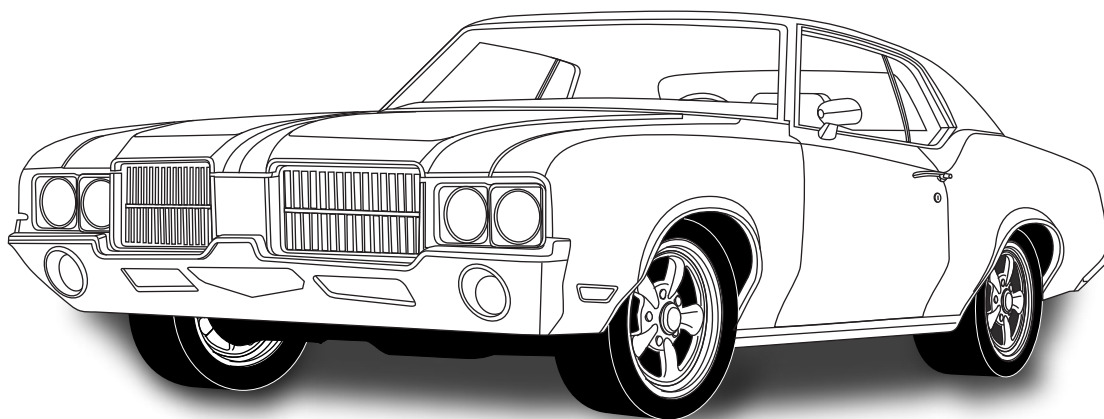




1970-72 Oldsmobile Cutlass

without Factory Air
Gen 5 Evaporator Kit
(561428)



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Packing List: Evaporator Kit (561428)

No.	Qty.	Part No.	Description
1.	1	765200	Gen 5 Magnum Max Module with 404 ECU
2.	1	781428	Accessory Kit

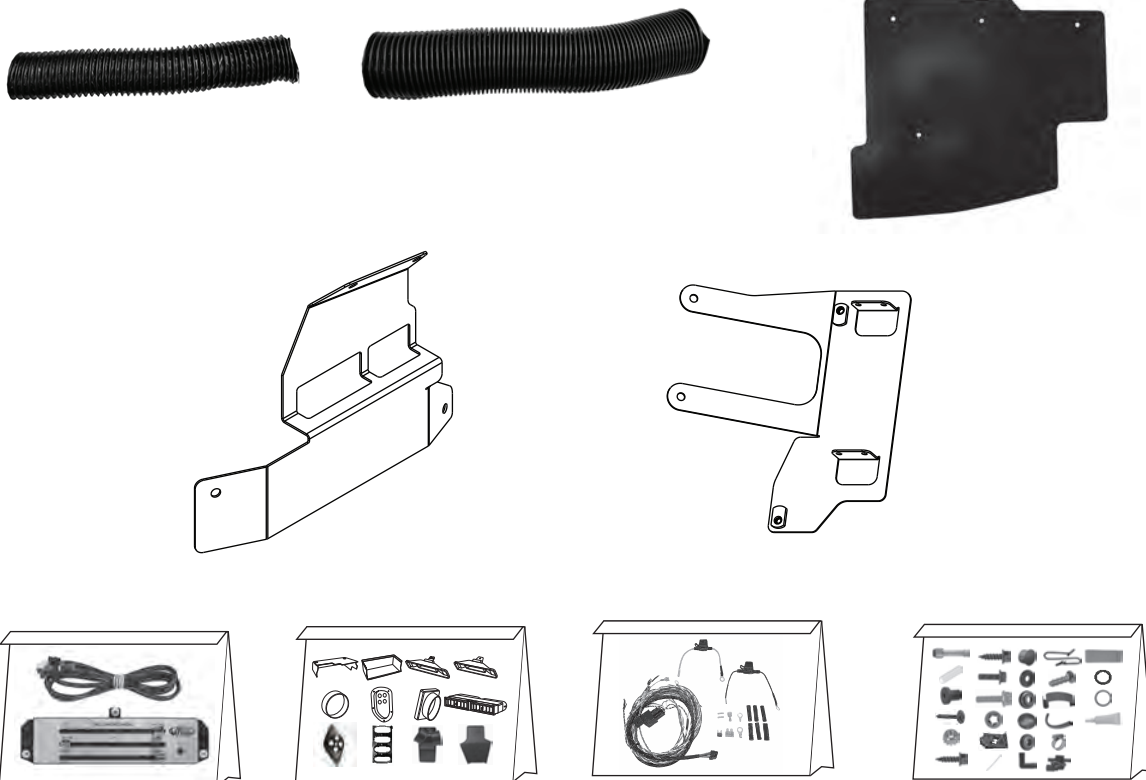
**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

1



Gen 5 Magnum Max
Module with 404 ECU
765200

2



Accessory Kit
781428

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, illustrations, photos & diagrams.

Perform the following:

1. Disconnect the battery.
2. Remove the battery and battery tray (retain).
3. Drain the radiator.
4. Remove the OEM heater hoses (discard).
5. Remove the OEM blower assembly (discard). **NOTE:** To remove the blower assembly (under hood) and the air distribution system (under dash), the factory manual recommends removing the passenger-side inner fender.

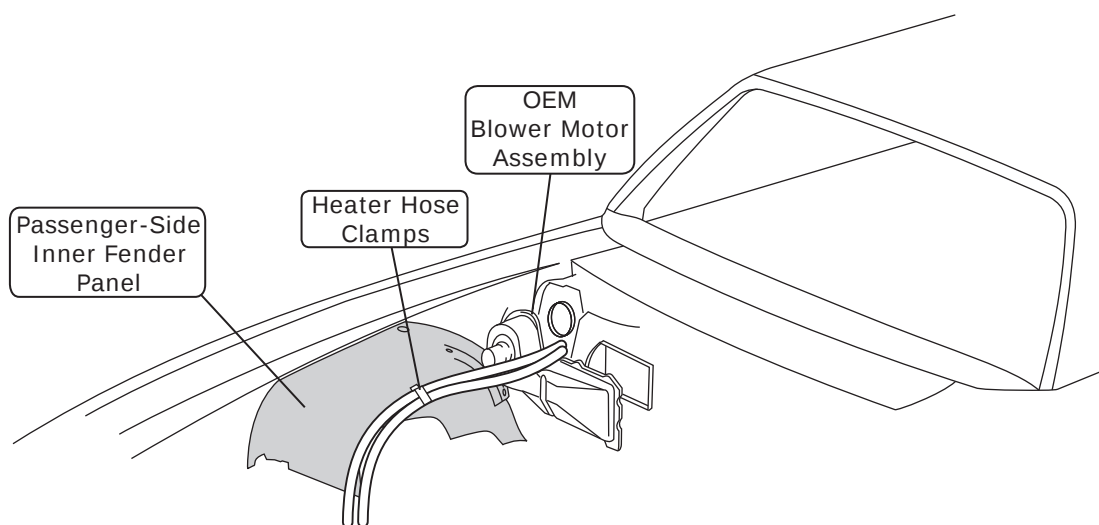


Figure 1

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.



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Passenger Compartment Disassembly

Perform the following:

1. Remove the glove box door (retain) and glove box (discard) (See Figure 1, below).
2. Disconnect all wire and cables from the control panel and radio.
3. Remove the radio (retain) and control panel (discard).
4. Remove all ducting from the OEM louvers (See Figure 1, below).
5. Remove OEM defrost duct assembly by straightening (4) metal tabs (See Figure 1, below).
6. Remove OEM A/C and heater assembly (discard) (See Figure 1, below).
7. Install the center louver assembly in the dash as shown in Figure 1a, below.

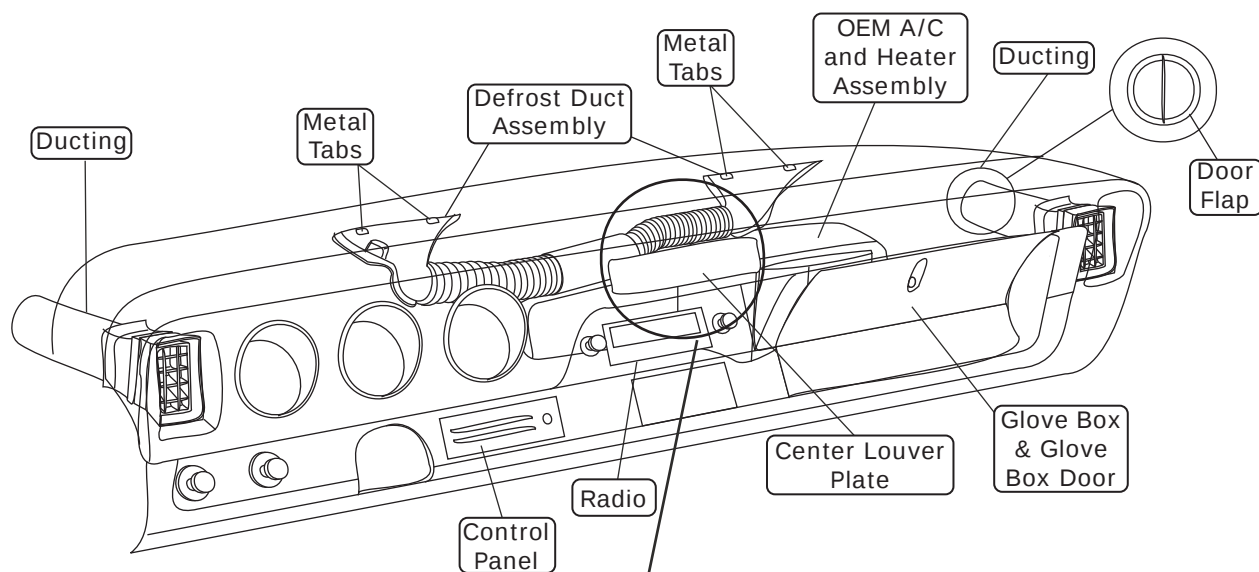


Figure 1

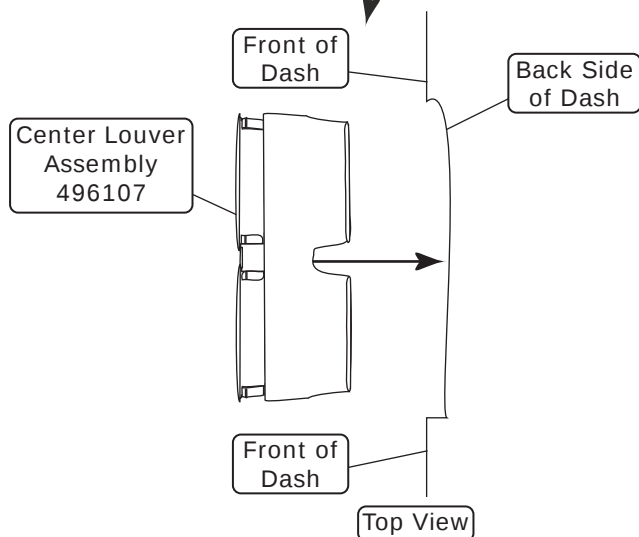


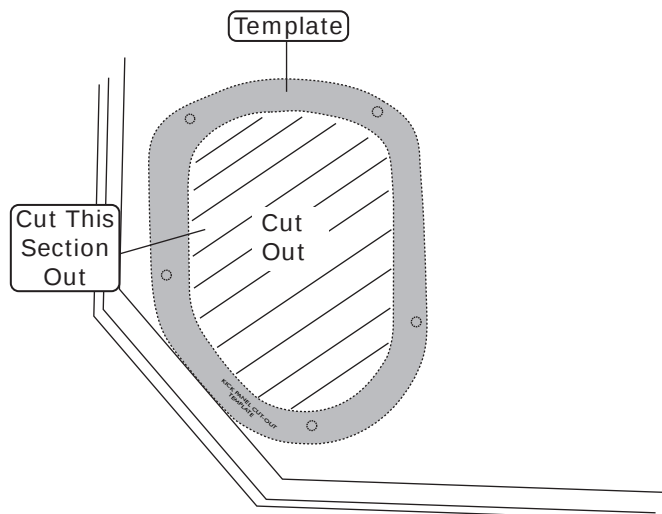
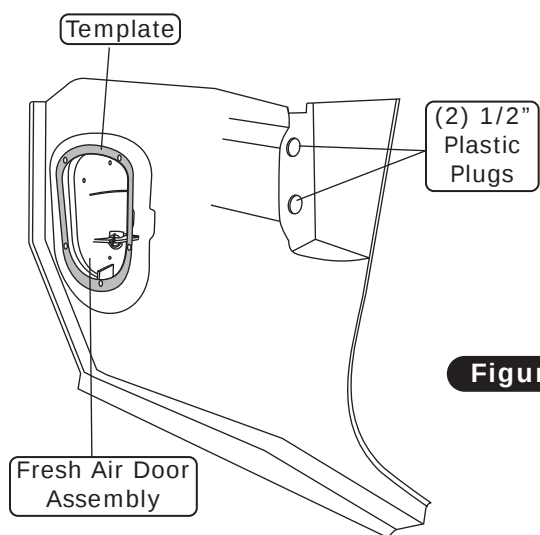
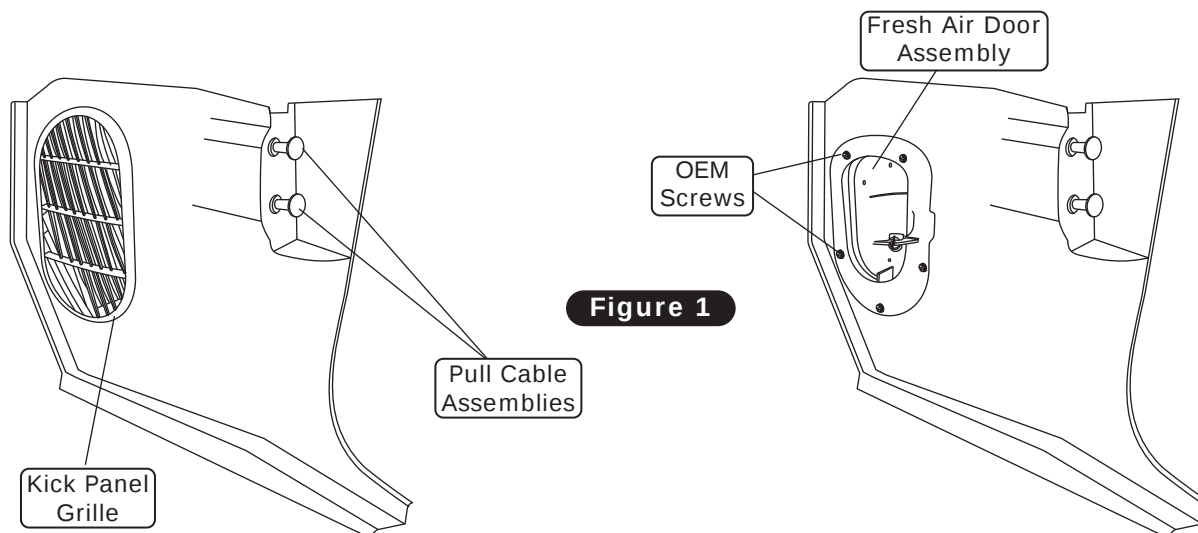
Figure 1a



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Kick Panel Modification

1. Remove kick panel grille (discard). Remove the kick panel by removing (5) OEM screws from the fresh air door assembly. Disconnect and discard pull cable assemblies from the kick panel (See Figure 1, below).
2. Install 1/2" plastic plugs to fill the holes left from the removal of the pull cable assembly (See Figure 2, below).
3. Place the template provided on Page 32, onto the kick panel as shown in Figure 2, below.
4. Cut the fresh air door assembly as shown in Figure 2a, below.
5. Reinstall the kick panel.

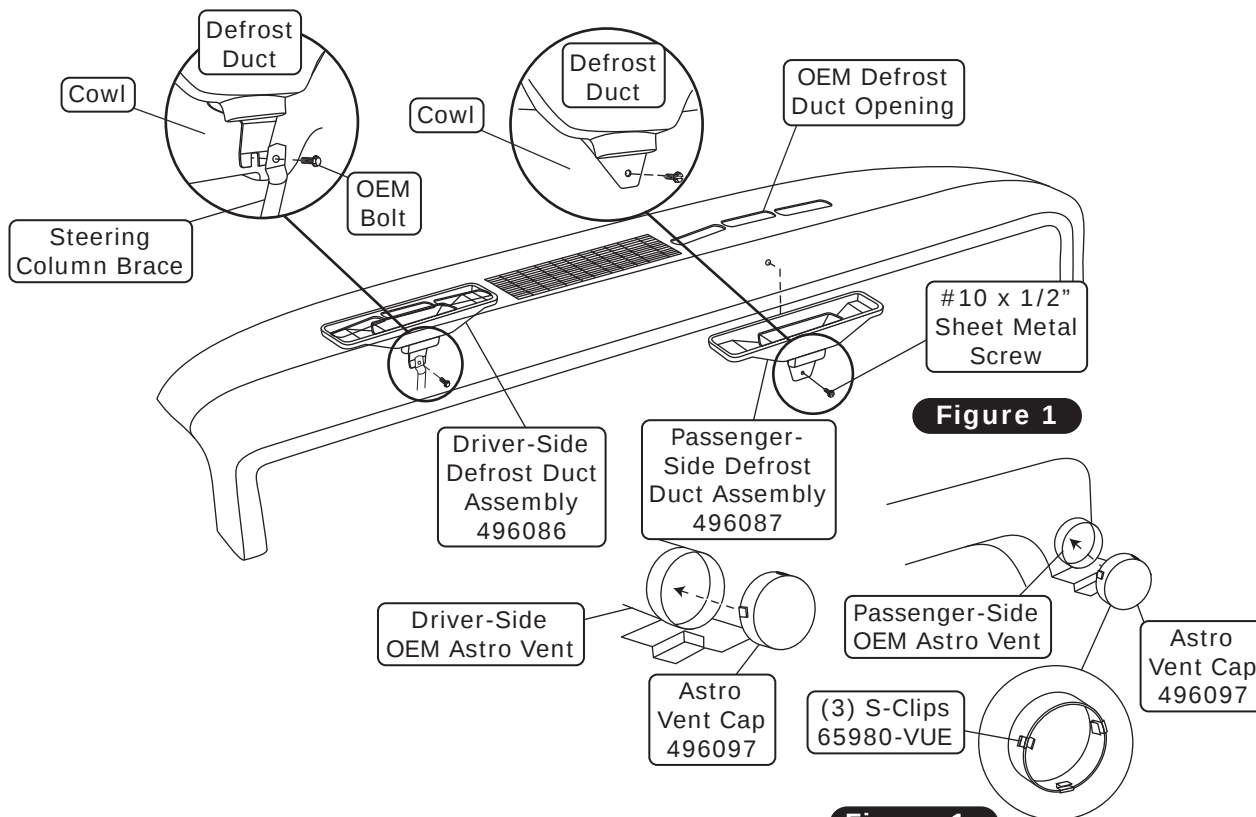




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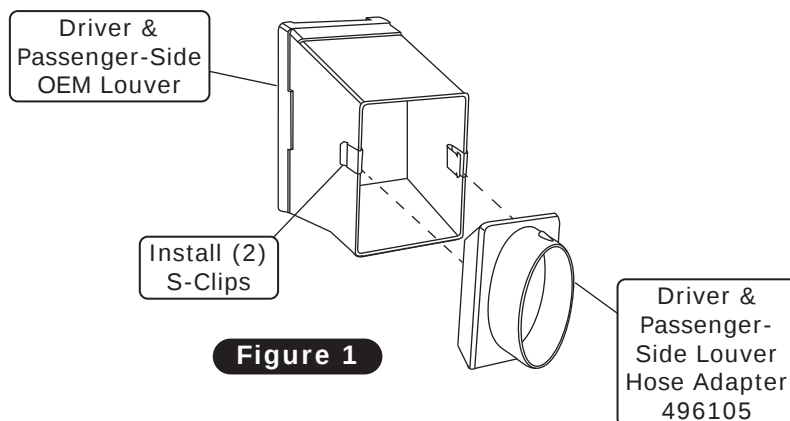
Defrost Duct Installation

1. Install the defrost ducts under the dash and align them with the OEM opening. Secure the passenger-side defrost duct to the cowl using #10 x 1/2" sheet metal screws (See Figure 1, below). **NOTE: The driver-side defrost duct installs behind the steering column brace and secures using the steering column OEM bolt as shown below.**
2. Install the astro vent cap with S-clips as shown in Figure 1a, below.



Driver and Passenger-Side Hose Adapter Installation

1. Install S-clips onto the driver and passenger-side OEM louvers as shown in Figure 1, below.
2. Install the adapters into the driver and passenger-side OEM louvers as shown in Figure 1, below.

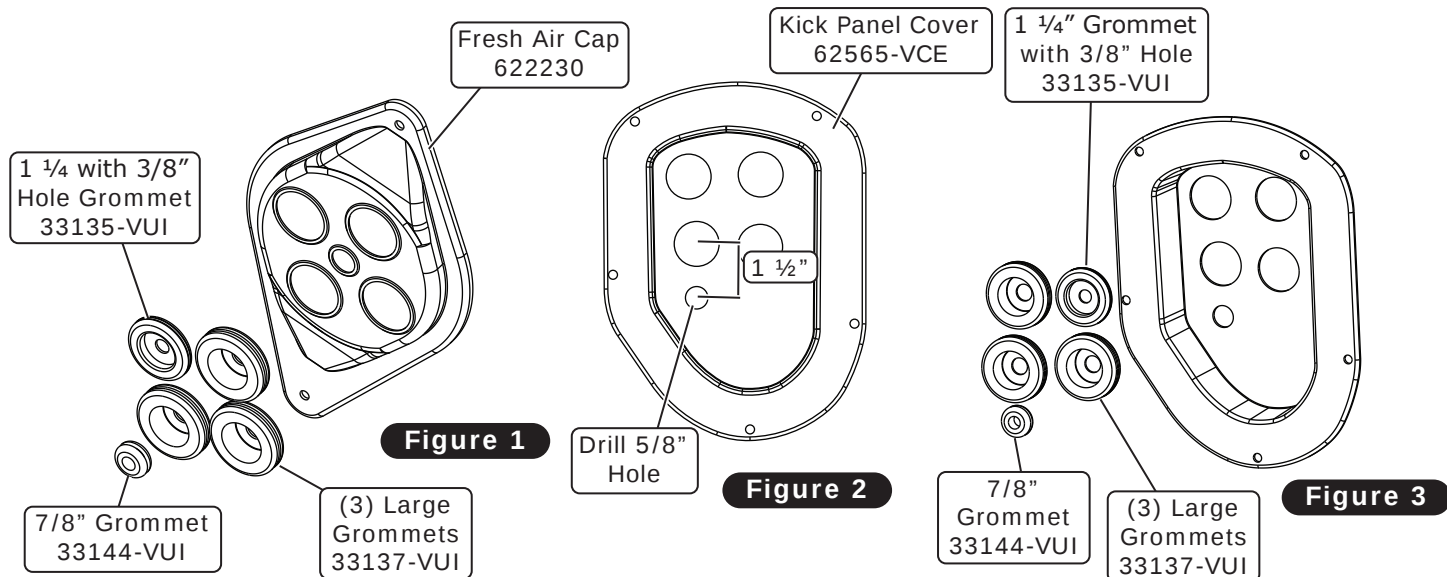




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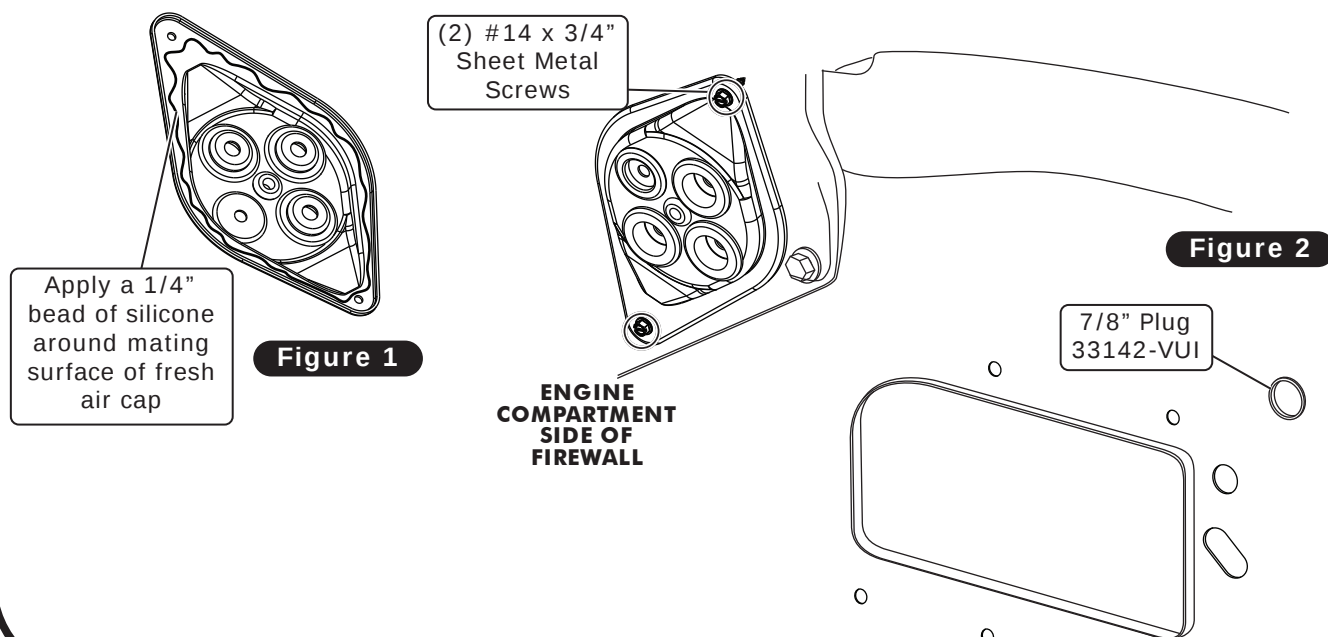
Fresh Air Cap & Kick Panel Cover Preparation

1. Install grommets onto the fresh air cap as shown in Figure 1, below.
2. From the center of the bottom-left hole on the kick panel cover, measure 1 ½" down. Mark and drill a 5/8" hole for the 7/8" grommet (See Figure 2, below).
3. Install grommets onto the kick panel cover as shown in Figure 3, below.



Fresh Air Cap Installation

1. Install a 7/8" plug into the OEM hole on the firewall (See Figure 2, below).
 2. Apply a 1/4" bead of silicone around the mating surface of the fresh air cap as shown in Figure 1, below.
 3. Secure the fresh air cap to the firewall using (2) #14 x 3/4" sheet metal screws (See Figure 2, below).
- NOTE: Fresh air cap installs on engine side of firewall.**

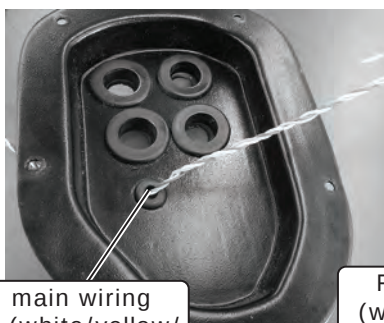




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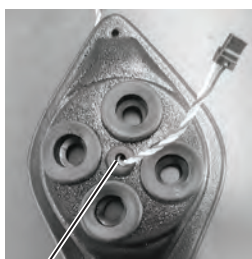
Wiring Installation

1. Locate the heater control valve plug on the main wiring harness (white/yellow/purple). Route it through the 7/8" wiring grommet on the kick panel cover (See Photo 1, below) and into the kick panel opening. Then, through the wiring grommet on the fresh air cap (See Photo 2, below) and into the engine compartment.
2. Route the red, white and blue wires from the main harness through the 7/8" wiring grommet on the kick panel cover (See Photo 3, below) and into the kick panel opening. Then, through the wiring grommet on the fresh air cap and into the engine compartment (See Photo 4, below).
3. Leave approximately 12" of wiring between the kick panel cover and relay.
4. Place the evaporator module on the passenger-side floorboard.
5. Route the heavy gauge orange and white wires through the wiring grommet in the kick panel cover (See Photo 5, below) and into the kick panel opening. Then, through the wiring grommet on the fresh air cap and into the engine compartment (See Photo 6, below).
6. Connect the blower speed controller plug into the main wiring harness plug (orange and green wires) (See Photo 7, below).



Route main wiring harness (white/yellow/purple) through 7/8" wiring grommet on kick panel cover

Photo 1



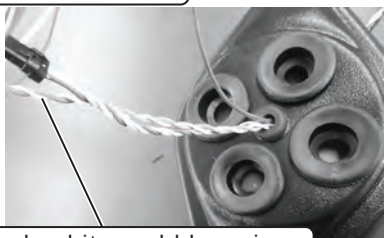
Route main wiring harness (white/yellow/purple) through wiring grommet on fresh air cap

Photo 2



Route red, white and blue wires from main harness through 7/8" wiring grommet on kick panel cover

Photo 3



Route red, white and blue wires from main harness through 7/8" wiring grommet on fresh air cap

Photo 4



Route heavy gauge orange and white wires through 7/8" wiring grommet on kick panel cover

Photo 5

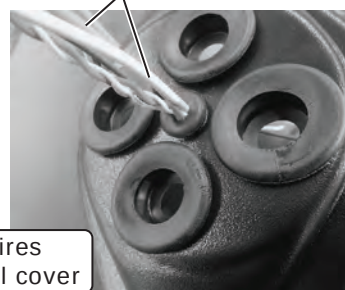
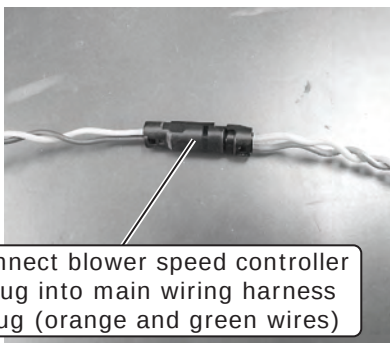


Photo 6



Connect blower speed controller plug into main wiring harness plug (orange and green wires)

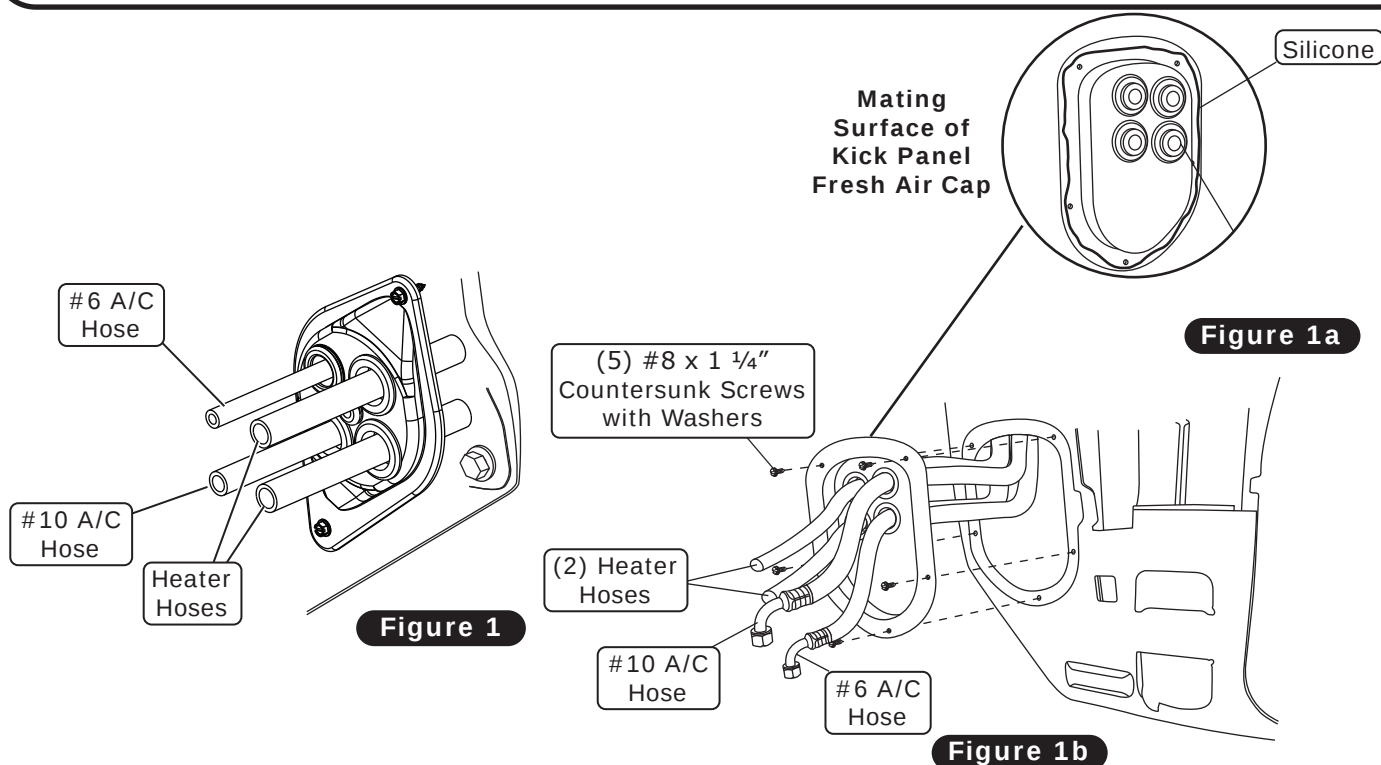
Photo 7



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Kick Panel Cover Installation

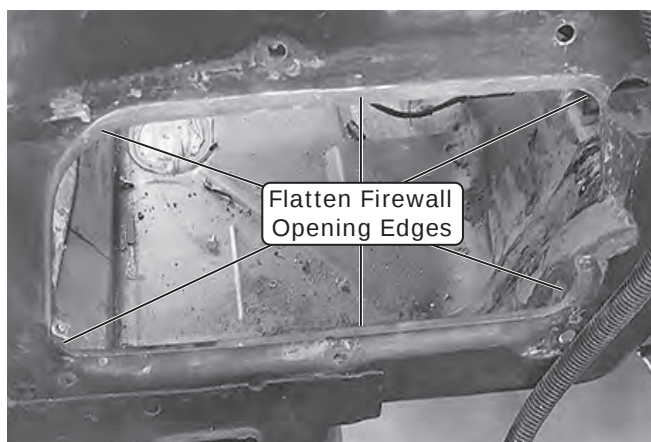
1. Route A/C and heater hoses through the fresh air cap and kick panel cover as shown in Figure 1 and 1b, below.
2. Apply a 1/4" bead of silicone around the mating surface of the kick panel cover as shown in Figure 1a, below.
3. Secure the kick panel cover using (5) #8 x 1 1/4" countersunk screws with washers, as shown in Figure 1b, below.



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).



Engine
Compartment Side

Photo 1



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Firewall Cover Installation and Insulation

NOTE: For proper system operation, Vintage Air recommends using Dynaliner (461500-VIP) heat-blocking insulation in the area around the evaporator module (firewall, kick panel, inner cowl and firewall covers). Due to tight clearance for the evaporator module, between the firewall and dash, Vintage Air recommends an insulation thickness of no more than 1/8".

1. Install (3) 1/4-20 x 3/4" black serrated flange bolts with (3) 1/4" pushnut bolt retainers onto the firewall cover (See Photo 1, below).
2. Apply silicone to the mating surface of the firewall cover (See Figure 1, below).
3. Install the firewall cover onto the firewall, then secure it using (3) 1/4-20 nuts with star washers (See Photo 2, below).
4. Clean the firewall and necessary areas, then apply heat-blocking insulation.

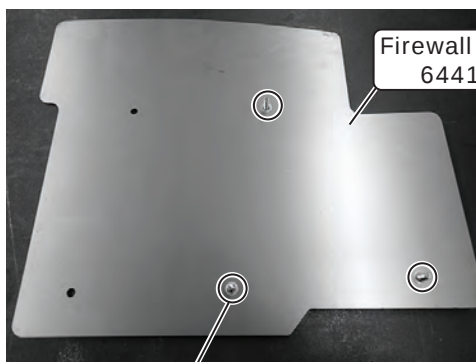
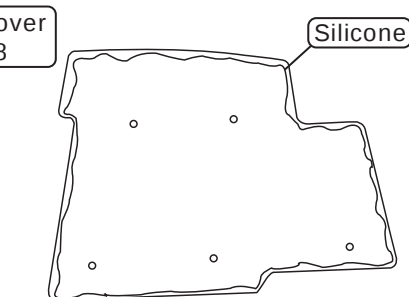


Photo 1

(3) 1/4-20 x 3/4" Black Serrated Flange Bolts with (3) 1/4" Pushnut Bolt Retainer



Mating Surface of Firewall Cover

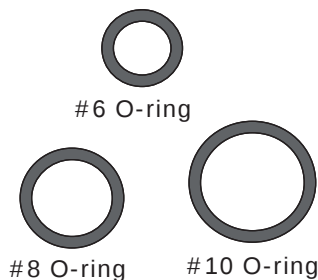
Figure 1



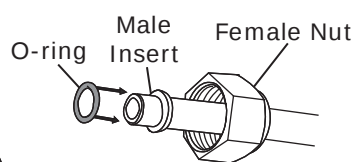
Photo 2

Install (3) 1/4-20 Nuts with Star Washers

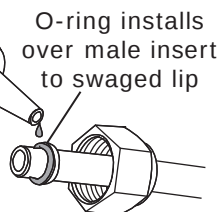
Lubricating O-rings



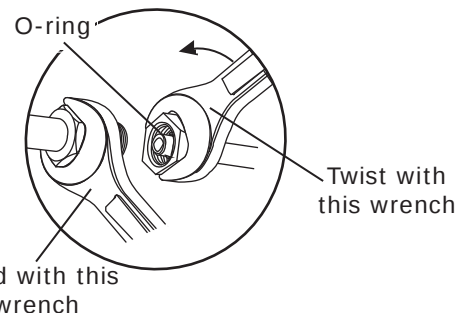
NOTE: Standard torque specifications:
 #6: 11 to 13 ft-lb.
 #8: 15 to 20 ft-lb.
 #10: 21 to 27 ft-lb.



Refrigerant Oil for O-rings



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





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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.

Evaporator Preparation

Perform the following on a work bench:

1. Install the defrost plenum onto the evaporator module using (2) spring clips (See Figure 1, below).
2. Install the dash plenum onto the evaporator module using (4) spring clips (See Figure 1, below).
3. Install (2) 1/4-20 well nuts as shown in Figure 1, below.
4. Attach the evaporator dash bracket onto the evaporator using (2) 1/4-20 x 1" serrated flange bolts (See Figure 1, below).

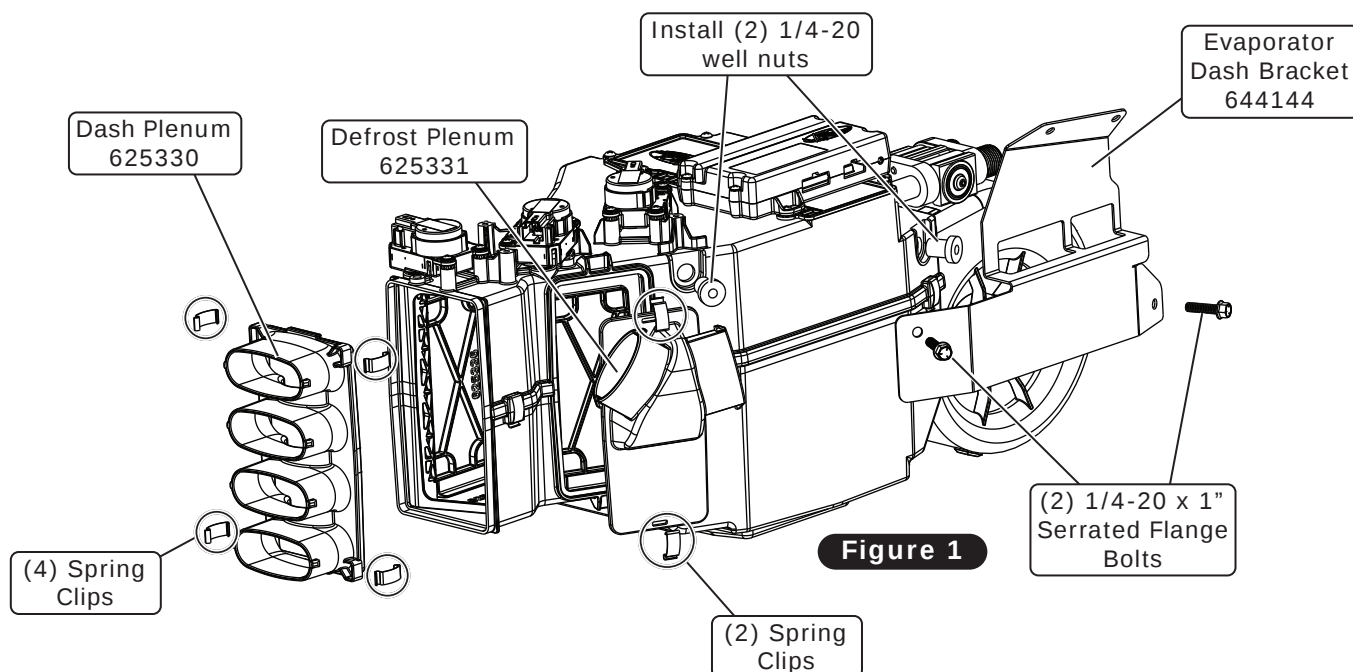


Figure 1



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Evaporator Preparation (Cont.)

5. Install a plastic plug into the location shown in Figure 2, below.
6. Install (2) 1/4-20 well nuts as shown in Figure 2, below.
7. Install the floor plenum onto the evaporator module using (2) spring clips (See Figure 2, below).
8. Install the evaporator firewall bracket onto the evaporator module using (4) #10 x 5/8" screws and (2) 1/4-20 x 1" serrated flange bolts (See Figure 2, below).
9. Install (2) 1/4-20 x 1 1/4" studs onto the evaporator firewall bracket as shown in Figure 2, below.
10. Install the (2) heater hardlines with properly lubricated O-rings (See Lubricating O-rings, Page 13 and Figure 3, below). **NOTE: Be careful when removing the caps from the sub case, sub case is shipped under pressure.**

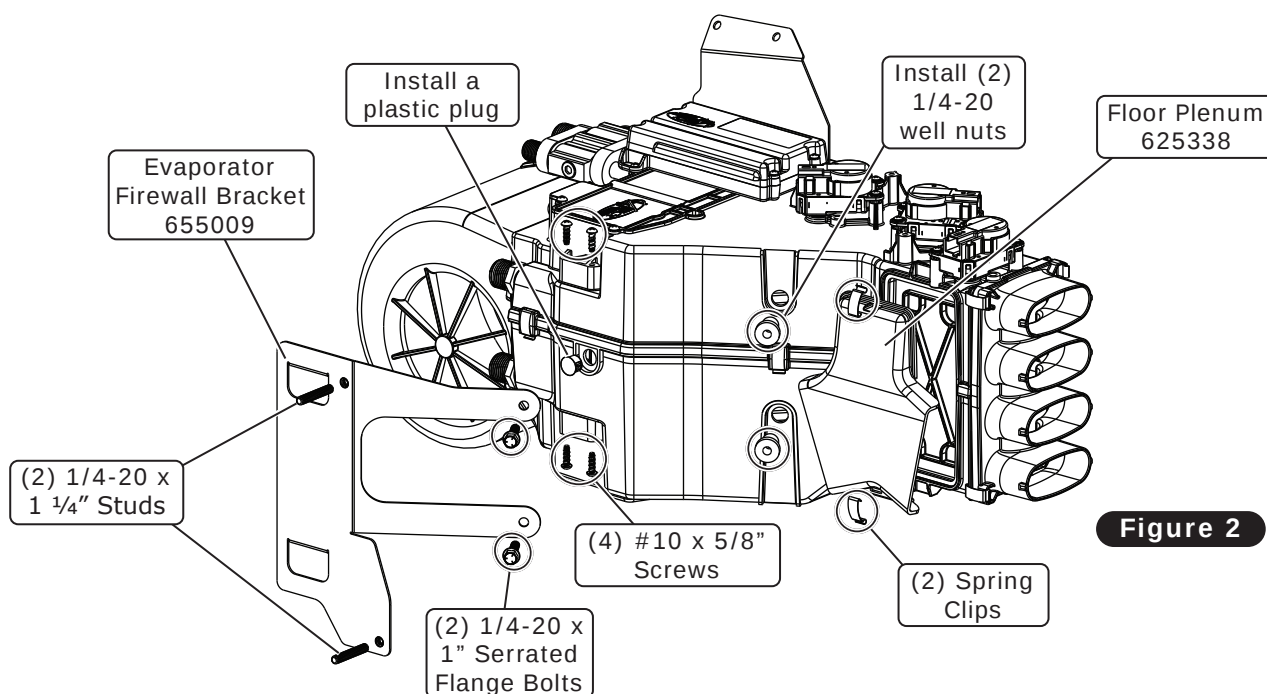


Figure 2

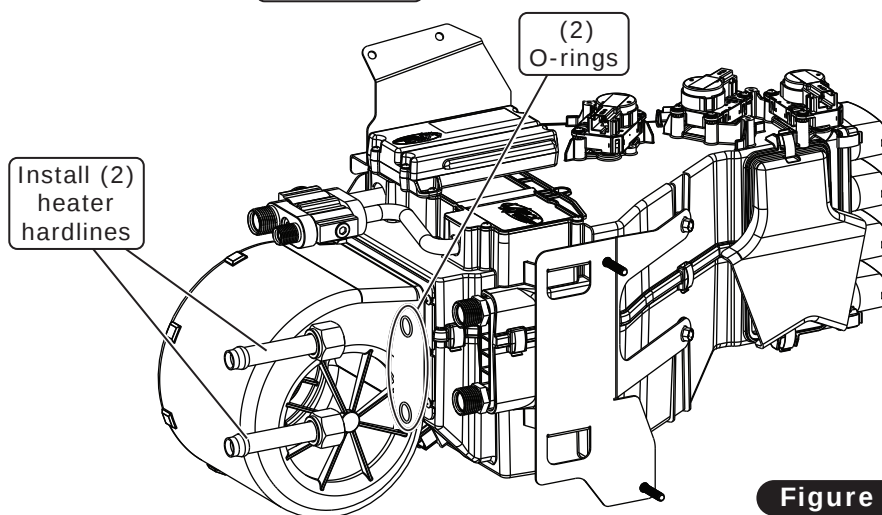


Figure 3



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Evaporator Installation

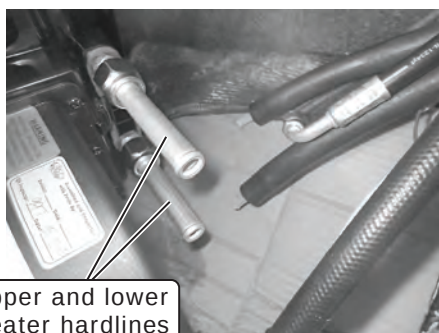
NOTE: To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

1. With the evaporator module on the passenger-side floorboard, install the upper and lower heater hoses and hose clamps onto the upper and lower heater hardlines on the evaporator module (See Photos 1 and 2, below).

2. Using a properly lubricated #6 O-ring (See Lubricating O-rings, Page 13), install the 45° fitting on the #6 drier/evaporator A/C hose onto the block valve adapter on the evaporator module (See Photo 3, below).

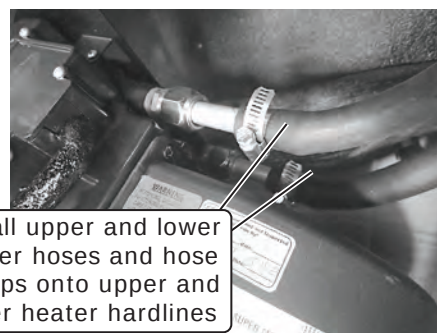
NOTE: Provide enough A/C hose when connecting the 45° fitting to the module. Once the connection is made, pull excess hose into the engine compartment, being sure not to kink it.

3. Using a properly lubricated #10 O-ring (See Lubricating O-rings, Page 13), 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 4, below). **NOTE:** After installing the #10 compressor/evaporator A/C hose, wrap all exposed metal with the supplied press tape (See Photo 5, below).



Upper and lower heater hardlines

Photo 1



Install upper and lower heater hoses and hose clamps onto upper and lower heater hardlines

Photo 2

Install 45° fitting on #6 drier/evaporator A/C hose onto block valve adapter

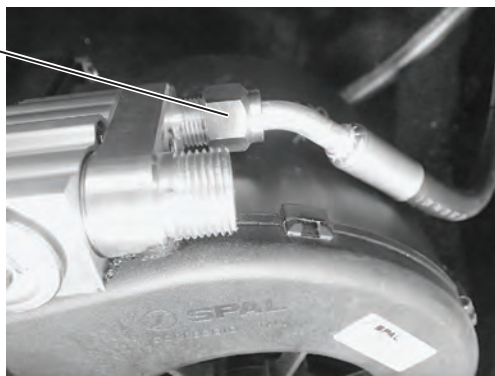


Photo 3

Install 45° fitting on #10 compressor/evaporator A/C hose onto #10 fitting on block valve adapter

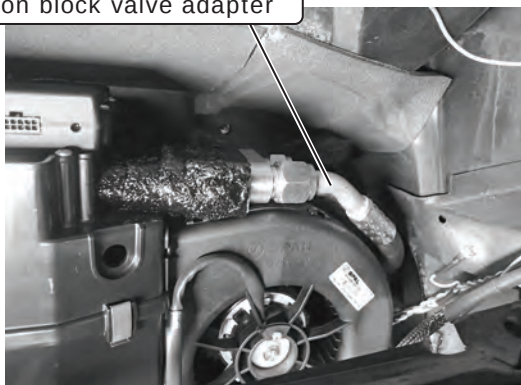


Photo 4

Wrap all exposed metal with supplied press tape



Photo 5



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Evaporator Installation (Cont.)

4. Lift the evaporator module up under the dash. Align the studs with mounting provisions on the firewall cover. Temporarily secure it in place using (2) 1/4-20 nuts with star washers from the engine side of the firewall.
5. Verify that the evaporator module 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. Before leveling the evaporator, ensure the vehicle is level. Depending on the vehicle, there may be clearance issues where a standard size level doesn't fit. The use of a compact level may be needed.**
6. Place the front evaporator mounting bracket onto the cowl. Using the bracket as a template, drill (2) 3/16" holes in the cowl. Secure it with (2) #14 x 3/4" hex sheet metal screws (See Figure 2, below).
7. Replace the studs in the firewall with (2) 1/4-20 x 3/4" flange head bolts.

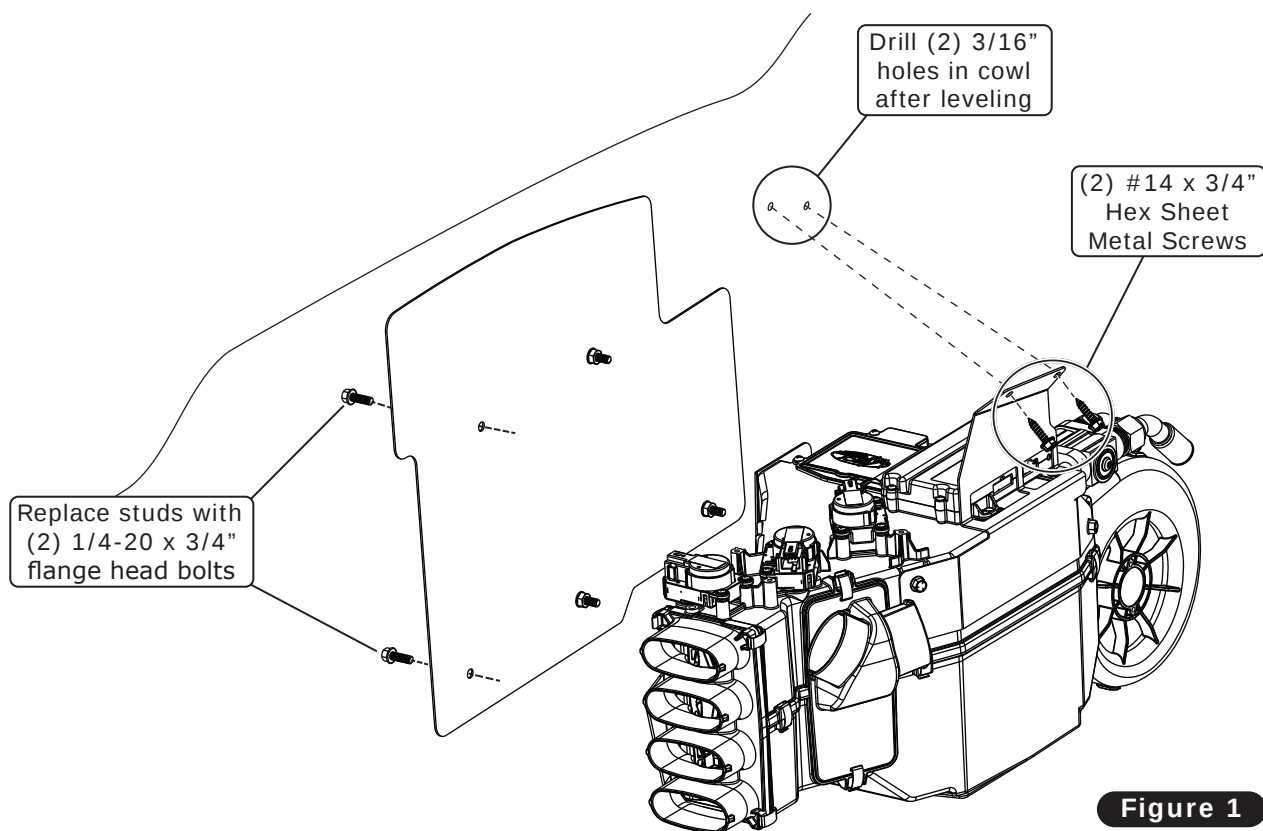


Figure 1



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Drain Hose Installation

1. Locate the evaporator drain on the bottom of the evaporator case.
2. In line with the drain, lightly make a mark on the firewall. Measure 1" down and 2 1/2" to the left, then drill a 5/8" hole through the firewall (See Figure 1, below).
3. Install the drain hose onto the bottom of the evaporator module, then it route through the firewall (See Figure 1, below).

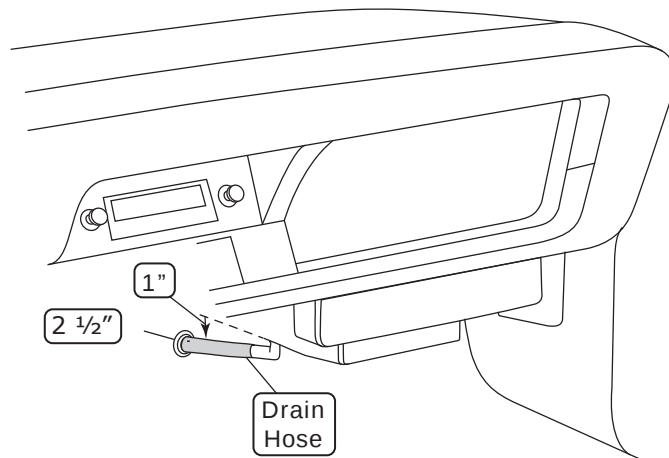
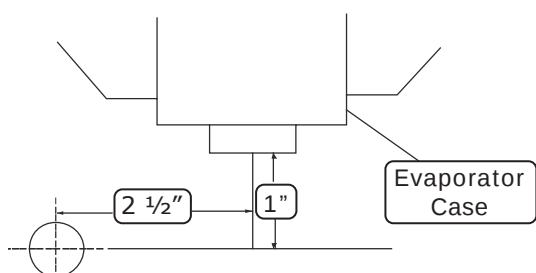


Figure 1

A/C Hose Installation

Standard Hose Kit:

1. Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Lubricating O-rings, Page 13), and connect the 45° female fitting with 134a service port to the #8 discharge port on the compressor. Then route the 90° female fitting to the #8 condenser hardline coming through the core support (See Figure 1, Page 19). Tighten each fitting connection.
2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Lubricating O-rings, Page 13), and connect the #10 135° female fitting with 134a service port to the #10 suction port on the compressor. Then route the 45° female fitting to the #10 evaporator adapter block port (See Photo 4, Page 16, and Figure 1, Page 19). Tighten each fitting connection.
3. Locate the #6 evaporator A/C hose. Lubricate (2) #6 O-rings (See Lubricating O-rings, Page 13), and connect the 90° female fitting to the #6 hardline coming through the core support from the drier. Then route the 45° female fitting to the #6 evaporator adapter block port (See Photo 3, Page 16, and Figure 1, Page 19). Tighten each fitting connection.

Modified Hose Kit:

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



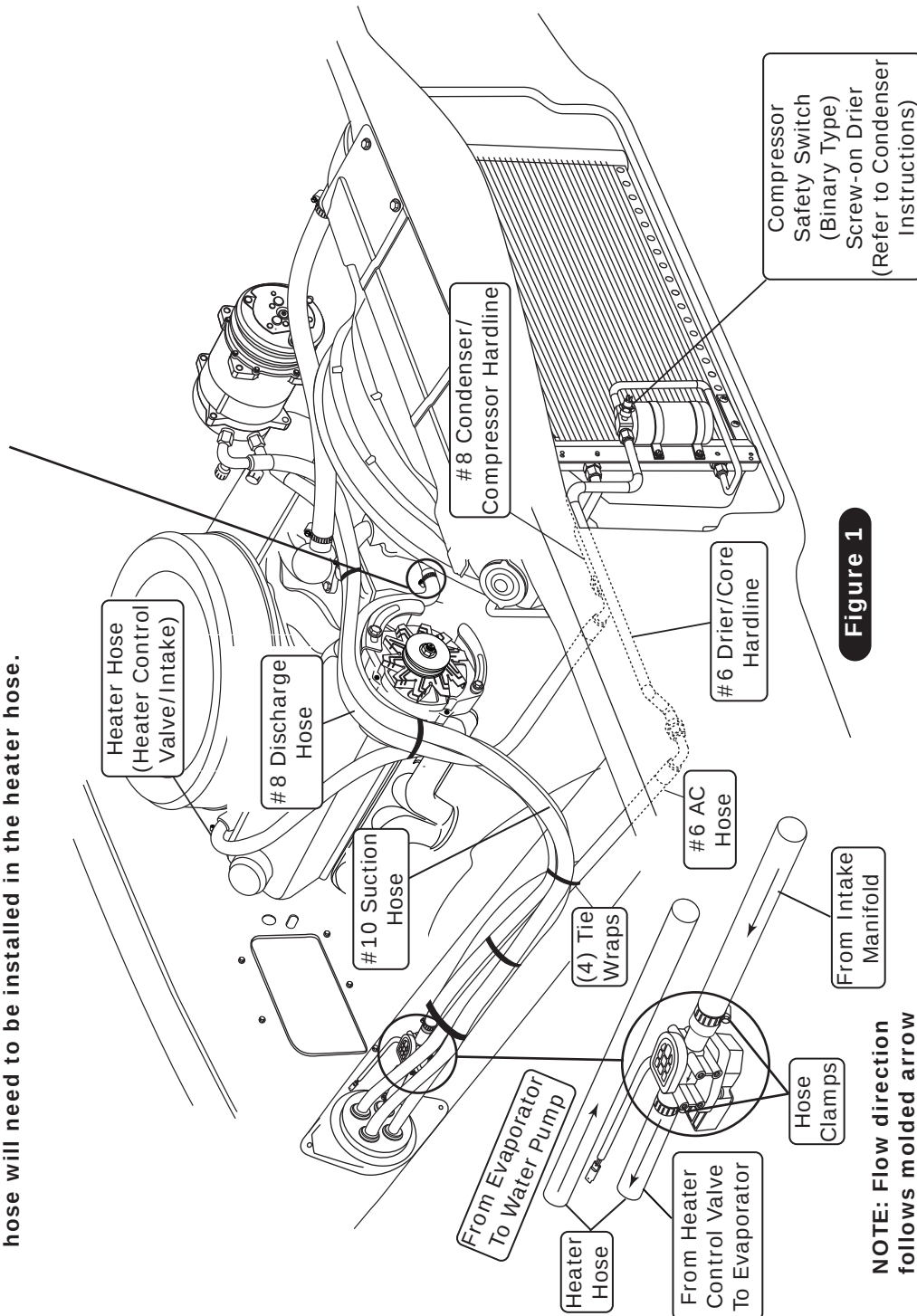
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Heater Hose & Heater Control Valve Installation

1. Route a piece of heater hose from the water pump to the top heater fitting of heater core as shown in Photo 2, Page 16, and Figure 1, below. Secure it using hose clamps. **NOTE: OEM water pump outlet is 3/4". A 3/4" x 5/8" reducer fitting is required (not supplied).**
2. Route a piece of heater hose from the intake to the bottom heater fitting of the heater core as shown in Photo 2, Page 16, and Figure 1, below. **NOTE: Install the heater control valve in line with intake manifold (pressure side) heater hose. Secure it using hose clamps as shown in Figure 1, below. Also note proper flow direction.**

A/C & Heater Hose Routing

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



Disclaimer: The illustration above is for reference only. Hose routing and fittings may differ depending on install and/or engine configuration.



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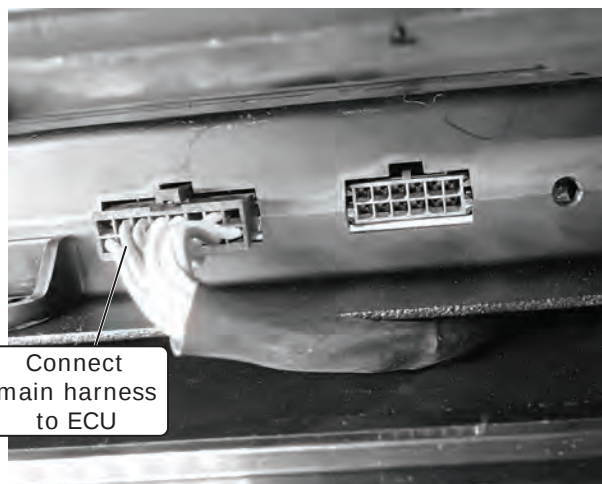
Wiring Final

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 main harness to the ECU (See Photo 2, below).
5. Select a suitable mounting location for the main relay.
6. Route the blue lead from the main wiring harness to the safety switch (See Photo 3, below).
7. Connect the compressor lead wire to the safety switch (See Photo 3, below).
8. Connect the bullet terminal of the compressor lead to the compressor bullet terminal (See Photo 4, below).

Attach Violet Wire to
Switched Power Source



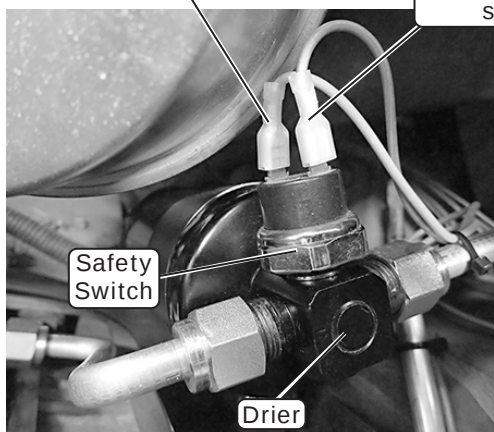
Photo 1



Connect
main harness
to ECU

Photo 2

Connect compressor lead
wire to safety switch



Safety
Switch

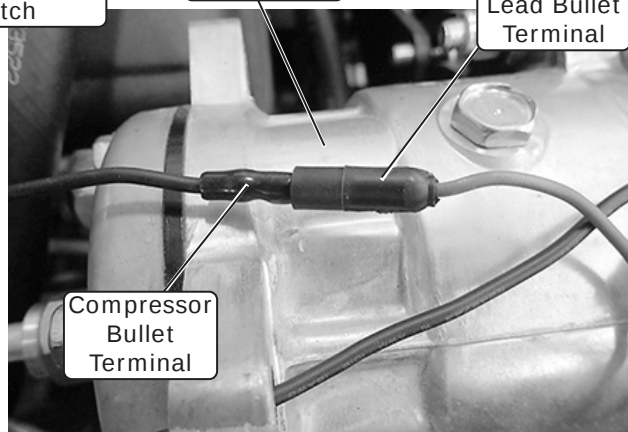
Drier

Connect blue lead from
main wiring harness to
safety switch

Photo 3

Compressor

Compressor
Lead Bullet
Terminal



Compressor
Bullet
Terminal

Photo 4

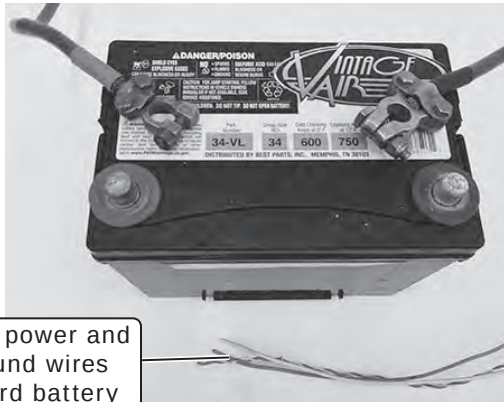


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Engine Compartment Wiring

NOTE: The following connections are critical to the performance of the system. Before making connections, refer to the Quality Crimp Guidelines, Page 26.

1. Route power and ground wires toward the battery (See Photo 1, below).
2. Install the supplied heat shrink over the 12 AWG orange standard fuse holder assembly wire and crimp it to the 12 AWG orange wire from the main wiring harness (See Photo 2, below). Slide the heat shrink over the crimp, then apply heat.
3. Install the supplied heat shrink over the 16 AWG black mini fuse holder assembly wire and crimp it to the 16 AWG red wire from the main wiring harness (See Photo 3, below). Slide the heat shrink over the crimp, then apply heat.
4. Install the fuses into the holders (See Photos 4 and 5, below).
5. Install the supplied heat shrink over the white ground wires, then crimp on the supplied ring terminals (See Photo 6, below). Slide the heat shrink over the crimps, then apply heat. **NOTE: Both white wires can be crimped to the larger ring terminal. Install the heat shrink, then strip the wires, twist them together and trim to length. Crimp on the ring terminal, then slide the heat shrink over and apply heat (See Photos 7 and 8, below).**



Route power and ground wires toward battery

Photo 1

Crimp 12 AWG orange fuse holder wire to 12 AWG orange wire from main wiring harness



Photo 2

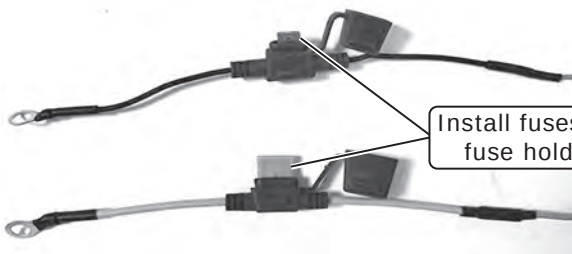
Install heat shrink over 12 AWG orange standard fuse holder assembly wire

Crimp 16 AWG black fuse holder wire to 16 AWG red wire from main wiring harness



Photo 3

Install heat shrink over 16 AWG black standard fuse holder assembly wire



Install fuses into fuse holders

Photo 4

Install heat shrink over white ground wires, then crimp on ring terminals

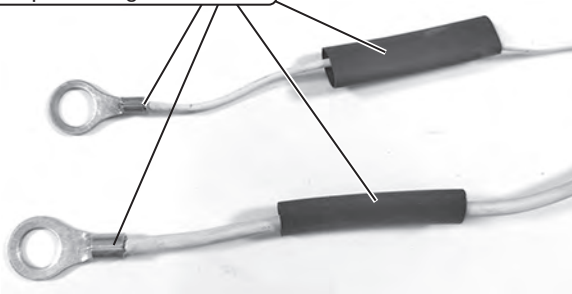


Photo 6

Both white ground wires can be crimped together. Install heat shrink, then strip wires, twist together and trim to length.

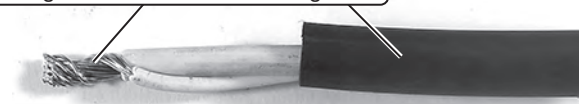


Photo 5

Crimp on ring terminal, then slide heat shrink over and apply heat

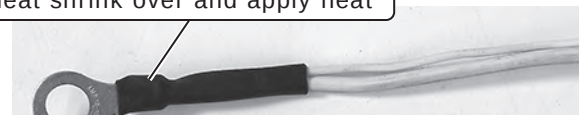


Photo 7

Photo 8



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Engine Compartment Wiring (Cont.)

6. Connect the ground wire ring terminals to the negative battery terminal connector (See Photos 9 and 10, below).
7. Connect the positive wire ring terminals to the positive battery terminal connector (See Photos 11 and 12, below). **NOTE: Do not connect power until the installation is completed.**
8. Wiring completed (See Photo 13, below).

Connect ground wire ring terminals to negative battery terminal
NOTE: Either connection application can be used.

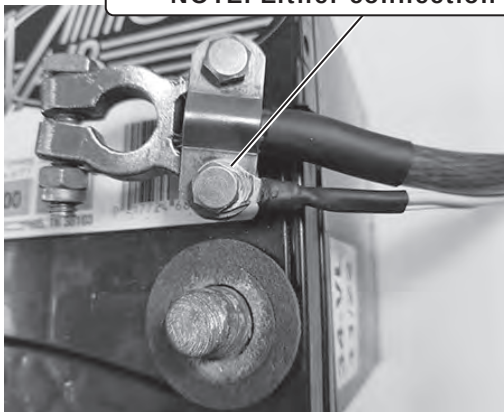


Photo 9

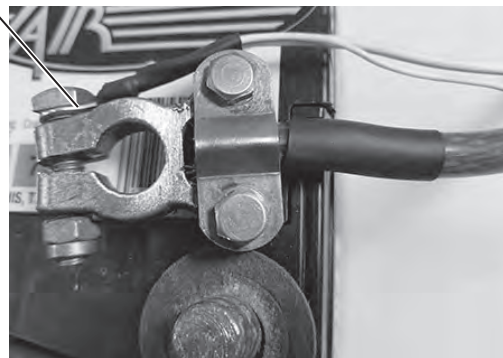


Photo 10

Connect power wire ring terminals to positive battery terminal
NOTE: Either connection application can be used.

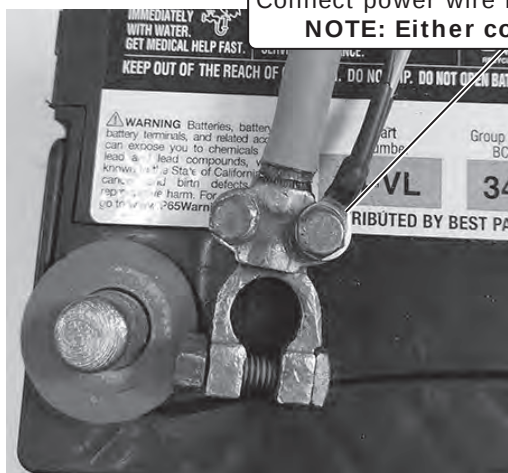


Photo 11

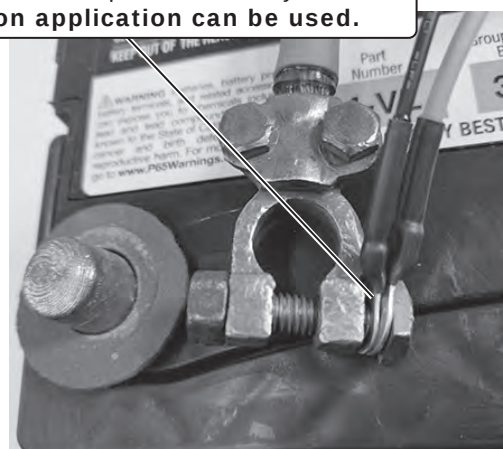


Photo 12

NOTE: Do not connect power until installation is completed.



Completed Installation
Shown

Photo 13



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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>
☐	Temperature control 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> . 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. Install duct hoses as shown in Duct Hose Routing, Page 25.
2. Install the control panel assembly
3. Wire according to wiring diagrams on Pages 27 and 28.
4. Reinstall all previously removed items (battery tray, battery, inner fender and radiator).
5. Install U-nuts onto the glove box top/bottom (See Figure 1, below).
6. Install the glove box bottom into the glove box compartment using OEM screws (See Figure 1, below).
7. Install the glove box top using (4) S-clips and OEM screws (See Figure 1, below).
8. 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.
9. Double check all fittings, brackets and belts for tightness.
10. Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
11. Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
12. Charge the system to the capacities stated on Page 4 of this instruction manual.
13. See Operation of Controls procedures on Page 29.

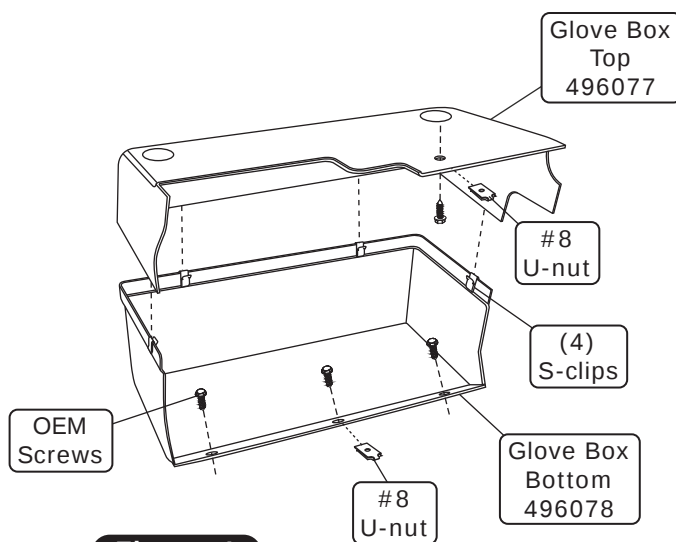


Figure 1



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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.

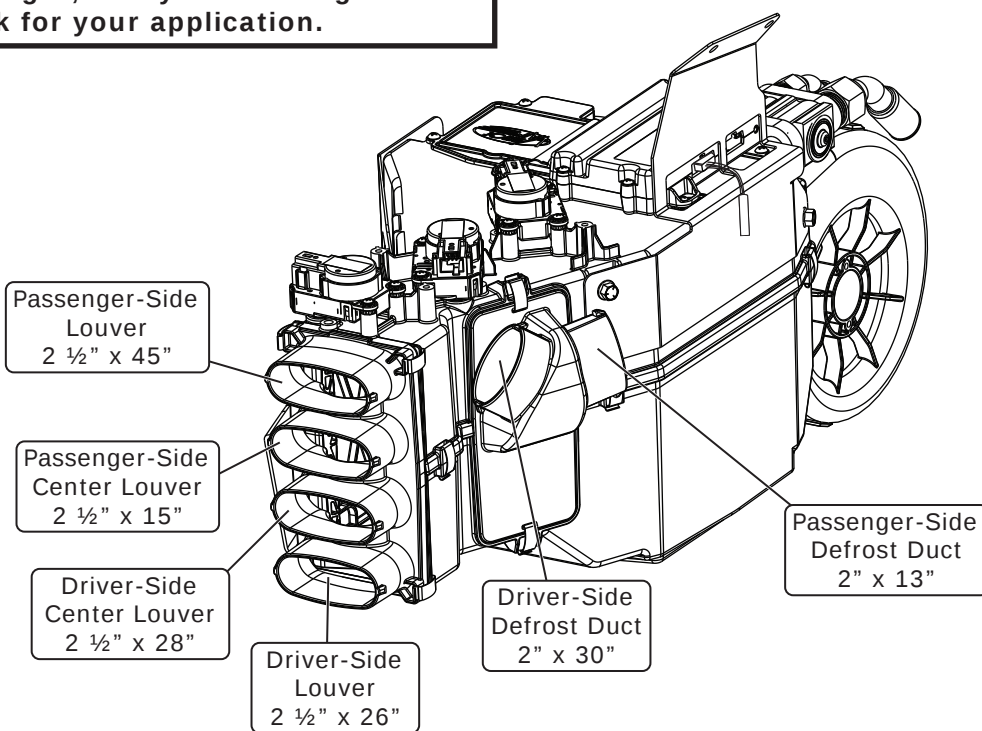
1. Stretch the duct hose until there is no slack, measure, mark and cut hose to size (See Photo 1, below).

Stretch, measure,
mark and cut
hose to size



Photo 1

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



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.

Position connectors
towards bottom



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Quality Crimp Guideline

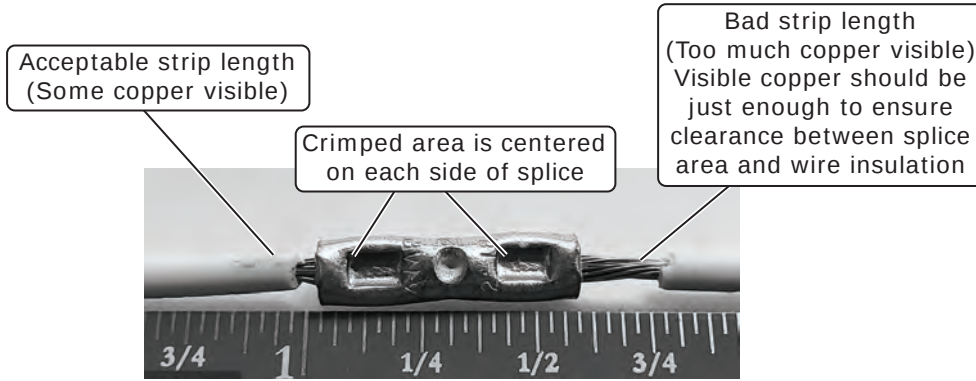


Photo 1

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



Photo 2

Good Ring Terminal Crimp Bad Ring Terminal Crimp

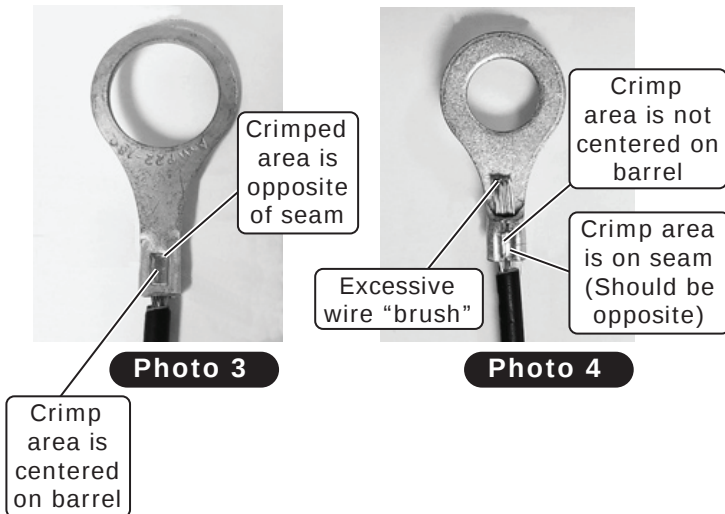


Photo 3

Photo 4



Photo 5

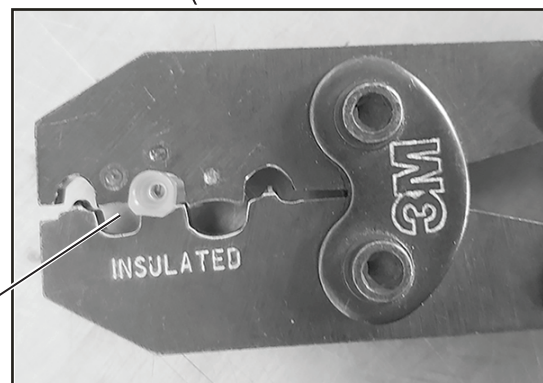


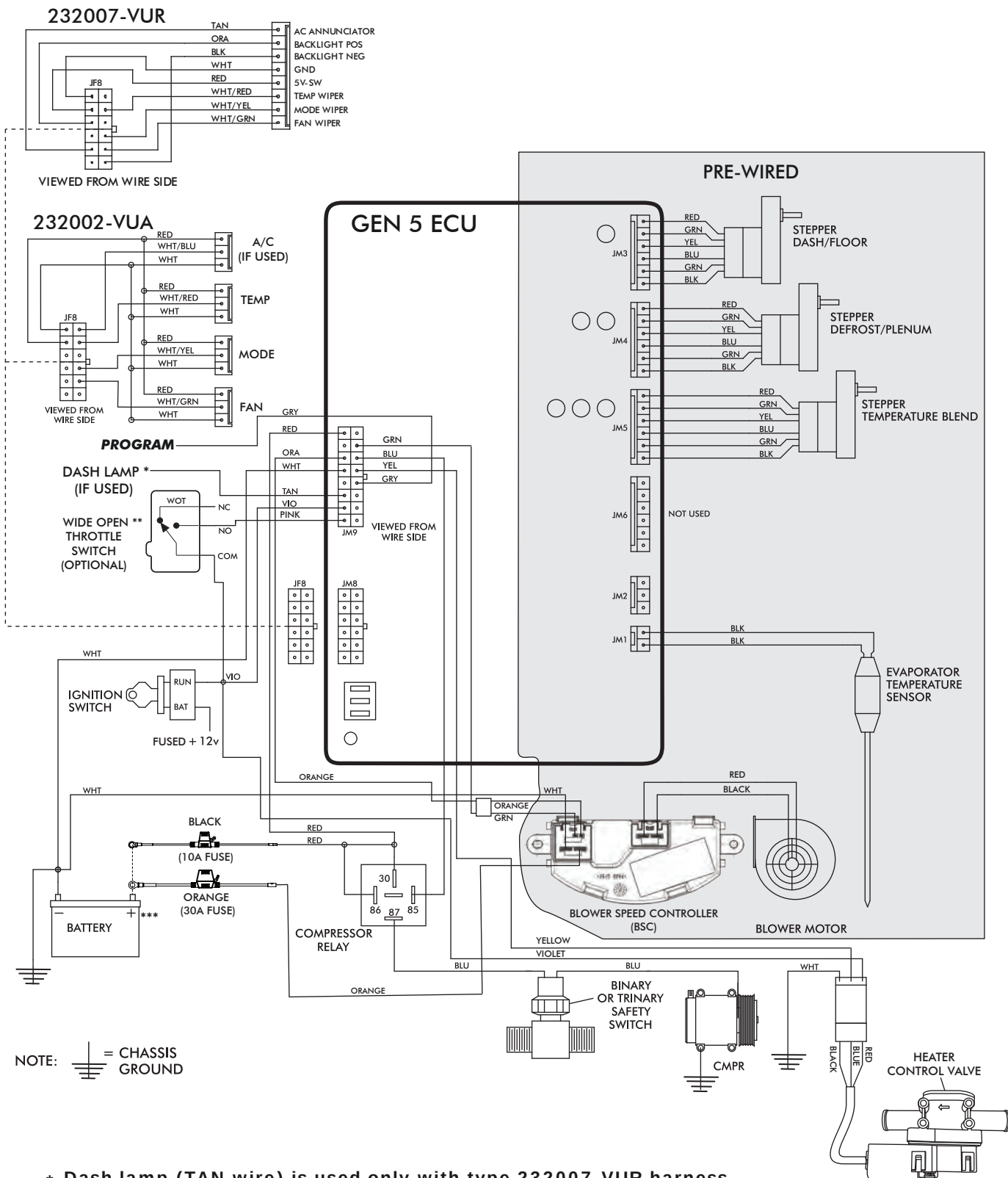
Photo 5a

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.

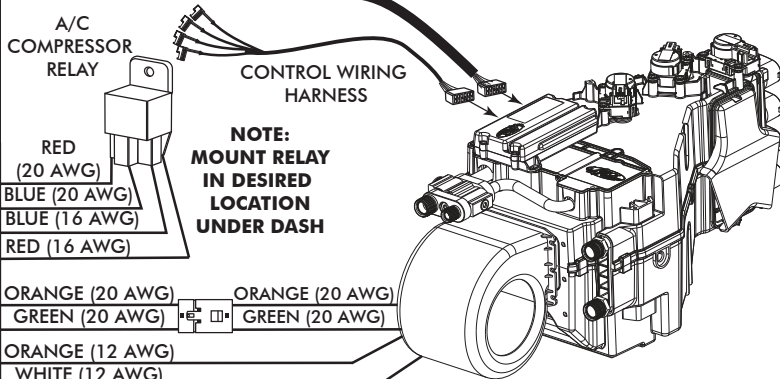
*** Install fuse assemblies at or as near to the battery as possible.



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Gen 5 Wiring Instructions

WIRING HARNESS (231505) ↓



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.

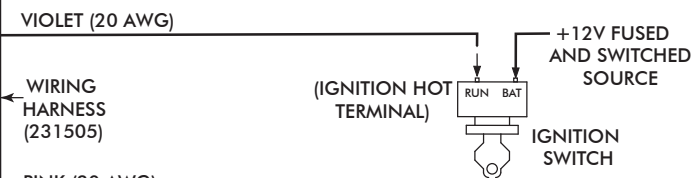
Wide Open Throttle Switch (Optional):

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):

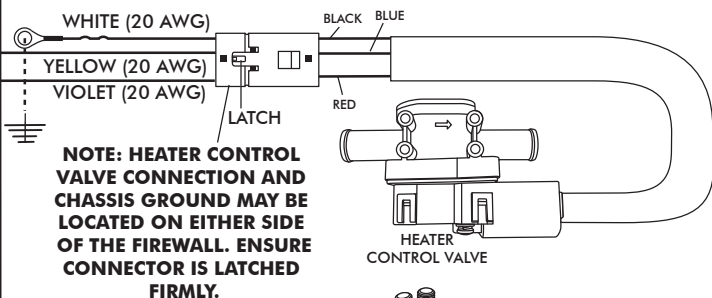
If using a Vintage Air control panel with back light, connect the 20 AWG tan wire to the vehicle's dash back light 0-12V using provided butt splice (PN 226004).

WIRING HARNESS (232020) →



FIREWALL

FIREWALL



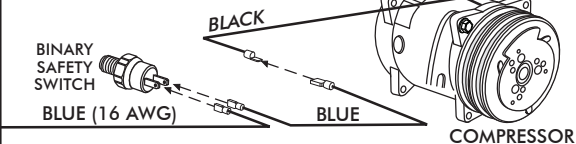
Heater Control Valve:

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.



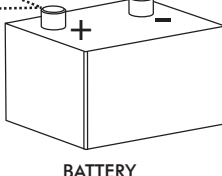
WHITE (12 AWG)

WHITE (20 AWG)

ORANGE (12 AWG)

RED (16 AWG)

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



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.



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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 in and out of heat and A/C 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

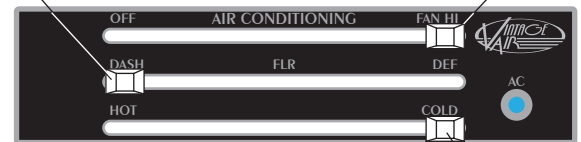
This lever/knob controls the mode positions, from DASH to FLOOR to DEFROST, with a blend in between.

Temperature Control

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

Mode Control

Blower Speed



Temperature Control

A/C Operation

Blower Speed

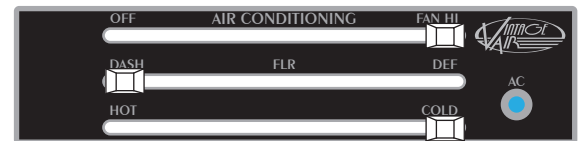
Adjust to desired speed.

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

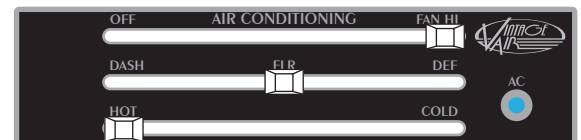
Adjust to desired speed.

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

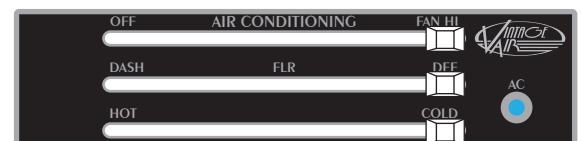
Adjust to desired speed.

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. All other functions work.	Check for damaged pins or wires in the control panel wire assembly and mating header at ECU. 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. 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 is charged.	System must be charged for compressor to engage. Check for faulty A/C potentiometer or associated wiring (not applicable to 3-pot controls). Check for disconnected or faulty thermistor.	Charge system. Check continuity to ground on white control head wire. Check for 5V on red control head wire. Check 2-pin connector at ECU housing.	Danger: Never bypass safety switch with engine running. Serious injury can result. 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.	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

Cut Along
Dotted Line

Cut Along
Dotted Line

Cut This
Area

Kick Panel Cut Out
Template

1968-72 Chevelle
without Factory Air



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Packing List: Evaporator Kit (561428)

No.	Qty.	Part No.	Description
1.	1	765200	Gen 5 Magnum Max Module with 404 ECU
2.	1	781428	Accessory Kit

Checked By: _____

Packed By: _____

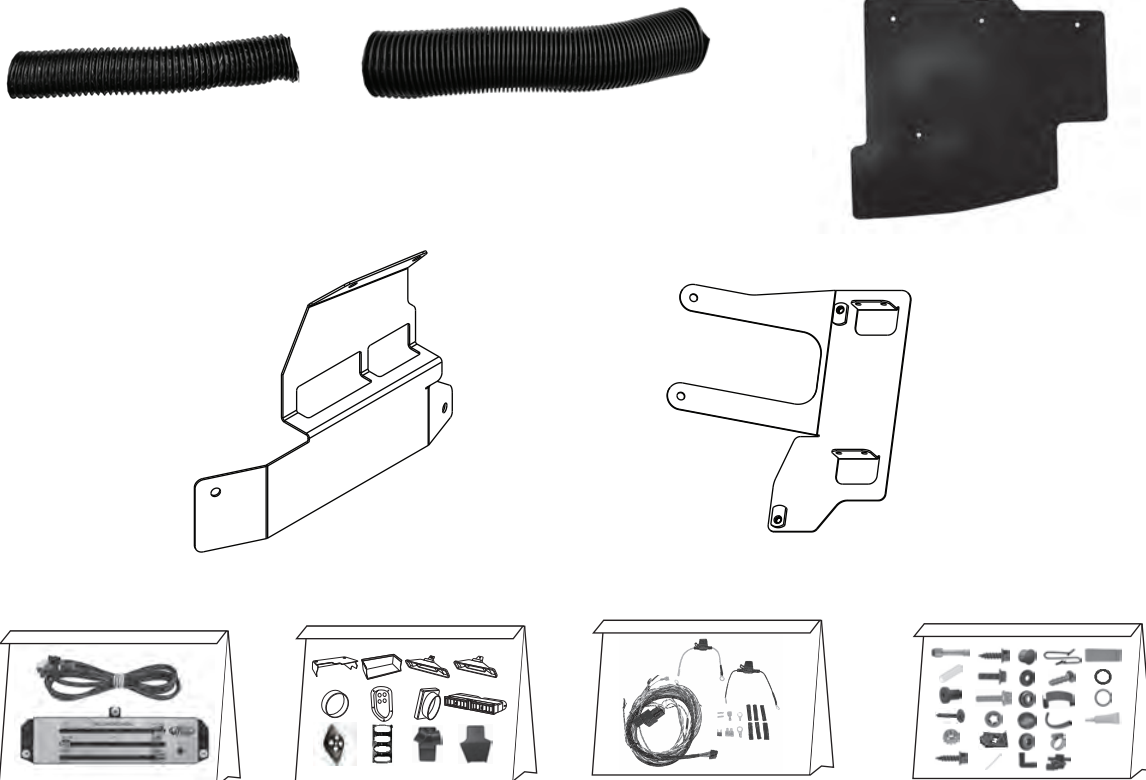
Date: _____

1



Gen 5 Magnum Max
Module with 404 ECU
765200

2



Accessory Kit
781428

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