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29. Evaporator Kit Packing List





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. (1 lb., 12 oz.) of **R134a**, charged by weight with a quality charging station or scale. NOTE: Use of the proper type and amount of refrigerant is critical to system operation and performance.

Other Systems: Consult manufacturer's guidelines.

Lubricant Capacities:

New Vintage Air-supplied Sanden Compressor: No additional oil needed (Compressor is shipped with proper oil charge).

All Other Compressors: Consult manufacturer (Some compressors are shipped dry and will need oil added).

Safety Switches

Your Vintage Air system is equipped with a binary pressure safety switch. A binary switch disengages the compressor clutch in cases of extreme low pressure conditions (Refrigerant Loss) or excessively high head pressure (406 PSI) to prevent compressor damage or hose rupture. A trinary switch combines Hi/Lo pressure protection with an electric fan operation signal at 254 PSI, and should be substituted for use with electric fans. Compressor safety switches are extremely important since an A/C system relies on refrigerant to circulate lubricant.

Service Info:

Protect Your Investment: Prior to assembly, it is critical that the compressor, evaporator, A/C hoses and fittings, hardlines, condenser and receiver/drier remained capped. Removing caps prior to assembly will allow moisture, insects and debris into the components, possibly leading to reduced performance and/or premature failure of your A/C system. This is especially important with the receiver/drier.

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

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

Bolts Passing Through Cowl and/or Firewall:

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

Heater Hose (Not Included With This Kit):

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



Important Wiring Notice—Please Read

Some Vehicles May Have Had Some or All of Their Radio Interference Capacitors Removed. There Should Be a Capacitor Found At Each of the Following Locations:

1. On the positive terminal of the ignition coil.

- 2. If there is a generator, on the armature terminal of the generator.
- 3. If there is a generator, on the battery terminal of the voltage regulator.

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

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

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

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

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

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



Engine Compartment

Before starting the installation, check the function of the vehicle (horn, lights, etc.) for proper operation. Study the instructions, illustrations & diagrams.
Remove the Following:
1. Battery and battery tray (retain) (See Figure 1, below).

- **2.** Drain radiator.
- 3. Hood latch assembly (retain) including hood latch support.
- Heater blower motor assembly (discard). To remove the heater blower motor assembly (under hood) and the air distribution system (under dash), remove inner fender (See Figure 3, below).
- 5. OEM heater hoses (discard) (See Figure 1, below).
- 6. Remove OEM heater wiring/vacuum harness molded grommet (See Figure 1, below).





Passenger Compartment

NOTE: Removal of dashboard is not required to install the evaporator. Vintage Air recommends that you utilize the factory service manual when you disassemble and reassemble the dashboard. Remove the Following:

1 Clove box door (See Figure 3

- **1.** Glove box door (See Figure 3, below).
- 2. Glove box (discard, retain screws) (See Figure 2, below).
- 3. Heater assembly and all related ducting (discard, retain screws) (See Figure 3, below).
- **4.** Driver/passenger side louver outlets (retain). Instrument panel must be removed to get to left outlet and control panel (See Figure 3, below).
- **5.** Control panel assembly (discard) (See Figure 3, below). Refer to control panel conversion kit instructions for installation of controls.
- **6.** Remove passenger side kick panel (retain). Disconnect passenger side fresh air cable from panel (See Figure 3, below). Disconnect driver/passenger cable astro-ventilation ducting (discard).
- 7. Remove OEM defrost duct assembly (discard).











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Evaporator Bracket and Heater Fittings Installation (Cont.)







Drain Hose Installation

- **1.** Locate evaporator drain on bottom of evaporator case.
- **2.** In line with the drain, lightly make a mark on the firewall. Measure one inch down and drill a 5/8" hole through the firewall (See Figure 13, below).
- 3. Install drain hose to bottom of evaporator unit and route through firewall (See Figure 13, below).



Center Louver Mounting Holes

- Cut out template provided on Page 27. Slide the template under the dash as shown in Figure 14, below. Align the left and right sides of template with the crease in the dash as shown in Figures 14 & 14a, below. Align bottom edge of the template along the bottom edge of dash as shown in Figures 14 & 14a, below.
- Once template is aligned correctly and taped into place, mark mounting holes on dash. Once holes are marked in the correct location, remove template and drill (2) 3/16" holes in dash for the center louver bezel (See Figure 14a, below).



Center Louver Installation
 I. Install the center louver bezel under the dash and secure using (2) 10-32 x 3/4" pan head screws

- w/ washers and 10-32 nuts w/star washers as shown in Figure 15, below.
- **2.** Install the center louver into the bezel as shown in Figure 15, below.
- 3. Reinstall center console (if equipped) (See Figure 15a, below).





1970-73 Camaro Standard Hose Kit

- Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 16, above) and connect the 90° female fitting w/ R134a service port to the #8 discharge port on the compressor. Route the 45° female fitting to the #8 condenser hardline coming through the core support (See Figure 17, Page 17). Tighten each fitting connection as shown in Figure 16, above.
- 2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Figure 16, above) and connect the #10 135° female fitting w/ R134a service port to the #10 suction port on the compressor. Route the 90° female fitting to the #10 evaporator (See Figure 12a, Page 13, and Figure 17, Page 17). Tighten each fitting connection as shown in Figure 16, above.
- 3. Locate the #6 evaporator A/C hose. Lubricate (2) #6 O-rings (See Figure 16, above) and connect the 45° female fitting to the #6 hardline coming through the core support from the drier. Route the 90° female fitting to the #6 evaporator (See Figure 12a, Page 13, and Figure 17, Page 17). Tighten each fitting connection as shown in Figure 16, above.

1974-78 Camaro Standard Hose Kit

- Locate the #8 compressor A/C hose. Lubricate (2) #8 O-rings (See Figure 16, above) and connect the 90° female fitting w/ R134a service port to the #8 discharge port on the compressor. Route the 45° female fitting to the #8 condenser hardline coming through the core support (See Figure 18, Page 18). Tighten each fitting connection as shown in Figure 16, above.
- 2. Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (See Figure 16, above) and connect the #10 135° female fitting w/ R134a service port to the #10 suction port on the compressor. Route the 90° female fitting to the #10 evaporator (See Figure 12a, Page 13, and Figure 18, Page 18). Tighten each fitting connection as shown in Figure 16, above.
- 3. Locate the #6 evaporator A/C hose. Lubricate (2) #6 O-rings (See Figure 16, above) and connect the 90° female fitting to the #6 hardline coming through the core support from the drier. Route the 90° female fitting to the #6 evaporator (See Figure 12a, Page 13, and Figure 18, Page 18). Tighten each fitting connection as shown in Figure 16, above.

Modified A/C Hose Kit

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







Final Steps

- **1.** Install duct hoses as shown in Figure 21, Page 18.
- 2. Install 3/8" ID grommet (See Figure 19, below).
- Route A/C wires through 3/8 ID grommet as shown on Figure 19, below (12 volt/ground/binary switch/ heater valve).
- 4. Install control panel assembly.
- Plug the wiring harness into the ECU module on the sub case as shown in Figure 21, Page 20 (Wire according to wiring diagram on Pages 21 & 22).
- 6. Install glove box (See Figure 20, below).
- 7. Reinstall all previously removed items (battery tray & battery).
- **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 certified automotive air conditioning technician.
- **11.** Evacuate the system for a minimum of 45 minutes prior to charging, and leak check prior to servicing.
- **12.** Charge the system to the capacities stated on the information page (Page 4) of this instruction manual.
- **13.** See Operation of Controls procedures on Page 23.







Wiring Diagram



- Battery and Circuit Breaker Is Unprotected and Should Be Carefully Routed to Avoid a Short Circuit).
 Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C
- Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C Compressor.





Operation of Controls

On Gen IV systems with three lever/knob controls, the temperature control toggles between economy/heat and A/C operations. To activate A/C, move the temperature lever all the way to COLD and then back it off to the desired vent temperature. For economy/heat operation, move the temperature lever 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.



			Troublesho	Troubleshooting Guide
Symptom	Condition	Checks	Actions	Notes
1a. No oth	No other functions work	Check for damaged pins or Wires in control head plug.	Verify that all pins are inserted into plug. Ensure that no pins are bent or damaged in ECU.	1 5 1
Blower stays on high speed when		-	Verify continuity to chassis ground with white control head wire at various points.	 Loss of ground on this wire renders control head inoperable.
1	All other functions work.	Check for damaged blower switch or potentiometer and associated wiring.		► See blower switch check procedure.
1 b 901196		Unplug 3-wire BSC control connector from ECU. If blower	Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU.	
Provide the stays on her stays			Check to ensure that no BSC wiring is damaged or shorted to vehicle ground. The BSC operates the blower by ground side pulse width modulation switching. The positive wire to the blower will always be hot. If the	
			"ground" side of the blower is shorted to chassis ground, the blower will run on HI.	
1970-78		stays running, BSC is either improperly wired or damaged.	→ Replace BSC (This will require removal of evaporator from vehicle).	► No other part replacements should be necessary.
2.		Svstem must be charged for	- - -	Danger: Never bypass safety switch with
	System is not charged.	o engage.	→ Unarge system or bypass pressure switch.	 engine running. Serious injury can result.
A Compressor will on turn on (All other functions		Check for faulty A/C potentiometer or associated	Check continuity to around on white control head wire	To check for proper pot function, check voltage at
work).	Svstem is charaed.		Check for 5V on red control head wire.	 White/ plue wire. Voltage should be between 0V and 5V, and will vary with pot lever position.
		Check for disconnected or faulty thermistor.	→ Check 2-pin connector at ECU housing.	Disconnected or faulty thermistor will cause
				compressor to be disabled.
З.		Check for faulty A/C potentiometer or associated	★ Repair or replace pot/control wiring.	Red wire at A/C pot should have approximately 5V
Compressor will not turn off				
(All other functions work).				Blue wire should vary between 0V and 5V when
	/	Check for faulty A/C relay.	➡ Replace relay.	lever is moved up or down.

25			Troubleshooting Guide (Cont.	ide (Cont.)
Symptom	Condition	Checks	Actions	Notes
4.	en engine is not shuts off when started early Gen IV, ble on all	Noise interference from either ignition or alternator.	Install capacitors on ignition coil and alternator. Ensure good ground at all points. Relocate coil and associated viring 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 guality oscilloscope. Spikes
System will not turn on, or runs intermittently.	Aversions). Will not turn on under	Verify connections on power lead, ignition lead, and both white ground wires.	Check for positive power at heater valve green wire and blower red wire. Check for ground on control head white wire.	greater than to will shut down the ECU. Install a radio capacitor at the positive post of the ignition coil (See radio capacitor installation builterio)
196 REV C 1:	any conditions.	Verify battery voltage is greater than 10 volts and less than 16.	Verify proper meter function by checking the condition of a known good battery.	faulty alternator or worn out battery can also result in this condition.
Loss of mode door	No mode change at all.	Check for damaged mode switch or potentiometer and associated wiring.		Typically caused by evaporator housing installed in a bind in the
	Partial function of mode doors.	Check for obstructed or binding mode doors. Check for damaged stepper motor or wiring.		 vehicle. Be sure all mounting locations line up and don't have to be forced into position.
9 WO	Battery voltage is at least	Check for at least 12V at	Ensure all system grounds and power connections are	System shuts off blower at 10/ Poor connections or
Blower turns on and off rapidly.	ery voltage is less 12V.	/ battery or		 Shutdown at up to 11V.
5 7. 5 Erratic functions of blower, mode, temp, etc.		 Check for damaged switch or pot and associated wiring. 	★ Repair or replace.	
8. When ignition is turned on, blower momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.		This is an indicator that the system has been reset. Be sure the red power wire is on the battery post, and not on a switched source. Also, if the system is pulled below 7V for even a split second, the system will reset.	 Run red power wire directly to battery. 	







Center Louver Template





Packing List Evaporator Kit (561173)

