure proper drainage, it is very important that the evaporator is level, both left-right and fore-aft. Check for level on the flat portions of the case around the drain.**
8. Tighten all of the mounting bolts at this time. **NOTE: Tighten the bolts on the firewall first. Adjust the evaporator dash bracket as needed, and then tighten the bolts on the evaporator unit. Silicone or seam sealer may be applied around the outer edge of the firewall cover.**

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).

Attach Violet Wire to Switched Power Source

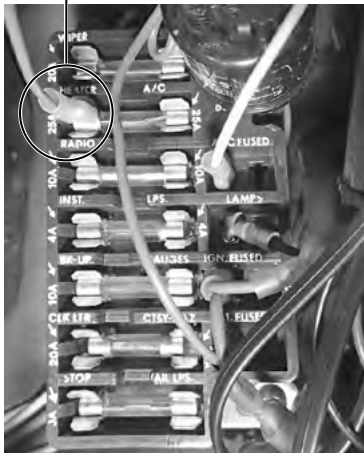


Photo 1

Main Wiring Harness Connector

Heater Control Valve Connector



Photo 2

Main Wiring Harness Connector

Blower Motor Connector



Photo 3

Plug Main Wiring Harness into ECU

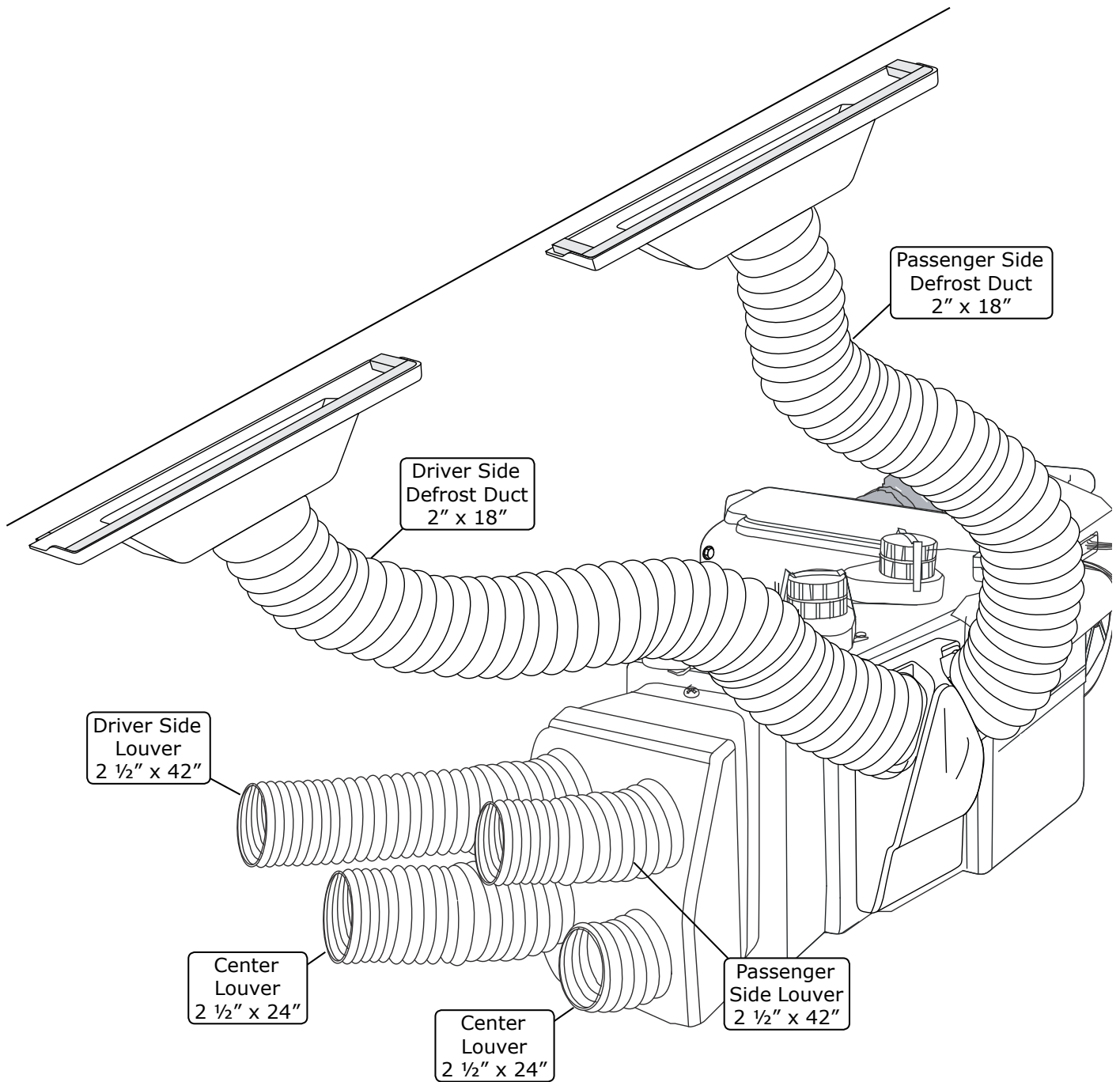


Photo 4



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Duct Hose Installation





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Center Louver Installation

1. Locate the center louver assembly, and disassemble it as shown in Figure 1, below.
2. Attach the center louver duct hoses to the center louver hose adapter (See Photo 1, below).
3. Install the dual hose adapter and center louver bracket into the dash using (2) #8 x 1/2" screws (See Photo 2, below).
4. Install (2) 1/16" nylon flat washers onto each end of the center louver (See Figure 1, below).
5. Install the center louver onto the center louver bracket (See Photo 3, below).
6. Install the trim plate, and secure it to the dash using OEM hardware (See Photo 4, below).
7. Install the center louver bezel over the center louver, and secure it using (2) #4 x 1/4" flat screws (See Photo 5, below).

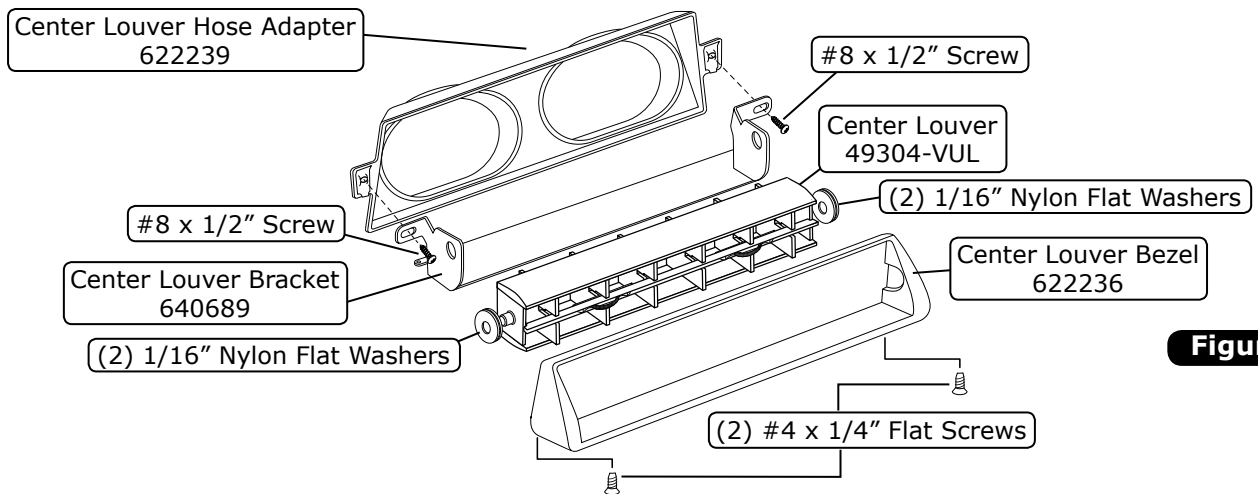


Figure 1



Center Louver Hose Adapter 622239

Photo 1

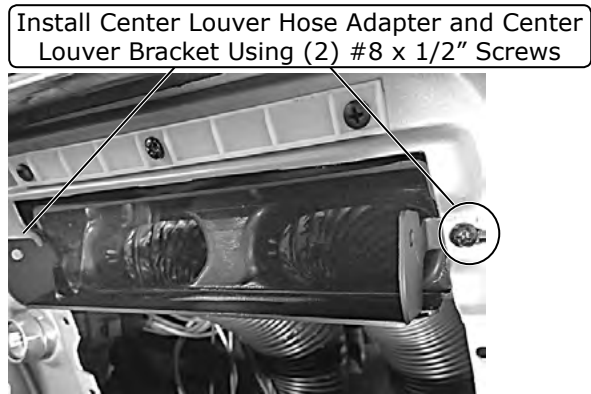


Photo 2

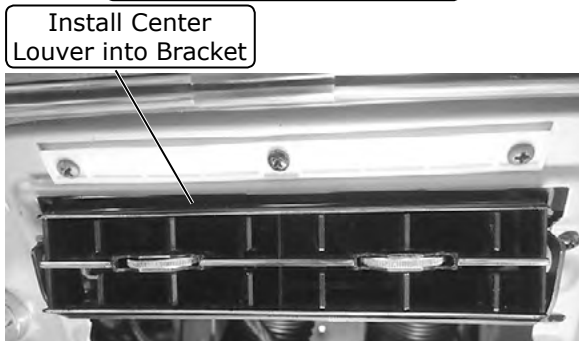
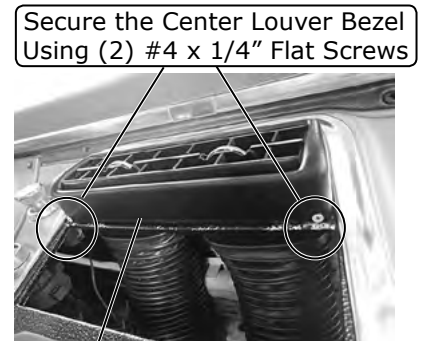


Photo 3



Photo 4



Center Louver Bezel 622236

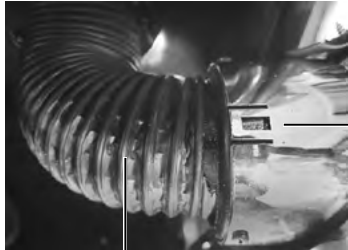
Photo 5



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Driver & Passenger Side Louver Installation

1. Attach a 42" length of 2 1/2" duct hose to the driver side louver, and install it into the dash (See Photo 1, below).
2. Attach a 42" length 2 1/2" duct hose to the passenger side louver, and install it into the dash (See Photo 2, below).



Driver Side Louver

42" Length of 2 1/2" Duct Hose

Photo 1



Passenger Side Louver

Photo 2

Control Panel Installation

1. From the driver side, install the control panel into the dash using the (4) OEM screws (See Photo 1, below).
2. Connect the control panel wiring harness to the ECU (See Photo 2, below).

(4) OEM Screws



Photo 1

Connect Control Panel Wiring Harness to ECU

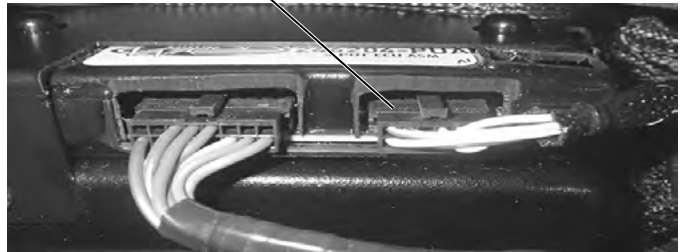
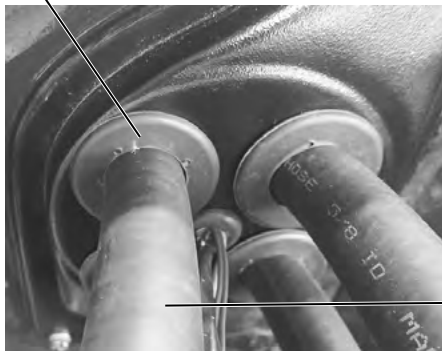


Photo 2

Fresh Air Cap Installation

1. Reinstall the large grommet on the #10 compressor/evaporator A/C hose into the fresh air cap (See Photo 1, below).
2. Gently pull the slack from the hoses in the passenger compartment, making sure the hoses are not kinked.
3. Slide the fresh air cap into position, and secure it to the firewall using (2) #14 x 3/4" sheet metal screws (See Photo 2, below).
4. Apply silicone around the outer edge of the fresh air cap (See Photo 2, below).

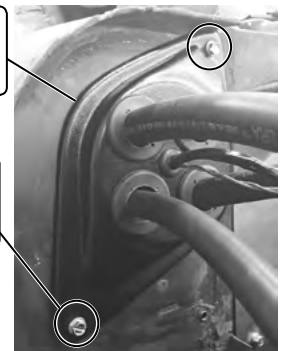
Reinstall Large Grommet into Fresh Air Cap



#10 Compressor/Evaporator A/C Hose 090176

Photo 1

Apply Silicone Around Fresh Air Cap



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

Photo 2



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A/C Hose Installation

Standard Hose Kit:

1. Locate the #8 condenser/compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 1, Page 16), and connect the #8 90° fitting with service port to the #8 discharge port on the compressor (See Photo 1, below). Then route the 45° fitting to the #8 condenser/core hardline coming from the condenser (See Photo 2, below). Tighten each fitting connection (See Figure 1, Page 16).
2. Locate the #10 compressor/evaporator A/C hose. Lubricate a #10 O-ring (See Figure 1, Page 16), and connect the #10 90° fitting with service port to the #10 suction port on the compressor (See Photo 1, below). Tighten the fitting connection (See Figure 1, Page 16).
3. Locate the #6 drier/evaporator hose. Lubricate a #6 O-ring (See Figure 1, Page 16), and connect it to the #6 drier/fenderwell hardline coming from the condenser (See Photo 2, below). Tighten the fitting connection (See Figure 1, Page 16).

Modified Hose Kit:

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

#10 Compressor/
Evaporator A/C Hose
090176

Compressor

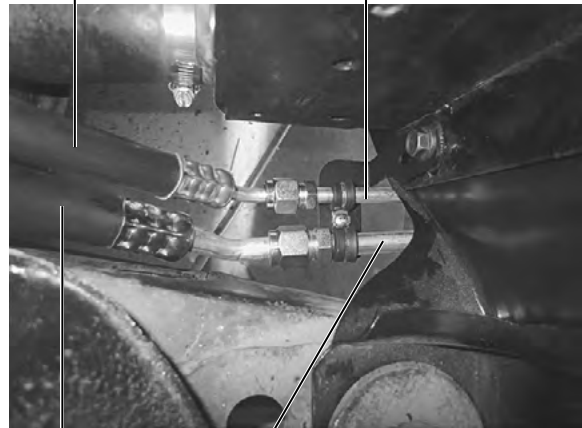


#8 Compressor/
Evaporator A/C Hose
090175

Photo 1

#6 Drier/Evaporator A/C Hose
090174

#6 Drier/Fenderwell Hardline
090173



#8 Compressor/
Evaporator A/C Hose
090175

#8 Condenser/
Core Hardline
35367-VCG

Photo 2

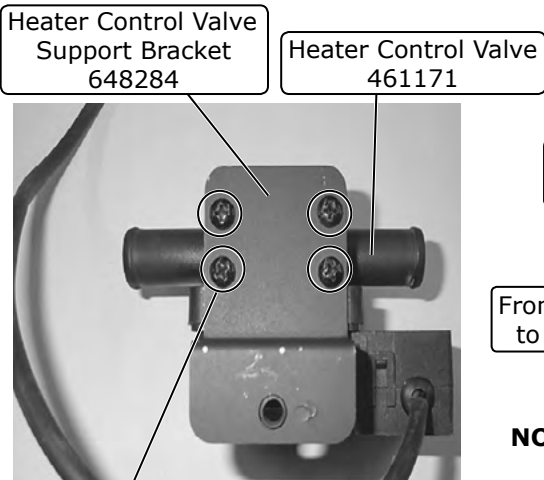


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Heater Control Valve Installation

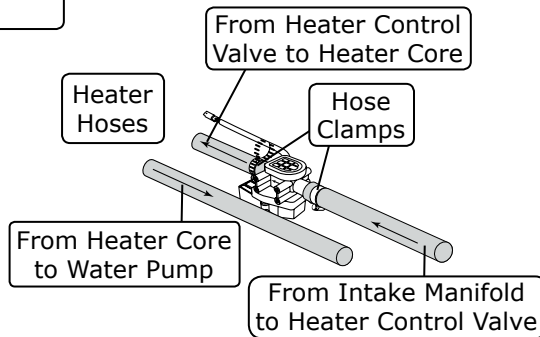
NOTE: Vintage Air Systems use 5/8" heater connections. On engines equipped with 3/4" hose nipples, these will need to be removed and replaced with 5/8" nipples (not supplied). For water pumps with a cast-in 3/4" heater outlet, a 3/4" x 5/8" reducer fitting (not supplied) or molded hose (Vintage Air Part # 099010) will need to be installed in the heater hose.

1. Install the heater control valve support bracket onto the heater control valve using (4) #8 x 1/2" screws (See Photo 1, below). **NOTE: Before mounting the heater control valve in the vehicle, ensure that the wiring from the main harness and heater control valve can be connected easily without tension or strain on the connection, or excessive pressure on the metal surfaces.**
2. Route a piece of heater hose (not provided) from the lower heater core fitting to the water pump. Secure using hose clamps. (See Photo 2, below).
3. 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 Figure 1 and Photo 3, below). **NOTE: Ensure proper flow direction through the heater control valve (the flow direction follows the molded arrow on the valve).**
4. Plug the heater control valve connector into the connector on the main wiring harness (See Photo 4, below). Secure the white wire from the heater control valve portion of the main harness to a suitable chassis ground.
5. Install (2) #10 Adel clamps to secure the heater hoses (See Photo 5, below). **NOTE: Use an OEM hole to mount the Adel clamps. If an OEM hole is not available, a new hole will need to be drilled. Be sure all hoses are routed away from the fan, belts and pulleys.**



(4) #8 x 1/2" Screws

Photo 1



NOTE: Flow Direction Follows Molded Arrow on Valve.

Figure 1

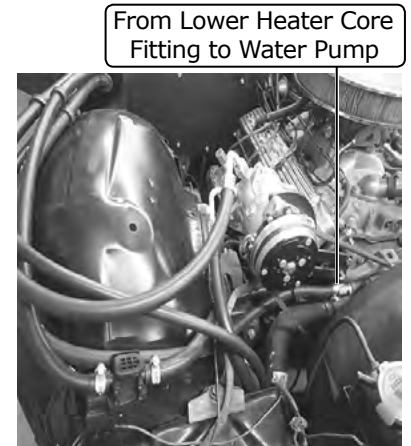
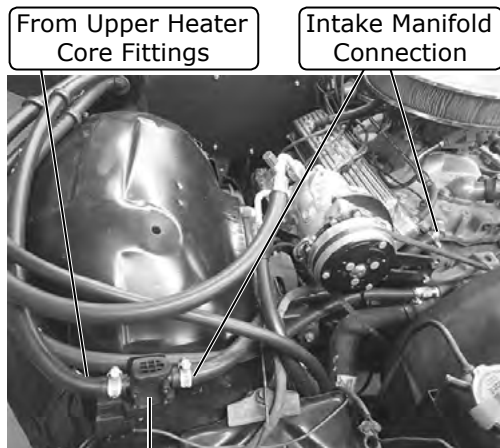
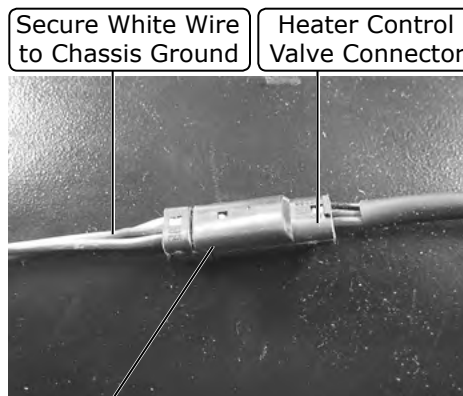


Photo 2



Heater Control Valve 461171

Photo 3



Heater Control Harness Connector

Photo 4

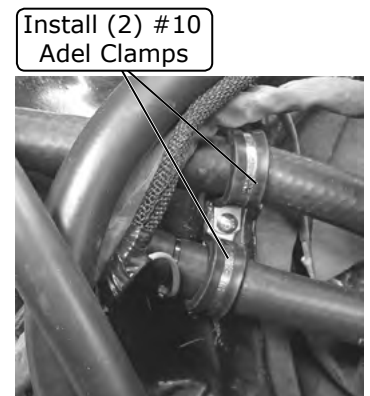


Photo 5



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Wiring Final Steps

1. Reconnect the circuit breaker, and mount it as close as possible to battery (See Photo 1, below).
2. Route the blue lead from the main wiring harness to the safety switch (See Photo 2, below).
3. Connect the compressor lead wire to the safety switch (See Photo 2, below).
4. Wrap the safety switch wiring with flexo sleeve, and secure it with the supplied tie wraps (See Photo 3, below).

Mount Circuit Breaker
Close to Battery

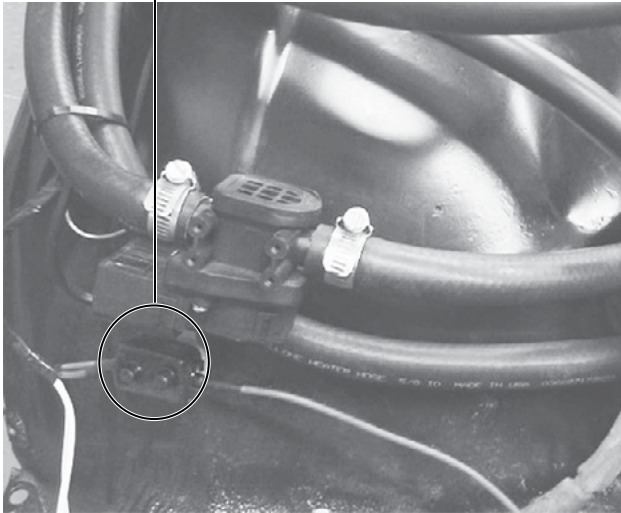


Photo 1

Connect Wire Leads
to Safety Switch

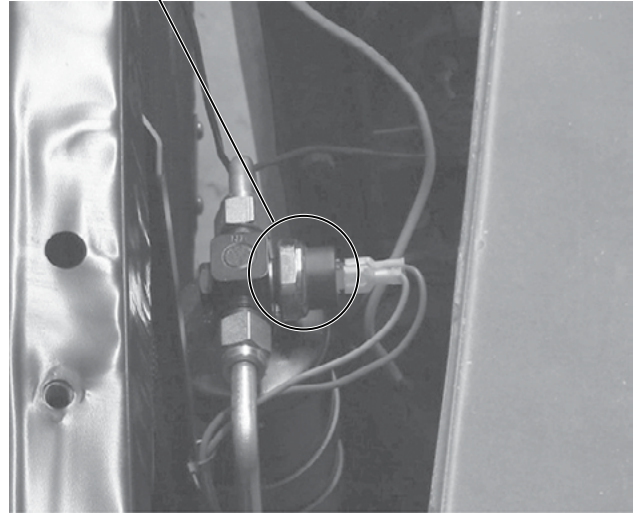
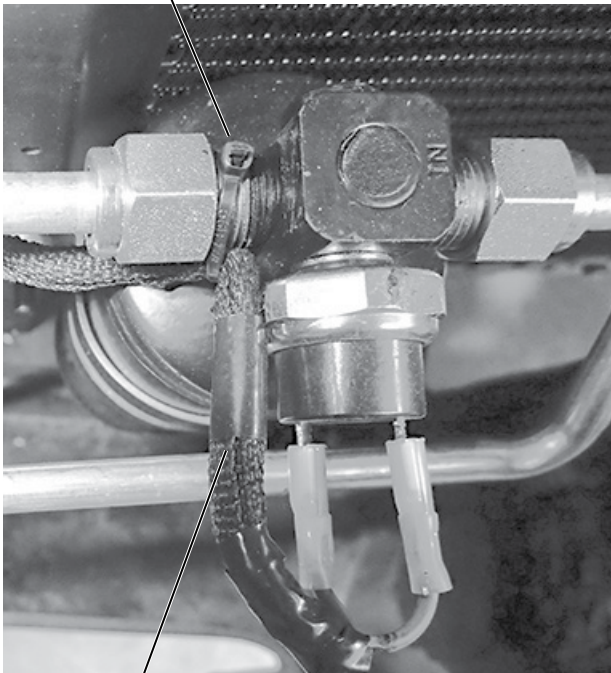


Photo 2

Secure Wiring
with Tie Wrap



Wrap Safety Switch Wiring
with 905611 Sleeve

Photo 3



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Glove Box Installation

NOTE: Before installing the glove box, install a #8 U-nut onto the bottom right hole on the supplied glove box bottom (See Photo 1, below).

1. Insert the supplied glove box bottom into the glove box opening. Install a #8 x 1/2" screw into the mounting holes on each side of the glove box opening (See Photo 2, below).
2. Insert the glove box top into the glove box opening, and attach the bottom half of the glove box to the top half using (3) 10-32 x 1/2" screws (See Photo 3, below). **NOTE: Route the glove box light wiring through the cutout on the top half of glove box (See Photo 4, below).**
3. Secure the glove box top to the glove box opening using (2) #8 x 1/2" screws (See Photo 5, below).
4. Reinstall the glove box door using (3) #8 x 1/2" screws (See Photo 6, below). **NOTE: When installing the glove box door, be sure the screws install into the #8 U-nuts on the dash bracket.**
5. Install the glove box door latch using (2) OEM screws.
6. Reinstall the glove box door light (See Photo 7, below).

Install #8 U-nut onto Glove Box Bottom

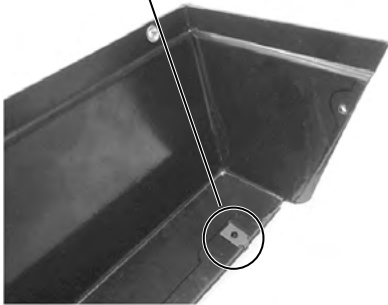
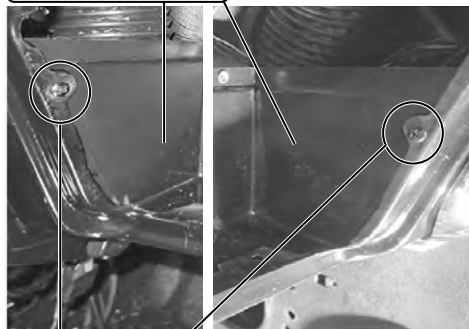


Photo 1

Glove Box Bottom 622231

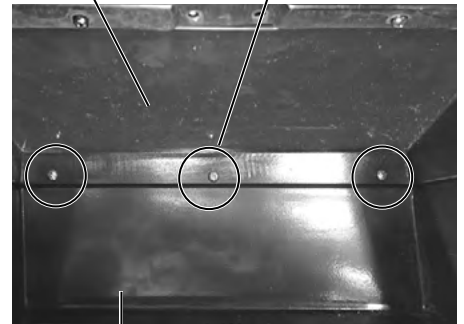


(2) #8 x 1/2" Screws

Photo 2

Glove Box Top 622232

Install (3) 10-32 x 1/2" Screws



Glove Box Bottom 622231

Photo 3

Route Wiring Through Cutout



Photo 4

Secure Glove Box Top Using (2) #8 x 1/2" Screws



Photo 5

Reinstall Glove Box Door Using (3) #8 x 1/2" Screws

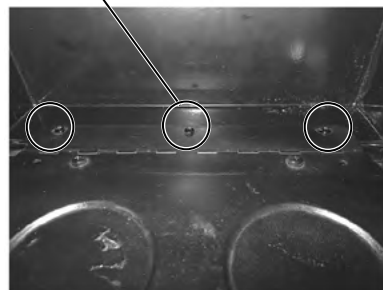


Photo 6

Reinstall Glove Box Light



Photo 7



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Final Steps

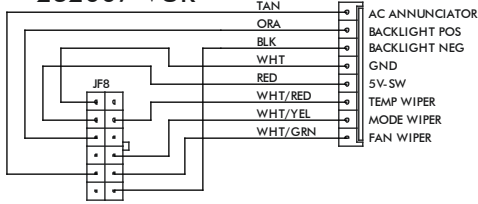
- 1.** Reinstall all previously removed items.
- 2.** Fill radiator with at least a 50/50 mixture of approved antifreeze and distilled water. It is the owner's responsibility to keep the freeze protection at the proper level for the climate in which the vehicle is operated. Failure to follow antifreeze recommendations will cause heater core to corrode prematurely and possibly burst in A/C mode and/or freezing weather, voiding your warranty.
- 3.** Double check all fittings, brackets and belts for tightness.
- 4.** Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
- 5.** Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
- 6.** Charge the system to the capacities stated on Page 4 of this instruction manual.
- 7.** See Operation of Controls procedures on Page 35.



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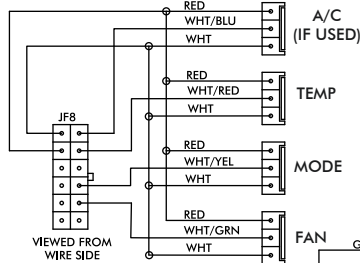
Wiring Diagram

232007-VUR



VIEWED FROM WIRE SIDE

232002-VUA



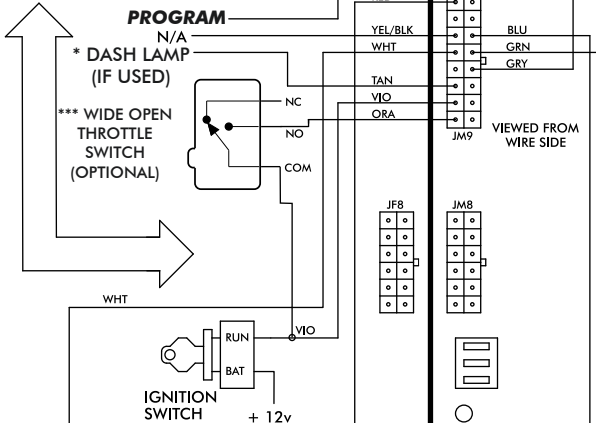
VIEWED FROM WIRE SIDE

PROGRAM

N/A

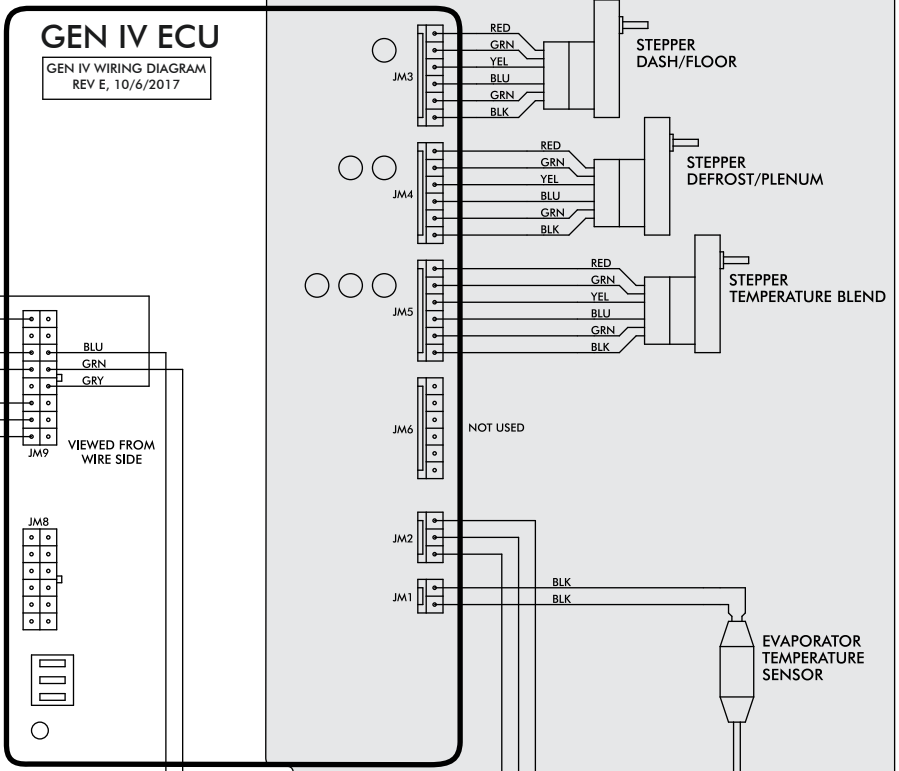
* DASH LAMP (IF USED)

*** WIDE OPEN THROTTLE SWITCH (OPTIONAL)

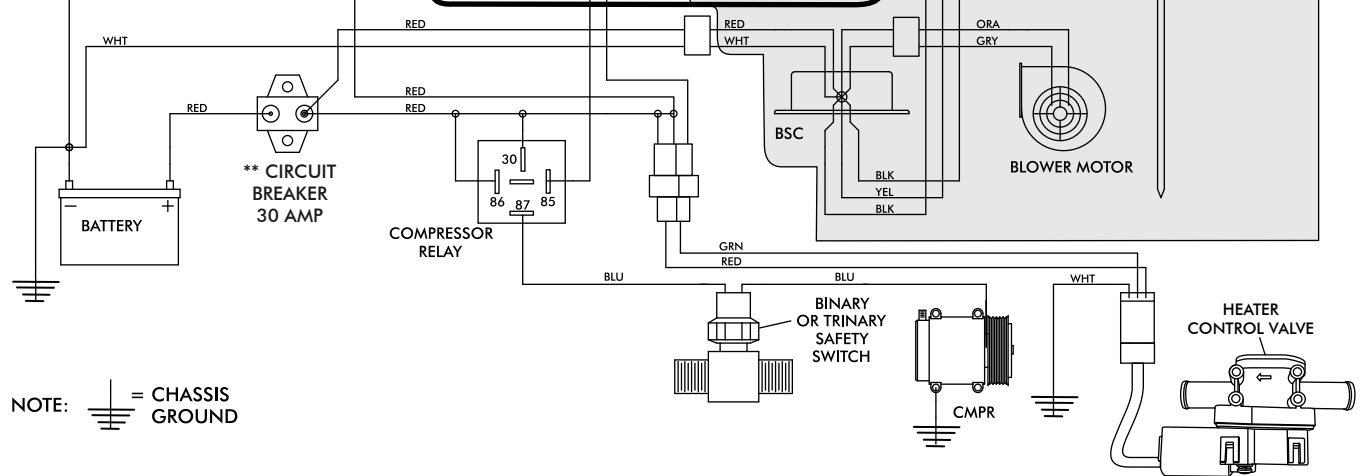


GEN IV ECU

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).

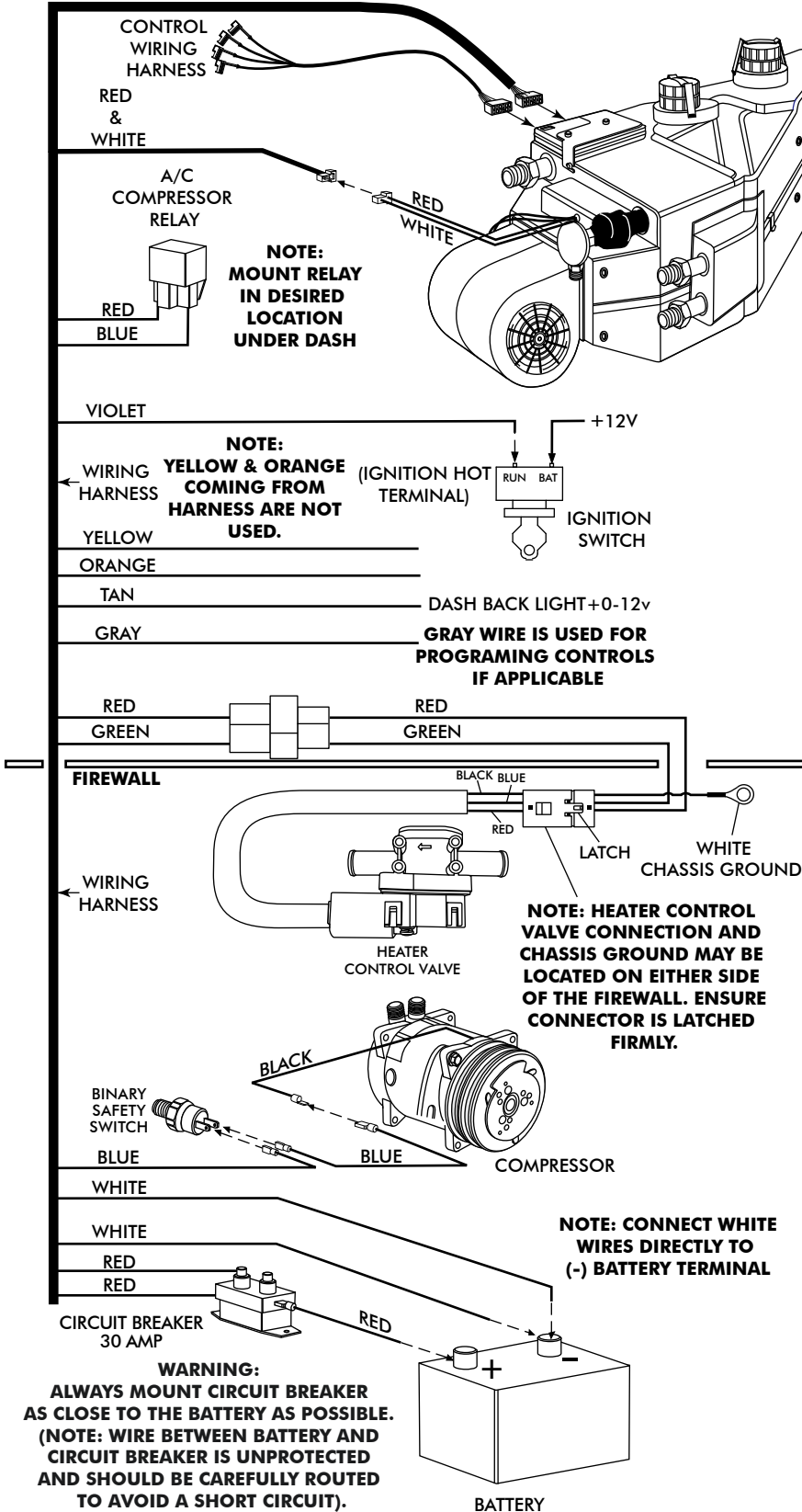
*** Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C Compressor.



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Gen IV Wiring Connection Instruction

WIRING HARNESS



Ignition Switch:
Violet 12V Ign Switch Source (Key On Accessory) Position Must Be Switched.

Dash Light:
Tan Wire Used Only With Vintage Air Supplied Control Panel With LED Back Light.

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. **NOTE: For proper control panel function, refer to control panel instructions for calibration procedure.**

Blower Speed

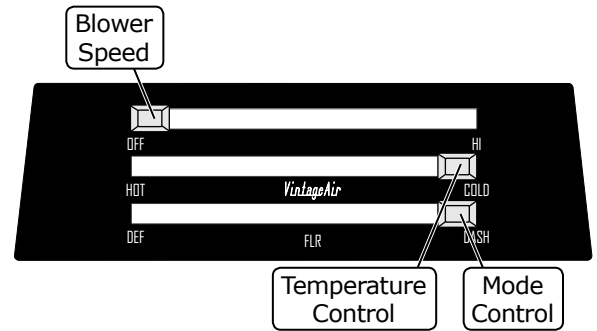
This lever/knob controls blower speed, from OFF to HI.

Mode Control

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

Temperature Control

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



A/C Operation

Blower Speed

Adjust to desired speed.

Mode Control

Adjust to desired mode position (DASH position recommended).

Temperature Control

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



Heat Operation

Blower Speed

Adjust to desired speed.

Mode Control

Adjust to desired mode position (FLOOR position recommended).

Temperature Control

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



Defrost/De-fog Operation

Blower Speed

Adjust to desired speed.

Mode Control

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

Temperature Control

Adjust to desired temperature.





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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.
	All other functions work.	Check for damaged ground wire (white) in control head harness. Check for damaged blower switch or potentiometer and associated wiring.	Verify continuity to chassis ground with white control head wire at various points.	See blower switch check procedure.
1b. Blower stays on high speed when ignition is on or off.		Unplug 3-wire BSC control connector from ECU. If blower shuts off, ECU is either improperly wired or damaged.	Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU.	
		Unplug 3-wire BSC control connector from ECU. If blower stays running, BSC is either improperly wired or damaged.	Check to ensure that no BSC wiring is damaged or shorted to vehicle ground. The BSC operates the blower by ground side pulse width modulation switching. The positive wire to the blower will always be hot. If the "ground" side of the blower is shorted to chassis ground, the blower will run on HI. Replace BSC (This will require removal of evaporator from vehicle).	No other part replacements should be necessary.
2. Compressor will not turn on (All other functions work).	System is not charged.	System must be charged for compressor to engage.	Charge system or bypass pressure switch.	Danger: Never bypass safety switch with engine running. Serious injury can result.
	System is charged.	Check for faulty A/C potentiometer or associated wiring (Not applicable to 3-pot controls). Check for disconnected or faulty thermistor.	Check continuity to ground on white control head wire. Check for 5V on red control head wire. Check 2-pin connector at ECU housing.	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.
3. Compressor will not turn off (All other functions work).		Check for faulty A/C potentiometer or associated wiring.	Repair or replace pot/control wiring.	Red wire at A/C pot should have approximately 5V with ignition on. White wire will have continuity to chassis ground. White/Blue wire should vary between 0V and 5V when lever is moved up or down.
		Check for faulty A/C relay.	Replace relay.	



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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.	
	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.	
	System will not turn on, or runs intermittently.	Will not turn on under any conditions.	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.	
		Partial function of 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.	
7.	Erratic functions of blower, mode, temp, etc.	Battery voltage is at least 12V.	Ensure all system grounds and power connections are clean and tight.	System shuts off blower at 10V. Poor connections or weak battery can cause shutdown at up to 11V.
		Battery voltage is less than 12V.	Check for faulty battery or alternator.	
8.	When ignition is turned on, blower momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.	Erratic functions of blower, mode, temp, etc.	Check for damaged switch or pot and associated wiring.	System shuts off blower at 10V. Poor connections or weak battery can cause shutdown at up to 11V.
		When ignition is turned on, blower momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.	Run red power wire directly to battery.	



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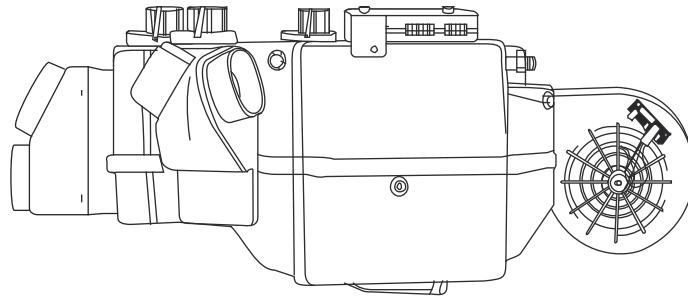
Packing List: Evaporator Kit (561190)

No.	Qty.	Part No.	Description
1.	1	744004-VUE	Gen IV Evaporator Sub Case
2.	1	781190	Accessory Kit

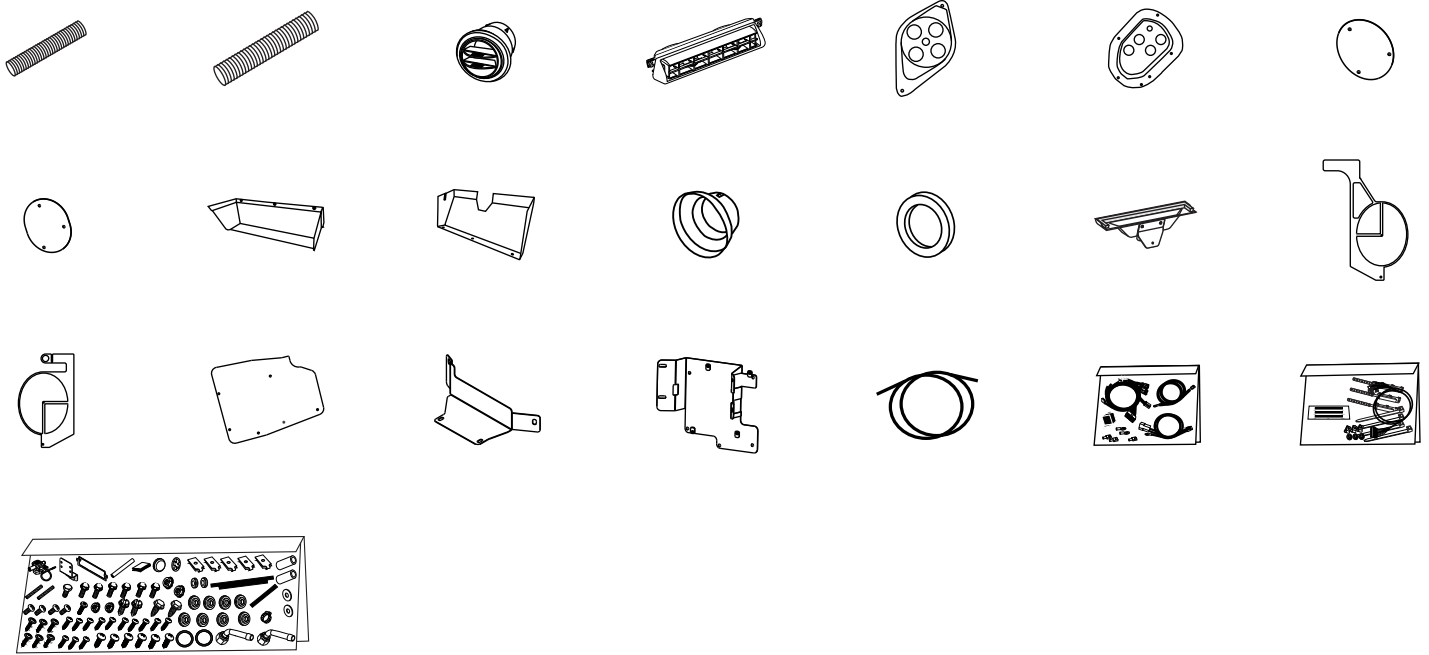
Checked By: _____
 Packed By: _____
 Date: _____

1

Gen IV Evaporator
Sub Case
744004-VUE



2



Accessory Kit
781190

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