1969 Pontiac Firebird

with **Factory Air,**
with **RGB Control Panel**
Gen 5 Evaporator Kit
(564405)

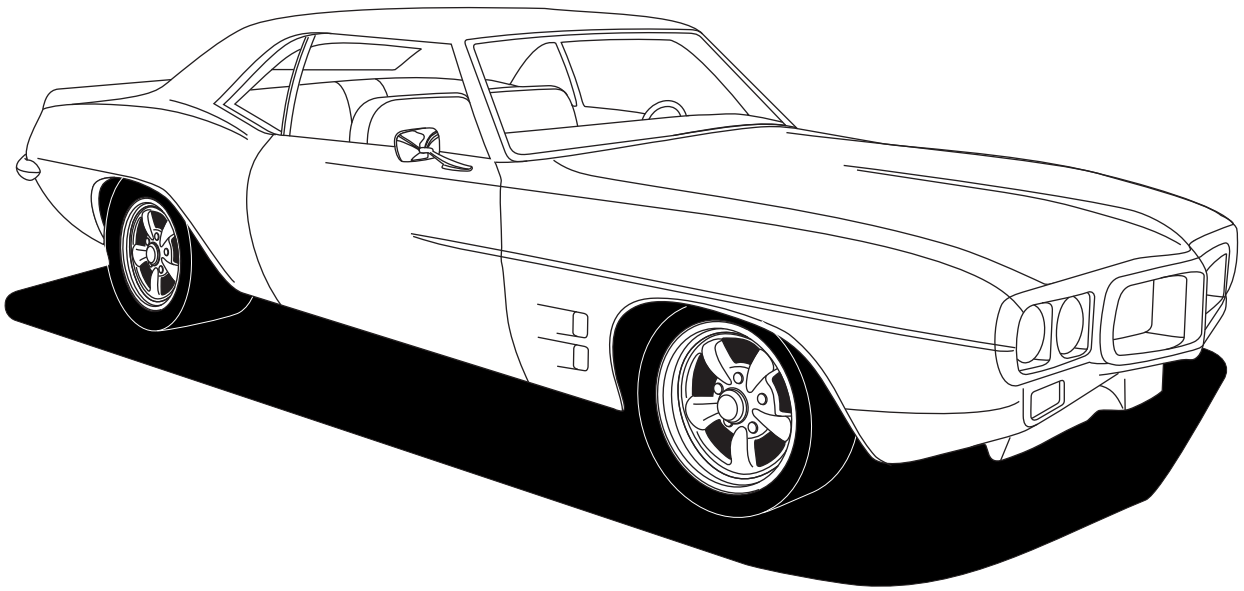

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Table of Contents

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Packing List: Evaporator Kit (564405)

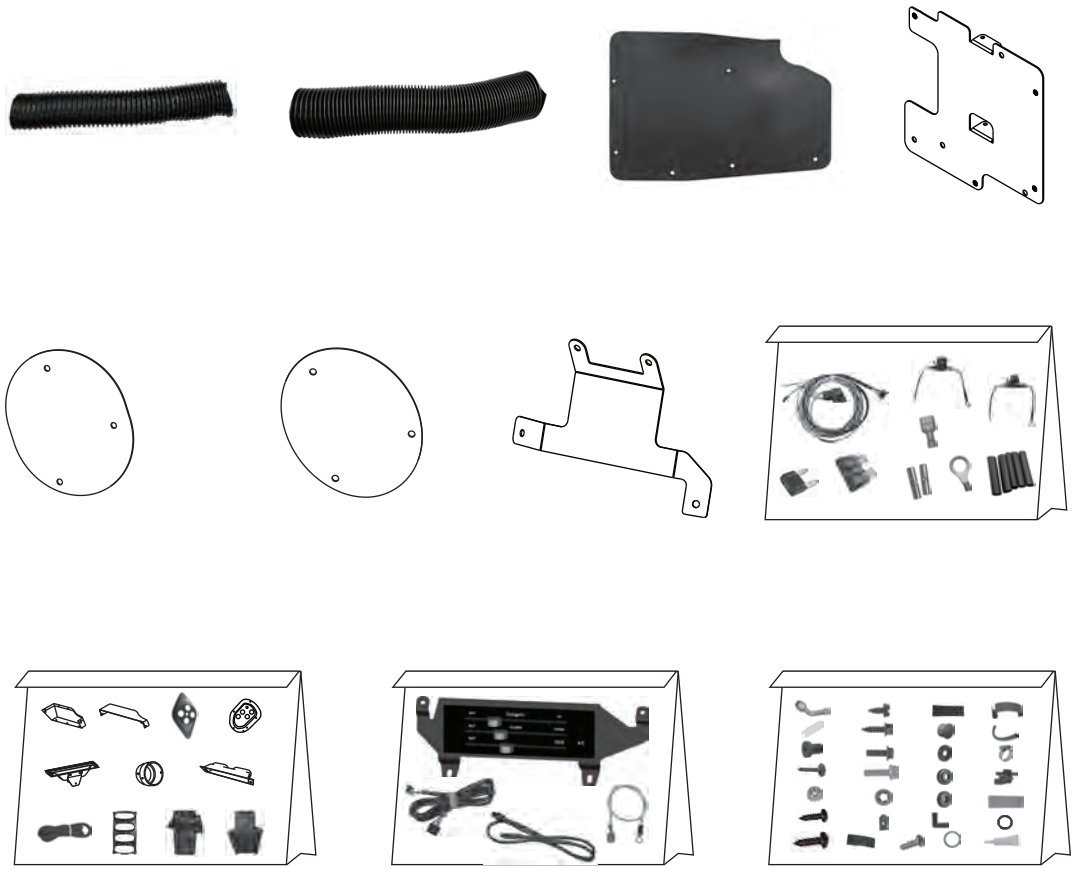
No.	Qty.	Part No.	Description
1.	1	765200	Gen 5 Magnum Max Module with 404 ECU
2.	1	784405	Accessory Kit

**** 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 5 Magnum Max Module with 404 ECU 765200

2



Accessory Kit 784405

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 remain capped. Removing caps prior to assembly will allow moisture, insects and debris into the components, possibly leading to reduced performance and/or premature failure of your A/C system. This is especially important with the receiver/drier.

Additionally, when caps are removed for assembly, **BE CAREFUL!** Some components are shipped under pressure with dry nitrogen.

Evacuate the System for 35-45 Minutes: Ensure that system components (Drier, compressor, evaporator and condenser) are at a temperature of at least 85°F. On a cool day, the components can be heated with a heat gun ***or*** by running the engine with the heater on before evacuating. Leak check and charge to specifications.

Bolts Passing Through Cowl and/or Firewall:

To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the cowl and/or firewall, Vintage Air recommends coating the threads with silicone prior to installation.

Heater Hose (not included with this kit):

Heater hose may be purchased from Vintage Air (Part#31800-VUD) or your local parts retailer. Routing and required length will vary based on installer preference.

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Important Wiring Notice—Please Read

Some vehicles may have had some or all of their radio interference capacitors removed. There should be a capacitor found at each of the following locations:

1. On the positive terminal of the ignition coil.
2. If there is a generator, on the armature terminal of the generator.
3. If there is a generator, on the battery terminal of the voltage regulator.

Most alternators have a capacitor installed internally to eliminate what is called “whining” as the engine is revved. If whining is heard in the radio, or just to be extra cautious, a radio interference capacitor can be added to the battery terminal of the alternator.

It is also important that the battery lead is in good shape and that the ground leads are not compromised. There should be a heavy ground from the battery to the engine block, and additional grounds to the body and chassis.

If these precautions are not observed, it is possible for voltage spikes to be present on the battery leads. These spikes come from ignition systems and charging systems, and from switching some of the vehicle’s other systems on and off. Modern computer-operated equipment can be sensitive to voltage spikes on the power leads, which can cause unexpected resets, strange behavior and/or permanent damage.

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

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

- Care must be taken, when installing the compressor lead, not to short it to ground. The compressor lead must not be connected to a condenser fan or to any other auxiliary device. Shorting to ground or connecting to a condenser fan or any other auxiliary device may damage wiring or the compressor relay, and/or cause a malfunction.
- When installing ground leads on Gen 5 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, study the instructions, illustrations, photos & diagrams.

Perform the following:

1. Remove the battery and the battery tray (retain) (See Figure 1, below).
2. Drain the radiator.
3. Evacuate the A/C system if necessary.
4. Remove the condenser and lines (discard) (See Figure 1, below).
5. Remove the OEM compressor and bracket (discard) (See Figure 1, below).
6. Remove the hood latch assembly (retain) including the hood latch support.
7. Remove the evaporator and blower assembly (discard). **NOTE: To remove the evaporator and blower assembly (under hood) and the air distribution system (under dash), the factory manual indicates doing the following: Remove the right lower rocker molding. Remove the lower fender attaching bolts. Remove the skirt to the fender and skirt to the 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 suggests that the right fender be removed and the inner panel be lowered (See Figure 1, below).
8. Remove the OEM heater hoses, A/C hoses, hardlines and drier (discard) (See Figure 1, below).
9. Remove the OEM heater wiring/vacuum harness molded grommet (See Figure 1, below).

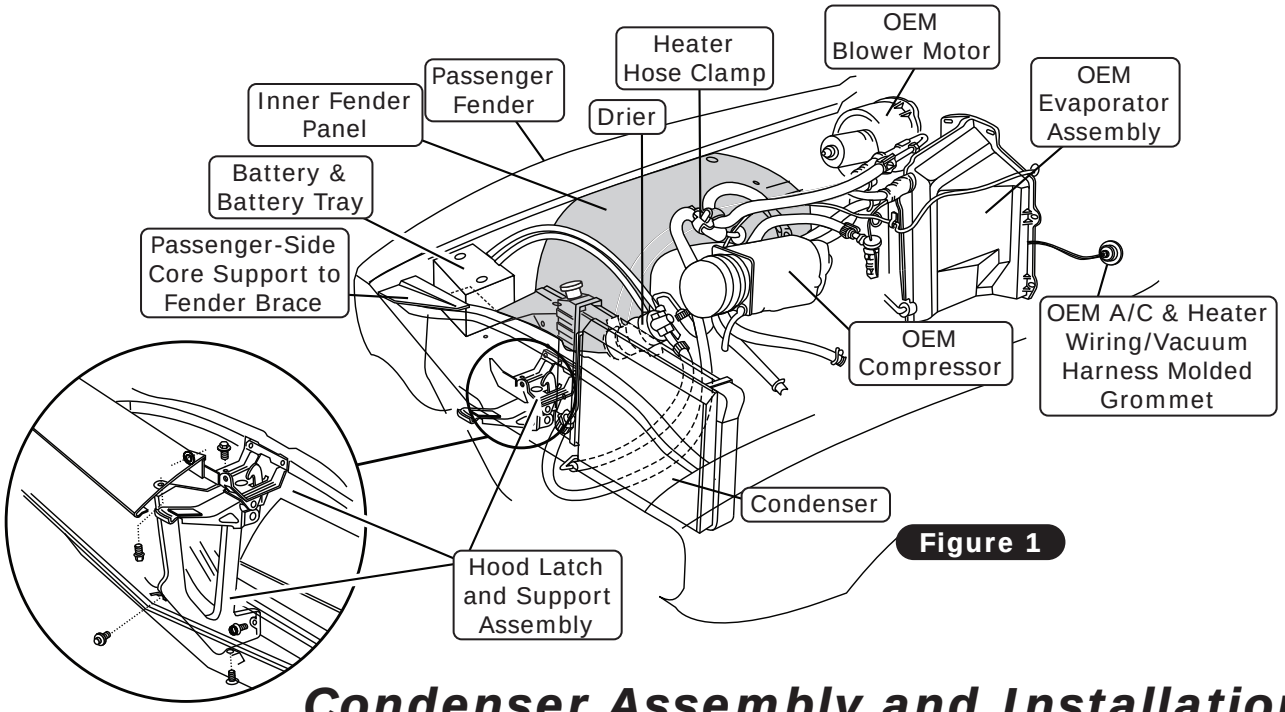


Figure 1

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).

Compressor and Brackets

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

Pulleys

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

Passenger Compartment Disassembly

Perform the following:

1. Remove the ashtray (retain) (See Figure 1, below).
2. Remove the ashtray slider assembly (retain) (See Figure 1, below).
3. Remove the glove box door (retain) (See Figure 1, below).
4. Remove and discard the OEM glove box.
5. Remove the astro ventilation ducts (See Figure 1, below).
6. Remove the radio (retain) (See Figure 1, below).
7. Remove the OEM control panel (See Figure 1, below).
8. Loose and lower the steering column (See Figure 1, below).
9. Remove the instrument panel assembly (retain) (See Figure 1, below).
10. Remove the OEM defrost duct (discard) (See Figure 2, below).
11. Remove the center louver, driver-side and passenger-side louver OEM ducts (discard) (See Figure 2a, Page 8).
12. Remove the evaporator (discard) (See Figure 2b, Page 8).

NOTE: Remove the front seats (optional, for ease of A/C installation only).

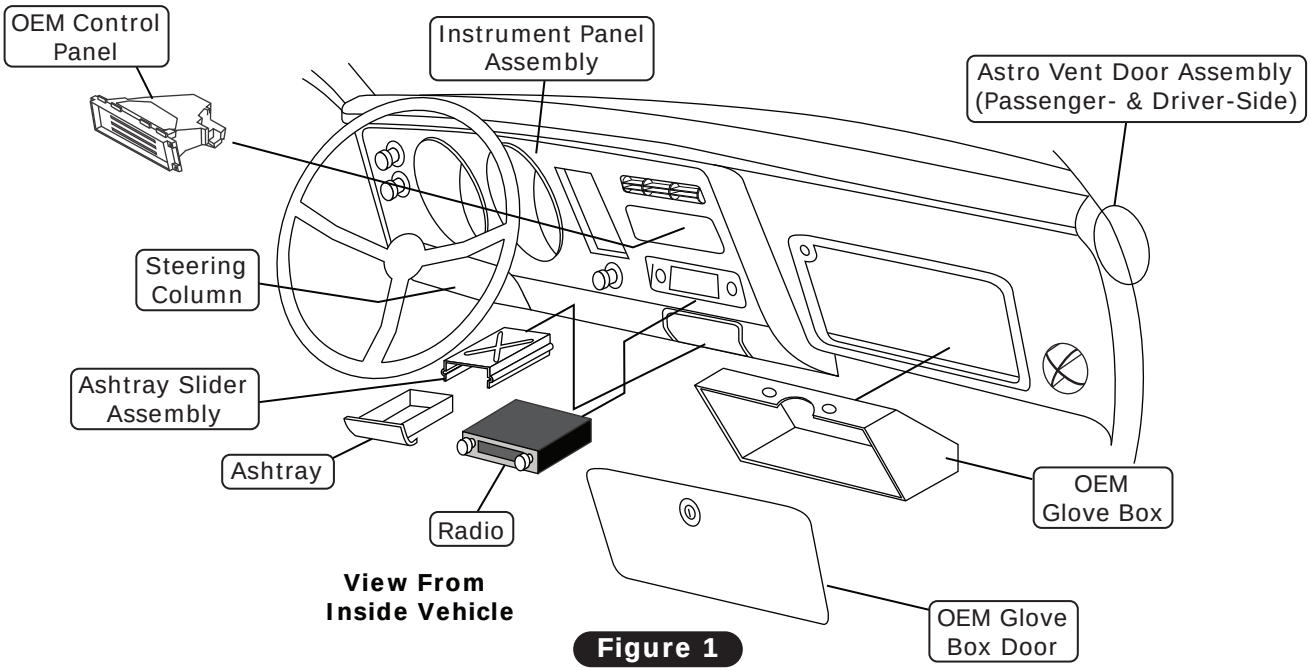


Figure 1

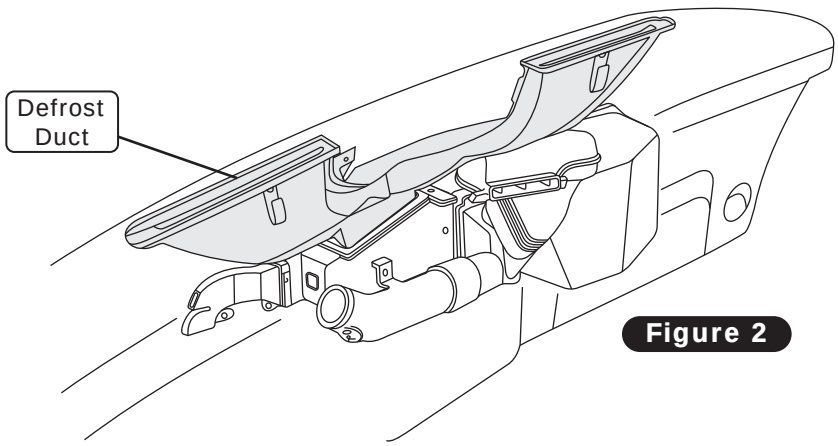


Figure 2

Passenger Compartment Disassembly (Cont.)

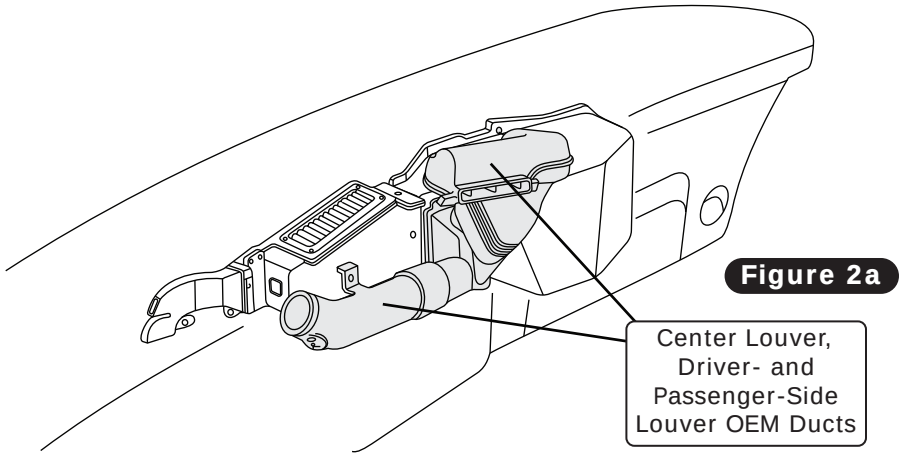


Figure 2a

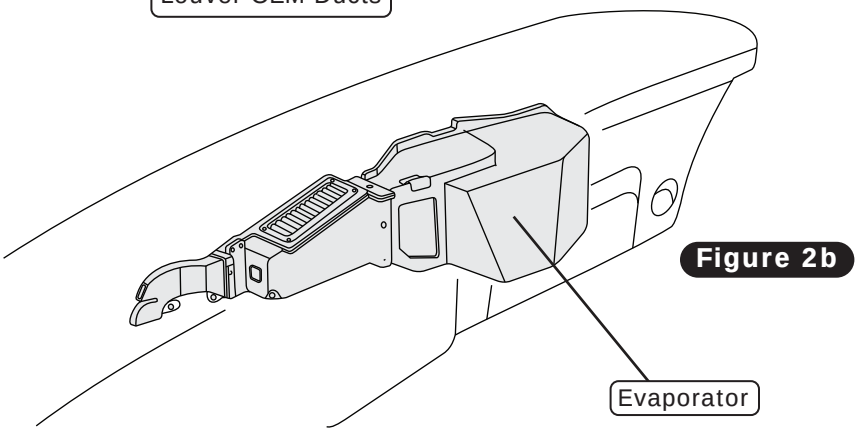


Figure 2b

Fresh Air Door and Kick Panel Removal

1. Remove (2) OEM screws from the fresh air door assembly. Disconnect and discard pull cable assemblies from the kick panel as shown in Figure 1, below.

2. Remove the kick panel by removing the (4) OEM screws as shown in Figure 1a, below.

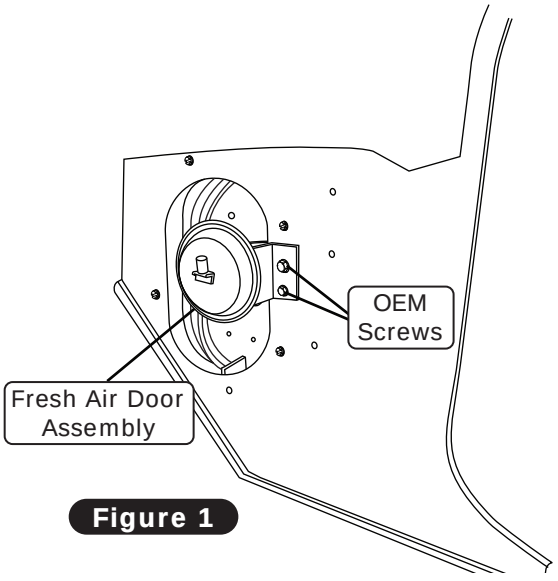


Figure 1

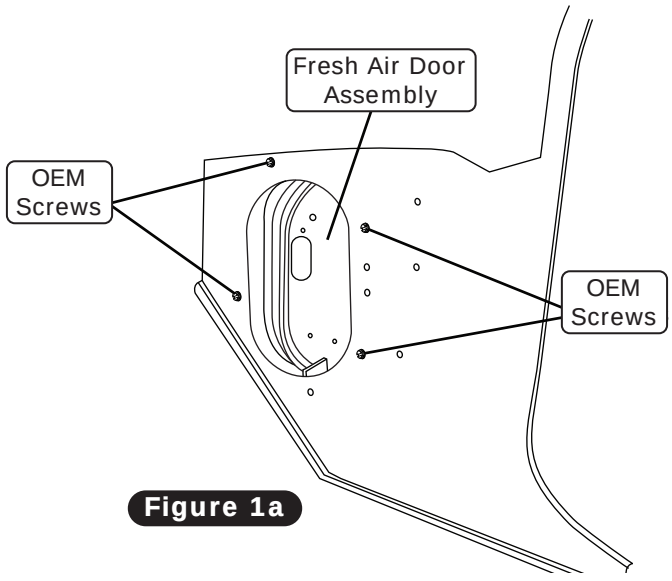


Figure 1a

Defrost Duct Cap & Fresh Air Installation

1. Install the defrost ducts under the dash as shown in Figure 1, below. Align the defrost duct with the defrost opening in the dash, and hold in place. Use the bracket as a template and drill a 7/64" hole. Secure using a #10 x 1/2" sheet metal screw (See Figure 1, below).
2. Install the driver- and passenger-side fresh air covers, apply a bead of silicone to the mating surface of the covers and secure using OEM hardware (See Figure 1, below).

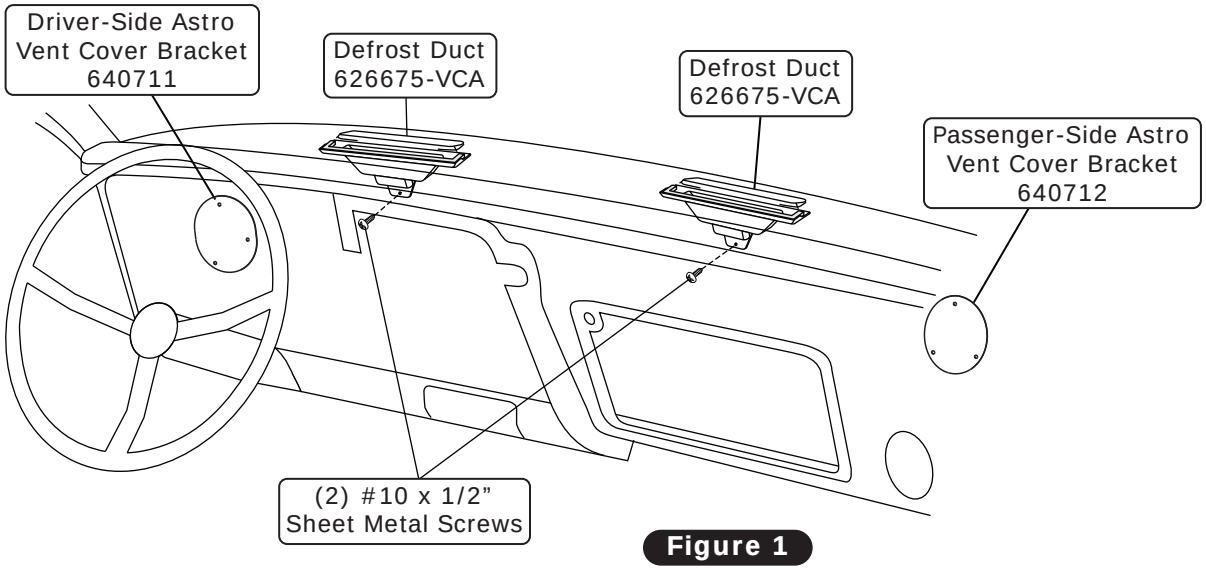


Figure 1

Driver- and Passenger-Side Hose Adapter Installation

1. Install the driver- and passenger-side hose adapters on the OEM louvers, and secure using (3) #8 x 1/2" pan head screws (See Figure 1, below).

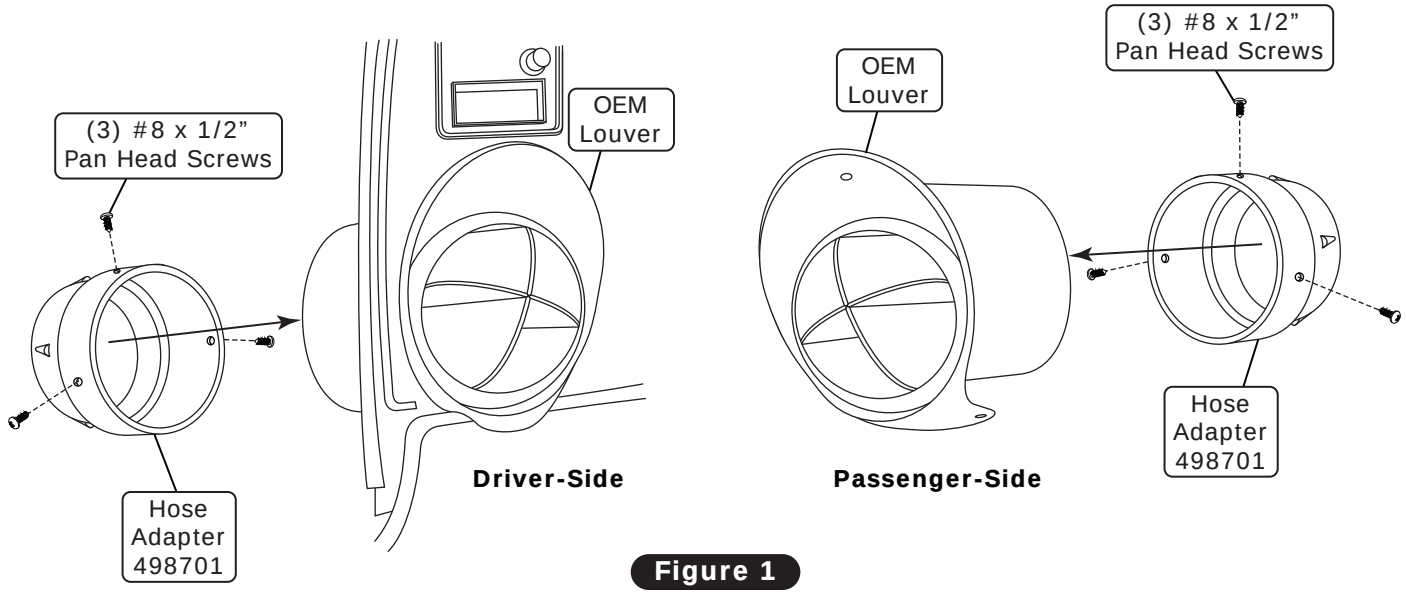


Figure 1

Center Louver Installation

1. Install (2) #8 U-nuts on the center louver hose adapter (See Figure 1, below).
2. Install the center louver hose adapter and the OEM center louver in the dash using (2) #8 x 1/2" pan head screws (See Figure 1, below).

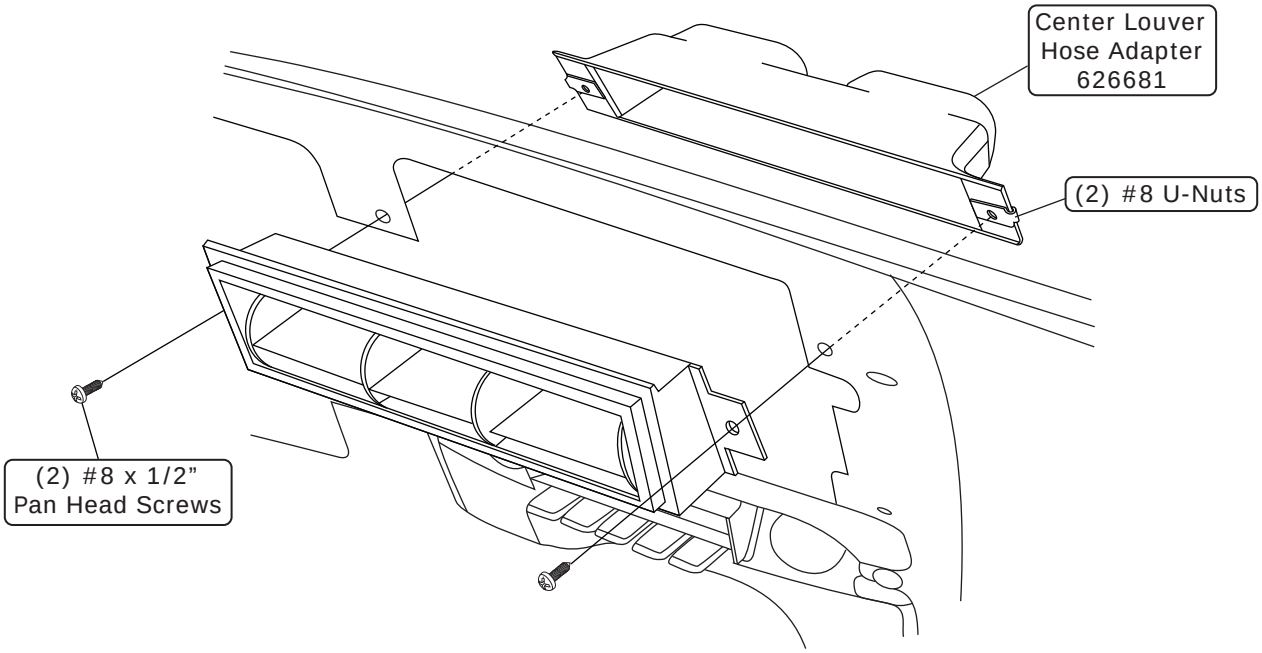
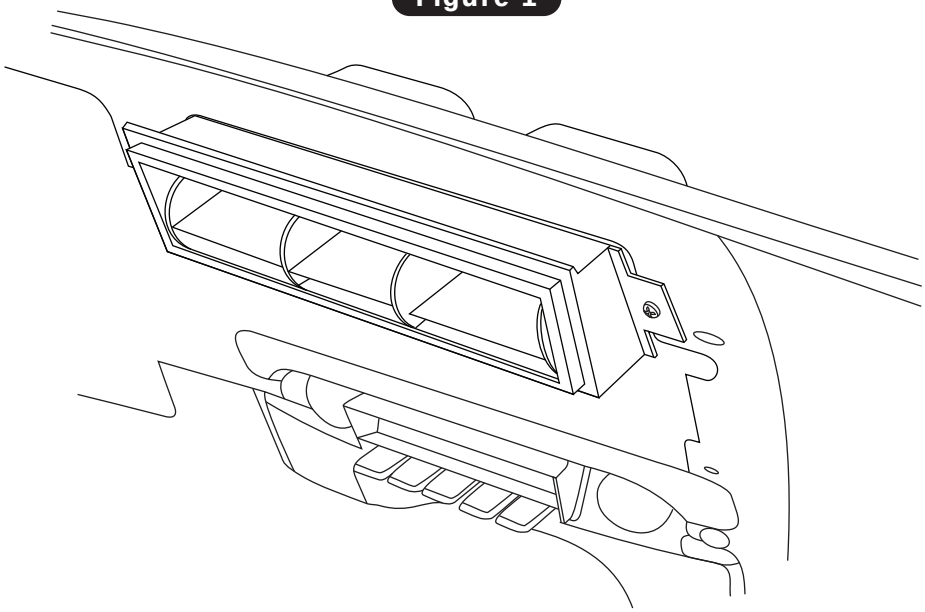


Figure 1



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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. Enlarge (6) holes on the firewall to 19/64" as shown in Photo 2, below.
3. From inside the passenger compartment, directly below the lowest OEM hole under the firewall opening, mark and drill a 5/8" hole for the drain hose (See Photo 3, below). **NOTE: To ensure a tight fit, do not enlarge the hole to more than 5/8".**

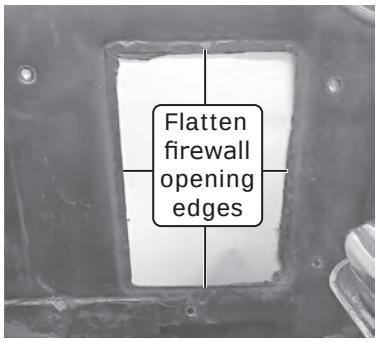


Photo 1

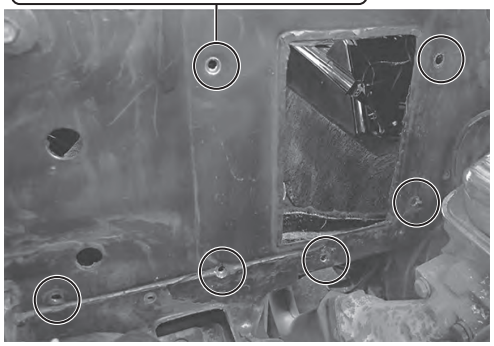


Photo 2

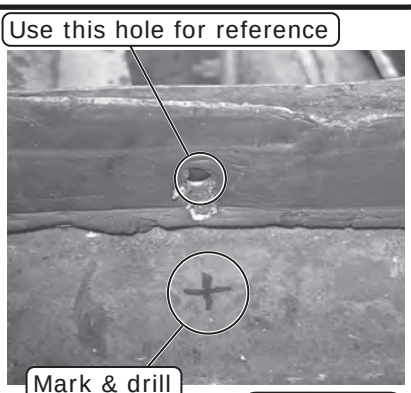
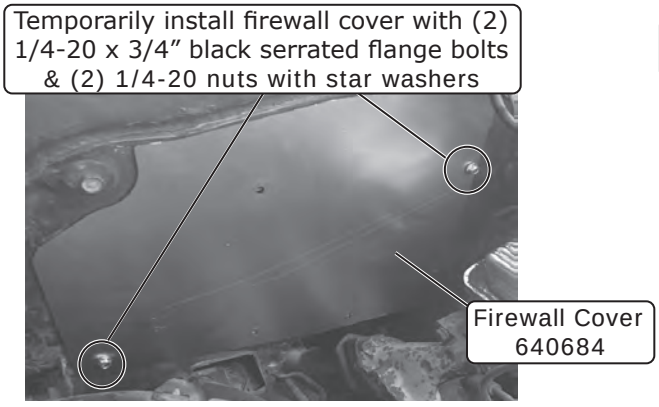


Photo 3

Firewall Cover Insulation

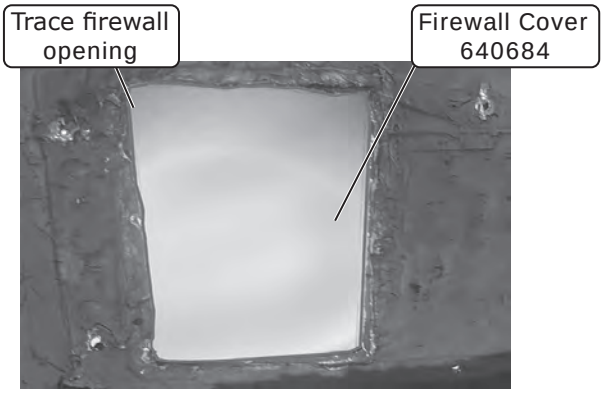
NOTE: For proper system operation, Vintage Air recommends using heat-blocking insulation in the area around the evaporator unit (firewall, kick panel, inner cowl, firewall covers). Due to tight clearance for the evaporator unit between the firewall and dash, Vintage Air recommends an insulation thickness 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" black serrated flange 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, then apply insulation to the traced area (See Photo 3, below).



Engine Compartment View

Photo 1



Passenger Compartment View

Photo 2

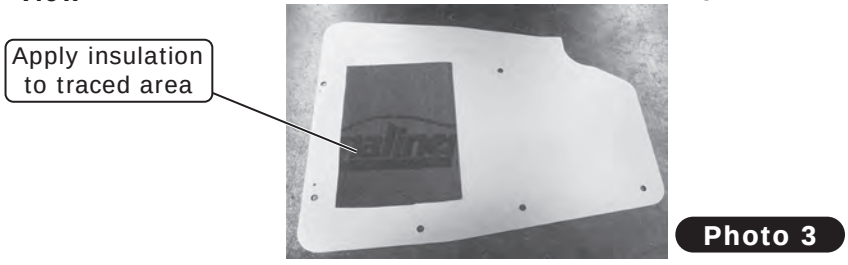
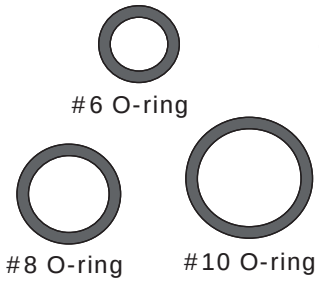
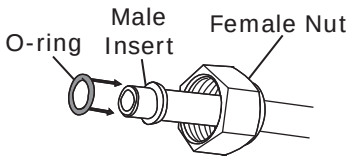
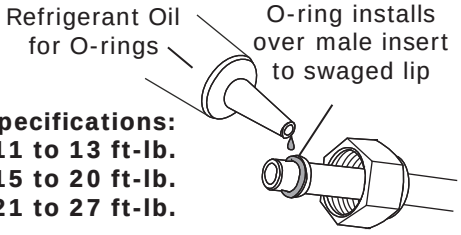


Photo 3

Lubricating O-rings & Fitting Torque Specs

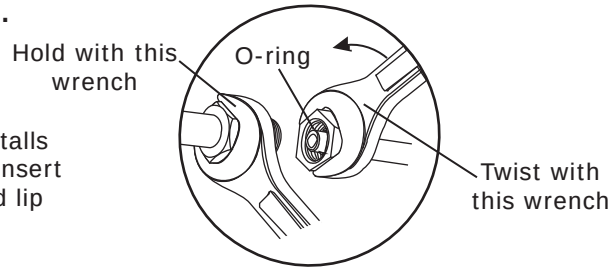






NOTE: Standard torque specifications:
#6: 11 to 13 ft-lb.
#8: 15 to 20 ft-lb.
#10: 21 to 27 ft-lb.

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



The use of a backup wrench is recommended to reduce the chance of damaging the fittings/hardline.

Properly Seated O-ring Land

When installing a hardline or A/C hose fitting onto the evaporator module, ensure the O-ring land is seated properly (See Photo 1, below). An improperly seated O-ring land (See Photo 2, below) can cause a leak. To properly install the fitting, slide the hardline or A/C hose nut back to expose the O-ring land and seat it onto the evaporator module fitting. Then, slide the hardline or A/C hose nut forward and thread it onto the evaporator module fitting, ensuring the O-ring land does not move or lift.

Properly Seated O-ring Land

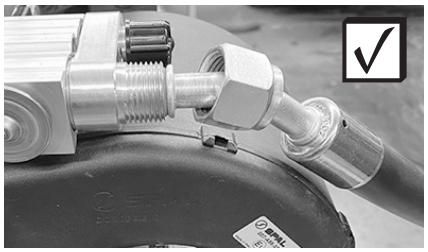


Photo 1

Improperly Seated O-ring Land

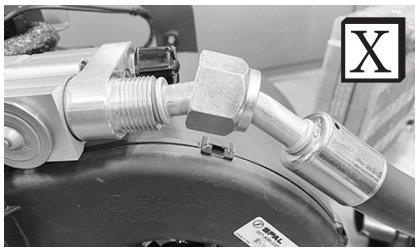


Photo 2

NOTE: Photos shown are for reference only. Fittings may vary depending on kit received.

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Evaporator Module Preparation

Perform the following on a workbench:

1. Install (3) 1/2” plastic plugs into the back of the evaporator module (See Photos 1, 2, 3 and 4, below).
2. Install the upper heater hardline onto the evaporator module using a properly lubricated #10 O-ring (See Lubricating O-rings & Fitting Torque Specs, Page 12 and Photo 5, below). **NOTE: Install hardline facing downward.**
3. Install the lower heater hardline onto the evaporator module using a properly lubricated #10 O-ring (See Lubricating O-rings & Fitting Torque Specs, Page 12 and Photo 6, below). **NOTE: Install hardline facing downward.**

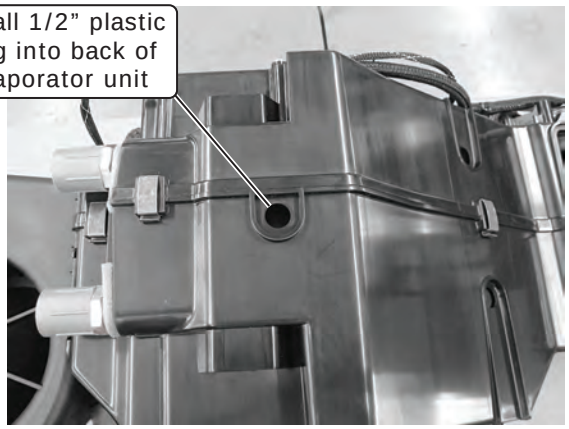


Photo 1

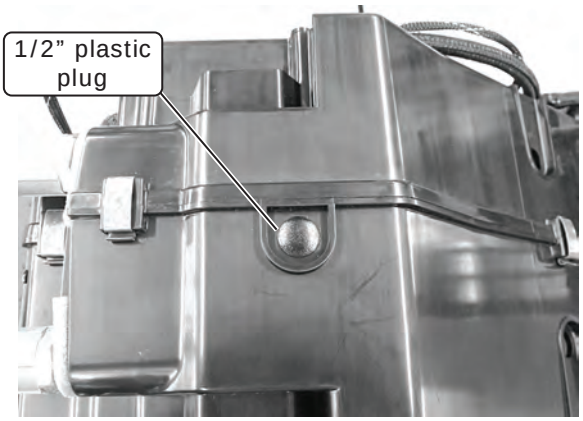


Photo 2

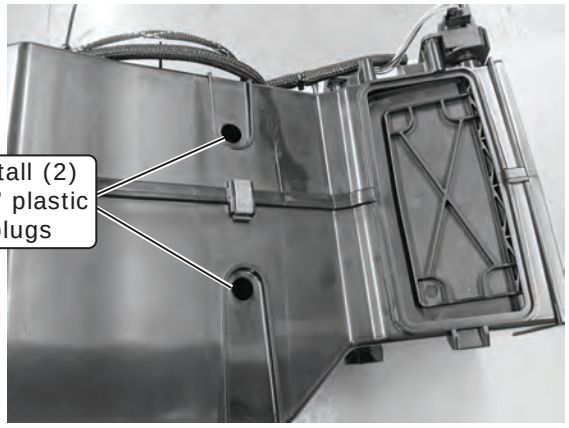


Photo 3

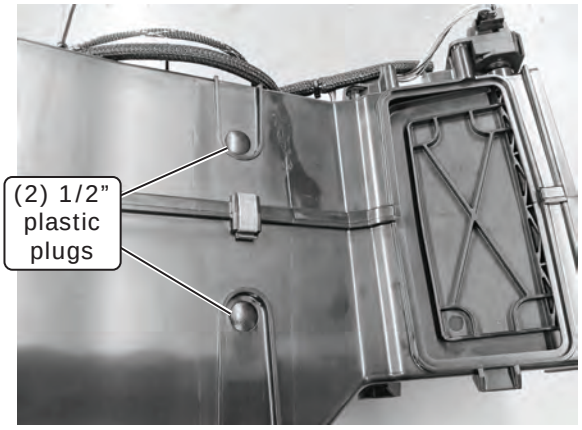


Photo 4

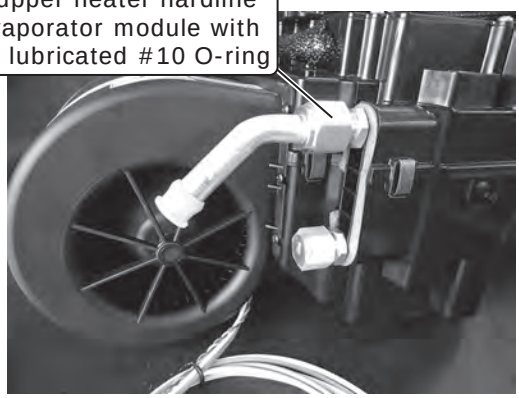


Photo 5

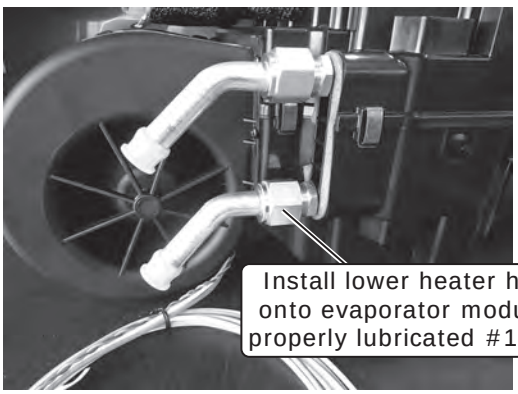


Photo 6

Evaporator Module Preparation (Cont.)

4. Install the evaporator firewall bracket onto the module and secure it using (4) #10 x 5/8" screws (See Photos 7, 8 and 9, below).
5. Install (2) 1/4-20 x 1 ½" full-threaded studs into the (2) upper mounting holes on the evaporator firewall bracket (See Photo 10, below). **NOTE: Thread the studs in a 1/4" of the way.**
6. Using (4) spring clips, install the dash plenum onto the evaporator module (See Photo 11, below).
7. Using (2) spring clips, install the floor plenum onto the back of the evaporator module (See Photo 12, below).
8. Using (2) spring clips, install the defrost plenum onto the front of the evaporator module (See Photo 13, below).

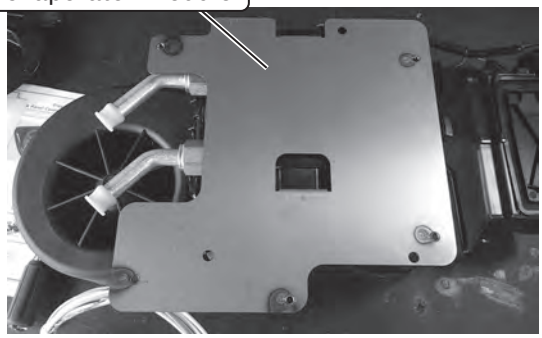
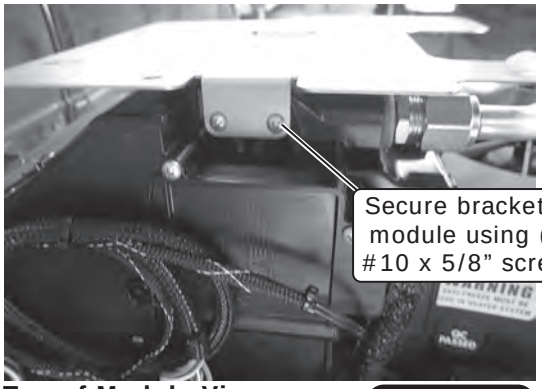


Photo 7

Bottom of Module View

Photo 8



Top of Module View

Photo 9

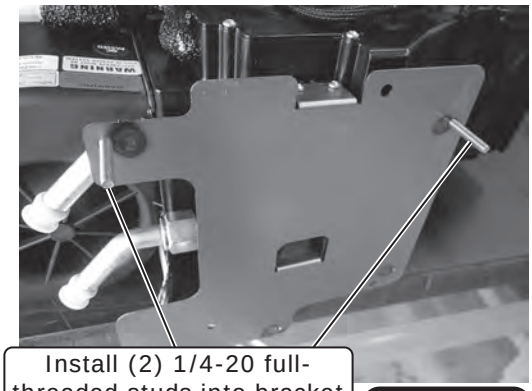


Photo 10

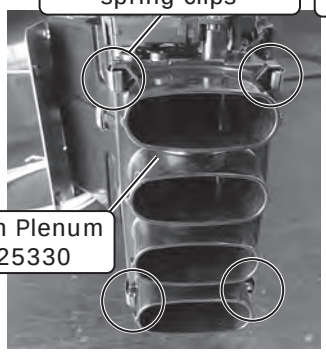


Photo 11

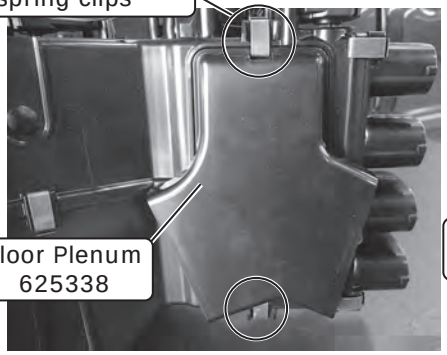


Photo 12

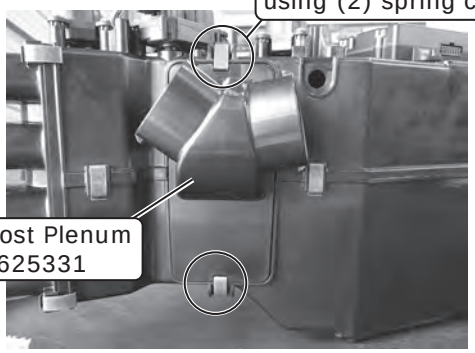


Photo 13

Evaporator Module Preparation (Final)

9. Loosen the (2) screws securing the ECU (See Photo 14, below), then remove it and let it hang in front of the module. Retighten the mounting screws.

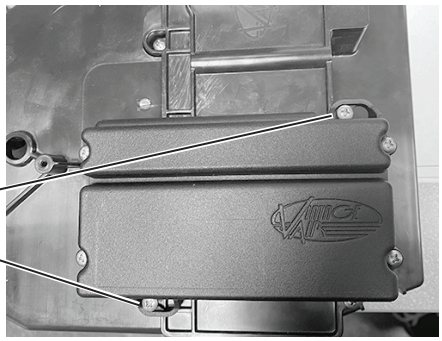


Photo 14

Fresh Air Cap & Kick Panel Cover Preparation

1. Install (3) large, (1) 1 ¼" O.D. and (1) 7/8" O.D. grommets into the fresh air cap (See Photos 1 & 2, below).

2. Install (3) large, (1) 1 ¼" O.D. and (1) 7/8" O.D. grommets into the kick panel cover (See Photos 3 & 4, below).

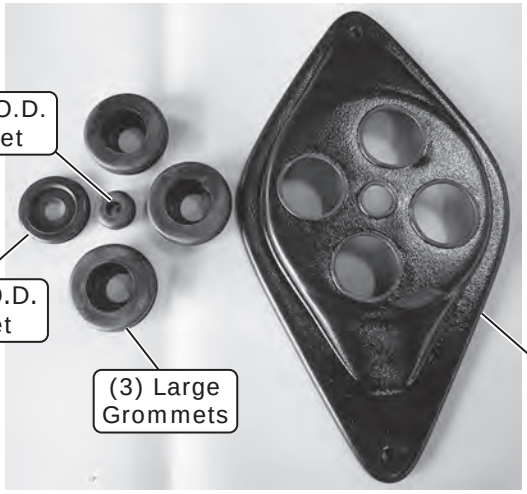


Photo 1

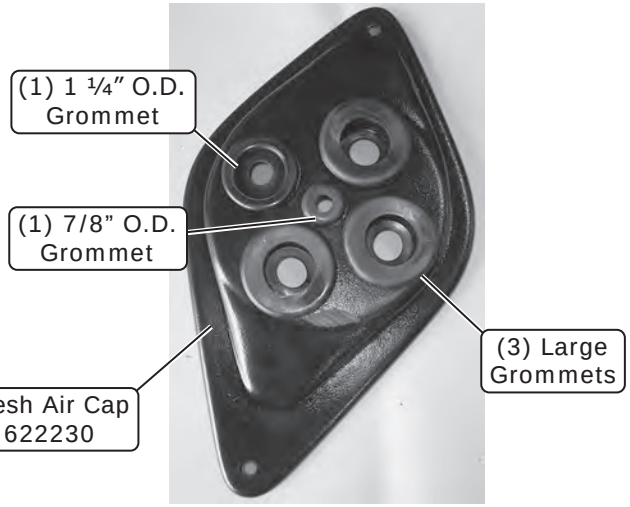


Photo 2

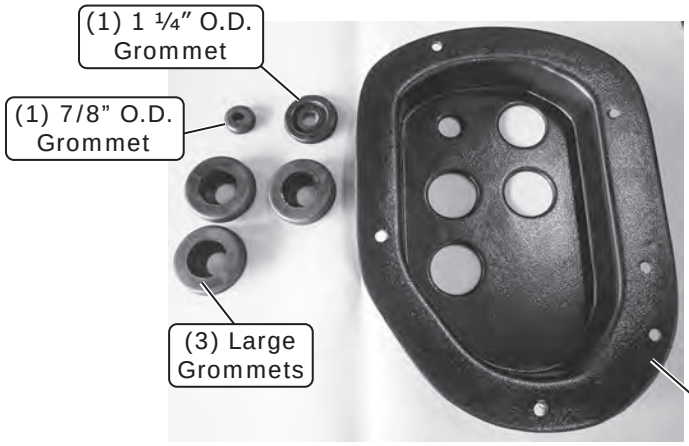


Photo 3

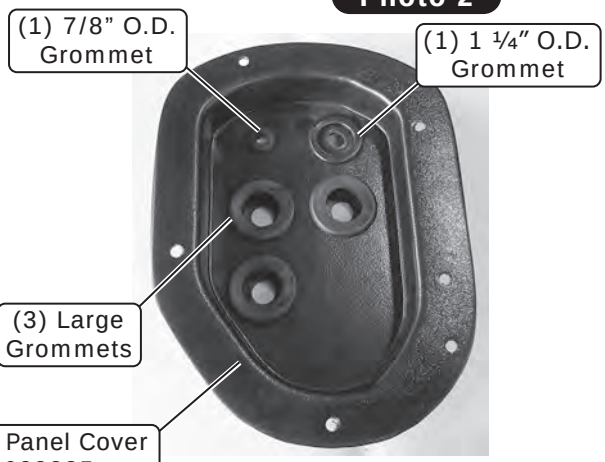


Photo 4

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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).
2. Insert a length of heater hose through the bottom-right large grommet on the fresh air cap (See Photo 2, below).
3. Insert a length of heater hose through the top-right large grommet on the fresh air cap (See Photo 3, below).
4. Insert the 45° fitting on the #10 compressor/evaporator A/C hose through the bottom-left large grommet on the fresh air cap (See Photo 4, below). **NOTE: Temporarily remove the large grommet from the fresh air cap to ease insertion of the #10 hose fitting.**
5. Insert the 45° fitting on the #6 drier/evaporator A/C hose through the top-left 1 ¼" O.D. grommet on the fresh air cap (See Photo 5, below).
6. From the passenger compartment, insert the lower heater hose through the bottom-left large grommet on the kick panel cover (See Photo 6, below).
7. Insert the upper heater hose through the top-left large grommet on the kick panel cover (See Photo 7, below).
8. Insert the #10 compressor/evaporator A/C hose through the bottom-right grommet on the kick panel cover (See Photo 8, below). **NOTE: Temporarily remove the grommet from the kick panel cover for easier insertion.**
9. Insert the #6 drier/evaporator A/C hose through the top-right large grommet on the kick panel cover (See Photo 9, below).

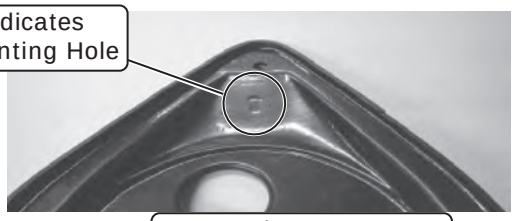


Photo 1

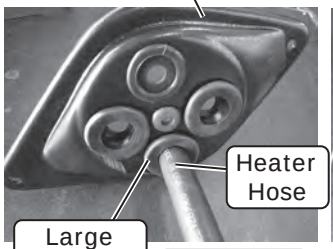
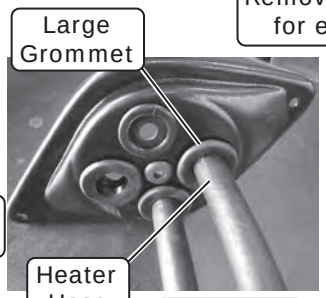


Photo 2



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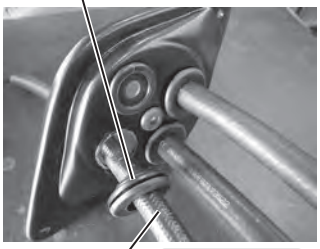


Photo 4

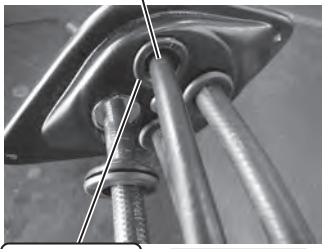


Photo 5

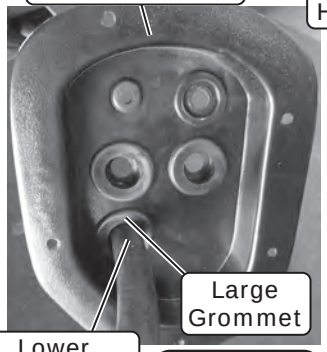


Photo 6

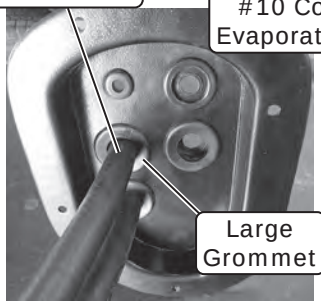


Photo 7

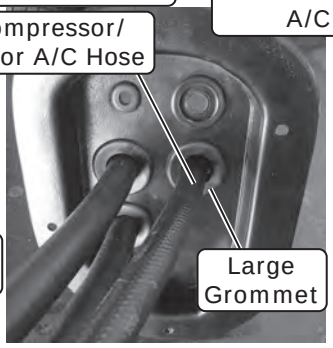


Photo 8

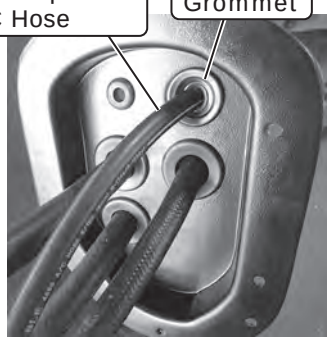
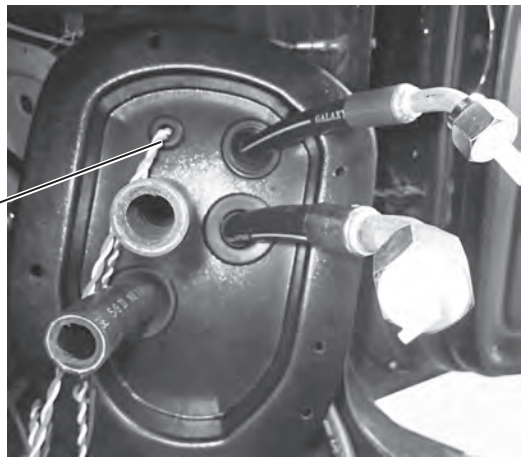


Photo 9

Wiring Installation

1. From the passenger compartment, route the heater control valve connector and wiring (red, white and blue), and the red, white and blue wires from the main wiring harness through the 7/8" O.D. grommet on the kick panel cover and into the 7/8" O.D. grommet on the fresh air cap (See Photo 1, below). **NOTE: Leave approximately 5" of wiring between the relay and the kick panel cover. This is to allow enough wiring to secure the relay to the mounting position.**
2. Place the evaporator module on the passenger-side floorboard and route the orange and white wires through the 7/8" O.D. grommet on the kick panel cover, then through the 7/8" O.D. grommet on the fresh air cap.

Route heater control valve connector and wiring (white, yellow and purple), and red, white and blue wires from main wiring harness through 7/8" O.D. grommet on kick panel cover and into 7/8" O.D. grommet on fresh air cap



NOTE: Leave approximately 5" of wiring between relay and kick panel cover to allow enough wiring to secure relay to mounting position.

Photo 1

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. Trim the fresh air door housing to make it flush with the back of the kick panel (See Photos 2 & 3, below).

Lift door toward spring to remove

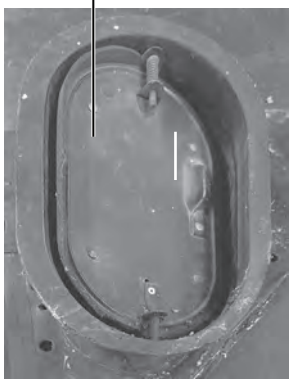
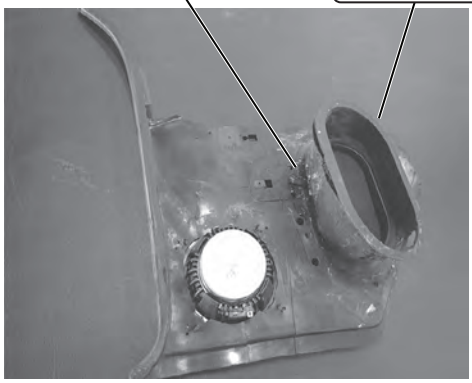


Photo 1

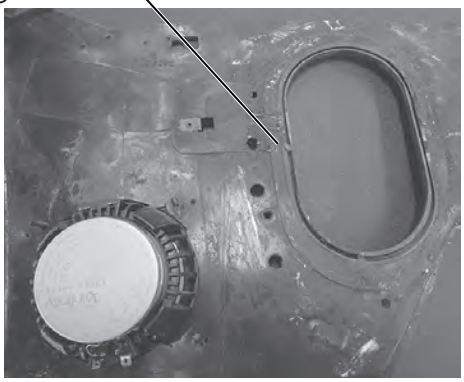
Fresh Air Door Housing

Trim Housing



Before Modification **Photo 2**

Trim flush with kick panel housing



After Modification **Photo 3**

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 ¼" countersunk screws with washers (See Photo 1, below). **NOTE: Use only the mounting holes shown in Photo 1, below, at this time.**
4. Using a #8 x 1 ¼" countersunk screw, secure the relay to the upper OEM kick panel mounting hole as shown in Photo 2, below.

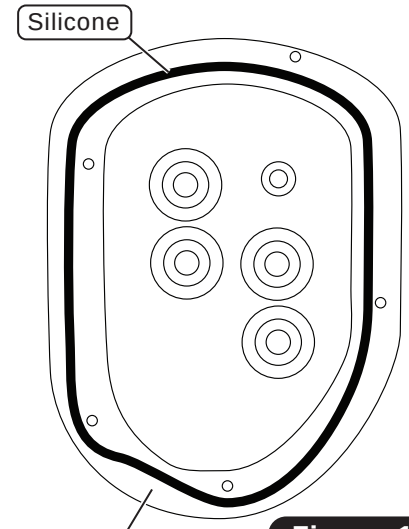


Figure 1

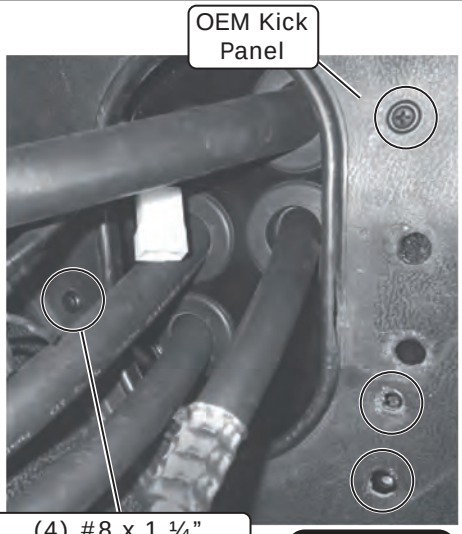


Photo 1

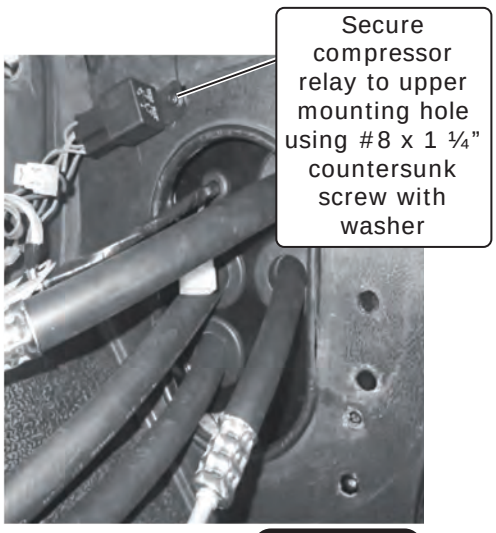


Photo 2

Evaporator Installation

NOTE: A 10" block of wood may be used to support the evaporator unit while the following steps are completed. 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. Install the upper heater hose and a hose clamp onto the upper heater hardline on the evaporator module (See Photo 1, below).
2. Install the lower heater hose and a hose clamp onto the lower heater hardline on the evaporator module (See Photo 2, below).

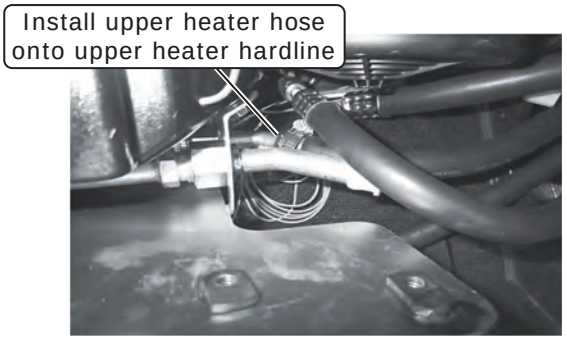


Photo 1

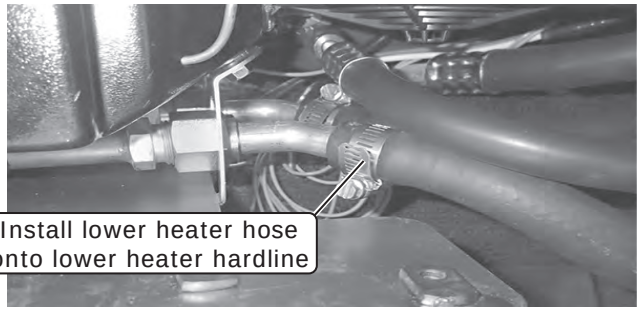


Photo 2

Evaporator Installation (Cont.)

3. Roll the evaporator into it's mounting position. Insert the (2) 1/4-20 full-threaded studs into the upper OEM mounting holes on the firewall (See Photo 3, below).
4. Using a properly lubricated #6 O-ring (See Lubricating O-rings & Fitting Torque Specs, Page 12), install the 45° fitting on the #6 drier/evaporator A/C hose onto the block-valve adapter on the evaporator module (See Photo 4, below).
5. Using a properly lubricated #10 O-ring (See Lubricating O-rings & Fitting Torque Specs, Page 12), install the 45° fitting on the #10 compressor/evaporator A/C hose onto the #10 fitting on the block-valve adapter on the evaporator module (See Photo 5, below). **NOTE: After installing the #10 compressor/evaporator A/C hose, wrap all exposed metal with the supplied press tape (See Photo 6, below).**
6. Install (2) 1/4-20 well nuts onto the evaporator module (See Photo 7, below).
7. Position the evaporator dash bracket under the glove box door mounting holes, then secure it onto the evaporator unit using (2) 1/4-20 x 1" serrated flange bolts (See Photo 8, below).
8. Using the upper mounts of the evaporator dash bracket as a guide, mark and drill (2) 3/16" holes into the cowl. Secure the evaporator dash bracket to the inner cowl with (2) #14 x 3/4" washer head screws.

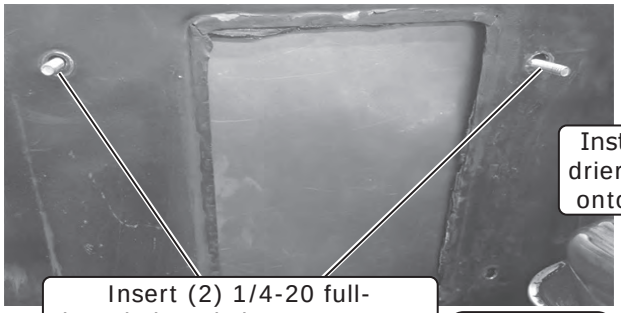


Photo 3

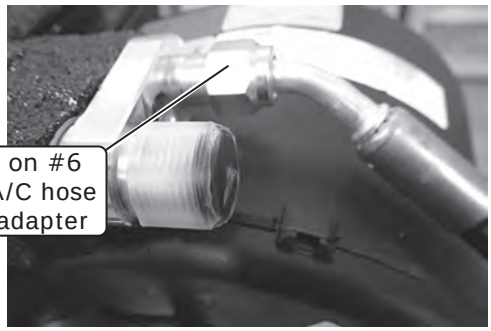


Photo 4

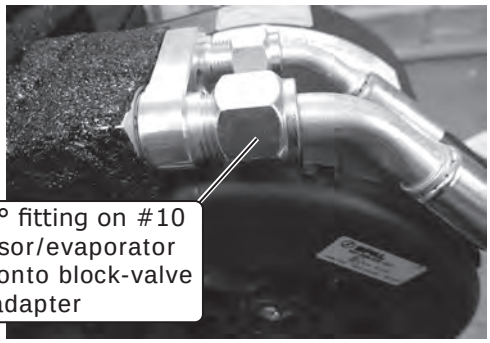


Photo 5

Photo 6

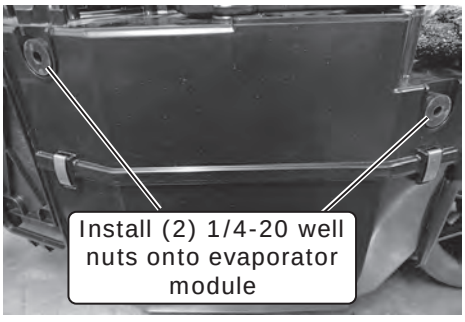


Photo 7

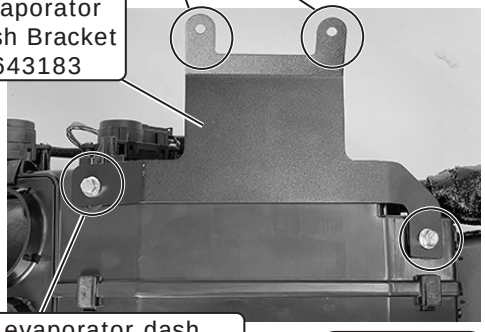


Photo 8

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 module (See Photo 1, below).

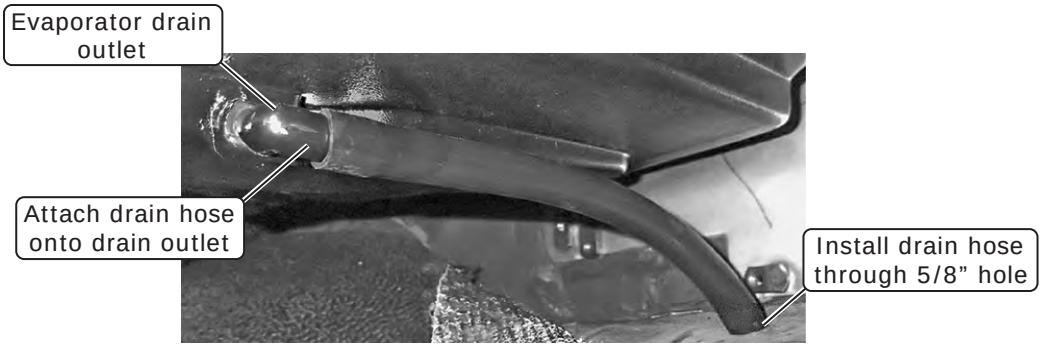


Photo 1

Firewall Cover Installation

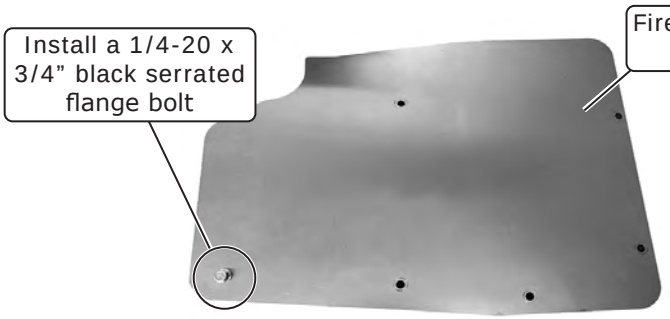
NOTE: To ensure a watertight seal between the passenger compartment and the exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

1. Locate the bottom-left mounting hole on the firewall cover, and install a 1/4-20 x 3/4" black serrated flange bolt and a 1/4" pushnut retainer (See Photos 1 and 2, below).

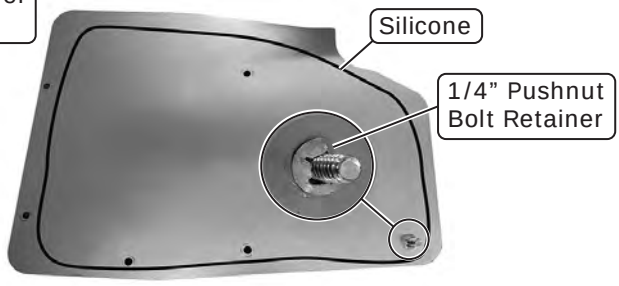
2. Apply a bead of silicone around the mating surface of the firewall cover as shown in Photo 2, below.

3. Install the firewall cover onto the (2) 1/4-20 full-threaded studs, then secure it using (2) 1/4-20 nuts with star washers (See Photo 3, below).

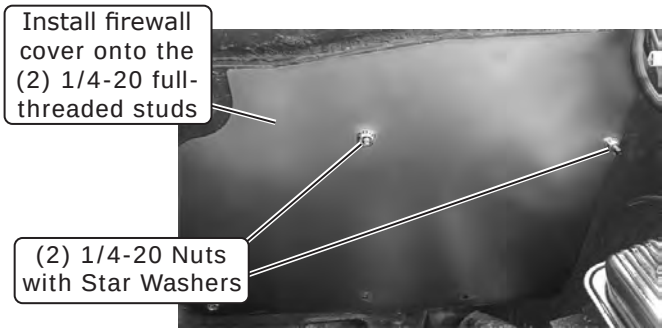
4. Install (3) 1/4-20 x 3/4" black serrated flange bolts into the remaining open mounting holes on the firewall cover and into the evaporator firewall bracket (See Photo 4, below). **NOTE: Do not tighten at this time.**



Engine Compartment Side View **Photo 1**



Passenger Compartment Side View **Photo 2**



Engine Compartment View **Photo 3**

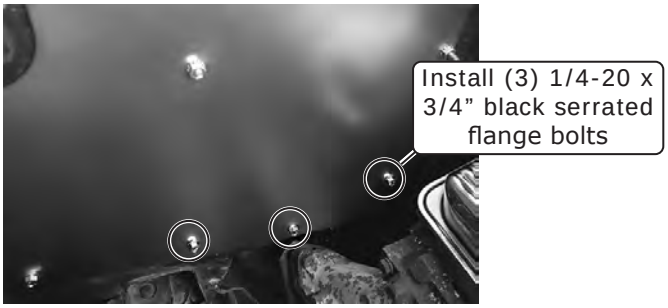
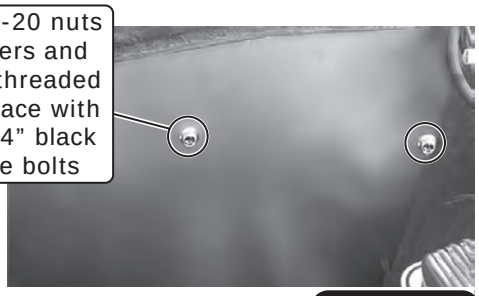


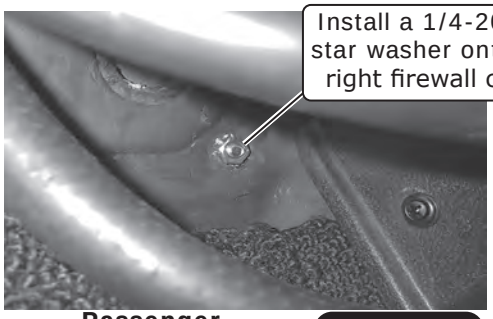
Photo 4

Firewall Cover Installation (Cont.)

5. Remove the (2) 1/4-20 nuts with star washers and (2) 1/4-20 full-threaded studs from the firewall cover, and replace them with (2) 1/4-20 x 3/4" black serrated flange bolts (See Photo 5, below).
6. Install (1) of the previously removed 1/4-20 nuts with star washers onto the bottom-right firewall cover bolt in the passenger compartment (See Photo 6, below).
7. Verify 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, then tighten the bolts on the evaporator unit. Silicone or seam sealer may be applied around the outer edge of the firewall cover.**



Engine Compartment View — **Photo 5**



Passenger Compartment View — **Photo 6**

Passenger Compartment Wiring

1. Select a suitable ground location for the white ground wire eyelet from the heater control valve harness, and secure it using a #10 x 1/2" sheet metal screw.
2. Route the violet power wire to a switched 12v power source on the fuse panel (See Photo 1, below). **NOTE: This requires a male fuse extension (not supplied).**
3. Connect the tan wire to the factory dash lights to enable control panel backlighting (if applicable).
4. Connect the BSC wiring to the main harness (See Photo 2, below).
5. Connect the main harness to the ECU (See Photo 3, below).

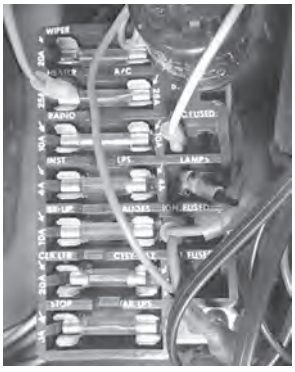


Photo 1

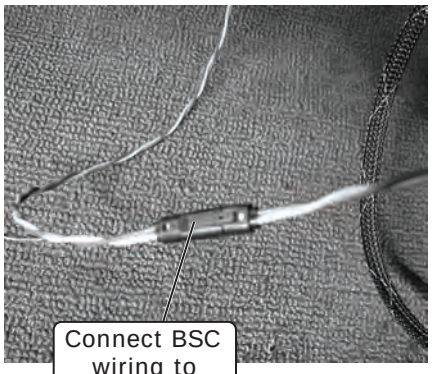


Photo 2

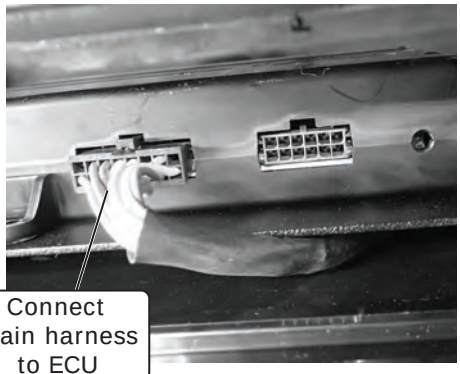


Photo 3

ECU, Control Panel & Duct Hose Routing

NOTE: For the system to function optimally, the duct hoses must be routed as directly as possible, taking care to avoid kinks, sharp bends and unnecessary length. Vintage Air supplies duct hoses in continuous lengths that will need to be cut to size depending on application. Before cutting, familiarize yourself with the installation instructions and verify the routing will work with your application. For custom hose routing, additional hose may be needed and can be purchased from Vintage Air.

1. Stretch the duct hose until there is no slack, measure, mark and cut hose to size (See Photo 1, below).

Photo 1

Disclaimer: Before cutting duct hose to length, verify the routing will work for your application.

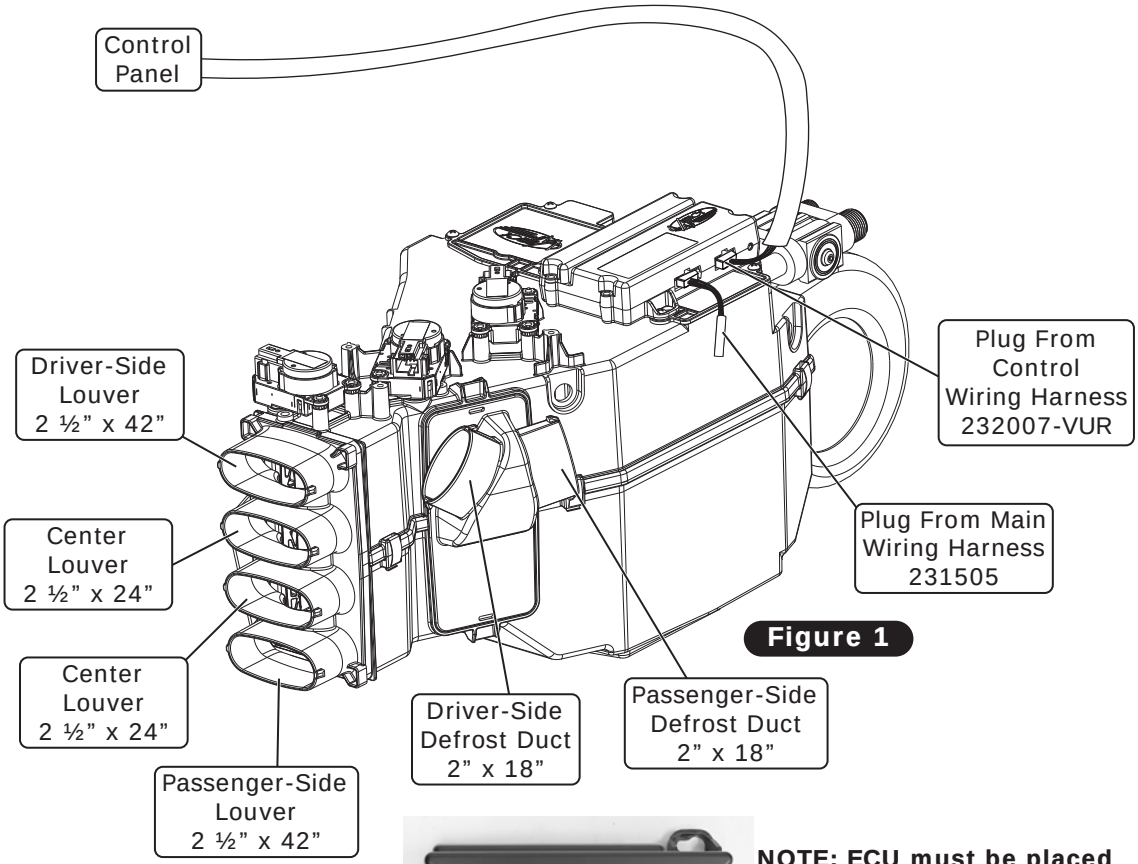
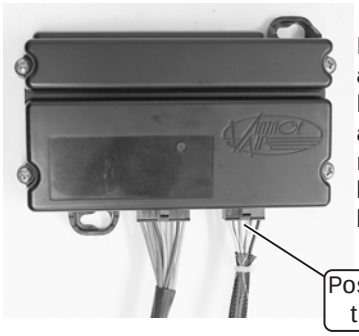


Figure 1



NOTE: ECU must be placed away from water and humidity, and also be accessible for servicing. If relocating, connectors must be positioned towards the bottom.

Fresh Air Cap Installation

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" washer head screws (See Photo 1, below).
3. Apply silicone around the outer edge of the fresh air cap (See Photo 1, below).

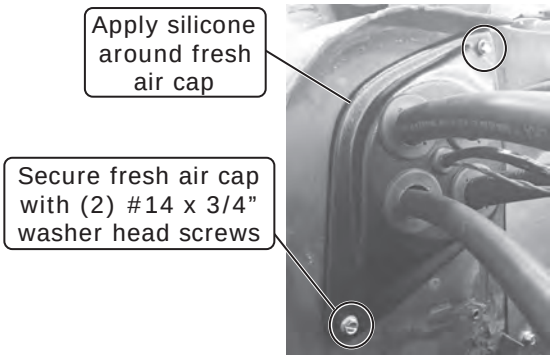


Photo 1

A/C Hose Installation

Standard Hose Kit:

1. Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Lubricating O-rings & Fitting Torque Specs, Page 12), and connect the 135° female fitting with 134a service port to the #8 discharge port on the compressor. Route the straight female fitting to the #8 condenser hardline coming through the core support (See Figure 1, Page 24). Tighten each fitting connection as shown in Lubricating O-rings & Fitting Torque Specs, Page 12.
2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Lubricating O-rings & Fitting Torque Specs, Page 12), and connect the #10 135° female fitting with 134a service port to the #10 suction port on the compressor. Route the 45° female fitting to the #10 evaporator (See Photo 5, Page 19 and Figure 1, Page 24). Tighten each fitting connection (See Lubricating O-rings & Fitting Torque Specs, Page 12).
3. Locate the #6 evaporator A/C hose. Lubricate (2) #6 O-rings (See Lubricating O-rings & Fitting Torque Specs, Page 12), and connect the 90° female fitting to the #6 hardline coming through the core support from the drier. Route the 45° female fitting to the #6 evaporator (See Photo 4, Page 19 and Figure 1, Page 24). Tighten each fitting connection (See Lubricating O-rings & Fitting Torque Specs, Page 12).

Modified Hose Kit:

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

Heater Hose & Heater Control Valve Installation

1. Route a piece of heater hose from the water pump to the top heater fitting of the heater core as shown in Evaporator Installation, Photo 1, Page 18, and Figure 1, below. Secure using hose clamps.
2. Route a piece of heater hose from the intake to the bottom heater fitting of the heater core as shown in Evaporator Installation, Photo 2, Page 18, and Figure 1, below. **NOTE: Install the heater control valve (the flow direction follows the molded arrow on the valve) in line with the intake manifold (pressure side), heater hose, and secure using hose clamps as shown in Figure 1, below. Also note proper flow direction.**
3. Plug the heater control valve connector into the connector on the main wiring harness (See Photo 1, below).

A/C & Heater Hose Routing

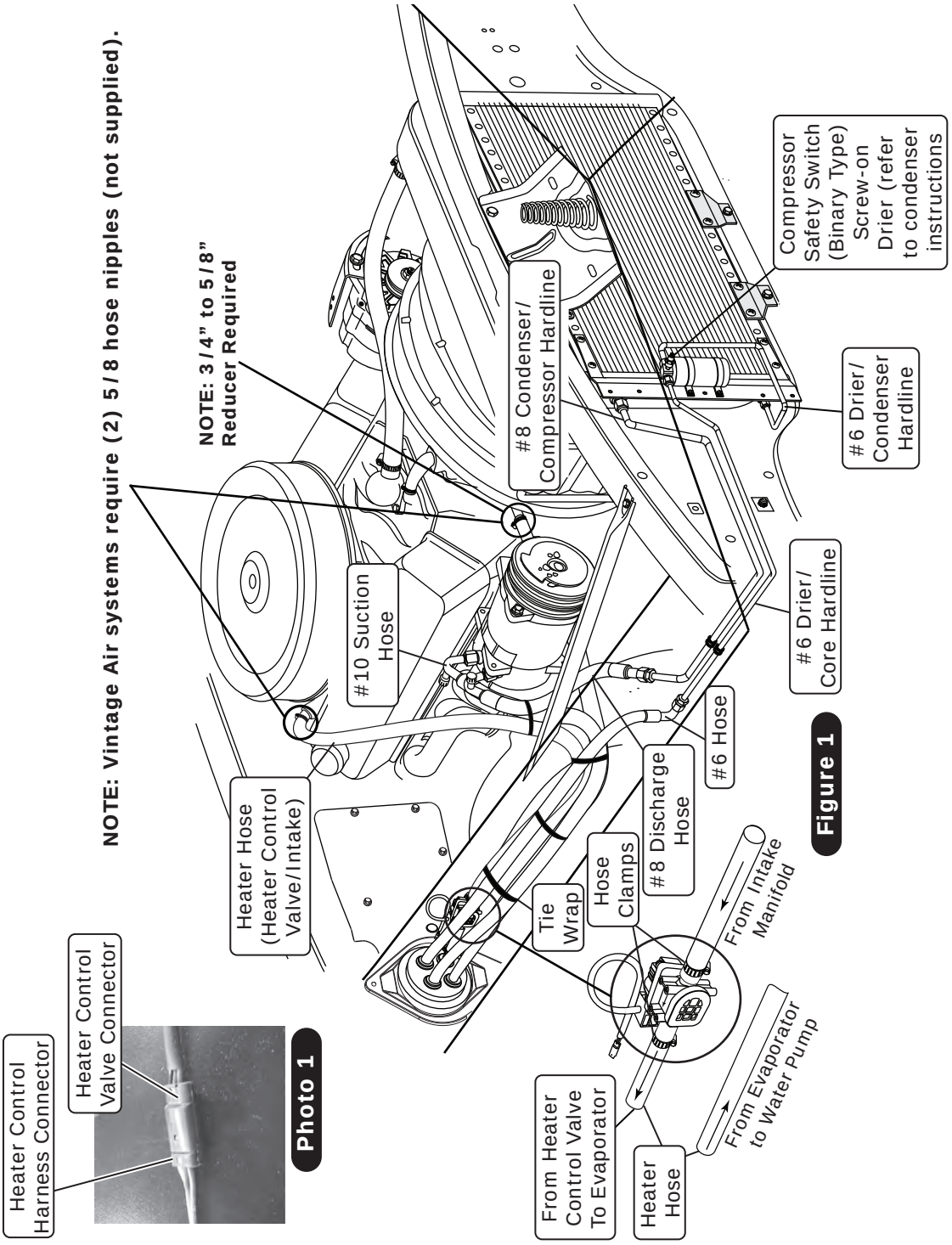


Figure 1

Photo 1

Quality Crimp Guideline

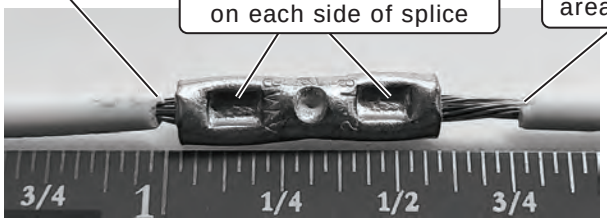


Photo 1

Photo 2

Good Ring Terminal Crimp

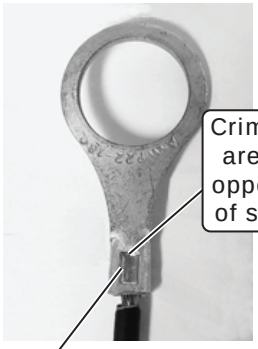


Photo 3

Bad Ring Terminal Crimp

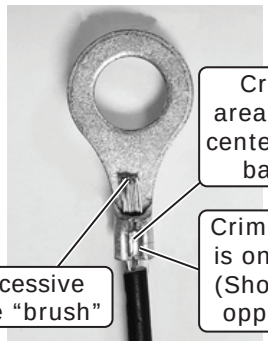


Photo 4

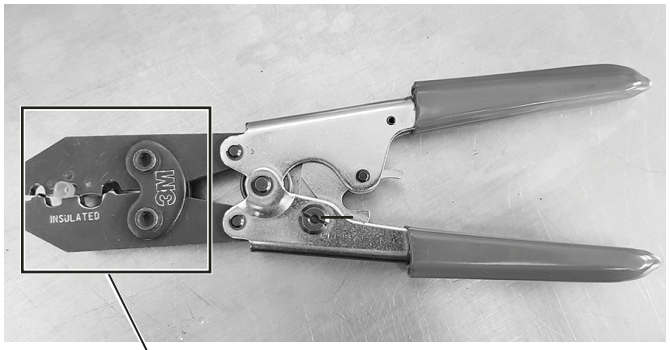
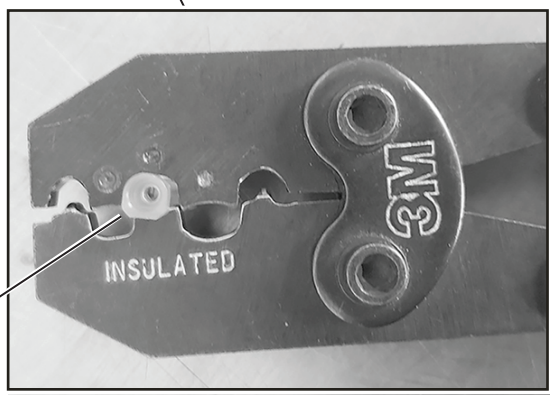


Photo 5



Use a ratcheting crimp tool for insulated barrel terminals when crimping the provided female insulated terminal. Ensure terminal is inserted in appropriate position before crimping.

Photo 5a

Engine Compartment Wiring

1. Route the blue lead from the main wiring harness to the safety switch (See Photo 1, below).
2. Connect the compressor lead wire to the safety switch (See Photo 1, below).
3. Wrap the safety switch wiring with flexo sleeve, and secure it with the supplied tie wraps (See Photo 2, below).
4. Route power and ground wires toward the battery.
5. Install the supplied heat shrink over the 12 AWG orange fuse holder assembly wire, and crimp it to the 12 AWG orange wire from the main wiring harness (See Photo 3, below and Quality Crimp Guidelines, Page 25).
6. Install the supplied heat shrink over the 16 AWG black fuse holder assembly wire, and crimp it to the 16 AWG red wire from the main wiring harness (See Photo 4, below and Quality Crimp Guidelines, Page 25).

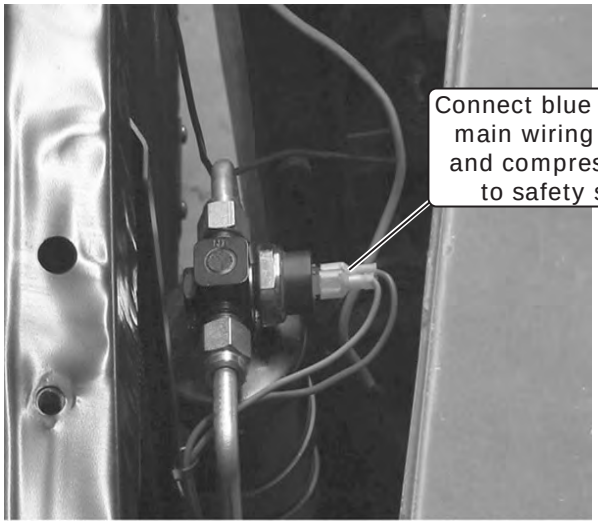


Photo 1

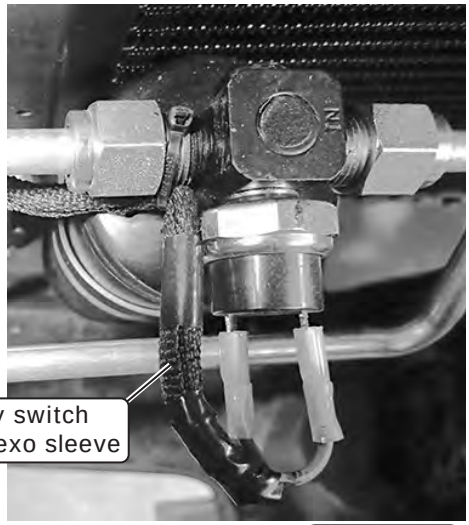


Photo 2

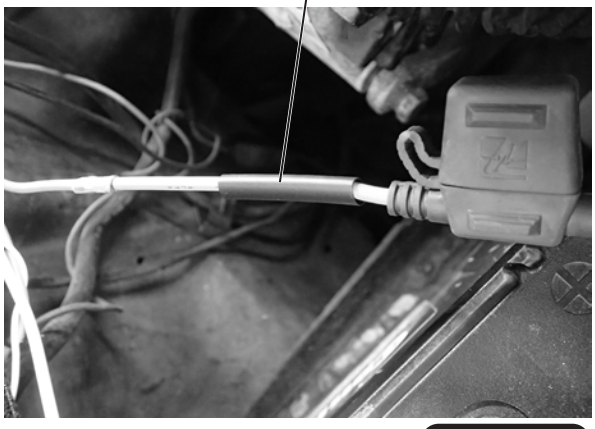


Photo 3

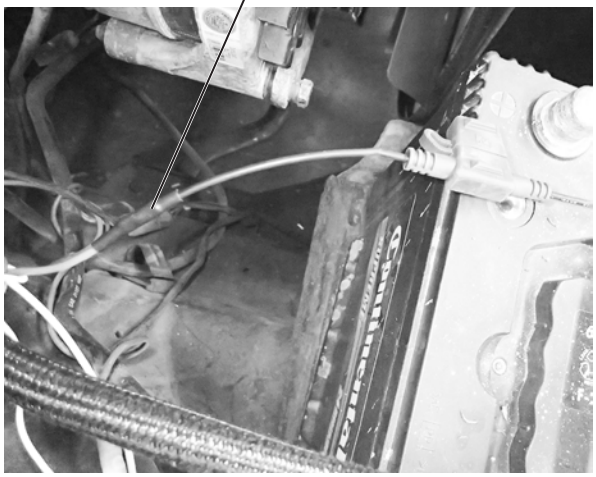


Photo 4

Engine Compartment Wiring (Cont.)

7. Install fuses into the holders (See Photo 5, below).
8. Install the supplied heat shrink over the white ground wires, then crimp on the supplied eyelets (See Photos 6 and 7, below and Quality Crimp Guidelines, Page 25)
9. Connect the ground wiring eyelets to the negative battery terminal connector (See Photo 8, below).
10. Connect the positive wiring eyelets to the positive battery terminal connector (See Photo 9, below).
NOTE: Do not connect power until installation is completed.

Photo 5

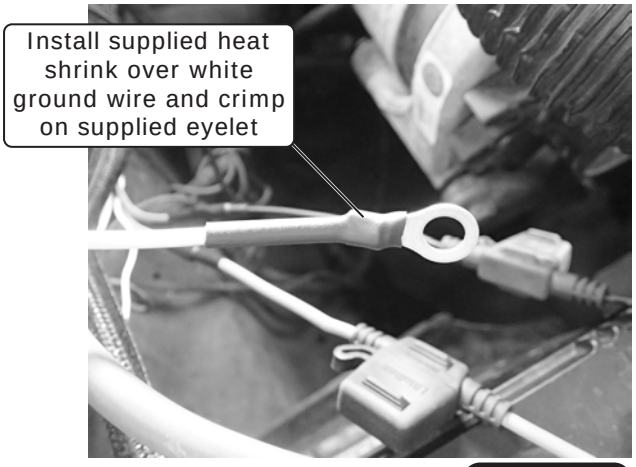


Photo 6

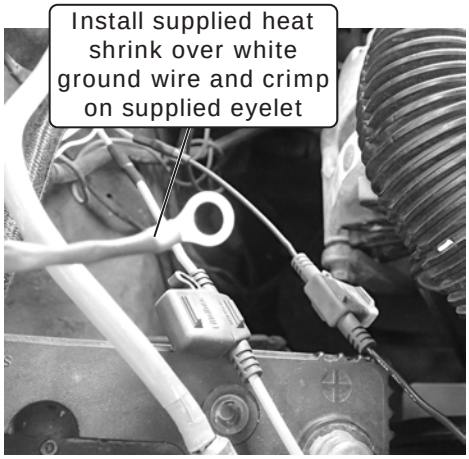


Photo 7

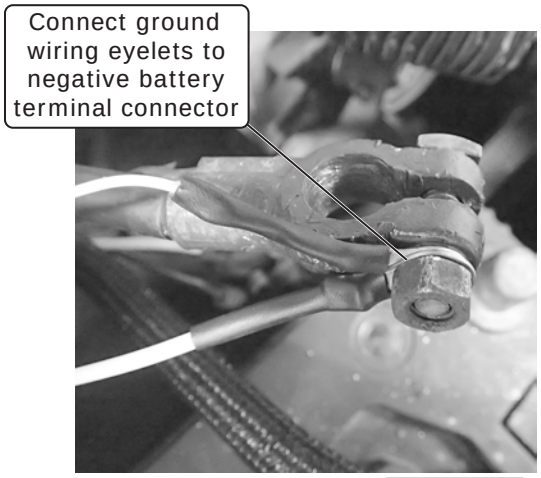
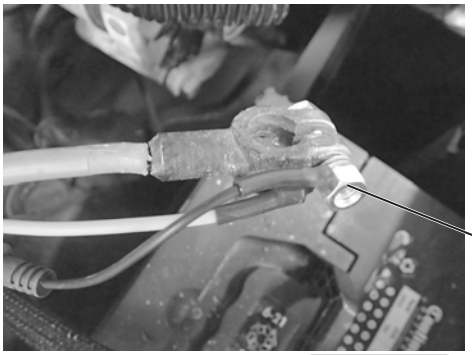


Photo 8



NOTE: Do not connect power until installation is completed.

Photo 9

Final Steps: Installation Check

Installation Check		
ITEM TO CHECK		Procedure
☐	ECU	If no blinking is observed after 1 minute of turning the ignition on, go to the next check. If repetetive blinking is observed, go to the **Advanced Diagnostics** Section to diagnose.
☐	Blower speed control	Set the blower speed control to **OFF**, *confirm that the blower is off*. Position the blower speed control to **LOW** then **MEDIUM** and then **HIGH**. *At each setting confirm that the blower speed increases*, do this by feeling for the amount of air coming from the unit and hearing the blower speed increase.
☐	Mode control	Set the **MODE** control to the **DASH** position. *Confirm that air is being blown at the dash vents.* Set the **MODE** control to the **FLOOR** position. *Confirm that air is being blown at the floor vents.* Set the **MODE** control to the **DEFROST** position. *Confirm that all air is being blown from the defrost vents*
☐	Temperature control	**If heater lines are installed:** Set the **MODE** control to the **DASH** position. Set the **TEMP** control to the **MAX HEAT** position. *Confirm that HOT air is coming from the dash vents.* **If system is charged:** Set the **TEMP** control to the **MAX COOL** position. *Confirm that **COLD** air is coming from the dash vents.* Also *confirm that the compressor "clicks" on* when adjusting the **TEMP** control from the **MAX HEAT** position to the **MAX COOL** position.
☐	AC Indicator (If applicable)	While the **MODE** control is set to the **DASH** position, and the **TEMP** control is set to the **MAX COOL/MIN HEAT** position, *confirm that the blue AC Indicator light is on*.
☐	Backlight (If applicable)	If your control panel has backlight capabilities and has been wired, turn the dash lamp on and *confirm that the AC panel's legend is lit*.
☐	Fittings	Verify AC and Heater fittings are all tight.

Glove Box Installation

1. The new glove box is made in (2) pieces for easy installation. Install (5) #8 U-nuts in the glove box bottom.
2. Insert the bottom half of the new glove box, securing with only one OEM screw on each side through the dash holes (See Figure 1, below).
3. Insert the top half of the glove box and fasten to the bottom half using (4) #6 x 3/8" pan head screws (See Figure 1, below).
4. Install the glove box door using (3) OEM screws as shown in Figure 1, below.

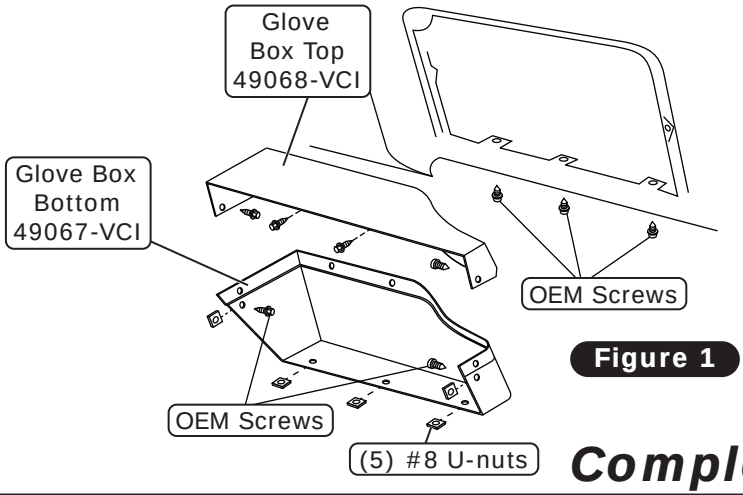


Figure 1

Final Steps: Completing the Install

1. Install the control panel. Refer to the control panel instructions. **NOTE: The control panel must be installed before completing the glove box installation.**
2. Modify the kick panel fresh air cover as shown in Figure 1, below.
3. Reinstall the kick panel fresh air cover.
4. Reinstall all previously removed items.
5. 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.
6. Double check all fittings, brackets and belts for tightness.
7. Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
8. Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
9. Charge the system to the capacities stated on Page 4 of this instruction manual.
10. See Operation of Controls procedures on Page 33.

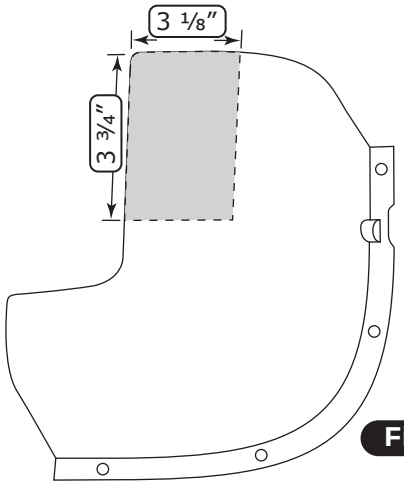


Figure 1

ECU Mounting

1. Select a suitable location behind the dashboard and clean the area where the ECU will be mounted.

2. Apply (2) strips of Velcro onto the back of the ECU (See Photo 1, below) and mount it in the selected location.

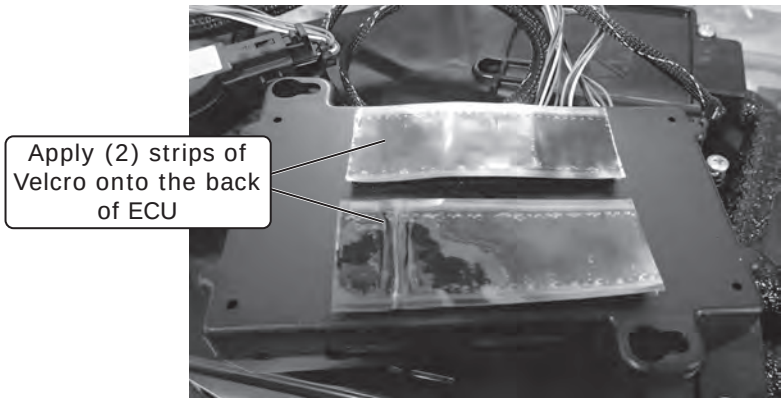
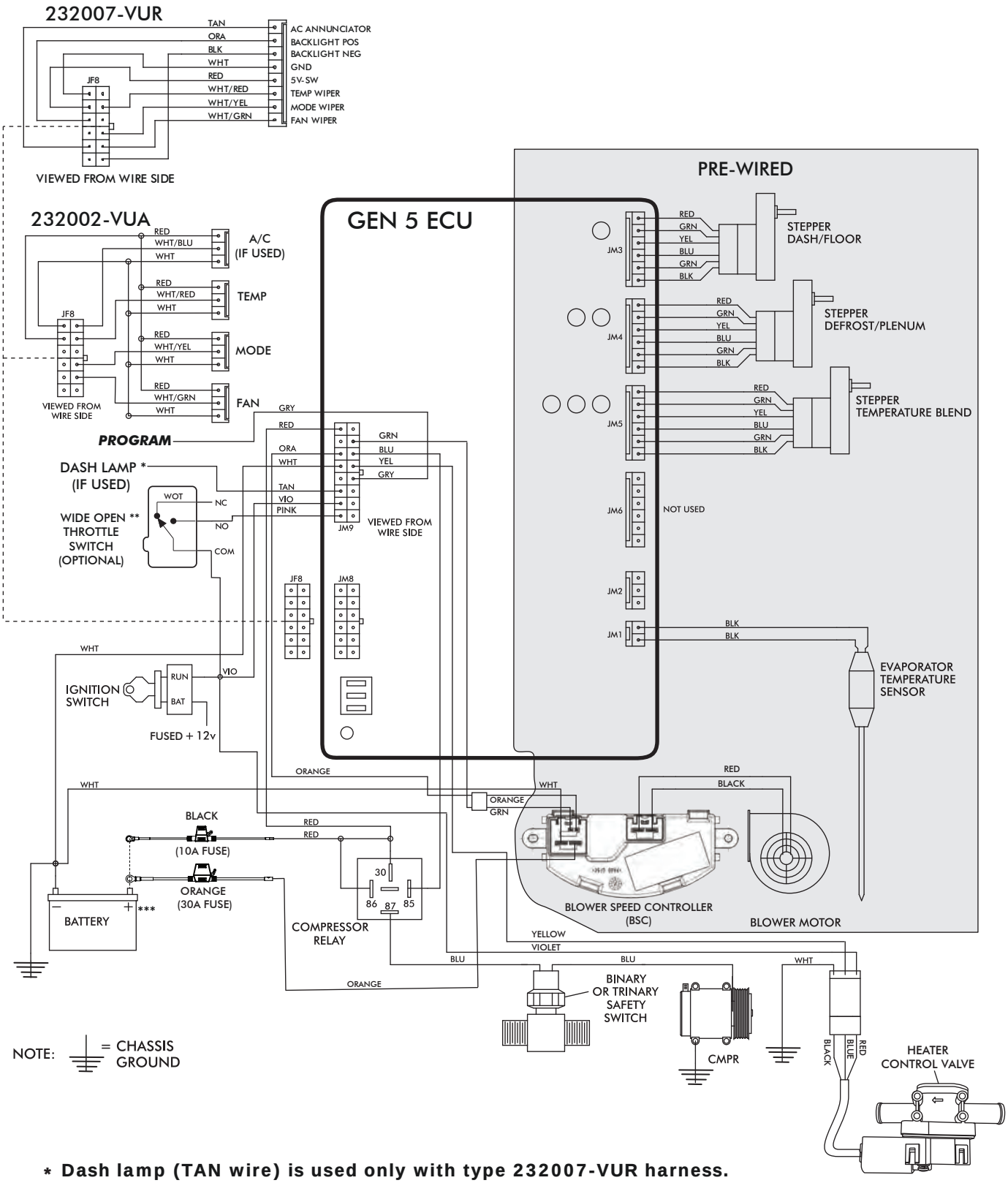


Photo 1

Gen 5 Wiring Diagram

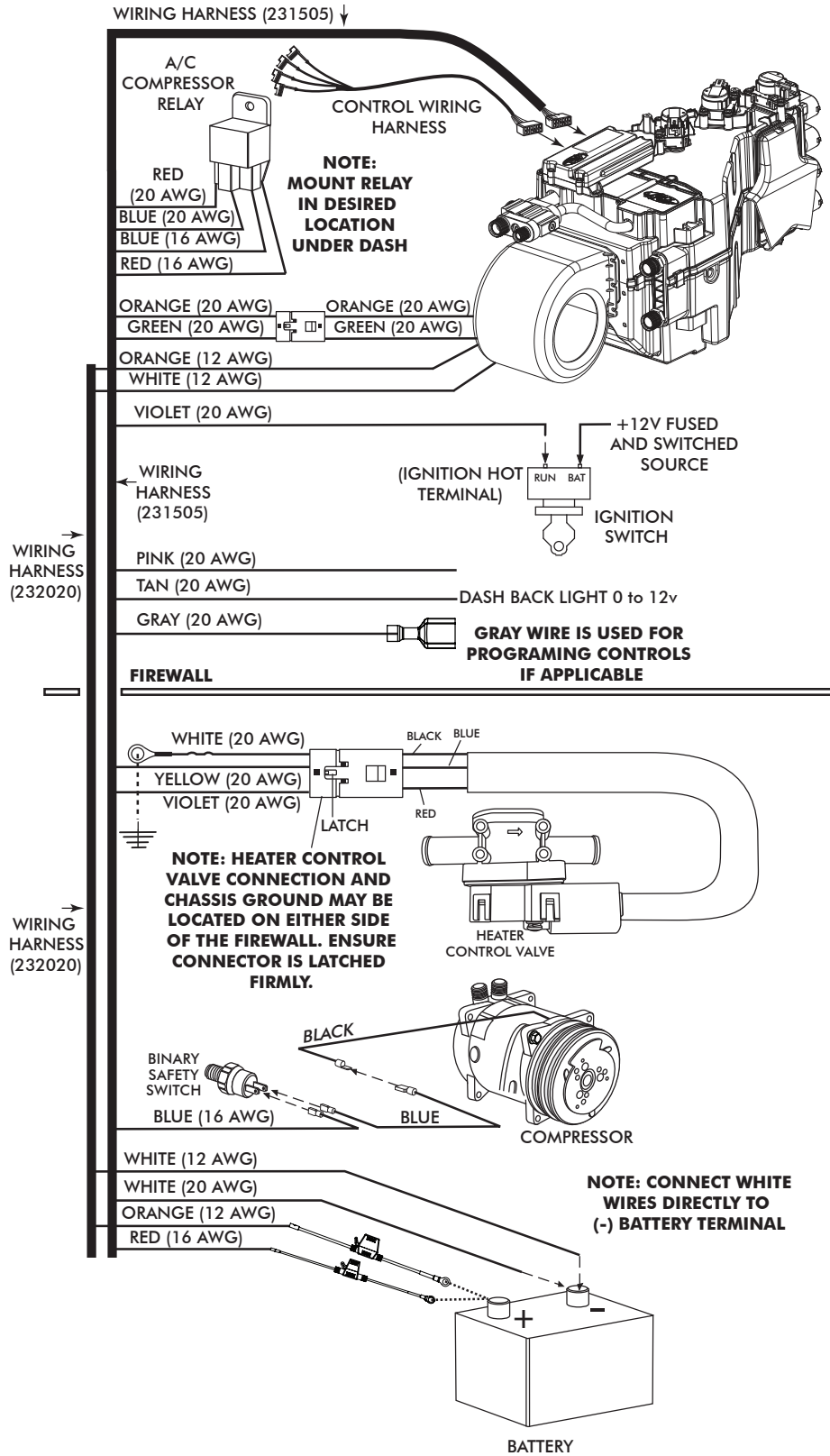


* Dash lamp (TAN wire) is used only with type 232007-VUR harness.

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

*** Install fuse assemblies at or as near to the battery as possible.

Gen 5 Wiring Instructions



Ignition Switch:
Using provided butt splice (PN 226004), connect the 20 AWG violet wire to a 5A fused and switched 12V source such as Key On.

Wide Open Throttle Switch (Optional):
If a wide open throttle switch is required, connect the 20 AWG pink wire to a normally open switch that, when closed, connects a fused and switched 12V source to the pink wire. See Gen 5 wiring diagram for an example.

Dash Light (Optional):
If using a Vintage Air control panel with back light, connect the 20 AWG tan wire to the vehicle's dash back light 0-12V using provided butt splice (PN 226004).

Heater Control Valve:
Connect the Violet/Yellow/White twisted branch with 3 position connector into the heater control valve connector. Ensure that the mating latch is fully seated.

Binary / Trinary & Compressor:
Binary Switch: Terminate provided insulated female terminal (PN 23172-VUW) to the blue 16 AWG wire. Connect as shown.
Trinary Switch: Connect according to trinary switch wiring diagram.

Battery Connections:
ECU Ground: Terminate provided ring terminal (PN 226110) to 20 AWG white wire from the 231505 wire assembly and install at battery.
ECU PWR: Terminate provided fuse assembly with black leads (PN 233012) to the 16 AWG red wire from the 231505 wire assembly. Install provided 10A Red Mini Fuse (PN 226118). Install at battery.
Blower Speed Controller (BSC) Ground: Terminate provided ring terminal (PN 226111) to 12 AWG white wire from the 232020 wire assembly and install at battery.
Blower Speed Controller (BSC) PWR: Terminate provided fuse assembly with orange leads (PN 233008) to the 12 AWG orange wire from the 232020 wire assembly. Install provided 30A Green ATO/ATC Fuse (PN 226125). Install at battery.

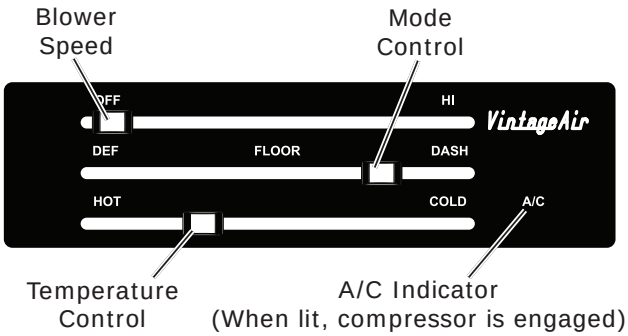
Operation of Controls

On Gen IV or Gen 5 systems with three lever/knob controls, the temperature control toggles between heat and A/C operations. To activate A/C, move the temperature lever/knob all the way to cold and then back it off to the desired vent temperature. For heat operation, move the temperature lever/knob all the way to hot and then adjust to the desired vent temperature. The blower will momentarily change speed, each time you toggle between operations, to indicate the change. **NOTE: For proper control panel function, refer to control panel instructions for calibration procedure.**

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

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

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



A/C Operation

Blower Speed
Adjust to desired speed.

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

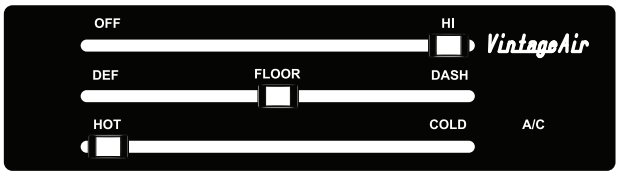
Temperature Control
For A/C operation, adjust to coldest position to engage compressor (Adjust between HOT and COLD to reach desired temperature).

Heat Operation

Blower Speed
Adjust to desired speed.

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

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

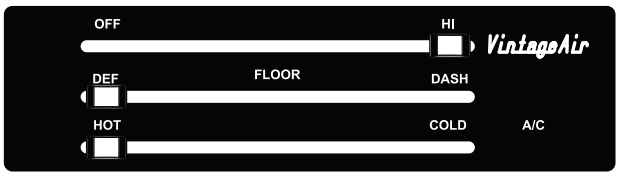


Defrost/De-fog Operation

Blower Speed
Adjust to desired speed.

Temperature Control
Adjust to desired temperature.

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



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Troubleshooting Guide

This printed troubleshooting guide is our basic guide that covers common installation problems. To see our advanced diagnostics and troubleshooting guide, please refer to the following page for instructions on how to download the complete guide.

WARNING: While troubleshooting the system, never probe connector terminals from the front mating side, only back probe.

WARNING: While troubleshooting the system, never use automotive check lights.

Symptom	Condition	Checks	Actions	Notes
1. Blower stays on high speed with ignition on.	No other functions work.	Check for damaged pins or wires in the control panel wire assembly and mating header at ECU.	If found damaged, replace wire assembly or ECU.	
		Check for a bad ECU GND.		
	All other functions work.	Check for damaged pins or wires in the control panel wire assembly and mating header at ECU.	If found damaged, replace wire assembly or ECU.	
		Check if Blower power fuse is blown.	Replace fuse.	If fuse continues to blow, there is a serious problem in the wiring. Check all wiring and ensure the wire is not damaged and shorting out along its route.
		Check for a bad ECU GND.	Repair connection.	
2. Compressor will not turn on (All other functions work).	System is not charged.	System must be charged for compressor to engage.	Charge system.	**Danger: Never bypass safety switch with engine running. Serious injury can result.**
	System is charged.	Check for faulty A/C potentiometer or associated wiring (not applicable to 3-pot controls).	Check continuity to ground on white control head wire. Check for 5V on red control head wire.	To check for proper pot function, check voltage at white/red wire. Voltage should be between 0V and 5V, and will vary with pot lever position.
		Check for disconnected or faulty thermistor.	Check 2-pin connector at ECU housing.	Disconnected or faulty thermistor will cause compressor to be disabled.
3. Compressor will not turn off (All other functions work).		Check for faulty A/C potentiometer or associated wiring.	Repair or replace pot/control wiring.	Red wire at A/C pot should have approximately 5V with ignition on. White wire will have continuity to chassis ground. White/Red wire should vary between 0V and 5V when lever is moved up or down.
		Check for faulty A/C relay.	Replace relay.	

Troubleshooting Guide (Cont.)

Symptom	Condition	Checks	Actions	Notes
4. System will not turn on, or runs intermittently.	Works when engine is not running; shuts off when engine is started	Noise interference from either ignition or alternator.	Install capacitors on ignition coil and alternator. Ensure good ground at all points. Relocate coil and associated wiring away from ECU and ECU wiring. Check for burned or loose plug wires.	Ignition noise (radiated or conducted) will cause the system to shut down due to high voltage spikes. If this is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut down the ECU. Install a radio capacitor at the positive post of the ignition coil (see radio capacitor installation bulletin). A faulty alternator or worn out battery can also result in this condition.
	Will not turn on under any conditions.	Verify connections on power lead, ignition lead, and both white ground wires.	Check for power at ECU, and confirm ignition is being applied to ECU properly.	
		Verify battery voltage is greater than 10 volts and less than 16 while engine is running.	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.		
6. Blower turns on and off rapidly.	Battery voltage is at least 12V.	Check for at least 12V at circuit breaker.	Ensure all system grounds and power connections are clean and tight.	System shuts off blower at 10V. Poor connections or weak battery can cause shutdown at up to 11V.
	Battery voltage is less than 12V.	Check for faulty battery or alternator.	Charge battery.	
7. Erratic functions of blower, mode, temp, etc.		Check for damaged switch or pot and associated wiring.	Repair or replace.	

Advanced Diagnostics and Troubleshooting Guide

If after referencing the Troubleshooting Guide, the issue is not resolved, move to The Advanced Diagnostics and Troubleshooting Guide that covers the following:

- **ECU Diagnostics Codes**
  1. ***ECU Blink Sequence***
  2. ***Firmware Version Number***
  3. ***ECU Model Number***
  4. ***ECU Start-Up Blink Sequence***
  5. ***Diagnostic Codes***
- **Complete Advanced Troubleshooting Guidelines**

Access the latest version of the Advanced Diagnostics and Troubleshooting Guide by scanning the following QR code on your mobile device:

You can also access the guide by typing the following address into your web browser:

https://www.vintageair.com/instructions_pdf/905000.pdf

www.vintageair.com

Packing List: Evaporator Kit (564405)

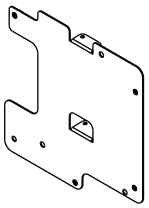
No.	Qty.		Part No.	Description
1.	1	_____	765200	Gen 5 Magnum Max Module with 404 ECU
2.	1	_____	784405	Accessory Kit

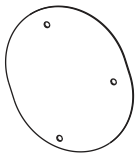
Checked By: _____
Packed By: _____
Date: _____

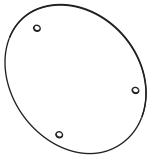
1

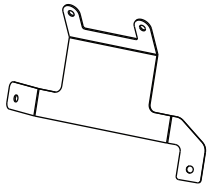
Gen 5 Magnum Max Module with 404 ECU 765200

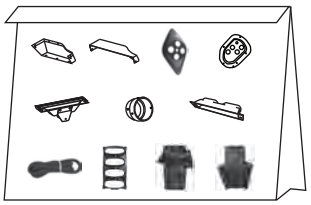
2

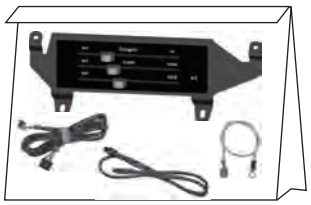


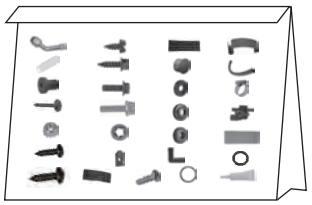












Accessory Kit 784405

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