



1980-86 Ford F-Series / Bronco

with Factory Air
Evaporator Kit
(754185)



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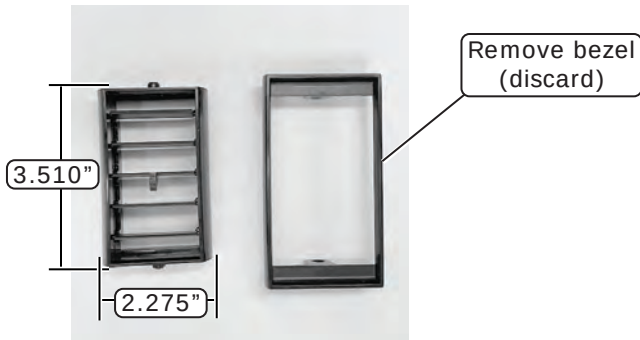
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Additional Parts Available:

- For replacement OEM louvers, order Vintage Air part #491798. Remove the louver from the bezel, then apply foam to the top and bottom of it to reinforce the louver into the housing. **NOTE: Before ordering new louvers, confirm the louver dimensions, as some trucks may differ.**



491798
Louver with Bezel





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Packing List: Evaporator Kit (754185)

No.	Qty.	Part No.	Description
1.	1	765200	Gen 5 Super Magnum Evaporator Module
2.	1	794185	Accessory Kit

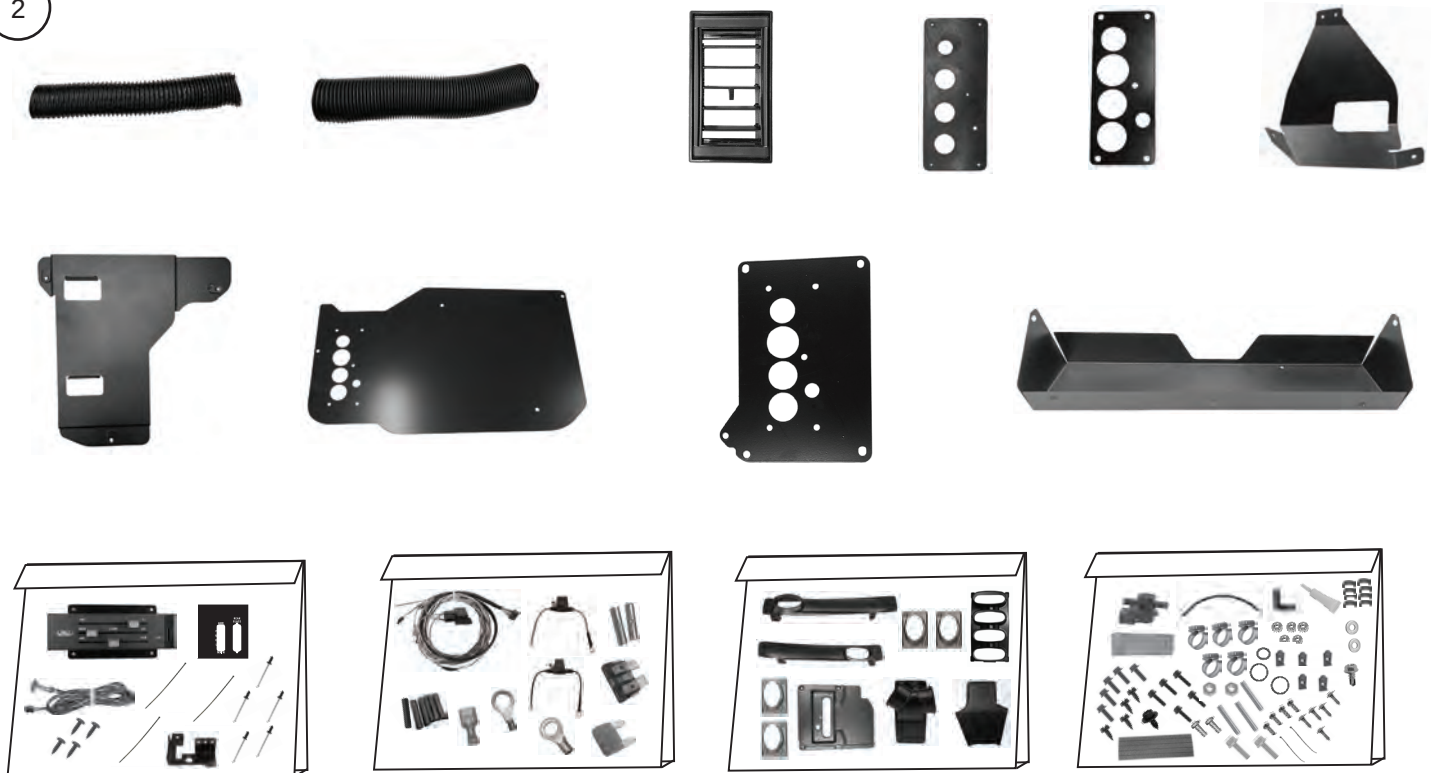
**** Before beginning installation, open all packages and check contents of shipment.
Please report any shortages directly to Vintage Air within 15 days. After 15 days,
Vintage Air will not be responsible for missing or damaged items.**

1

**Gen 5 Super Magnum
Evaporator Module
765200**



2



**Accessory Kit
794185**

**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.

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, and study the instructions, photos, illustrations, & diagrams. Retain OEM bolts, washers and nuts, as some hardware will be reused.

Perform the following:

1. Disconnect the battery.
2. Evacuate the A/C system (if necessary).
3. Drain the radiator.
4. Place a jack stand under the lower arm on the passenger side of the vehicle, then remove the passenger-side front tire. **NOTE: This is necessary to gain access to the OEM heater core mounting hardware.**
5. Remove the screws along the inner fender and the (2) screws on the top of the fender (See Photo 1, below).
6. Disconnect the heater hoses from the firewall, the intake and the water pump (See Photos 2 and 3, below).
7. Disconnect the wiring harness connections to the evaporator housing (See Photo 4, below).

Remove (2) screws
on top of fender

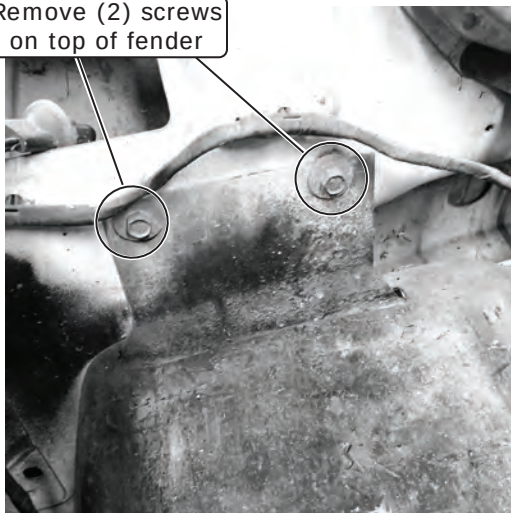


Photo 1

Disconnect heater
hoses from firewall

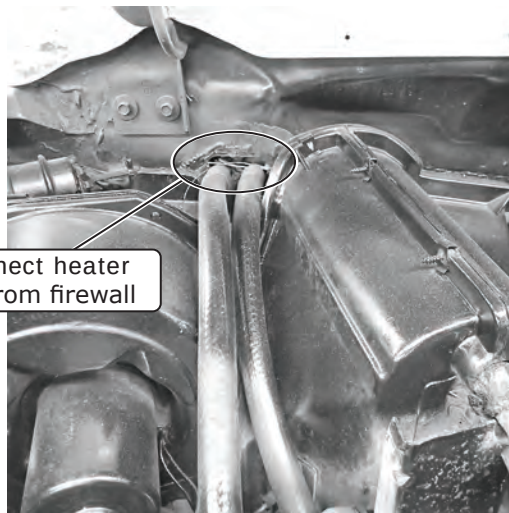


Photo 2

Disconnect heater
hoses from intake
and water pump

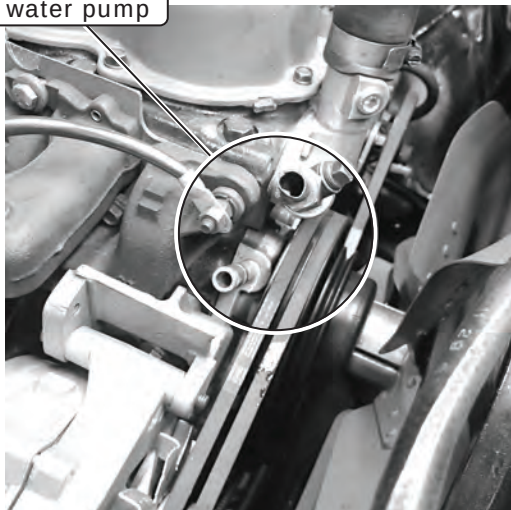


Photo 3

Disconnect wiring
harness connections
to evaporator housing



Photo 4



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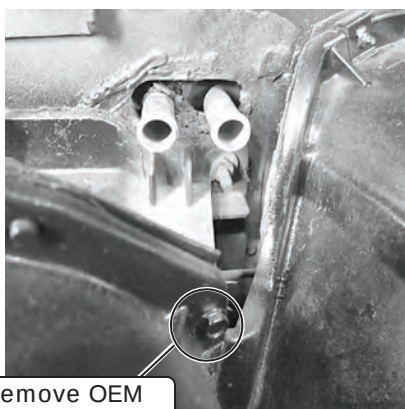
Engine Compartment Disassembly (Cont.)

8. From the engine compartment, remove the (4) OEM heater core mounting nuts from the firewall (See Photos 5, 6, 7 and 8, below).
9. From the passenger compartment, remove the (3) OEM heater core mounting nuts from the firewall (See Photos 9 and 10, below), then remove the OEM heater core from the engine compartment (See Photo 11, below).
10. Remove the reminesnce of seam sealer and other residue from the firewall.
11. Reinstall the passenger-side inner fender using the OEM hardware, then reinstall the tire and jack the truck down.



Remove OEM heater core mounting nut from firewall

Photo 5



Remove OEM heater core mounting nut from firewall

Photo 6

Remove OEM heater core mounting nut from firewall

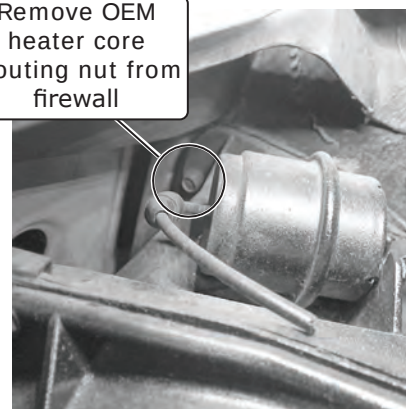


Photo 7

Remove OEM heater core mounting nut from firewall

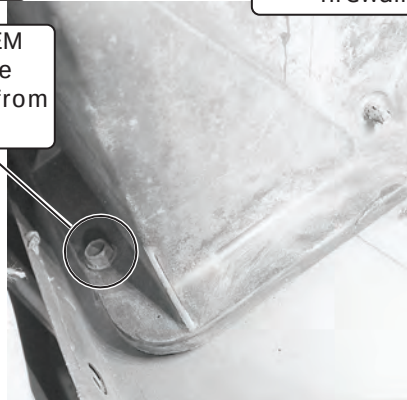
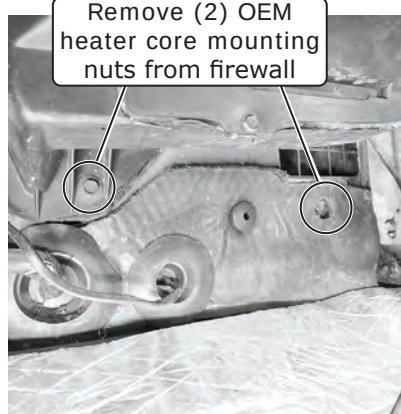


Photo 8

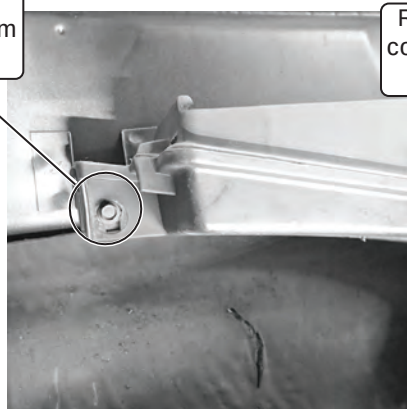
Remove (2) OEM heater core mounting nuts from firewall



Passenger Compartment View

Photo 9

Remove OEM heater core mounting nut from firewall



Passenger Compartment View

Photo 10

Remove heater core from engine compartment

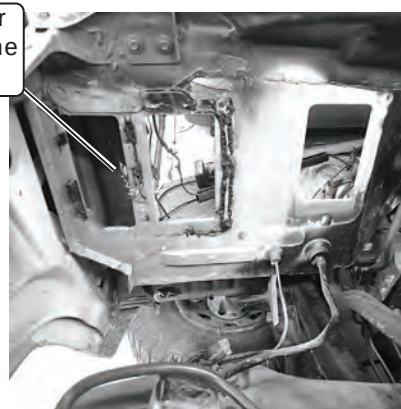


Photo 11



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Passenger Compartment Disassembly

NOTE: The removal of the dash is required to remove the OEM duct work from the vehicle. Refer to the vehicle shop manual for more detailed information. Retain the OEM bolts, washers and nuts, as some hardware will be reused.

Perform the following:

1. Remove the (8) screws on the front of the dash pad (See Photos 1, 2 and 3, below), then remove the (4) screws on the back of the defrost vents (See Photos 4 and 5, below).
2. Pull the radio knobs off (See Photo 6, below), then remove the front of the radio bezel. Remove the (4) screws on the A/C control panel bracket, then remove the control panel (See Photo 7, below).

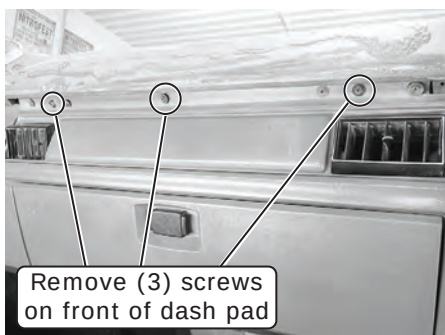


Photo 1

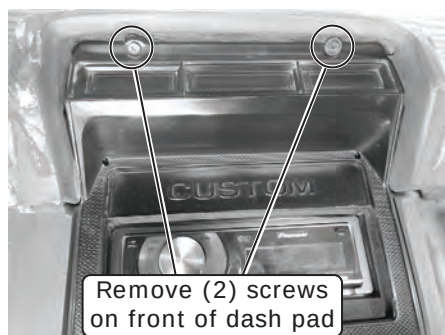


Photo 2

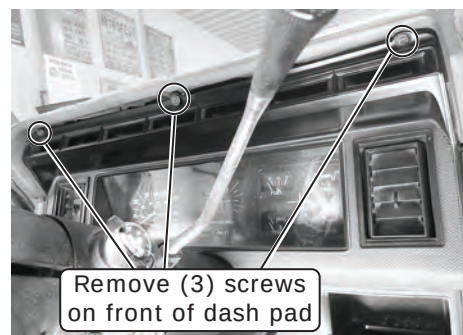


Photo 3

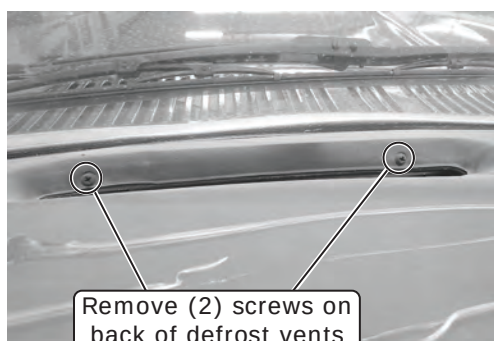


Photo 4

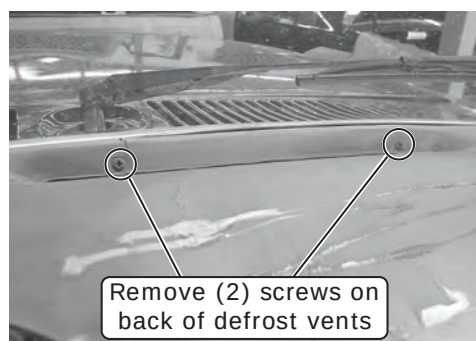


Photo 5

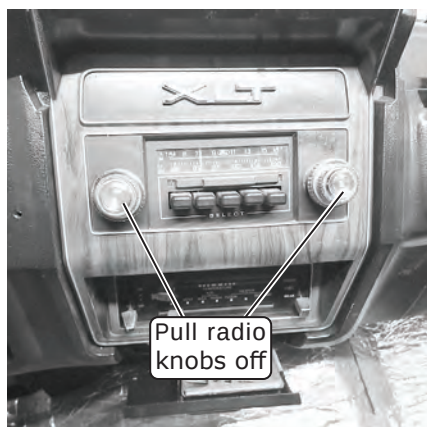


Photo 6

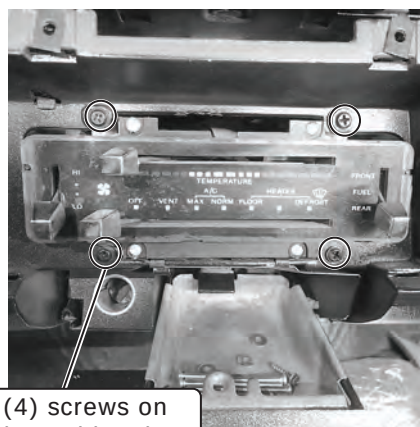


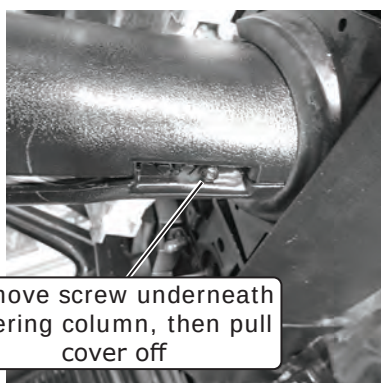
Photo 7



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Passenger Compartment Disassembly (Cont.)

3. Remove the screw underneath the steering column (See Photo 8, below), then pull the cover off. Remove the screw holding the shift cable, so the selector is just being held in the instrument cluster. Pull the headlight and wiper knobs (See Photo 9, below), then remove the instrument panel bezel. Remove the (4) screws from the instrument panel, then remove it (See Photos 10 and 11, below).
4. Undo the headlight and wiper switch, then unclip the light above them. Push the light behind the dash, then remove the (4) screws holding the driver-side A/C vents (See Photo 12, below).
5. Remove the dash piece underneath the steering column by removing the (2) screws (See Photo 13, below). Remove the (2) bolts on the steering column bracket (See Photo 14, below), then remove the bolt directly above the steering column.
6. Remove the bolt holding the emergency brake and the (2) bolts holding the hood latch bracket (See Photo 15, below).



Remove screw underneath steering column, then pull cover off

Photo 8



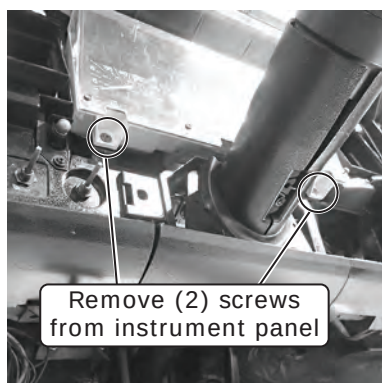
Pull headlight and wiper knobs, then remove instrument panel bezel

Photo 9



Remove (2) screws from instrument panel

Photo 10



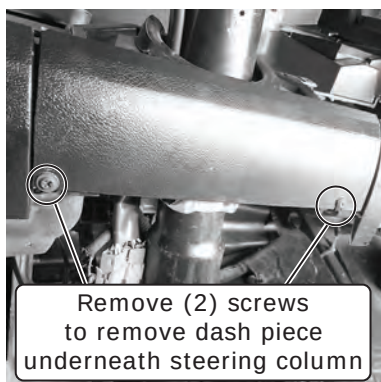
Remove (2) screws from instrument panel

Photo 11



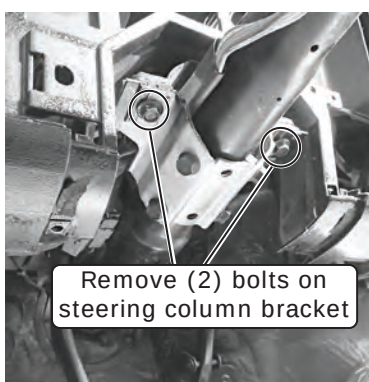
Remove (4) screws holding driver-side A/C vents

Photo 12



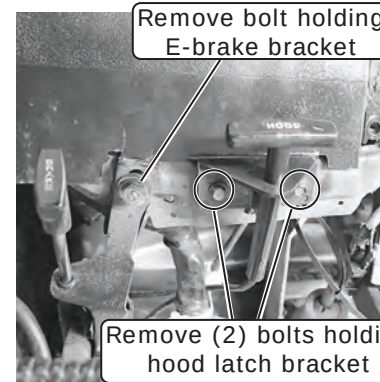
Remove (2) screws to remove dash piece underneath steering column

Photo 13



Remove (2) bolts on steering column bracket

Photo 14



Remove bolt holding E-brake bracket

Remove (2) bolts holding hood latch bracket

Photo 15



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Passenger Compartment Disassembly (Cont.)

7. Remove the (3) screws from inside the glove box and the (2) glove box cable screws (See Photo 16, below), then the (3) screws to remove the glove box door (See Photo 17, below).
8. Remove the (2) bolts underneath the dash in the middle (See Photo 18, below) and the bolt holding the dash to the firewall (See Photo 19, below). Remove the (2) bolts on the top of the dash, near the windshield on the driver and passenger side (See Photos 20 and 21, below). Remove the (2) bolts in the middle, above the radio (See Photo 22, below), then remove the (2) bolts on either side, underneath the dash (See Photos 23 and 24, below).

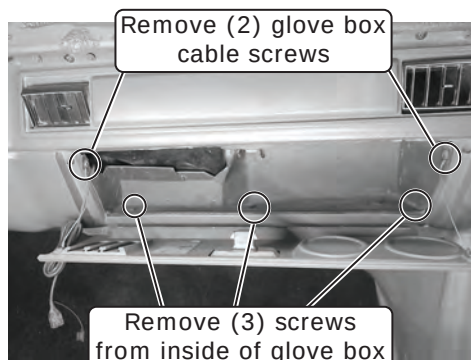


Photo 16

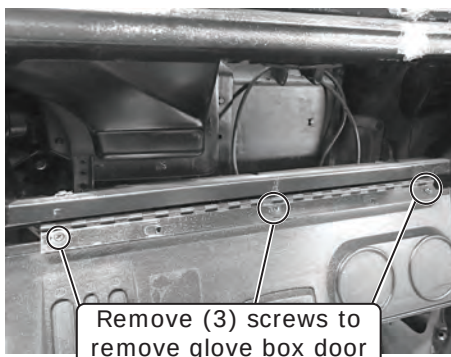


Photo 17

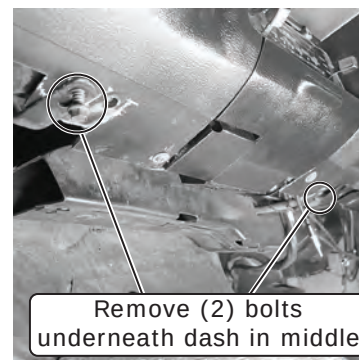


Photo 18

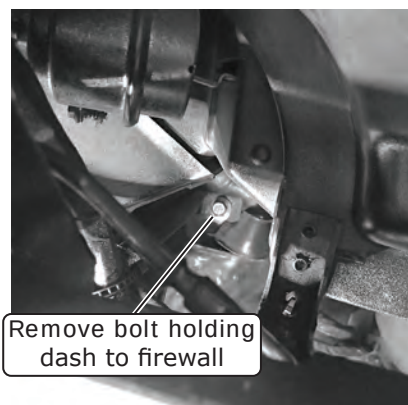


Photo 19



Photo 20



Photo 21

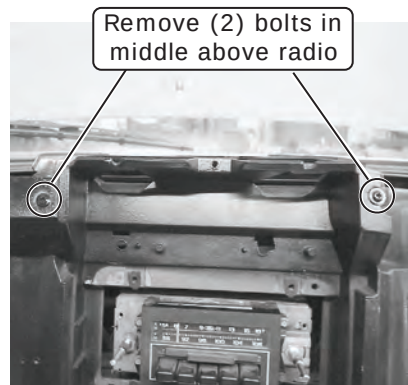


Photo 22

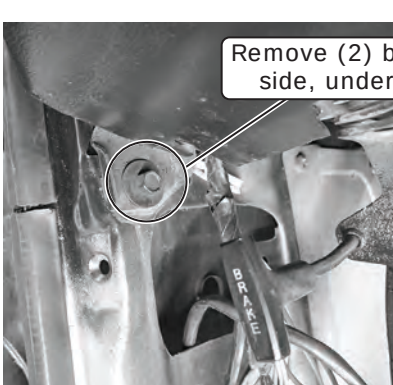


Photo 23

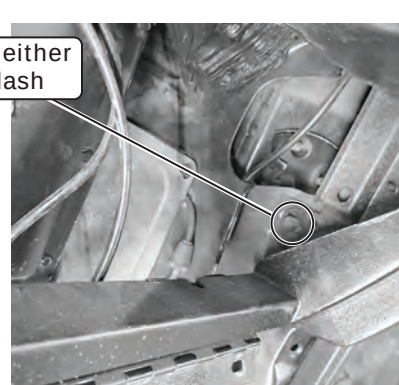


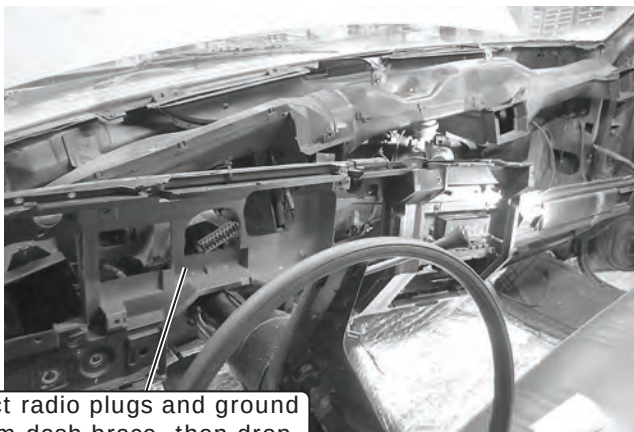
Photo 24



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Passenger Compartment Disassembly (Final)

9. Disconnect the radio plugs and ground wires from the dash brace, then drop the dash away from the ductwork (See Photo 25, below).
10. Remove the OEM ductwork, then remove the (4) screws from the defrost ducts and remove them.
11. Locate the passenger-side lower dash brace (if equipped), and remove it (will not be reused) (See Photo 26, below).
12. Remove the tank selector (rear window for Bronco's) switch from the control panel (See Photo 27, below). Disconnect all plugs and cables from the control panel, then remove it (See Photos 27 and 28, below).



Disconnect radio plugs and ground wires from dash brace, then drop dash away from ductwork

Photo 25

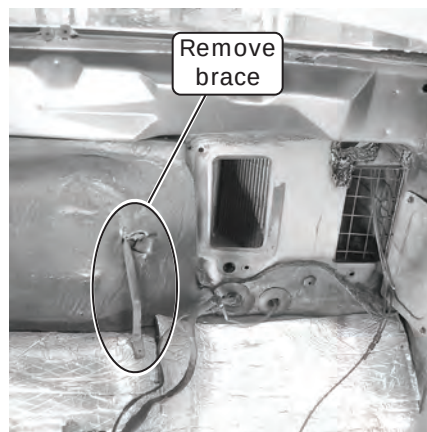
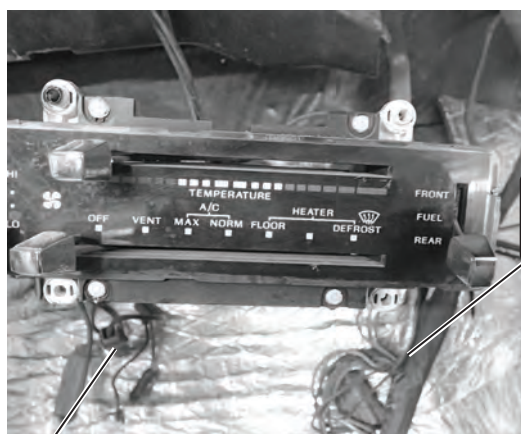
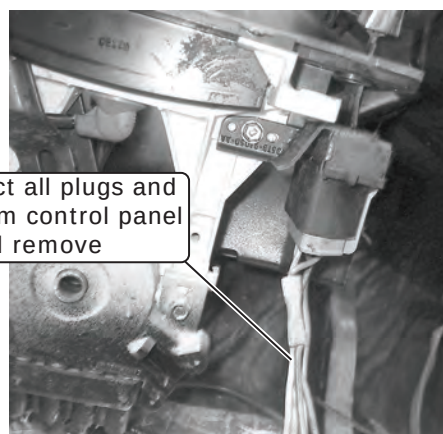


Photo 26



Remove tank selector switch from control panel

Photo 27



Disconnect all plugs and cables from control panel and remove

Photo 28

Condenser Assembly and Installation

1. Refer to separate instructions included with the condenser kit to install the condenser.
2. Binary switch installation (Refer to condenser instructions).

Compressor and Brackets

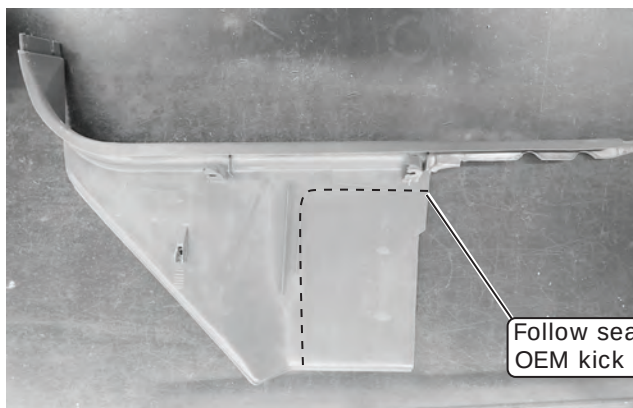
1. Refer to separate instructions included with the bracket kit to install the compressor bracket.



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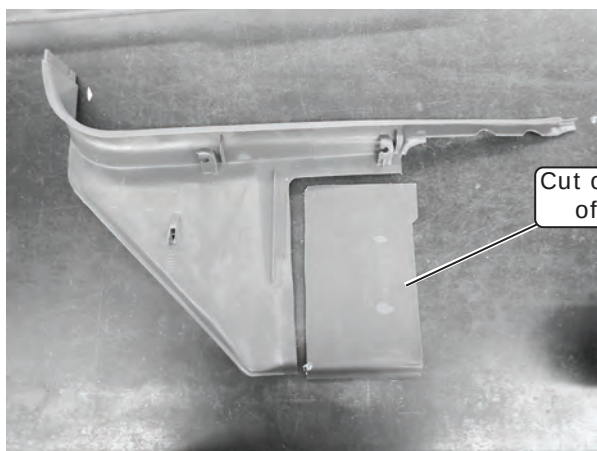
Kick Panel Modification

1. Follow the seam on the OEM kick panel. Cut out the top corner of the kick panel to allow it to fit in place with the new kick panel plate (See Photos 1, 2 and 3, below). **NOTE: Photo 3, below, shows how the new kick panel will mount back into the truck.**



Follow seam on
OEM kick panel

Photo 1



Cut out top corner
of kick panel

Photo 2



Fit stock kick panel
in place with new
kick panel plate

Photo 3



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Dash Louver Adapter Preparation

NOTE: For replacement louvers, See Additional Parts Available, Page 2. The OEM louvers can be loose inside the louver housing, however, Vintage Air recommends using foam on the top and bottom of the louvers to reinforce them.

On a workbench, perform the following:

1. Remove the foam from the back of the passenger- and driver-side louvers (See Photos 1, 2, 3, 4, and 5, below).
2. On the hose adapters with four dimples, apply a bead of silicone onto the inner rim, then install it over the back of the passenger-side louvers (See Photos 6, 7 and 8, below).
3. On the hose adapters with two dimples, apply a bead of silicone onto the inner rim, then install it over the back of the driver-side louvers (See Photo 9, below).

Remove foam from back of
passenger-side louvers



Photo 1



Photo 2

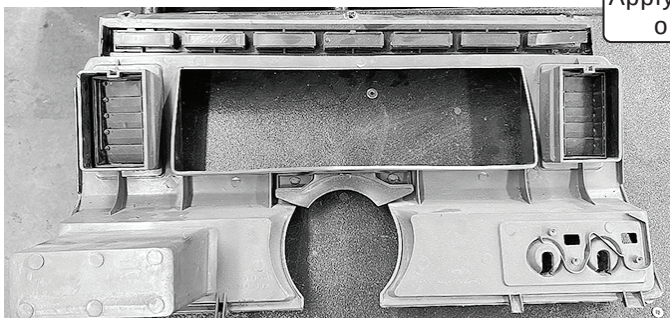
Remove foam from back of
driver-side louvers



Photo 3

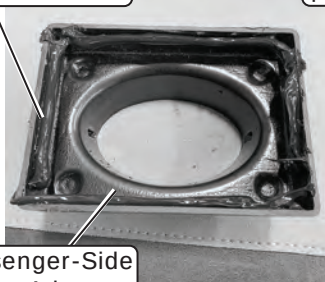


Photo 4



Foam Removed from
Driver-Side Louvers

Apply bead of silicone
onto inner rim



Passenger-Side
Hose Adapter
592955

Photo 5

Install over back of
passenger-side louvers



Photo 7

Install over back of
passenger-side louvers

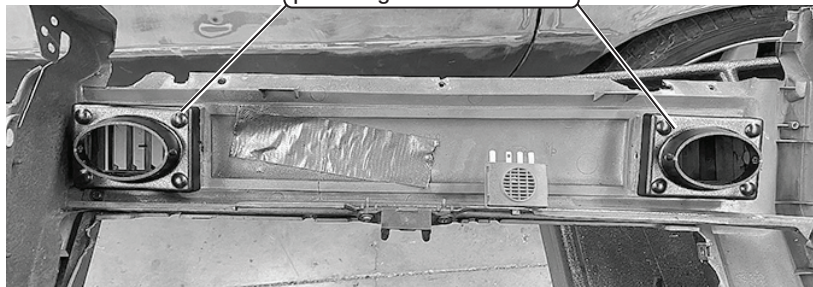
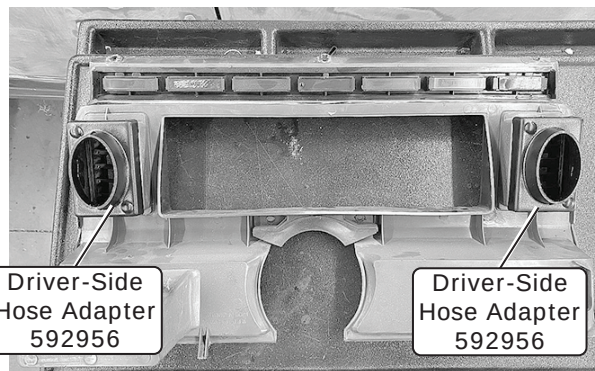


Photo 8



Driver-Side
Hose Adapter
592956

Driver-Side
Hose Adapter
592956

Photo 9



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Control Panel Installation

NOTE: The OEM control panel removal is shown during the dash removal under "Passenger Compartment Disassembly", Page 8. Install the new control panel before reinstalling the dash. Refer to control panel instructions for control panel preparation and operation.

1. Install the Vintage Air control panel into the dash. **NOTE:** The control panel installs against the back side of the dash and the (4) #8 x 3/4" countersunk screws with washers are inserted from the front (See Photo 1, below).
2. Route the control panel harness over to the passenger side of the dash and temporarily secure it to keep it out of the way during the dash reinstallation.

Install (4) #8 x 3/4" countersunk screws with washers from front

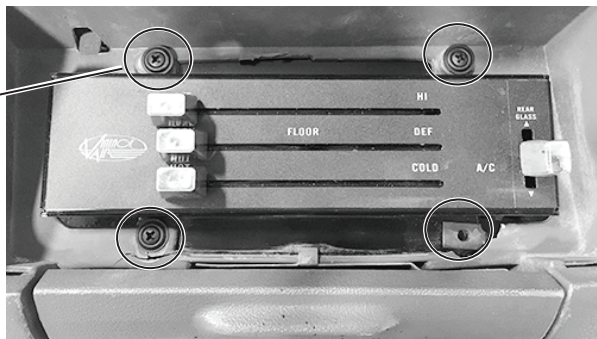
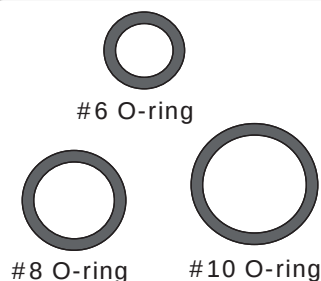
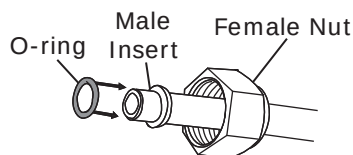


Photo 1

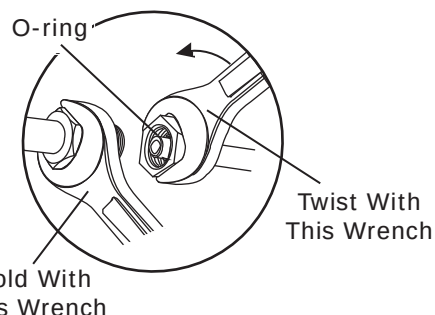
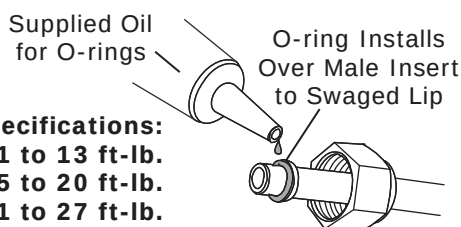
Lubricating O-rings



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.



Evaporator Preparation

On a workbench, perform the following:

1. Install (3) 1/2" plastic caps into the back of the evaporator case (See Photo 1, below), as these mounting provisions will not be used in this application.

Install (3) 1/2" plastic caps into back of evaporator case

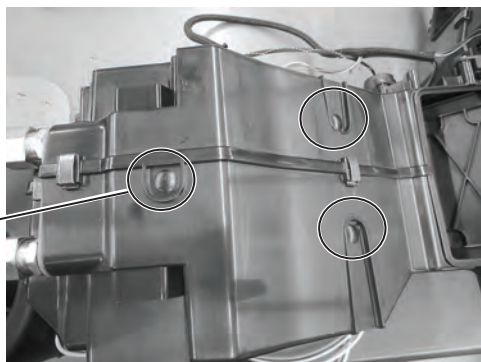


Photo 1

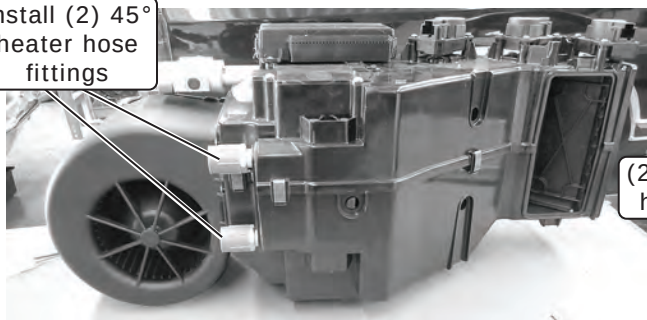


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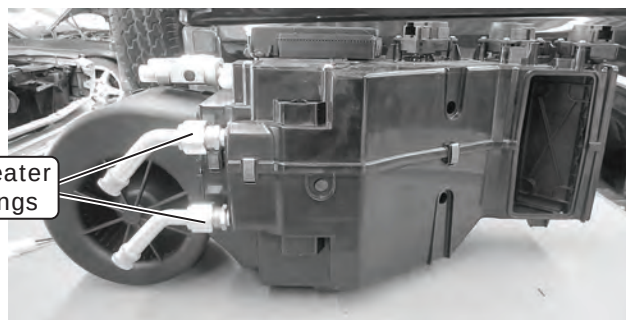
Evaporator Preparation (Cont.)

2. Install the (2) 45° heater hose fittings with properly lubricated #10 O-rings as shown in Lubricating O-rings, Page 14, and Photos 2 and 3, below. **NOTE: When removing the caps from the unit, Be careful, as the evaporator module is shipped under pressure. Also, be sure to remove the rubber inserts.**
3. Install the evaporator firewall bracket onto the evaporator using (4) 10 x 5/8" screws (supplied on the evaporator module) (See Photos 4, 5 and 6, below).
4. Install (3) 1/4-20 x 1 1/2" full-length studs into the weld nuts on the evaporator bracket (See Photo 7, below).

Install (2) 45° heater hose fittings



(2) 45° heater hose fittings



Evaporator Firewall Bracket 657054

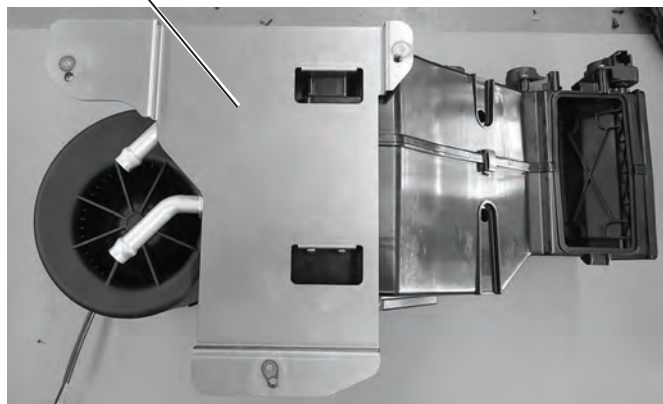
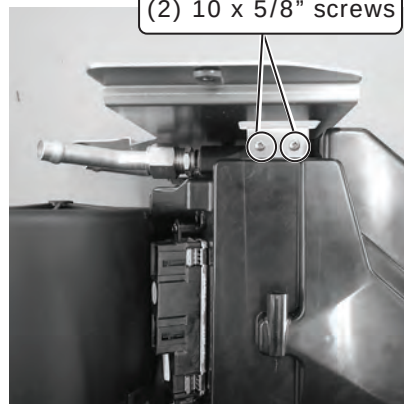


Photo 2

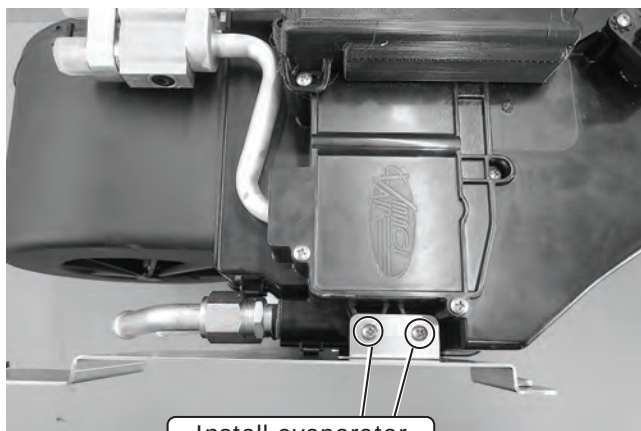
Photo 3

Install evaporator firewall bracket on evaporator using (2) 10 x 5/8" screws



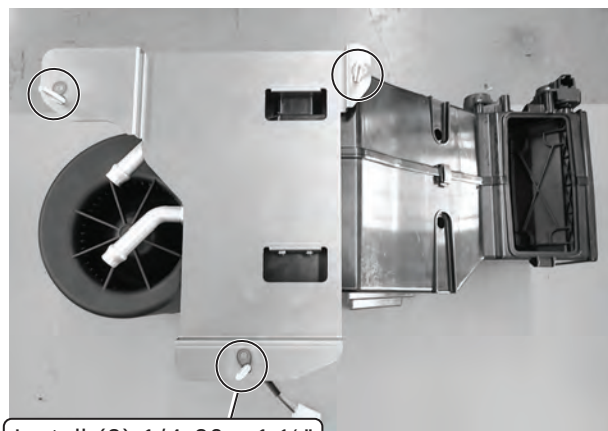
Bottom View of Evaporator Module

Photo 5



Install evaporator firewall bracket on evaporator using (2) 10 x 5/8" screws

Photo 6



Install (3) 1/4-20 x 1 1/2" full-length studs into weld nuts of evaporator bracket

Photo 7



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Evaporator Preparation (Final)

5. On the back of the module, install the floor plenum by using (2) spring clips (See Photos 8 and 9, below). Install the dash plenum on the left side of the module by using (4) spring clips (See Photos 10 and 11, below). Install the defrost plenum on the front of the module by using (2) spring clips (See Photo 12, below).

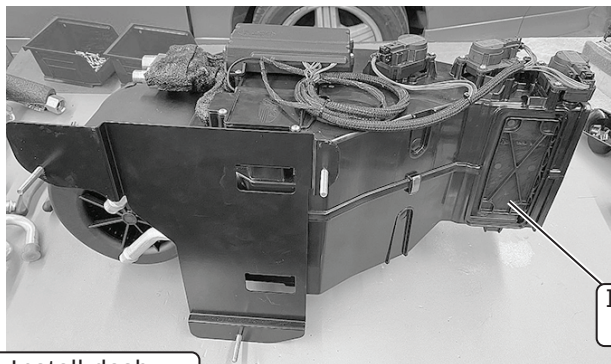


Photo 8

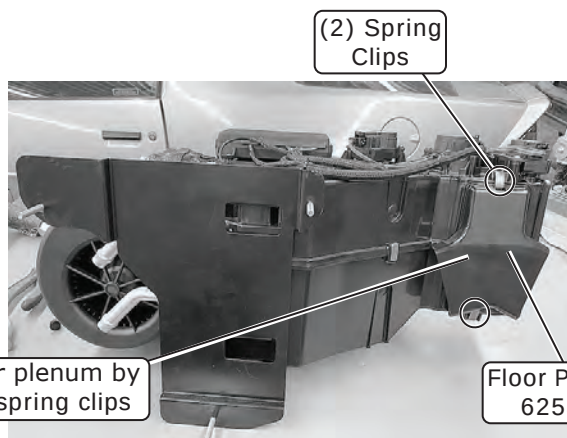


Photo 9

Install dash plenum on left side of module by using (2) spring clips

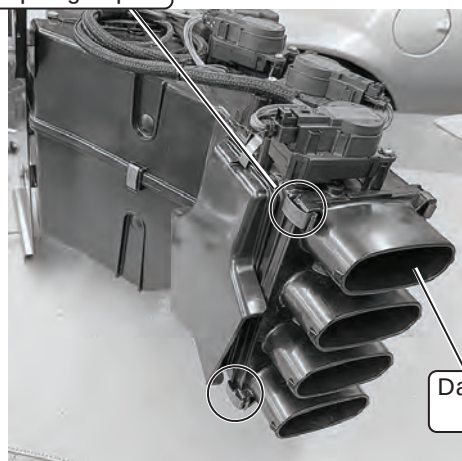


Photo 10

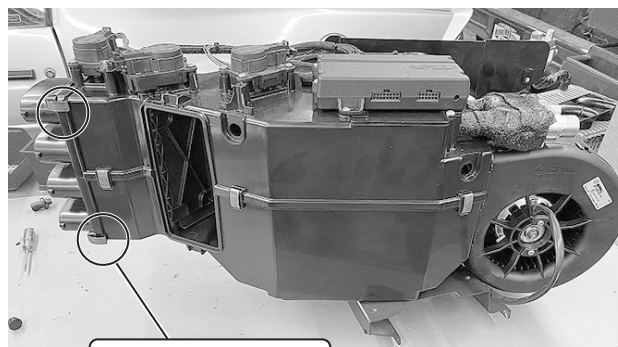


Photo 11

Install dash plenum on left side of module by using (2) spring clips

Install defrost plenum on front of module by using (2) spring clips

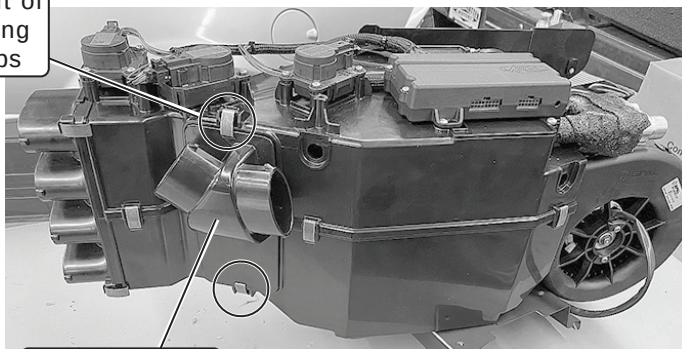


Photo 12

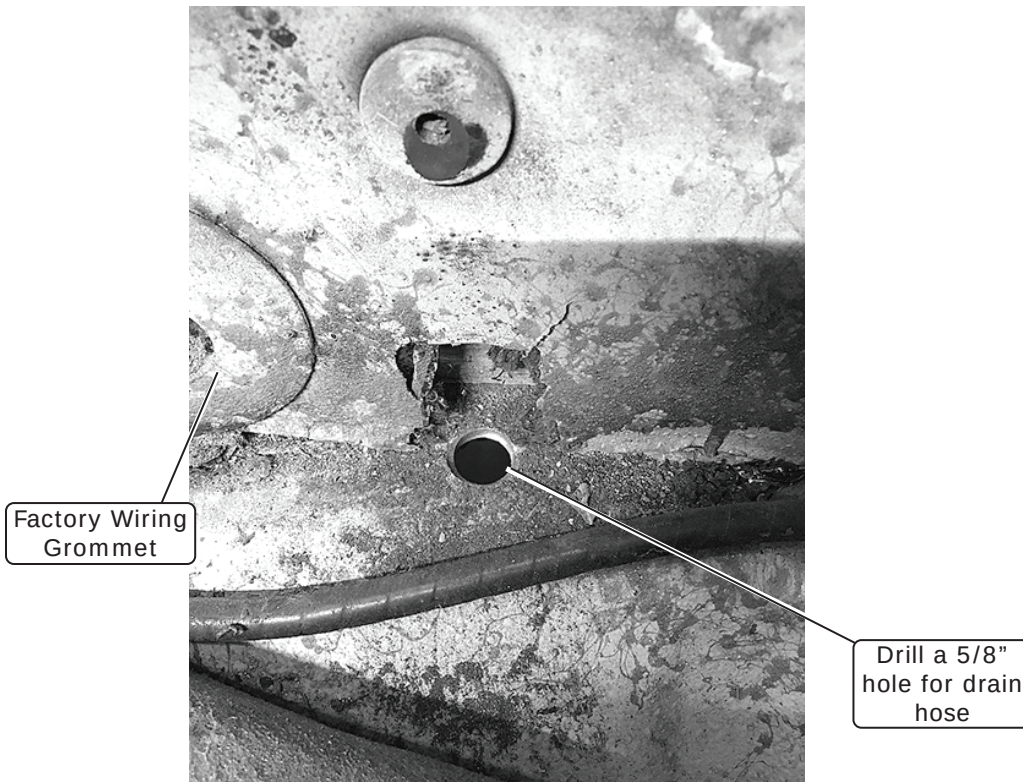
Defrost Plenum
625331



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Drain Hose Hole Modification

1. Pull back the carpet to gain access to where the firewall meets the floorboard.
2. Measure over 1" from the factory wiring grommet. Mark an area on the firewall insulation 1" wide and 1 1/2" up from the intersection for the floorboard and the firewall. Cut out and remove the insulation in this area.
3. Centered in the cutout section of the insulation, mark a spot on the horizontal portion of the floorboard, halfway between the firewall and the bend down of the floorboard. Drill a 5/8" hole for the drain hose (See Photo 1, below). **NOTE: To ensure a tight fit for the drain tube, do not enlarge the drain hole larger than 5/8".**



Factory Wiring
Grommet

Drill a 5/8"
hole for drain
hose

Photo 1



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Firewall Cover and Kick Panel Installation

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

1. Install the hose rubber boot and the rubber boot cover onto the firewall cover using (5) 10-24 nuts with star washers and (5) 10-24 x 3/4" serrated flange bolts (See Photos 1, 2 and 3, below). **NOTE: Ensure the hose rubber boot and rubber boot cover are installed on the correct side of the firewall cover as shown in Photo 2, below.**
2. Add foam to the outside of the kick panel opening to create a seal (See Photos 4 and 5, below).

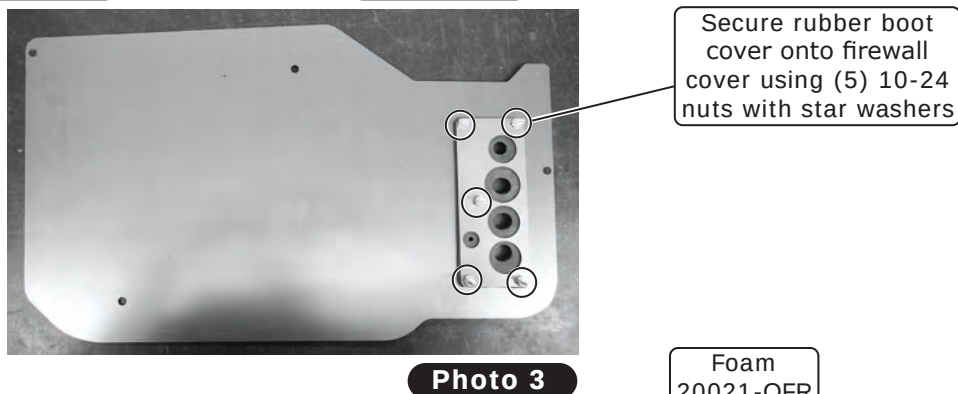
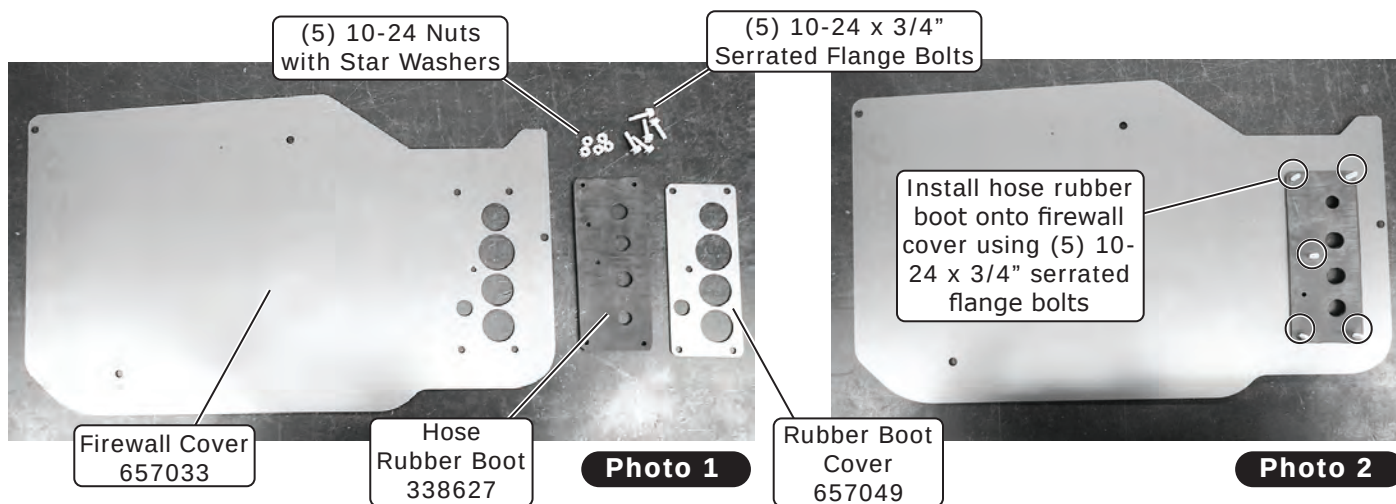


Photo 4

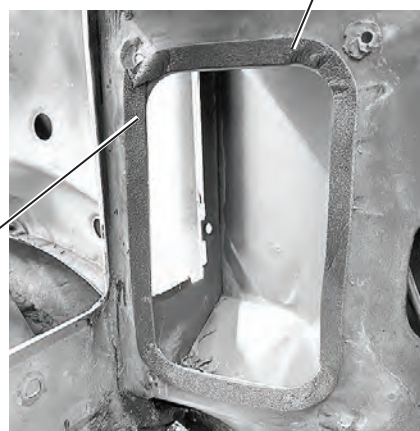


Photo 5



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Firewall Cover and Kick Panel Installation (Cont.)

3. Run both heater hoses through the firewall cover assembly and into the passenger compartment, through the fresh air vent on the left (See Photos 6 and 7, below). **NOTE: Soapy water may be used to ease insertion of the A/C hoses through the rubber boots, but be sure the hoses are capped to prevent water from getting inside.**
4. Repeat Step 3, above with the #10 and #6 A/C hoses (See Photos 8 and 9, below). **NOTE: Ensure the #10 and #6 A/C hose fittings without service ports are routed into the passenger compartment. All (4) hoses should be in the passenger compartment with the firewall assembly still hanging in the engine bay (See Photo 10, below).**

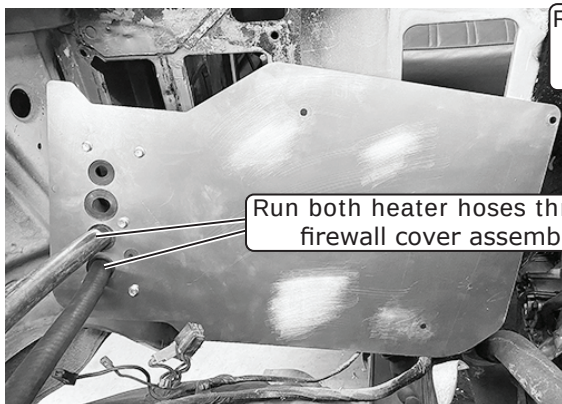


Photo 6

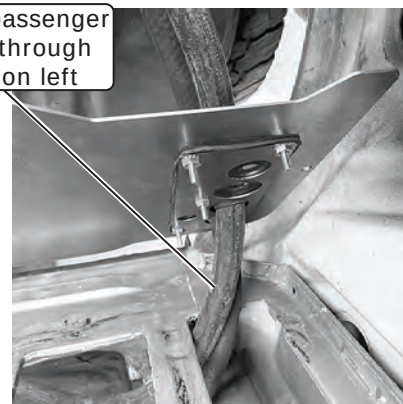


Photo 7

Run #10 A/C hose through firewall cover assembly and into passenger compartment, through fresh air vent on left

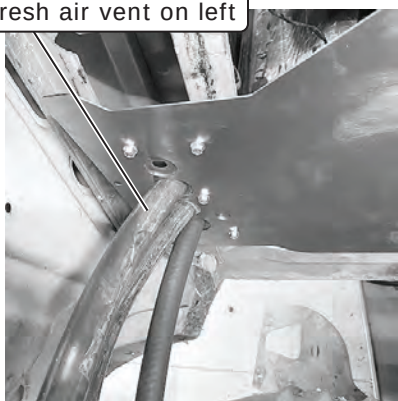


Photo 8

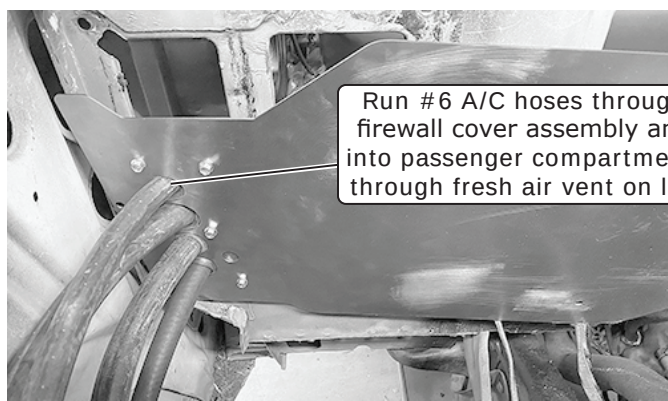


Photo 9



Photo 10



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Firewall Cover and Kick Panel Installation (Final)

5. Run the hoses through the kick panel plate, then through the hose rubber boot, and finally through the plastic kick panel cover (See Photos 11 and 12, below). Once the hoses have been inserted through all (3) parts, use (5) 10-24 x 3/4" serrated flange bolts and (5) 10-24 nuts with star washers to hold the parts together (See Photos 13 and 14, below).

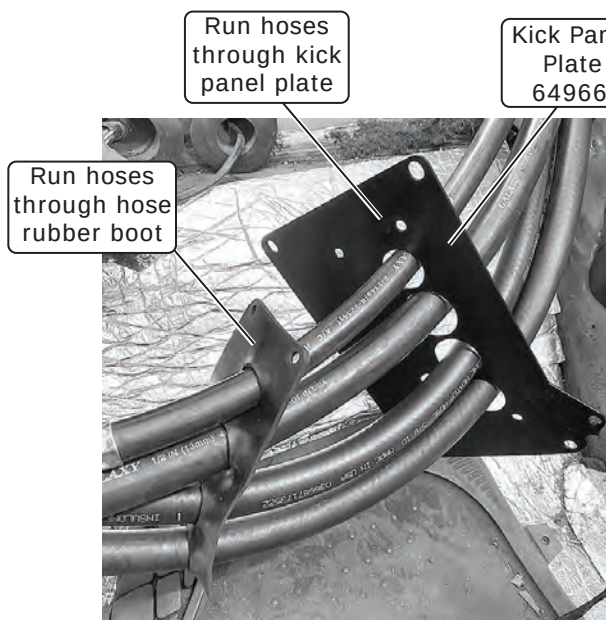


Photo 11

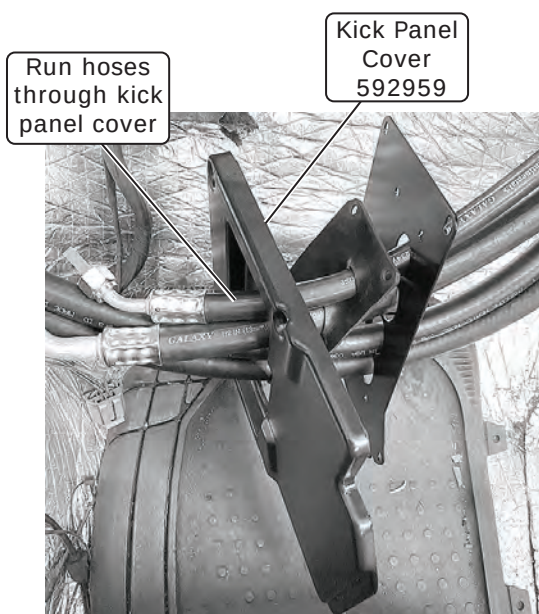


Photo 12

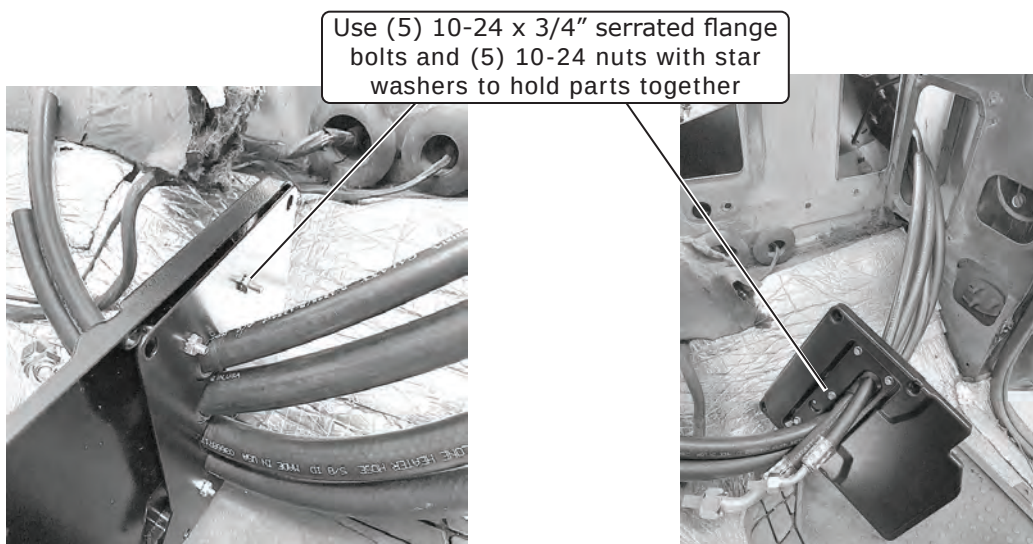


Photo 13



Photo 14



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Wiring Installation

1. Locate the main wiring harness. Route the heater control valve plug and wiring through the kick panel cover, towards the engine compartment (See Photo 1, below).
2. Route the red, white and blue wires from the main wiring harness through the kick panel cover, towards the engine compartment (See Photo 2, below).
3. Route the orange/white wires from the main wiring harness through the kick panel cover and firewall cover, towards the engine compartment (See Photo 3, below).
4. Route both the heater control valve, orange/white and the red, white and blue wires through the firewall cover (See Photo 4, below), then run the red, white and blue wires along the top of the inner fender towards the battery.
5. After installing the wiring, push the kick panel cover back to the kick panel, then secure it using (4) 1/4-14 x 1 1/4" slotted flange hex bolts (See Photo 5, below). **NOTE: Be sure to install (2) 9/32" flat washers onto the top (2) 1/4-14 x 1 1/4" slotted flange hex bolts before installing them into the kick panel.**

Route heater control valve plug and wiring through kick panel cover, towards engine compartment



Photo 1

Route red, white and blue wires from main wiring harness through kick panel cover, towards engine compartment

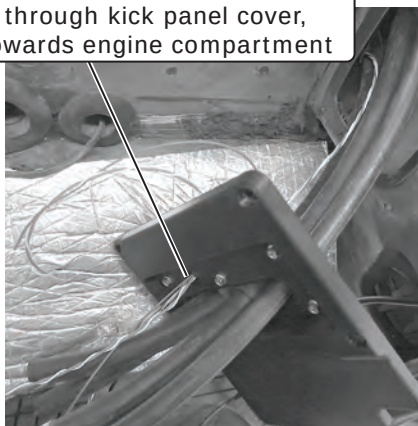


Photo 2

Route orange/white wires from main wiring harness through kick panel cover and firewall cover, towards engine compartment

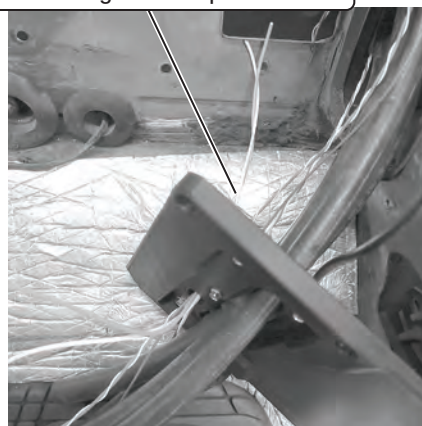


Photo 3

Route heater control valve, orange and white, and red, white and blue wires through firewall cover



Photo 4

Push kick panel cover back to kick panel, then secure using (4) 1/4-14 x 1 1/4" slotted flange hex bolts

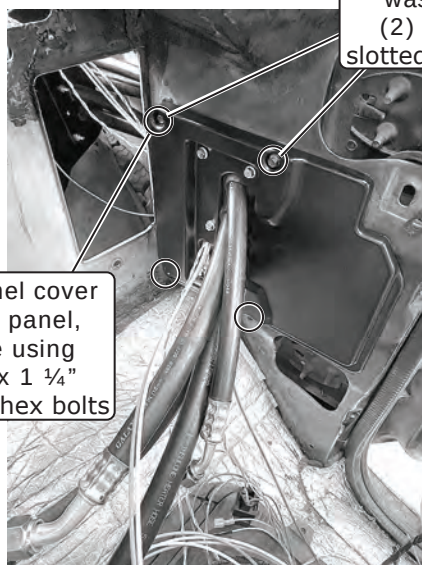


Photo 5

Install (2) 9/32" flat washers onto top (2) 1/4-14 x 1 1/4" slotted flange hex bolts



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Evaporator Unit Installation

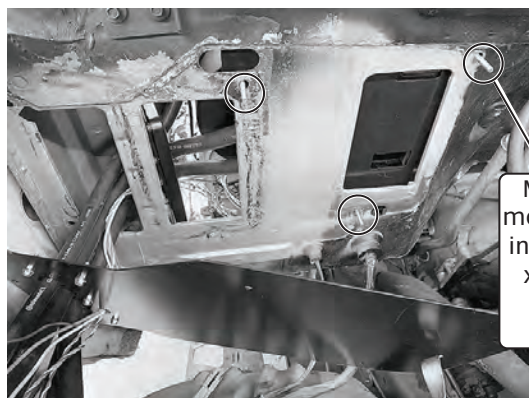
NOTE: The holes in the firewall may need to be drilled out to 5/16" to ease the installation of the evaporator module. A 2" x 4" board cut to approximately 16 1/2" to 17" may be used between the firewall and the dash to provide space to install the evaporator module.

1. With the unit on the floorboard, attach the heater hoses to the 45° heater fittings on the back of the evaporator module. Run the hose coming out of the bottom of the kick panel to the bottom fitting and the one above it to the top fitting. Use hose clamps to secure the hoses to the fittings (See Photo 1, below).
2. Mount the evaporator module to the firewall by inserting the (3) 1/4-20 x 1 1/2" full-length studs into the OEM firewall holes (See Photo 2, below). Wedge a 2" x 4" board to keep the evaporator module in place while working in the engine compartment (See Photo 3, below). **NOTE: When wedging the board into place, be sure not to hit and damage the evaporator drain located underneath the unit.**
3. Apply a bead of silicone onto the mating surface of the firewall, then install the firewall cover over the full-length studs (See Photos 4 and 5, below).



Use hose clamps to secure hoses to 45° heater fittings

Photo 1



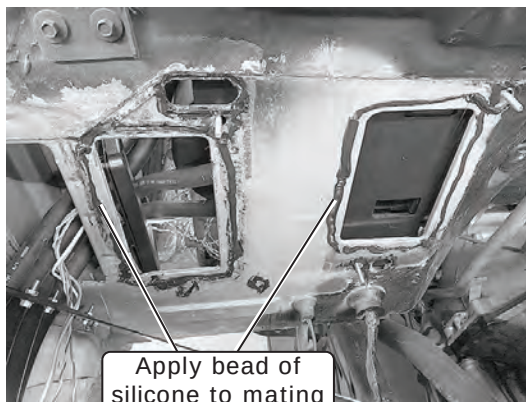
Mount evaporator module to firewall by inserting (3) 1/4-20 x 1 1/2" full-length studs into OEM firewall holes

Photo 2



Wedge a 2" x 4" board to keep evaporator module in place while working in engine compartment

Photo 3



Apply bead of silicone to mating surface of firewall

Photo 4



Install firewall cover over full-length studs

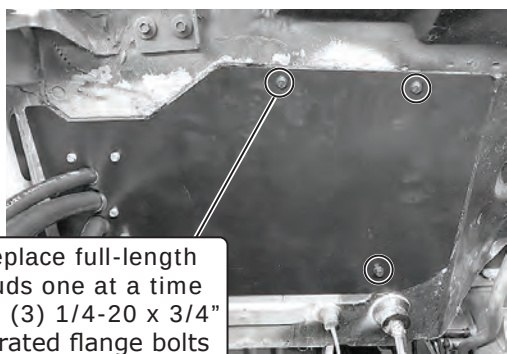
Photo 5



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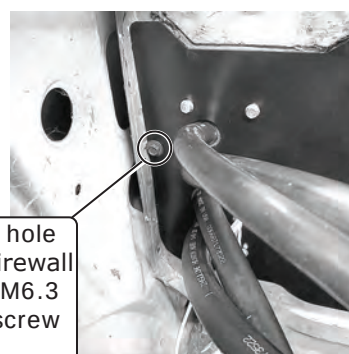
Evaporator Unit Installation (Cont.)

4. Replace the full-length studs one at a time with (3) 1/4-20 x 3/4" serrated flange bolts (See Photo 6, below).
NOTE: Do not fully tighten the bolts at this time.
5. Drill a 11/64" pilot hole into the far left side of the firewall cover and install a M6.3 x 16MM hex head screw with washer (See Photo 7, below).
6. In the passenger compartment, starting with the #6 A/C hose first, attach the #6 and #10 A/C hoses with properly lubricated O-rings onto the expansion valve located on top of the evaporator module (See Lubricating O-rings, Page 14, and Photos 8 and 11, below). **NOTE: When installing the A/C hose fittings to the expansion valve, do not install the fitting pointing straight down towards the blower motor, as this may cause the O-ring land of the hose to seat improperly (See Photo 9, below) and leak. To properly install the fittings, slide the A/C hose nut back to expose the O-ring land, then angle the fitting toward the firewall to fully seat it inside the expansion valve fitting (See Photo 10, below).**
7. Wrap the #10 A/C hose fitting separately with press tape (See Photo 12, below).
8. Cut approximately 3" of drain hose, and connect it to the drain under the evaporator. Next, connect the 90° drain elbow to the hose facing down. Lastly, route the remainder of the drain hose from the 90° drain elbow down through the hole previously drilled into the floor. **NOTE: To prevent water from getting trapped in the drain hose, be sure to point it down approximately 1".**



Replace full-length studs one at a time with (3) 1/4-20 x 3/4" serrated flange bolts

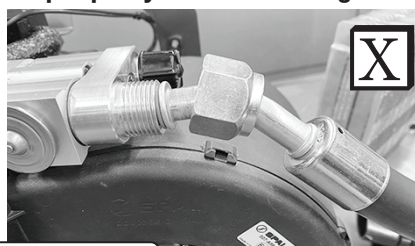
Photo 6



Drill a 11/64" pilot hole into far left side of firewall cover and install a M6.3 x 16MM hex head screw with washer

Photo 7

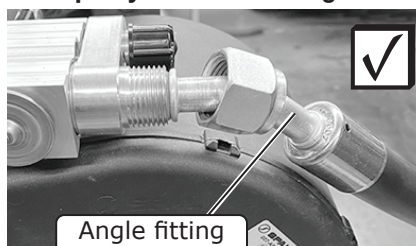
Improperly Seated O-ring Land



Attach #6 and #10 A/C hoses with properly lubricated O-rings onto expansion valve on top of evaporator module

Photo 8

Properly Seated O-ring Land



Angle fitting toward firewall

Photo 9

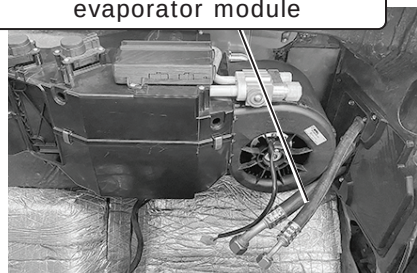
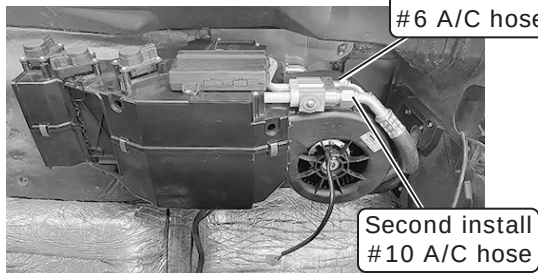


Photo 10



A/C Hoses Installed

Photo 11



Wrap #10 A/C hose fitting separately with press tape

Photo 12

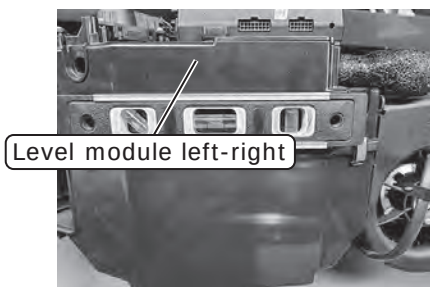


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Evaporator Unit Leveling

NOTE: To ensure proper drainage, it is very important the evaporator is level, both fore-aft and left-right. Before leveling the evaporator, ensure the vehicle is level. Check for level on the flat portions of the case around the drain (See Photos 1 and 2, below).

1. Once the unit has been leveled, install (2) well nuts into the mounting provisions on the evaporator module (See Photo 3, below).
2. Install the cowl bracket using (2) 1/4-20 x 1" serrated flange bolts on the front of the evaporator module and (2) #10 x 1/2" sheet metal screws on top of the cowl (See Photos 4 and 5, below). **NOTE: Drill 11/64" pilot holes for the sheet metal screws.**
3. Tighten all mounting hardware at this time ((3) firewall mounting bolts and (2) dash bracket mounting bolts).



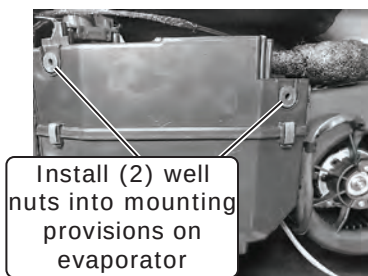
Level module left-right

Photo 1



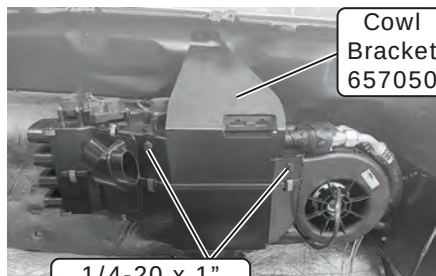
Level module fore-aft

Photo 2



Install (2) well nuts into mounting provisions on evaporator

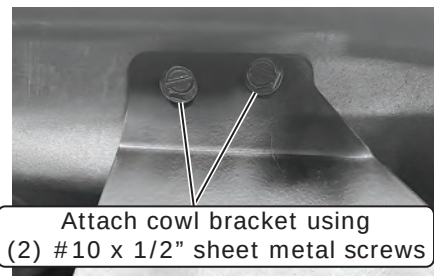
Photo 3



Cowl Bracket 657050

1/4-20 x 1" Serrated Flange Bolt

Photo 4

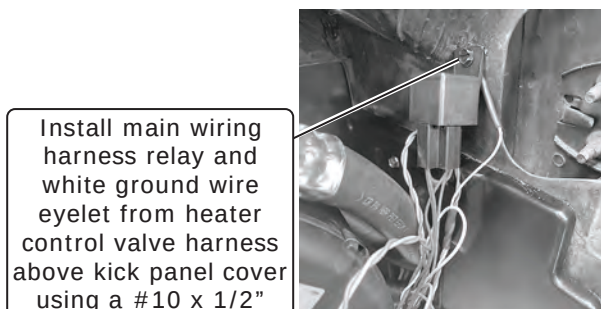


Attach cowl bracket using (2) #10 x 1/2" sheet metal screws

Photo 5

Passenger Compartment Wiring

1. Install the main wiring harness relay and white ground wire eyelet from the heater control valve harness above the kick panel cover using a #10 x 1/2" sheet metal screw (See Photo 1, below).
2. Route the violet power wire to a switched 12v power source on the fuse panel. **NOTE: This requires a male fuse extension (not supplied).**
3. Connect the tan wire to the factory dash lights to enable control panel backlighting.
4. Connect the BSC (Blower Speed Control) wiring to the main harness (See Photo 2, below).



Install main wiring harness relay and white ground wire eyelet from heater control valve harness above kick panel cover using a #10 x 1/2" sheet metal screw

Photo 1



Connect BSC wiring to main harness

Photo 2



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Passenger Compartment Wiring (Cont.)

5. Plug the main wiring harness connector into the ECU (See Photo 3, below).
6. Route the control panel wiring to the ECU, then plug in the connector (See Photo 4, below).

Plug main wiring harness connector into ECU



Photo 3

Route control panel wiring to ECU, then plug in connector



Photo 4

A/C Hose Installation

NOTE: Be sure to use a backup wrench when connecting A/C hoses and hardlines to avoid damaging fittings (See Lubricating O-rings, Page 14).

1. Route the #6 A/C hose along the inner fender. With a properly lubricated #6 O-ring (See Lubricating O-rings, Page 14), connect the straight fitting to the #6 drier fitting (See Photo 1, below).
2. Install a #6 Adel clamp onto the #6 A/C hose. Under the voltage regulator, drill a 11/64" pilot hole, then secure the hose to the inner fender using a #10 x 1/2" sheet metal screw (See Photo 2, below). Secure the rest of the hoses using tie wraps (See Photo 3, below).
3. With a properly lubricated #10 O-ring (See Lubricating O-rings, Page 14), attach the 90° fitting on the #10 A/C hose to the suction port on the compressor (See Photo 4, below).
4. With a properly lubricated #8 O-ring (See Lubricating O-rings, Page 14), attach the 135° fitting on the #8 A/C hose to the discharge port on the compressor (See Photo 5, below).
5. Route the straight fitting of the #8 A/C hose to the condenser. With a properly lubricated #8 O-ring (See Lubricating O-rings, Page 14), attach the fitting to the #8 condenser hardline (See Photo 6, below).

Connect straight fitting to #6 drier fitting

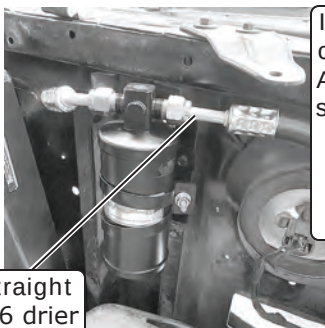


Photo 1

Install #6 Adel clamp onto #6 A/C hose, then secure to inner fender using #10 x 1/2" sheet metal screw

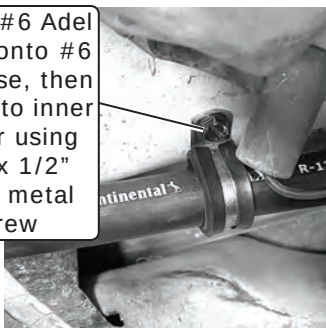


Photo 2

Secure rest of hoses using tie wraps

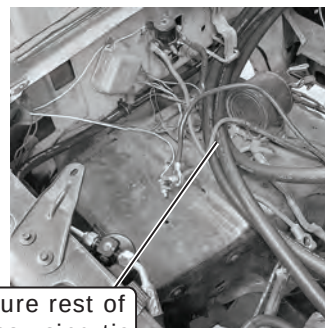


Photo 3

Attach 90° fitting on #10 A/C hose to suction port on compressor

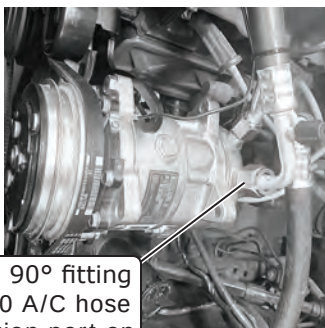


Photo 4

Attach 135° fitting on #8 A/C hose to discharge port on compressor

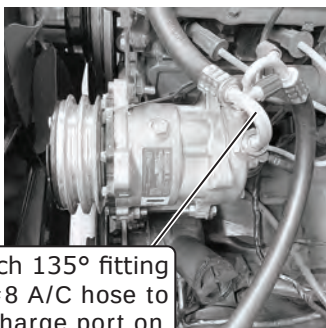


Photo 5

Route straight fitting of #8 A/C hose to #8 condenser hardline

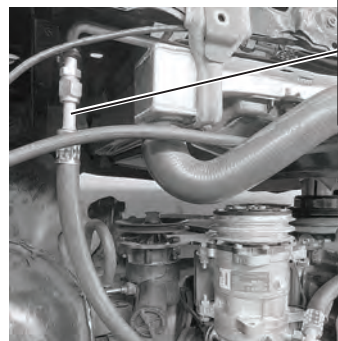


Photo 6



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Heater Hose & 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) in the heater hose or molded hose (Vintage Air Part # 099010) will need to be installed.

1. Cut the upper heater hose approximately 4" or 5" from the firewall cover and install the heater control valve. Secure it with the supplied hose clamp. **NOTE: Ensure proper flow direction through the heater control valve. The flow direction follows the molded arrow on the valve. The arrow should be pointing towards the firewall.**
2. Install another length of heater hose from the heater control valve to the intake manifold, then secure it with hose clamps (See Photos 1 and 2, below).
3. Plug the heater control valve connector into the heater control valve connector wiring harness (See Photo 3, below).

Install another length of heater hose from heater control valve to intake manifold, then secure with hose clamps

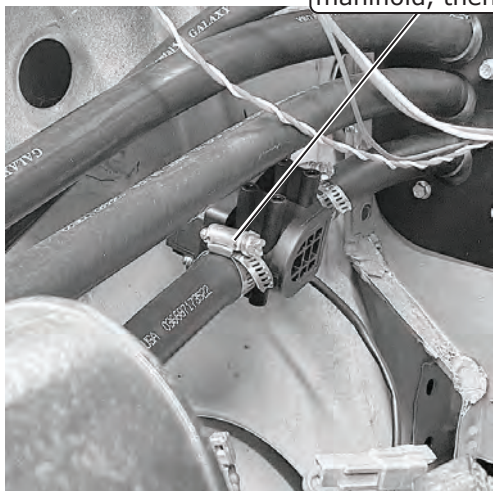


Photo 1

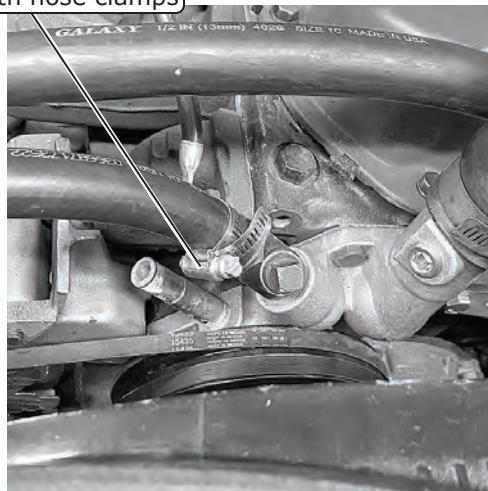
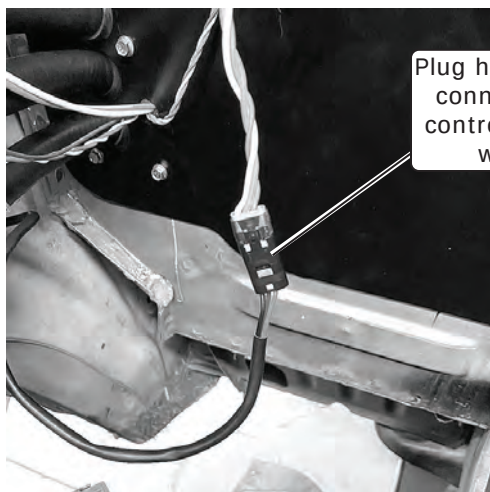


Photo 2



Plug heater control valve connector into heater control valve connector wiring harness

Photo 3



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Heater Hose & Heater Control Valve Installation (Cont.)

4. Route the lower heater hose to the water pump on the front of the engine (See Photos 4 and 5, below).

Route lower heater hose to water pump on front of engine

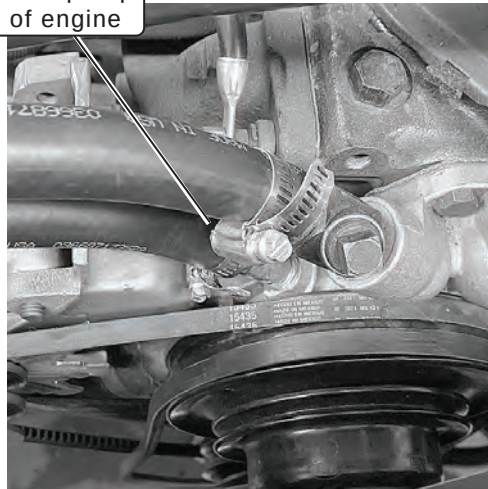


Photo 4

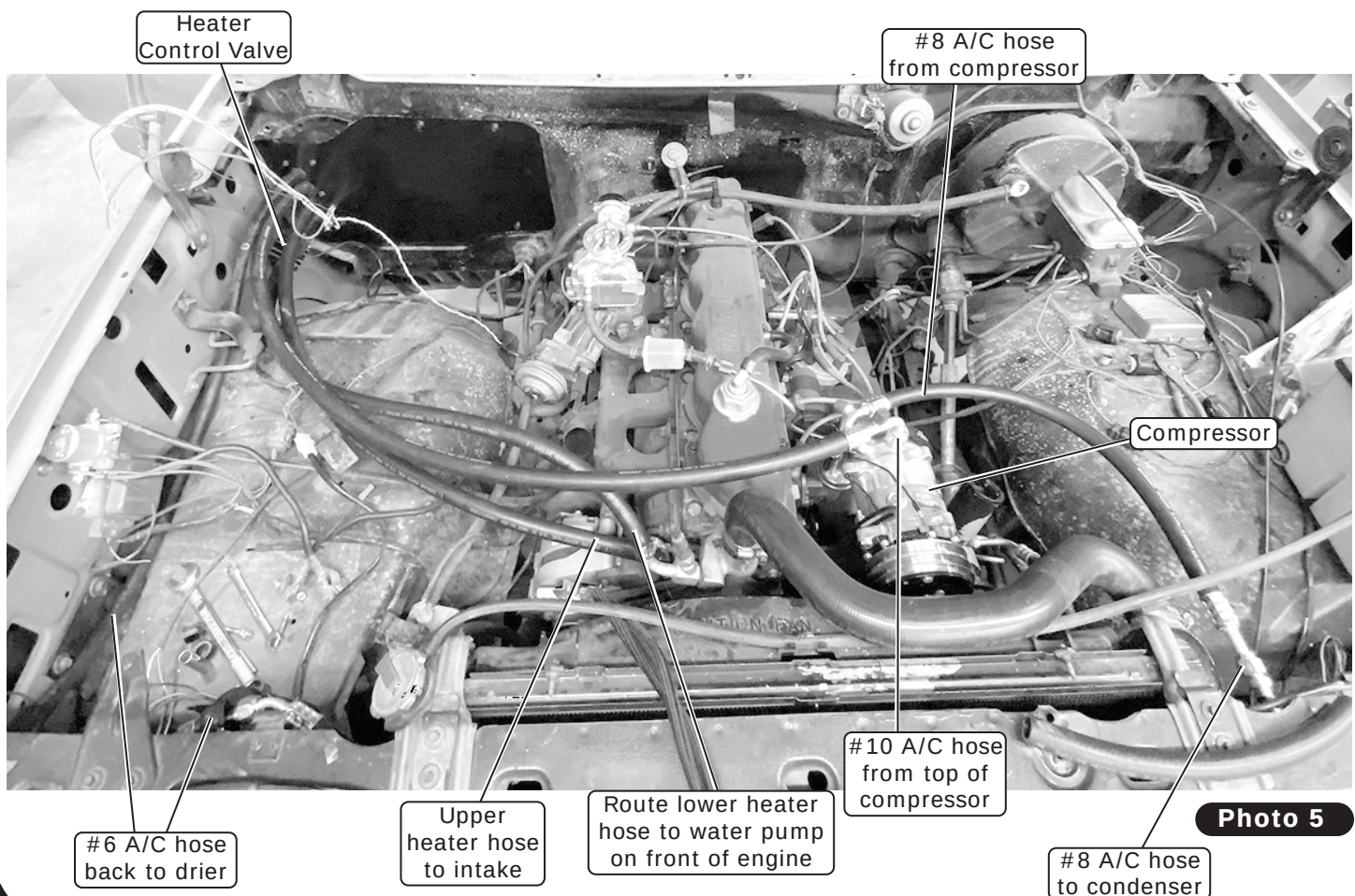


Photo 5



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Engine Compartment Wiring

NOTE: Cut wires to lengths as necessary. Do not connect the power until the installation is complete.

1. Reinstall the battery.
2. Starting at the firewall, run the flexo sleeve over the wires.
3. Route the power and ground wires along the #6 A/C hose, toward the battery.
4. Connect the positive wiring eyelets to the positive battery terminal connector (See Photo 1, below).
5. Connect the blue wire to the binary switch using the supplied spade terminal (See Photo 2, below).
6. 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 Photos 3 and 4, below, and Quality Crimp Guideline, Page 34).
7. 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 Photos 5 and 6, below), and Quality Crimp Guideline, Page 34).

Connect positive wiring eyelets to positive battery terminal connector

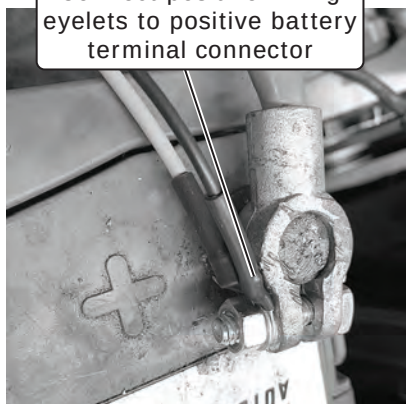


Photo 1

Connect blue wire to binary switch using supplied spade terminal

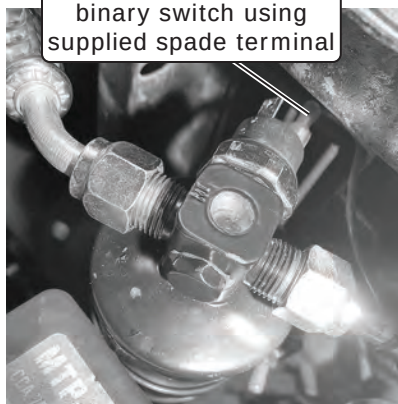


Photo 2

Install supplied heat shrink over 12 AWG orange fuse holder assembly wire

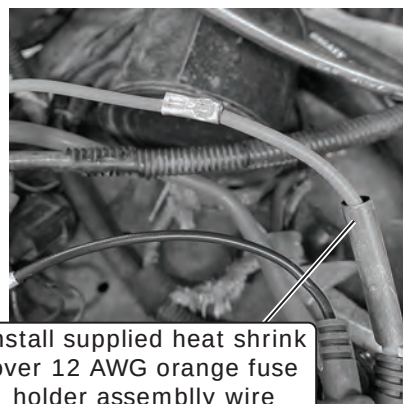


Photo 3

Crimp to 12 AWG orange wire from main wiring harness

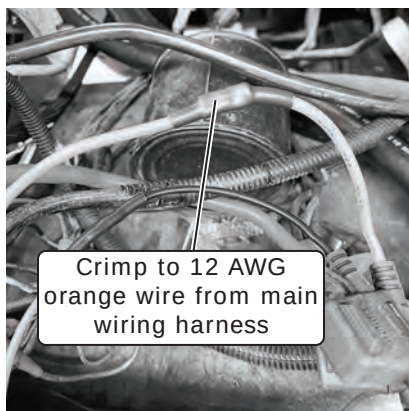


Photo 4

Install supplied heat shrink over 16 AWG black fuse holder assembly wire and crimp it to 16 AWG red wire from main wiring harness

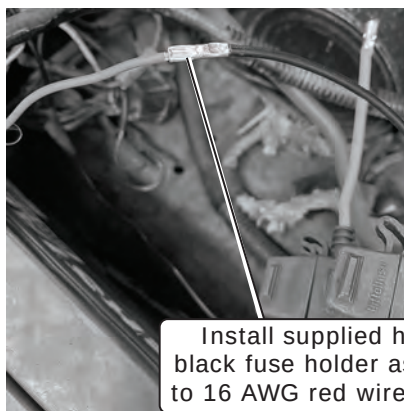


Photo 5



Photo 6



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Engine Compartment Wiring (Cont.)

8. Install the fuses into the holders (See Photos 7 and 8, below).
9. Connect the ground wiring eyelets to the negative battery terminal connector (See Photo 9, below).
10. Connect the compressor bullet connector to the compressor lead (See Photo 10, below).
11. Route the compressor lead along the #10 and #6 A/C hoses, then secure it with the supplied tie wraps. Connect the compressor lead to the binary switch using the supplied spade terminal (See Photo 11, below).

Install fuses into
holders

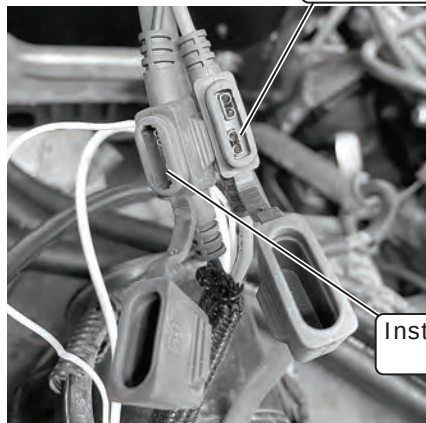


Photo 7

Install fuses into
holders

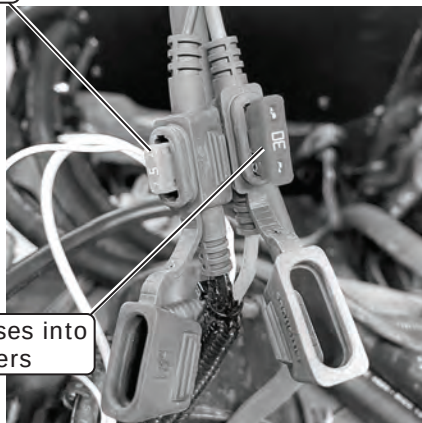


Photo 8

Connect ground
wiring eyelets to
negative battery
terminal connector

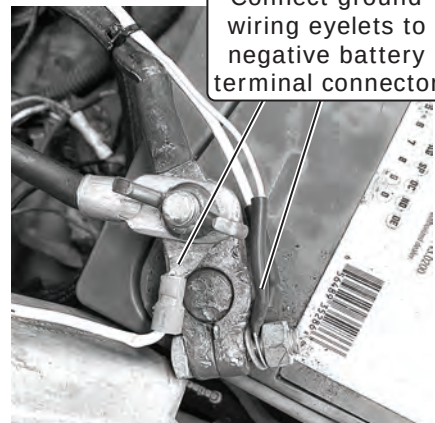


Photo 9

Connect compressor
bullet connector to
compressor lead

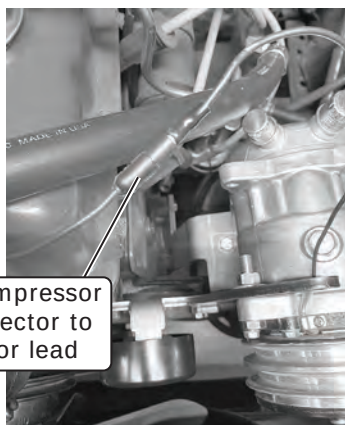


Photo 10

Connect compressor lead
to binary switch using
supplied spade terminal

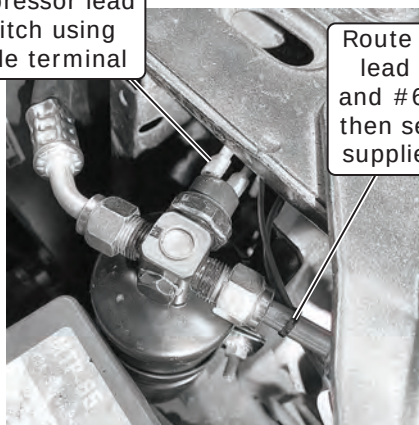


Photo 11

Route compressor
lead along #10
and #6 A/C hoses,
then secure it with
supplied tie wraps



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Engine Compartment Wiring (Final)

12. Install the supplied heat shrink over the white ground wires and crimp on the supplied eyelets (See Photos 12, 13, 14 and 15, below, and Quality Crimp Guideline, Page 34).

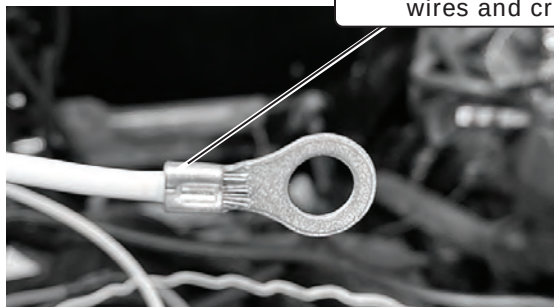


Photo 12

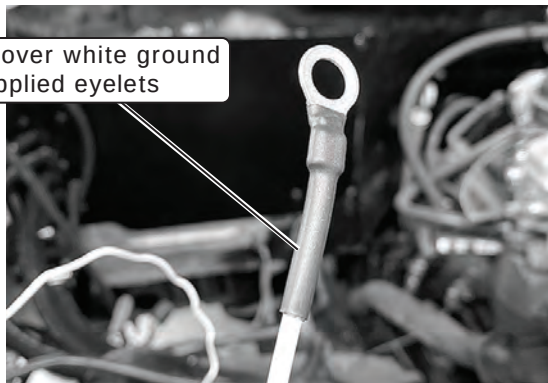


Photo 13

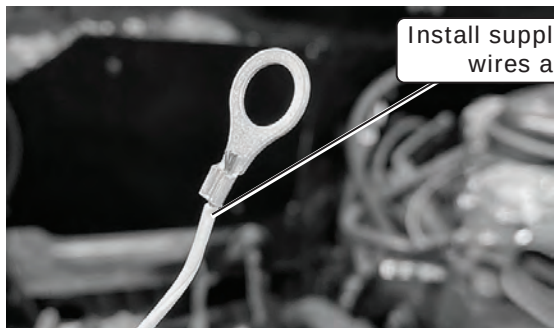


Photo 14

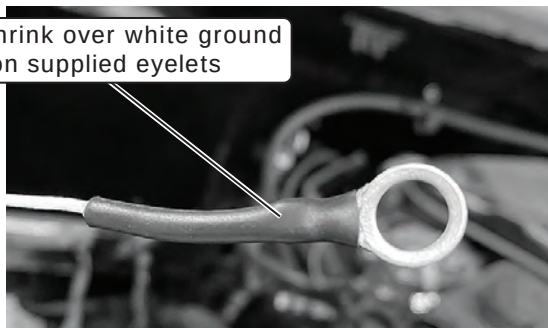


Photo 15

Defrost Duct Installation

1. Install the defrost ducts using the (4) OEM screws on top of the dash (See Photos 1 and 2, below).

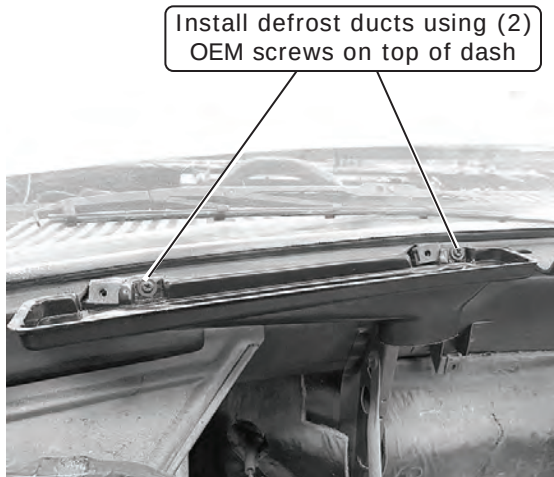


Photo 1

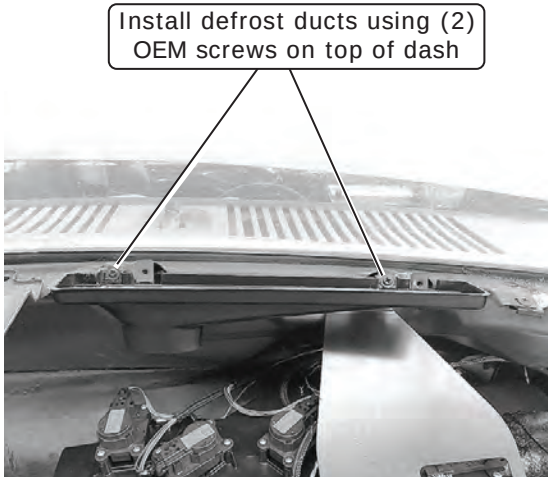


Photo 2



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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).

Stretch, measure,
mark and cut
hose to size



Photo 1

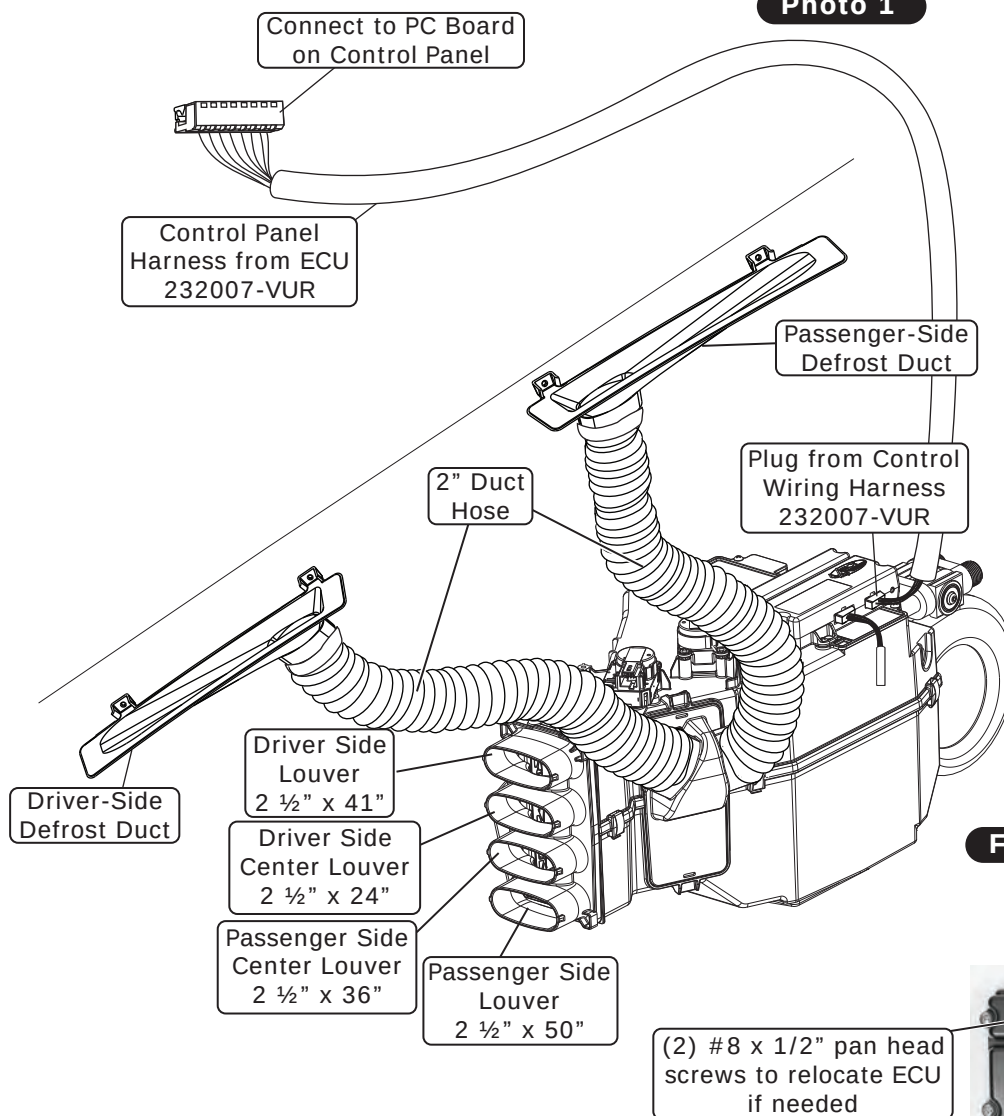


Figure 1

(2) #8 x 1/2" pan head
screws to relocate ECU
if needed



Position connectors
towards bottom

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.



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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 repetitive blinking is observed, go to the Advanced Diagnostics Section to diagnose.
☐	Blower speed control Set the blower speed control to OFF , <u>confirm that the blower is off</u> . Position the blower speed control to LOW then MEDIUM and then HIGH . <u>At each setting confirm that the blower speed increases</u> , 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. <u>Confirm that air is being blown at the dash vents</u> . Set the MODE control to the FLOOR position. <u>Confirm that air is being blown at the floor vents</u> . Set the MODE control to the DEFROST position. <u>Confirm that all air is being blown from the defrost vents</u>
☐	If heater lines are installed: Set the MODE control to the DASH position. Set the TEMP control to the MAX HEAT position. <u>Confirm that HOT air is coming from the dash vents</u> .
☐	Temperature control If system is charged: Set the TEMP control to the MAX COOL position. <u>Confirm that COLD air is coming from the dash vents</u> . Also <u>confirm that the compressor "clicks" on</u> 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, <u>confirm that the blue AC Indicator light is on</u> .
☐	Backlight (If applicable) If your control panel has backlight capabilities and has been wired, turn the dash lamp on and <u>confirm that the AC panel's legend is lit</u> .
☐	Fittings Verify AC and Heater fittings are all tight.



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Final Steps: Completing the Install

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 37.

Dash Reinstallation

1. Reinstall the dash, connecting the (2) passenger-side duct hoses to the hose adapters. Guide the (2) driver-side duct hoses to the holes for the hose adapters. Next, reinstall the instrument cluster and the instrument cluster bezel. When installing the bezel, connect the hoses to the hose adapters that were previously glued on.

Glove Box Installation

1. Install the ECU onto the back of the glove box, with the connectors facing down, and secure it using (2) 10-32 x 1/2" pan head screws and (2) 10-32 hex nuts (See Photos 1 and 2, below).
2. Install the new glove box into the opening and secure it using the (5) OEM mounting screws (See Photo 3, below).
3. Reinstall the glove box door.

Install ECU onto back of glove box and secure using (2) 10-32 hex nuts



Photo 1

(2) 10-32 x 1/2" Pan Head Screws

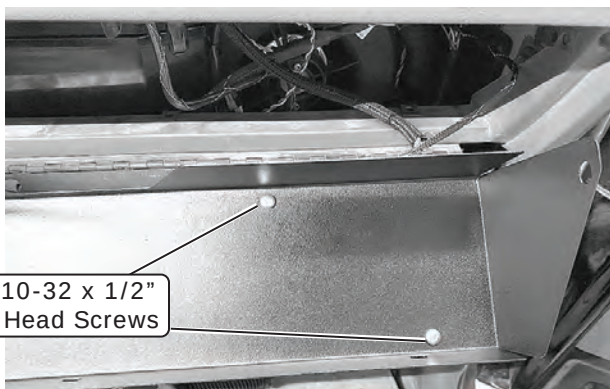


Photo 2

Install new glove box into opening and secure using (5) OEM mounting screws



Photo 3



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Quality Crimp Guideline

Refer to wiring diagram on Page 35, and instructions on Page 36.

Acceptable strip length
(Some copper visible)

Crimped area is centered
on each side of splice

Bad strip length
(Too much copper visible)
Visible copper should be
just enough to ensure
clearance between splice
area and wire insulation

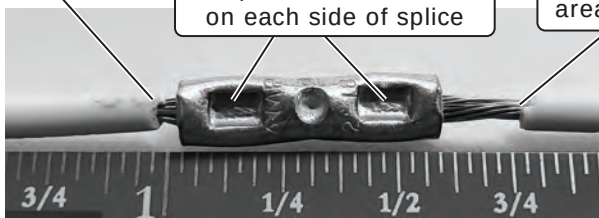


Photo 1

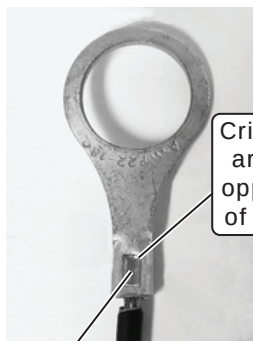
A good crimp requires
seam of butt splice to be
opposite of crimp die tooth



Crimp die tooth

Photo 2

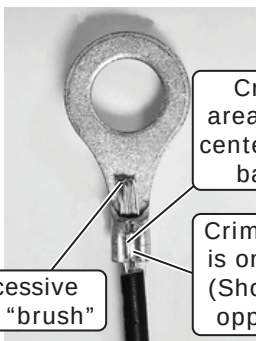
Good Ring Terminal Crimp Bad Ring Terminal Crimp



Crimped
area is
opposite
of seam

Photo 3

Crimp
area is
centered
on barrel



Crimp
area is not
centered on
barrel

Excessive
wire "brush"

Crimp
area is on seam
(Should be
opposite)

Photo 4

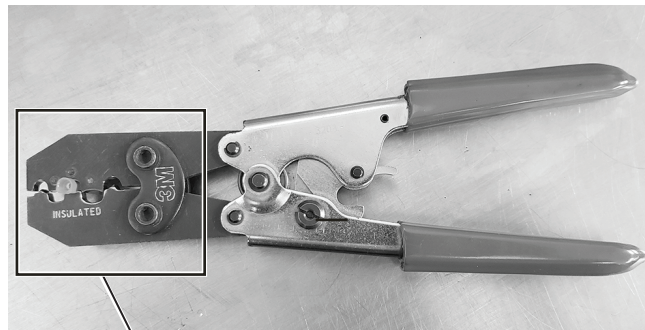


Photo 5

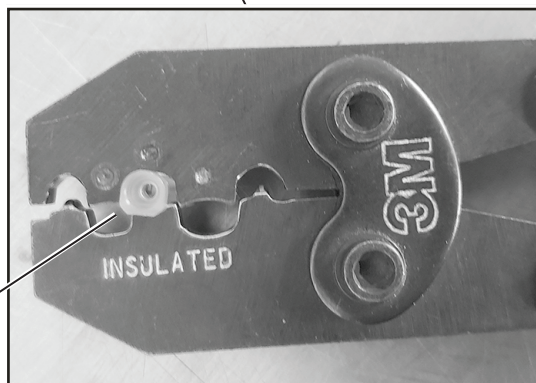


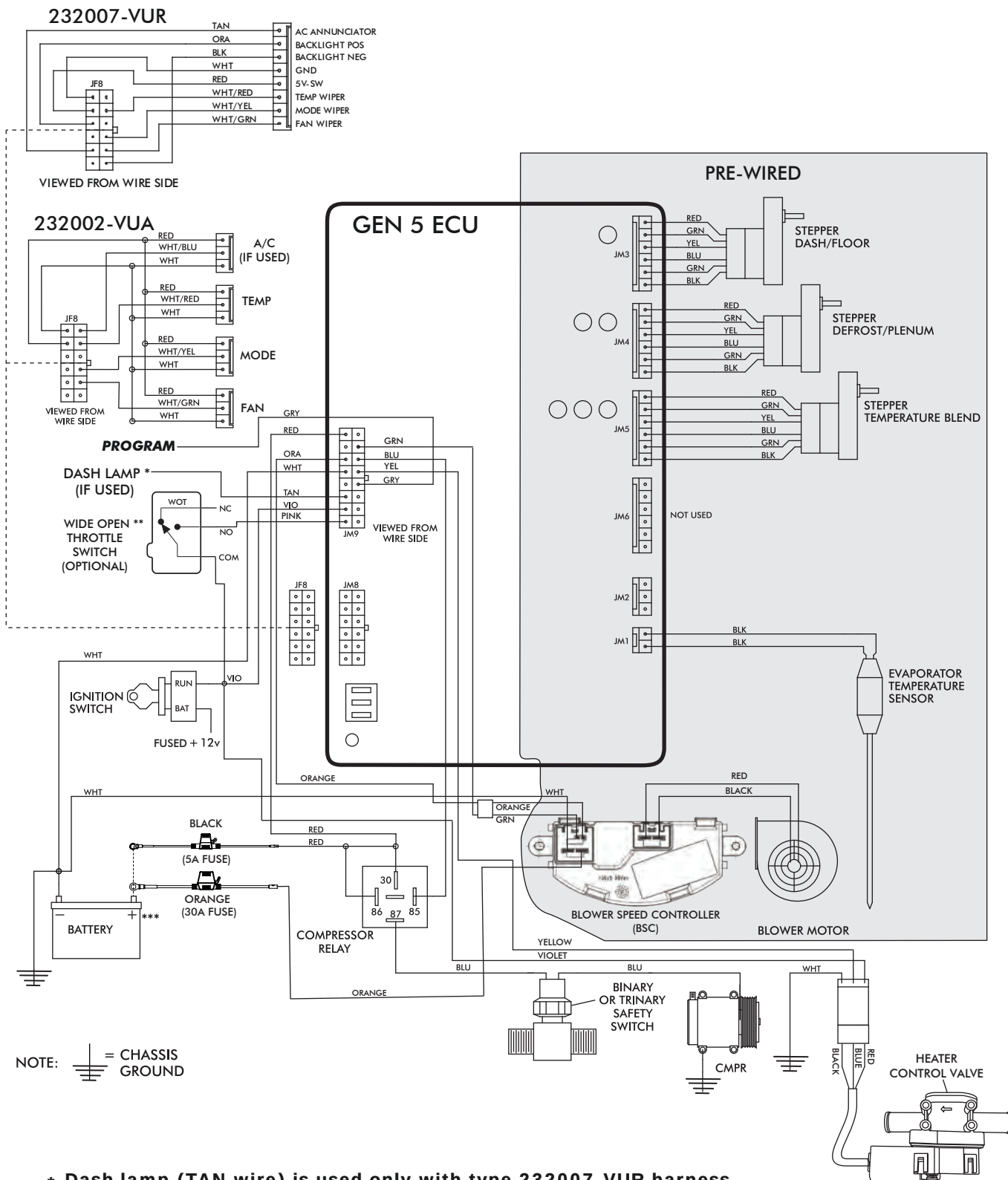
Photo 5a

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.



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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.

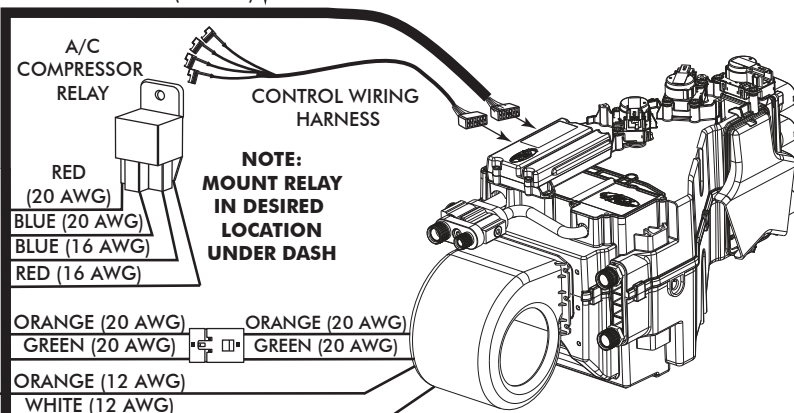
*** Install fuse assemblies at or as near to the battery as possible.



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Gen 5 Wiring Instructions

WIRING HARNESS (231505) ↓



NOTE:
MOUNT RELAY
IN DESIRED
LOCATION
UNDER DASH

ORANGE (20 AWG)
GREEN (20 AWG)
ORANGE (20 AWG)
GREEN (20 AWG)
ORANGE (12 AWG)
WHITE (12 AWG)

VIOLET (20 AWG)

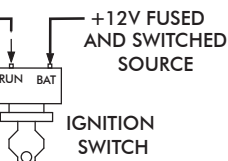
WIRING
HARNESS
(231505)

PINK (20 AWG)

TAN (20 AWG)

GRAY (20 AWG)

(IGNITION HOT
TERMINAL)



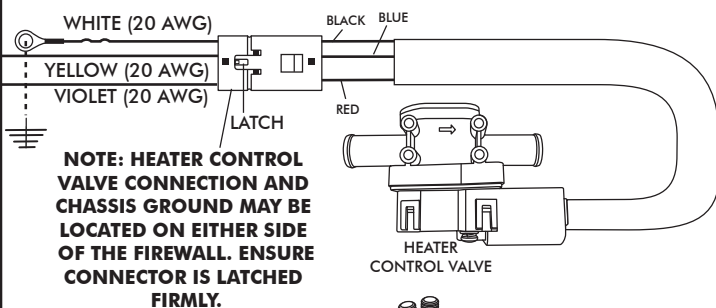
IGNITION
SWITCH

DASH BACK LIGHT 0 to 12v

**GRAY WIRE IS USED FOR
PROGRAMING CONTROLS
IF APPLICABLE**

FIREWALL

FIREWALL



**NOTE: HEATER CONTROL
VALVE CONNECTION AND
CHASSIS GROUND MAY BE
LOCATED ON EITHER SIDE
OF THE FIREWALL. ENSURE
CONNECTOR IS LATCHED
FIRMLY.**

HEATER
CONTROL VALVE

BINARY
SAFETY
SWITCH

BLUE (16 AWG)

BLACK

BLUE

COMPRESSOR

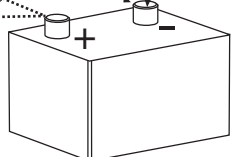
WHITE (12 AWG)

WHITE (20 AWG)

ORANGE (12 AWG)

RED (20 AWG)

**NOTE: CONNECT WHITE
WIRES DIRECTLY TO
(-) BATTERY TERMINAL**



BATTERY

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 20 AWG red wire from the 231505 wire assembly. Install provided 5A Brown 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.



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Operation of Controls

On systems with three lever/knob controls, the temperature control toggles between heat and A/C operations. To activate A/C, move the temperature lever/knob all the way to cold and then back it off to the desired vent temperature. For heat operation, move the temperature lever/knob all the way to hot and then adjust to the desired vent temperature. The blower will momentarily change speed each time you toggle between operations to indicate the change.

Blower Speed

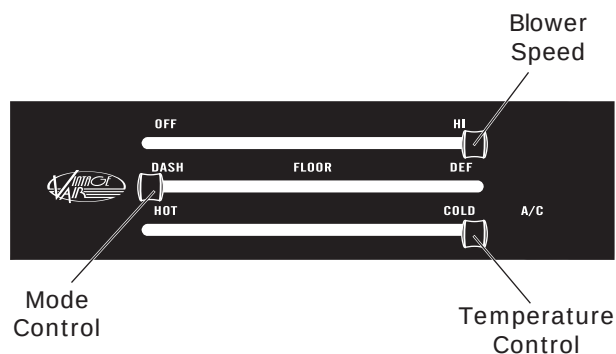
This lever/knob controls blower speed, from OFF to HI.

Mode Control

This lever/knob controls the mode positions, from 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.	
	All other functions work.	Check for a bad ECU GND. Check for damaged pins or wires in the control panel wire assembly and mating header at ECU. Check if Blower power fuse is blown. Check for a bad ECU GND.	If found damaged, replace wire assembly or ECU. Replace fuse. Repair connection.	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.
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 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/red 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. Check for faulty A/C relay.	Repair or replace pot/control wiring. Replace relay.	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.



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Troubleshooting Guide (Cont.)

Symptom	Condition	Checks	Actions	Notes
4.	System will not turn on, or runs intermittently.	Works when engine is not running; shuts off when engine is started	Noise interference from either ignition or alternator.	Ignition noise (radiated or conducted) will cause the system to shut down due to high voltage spikes. If this is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut down the ECU. Install a radio capacitor at the positive post of the ignition coil (see radio capacitor installation bulletin). A faulty alternator or worn out battery can also result in this condition.
		Will not turn on under any conditions.	Verify connections on power lead, ignition lead, and both white ground wires.	
			Verify battery voltage is greater than 10 volts and less than 16 while engine is running.	
			Check for power at ECU, and confirm ignition is being applied to ECU properly.	
5.	Loss of mode door function.	No mode change at all.	Check for damaged mode switch or potentiometer and associated wiring.	System shuts off blower at 10V. Poor connections or weak battery can cause shutdown at up to 11V.
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.
		Battery voltage is less than 12V.	Check for faulty battery or alternator.	
7.	Erratic functions of blower, mode, temp, etc.		Check for damaged switch or pot and associated wiring.	Charge battery.
				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



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Packing List: Evaporator Kit (754185)

No.	Qty.	Part No.	Description
1.	1	765200	Gen 5 Super Magnum Evaporator Module
2.	1	794185	Accessory Kit

Checked By: _____

Packed By: _____

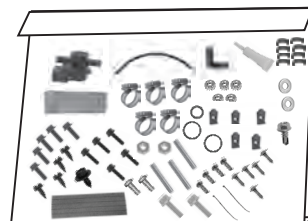
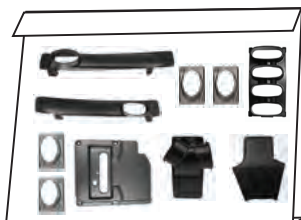
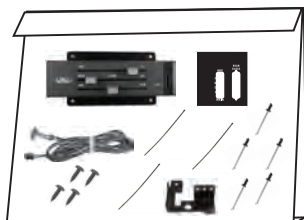
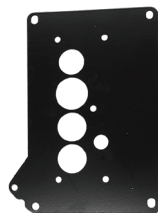
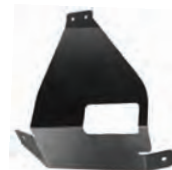
Date: _____

1



**Gen 5 Super Magnum
Evaporator Module
765200**

2



**Accessory Kit
794185**

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