an ISO 9001:2008 Registered Company

Facel Vega

with Left Hand Drive Evaporator Kit *with* HK500 Control 589003

FV3B (1957-58)
FV4 (1957-58)
HK (1958-61)
EX (1958)
EX1 (1958-61)
EX2 (1961-65)

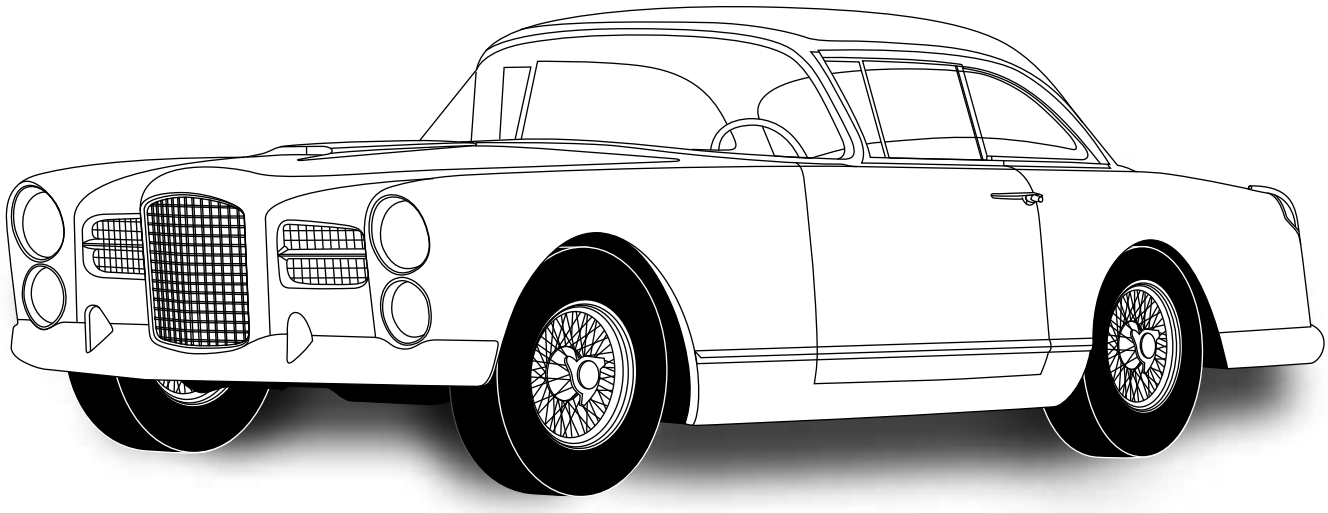

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Table of Contents

1. **Cover**
2. **Table of Contents**
3. **Packing List/Parts Disclaimer**
4. **Information Page**
5. **Wiring Notice**
6. **Engine Compartment, Condenser Assembly & Installation, Compressor & Brackets, Pulleys**
   Figure 1
7. **Passenger Compartment**
   Figures 2, 2a & 3
8. **A/C Firewall Cover Assembly Installation, Heater Cover Installation**
   Figures 4, 5 & 5a
9. **Evaporator/Cowl Front Bracket Installation, A/C Hose Routing**
   Figures 6, 6a & 7
10. **Front & Rear Evaporator Bracket Installation**
    Figures 8, 8a & 8b
11. **Heater Hardline Installation**
    Figures 9, 10 & 10a
12. **Evaporator Installation**
    Figures 11, 11a & 11b
13. **Drain Hose Installation**
    Figures 12 & 13
14. **A/C Hose, Heater Hose & Heater Control Valve Installation, A/C & Heater Hose Routing**
    Figure 14
15. **Final Steps**
    Figures 15, 16 & 16a
16. **Control Panel & Duct Hose Routing**
    Figure 17, 17a, 17b & 18
17. **Wiring Diagram**
18. **Gen IV Wiring Connection Instruction**
19. **Operation of Controls**
20. **Troubleshooting Information**
21. **Troubleshooting Information (Cont.)**
22. **Evaporator Kit Packing List**

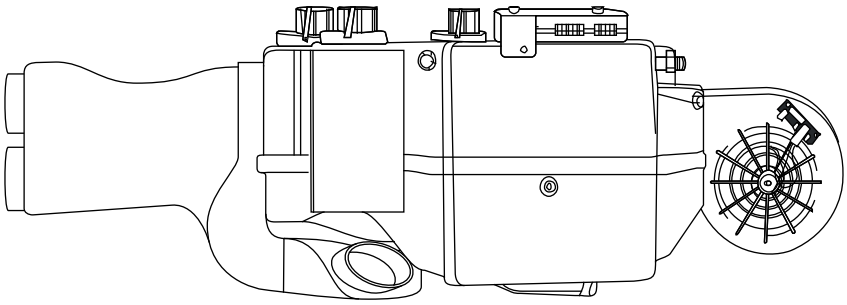
Packing List
Evaporator Kit (589003)

No.	Qty.	Part No.	Description
1.	1	768005	Facel Vega Evaporator Sub Case w/ 204 ECU
2.	1	789003	Accessory Kit, 1957-65 Facel Vega w/ HK500 Control

**** 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

Facel Vega Evaporator Sub Case w/ 204 ECU 768005



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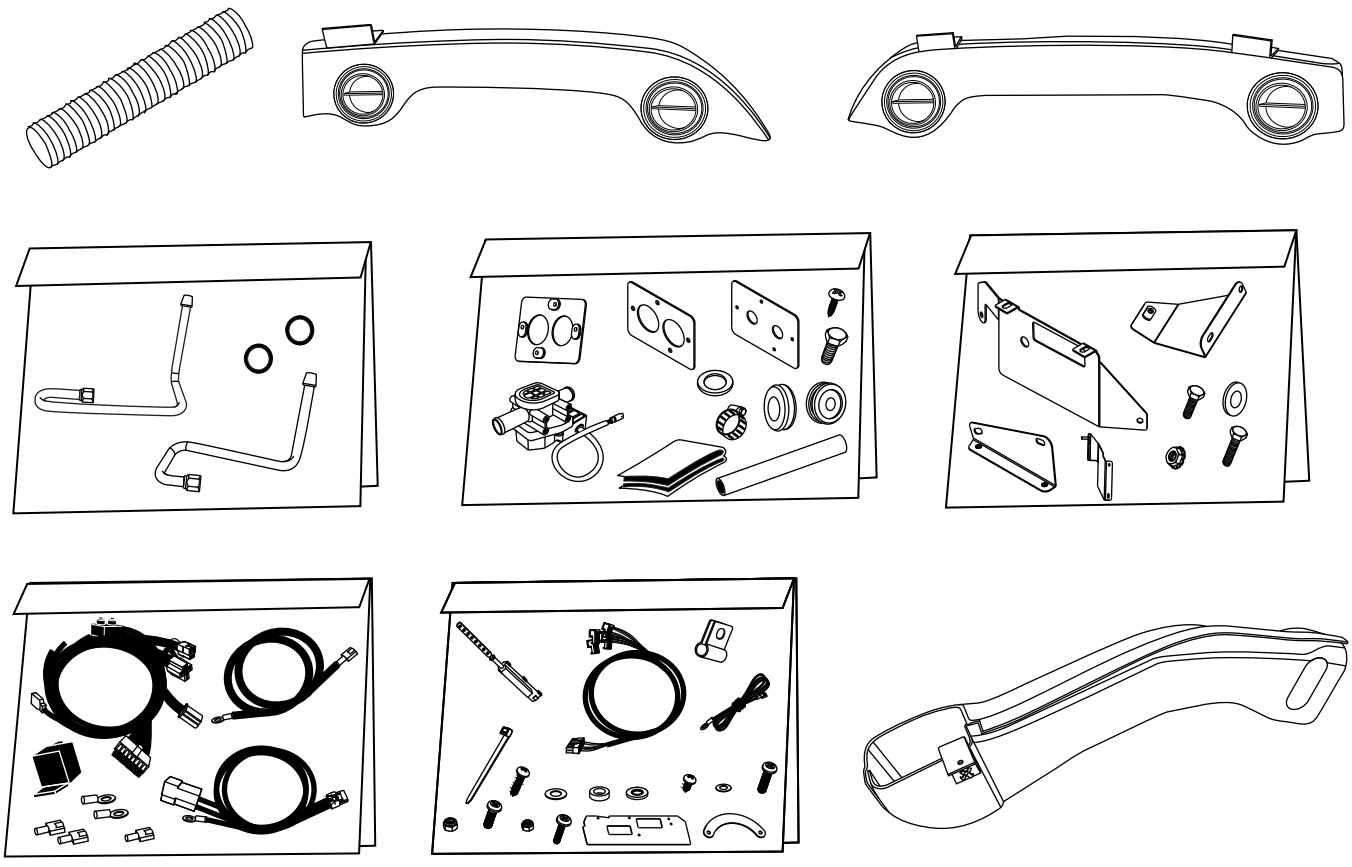


Accessory Kit 789003

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

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

NOTE: Before starting the installation, check the function of the vehicle (horn, lights, etc.) for proper operation, and study the instructions, illustrations & diagrams.

Perform the Following:

1. Disconnect battery (See Figure 1, below).

2. Remove radiator cover (retain) (See Figure 1, below).

3. Drain & remove radiator (retain).

4. Remove OEM heater hoses (discard) (See Figure 1, below).

5. Remove heater blower motor assembly (discard).

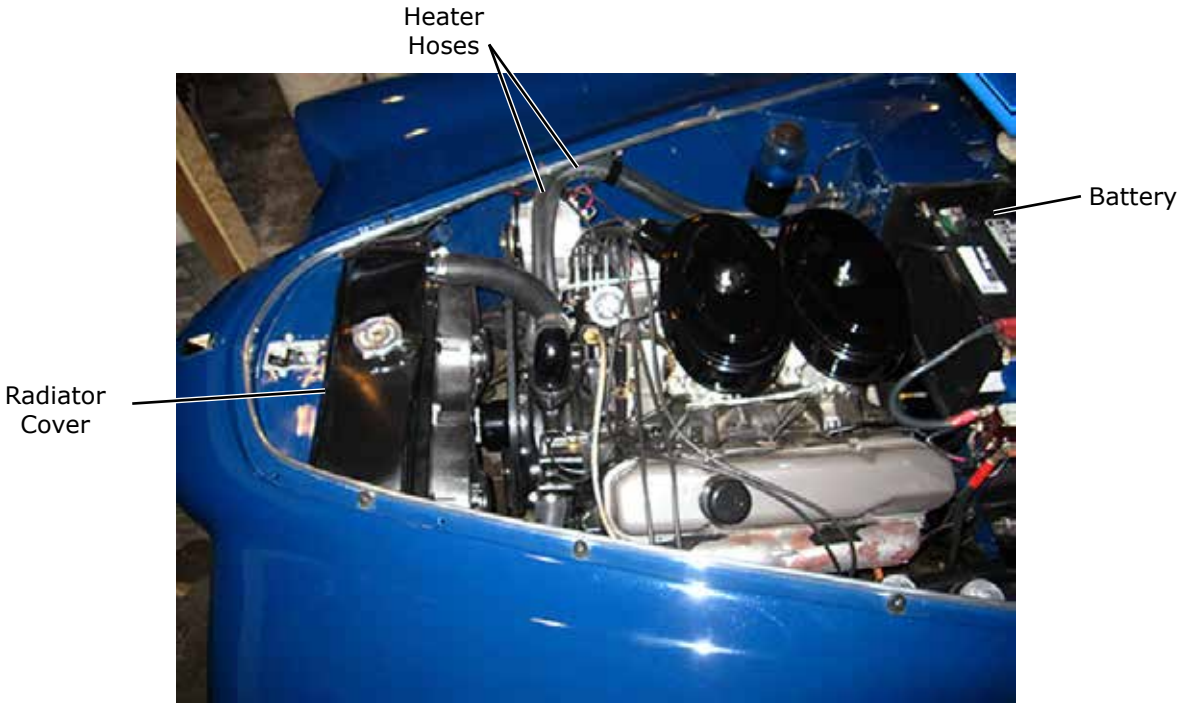


Figure 1

Condenser Assembly & Installation

1. Refer to separate instructions included with the condenser kit to install the condenser.

2. Binary switch installation (Refer to condenser instructions).

Compressor & Brackets

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

Pulleys

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

Passenger Compartment

Perform the Following:

1. Remove the dash pad (retain) (See Figure 2, below).

2. Remove the dash (retain) (See Figure 2, below).

3. Remove the fresh air ventilation duct (discard) (See Figure 2a, below).

4. Remove the OEM heater/blower motor assembly (discard) (See Figures 2a and 3, below).

Figure 2

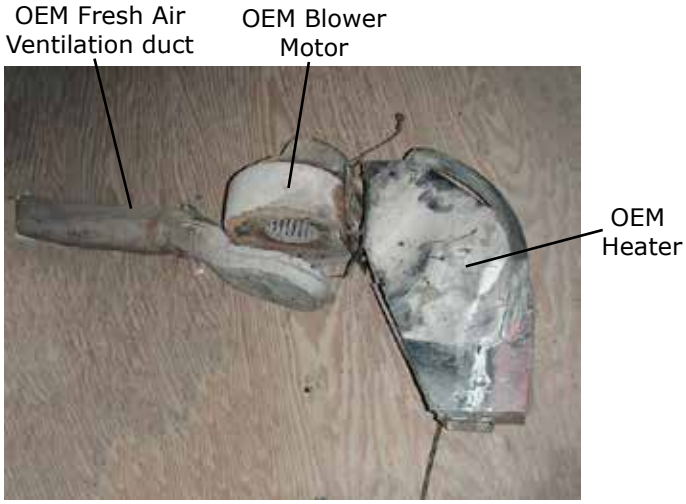


Figure 2a

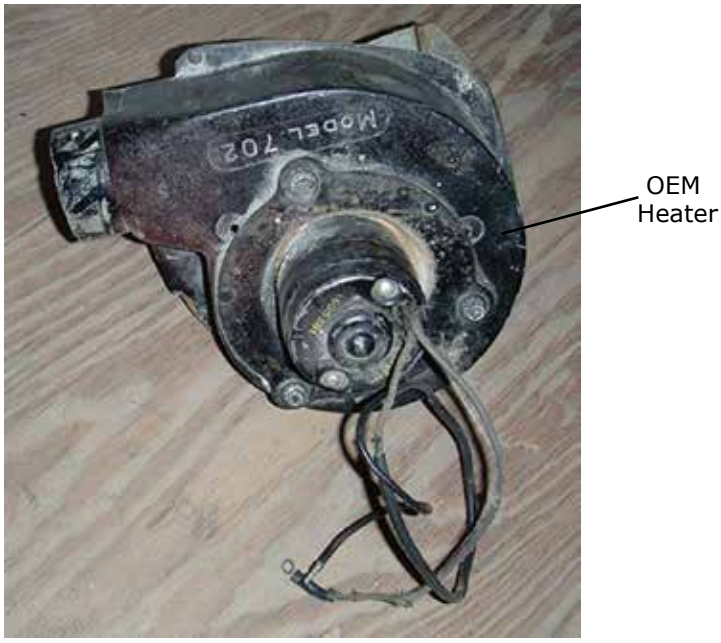


Figure 3

A/C Firewall Cover Assembly Installation

1. Install (2) 1 ¼" grommets in A/C firewall cover assembly located in fender well outside engine compartment (See Figure 4, below, and Figure 14, Page 14).

2. Apply a 1/4" bead of silicone around the back side of the A/C firewall cover assembly.

3. Install A/C firewall cover assembly on firewall under passenger side fender well using (3) 1/4-20 x 3/4" hex bolts. Secure with (3) 1/4" flat washers and (3) 1/4-20 nuts with star washers (See Figure 4, below).

4. Using the remaining hole in the firewall cover as a template, drill a 5/16" hole through the firewall (See Figure 4, below).

Figure 4

Heater Cover Installation (Original Heater Hose Routing)

1. Install heater cover gasket inside engine bay between heater cover and firewall, and secure to passenger compartment heater cover using (4) 10-32 x 1" Phillips pan head screws (See Figures 5 & 5a, below).

2. Install 1 ⅛" plug in firewall (See Figure 5, below).

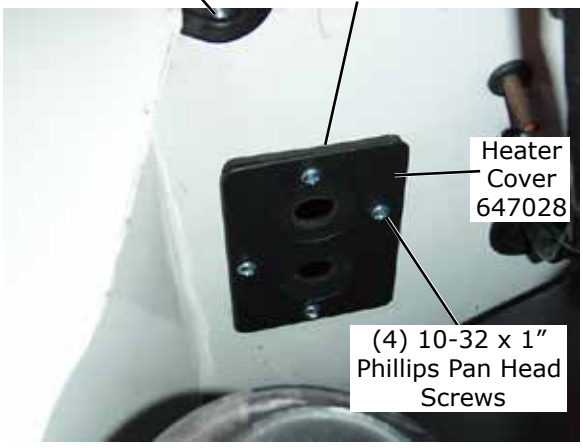


Figure 5

Figure 5a

Evaporator/Cowl Front Bracket Installation

1. Using measurements in Figure 6, below, drill (2) 1/4” holes in cowl.

2. Install evaporator/cowl front bracket assembly to cowl using (2) 1/4-20 x 3/4” hex bolts (See Figure 6a, below).

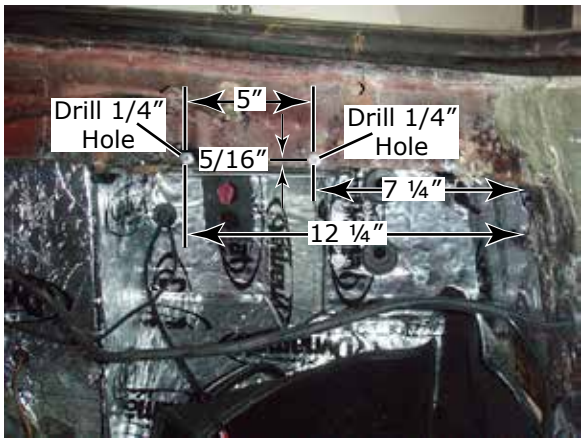


Figure 6

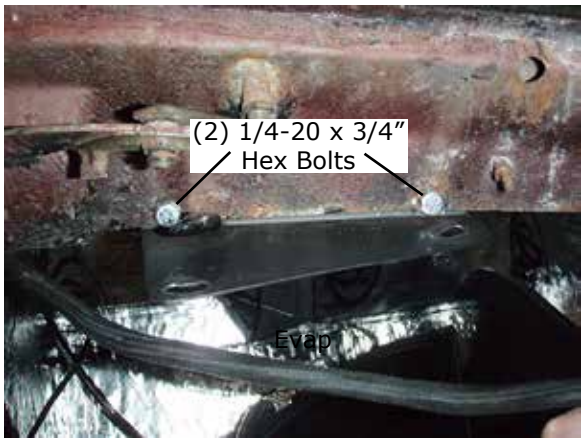


Figure 6a

A/C Hose Routing

1. Route #6 and #10 A/C hoses through A/C firewall cover assembly (In fender well area, not engine compartment) (See Figure 7, below).

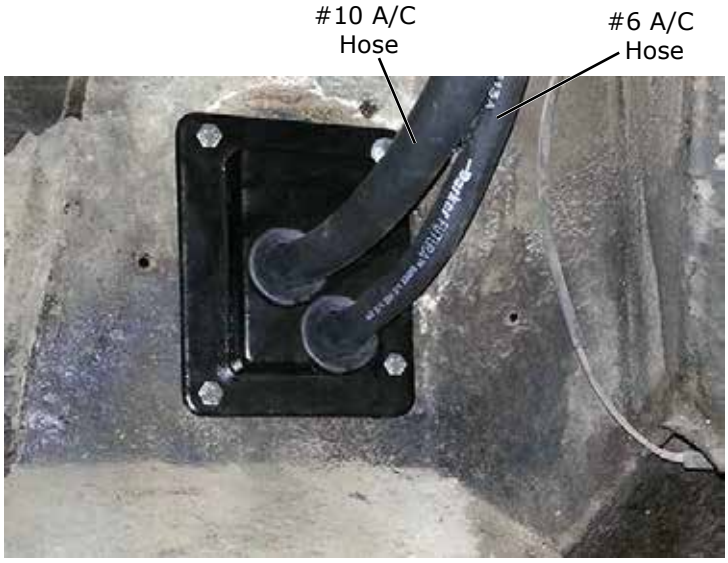


Figure 7

Front & Rear Evaporator Bracket Installation

1. Install (2) relays onto blower relay bracket using (2) 10-32 x 1/2" Phillips pan head screws and (2) 10-32 nuts with star washers (See Figure 8a, below).
2. On a workbench, install driver and passenger side rear evaporator brackets and blower relay bracket onto evaporator as shown in Figures 8 & 8a, below.
3. Install front mounting bracket onto evaporator using (2) 1/4-20 x 1/2" hex bolts, and tighten as shown in Figure 8b, below.

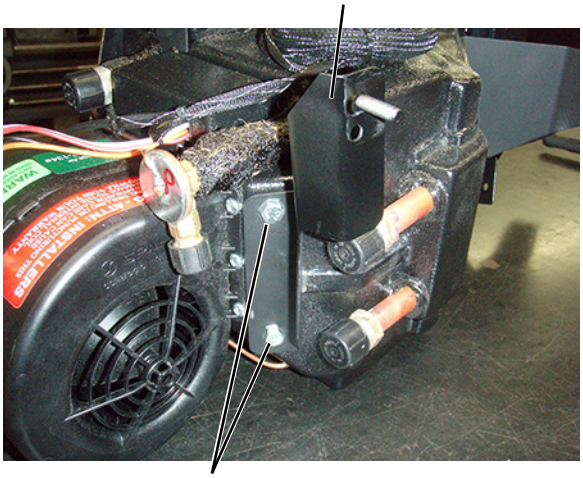


Figure 8

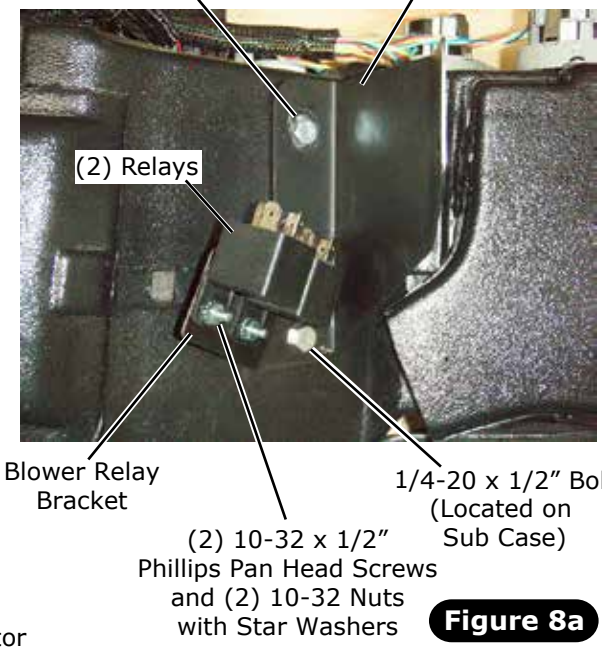


Figure 8a

Figure 8b

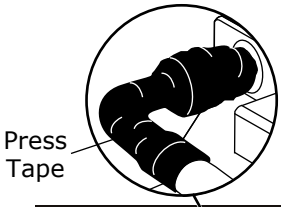
Heater Hardline Installation

1. Install (2) heater hardlines onto evaporator with properly lubricated O-rings (See Figure 9, below, and Figure 13, Page 13).

Figure 9

A/C Hose Installation

1. Lay evaporator on passenger side floorboard, and install #6 and #10 A/C hoses onto evaporator with properly lubricated O-rings (See Figures 10 & 10a, below, and Figure 13, Page 13).



NOTE: Press tape should cover all metal portions of #10 fitting.

Figure 10

#6 A/C Hose

Figure 10a

#10 A/C Hose

Evaporator Installation

1. Lift evaporator unit up under the dashboard. Secure passenger side (left hand drive models) evaporator bracket loosely to the firewall from the passenger side fender well using a 1/4” washer and 1/4-20 nut with star washer (See Figure 11, below).
2. Secure driver side evaporator bracket loosely to the firewall from the engine compartment side of the firewall using a 1/4-20 x 3/4” hex bolt and 1/4” washer (See Figure 11a, below).
3. Using (2) 1/4-20 x 3/4” hex bolts, (2) 1/4” washers and (2) 1/4-20 nuts with star washers, secure the front evaporator mounting bracket to the evaporator/cowl front bracket (See Figure 11b, below).
4. Verify that the evaporator unit is level and square to the dash, and then tighten all mounting bolts. **NOTE: Tighten the bolt on firewall first, and then tighten the front mounting bracket screws.**

Figure 11

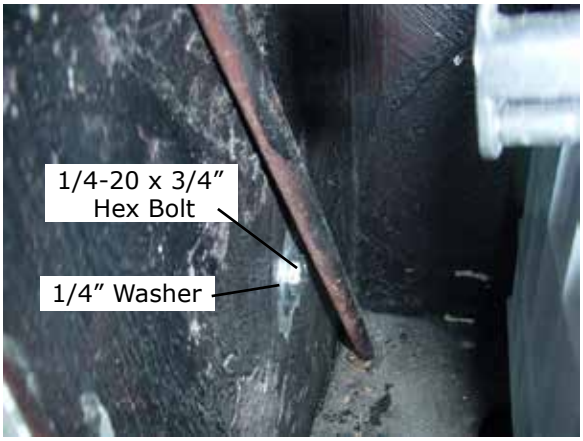


Figure 11a

Figure 11b

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 12, right).

3. Install drain hose to bottom of evaporator unit and route through firewall (See Figure 12, right).

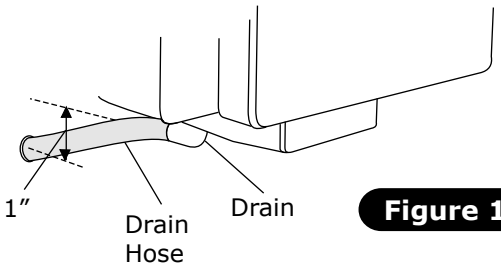
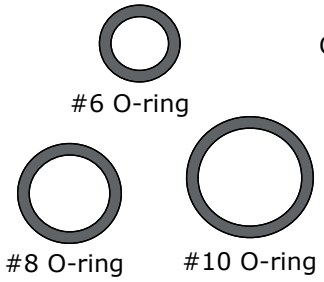
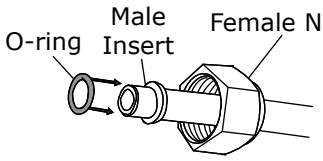


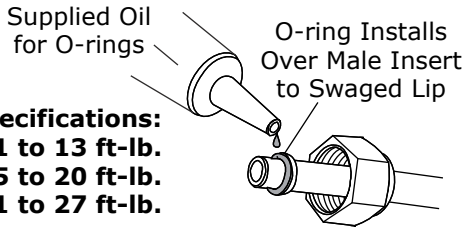
Figure 12

Lubricating O-rings





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



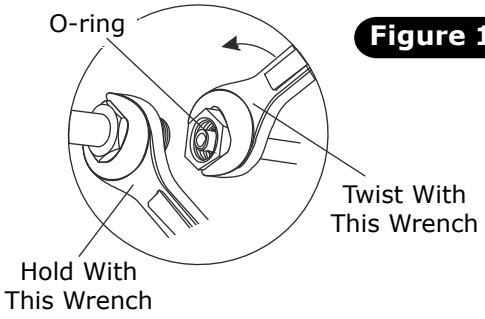


Figure 13

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

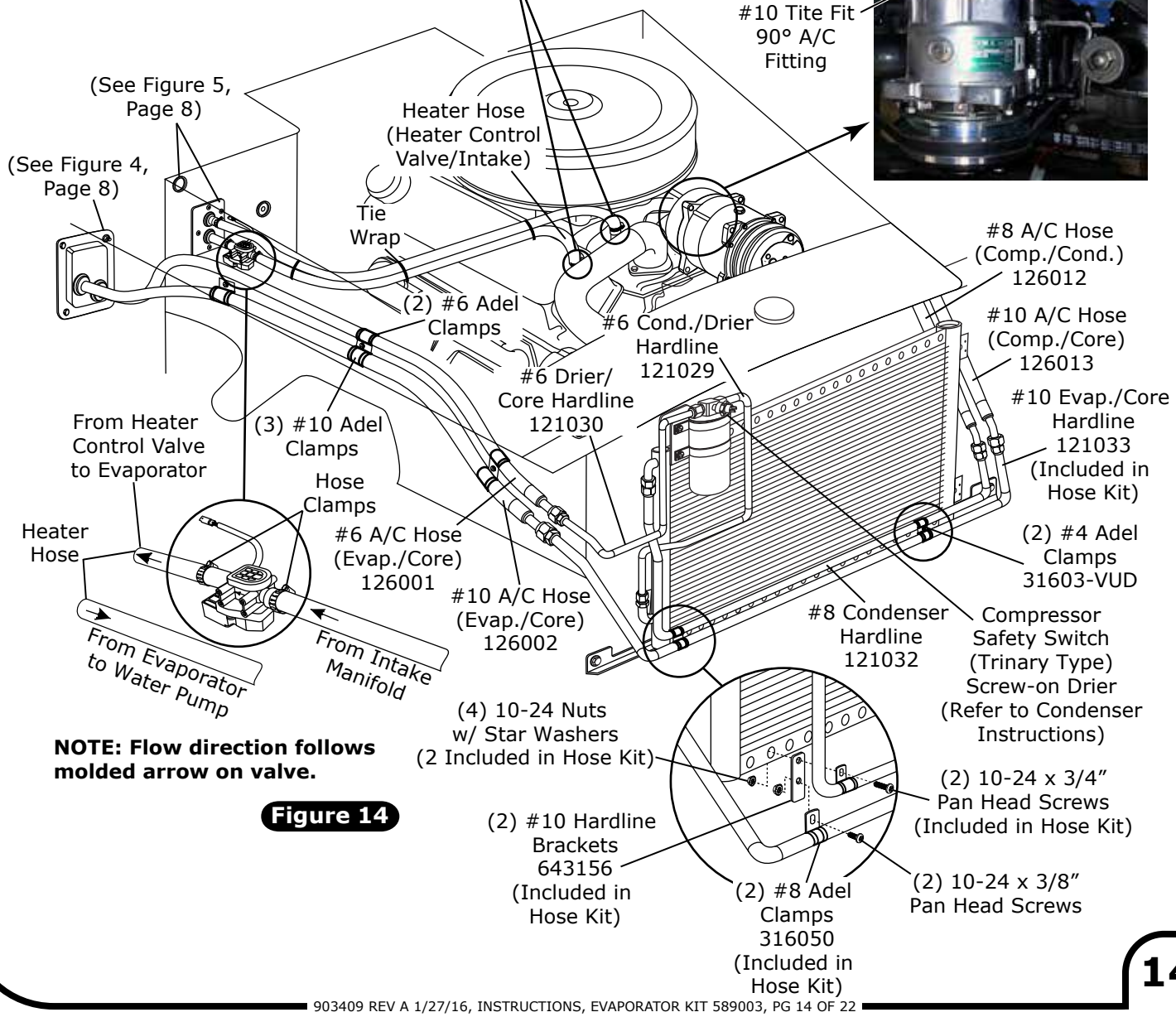
A/C Hose, Heater Hose & Heater Control Valve Installation

1. Route A/C hoses as shown in Figure 14, below.

2. Route a piece of heater hose from the water pump to the top heater fitting of the heater core as shown in Figure 9, Page 11, and Figure 14, below. Secure using hose clamps.

3. Route a piece of heater hose from the intake to the bottom heater fitting of the heater core as shown in Figure 9, Page 11, and Figure 14, below. **NOTE: Install heater control valve in line with intake manifold (pressure side) heater hose, and secure using hose clamps as shown in Figure 14, below. Also note proper flow direction.**

A/C & Heater Hose Routing



NOTE: Flow direction follows molded arrow on valve.

Figure 14

Final Steps

1. Install duct hoses as shown in Figures 17 & 17a, Page 16. Install defrost duct as shown in Figures 17b & 17c, Page 16.
2. Route A/C wires (12 volt/grounds/trinary switch/heater valve) through 1 ¼" x 1" grommet with 1/2" ID hole as shown in Figure 15, below.
3. Install control panel assembly.
4. Plug the wiring harnesses into the ECU module on the sub case as shown in Figure 18, Page 16 (Wire according to wiring diagrams on Pages 17 and 18).
5. Reinstall dash and all previously removed items.
6. Install driver and passenger side under dash louvers between dash and padded trim (See Figures 16 & 16a, below).
7. 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.
8. Double check all fittings, brackets and belts for tightness.
9. Vintage Air recommends that all A/C systems be serviced by a certified automotive air conditioning technician.
10. Evacuate the system for a minimum of 45 minutes prior to charging, and perform a leak check prior to servicing.
11. Charge the system to the capacities stated on Page 4 of this instruction manual.
12. See Operation of Controls procedures on Page 19.

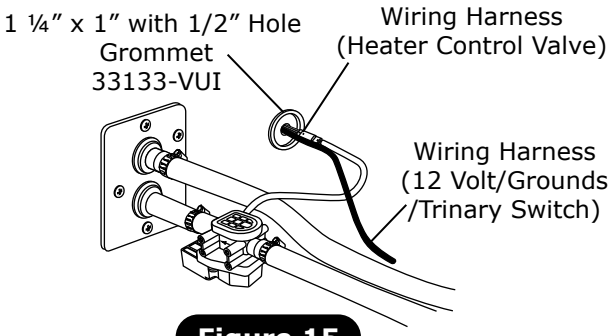


Figure 15

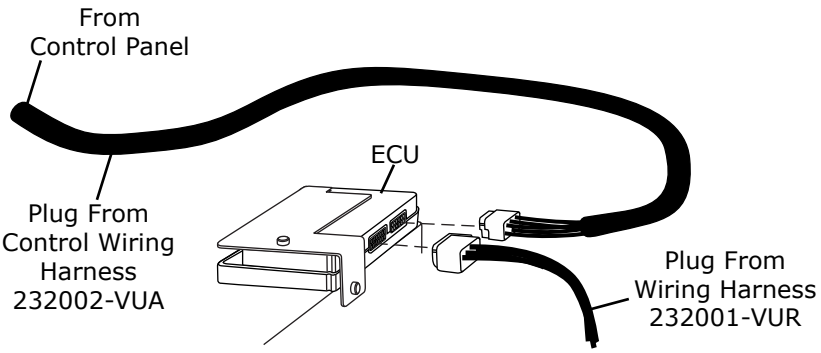


Figure 16

Figure 16a

Control Panel & Duct Hose Routing

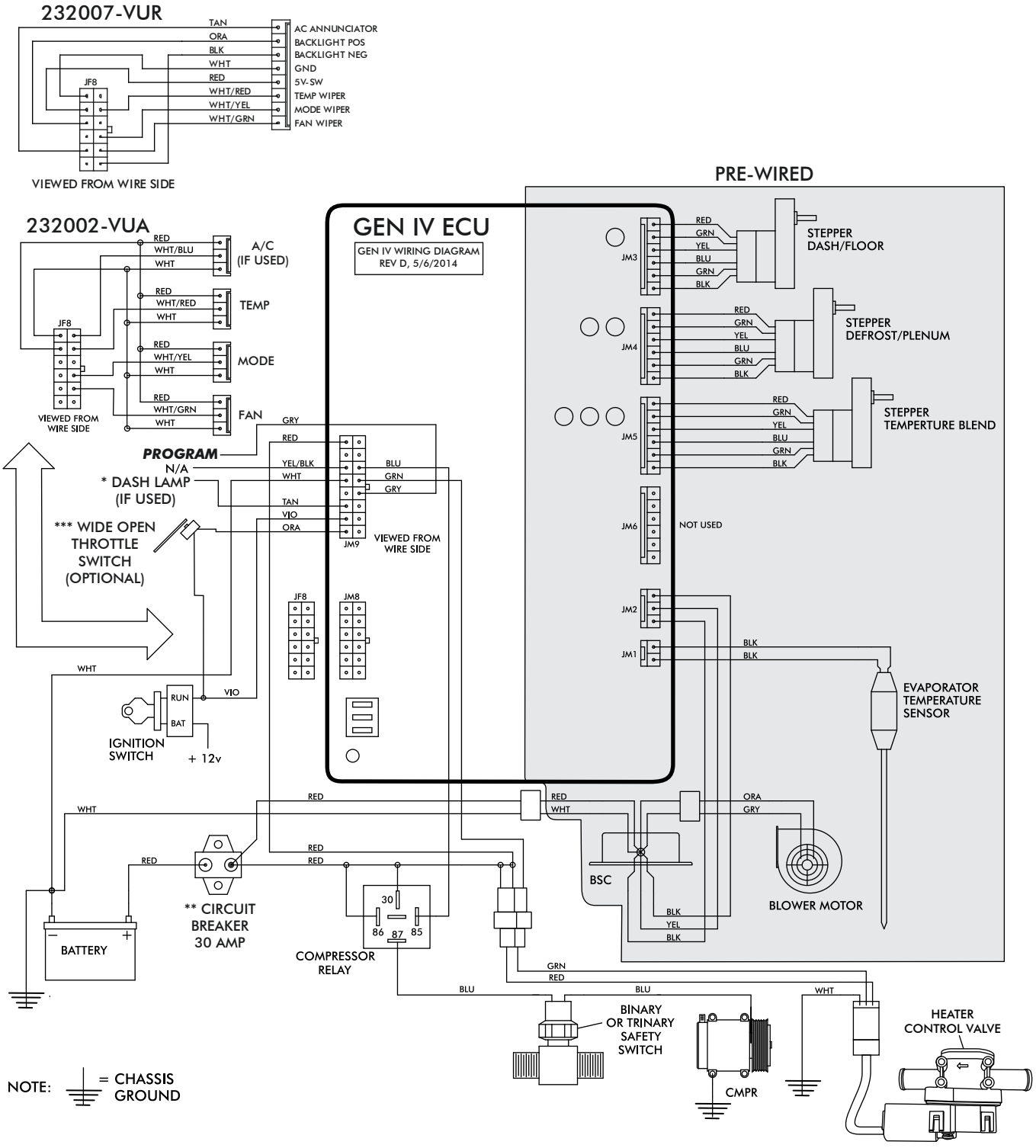
Figure 17

Figure 17a

Figure 17b

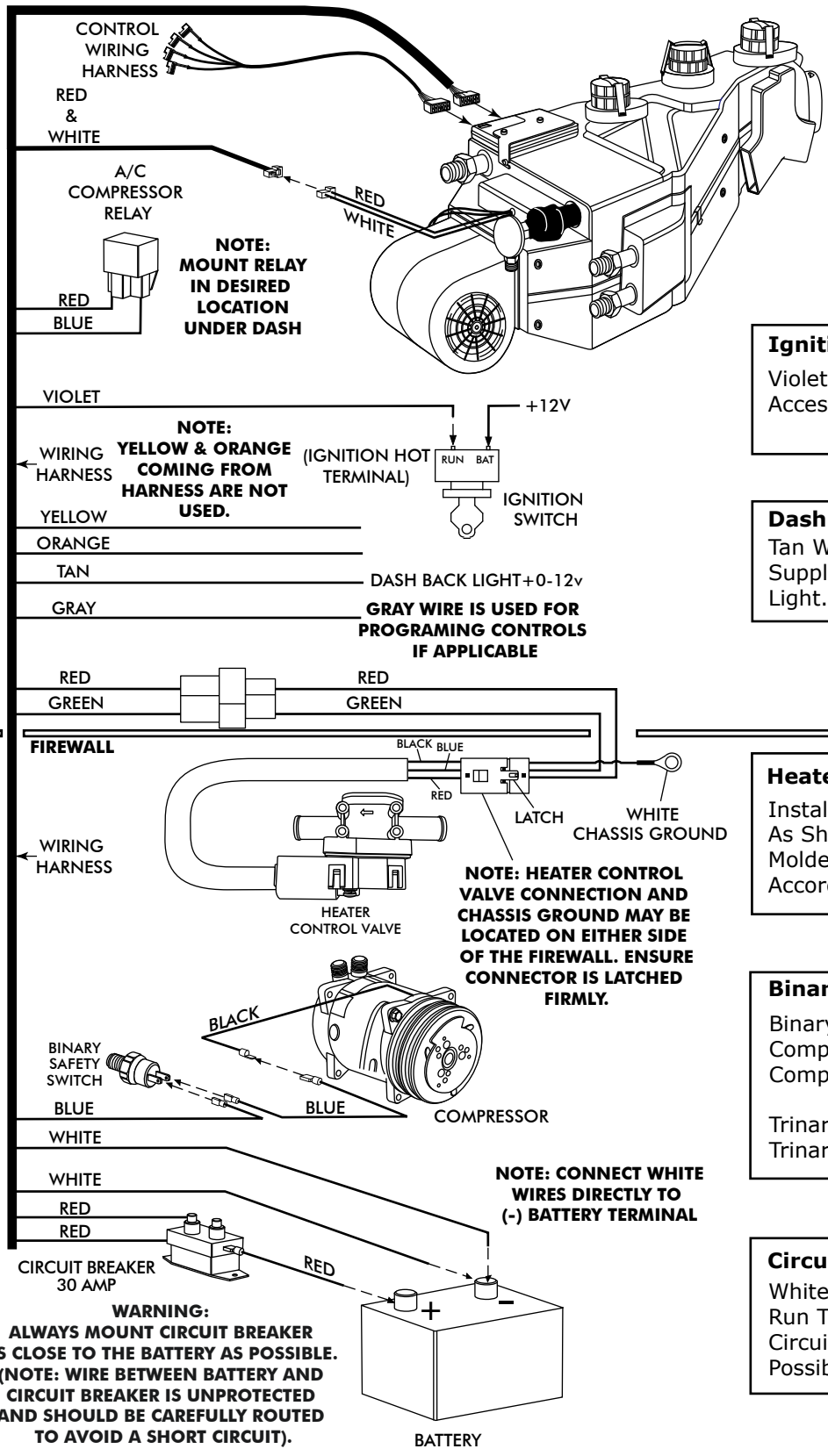
Figure 17c

Wiring Diagram



- **Dash Lamp Is Used Only With Type 232007-VUR Harness.**
- **Warning: Always Mount Circuit Breaker As Close to the Battery As Possible. (NOTE: Wire Between Battery and Circuit Breaker Is Unprotected and Should Be Carefully Routed to Avoid a Short Circuit).**
- **Wide Open Throttle Switch Contacts Close Only at Full Throttle, Which Disables A/C Compressor.**

Gen IV Wiring Connection Instruction



Ignition Switch:

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

Dash Light:

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

Heater Control Valve:

Install With Servo Motor Facing Down, As Shown. Note Flow Direction Arrow Molded Into Valve Body, And Install Accordingly.

Binary/Trinary & Compressor:

Binary: Connect As Shown (Typical Compressor Wiring). Be Sure Compressor Body Is Grounded.

Trinary Switch: Connect According To Trinary Switch Wiring Diagram.

Circuit Breaker/Battery:

White **Must** Run To (-) Battery. Red May Run To (+) Battery Or Starter. Mount Circuit Breaker As Close to Battery As Possible.

Operation of Controls

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

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

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

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

A/C Operation

Blower Speed
Adjust to desired speed.

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

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

Heat Operation

Blower Speed
Adjust to desired speed.

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

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

Defrost/De-fog Operation

Blower Speed
Adjust to desired speed.

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).

Troubleshooting Guide

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

Troubleshooting Guide (Cont.)

Symptom	Condition	Checks	Actions	Notes
4. System will not turn on, or runs intermittently.	Works when engine is not running; shuts off when engine is started (Typically early Gen IV, but possible on all versions).	Noise interference from either ignition or alternator.	Install capacitors on ignition coil and alternator. Ensure good ground at all points. Relocate coil and associated wiring away from ECU and ECU wiring. Check for burned or loose plug wires.	Ignition noise (radiated or conducted) will cause the system to shut down due to high voltage spikes. If this is suspected, check with a quality oscilloscope. Spikes greater than 16V will shut down the ECU. Install a radio capacitor at the positive post of the ignition coil (See radio capacitor installation bulletin). A faulty alternator or worn out battery can also result in this condition.
	Will not turn on under any conditions.	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.	
		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.	
5. Loss of mode door function.	No mode change at all.	Check for damaged mode switch or potentiometer and associated wiring.		Typically caused by evaporator housing installed in a bind in the vehicle. Be sure all mounting locations line up and don't have to be forced into position.
	Partial function of mode doors.	Check for obstructed or binding mode doors.		
		Check for damaged stepper motor or wiring.		
6. Blower turns on and off rapidly.	Battery voltage is at least 12V.	Check for at least 12V at circuit breaker.	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.	
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.	

Packing List
Evaporator Kit (589003)

No.	Qty.	Part No.	Description	
1.	1	768005	Facel Vega Evaporator Sub Case w/ 204 ECU	_____
2.	1	789003	Accessory Kit, 1957-65 Facel Vega w/ HK500 Control	_____

Checked By: _____
Packed By: _____
Date: _____

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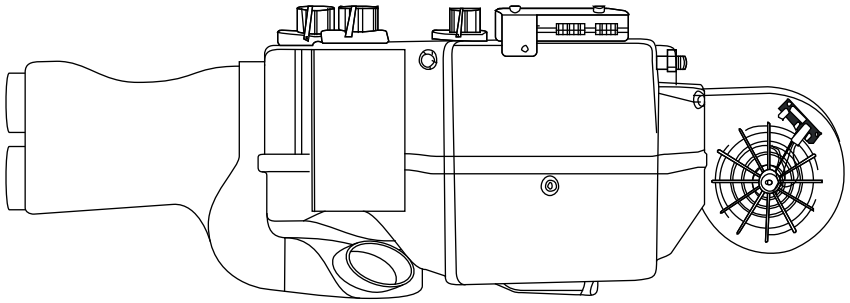

Facel Vega Evaporator Sub Case w/ 204 ECU 768005

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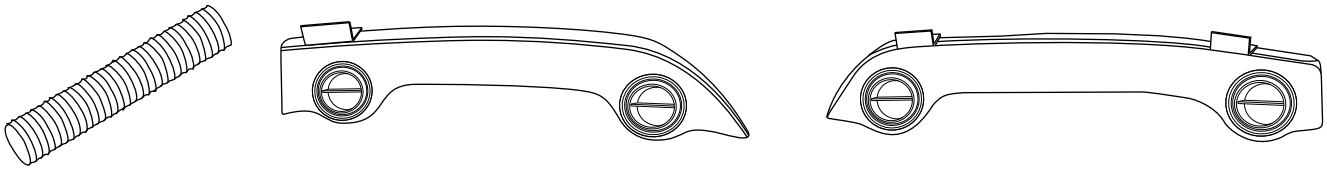

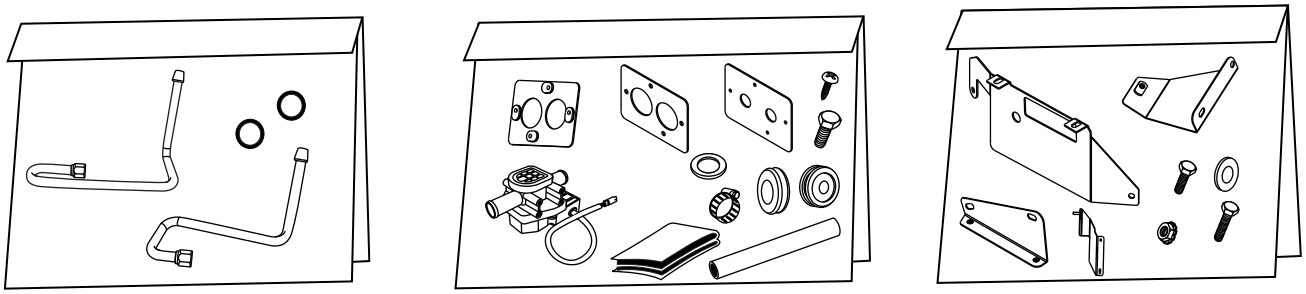

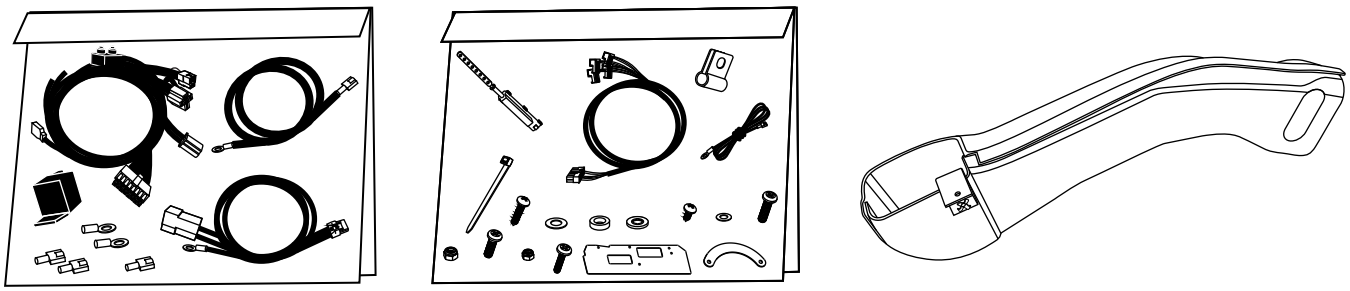

Accessory Kit 789003

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