1967-68 CAMARO
WITHOUT FACTORY AIR
561167
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**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. 1 744005 GEN IV 3 VENT EVAP. SUB CASE w/ 204 ECU
2. 1 781168 1967-68 CAMARO w/o AC GEN IV ACC. KIT

NOTE: IMAGES MAY NOT DEPICT ACTUAL PARTS AND QUANTITIES. REFER TO PACKING LIST FOR ACTUAL PARTS AND QUANTITIES
For Maximum System Performance, Vintage Air Recommends the Following:

**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.

**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.

**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:**
**Attention:** The following system components are capped: Compressor, evaporator, condenser & drier. Caps may be under pressure with dry nitrogen. Be careful removing caps. Do not remove caps prior to installation. Removing caps prior to installation will cause components to collect moisture and lead to premature failure and reduced performance.

Evacuate the system for 35-45 minutes with system components (Drier, compressor, evaporator and condenser) 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.

*Vintage Air Systems Are Designed to Operate With R134a Refrigerant Only! Use of Any Other Refrigerants Is a Fire Hazard and Could Damage Either Your Air Conditioning System or Your Vehicle.*

Use of Any Other Refrigerants Will Void All Warranties of the Air Conditioning System and Components. Use of the Proper Type and Amount of Refrigerant Is Critical to Proper System Operation. Vintage Air Recommends Our Systems Be Charged By Weight With a Quality Charging Station or Scale.

**Refrigerant Capacity for Vintage Air Systems:**
(For other systems, consult manufacturer’s guidelines)

**R134a System**
Charge with 1.8 lbs. (1 lb., 12 oz.) of refrigerant.

**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).
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.
BEFORE STARTING THE INSTALLATION, CHECK THE FUNCTION OF THE VEHICLE (HORN, LIGHTS, ETC.) FOR PROPER OPERATIONS. STUDY THE INSTRUCTIONS, ILLUSTRATIONS, & DIAGRAMS.

ENGINE COMPARTMENT

REMOVE THE FOLLOWING:

- Battery and battery tray (retain). See Figure 1a.
- Drain radiator.
- 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), the factory manual indicates doing the following: “Remove right lower rocker molding. Remove lower fender attaching bolts. Remove skirt to fender and skirt to reinforcement screws. Pull out on lower portion of fender, moving the skirt away from the fender flange and firewall. Block the skirt with a 2” x 4” block of wood.” To avoid damage to paint and sheet metal, and for ease of removal and replacement of components, Vintage Air suggests that the right fender be removed and inner panel be lowered. See Figure 1.
- OEM heater hoses (discard). See Figure 1.
- Remove OEM heater wiring/vacuum harness molded grommet. See Figure 1.
- Install 1 ½” plug in firewall. See Figure 1b, below.

CONDENSER ASSEMBLY & INSTALLATION

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

COMPRESSOR & BRACKETS

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

PULLEYS

- In most instances the belt lengths will remain the same.
PASSENGER COMPARTMENT

REMOVE THE FOLLOWING: SEE FIGURE 2.
- REMOVE THE ASHTRAY (RETAIN).
- REMOVE ASHTRAY SLIDER ASSEMBLY (RETAIN).
- REMOVE GLOVE BOX DOOR (RETAIN).
- REMOVE AND DISCARD OEM GLOVE BOX (SAVE THE (3) TINNERMAN NUTS FROM THE BOTTOM EDGE).
- REMOVE THE CENTER DASH TRIM PLATE (RETAIN).
- REMOVE THE RADIO (RETAIN).
- REMOVE OEM CONTROL PANEL (RETAIN).
- LOOSEN STEERING COLUMN AND LOWER.
- REMOVE THE INSTRUMENT PANEL ASSEMBLY (RETAIN).


NOTE: REMOVE THE FRONT SEATS (OPTIONAL FOR EASE OF A/C INSTALLATION ONLY).

- OEM CONTROL PANEL
- INSTRUMENT PANEL ASSEMBLY
- STEERING COLUMN
- ASHTRAY SLIDER ASSEMBLY
- ASHTRAY
- CENTER DASH TRIM PLATE
- RADIO
- OEM GLOVE BOX
- TINNERMAN NUTS
- OEM GLOVE BOX DOOR
- ASTRO VENT DOOR ASSEMBLY (PASSENGER & DRIVER SIDE)
- ASTRO VENTS IF EQUIPPED (PASSENGER & DRIVER SIDE)
- DEFROST DUCT
- HEATER ASSEMBLY
- FIGURE 2
  VIEW FROM INSIDE VEHICLE

- REMOVE THE OEM DEFROST DUCT (DISCARD). SEE FIGURE 3, BELOW.
- REMOVE THE OEM HEATER ASSEMBLY (DISCARD). SEE FIGURE 3, BELOW.
**DASH FRAME MODIFICATION**

- Cut along the dotted line on dash as shown below in Figure 4.

**TRIM PLATE MODIFICATION**

- Cut out center louver template on page 29. Align center louver template on trim plate as shown in Figure 5, below.
- Mark center louver opening and mounting holes on trim plate. Once center louver opening and mounting holes are marked, remove template and carefully cut out opening in trim plate.
- Using a 1/8” drill bit, drill mounting holes as marked on center trim plate.
CENTER LOUVER INSTALLATION

- INSTALL CENTER LOUVER IN TRIM PLATE AS SHOWN BELOW IN FIGURE 5a.
- SECURE CENTER LOUVER TO TRIM PLATE USING (2) #6 x 3/8” PH PAN HEAD SCREWS AS SHOWN IN FIGURE 5a.

CUT OUT CENTER LOUVER FOAM TEMPLATE ON PAGE 29. PLACE CENTER LOUVER FOAM TEMPLATE ON FOAM STRIP PROVIDED. TRACE TEMPLATE ON FOAM AND CUT OUT.

- PEEL PAPER BACKING FROM FOAM AND INSTALL FOAM ON BACK SIDE OF TRIM PLATE AS SHOWN IN FIGURE 5b, BELOW.
EVAPORATOR MOUNTING HOLES

- Cut out template provided on page 28. Place the template under the dash on inner cowl by aligning the left side of the template against the dash bracket as shown in Figure 6. Fold the template to follow the contour of the inner cowl. Make sure the upper left hand corner of the template aligns with left side of the defrost opening in dash as shown in Figure 6.
- Once template is aligned correctly, mark mounting holes on inner cowl. Once holes are marked in the correct location, drill (2) 3/16" holes in inner cowl for evaporator front mounting bracket. See Figure 6, below.

DEFROST DUCT & FRESH AIR COVER INSTALLATION

- Install defrost ducts under dash as shown in Figure 7, below. Align defrost duct with defrost opening in dash, hold in place. Use bracket as template and drill 7/64 hole. Secure using #10 x 1/2" PH pan head screw.
- If vehicle is equipped with astro ventilation, it will be necessary to install driver and passenger side fresh air covers. Secure using OEM hardware. See Figure 7, below.
PASSENGER AND DRIVER SIDE LOUVER INSTALLATION (67 MODELS ONLY)

- Cut out template provided on page 30. Place the passenger side template on the dash by aligning the left side of the template against the glove box edge as shown in Figure 8. Fold the bottom of the template under the dash by aligning it with the existing OEM hole.

- Once template is aligned correctly, use a center punch to mark the hole on the dash. Once the center of the hole is located on the dash, remove template. Use a 2 ½” hole saw to cut 2 ½” hole in dash for passenger side louver. See Figure 8, below.

- Cut out template provided on page 31. Place the driver side template on the dash by aligning the right side of the template against the instrument panel parting line, as shown in Figure 8a. Fold the bottom of the template under the dash by aligning it with the existing OEM hole.

- Once template is aligned correctly, use a center punch to mark the hole on the dash. Once the center of the hole is located on the dash, remove template. Use a 2 ½” hole saw to cut 2 ½” hole in dash for driver side louver. See Figure 8a, below.

![Figure 8](image-url)

![Figure 8a](image-url)
PASSENGER AND DRIVER SIDE LOUVER INSTALLATION CONT.

- INSTALL LOUVER BEZEL THROUGH DASH OPENING. FROM BACK SIDE OF DASH, INSTALL HOSE ADAPTER TO LOUVER BEZEL, AS SHOWN IN FIGURE 9, BELOW.

(FOR 1968 OEM ASTRO VENTS ONLY)
HOSE ADAPTER INSTALLATION

- CUT AND MODIFY AS SHOWN BELOW.
- INSTALL S-CLIPS ON HOSE ADAPTERS AS SHOWN IN FIGURE 9a, BELOW.
- INSTALL DRIVER & PASSENGER SIDE HOSE ADAPTERS ON OEM LOUVERS. SEE FIGURE 9a, BELOW.
- REINSTALL MODIFIED ASTRO VENTS IN DASH.
FRESH AIR COVER INSTALLATION

- APPLY A 1/4" BEAD OF SILICONE AROUND THE BACK SIDE OF THE FRESH AIR CAP AS SHOWN IN FIGURE 10, BELOW.

- ATTACH FRESH AIR CAP TO FIREWALL USING A 1/4-20 x 1" BOLT AND WASHER. SEE FIGURE 10, BELOW.

  NOTE: FRESH AIR CAP INSTALLS ON ENGINE SIDE OF FIREWALL.

KICK PANEL INSTALLATION

- REMOVE THE KICK PANEL BY REMOVING THE (5) #10 x 1" PH PAN HEAD SCREWS. DISCONNECT THE FRESH AIR DOOR FROM THE LEVER HOUSING. CLOSE FRESH AIR DOOR ASSEMBLY IN KICK PANEL AND SEAL DOOR w/ 1/4" BEAD OF SILICONE AROUND DOOR AS SHOWN IN FIGURE 11.

- INSTALL KICK PANEL USING THE (5) #10 x 1" PH PAN HEAD OEM SCREWS AS SHOWN IN FIGURE 11a.

FIREWALL COVER INSTALLATION


- FROM INSIDE OF CAR, INSTALL FIREWALL COVER ON FIREWALL. SEE FIGURE 13, PAGE 15. FROM THE ENGINE COMPARTMENT SIDE OF FIREWALL, SECURE FIREWALL USING (4) 1/4-20 x 1" HEX BOLTS WITH WASHERS. SEE FIGURE 13, PAGE 15.
EVAPORATOR INSTALLATION

- On a workbench, install evaporator rear bracket and hardlines with properly lubricated O-rings (see figure 18, page 17, and figure 24, page 22).

- Install front mounting bracket on evaporator using (2) 1/4-20 x 1/2” hex bolts, and tighten as shown in figure 12, below.

- Lift evaporator unit up under the dashboard. See figure 14, page 15. Secure loosely to the firewall from the engine compartment side using a 1/4-20 nut and washer. See figure 14, page 15.

- Using (2) #14 x 3/4” sheet metal screws, secure the front evaporator mounting bracket to the inner cowl. See figure 14, page 15.

- Verify that evaporator unit is level and square to the dash. Then tighten all mounting bolts. Note: Tighten the bolt on firewall first, then the front mounting bracket screws.
FIREWALL COVER INSTALLATION

(4) 1/4-20 x 1”
HEX BOLTS
w/ WASHERS

ENGINE COMPARTMENT
SIDE OF FIREWALL

NOTE: FIREWALL COVER MOUNTING HOLES MUST BE ENLARGED. ENLARGE EXISTING HOLES IN FIREWALL TO 5/16”.

FIREWALL OUTER COWL
(2) #14 x 3/4”
SHEET METAL SCREWS

INFORMATION FROM INSIDE CAR, THROUGH DASH

FIGURE 13

FIGURE 14

EVAPORATOR INSTALLATION

1/4-20 NUT
w/ WASHER

FIREWALL

INNER COWL
CENTER LOUVER AND HOSE ADAPTER INSTALLATION

- Attach the duct hose to center vent hose adapter as shown in Figure 15, below.
- Install center vent hose adapter to dash using (2) 8 x 1/2" sheet metal screws as shown in Figure 15, below.
- Install the trim plate. See Figure 15, below.

DRAIN HOSE INSTALLATION

- Locate evaporator drain on bottom of evaporator case.
- 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 16.
- Install drain hose to bottom of evaporator unit and route through firewall. See Figure 16.
FIREWALL CAP INSTALLATION

- Apply a 1/4" bead of silicone around the back side of the firewall cap as shown in Figure 17, below.
- Pass lines through firewall cap, and secure with (3) #10 x 1/2” hex sheet metal screws. See Figure 17, below.

![Diagram of firewall cap installation](image)

**FIGURE 17**

**VIEW SHOWN FROM ENGINE COMPARTMENT**

LUBRICATING O-RINGS

- For a proper seal of fittings, install supplied o-rings as shown and lubricate with supplied oil.

![Diagram of o-ring installation](image)

**FIGURE 18**

STANDARD HOSE KIT

- Locate the #8 compressor a/c hose. Lubricate (2) #8 o-rings (see Figure 18, above) and connect the 135° female fitting w/ 134a service port to the #8 discharge port on the compressor. Route the 45° female fitting to the #8 condenser hardline coming from under the radiator core support. See Figure 20, page 19. Tighten each fitting connection as shown in Figure 18, above.
STANDARD HOSE KIT CONT.

- Locate the #10 compressor A/C hose. Lubricate (2) #10 O-rings (see Figure 18, Page 17) and connect the 135° female fitting w/ 134a service port to the #10 suction port on the compressor. Route the straight female fitting to the #10 evaporator hardline coming through the firewall. See Figure 19, below. Tighten each fitting connection as shown in Figure 18, Page 17. **Note: Wrap the #10 fitting connections with press tape. See Figure 19a, below.**

- Locate the #6 evaporator/drier hardline and lubricate (2) #6 O-rings (see Figure 18, Page 17). Connect the hardline to the #6 hardline on fender well coming from drier. Attach the other end of the hardline with lubricated O-ring to the #6 evaporator hardline coming through the firewall. See Figure 19, below. Tighten each fitting connection as shown in Figure 18, Page 17.

- Use a #2 adel clamp to secure the #6 evap/core hardline to the inner fender well as shown in Figure 20a, Page 19. Secure the adel clamp to the inner fender using a 10-32 x 1/2” ph pan head screw w/ nut.

MODIFIED HOSE KIT

- Refer to separate instructions included with modified hose kit.

HEATER HOSE & HEATER CONTROL VALVE INSTALLATION

**Note: Vintage Air systems require (2) 5/8” hose nipples (not supplied): one for the intake (pressure) and one for the water pump (suction). If required, remove existing hose nipple or nipples and install new 5/8” hose nipples in intake and water pump.**

- Route a piece of heater hose from the water pump to the heater line coming through the firewall as shown in Figure 19, below. Secure using hose clamps.

- Route a piece of heater hose from the intake to the heater line coming through the firewall as shown in Figure 19, below. **Note: Install heater control valve in line with intake manifold (pressure side) heater hose. Secure using hose clamps as shown in Figure 19.** **Note proper flow direction.** Secure the heater hose coming from the intake & the #6 evap hardline to the inner fender using a #10 & #2 adel clamp. Secure clamps using a 10-32 x 1/2” ph pan head screw w/ nut. See Figure 20a, Page 19.
NOTE: VINTAGE AIR SYSTEMS REQUIRE (2) 5/8” HOSE NIPPLES (NOT SUPPLIED).

HEATER HOSE (HEATER CONTROL VALVE/INTAKE)

HEATER HOSE (HEATER CORE/WATER PUMP)

ALTERNATOR SUPPORT

#10 ADEL CLAMP

#10 SUCTION HOSE

#6 EVAP HARDLINE

#2 ADEL CLAMP

INNER FENDER WELL

#10 SUCTION HOSE 091068

#6 EVAP HARDLINE 091694-FFL

#8 DISCHARGE HOSE 090167

#8 CONDENSER HARDLINE 35367-VCG

#6 HARDLINE FROM DRIER/FENDER WELL 35067-VCG

#6 HARDLINE DRIER/CONDENSER 35368-VCG

COMPRESSOR SAFETY SWITCH (BINARY TYPE)
SCREW-ON DRIER (REFER TO CONDENSER INSTRUCTIONS)

FIGURE 20

FIGURE 20a

10-32 x 1/2” PH PAN HEAD SCREW w/ NUT

#10 SUCTION HOSE

091068

#6 EVAP HARDLINE

091694-FFL

#8 DISCHARGE HOSE 090167

#8 CONDENSER HARDLINE 35367-VCG

#6 HARDLINE FROM DRIER/FENDER WELL 35067-VCG

#6 HARDLINE DRIER/CONDENSER 35368-VCG

COMPRESSOR SAFETY SWITCH (BINARY TYPE)
SCREW-ON DRIER (REFER TO CONDENSER INSTRUCTIONS)
FINAL STEPS

- INSTALL DUCT HOSES AS SHOWN IN FIGURE 23, PAGE 21.
- ROUTE A/C WIRES THROUGH 3/8” GROMMET AS SHOWN IN FIGURE 21a (12 VOLT/GROUND/BINARY SWITCH/HEATER VALVE).
- INSTALL CONTROL PANEL ASSEMBLY.
- PLUG THE WIRING HARNESS INTO THE ECU MODULE ON SUB CASE AS SHOWN IN FIGURE 23, PAGE 21 (WIRE ACCORDING TO WIRING DIAGRAM ON PAGES 23 & 24).
- GLOVE BOX INSTALLATION (SEE FIGURE 21).
- REINSTALL ALL PREVIOUSLY REMOVED ITEMS (BATTERY TRAY & BATTERY).
- 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.
- DOUBLE CHECK ALL FITTINGS, BRACKETS AND BELTS FOR TIGHTNESS.
- VINTAGE AIR RECOMMENDS THAT ALL A/C SYSTEMS BE SERVICED BY A CERTIFIED AUTOMOTIVE AIR CONDITIONING TECHNICIAN.
- EVACUATE THE SYSTEM FOR A MINIMUM OF 45 MINUTES PRIOR TO CHARGING, AND LEAK CHECK PRIOR TO SERVICING.
- CHARGE THE SYSTEM TO THE CAPACITIES STATED ON THE INFORMATION PAGE (PAGE 4) OF THIS INSTRUCTION MANUAL.

GLOVE BOX INSTALLATION

- THE NEW GLOVE BOX IS MADE IN (2) PIECES FOR EASY INSTALLATION. LOCATE THE (3) TINNERMAN NUTS PREVIOUSLY REMOVED FROM THE ORIGINAL GLOVE BOX SHELL, AND SLIDE THEM INTO POSITION AT DOOR HINGE HOLES PUNCHED IN DASH.
- INSERT BOTTOM HALF OF NEW GLOVE BOX, SECURING WITH ONLY ONE OEM SCREW ON EACH SIDE THROUGH DASH HOLES (SEE FIGURE 21, BELOW).
- INSERT TOP HALF OF GLOVE BOX AND FASTEN TO BOTTOM HALF USING (5) #6 x 3/8” BLACK PAN HEAD PHILLIPS SCREWS (SEE FIGURE 21, BELOW).
- INSTALL GLOVE BOX DOOR USING (3) OEM SCREWS THROUGH THE TINNERMAN NUTS.
CONTROL PANEL & DUCT HOSE ROUTING

DEFROST DUCT ASSEMBLY 626675-VCA

PLUG FROM CONTROL WIRING HARNESS 232002-VUA

PLUG FROM WIRING HARNESS 232001-VUR

FIGURE 22

CENTER LOUVER 2 ½" x 24"

PASSENGER SIDE LOUVER 2 ½" x 40"

DRIVER SIDE LOUVER 2 ½" x 28"

PASSENGER SIDE DEFROST DUCT 2” x 20”

DRIVER SIDE DEFROST DUCT 2” x 16”

FIGURE 23
NOTE: AFTER INSTALLING #10 SUCTION LINE, WRAP ALL EXPOSED METAL (FITTINGS & TUBE) WITH SUPPLIED PRESS TAPE.

1/4-20 x 1 ½" COARSE BOLT W/18125-VUB FLAT WASHER

1/4" PUSH NUT BOLT RETAINER 189125-MUR

3/4" NYLON SPACER 18040-VUB

1/4" PUSH NUT BOLT RETAINER 189125-MUR

HOLD WITH THIS WRENCH

LUBRICATE O-RING (SEE FIGURE 18, PAGE 17)

FIGURE 24

EVAPORATOR HARDLINE INSTALLATION

#10 SUCTION LINE (09151-PCS)

#10 O-RING (33859-VUF)

#6 O-RING (33857-VUF)

HEATER LINE (EVAPORATOR TO WATER PUMP) 09153-PCH

HEATER LINE (EVAPORATOR TO INTAKE) 09152-PCH

EVAPORATOR BRACKET 643170-FCB

#10 O-RING (33859-VUF)

#6 LIQUID LINE (09150-PCL)

#10 O-RING (33859-VUF)

1/4-20 x 1/2" BOLT (LOCATED ON SUB CASE)

HOLD WITH THIS WRENCH

LUBRICATE O-RING (SEE FIGURE 18, PAGE 17)

1/4" PUSH NUT BOLT RETAINER 189125-MUR

3/4" NYLON SPACER 18040-VUB

1/4" PUSH NUT BOLT RETAINER 189125-MUR

HOLD WITH THIS WRENCH

LUBRICATE O-RING (SEE FIGURE 18, PAGE 17)

FIGURE 24

EVAPORATOR HARDLINE INSTALLATION

#10 SUCTION LINE (09151-PCS)

#10 O-RING (33859-VUF)

#6 O-RING (33857-VUF)

HEATER LINE (EVAPORATOR TO WATER PUMP) 09153-PCH

HEATER LINE (EVAPORATOR TO INTAKE) 09152-PCH

EVAPORATOR BRACKET 643170-FCB

#10 O-RING (33859-VUF)

#6 LIQUID LINE (09150-PCL)

#10 O-RING (33859-VUF)

1/4-20 x 1/2" BOLT (LOCATED ON SUB CASE)
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**

**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).

**Circuit Breaker/Battery:**
White Must Run to (-) Battery. Red May Run to (+) Battery or Starter. Mount Circuit Breaker as close to Battery as possible.

**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.

**Heater Control Valve:**
Install with Servo Motor Facing Down, as shown. Note Flow Direction Arrow molded into Valve Body, and install accordingly.

**Dash Light:**
Tan Wire Used Only with Vintage Air Supplied Control Panel with LED Back Light.

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

**NOTE:**
Mount relay in desired location under dash.
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.

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**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).

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**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).

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**Defrost/De-fog Operation**

**Blower Speed**
Adjust to desired speed.

**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

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Condition</th>
<th>Checks</th>
<th>Actions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a.</td>
<td>Blower stays on high speed when ignition is on. No other functions work.</td>
<td>Check for damaged pins or wires in control head plug. Check for damaged ground wire (white) in control head harness. Check for damaged blower switch or potentiometer and associated wiring.</td>
<td>Verify that all pins are inserted into plug. Ensure that no pins are bent or damaged in ECU. Verify continuity to chassis ground with white control head wire at various points.</td>
<td>Loss of ground on this wire renders control head inoperable. See blower switch check procedure.</td>
</tr>
<tr>
<td>1b.</td>
<td>Blower stays on high speed when ignition is on or off. All other functions work.</td>
<td>Unplug 3-wire BSC control connector from ECU. If blower shuts off, ECU is either improperly wired or damaged. Unplug 3-wire BSC control connector from ECU. If blower stays running, BSC is either improperly wired or damaged.</td>
<td>Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU. 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 &quot;ground&quot; 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).</td>
<td>No other part replacements should be necessary.</td>
</tr>
<tr>
<td>2.</td>
<td>Compressor will not turn on (All other functions work). System is not charged.</td>
<td>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. Check continuity to ground on white control head wire. Check for 5V on red control head wire. Check 2-pin connector at ECU housing.</td>
<td>Charge system or bypass pressure switch. Check continuity to ground on white control head wire. Check for 5V on red control head wire. Repair or replace pot/control wiring.</td>
<td>Danger: Never bypass safety switch with engine running. Serious injury can result. 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. Disconnected or faulty thermistor will cause compressor to be disabled. 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.</td>
</tr>
<tr>
<td>3.</td>
<td>Compressor will not turn off (All other functions work).</td>
<td>Check for faulty A/C potentiometer or associated wiring. Check for faulty A/C relay.</td>
<td>Repair or replace pot/control wiring. Replace relay.</td>
<td></td>
</tr>
</tbody>
</table>

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*Symptom: Blower stays on high speed when ignition is on.*

1. **Condition:** No other functions work.

   *Checks:* Check for damaged pins or wires in control head plug. Check for damaged ground wire (white) in control head harness. Check for damaged blower switch or potentiometer and associated wiring.

   *Actions:* Verify that all pins are inserted into plug. Ensure that no pins are bent or damaged in ECU. Verify continuity to chassis ground with white control head wire at various points.

   *Notes:* Loss of ground on this wire renders control head inoperable. See blower switch check procedure.

2. **Condition:** All other functions work.

   *Checks:* Unplug 3-wire BSC control connector from ECU. If blower shuts off, ECU is either improperly wired or damaged. Unplug 3-wire BSC control connector from ECU. If blower stays running, BSC is either improperly wired or damaged.

   *Actions:* Be sure the small, 20 GA white ground wire is connected to the battery ground post. If it is, replace the ECU. 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).

   *Notes:* No other part replacements should be necessary.

3. **Condition:** System is not charged.

   *Checks:* System must be charged for compressor to engage. Check for faulty A/C potentiometer or associated wiring (Not applicable to 3-pot controls).

   *Actions:* Charge system or bypass pressure switch. Check continuity to ground on white control head wire. Check for 5V on red control head wire.

   *Notes:* Danger: Never bypass safety switch with engine running. Serious injury can result. 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. Disconnected or faulty thermistor will cause compressor to be disabled. 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.
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<td>4.</td>
<td>System will not turn on, or runs intermittently.</td>
<td>Works when engine is not running; shuts off when engine is started (Typically early Gen IV, but possible on all versions).</td>
<td><strong>Noise interference from either ignition or alternator.</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Will not turn on under any conditions.</td>
<td>Verify connections on power lead, ignition lead, and both white ground wires.</td>
<td><strong>Verify battery voltage is greater than 10 volts and less than 16.</strong></td>
<td>Verify proper meter function by checking the condition of a known good battery.</td>
</tr>
<tr>
<td>5.</td>
<td>Loss of mode door function.</td>
<td>No mode change at all.</td>
<td>Check for damaged mode switch or potentiometer and associated wiring.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partial function of mode doors.</td>
<td>Check for obstructed or binding mode doors.</td>
<td>Check for damaged stepper motor or wiring.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Blower turns on and off rapidly.</td>
<td>Battery voltage is at least 12V.</td>
<td>Check for at least 12V at circuit breaker.</td>
<td>Ensure all system grounds and power connections are clean and tight.</td>
</tr>
<tr>
<td></td>
<td>Battery voltage is less than 12V.</td>
<td>Check for faulty battery or alternator.</td>
<td>Charge battery.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Erratic functions of blower, mode, temp, etc.</td>
<td></td>
<td>Check for damaged switch or pot and associated wiring.</td>
<td>Repair or replace.</td>
</tr>
<tr>
<td>8.</td>
<td>When ignition is turned on, blower momentarily comes on, then shuts off. This occurs with the blower switch in the OFF position.</td>
<td></td>
<td>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.</td>
<td>Run red power wire directly to battery.</td>
</tr>
</tbody>
</table>
CUT ALONG DOTTED LINE

FOLD DOTTED LINE

FOLD DOTTED LINE

MARK & DRILL 3/16" HOLES

CUT ALONG DOTTED LINE

4 1/8"
CENTER VENT TEMPLATE FOR VINTAGE AIR LOUVER ONLY

**TEMPLATE FOR CUTTING HOLE IN TRIM PLATE FOR V.A. CENTER LOUVER INSTALLATION**

- **1 5/8"**
- CENTER VENT
  - CUT OUT ON DOTTED LINE
  - CUT OUT ON DOTTED LINE AND PLACE ON FACE OF TRIM PLATE MARK AND CUT HOLE

**CUT SUPPLIED FOAM TO MATCH TEMPLATE. PEEL PROTECTIVE BACKING AND STICK TO BACK SIDE OF TRIM PLATE**

- CENTER VENT
  - CUT OUT ON DOTTED LINE

**FOAM TEMPLATE**
ALIGN WITH EXISTING OEM HOLE UNDER DASH

CENTER PUNCH AND DRILL 2 1/2" DIAM. HOLE

GLOVE BOX EDGE

PASSENGER SIDE

FOLD UNDER DASH AT DOTTED LINE

TEMPLATE FOR BALL LOUVER ON PASSENGER SIDE AREA
EXISTING OEM HOLE

CENTER PUNCH AND DRILL 2 1/2" DIAM. HOLE

ALIGN THIS EDGE WITH DASH TO INSTRUMENT PANEL PARTING LINE

FOLD UNDER DASH AT DOTTED LINE

DRIVER SIDE VENT TEMPLATE FOR VINTAGE AIR LOUVER ONLY
1967 CAMARO

DRIVER SIDE
EVAPORATOR KIT PACKING LIST

<table>
<thead>
<tr>
<th>NO.</th>
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<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
<td>744005</td>
<td>GEN IV 3 VENT EVAP. SUB CASE w/ 204 ECU</td>
</tr>
<tr>
<td>2.</td>
<td>1</td>
<td>781168</td>
<td>1967-68 CAMARO w/o AC GEN IV ACC. KIT</td>
</tr>
</tbody>
</table>

NOTE: IMAGES MAY NOT DEPICT ACTUAL PARTS AND QUANTITIES.
REFER TO PACKING LIST FOR ACTUAL PARTS AND QUANTITIES

ACCESSORY KIT
781168