

Heater/ Air Conditioner Model R-8230

R-8230 HEATER/AIR CONDITIONER INSTALLATION INSTRUCTIONS FOR NAVISTAR "S" SERIES 1983 TO 1994

Please read instructions all the way through before beginning work.
Install compressor per installation instructions provided with compressor mount kit.

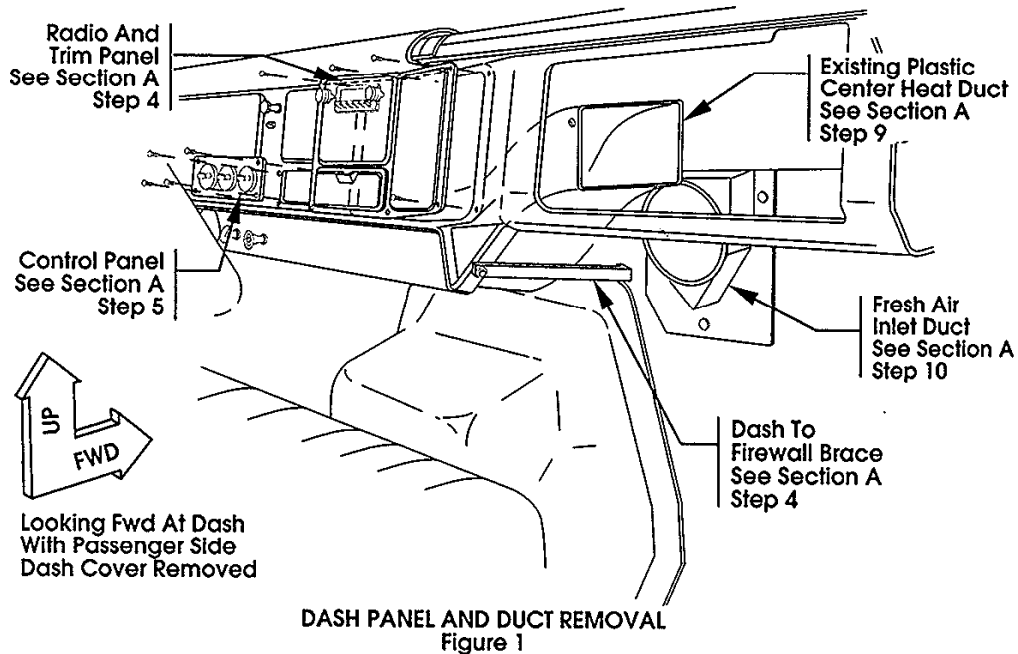
PLEASE NOTE: WHEN INSTALLING ON PRE-1990 2200, 2500 AND 2600 SERIES TRUCKS,
YOU MAY SKIP STEPS A-8, 10, 11, 13, 16, 17 AND B-5.

A. Preparation of truck for installation of R-8230 Heater Air Conditioner Unit.

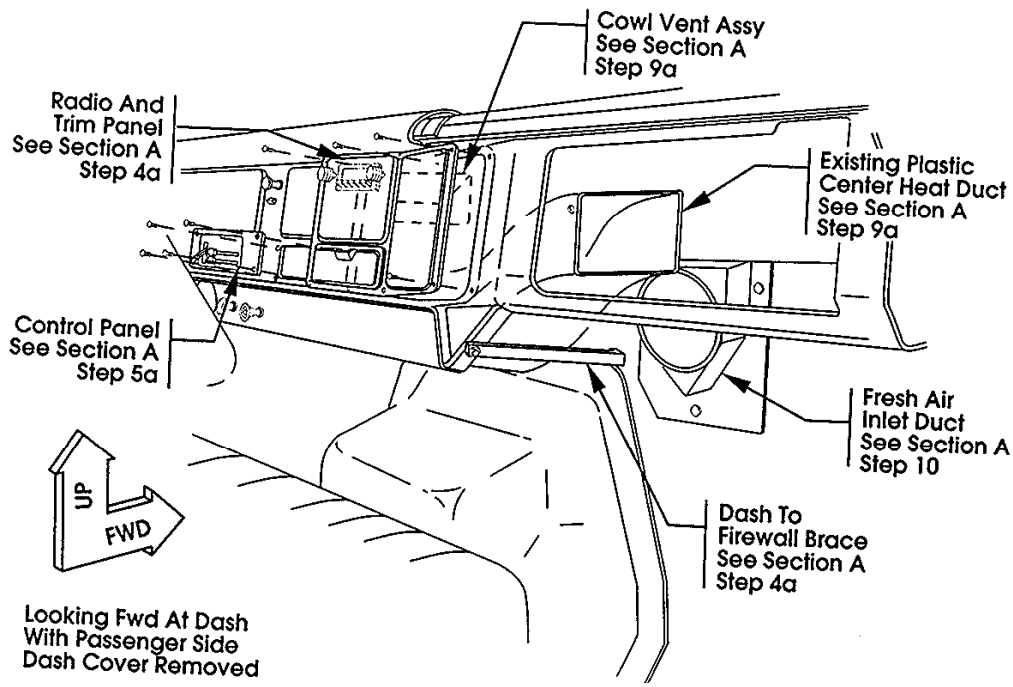
1. Disconnect batteries.
2. Remove air cleaner and inlet hose only when located on passenger side firewall.
3. Clamp off and remove heater hoses from heater.

NOTE: FOR PRE-1990 TRUCKS SEE STEPS 4a. AND 5a.

4. Remove and retain left and right dash covers, defroster - A/C duct and all other removable dash panels excluding the gauge cluster. Take out dash to firewall brace. See Fig. 1.
5. Disconnect control cables from the heater and remove control panel.
6. Remove relay panel from dash. Remove all relays and Kysor auto override, clip nuts, wiring, anti-chafe strips and label from the relay panel. (Discard panel).
7. Reinstall all of the above items on the new relay panel provided in kit, set aside.



- 4a. Remove and retain passenger side dash cover, radio speaker, radio and trim panel, and dash to firewall brace. See Fig. 1a.
- 5a. Disconnect control cables and wiring from heater unit. Then remove control panel from dash. See Fig. 1a. (Proceed to step 8).



PRE-1990 TRUCKS
DASH PANEL AND DUCT REMOVAL
Figure 1a

8. Remove (2) sheet metal screws from heater core plumbing seal plate. Remove (4) nuts and washers from unit mounting studs and remove (1) screw from center heat duct. Save screws, nuts and washers. Now remove heater unit and gasket from firewall.

NOTE: FOR 1993 AND NEWER TRUCKS PROCEED TO STEP 9b

9. Remove plastic center heat duct and discard.

FOR PRE-1990 TRUCKS

- 9a. Remove plastic center heat duct and bracket assembly by drilling out rivets common to the cowl vent assembly. See Fig. 1a. Proceed to step 10.

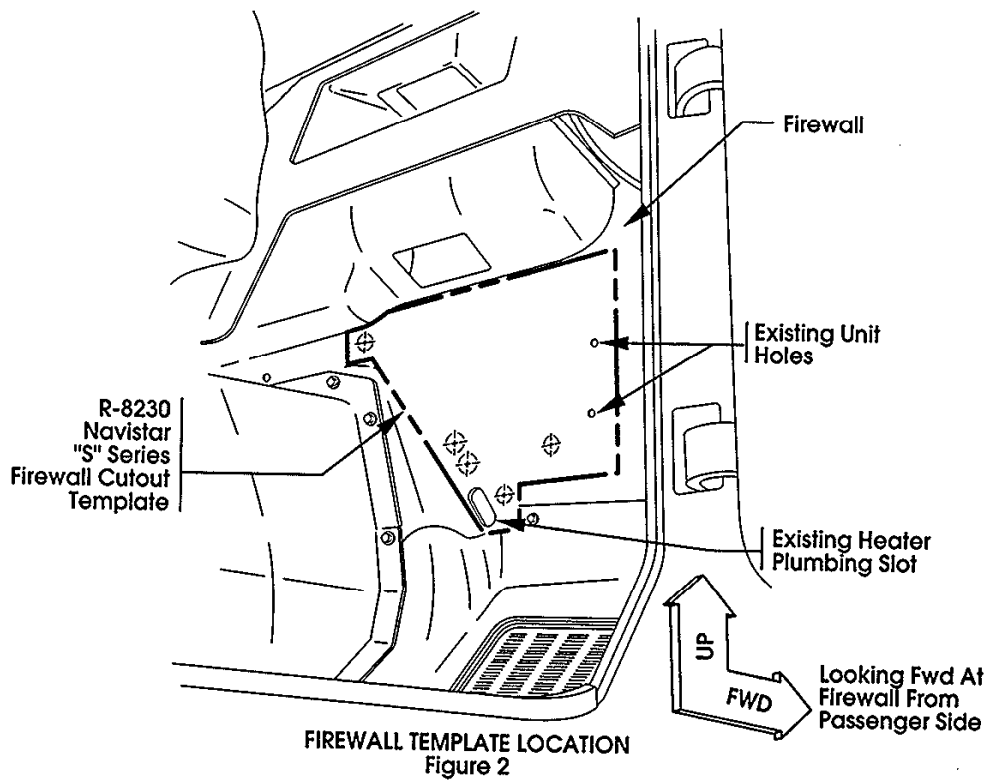
FOR 1993 AND 1994 TRUCKS

- 9b. Cut a 2 1/2" diameter hole in the top of center heat duct 6" from the passenger side edge of duct. Install 2 1/2" plastic flex hose ring. Install ball louver in existing hole in bottom of duct. Proceed to step 10.

10. Remove plastic fresh air inlet duct from firewall. (Save screws) See Fig. 1a.

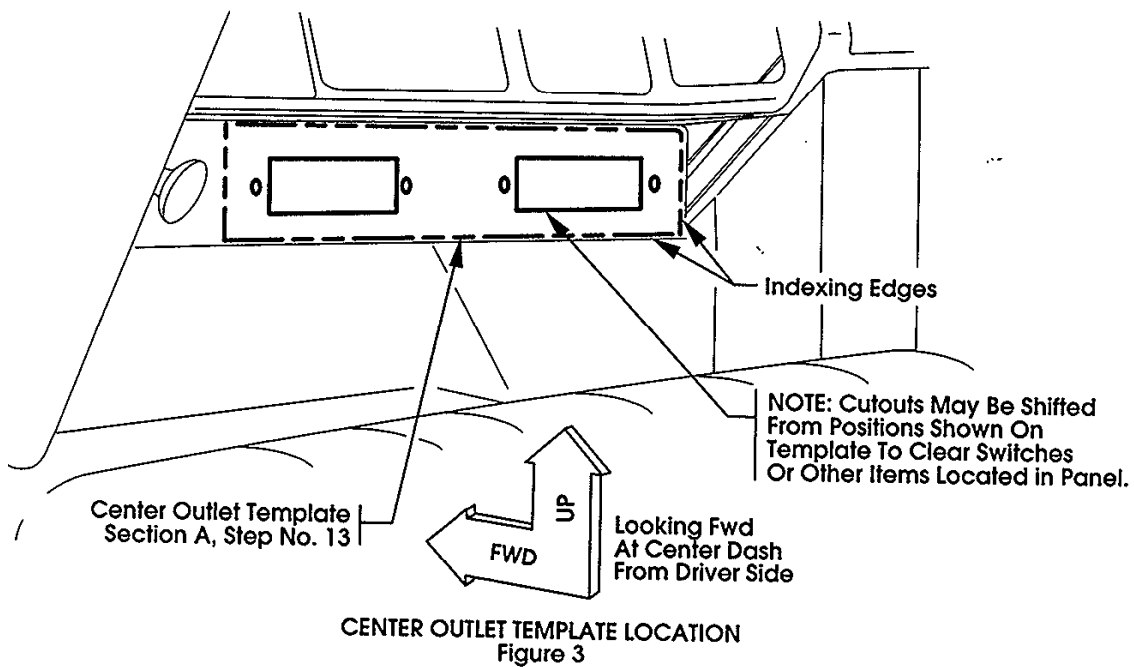
NOTE: FOR PRE-1990 TRUCKS PROCEED TO STEP 12.

11. Disconnect the windshield washer pump wires from the vehicle wire harness, pull them and the grommet attached through the firewall into the engine compartment, set aside. Install the 3/4" grommet from the kit into this existing wiring hole.
12. On firewall, use existing heater plumbing slot and (2) unit mounting holes to align Firewall Cutout Template. Now drill (2) 1-1/4" holes, (1) 7/8" and (2) 3/4" holes. Also replace screws from step 10 back in their own holes to help prevent air leaks into cab. See Fig. 2.



NOTE: FOR 1993 AND NEWER TRUCKS PROCEED TO STEP 15.

13. On the lower steel dash panel, use passenger side edge and bottom edge, to index the center outlet diffuser template. Saw rectangular cutouts per template. (See Fig. 3). Drill (4) .093 dia holes.



NOTE: FOR PRE-1990 TRUCKS PROCEED TO STEP 14a.

NOTE: FOR 1993 AND 1994 TRUCKS PROCEED TO STEP 15.

14. Locate driver side top dash panel template as shown in Fig. 4. Drill 3" dia. hole (a hole saw with a longer pilot drill works well.) Cover existing driver side rectangular cutout using plate provided in kit. Secure in place using plastic push-rievet from kit.

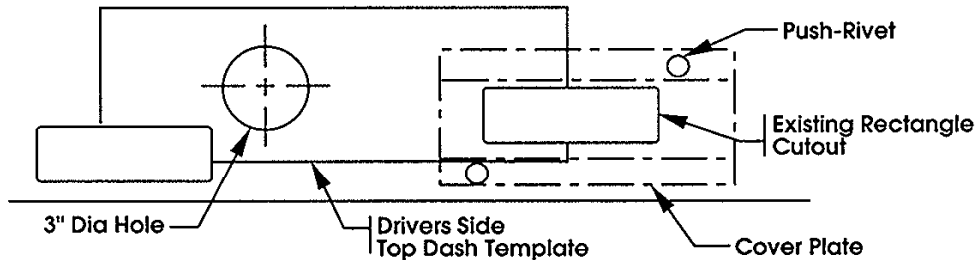


Figure 4

15. Locate Passenger Side Top Dash Panel Template as shown in Fig. 5. Drill 3" dia. hole.

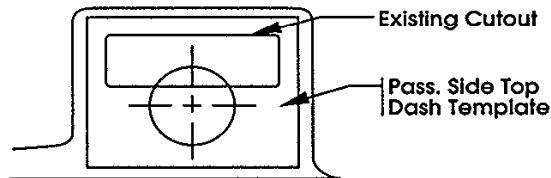
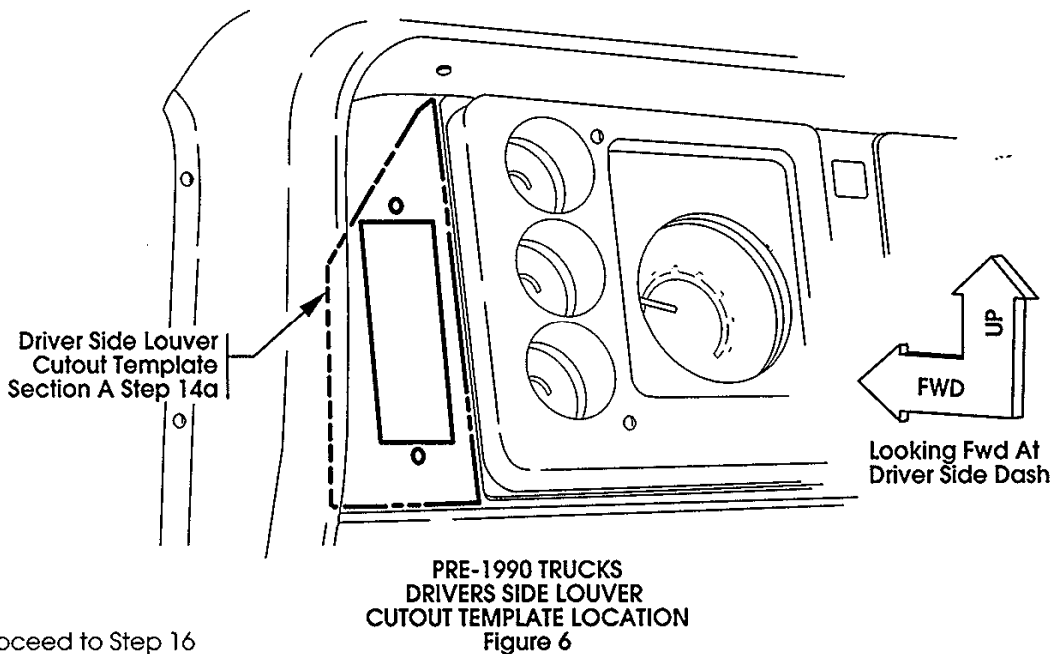


Figure 5

NOTE: FOR 1993 AND 1994 TRUCKS PROCEED TO STEP 18.

- 14a. Locate Driver Side Louver Cutout Template to the left of panel with water temp, oil pressure and amp gauge. Cut rectangular hole per Template. See Fig. 6.
- 15a. Locate Passenger Side Louver Cutout Template in center of vertical indentation on RH side of passenger dash cover. Cutout per Template.



Proceed to Step 16

16. Using mounting brackets as a guide; locate and drill (2) 5/16 dia. holes in indentation on driver side of engine cover approx. 6" aft of firewall. (Leave adequate clearance for the throttle cable.) Locate and drill (2) 5/16 dia. holes on passenger side of engine cover near the top approx 6" aft of firewall.
17. Install heat outlet mounting brackets to engine cover in holes just drilled using 1/4-20 hex HD screws and nuts provided in kit.

NOTE: FOR PRE-1990 TRUCKS PROCEED TO STEP 20

18. On the existing defroster - A/C duct, remove and discard the rubber A/C baffles and remove the vertical plastic webs they were attached to.
19. On the outer dash covers, remove and discard the plastic boxes used to plug the A/C cutouts. Trim 5/16" off the edge of the lower "lips" in these cutouts. Install louver attachment brackets provided using the trim clips from the kit, one on each side of each A/C cutout. See Fig. 7.

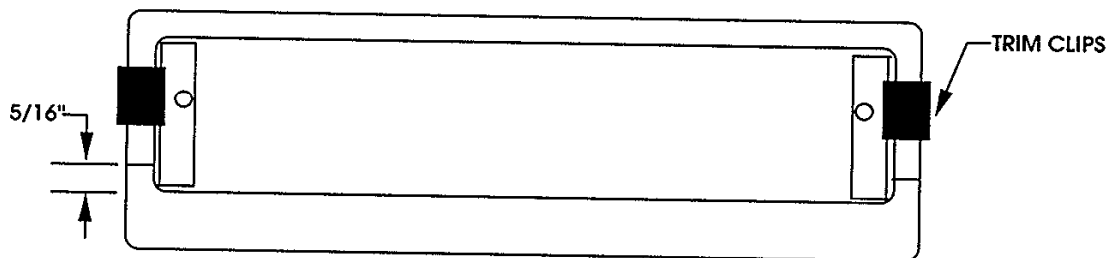


Figure 7

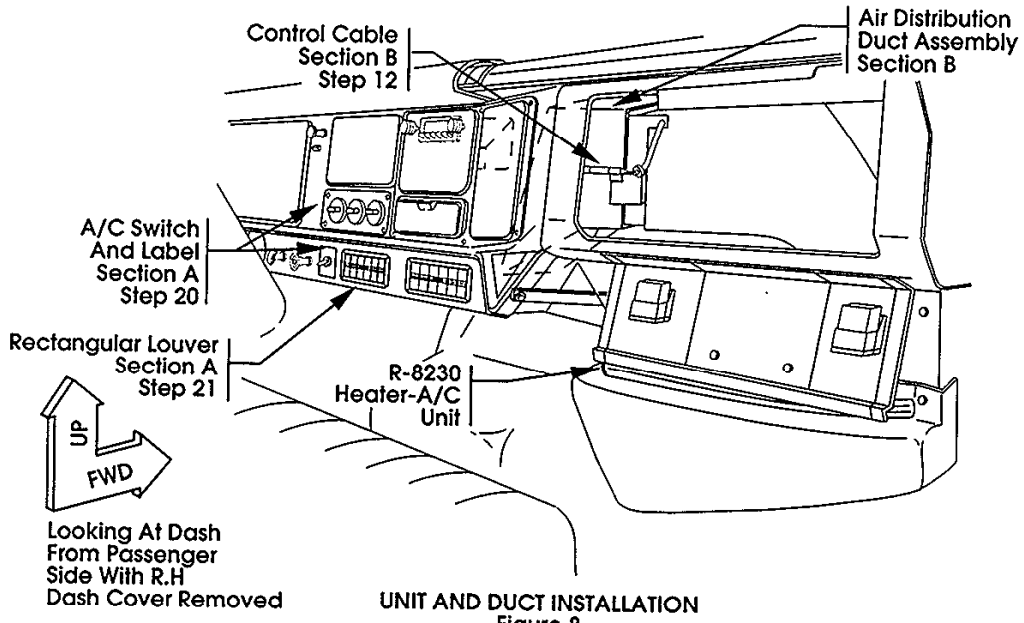
20. Find a suitable location for the mode switch/circuit board assembly in dash panel. Drill (1) 15/32" dia. hole. Locate A/C label around drilled 15/32 hole. In same hole, secure mode switch assembly with keyway pointing down.

NOTE: FOR 1993 AND 1994 TRUCKS PROCEED TO SECTION B.

21. Install remaining (2) rectangular louvers into lower dash panel using #4 SMS provided in kit.

FOR PRE-1990 TRUCKS

- 21a. Install (3) rectangular louvers into cutouts in dash using #4 SMS provided. Snap (1) rectangular louver into plastic passenger side dash panel trimmed in step 15a.



UNIT AND DUCT INSTALLATION
Figure 8

B. Install R-8230 Heater A/C Unit

NOTE: FOR 1993 AND 1994 TRUCKS PROCEED TO STEP 2.

1. Prior to installing the unit, slip air distribution plenum up under dash and place it on top of engine cover.

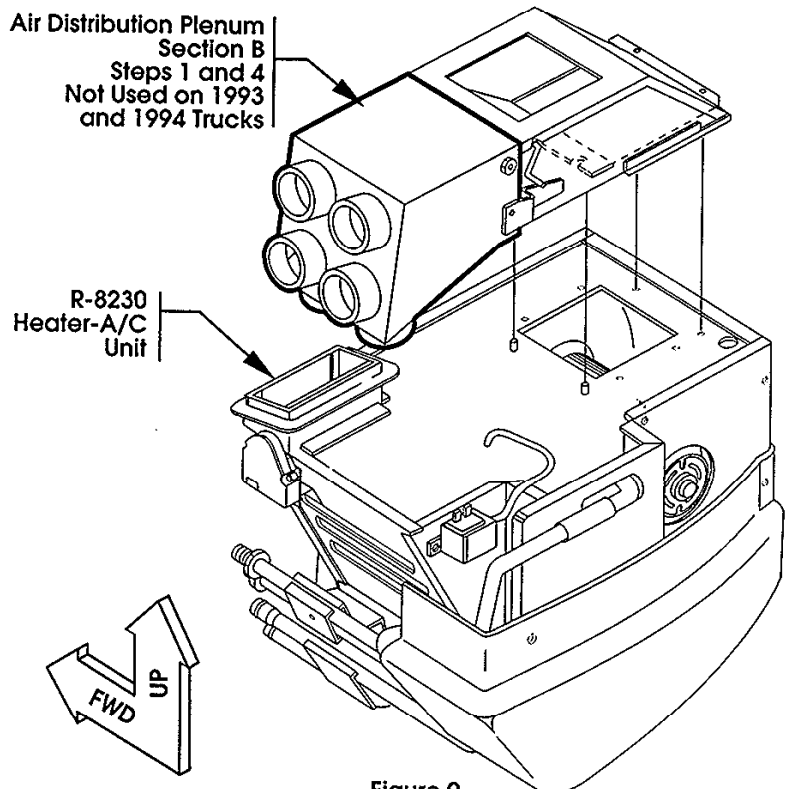
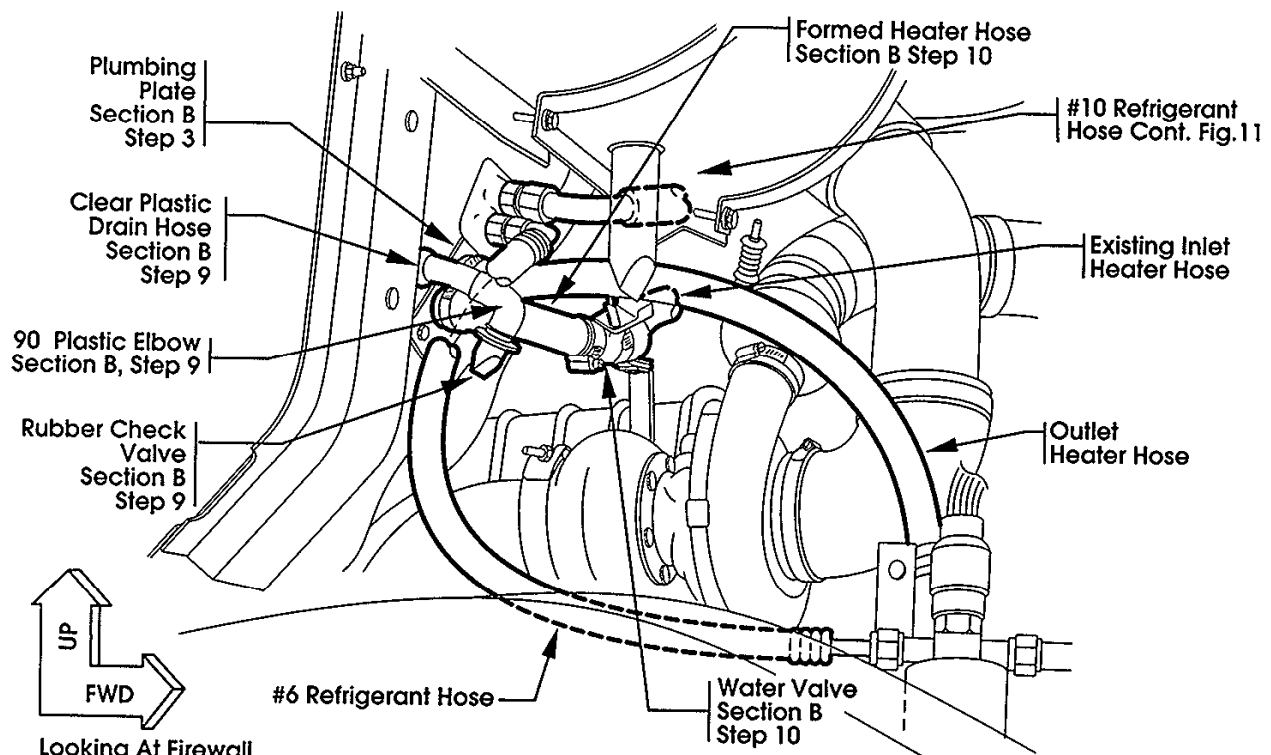


Figure 9



REFRIGERANT HOSE, DRAIN HOSE, HEATER HOSE AND
WATER VALVE ROUTING FROM FIREWALL
Figure 10

2. Mount R-8230 unit to firewall using original (4) nuts and washer.
3. Install heater plumbing plate to firewall using original (2) sheetmetal screws. See Fig. 10.

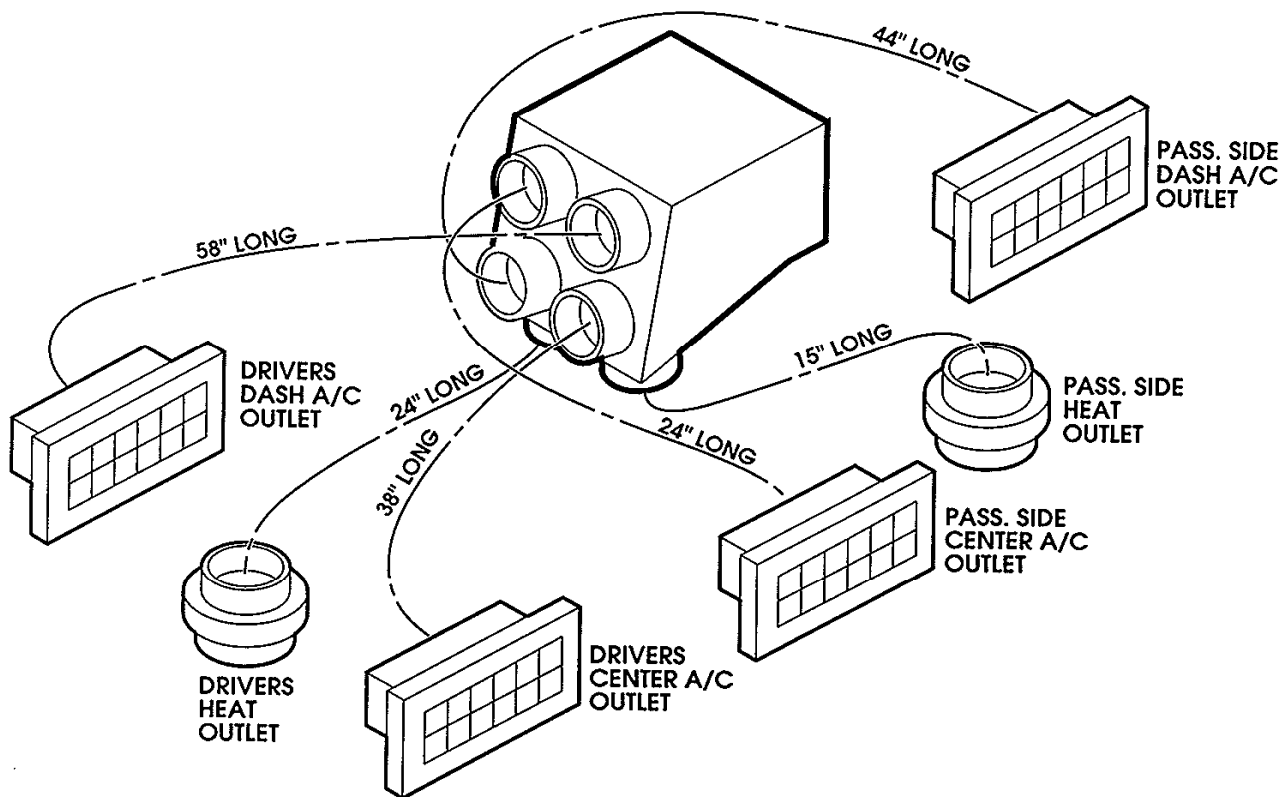
NOTE: FOR 1993 AND 1994 TRUCKS PROCEED TO STEP 4a.

4. Slide air distribution plenum onto R-8230 heater-A/C unit and secure to top using (2) 10-32 hex HD. screws.

NOTE: BE SURE INBOARD FLANGE OF PLENUM GOES UNDER LOCK NUTS.

FOR 1993 AND 1994 TRUCKS ONLY

- 4a. Connect existing center heat duct to air outlet duct of unit.
- 4b. Route 2 1/2" flex hose 44" long from 2 1/2" plastic ring (section A, Step 9b) to passenger side top dash louver (Section A, Step 15). Proceed to step 7.



FLEX HOSE ROUTING DIAGRAM
Figure 11

5. Route 2-1/2" dia. flex hoses from distribution plenum to louver outlets per Fig. 11.
6. Install heat outlet ball louvers and hose adaptors to mounting brackets that were fastened to engine cover.
7. Install (2) grommets in the (1) 7/8" and (1) 3/4" holes drilled in firewall.
8. Reinstall control panel
 - a. Route mode control cable to control rod on unit outlet duct and secure using thinner spacer and 10-32 x 1" hex HD. screw provided in kit.
 - b. Route water valve cable through upper 3/4" grommet installed in firewall.
9. Attach clear plastic drain hose to unit and route through grommet in firewall. Attach 90 degree plastic elbow and rubber check valve to hose end. See Fig. 10.
10. Attach provided formed heater hose to the inlet heater core plumbing using hose clamp. See Fig. 10.
11. On existing inlet heater hose routed from the engine, cut off 9" and assemble the cable operated water valve using hose clamp. Attach opposite end of water valve to the just installed formed heater hose. See Fig. 10.
12. Re-attach the outlet heater hose to the unit heater plumbing.
13. Attach control cable to new water valve. (Make sure valve is completely closed when heat lever is in the "Off" position).

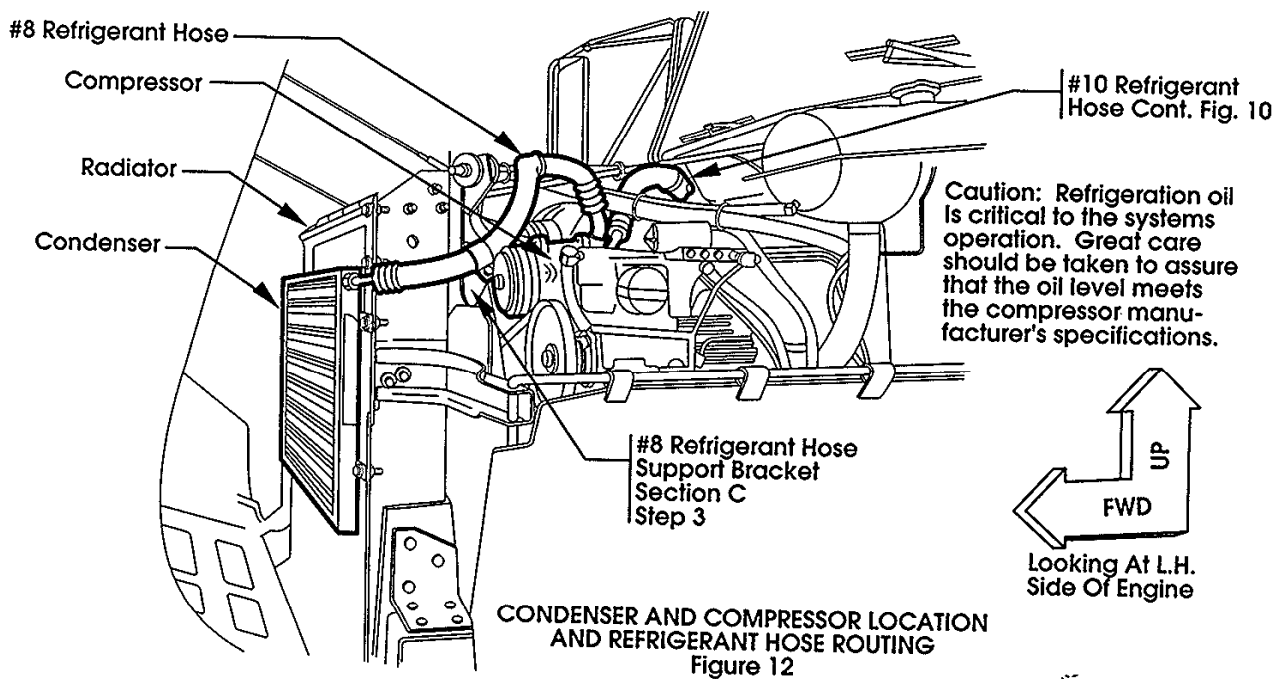
C. Install Condenser.

1. Locate and secure condenser to radiator per universal mounting kit instructions.

NOTE: USE ADDITIONAL "L" BRACKETS PROVIDED FOR MOUNTING UNIVERSAL BRACKETS ON 2200, 2300, 2500 AND 2600 SERIES.

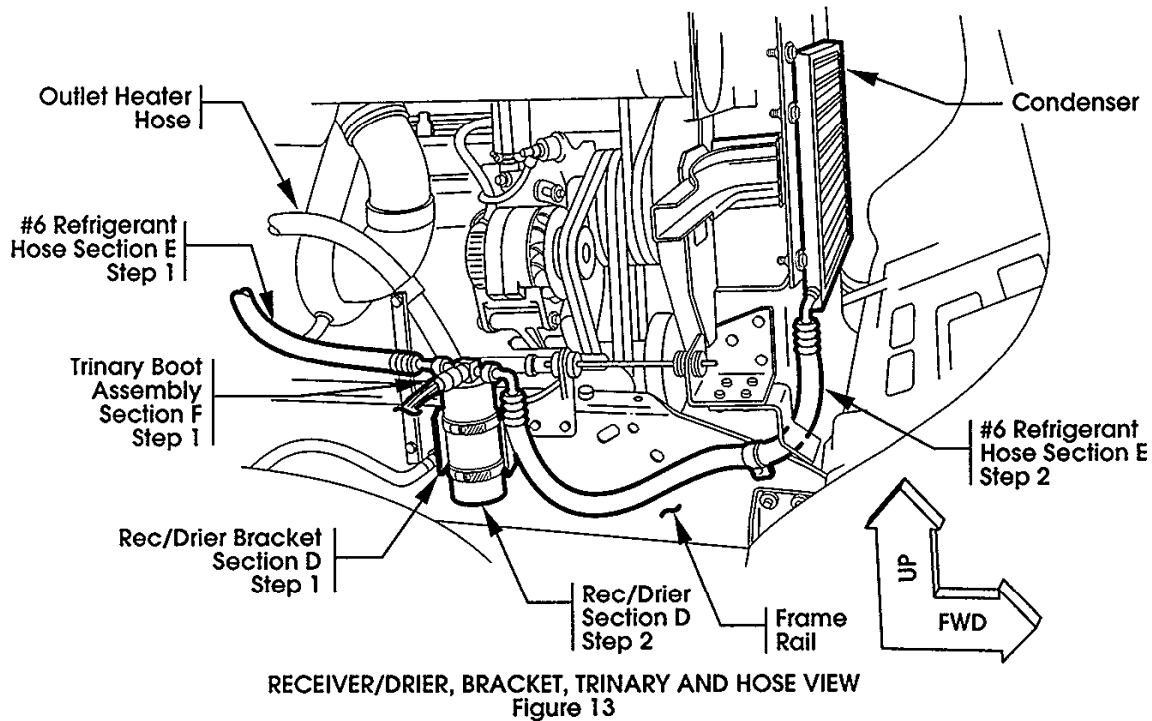
NOTE: STEPS 2 & 3 NOT REQUIRED FOR 2200 THROUGH 2600 "S" SERIES TRUCKS.

2. Remove (2) screws securing fan shroud to the radiator on the driver side.
3. Re-assemble securing #8 refrigerant hose support bracket to the radiator and shroud. See Fig. 12.



D. Install Receiver Drier

1. Mount receiver drier bracket to passenger side frame rail. Match up hole pattern on bracket with existing holes on frame rail and mount using (2) 1/4-20 bolts, (2) lockwashers, and (2) nuts provided. See Fig. 13.
2. Assemble receiver drier to drier bracket. See Fig. 13.



E. Route Refrigerant Hoses

NOTE: Lubricate "O"-rings with refrigeration oil before using.

Provide sufficient clearances around sharp angles and edges to prevent damage to refrigerant hoses.

Do not leave refrigerant hoses unsupported! The service life of the Heater-A/C unit or condenser may be greatly reduced as a result of broken fittings.

Hose clamps and tie wraps are provided in kit to secure both refrigerant and heater hoses.

1. Route #6 refrigerant hose with 90 degree and straight fittings from the "out-port" of the receiver drier, to the #6 side of the expansion valve. See Fig. 13.
2. Route #6 refrigerant hose with 90 degree fitting from the condenser, to the receiver drier. Cut hose to length and install 90 degree #6 fitting, using self-locating clamp provided or use ferrule and crimp fitting to hose. See Fig. 13.
3. Route #8 refrigerant hose with 90 degree fitting from the condenser, to the compressor. Cut hose to length, and install straight #8 fitting using self-locating clamp provided or use ferrule and crimp fitting to hose. See Fig. 12.

NOTE: SECURE HOSE TO SUPPORT BRACKET USING #8 HOSE CLAMP AND 1/4-20 HEX HEAD SCREW (WHEN APPLICABLE).

4. Route #10 refrigerant hose with 90 degree fitting, from the unit to the compressor. Cut hose to length and install straight #10 fitting using self-locating clamp provided or use ferrule and crimp fitting to hose. See Fig. 12.

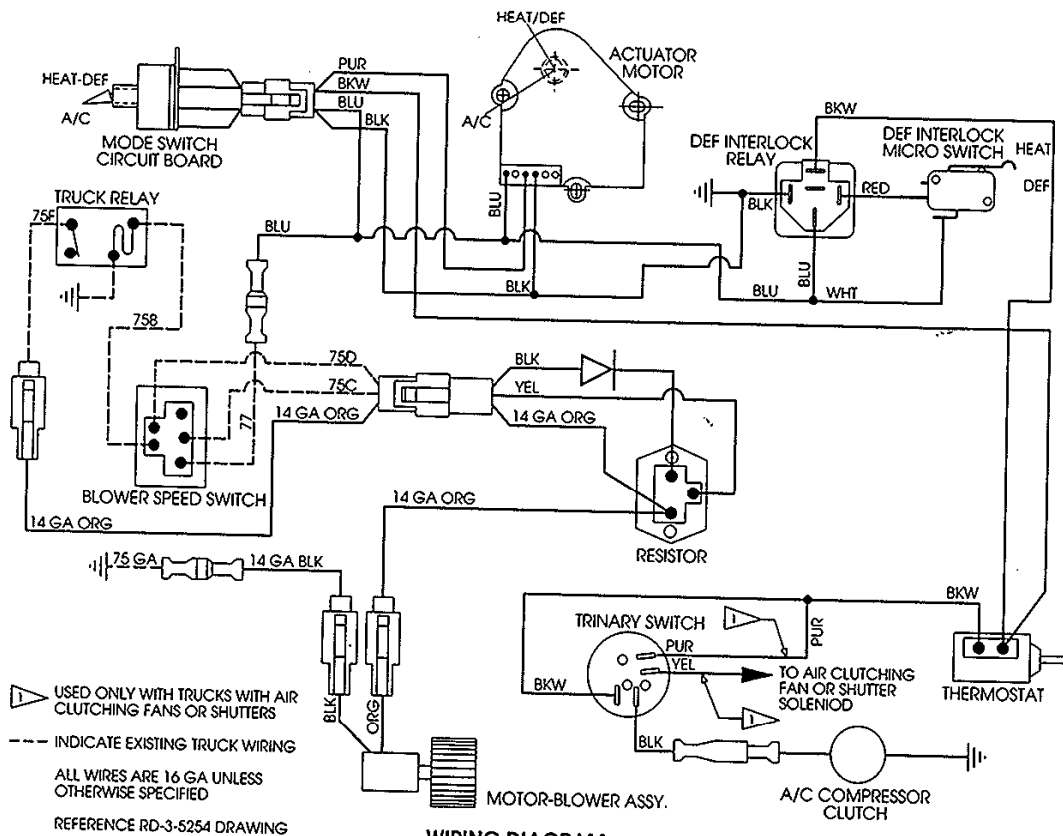
F. Wiring Instructions

NOTE: SEE WIRING DIAGRAM (Fig. 14)

1. Attach trinary wiring harness to connectors on trinary switch.
 - a. Install grommet provided in kit, into 7/8" dia. hole drilled in firewall in section A Step 12. Route black/white and purple wires from trinary harness through grommet.
 - b. Route black/white wire to thermostat on unit and insert into 2 contact connector body on thermostat.
 - c. Route black wire to compressor.
 - d. Route yellow wire (when applicable) to solenoid valve or air clutching fan or shutters.

NOTE: YELLOW WIRES ARE ONLY USED ON TRUCKS EQUIPPED WITH AIR CLUTCHING FANS OR SHUTTERS.

2. Locate wires 77 and 77a in truck harness near center of cab. Cut off connector on 77 wire and install 1/4" female terminal provided in kit.
3. Route end of unit wire harness to mode switch/circuit board assembly and connect 4 way connector body on harness to mating connector on switch/board assembly. Connect 1/4" male terminal to 1/4" male terminal just installed on 77 wire in Step 2.
4. Remove 75C, 75D and 75E wires from existing heater unit resistor connector. Completely remove 75E from truck harness.
5. Re-insert 75C and 75D wires into 3-way connector provided. Insert terminal end of orange wire provided in kit into remaining opening in connector body. Connect 3-way connector to mating connector from R-8230 unit.



WIRING DIAGRAM
Figure 14

6. Route black ground wire from Heater-A/C unit to existing ground wire. Cut off terminal from existing heater only ground wire and attach the 1/4" insulated female terminal. Then make connection.
7. Connect 4 way connector from unit wire harness to mating connector on mode switch/circuit board assembly.

NOTE: FOR PRE-1990 TRUCK PROCEED TO SECTION H

G. Finish Assembly

1. Install the foam gaskets provided in kit around the 2-1/2" hoses previously routed in step B4, through the 3" diameter holes drilled in the dash - top panel. Pull the hoses through the A/C outlets on the defroster duct, then reinstall duct.
2. Pull the 2-1/2" hoses through the A/C outlets, on the left and right dash covers. Install covers, connect the hoses to the remaining rectangular louvers and install louvers in dash covers using #4 sheetmetal screws.

H. Final Assembly Check

CAUTION: CHECK COMPRESSOR REFRIGERANT OIL LEVEL PER COMPRESSOR MANUFACTURERS SPECIFICATIONS.

1. Seal around slot and holes in firewall, using refrigeration tape provided to prevent air leaks into cab.
2. Reinstall passenger side dash cover, radio speaker, radio and trim panel, and dash to firewall brace.
3. Reinstall air cleaner and inlet hose.
4. Evacuate the system. Then charge with R-12 and test for leaks.
5. Re-connect batteries.
6. Turn the ignition switch to the "On" position and the temperature control lever on the coldest position.
7. Place the Heat-A/C switch to the "A/C" position and the temperature control selector on the coldest position.
 - a. The clutch should click on and be engaged. If not see Section H Step 12.
 - b. The evaporator blower should be turning at high speed.
8. Turn the fan switch to the "Off" position and compressor clutch should disengage.
9. Move the Heat-A/C switch to the "Heat" position and compressor clutch should disengage.
10. Start engine and run at 1500-2000 RPM. Place the Heat-A/C switch to the "A/C" position and the fan speed on high. Check sight glass on receiver drier for bubbles. Add 6 to 8 ounces more R-12 after the sight glass just clears.
11. Make sure clutch cycles On and Off as system is operating.
12. If clutch does not engage, the system may not have been charged to a high enough pressure to actuate the Trinary™ switch. Place a jumper wire across the switch (at Terminals 1 & 2) and run system until it is fully charged then remove jumper wire.

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