



42-02-3154-1

**VOLKSWAGEN AIR CONDITIONER  
TYPE 2 STATION WAGON 1973  
INSTALLATION INSTRUCTIONS**

VOLKSWAGEN PRODUCTS CORP. FORT WORTH, TEXAS

**VOLKSWAGEN AIR CONDITIONER  
TYPE 2 STATION WAGON 1973  
INSTALLATION INSTRUCTIONS**

**Contents:**

**ZC0.2 INSTALLATION INSTRUCTIONS – TYPE 2 STATION WAGON**

- 1 – 1 Tool List
- 2 – 1 Engine Compartment
- 3 – 1 Hoses and Wiring
- 4 – 1 Evaporator
- 5 – 1 Condenser
- 6 – 1 Completion
- 7 – 1 Wiring Diagram

# ZC<sub>0.2</sub> TOOL LIST

---

The following tools are suggested for proper installation of a 1973 TYPE 2 Station wagon air-conditioning unit:

- 1) Vacuum pump
- 2) Manifold gauge set (with charging hoses)
- 3) 52 ounces of Refrigerant 12
- 4) Refrigeration oil
- 5) Eye goggles
- 6) Leak detector
- 7) Template US4440 (fiberglass)
- 8) Template ZVW 219 741 (paper)
- 9) Holes saws with mandrel and pilot bit
  - a) 1-1/4"
  - b) 1"
  - c) 2- 1/4"
- 10) Drill bits
  - a) 1/8" (No. 30 or 3mm)
  - b) No. 42
  - c) 1/2" (13mm)
  - d) 5/32" (4mm)
- 11) Left hand sheetmetal shears
- 12) Right hand sheetmetal shears
- 13) 3/8" drive ratchet
- 14) 3/8" drive 6" extension
- 15) Sockets
  - a) 10 mm (3/8" drive)
  - b) 13 mm (3/8" drive)
  - c) 3/8" (3/8" drive)
  - d) 1/2" (3/8" drive)
  - e) 9/16" (3/8" drive)
- 16) Torque wrench (0-125 ft. lbs.)
- 17) Open end wrenches
  - a) 13 mm
  - b) 1/2"
  - c) 9/16"
  - d) 5/8" (offset 90°)
  - e) 3/4"
  - f) 13/16"
  - g) 7/8"
  - h) 15/16"
  - i) 1"
  - j) 1-1/16"
  - k) 1-1/8"
- 18) Oil filter tool (VW1017)
- 19) Electric drill motor
- 20) Slot and Phillips screwdrivers

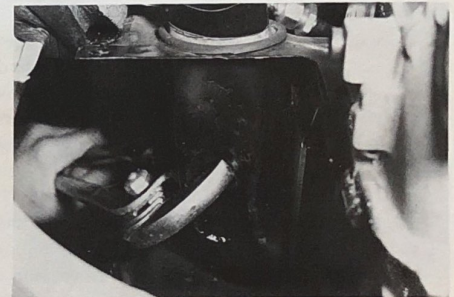
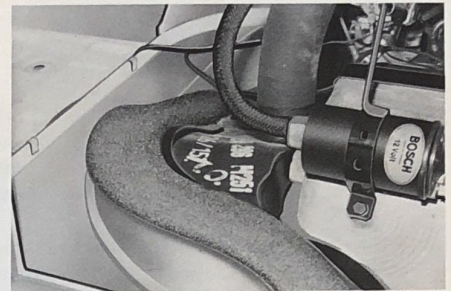
# ENGINE COMPARTMENT ZC<sub>0.2</sub>

- 1 - Place vehicle on suitable hoist and raise until engine compartment is at working level.

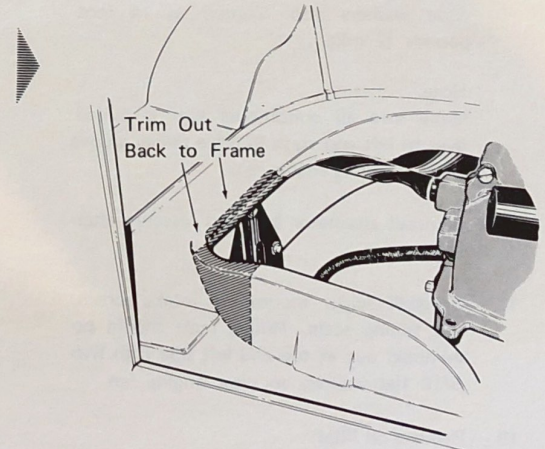
**Caution:**

Vehicle hoist must be equipped with rigid spacer blocks with minimum height of 2" on front pickup. Otherwise, there is a danger of damaging condenser when it is installed.

- 2 - Disconnect both battery terminals.
- 3 - Disconnect air hose between heater blower and vertical heater pipe on left side of engine.
- 4 - Remove black sheet metal panel around left rear of engine.
- 5 - Remove air hose which connects to left side of fan housing. Cut off air hose stub. Insert rubber plug from kit in hole. Discard rubber elbow on air hose but leave metal tube as is.
- 6 - Bend in vertical heater pipe approximately 1/2" on rear side to clear clutch.



- 7 - Move insulation strip around left side of engine out of way. Cut sheet metal around that side all the way back to frame as shown. Use plastic replacement to cover plate as a cutting template.



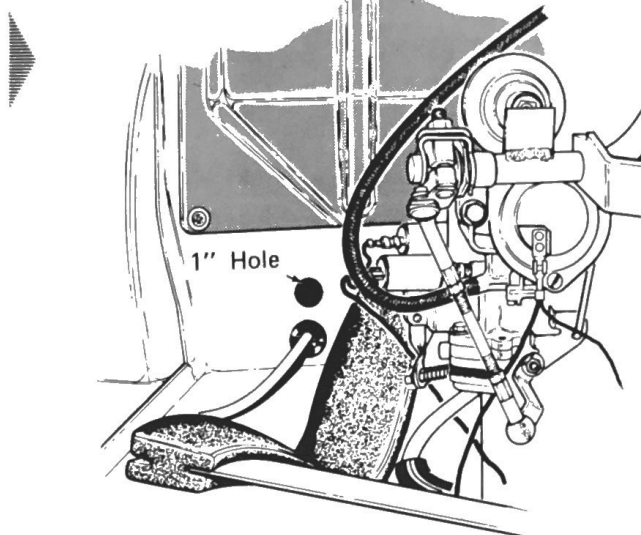
# ZC0.2 ENGINE COMPARTMENT

8 – Drill a 1" hole in firewall above original grommet as shown.

9 – Remove spider mount for air pump pulley along with timing scale and belt. Discard pulley bolts but save wave washers.

10 – Remove alternator belt.

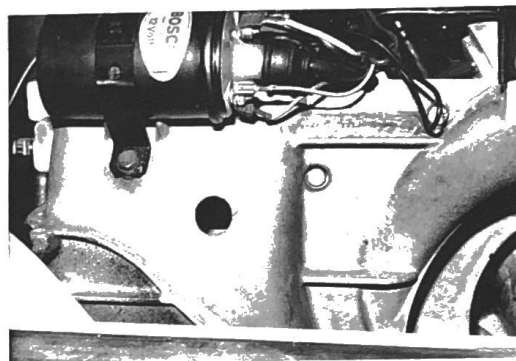
11 – Remove engine fan and discard spacer washer.



12 – Drill a 3/4" hole in fan housing approximately 1" below and 1" to right of ignition coil mounting bolt. Remove all drill shavings and chips from inside fan housing.

13 – Insert one end of air conditioner belt from left side of fan housing to reach a point past crankshaft.

14 – Insert drive pulley through air intake opening with side with red paint mark towards engine. Place air conditioner belt over drive pulley. Place pulley against crankshaft with dowel on crankshaft through locator hole on drive pulley.



15 – Place engine fan over drive pulley so that dowel pin on crankshaft aligns with hole in engine fan. Resecure with three 8mm x 50mm bolts and lockwashers using original wave washers also. Torque to 14 foot pounds (2 mkg.).

#### Note:

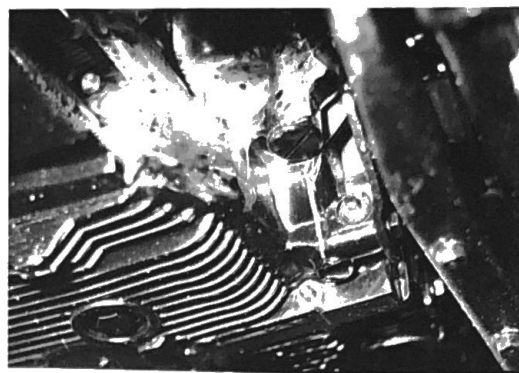
Make sure air conditioner belt is pulled over to left and stays in drive pulley groove while installing engine fan.

16 – Reinstall alternator belt and resecure alternator.

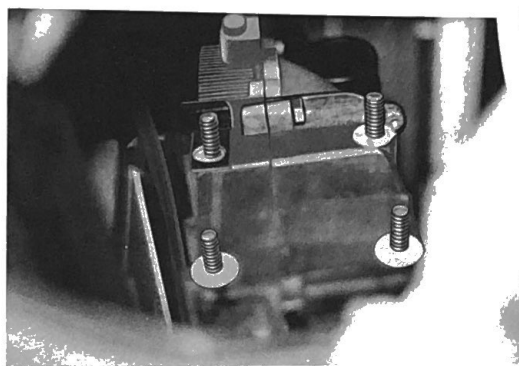
17 – Reinstall spider mount, air intake screen, and timing scale. Timing scale should be shimmed out at top and left side with two 5/16 flat washers to clear engine fan.

18 – Remove oil filter.

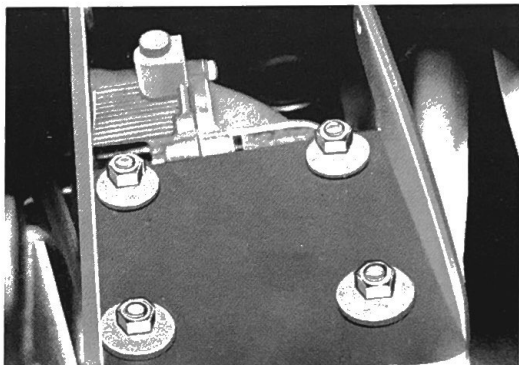
- 19 – Remove three 8 mm nuts from engine case studs below oil filter mount. Do not remove washers. Retain nuts to use later.



- 20 – Remove front bolt securing oil cooler brace on left side of fan housing. Retain bolt and lockwasher to use later. Install short, threaded ends of four 8mm x 1.25 mm studs into this hole and other three vacant holes on side of fan housing.



- 21 – Install compressor main mount on these four studs with hinge arms pointing upwards. Secure with diswashers, internal star washers and three 8 mm nuts removed below oil filter along with one 8 mm nut from kit.



- 22 – Assemble service valves to respective ports on compressor cylinder head with valve ports pointing to front of compressor. Do not tighten yet.

**Caution:**

Remove caps slowly or excess amount of compressor oil will be lost with escaping refrigerant. Oil level should be between 7/8" and 1-1/8. (22.2 mm – 28.6 mm) in a vertical position.

- 23 – Mount clutch holding coil on compressor with lead wire toward cylinder head. Torque to 7 – 10 foot pounds (.9 – 1.4 mkg.).

# ZC<sub>0.2</sub> ENGINE COMPARTMENT

- 24 — Remove grease from compressor shaft. Align clutch key way with compressor shaft key and push pulley on shaft. Attach with clutch bolt and washer. Do not tighten yet.

**Caution:**

Clutch cannot be tightened properly until later when it is engaged.

- 25 — Secure compressor mounting plate to left side of compressor (viewed from compressor front) with four 3/8 x 3/4" countersunk allenhead bolts.

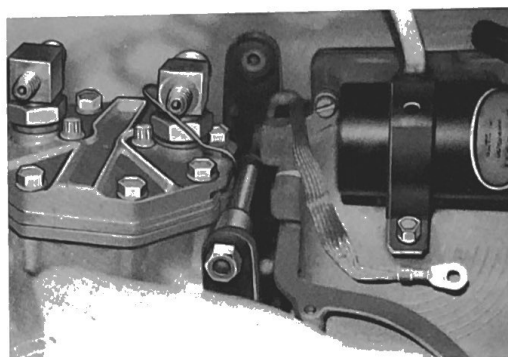
- 26 — Compressor should now be placed in area alongside main mount with clutch to front of car.

- 27 — Place air conditioner belt in clutch groove closest to compressor.

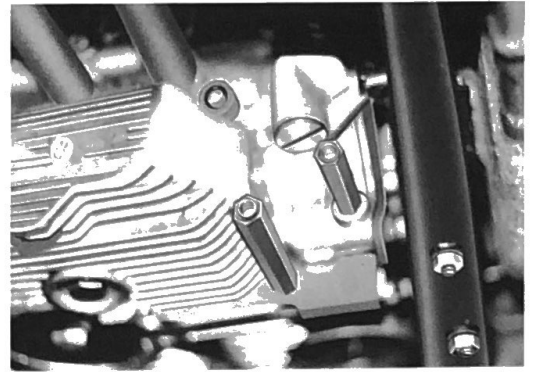
- 28 — Rear hinge pivot on mount plate should be aligned with hole on rear arm of main mount. Front hinge pivot should be aligned with second hole down on front arm of main mount. From front, insert a 3/8 x 6" bolt through ground strap and through both hinge pivots. Secure at rear hinge pivot with nut and lockwasher, however, do not tighten yet.

- 29 — Install compressor brace between forward arm on main mount and vacant hole on engine case behind air pump. Secure at both ends with 5/16 x 2" bolts, nuts, and lockwashers. Tighten bracket now.

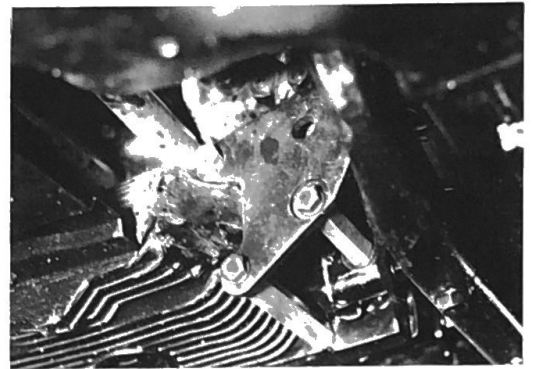
- 30 — At bottom between main mount and mount plate, insert two 5/16 x 2" bolts, lockwashers and flatwashers through 1/4" thick shim and brackets. Insert thinner shims until 140 pounds belt tension is achieved. Tighten both of these bolts and then tighten 6" hinge bolt at pivots.



- 31 – Install short, threaded spacer on center stud below oil filter. Install longer, threaded spacer on lower stud. Place short, tubular spacer on upper stud.



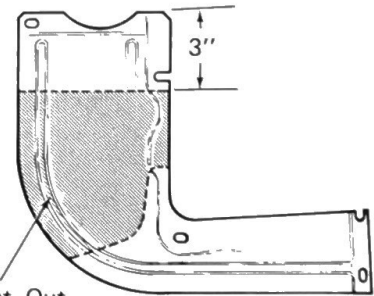
- 32 – Put bracket in place with belt aligned over idler bearing and secure at top stud with a shouldered, 8 mm nut and star washer; Secure at threaded spacers with 8 mm x 20 mm bolts and lockwashers. Tighten bracket. Use one 8 mm bolt removed from oil cooler brace earlier and another from kit.



- 33 – Clamp rubber splash guard to engine carrier so that flap is in front of compressor clutch.

- 34 – Install replacement panel from kit around left side of compressor with three No. 8 x 1/2" sheet metal screws.

- 35 – Using paper template (ZVW 219 741) modify original sheet metal panel removed from left side of engine and reinstall both pieces. Reinstall insulation strip around left side of engine.



Cut Out  
And Discard  
Shaded Area

- 36 – Secure other end of ground strap at bolt which secures ignition coil bracket.

- 37 – Reinstall air hose to vertical heater pipe.

- 38 – Push rubber bushing into 3/4" hole drilled in fan housing.

- 39 – Insert air hose and tube into rubber bushing.





# ZC<sub>0.2</sub> HOSES AND WIRING

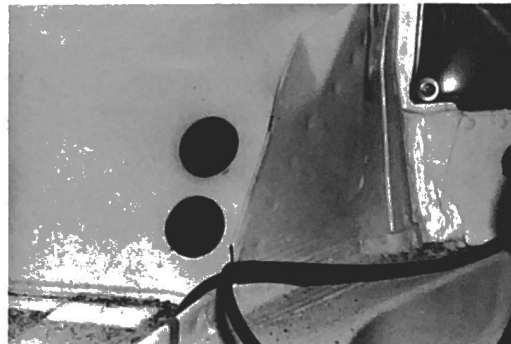
---

- 1 — Drill two 1-1/4" holes on inboard side of left rear wheel well as shown.
- 2 — Route one end of No. 10 suction hose rearward over top of rear torsion bar tube and rear crossmember on left side. Pass end through bottom 1-1/4" hole in wheel well. Put grommet over end of hose but do not push in place yet.
- 3 — Route No. 8 discharge hose in same manner and through other 1-1/4" hole. Put grommet over end of hose but do not push in place yet.
- 4 — Tighten service valves to compressor to 30 — 35 foot pounds (4.1 — 4.8 mkg.). Connect suction hose and tighten 42 — 47 foot pounds (5.8 — 6.5 mkg.). Connect discharge hose and tighten to 35 — 40 foot pounds (4.8 — 5.5 mkg.). Press both grommets in place now.

**Note:**

Lubricate all hose connections with clean refrigeration oil for proper sealing.

- 5 — Insert end of main wiring harness (with three-point connector) through hole in engine compartment leaving relay block-connector, clutch wire, and battery wire (with circuit-breaker) in engine compartment.
- 6 — Connect white, clutch wire to bullet connector from clutch holding coil.
- 7 — Connect black, double-connector wire to No. 15 terminal of ignition coil.
- 8 — Pass battery wire around front of engine to positive battery connector, but do not connect to battery yet.
- 9 — Secure relay bracket with two No. 8 x 1/2" sheet metal screws on left rear, inner fender panel above hoses.
- 10 — Connect relay to relay block-connector on wiring harness and firmly insert relay into bracket.



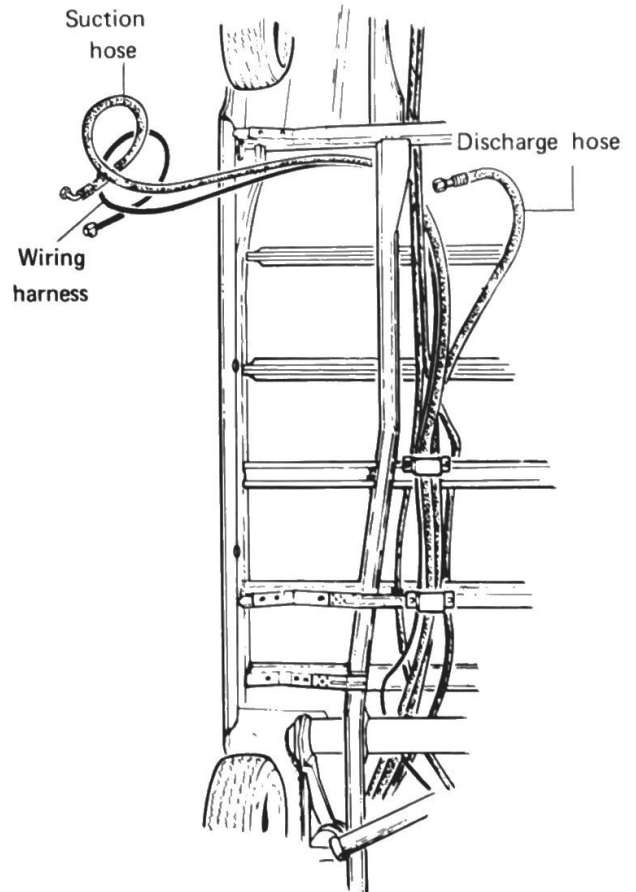
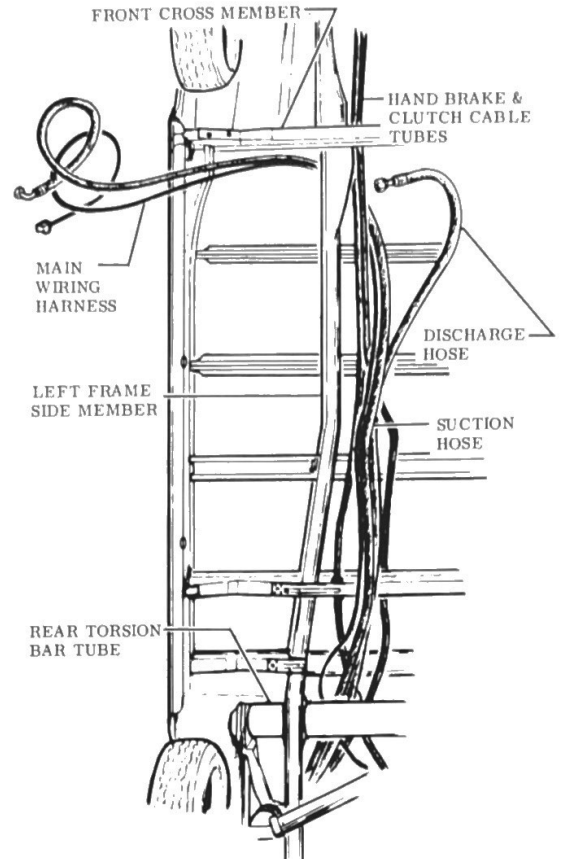
- 11 – Insert wiring harness grommet around wiring and press into hole in engine compartment.

**Caution:**

Do not let hoses or wiring rest against any part of heater or exhaust systems as damage would eventually result. Also, do not route them hard over a sharp flange. Beat flange down flat first.

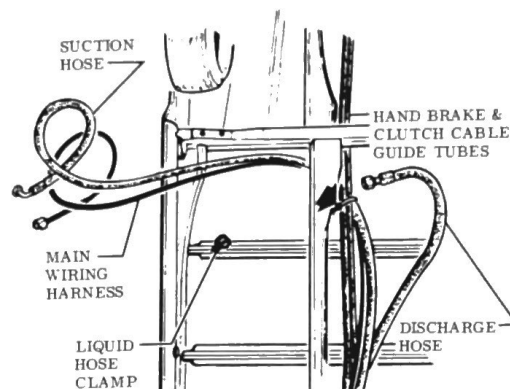
- 12 – Route suction hose over clutch cable and hand brake cable guide tubes and over left frame side member at a point immediately to rear of front cross member.
- 13 – Route wiring harness forward and over left frame side member following same route as suction hose.
- 14 – Route discharge hose forward in same manner as suction hose except do not cross over left frame side member.
- 15 – Connect red wire on wiring harness to No.50 terminal of starter solenoid.
- 16 – Route blue wire over hand brake and clutch cable guide tubes to center of car.
- 17 – Route two white wires over left frame side member.

- 18 – Secure two padded saddle clamps over hoses and wiring harness with No. 8 x 1/2" sheet metal screws.

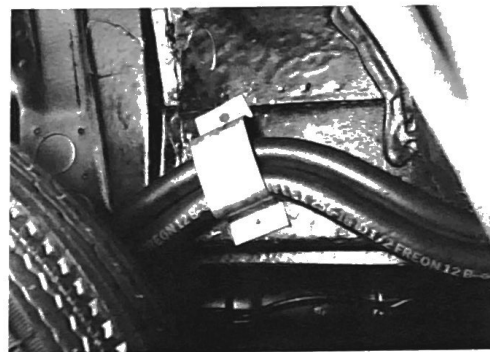


# ZC<sub>0.2</sub> HOSES AND WIRING

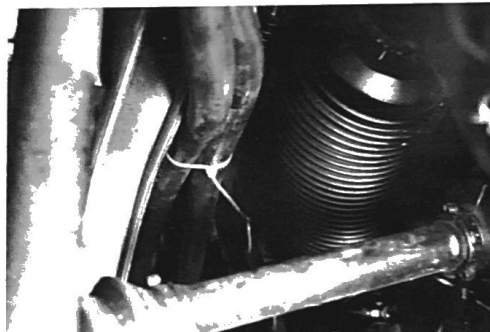
- 19 – At rear of front cross member, secure suction hose and wiring harness to hand brake and clutch cable guide tubes with plastic, strap clamp (arrow).



- 20 – Clamps hoses and wiring to frame in left rear wheel well with another saddle clamp. Position hoses so that won't rubber against sharp flange of frame.

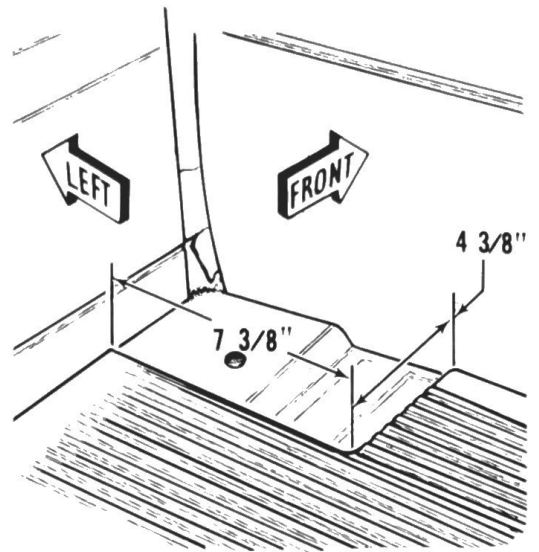


- 21 – Tie hoses and wiring up above left rear axle with a plastic, strap clamp.



# EVAPORATOR ZC<sub>0.2</sub>

- 1 – Remove front dome light. It will be reinstalled later in evaporator.
- 2 – Cut away section of floor mat in left front corner of passenger compartment floor behind driver's seat.



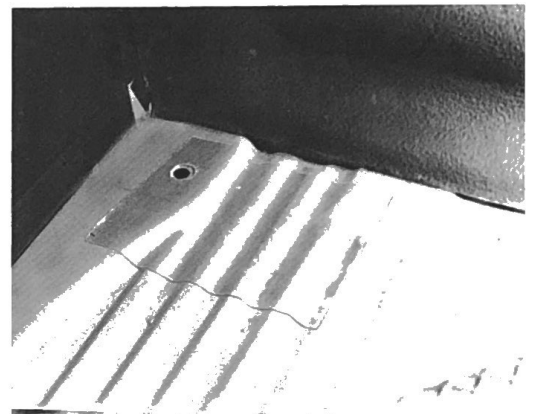
- 3 – Locate hole in template US 4440 over rubber plug in passenger compartment floor. Mark hole locations.



**Note:**

In some vehicles rubber plug is not installed. In those cases, locate template using floor contour.

- 4 – Drill one 2-1/4" hole and four No. 30 holes through floor. Install hole liner around edge of 2-1/4" hole.

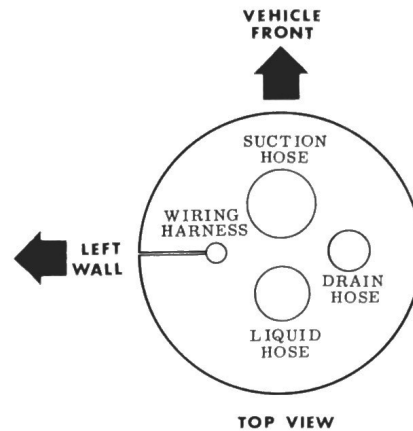


- 5 – Insert ends of suction hose and long No. 6 liquid hose up through hole in floor. Insert wiring harness up through hole also.



# ZC<sub>0.2</sub> EVAPORATOR

- 6 — Insert hoses and wiring harness through holes in sponge seal as shown in diagram. Do not install drain hose at this time.



- 7 — Insert hoses and wiring harness through retainer plate. Slide sponge seal and retainer plate down to floor.

- 8 — Spread a fender cover on second seat, and place evaporator assembly on seat with switch panel towards front.

- 9 — Insert suction hose through hole on left end of evaporator assembly and connect to 5/8" fitting on evaporator coil. Tighten 25 — 31 foot pounds (3.5 — 4.3 mkg.).

- 10 — Insert liquid hose through same hole and connect to 3/8" fitting on expansion valve. Tighten 15 — 19 foot pounds (2.1 — 2.6 mkg.).

- 11 — Wrap exposed portion of suction hose connection at evaporator coil with sealing tape.

**Caution:**

Use two wrenches so as not to stress or twist coil tube connection.

- 12 — Remove and discard left rear hanger knob.
- 13 — Place right end of evaporator above sliding door rail.
- 14 — Lift left end of evaporator and prop close to ceiling.



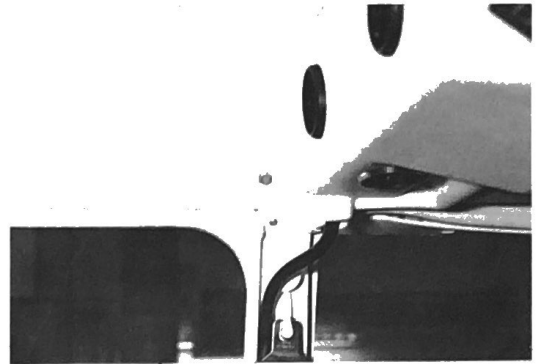
# EVAPORATOR ZC<sub>0.2</sub>

- 15 – Pull three dome light wires through upper slot in switch panel.

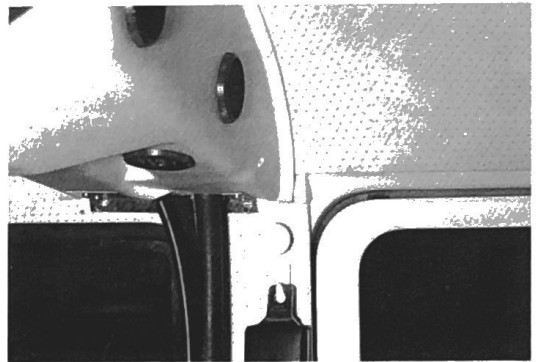
**Note:**

In some cases, dome light wires may have to be extended due to variance in length of wiring.

- 16 – Prop evaporator assembly firmly to ceiling and align front of evaporator as shown.



- 17 – Using evaporator mounting brackets as templates, drill five 5/32" holes. Secure evaporator with five No. 14 x 3/4" hex head sheet metal screws.



- 18 – Pass dome light wires through switch panel frame and reconnect to dome light. Snap dome light into switch panel.

- 19 – Push one end of long drain hose on drain hose connection on left side of evaporator.

- 20 – Push other end of drain hose through remaining hole in sponge seal.

- 21 – Plug evaporator wiring harness and main wiring harness together.

- 22 – Tape suction and discharge hoses and wiring harness together every 12" from evaporator assembly down. Press them against left vehicle wall swinging out at bottom to hole in floor.

**Note:**

Don't cross hoses or wiring. Do not tape drain hose, or it might be pinched off.

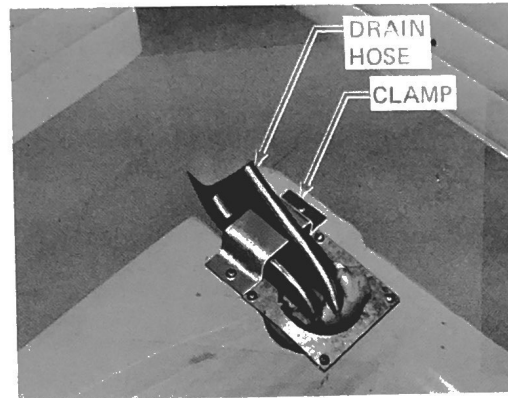
- 23 – Compress sponge seal with retainer plate and secure with four No. 8 x 1" sheet metal screws.

# ZC<sub>0.2</sub> EVAPORATOR

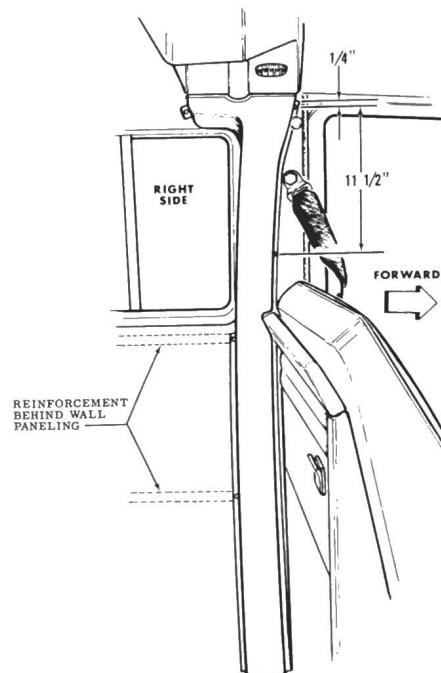
- 24 – Using a saddle clamp, secure suction and discharge hoses to passenger compartment floor and as close to left wall of car as possible with two No. 8 x 1/2" sheet metal screws.

Note:

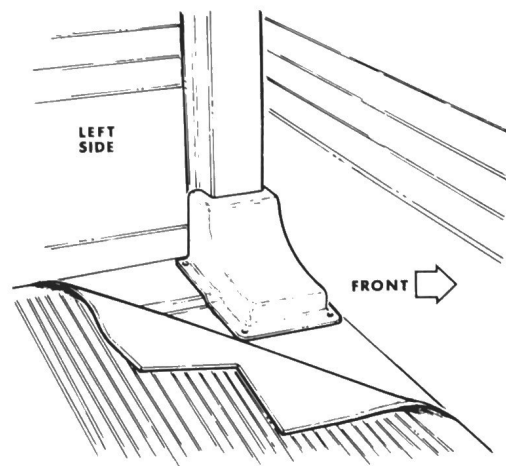
Do not clamp over drain hose.



- 25 – Locate post trim cover and secure with five No. 6 x 1/2" sheet metal screws and flatwashers. Two lower, rear holes must be drilled into reinforcements behind left wall panel.



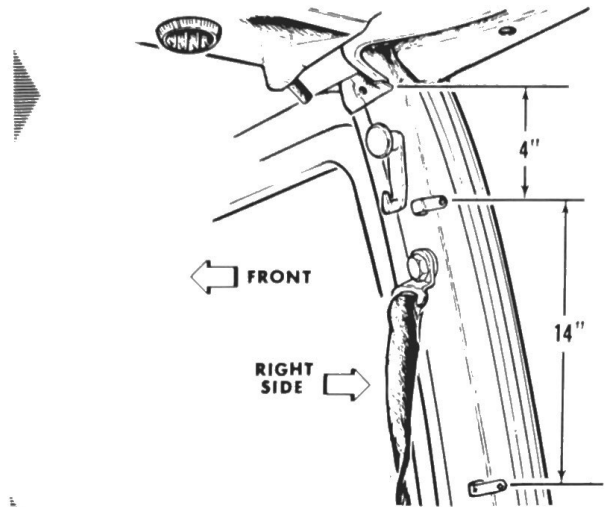
- 26 – Locate post trim adapter cover. Secure with three No. 6 x 1/2" sheet metal screws and flatwashers.



- 27 – Push end of other drain hose on drain hose connection on right side of evaporator.

# EVAPORATOR ZC<sub>0.2</sub>

- 28 – Drill two No. 30 holes in right pillar post 4" and 10" below evaporator. Secure drain hose with two black plastic clamps and two black oxide No. 6 x 1/2" sheet metal screws and flatwashers.

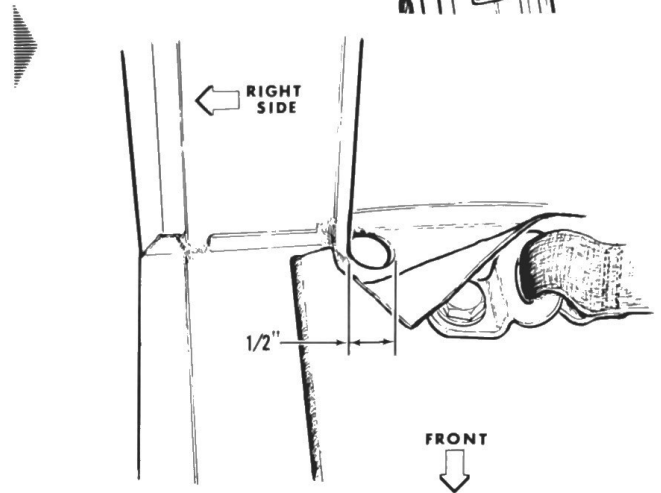


- 29 – Drill a 1/2" hole at right rear corner of front passenger seat forward of vertical wall.

Note:

Seat belt anchor underneath vehicle varies in some vehicles and can cause interference.

- 30 – Insert drain hose into hole and seal with sealing compound.

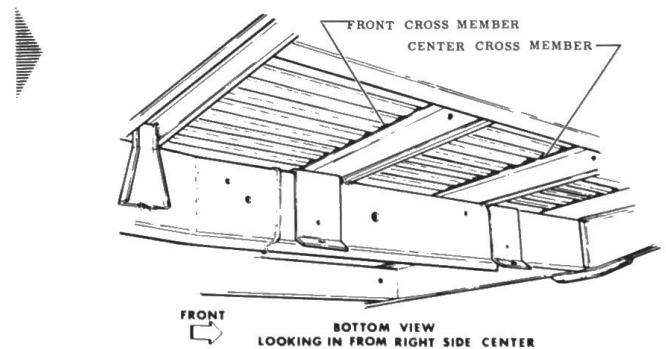


- 1 – Connect short No. 6 liquid hose to rear outlet connection of condenser assembly. Tighten to 15 – 19 foot pounds (2.1 – 2.6 mkg.).

Caution:

Use two wrenches so as not to stress or twist coil tube connection.

- 2 – Place four hanger brackets over frame side members as shown. Position brackets immediately in front of front cross member and immediately to rear of center cross member.

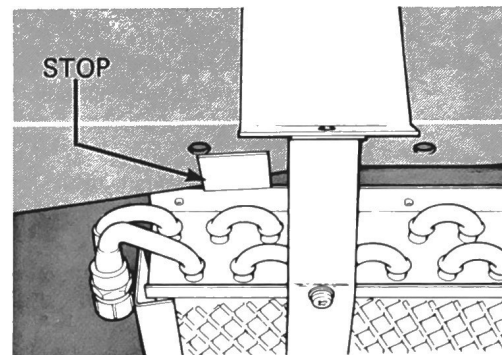
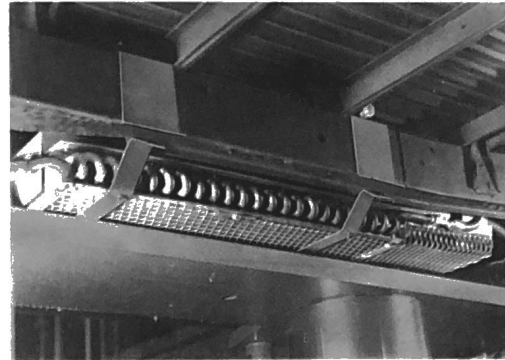


- 3 – Lower car to ground. Be sure hoist is down all the way. Slide condenser assembly (fans to rear) on hoist platform. Using bolt holes in cross straps and hanger brackets as a guide, position between front and rear cross members. Center between frame side members at same time.



# ZC<sub>0.2</sub> CONDENSER

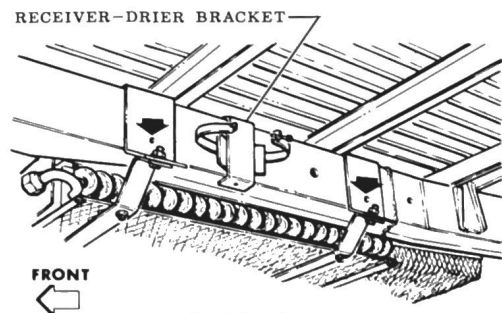
4 – Cautiously raise lift with condenser up to under side of car. On front left side a locating stop will position height of condenser. Providing condenser clears all obstructions, continue to raise lift until car is brought up to a working level.



5 – Attach condenser to hanger brackets with four 5/16" x 1-1/2" NF bolts, nuts, flat-washers, and lockwashers. Tighten until condenser assembly is securely held in place.



6 – Drill one No. 30 hole through each hanger into side member (arrow). Secure each bracket with a No. 8 x 3/8" sheet metal screw.



RECEIVER-DRIER BRACKET  
FRONT  
BOTTOM VIEW  
LOOKING IN FROM LEFT SIDE CENTER

7 – Locate receiver-drier bracket on left frame side member as shown. Drill a No. 30 hole and secure with a No. 8 x 3/8" sheet metal screw.

# CONDENSER ZC<sub>0.2</sub>

---

- 8 – Place receiver-drier on bracket so that sight glass is visible and tighten strap clamp securely.

Note:

Locate receiver-drier in its bracket so that top of pressure switch is not pressing against floor.

- 9 – Connect two wires from pressure switch mounted on top of receiver-drier to two white wires on wiring harness.
- 10 – Connect two condenser blower motor wires to two-connection blue wire on wiring harness.
- 11 – Pass short No. 6 liquid hose over top of left frame side member and connect to rear inlet of receiver-drier. Tighten to 20 – 24 foot pounds (2.8 – 3.3 mkg.).
- 12 – Connect long No. 6 liquid hose to front outlet of receiver-drier. Tighten to 15 – 19 foot pounds (2.1 – 2.6 mkg.). Clamp to front frame cross member.
- 13 – Connect No. 8 discharge hose to front inlet of condenser coil. Tighten to 21 – 27 foot pounds (2.9 – 3.7 mkg.).

Caution:

Use two wrenches so as not to stress or twist coil tube connection.

- 14 – Begin to evacuate system now.

# COMPLETION ZC<sub>0.2</sub>

---

- 1 – Reconnect battery.
- 2 – Turn ignition switch ON. Do not start engine. Turn air conditioner ON. Tighten clutch center bolt 15 – 20 foot pounds (2.1 – 2.8 mkg.). Turn ignition switch and air conditioner OFF.
- 3 – If evacuation is complete, charge air conditioning system with 52 ounces of R-12.
- 4 – Reinstall receiver-drier sight glass dust cover.
- 5 – Remove all drill chips, shavings and tools from vehicle.
- 6 – Place "COOL" decal to rear window where state law permits.
- 7 – Place "Maximum Load" sticker behind driver's seat next to tire pressure sticker. This is required by Federal law.
- 8 – Test drive car with air conditioner in operation.

