Heater and Air Conditioning

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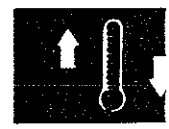
Air Conditioning 22-1



Heater

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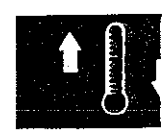
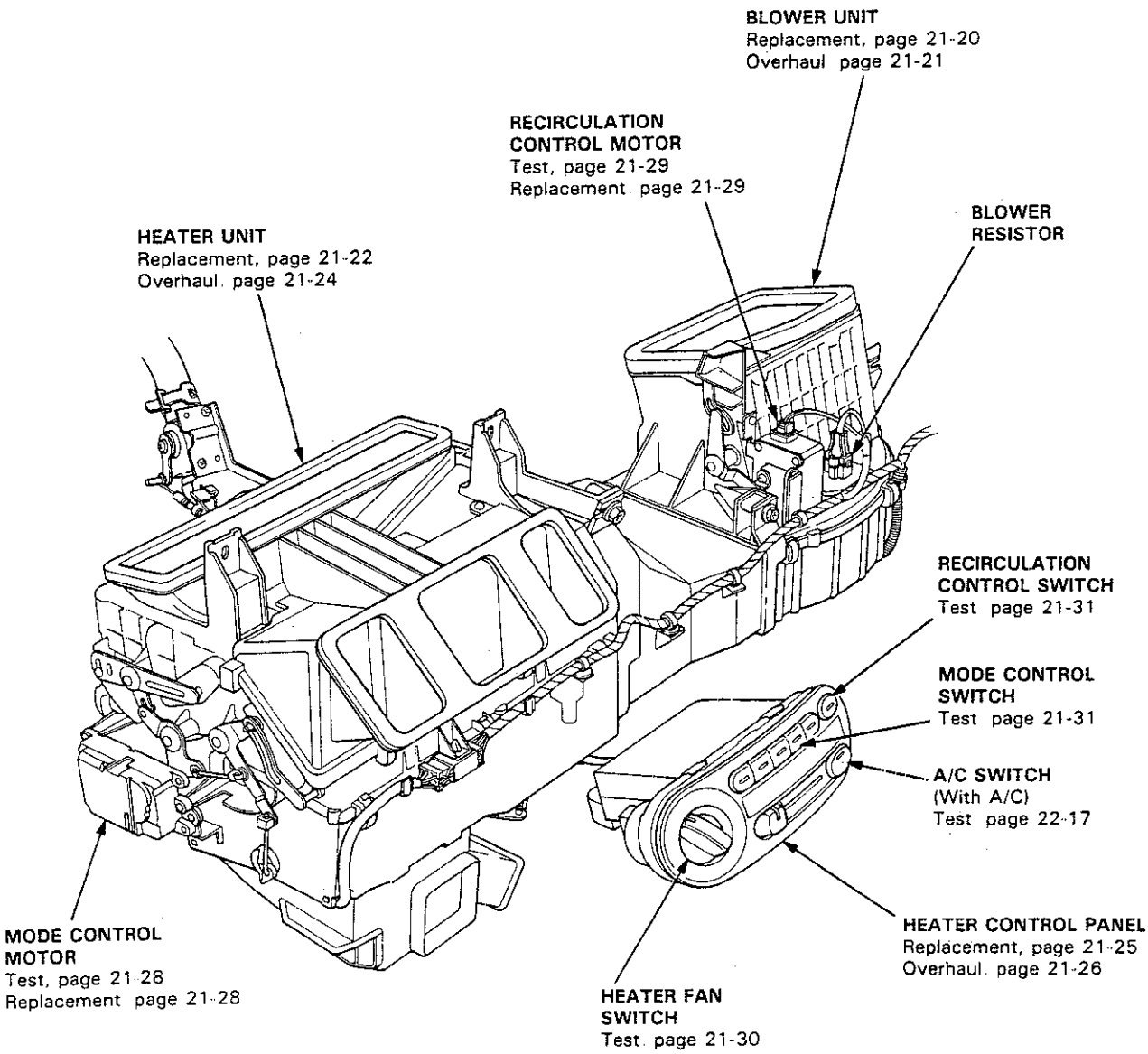


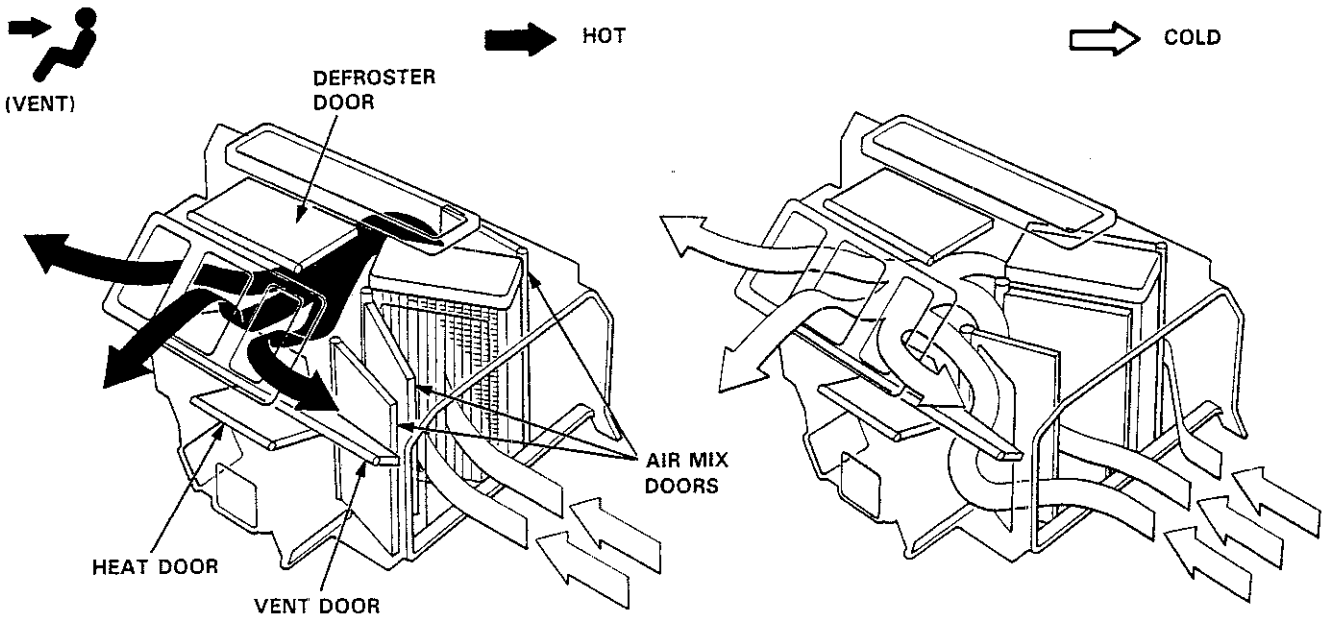
Illustrated Index

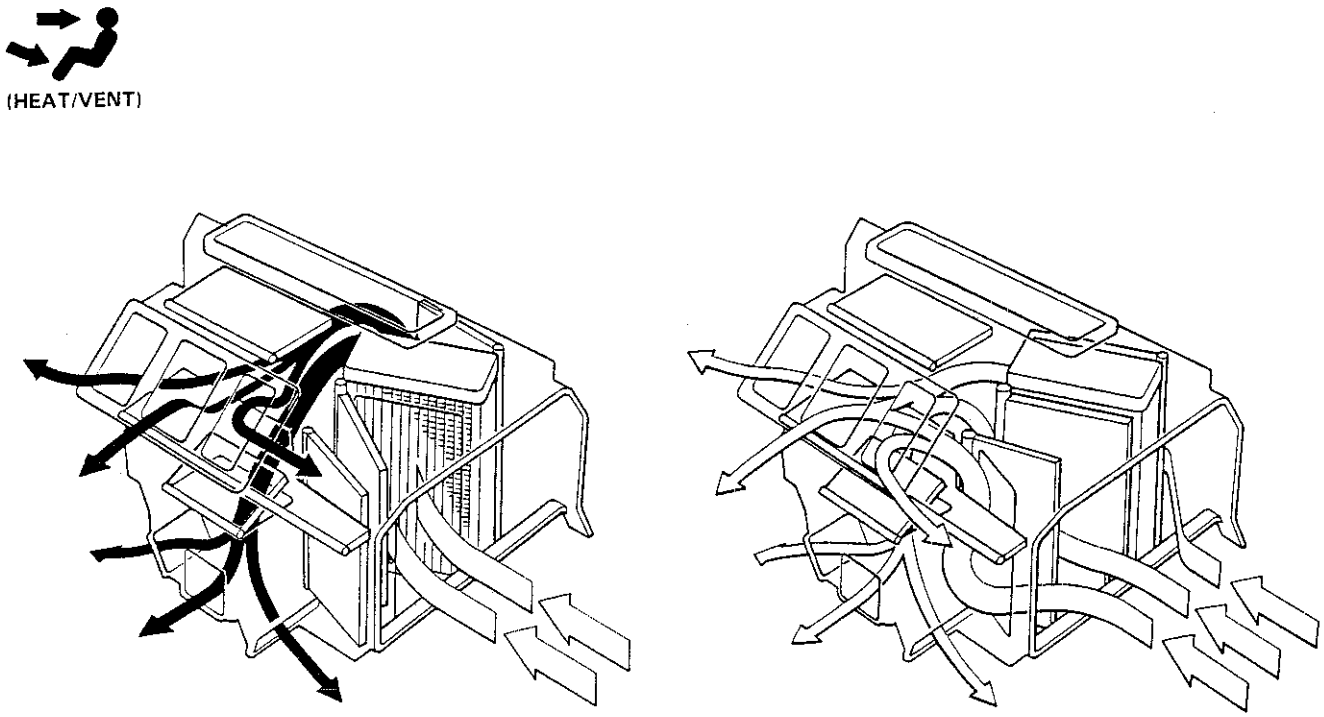
NOTE: LHD type is shown RHD type is symmetrical to LHD type



Heater Door Positions

NOTE: LHD type is shown. RHD type is similar.





(cont'd)

Heater Door Positions

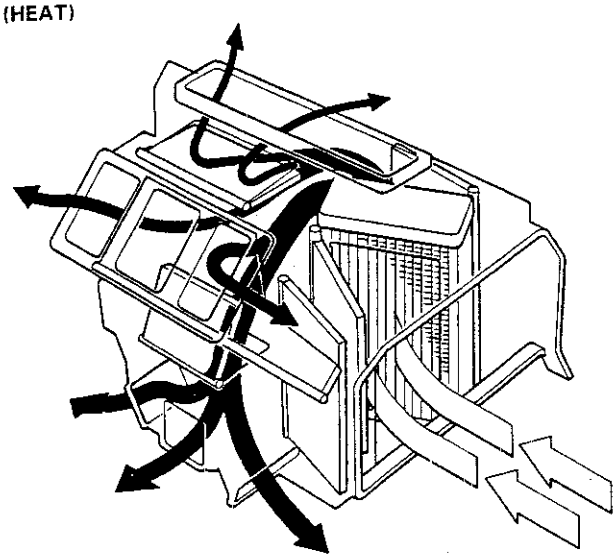
(cont'd)

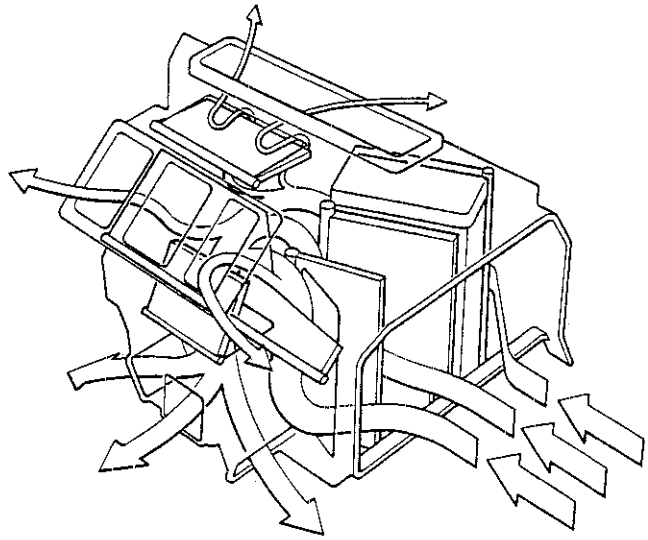
NOTE: LHD type is shown RHD type is similar

(HEAT)

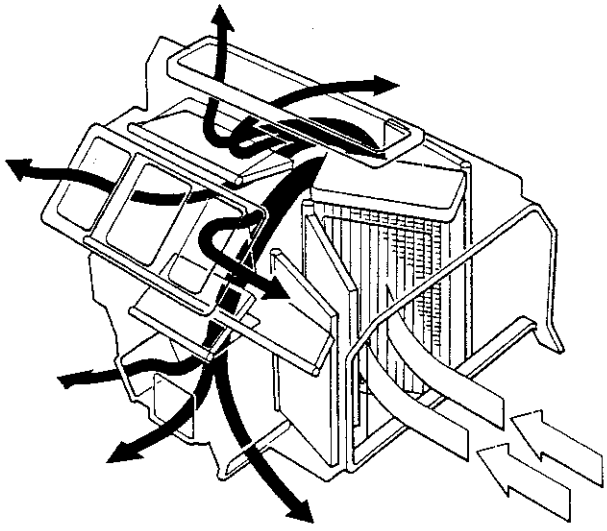
HOT

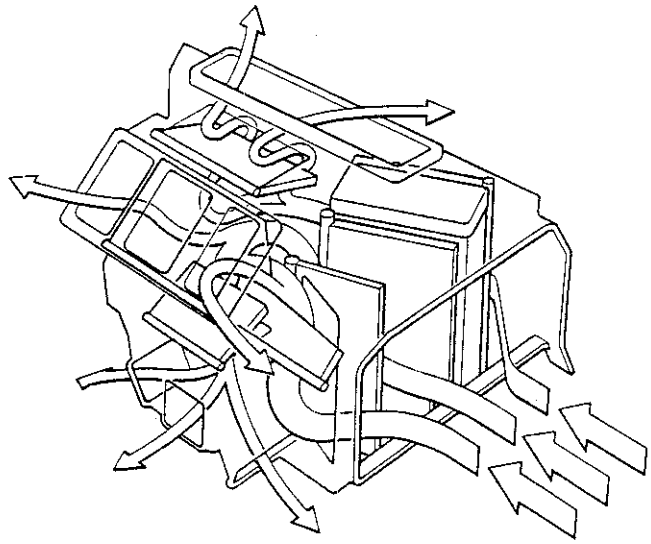
COLD



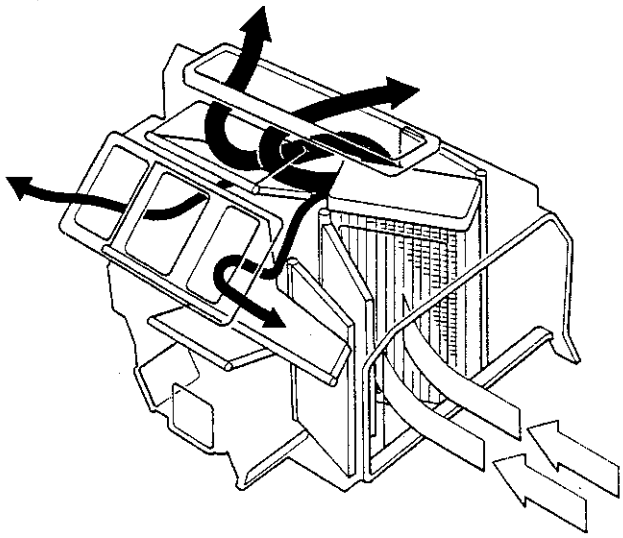


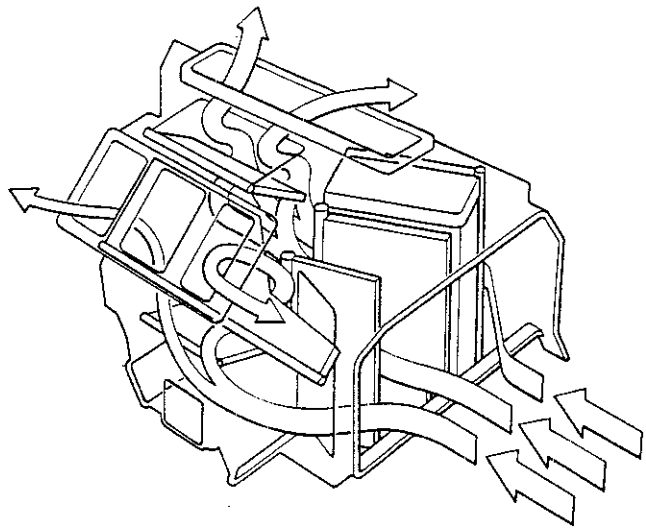
(HEAT/DEF)



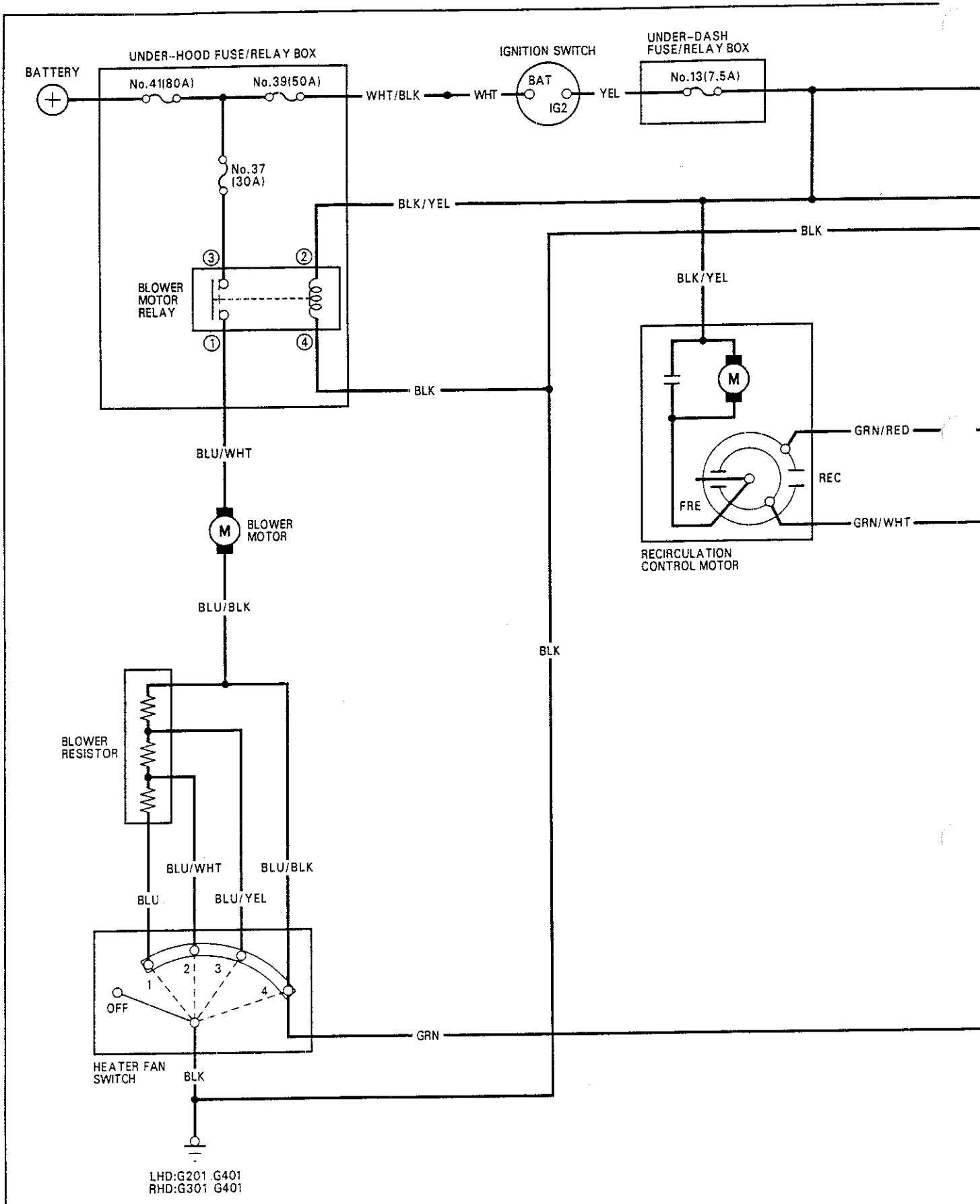


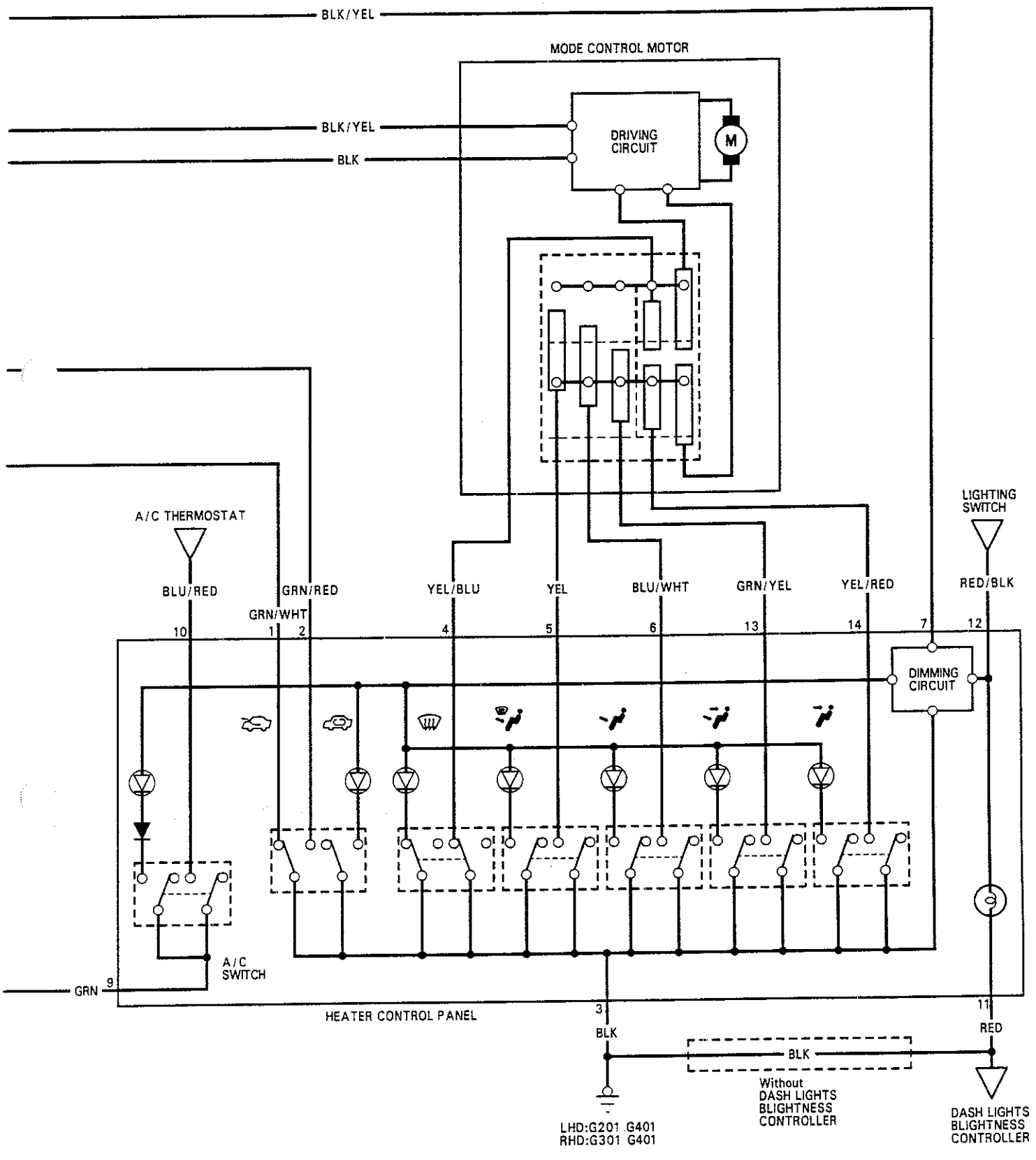

(DEF)





Circuit Diagram




BLK/YEL
MODE CONTROL MOTOR
BLK/YEL
BLK
DRIVING CIRCUIT
M
A/C THERMOSTAT
LIGHTING SWITCH
BLU/RED
GRN/RED
GRN/WHT
YEL/BLU
YEL
BLU/WHT
GRN/YEL
YEL/RED
RED/BLK
10
1
2
4
5
6
13
14
7
12
DIMMING CIRCUIT
A/C SWITCH
GRN
9
HEATER CONTROL PANEL
3
11
BLK
RED
BLK
Without DASH LIGHTS BLIGHTNESS CONTROLLER
LHD:G201 G401
RHD:G301 G401
DASH LIGHTS BLIGHTNESS CONTROLLER

Symptom Chart

NOTE: Check the engine coolant level and allow the engine to warm up before troubleshooting

SYMPTOM		REMEDY
No hot air flow	Blower motor does not run at all.	Follow the flowchart (page 21-11).
	Blower motor runs.	Check for the following: • Clogged heater duct • Clogged blower outlet • Clogged heater valve • Faulty air mix door • Air mix control cable adjustment • Faulty thermostat (section 10) • Clogged evaporator (with air conditioner) • Frozen evaporator (with air conditioner)
Hot air flow is low	Blower motor runs, but one or more speeds are inoperative.	Follow the flowchart (page 21-9).
	Blower runs properly.	Check for the following: • Clogged heater duct • Clogged heater outlet • Incorrect door position
Mode control motor runs, but one or more modes are inoperative.		Follow the flowchart (page 21-14)
Recirculation control door does not change between FRESH and REC.		Follow the flowchart (page 21-17)

Flowchart—Blower Motor Speed

Blower motor runs, but one or more speeds are inoperative

Turn the ignition switch ON, and the blower fan switch OFF

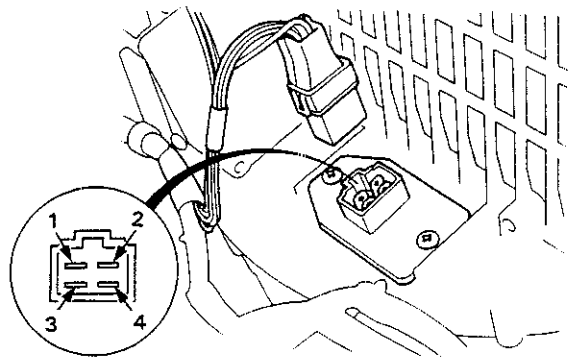
Does the blower motor run? YES → B → To page 21-10

NO

Turn the ignition switch OFF

Disconnect the blower resistor 4P connector

Measure the resistance between the No. 2 and No. 4 terminals of the resistor



Is the resistance 2.15 Ω? NO → **Replace the blower resistor**

YES

Reconnect the blower resistor 4P connector

Remove the heater control panel (page 21-25)

Disconnect the heater fan switch 6P connector

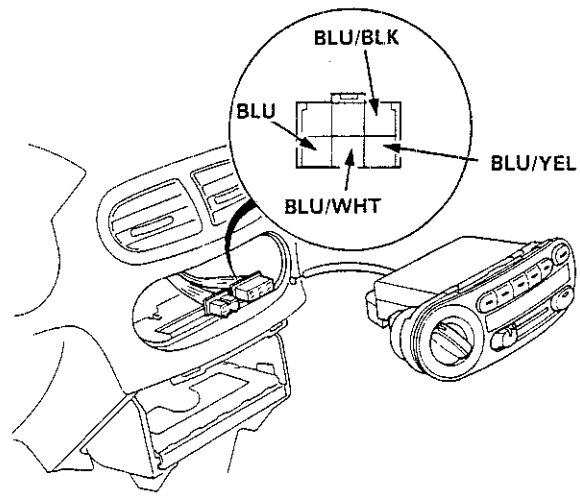
Turn the ignition switch ON

At the heater fan switch 6P connector, ground each of these wires individually in the following order
—BLU
—BLU/WHT
—BLU/YEL
—BLU/BLK

A

To page 21-10

View from wire side



(cont'd)

Flowchart—Blower Motor Speed (cont'd)

From page 21-9

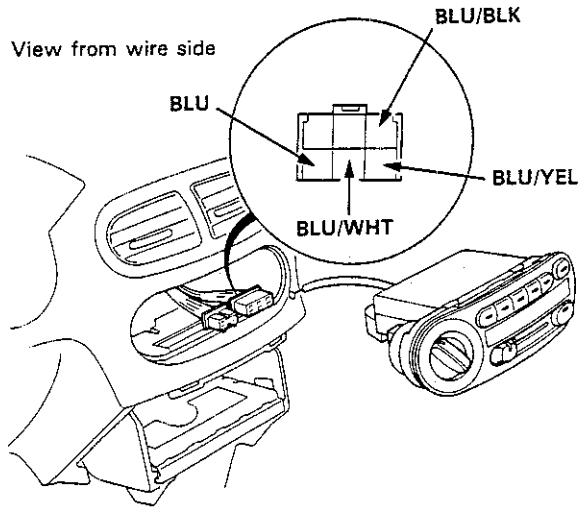
(A)

Does the blower motor run at progressively higher speeds?

YES → **Replace the heater fan switch**

NO

Repair open or cause of excessive resistance in the appropriate wire(s) between the heater fan switch and the blower resistor



From page 21-9

(B)

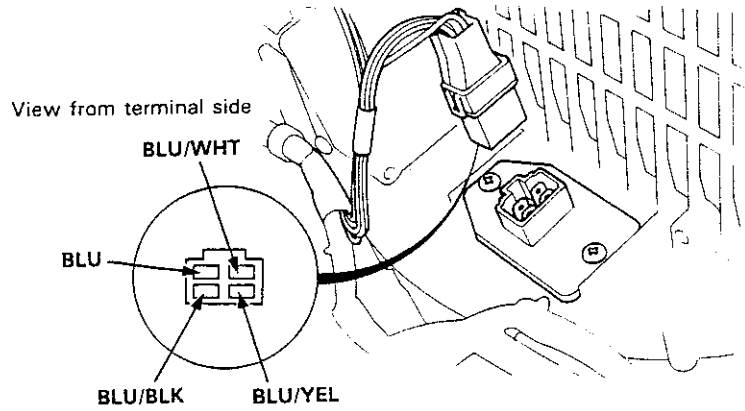
Turn the ignition switch OFF

Remove the heater control panel (page 21-25)

Disconnect the heater fan switch 6P connector

Disconnect the blower resistor 4P connector

Check each wire for continuity between the heater fan switch 6P connector and body ground
- BLU
- BLU/WHT
- BLU/YEL
- BLU/BLK



Is there continuity?

NO → **Replace the heater fan switch**

YES

Repair open in wire(s) between the heater fan switch and the blower resistor

Flowchart—Blower Motor

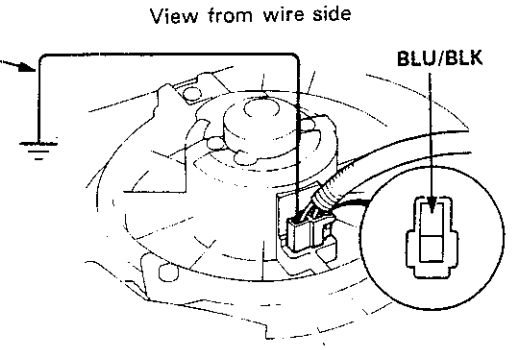
Blower motor does not run at all

Check for blown No. 13 (7.5 A) and No. 37 (30 A) fuses

Are the fuses OK?
- NO → **Replace the blown fuse(s)**
- YES

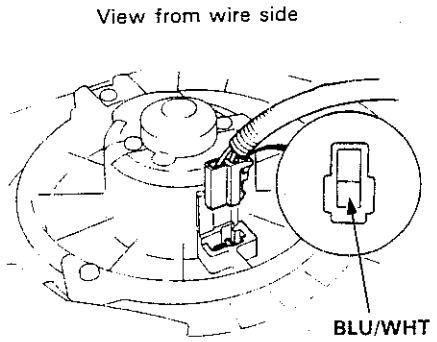
Turn the ignition switch ON.

At the blower motor 2P connector, connect the BLU/BLK wire terminal to the body ground using a jumper wire



Does the blower motor run?
- YES → To page 21-12
- NO

Disconnect the blower motor 2P connector and measure voltage between the BLU/WHT wire terminal (+) and body ground (−)

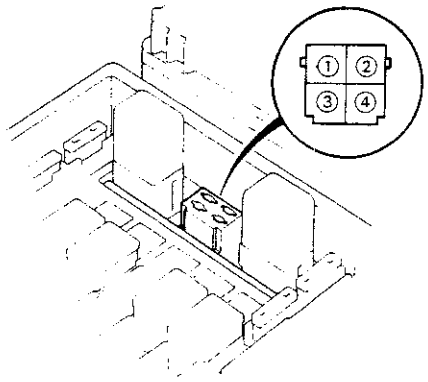


Is there battery voltage?
- YES → **Replace the blower motor.**
- NO

Remove the blower motor relay and test it (page 21-30).

Is the relay OK?
- NO → **Replace the blower motor relay.**
- YES

Measure voltage between the No. ③ terminal (+) and body ground (−)



Is there battery voltage?
- NO → **Replace the under-hood fuse/relay box.**
- YES

To page 21-13

(cont'd)

Flowchart—Blower Motor (cont'd)

From page 21-11

Turn the ignition switch OFF.

Remove the heater control panel (page 21-25)

Disconnect the heater fan switch 6P connector

Turn the ignition switch ON

Measure voltage between the BLU/BLK wire terminal (+) and body ground (−).

Is there battery voltage?

NO → **Repair open in the BLU/BLK wire between the blower motor and heater fan switch.**

YES

Turn the ignition switch OFF

Check for continuity in the BLK wire between the heater fan switch and body ground.

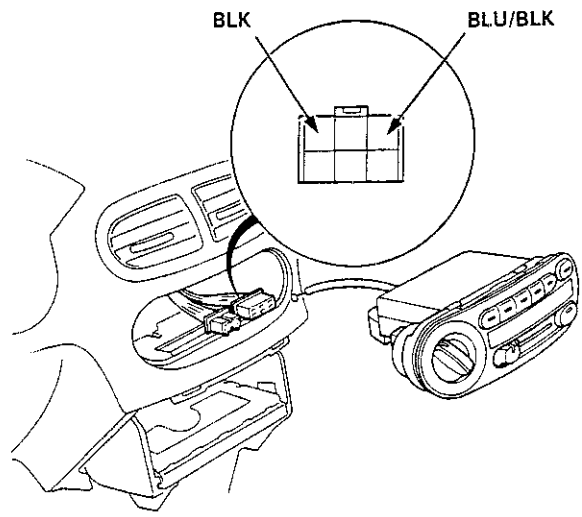
Is there continuity?

NO → **Repair open in the BLK wire between the heater fan switch and body ground. If the wire is OK, check for poor ground at G201 (LHD), G301 (RHD), and 401**

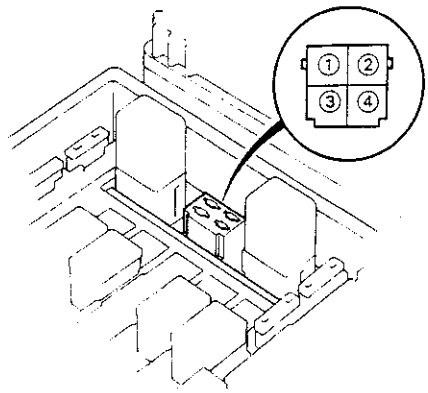
YES

Replace the heater fan switch.

View from wire side



From page 21-11



Measure voltage between the No. ② terminal (+) and body ground (−)

Is there battery voltage?

NO → **Repair open in the BLK/YEL wire between the No. 13 (7.5 A) fuse and No. ② terminal**

YES

Turn the ignition switch OFF

Check for continuity between the No. ④ terminal and body ground.

Is there continuity?

NO → **Repair open in the BLK wire between the No. ④ terminal and body ground. If the wire is OK, check for poor ground at G201 (LHD), G301 (RHD), and G401.**

YES

Repair open in the BLU/WHT wire between the blower motor relay and blower motor

Flowchart—Mode Control

Mode control motor runs, but one or more modes are inoperative

Check for blown No. 13 (7.5 A) fuse

Is the fuse OK? — NO → **Replace the blown fuse**

YES

Turn the ignition switch ON

Switch back and forth from FRESH to REC

Does the recirculation control motor run? — NO → Disconnect the mode control motor 8P connector

YES

Turn the ignition switch OFF

Disconnect the mode control motor 8P connector

Turn the ignition switch ON

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−)

Is there battery voltage? — NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and mode control motor**

YES

Turn the ignition switch OFF

To page 21-15

Turn the ignition switch ON

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−)

Is there battery voltage? — NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and mode control motor**

YES

Turn the ignition switch OFF

Remove the heater control panel (page 21-25)

Disconnect the heater control panel 14P connector

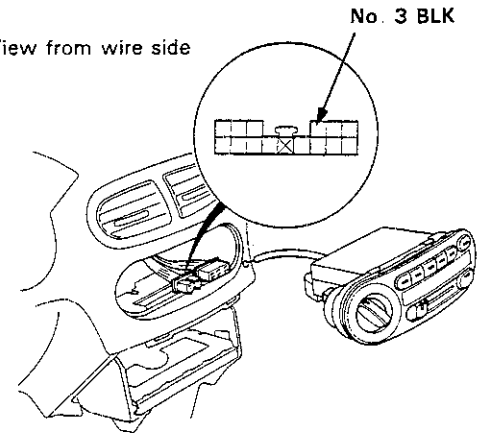
Check for continuity in the BLK wire between the heater control panel and body ground

Is there continuity? — NO → **Repair open in the BLK wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G201 (LHD), G301 (RHD) and G401**

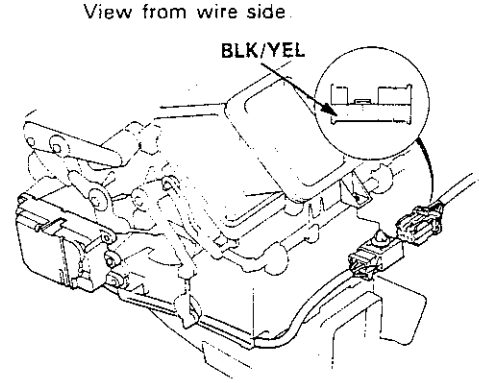
YES

Replace the heater control panel

View from wire side



View from wire side



From page 21-14

Check for continuity in the BLK wire between the mode control motor and body ground

Is there continuity?

NO → **Repair open in the BLK wire between the mode control motor and body ground. If the wire is OK, check for poor ground at G201 (LHD), G301 (RHD), and G401**

YES

Test the mode control motor (page 21-28)

Is the mode control motor OK?

NO → Remove the mode control motor (page 21-28)

YES

Remove the heater control panel (page 21-25)

Disconnect the heater control panel 14P connector

Check each wire for continuity between the mode control motor and body ground
- YEL/BLU
- YEL
- BLU/WHT
- GRN/YEL
- YEL/RED

Is there continuity?

YES → **Repair any short in the wire(s) between the mode control motor and heater control panel**

NO

Check the same wires for voltage

Is there any voltage?

YES → **Repair short to power in the BLK/YEL wire between the mode control motor and heater control panel. (This damages the heater control panel).**

NO

To page 21-16

Check for moves of the mode control link and the doors

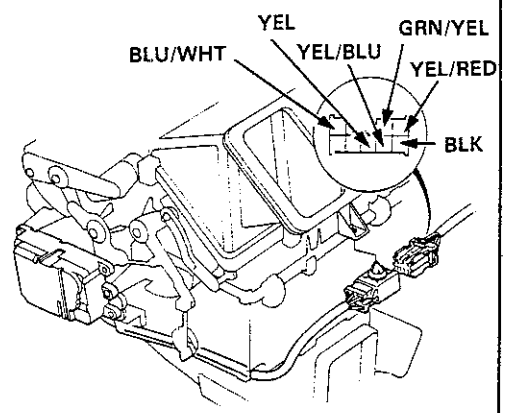
Do the mode control link and doors move?

NO → **Repair the mode control link or doors.**

YES

Replace the mode control motor.

View from wire side



(cont'd)

Flowchart—Mode Control (cont'd)

From page 21-15

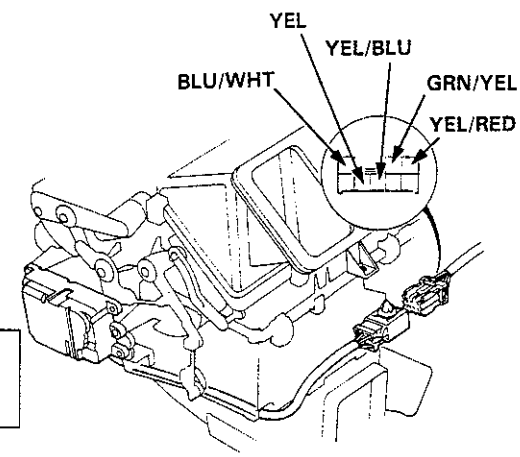
Check each wire for continuity between the mode control motor and heater control panel.
—YEL/BLU
—YEL
—BLU/WHT
—GRN/YEL
—YEL/RED

Is there continuity?

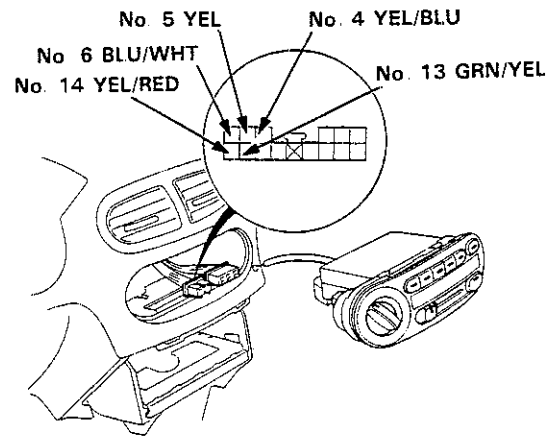
NO → Repair any open in the wire(s) between the mode control motor and heater control panel

YES → Replace the heater control panel.

View from wire side



View from wire side



Flowchart—Recirculation Control

Recirculation control door does not change between FRESH and REC.

Check for blown No. 13 (7.5 A) fuse

Is the fuse OK? — NO → **Replace the blown fuse.**

YES

Turn the ignition switch ON

Switch between the different ventilation modes (VENT, HEAT, etc.).

Does the mode control motor run? — NO →

Disconnect the recirculation control motor 4P connector.

Turn the ignition switch ON.

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−)

Is there battery voltage? — NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and recirculation control motor.**

YES

Turn the ignition switch OFF

Remove the heater control panel (page 21-25)

Disconnect the heater control panel 14P connector

Check for continuity in the BLK wire between the heater control panel and body ground.

Is there continuity? — NO → **Repair open in the BLK wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G201 (LHD), G301 (RHD), and G401.**

YES

Replace the heater control panel.

YES

Turn the ignition switch OFF

Disconnect the recirculation control motor 4P connector.

Turn the ignition switch ON

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−)

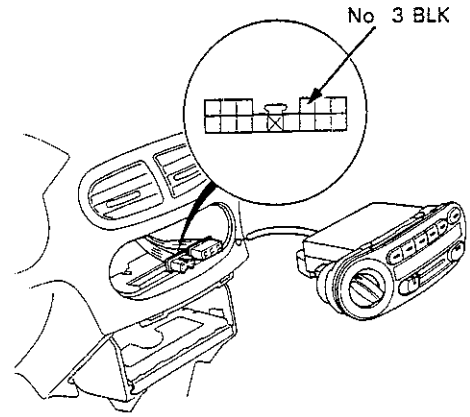
Is there battery voltage? — NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and recirculation control motor**

YES

Turn the ignition switch OFF

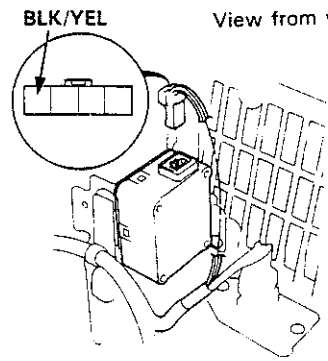
To page 21-18

View from wire side



BLK/YEL

View from wire side



(cont'd)

Flowchart—Recirculation Control (cont'd)

From page 21-17

Test the recirculation control motor (page 21-29).

Is the recirculation control motor OK?

NO → Remove the recirculation control motor (page 21-29).

YES

Check for moves of the recirculation control link and the doors

Do the recirculation control link and doors move?

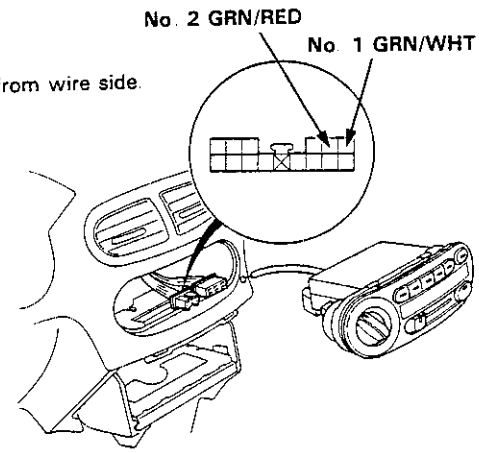
NO → **Repair the recirculation control link or door.**

YES

Replace the recirculation control motor.

Remove the heater control panel (page 21-25).

Disconnect the heater control panel 14P connector.



View from wire side

Check for continuity in the GRN/WHT and GRN/RED wire between the recirculation control motor and body ground

Is there continuity?

YES → **Repair short in the GRN/WHT and GRN/RED wire between the recirculation control motor and heater control panel**

NO

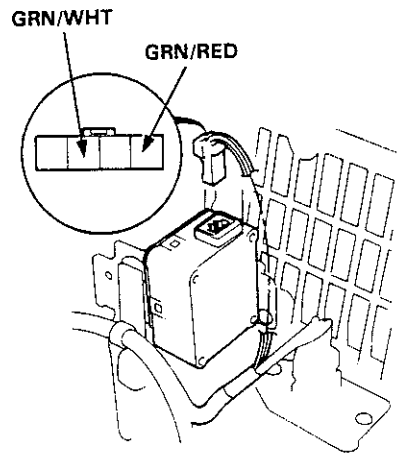
Check the same wires for voltage

View from wire side

Is there any voltage?

YES → **Repair short to power in the BLK/YEL wire between the recirculation control motor and heater control panel. (This damages the heater control panel).**

NO



Check for continuity in the GRN/WHT and GRN/RED wire between the recirculation control motor and heater control panel

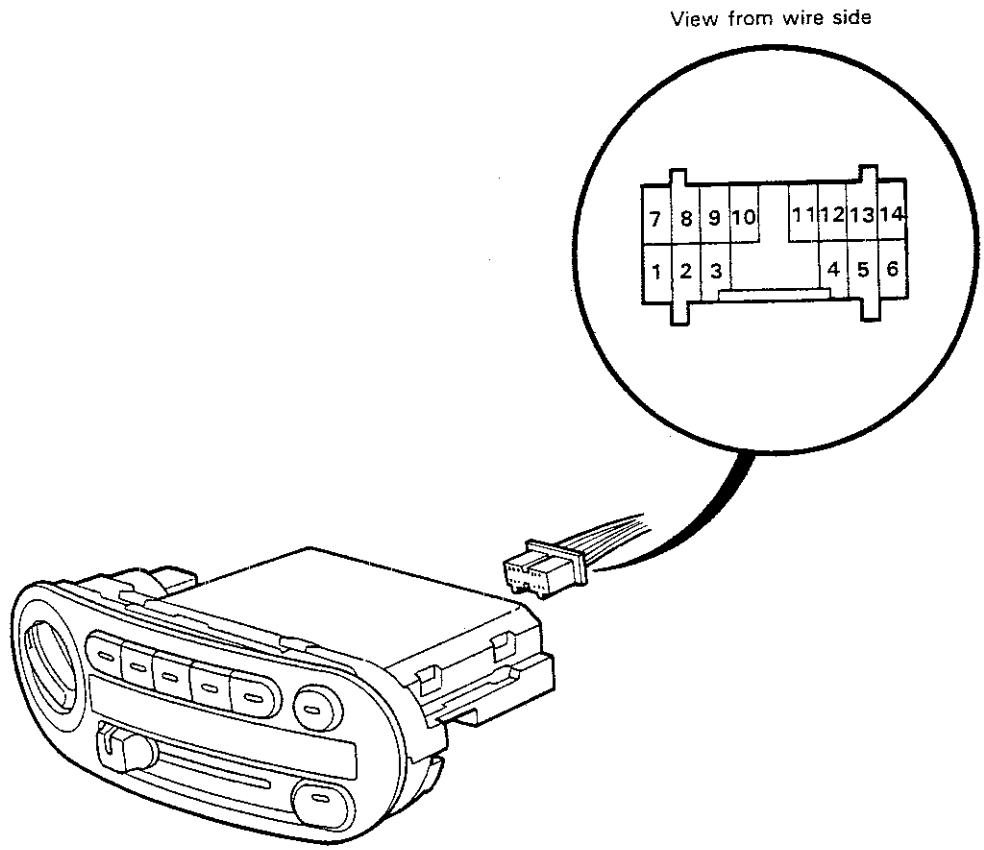
Is there continuity?

NO → **Repair open in the GRN/WHT or GRN/RED wire between the recirculation control motor and heater control panel.**

YES

Replace the heater control panel

Heater Control Panel Input/Output Signals



Wire Position		Signal	Wire Position		Signal
1	GRN/WHT	FRESH ⊕	9	GRN	HEATER FAN SWITCH
2	GRN/RED	RECIRCULATION ⊕	10	BLU/RED	A/C THERMOSTAT
3	BLK	GROUND	11	RED	ILLUMINATION CONTROL
4	YEL/BLU	DEF			*GROUND
5	YEL	HEAT/DEF	12	RED/BLK	LIGHTING SWITCH
6	BLU/WHT	HEAT	13	GRN/YEL	HEAT/VENT
7	BLK/YEL	IG2	14	YEL/RED	VENT
8					

*: Without ILLUMINATION CONTROL

Blower Unit

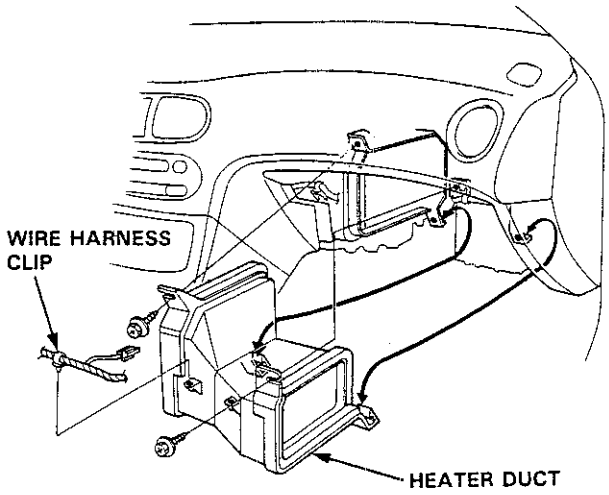
Replacement

NOTE: The blower motor, recirculation control motor, and resistor can be replaced without removing the blower unit (page 21-21).

1 Remove the glove box and glove box frame (section 20).

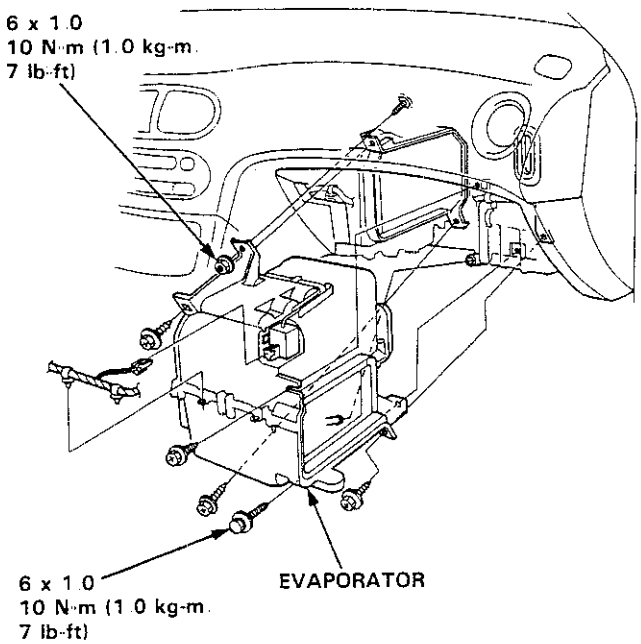
WITHOUT AIR CONDITIONER

2-a. Remove the wire harness clip from the heater duct
Remove the two self-tapping screws and the heater duct.



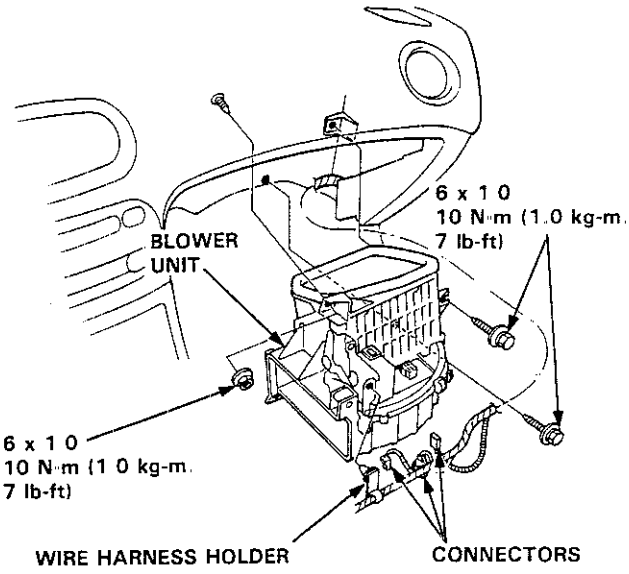
WITH AIR CONDITIONER

2-b. Remove the evaporator (page 22-23)



3 Disconnect the connectors from the blower motor, resistor, and recirculation control motor

4 Remove the wire harness holder from the recirculation control motor and release the wire harness from the clamp on the blower unit
Remove the two bolts, nut and blower unit

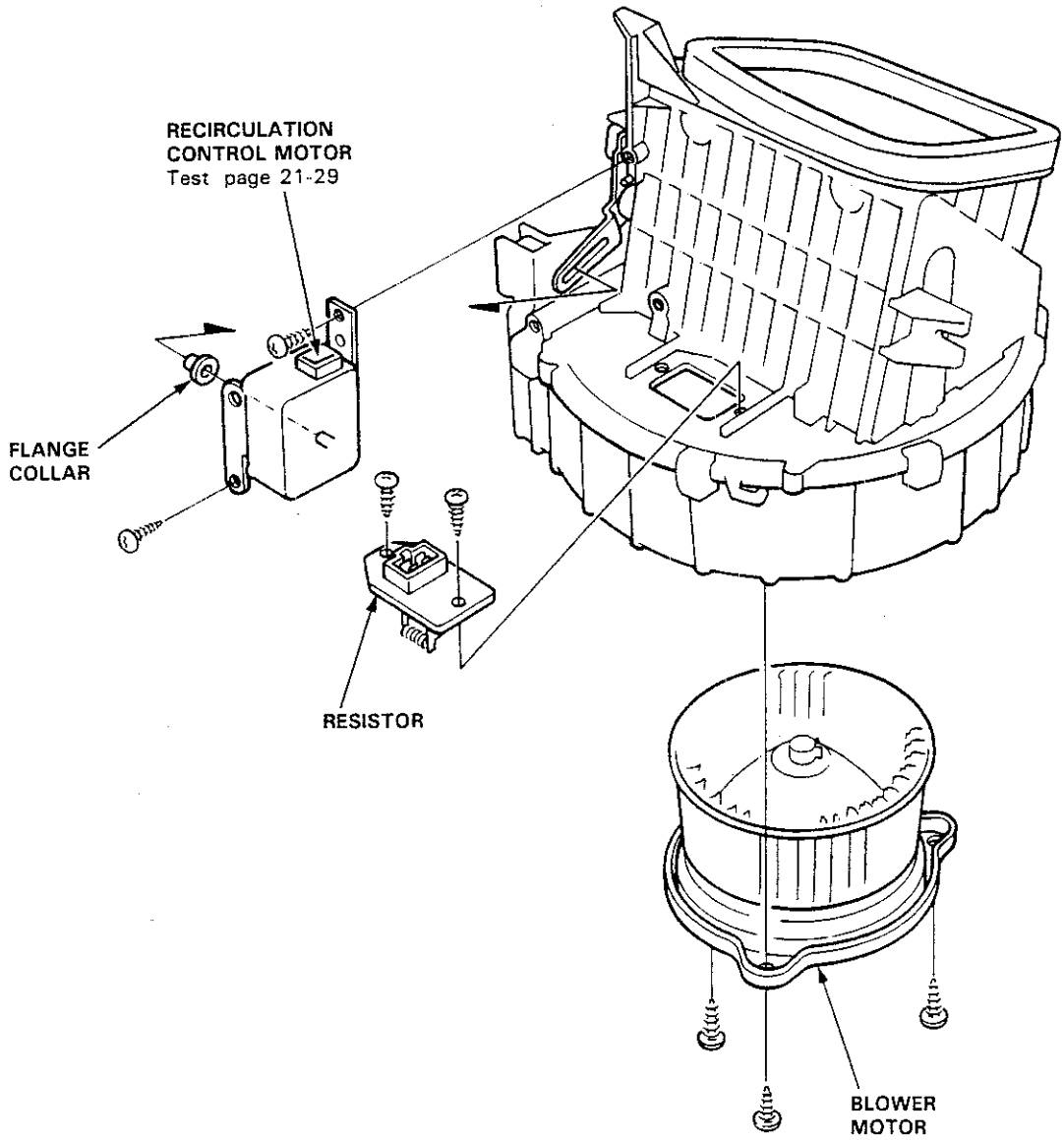


5 Install the blower unit in the reverse order of removal and make sure there is no air leakage

Overhaul

NOTE:

- Before reassembly, make sure that the air door and linkage move smoothly without binding.
- When reattaching the actuator, make sure its positioning will not allow the air door to be pulled too far. Attach the actuator and all linkage, then apply battery voltage and watch the door movement. If necessary, loosen the holding screw and move the actuator up or down.



Heater Unit

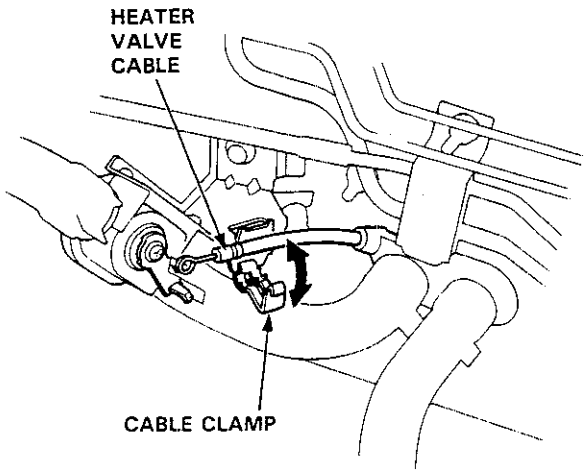
Replacement

1. When the engine is cool, drain engine coolant from the radiator (section 10)

⚠ WARNING

- **Do not remove the radiator cap when the engine is hot; the engine coolant is under pressure and could severely scald you.**

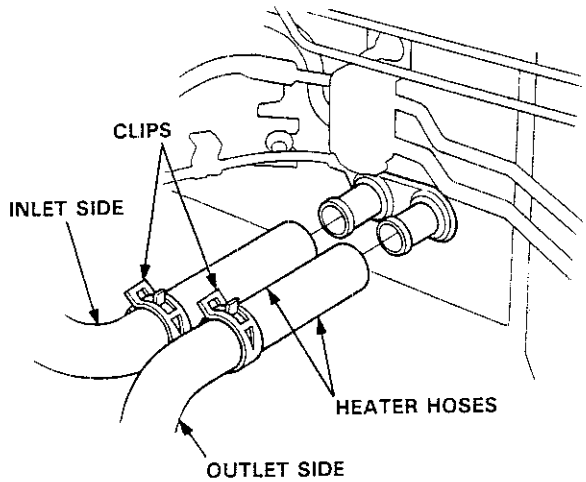
2. Snap open the cable clamp and disconnect the heater valve cable from the heater valve



3. Disconnect the heater hoses at the heater.

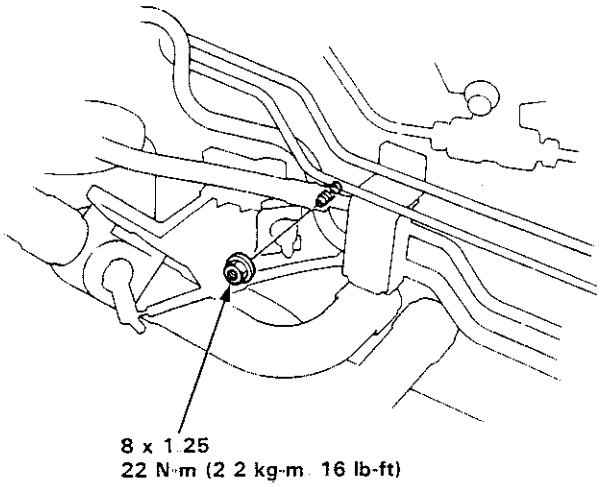
CAUTION: Engine coolant will damage paint. Quickly rinse any spilled engine coolant from painted surfaces.

NOTE: Engine coolant will run out when the hoses are disconnected. drain it into a clean drip pan.



4. Remove the heater unit mounting nut from the engine compartment side

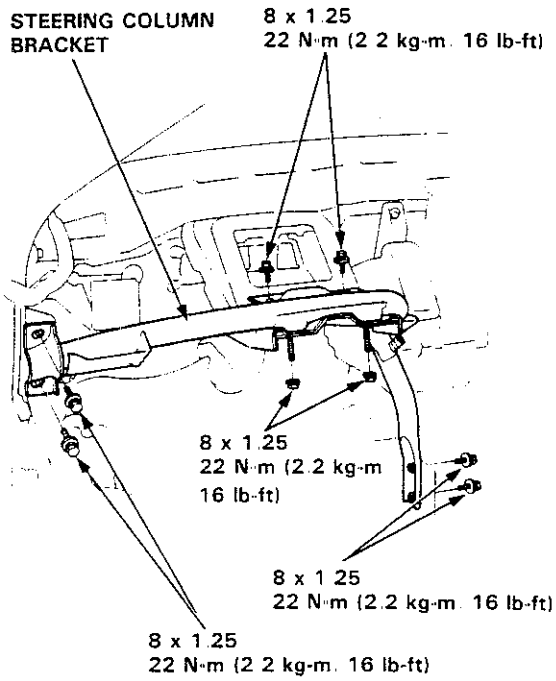
NOTE: When removing the nut, take care not to damage or bend the fuel pipes, brake pipes, etc



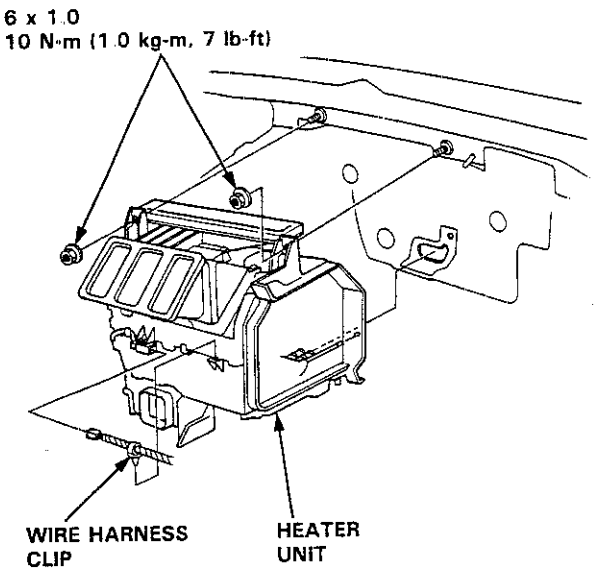
5. Remove the dashboard (section 20).

6. Remove the heater duct (page 21-20) or evaporator (page 22-23).

7. Remove the steering column bracket.



8. Remove the wire harness clip, two heater mounting nuts and heater unit



9. Install the removed parts in the reverse order of removal, and:

- Do not interchange the inlet and outlet hoses
- Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper engine coolant mixture (section 10).
  Tighten the bleed bolt when all the trapped air has escaped and engine coolant begins to flow from it (section 10)
- Connect all cables and make sure they are properly adjusted (page 21-27)

Heater Unit

Overhaul

1 Remove the heater unit (page 21-22)

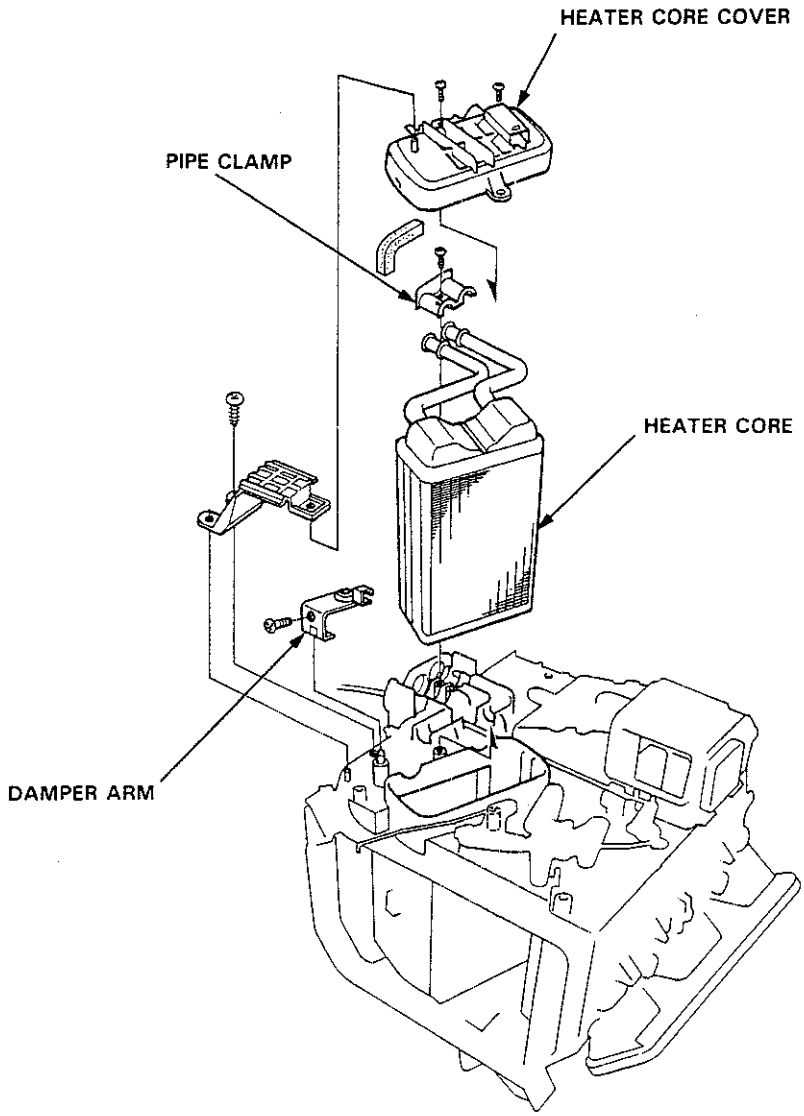
2. Remove the two screws and heater core cover

3 Remove the screw and pipe clamp

4 Remove the screw and damper arm

5 Pull the heater core from the heater unit

NOTE: Be careful not to bend the inlet and outlet pipes during heater core removal.

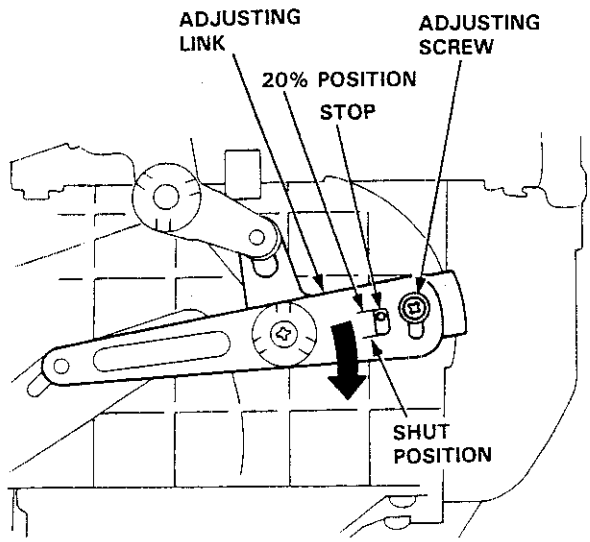


Install the removed parts in the reverse order of removal and:
Loosen the bleed bolt on the engine and refill the radiator and reservoir tank with the proper engine coolant mixture
Tighten the bleed bolt when all the trapped air has escaped and engine coolant begins to flow from it

Heater Linkage Adjustment

DEF Door Adjustment
Set the heater control switch on HEAT for adjusting DEF leak (shut ~20%).

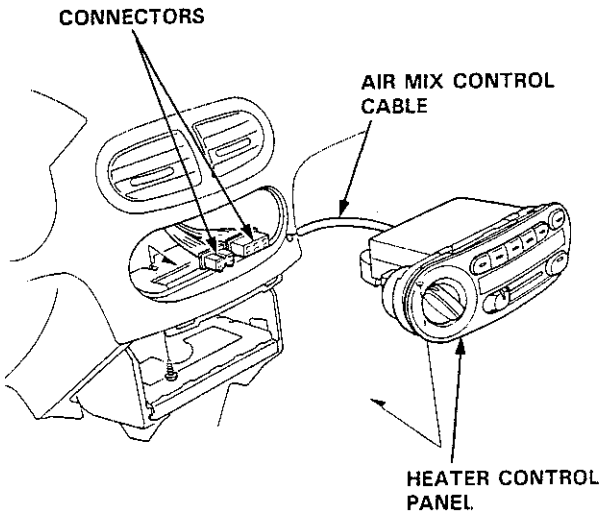
1. Loosen the adjusting screw.
2. Turn the adjusting link in the direction shown as far as it goes.
3. Tighten the adjusting screw.



Replacement

1. Remove the console (section 20)
2. Remove the radio (section 23)
3. Disconnect the air mix control cable from the heater unit (page 21-27)
4. Remove the self-tapping screws. Disconnect the connectors and remove the heater control panel.

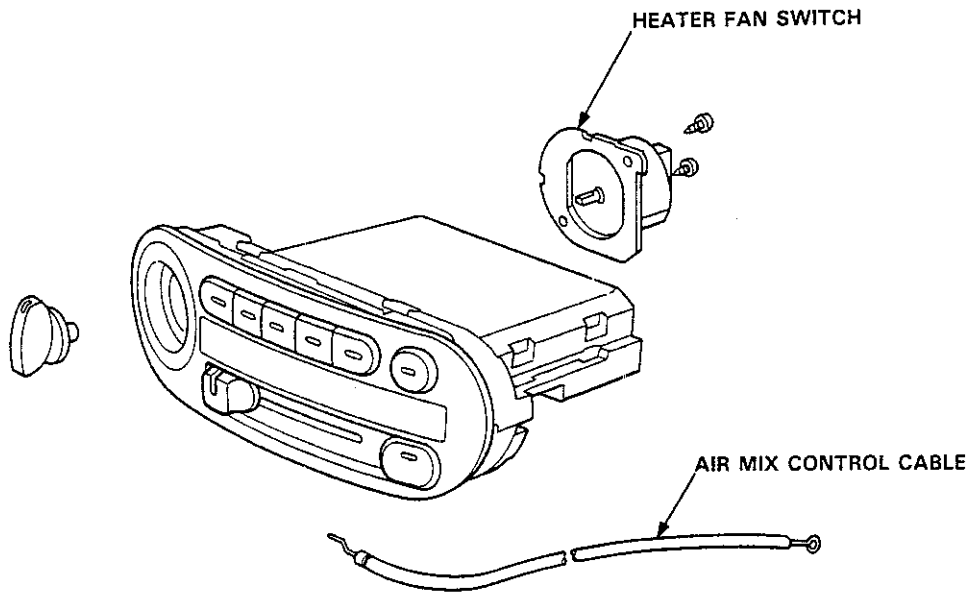
   NOTE: The locking tabs are on the bottom of the connectors.



5. Install the removed parts in the reverse order of removal, and refer to page 21-27 for air mix control cable installation

Heater Control Panel

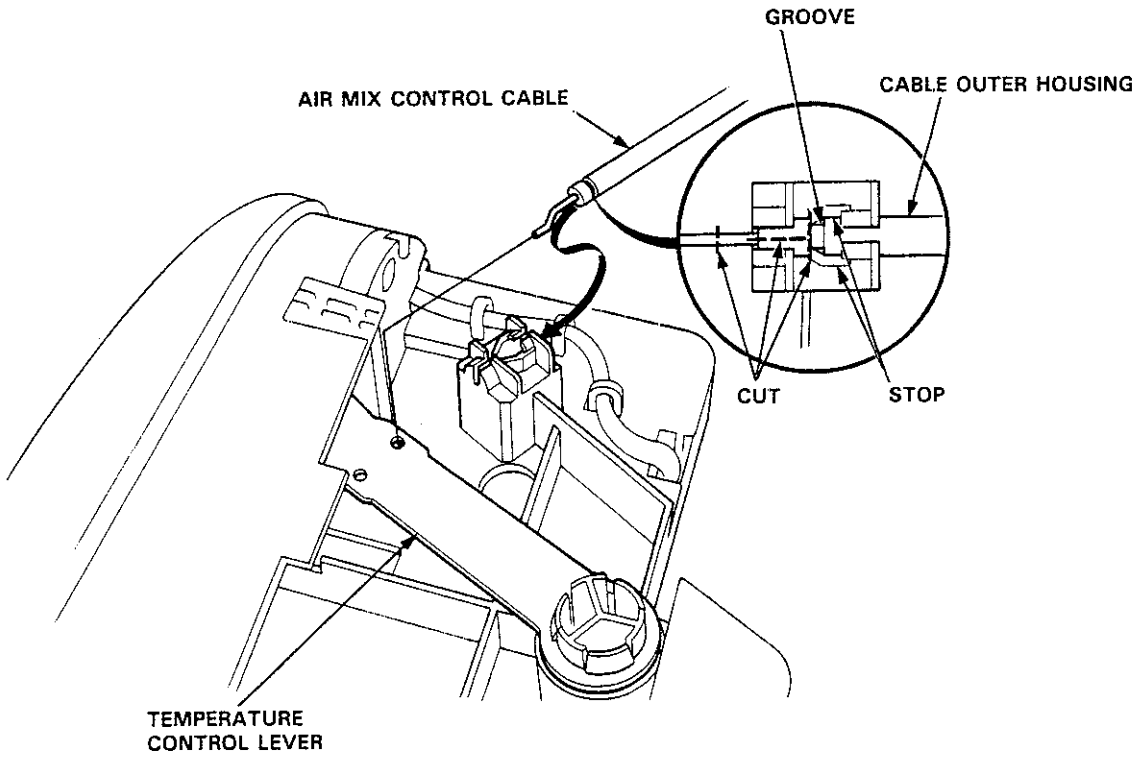
Overhaul



Air Mix CONTROL Cable Replacement

1 Cut and pull out the air mix control cable.

2 Hook the tip of the new cable to the temperature control lever and push the cable outer housing until it is locked



NOTE: After assembly, check that the temperature control lever slides smoothly through the full stroke from right to left.

Heater Control Cables

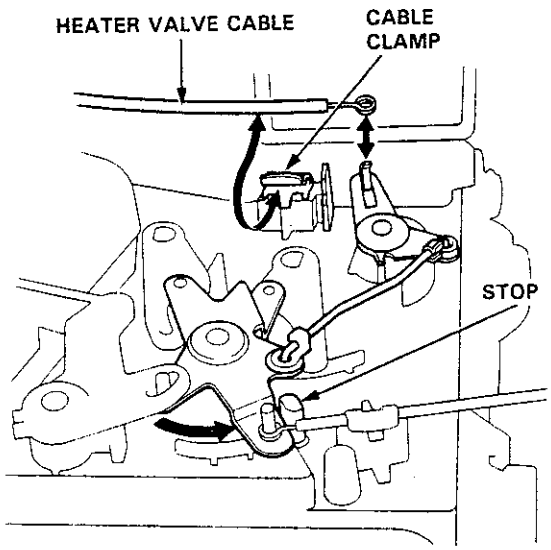
Heater Valve Cable Adjustment

1 Disconnect the cable from the heater valve.

2. Set the temperature control lever on COOL

3 Turn the cable arm to the stop and connect the end of the cable to the arm.

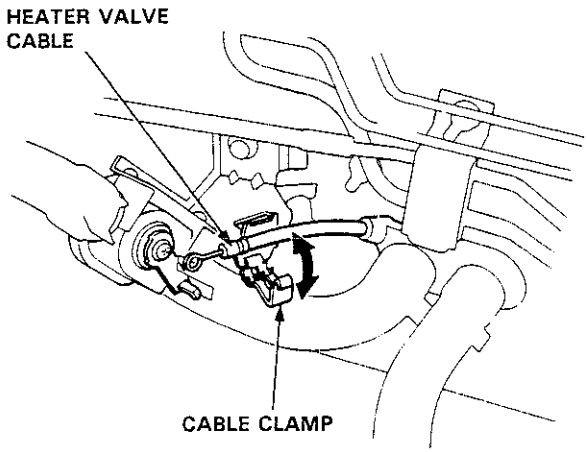
4 Gently slide the cable outer housing back from the end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then snap the cable housing into the cable clamp.



5 Turn the heater valve arm to shut and connect the end of the cable to the arm.

6 Gently slide the cable outer housing back from the end enough to take up any slack in the cable, but not enough to make the temperature control lever move. then snap the cable housing into the cable clamp

NOTE: The heater valve cable should be adjusted if the air mix control cable has been disconnected.



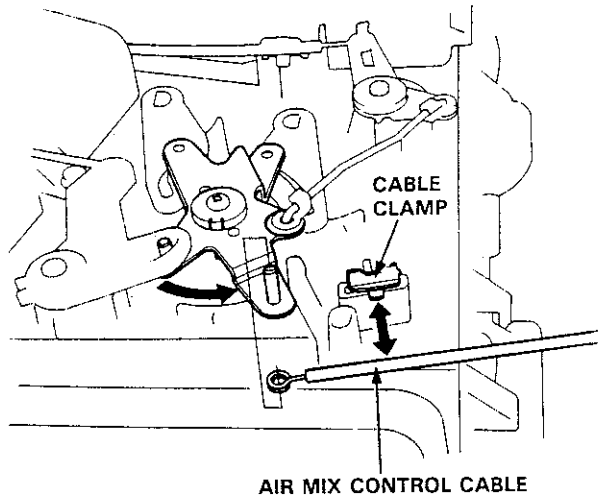
Air Mix Control Cable Adjustment

1. Set the temperature control lever on COOL.

2 Turn the cable arm to the stop and connect the end of the cable to the arm

3 Gently slide the cable outer housing back from the end enough to take up any slack in the cable, but not enough to make the temperature control lever move, then snap the cable housing into the cable clamp

NOTE: The air mix control cable should be adjusted if the heater valve cable has been disconnected.



Mode Control Motor

Test

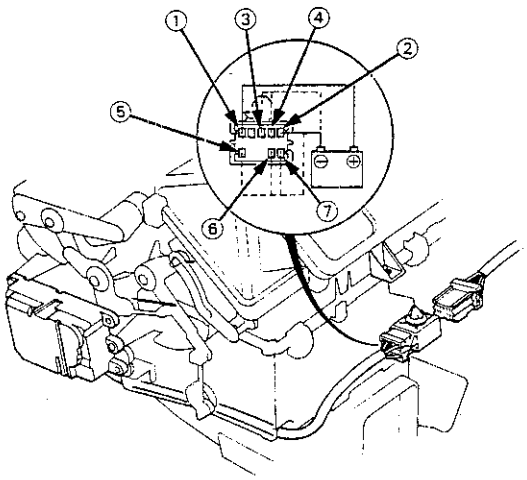
1. Connect battery power to the ① terminal of the mode control motor and ground to the ② terminal.

2. Using a jumper wire, short the ② terminal individually to the ③, ④, ⑤, ⑥, and ⑦ terminals, in that order.

   - Each time the short circuit is made, the mode control motor should run smoothly and stop.

   NOTE: If the mode control motor does not run when shorting the first terminal, short that terminal again after shorting the other terminals.
   The mode control motor is normal if it runs when shorting the first terminal again

View from wire side

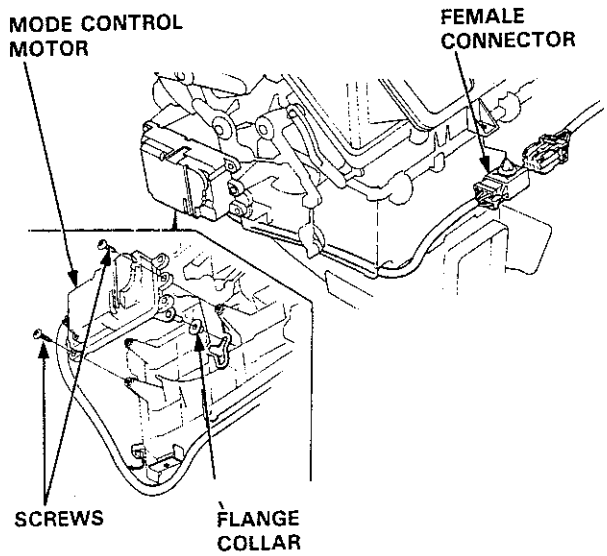


3. If the mode control motor does not run in step 2, remove it, and check the mode control motor links for smooth operation. If the mode control motor links operate normally, replace the mode control motor

Replacement

1. Disconnect the mode control motor 8P connector and remove the female connector from the bracket.

2. Remove the two screws, mode control motor and flange collar



3. Install in the reverse order of removal
   After installation, make sure the mode control motor operates smoothly

Recirculation Control Motor

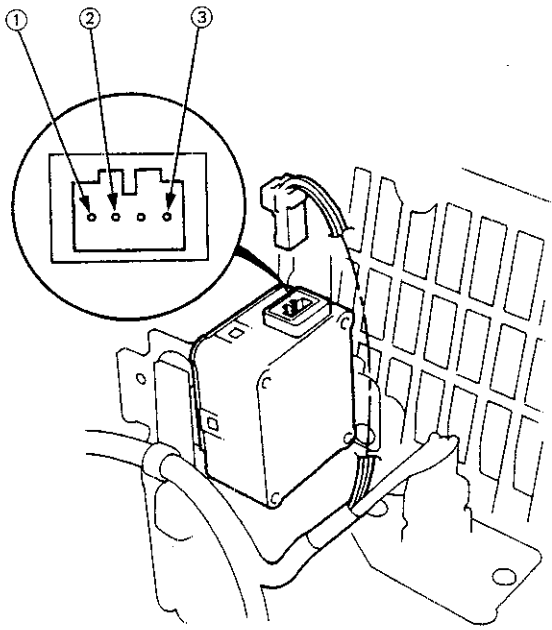
Test

1. Connect battery power to the ① terminal of the recirculation control motor connector and ground to the ② and ③ terminals; the recirculation control motor should run smoothly

2. Disconnect the ground from ② or ③; the recirculation control motor should stop at FRESH or REC

   CAUTION: Never connect the battery in the opposite direction

   NOTE: Don't cycle the recirculation control motor for a long time.

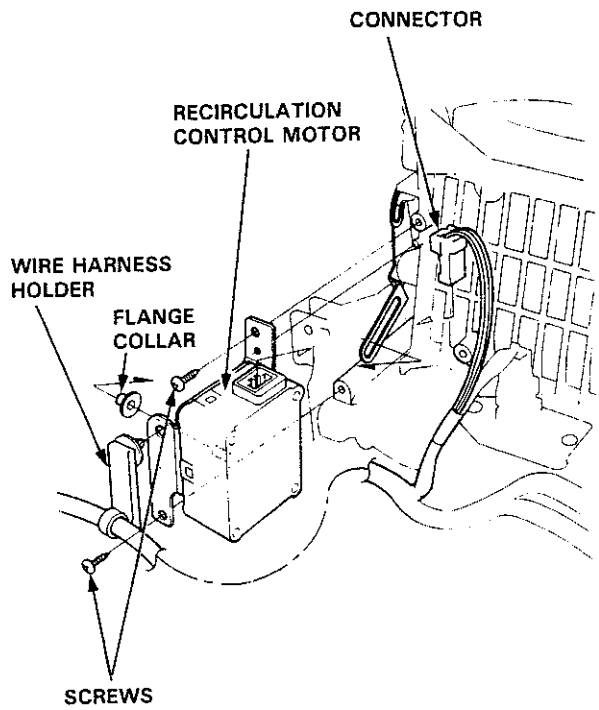


3. If the recirculation control motor does not run in step 1, remove it, and check the recirculation control motor links for smooth operation. If the recirculation control motor links operate normally, replace the recirculation control motor

Replacement

1. Disconnect the 4P connector from the recirculation control motor and remove the wire harness holder

2. Remove the two screws, recirculation control motor and flange collar



3. Install in the reverse order of removal.
   After installation, make sure the recirculation control motor operates smoothly.

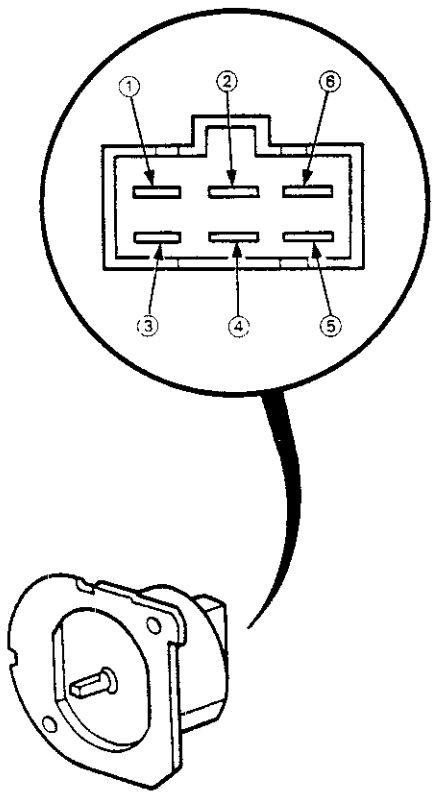
Fan Switch

Test

Check for continuity between the terminals according to the table below

SWITCH CONNECTION

Terminal / Position	①	②	③	④	⑤	⑥
OFF						
1	○	○	○			
2	○	○		○		
3	○	○			○	
4	○	○				○

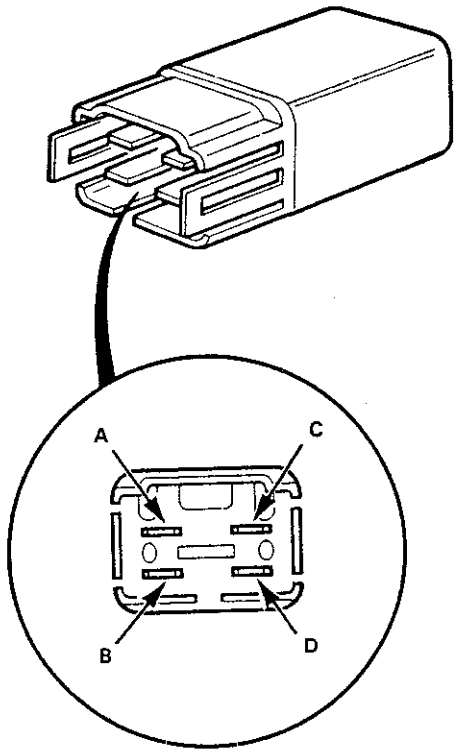


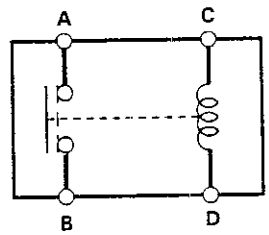
Relay

Test

There should be continuity between the C and D terminals.

There should be continuity between the A and B terminals when the battery is connected to the C and D terminals. There should be no continuity when the battery is disconnected.



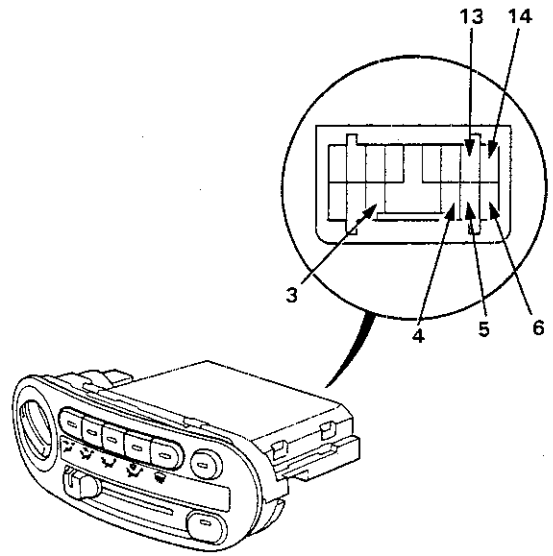


Mode Control Switch

Test

Check for continuity between the terminals according to the table below

Position \ Terminal	3	6	5	4	14	13
Heat	○	○				
Heat/Def	○	○	○			
Def	○	○	○	○		
Vent	○	○	○	○	○	
Heat/Vent	○	○	○	○	○	○

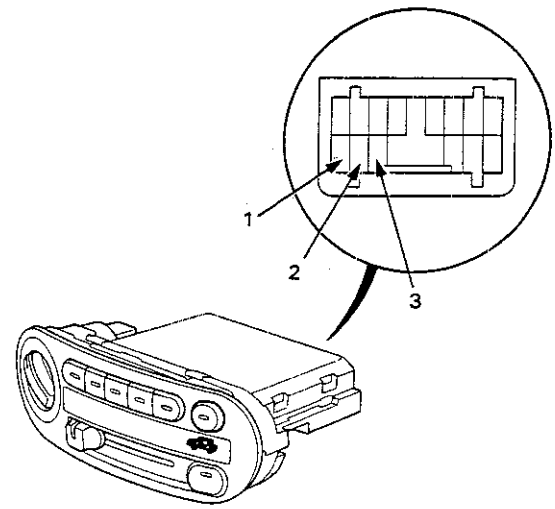


Recirculation Control Switch

Test

Check for continuity between the terminals according to the table below.

Position \ Terminal	2	1	3
Fresh		○	○
Rec	○		○



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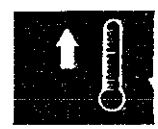
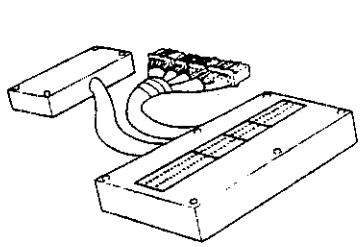
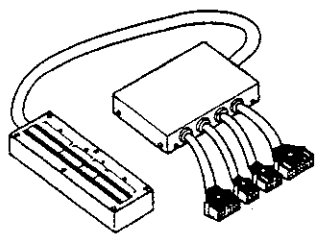


Special Tools

Ref. No	Tool Number	Description	Q'ty	Page Reference
①	07LAJ–PT30100 or 07LAJ–PT3010A	Test Harness	1	22–11
②	07NAB–HAC0100	A/C Clutch Holder	1	22-30, 37
③	07945–4150200	Seal Driver	1	22-37
④	07JAC–SH20300	Shaft Ring Remover	1	22-38
⑤	07JGG–0010100	Belt Tension Gauge	1	22-40

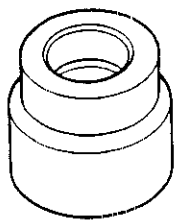


①



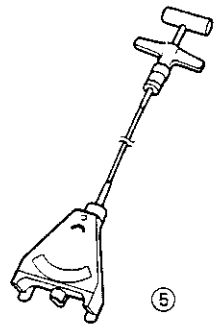
①

②

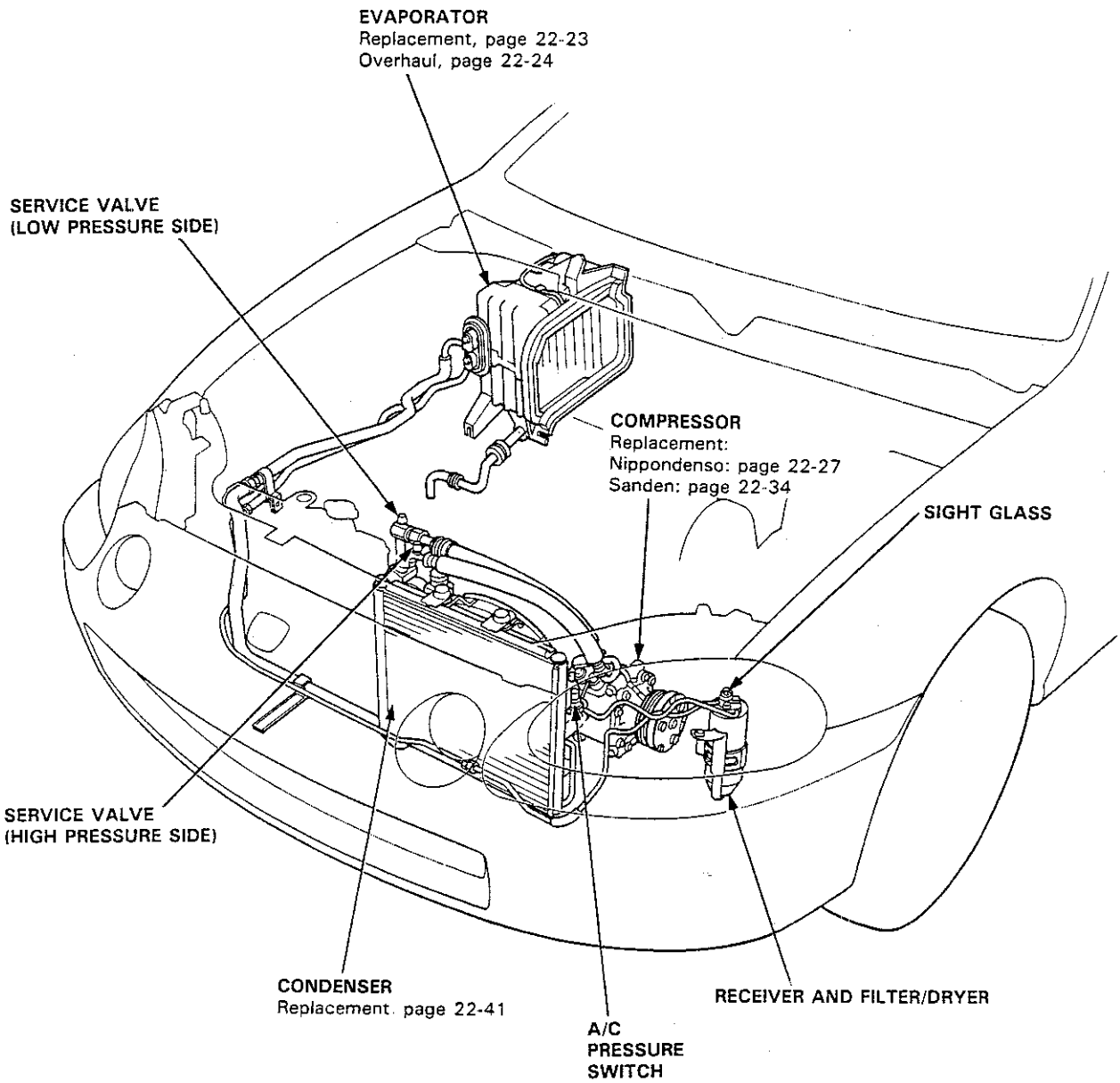


③

④



⑤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Replacement:
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PRESSURE
SWITCH
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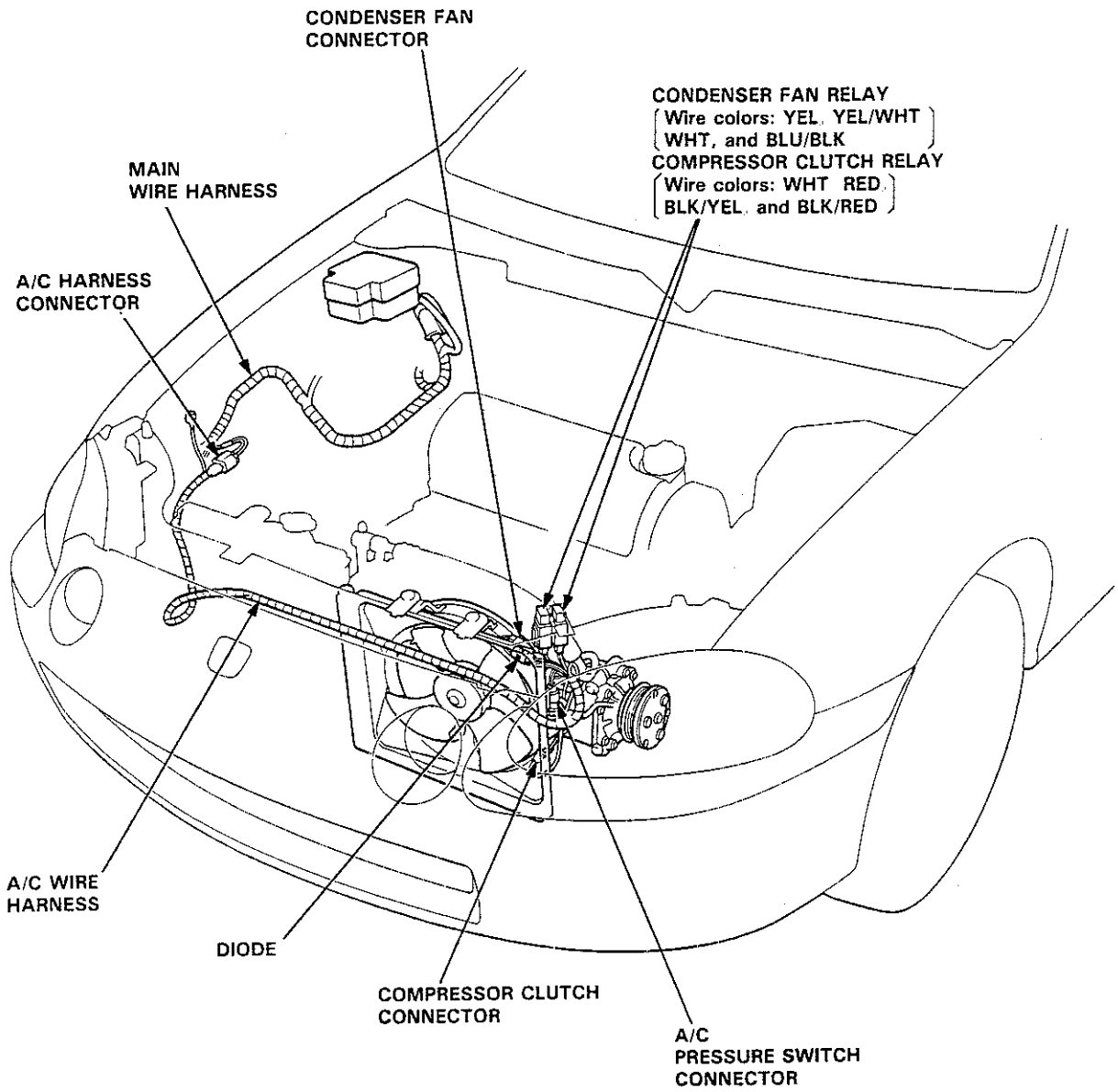
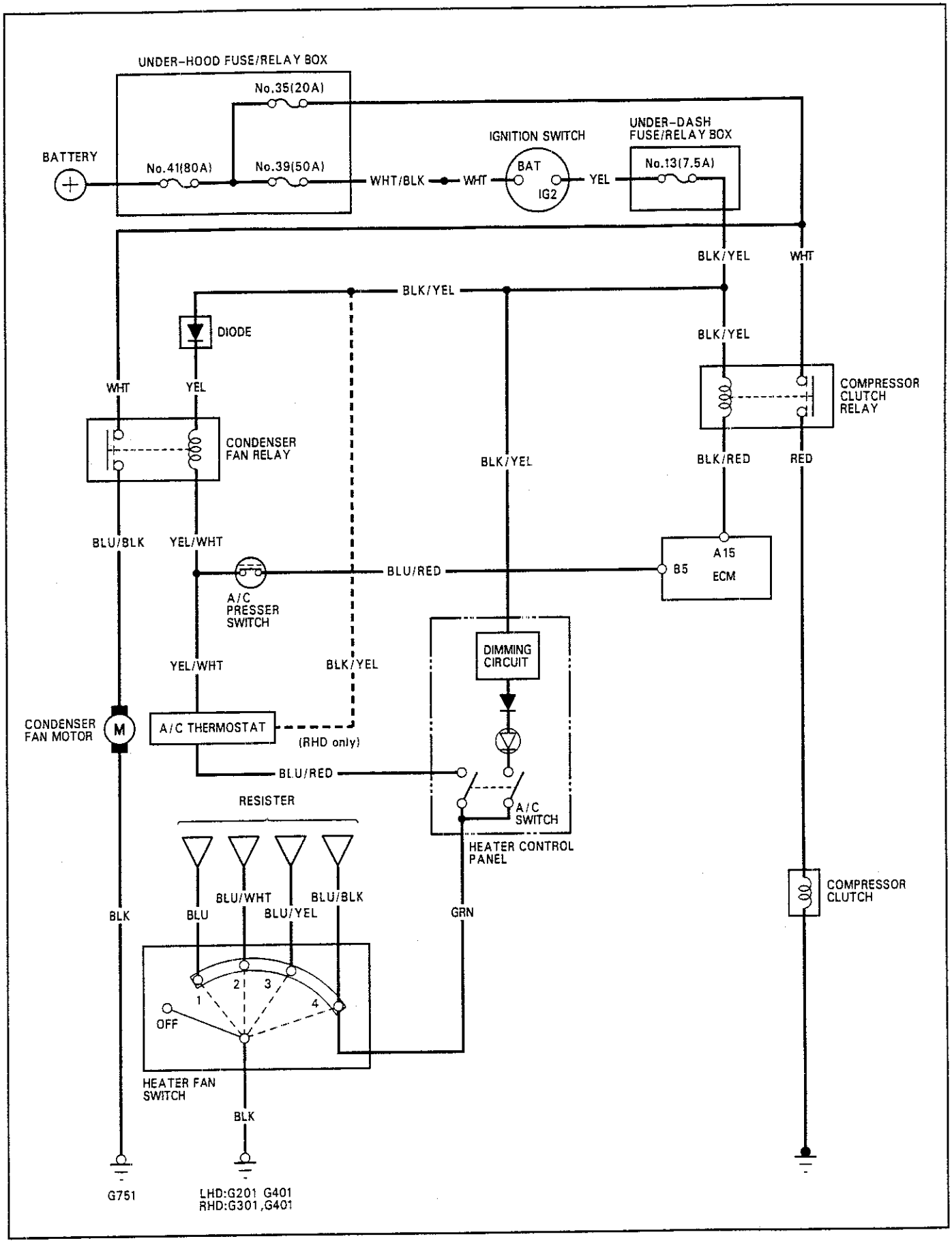
Wiring/Connector Locations



Circuit Diagram



Reference Chart

- Any abnormality must be corrected before continuing the test
- Because of the precise measurements needed, use a multimeter when testing.

Before performing any troubleshooting procedures check:
- Fuses No 41 (80 A), No. 39 (50 A), No 13 (7.5 A), No 35 (20 A)
- Grounds No G751, G201 (LHD), G301 (RHD), G401
- Cleanliness and tightness of all connectors

SYMPTOM	REMEDY
Condenser fan does not run at all.	Perform the procedures in the flowchart (page 22-7).
Compressor clutch does not engage.	Perform the procedures in the flowchart (page 22-9).
A/C system does not come on (compressor and fan).	Perform the procedures in the flowchart (page 22-12).

Flowchart — Condenser Fan

Condenser fan does not run at all.

Check for blown No. 13 (7.5 A) and No. 35 (20 A) fuses.

Are the fuses OK?
- NO → **Replace the blown fuse(s).**
- YES

Remove the condenser fan relay and test it (page 22-16).

Is the relay OK?
- NO → **Replace the condenser fan relay.**
- YES

Connect the WHT and BLU/BLK wire terminals with a jumper wire.

Does the condenser fan run?
- YES → To page 22-8
- NO

Disconnect the jumper wire.

Measure voltage between the WHT wire terminal (+) and body ground (−)

Is there battery voltage?
- NO → **Repair open in the WHT wire between the under-hood fuse/relay box and condenser fan relay.**
- YES

Disconnect the condenser fan 2P connector.

Check for continuity in the BLU/BLK wire between the condenser fan relay and condenser fan.

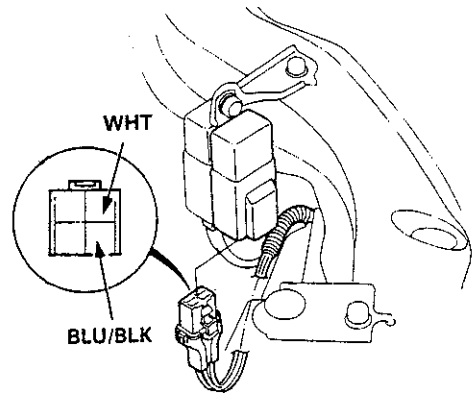
Is there continuity?
- NO → **Repair open in the BLU/BLK wire between the condenser fan relay and condenser fan.**
- YES

Check for continuity in the BLK wire between the condenser fan and body ground.

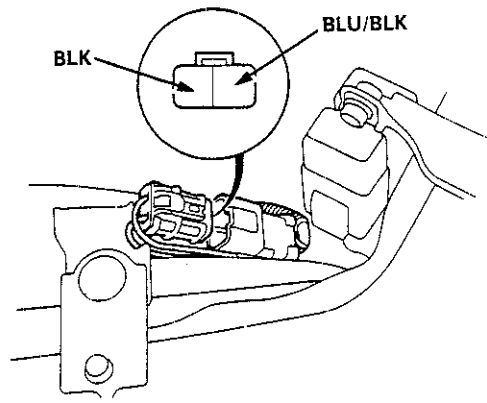
Is there continuity?
- NO → **Repair open in the BLK wire between the condenser fan and body ground. If the wire is OK, check for poor ground at G751**
- YES

Replace the condenser fan motor

View from terminal side



View from terminal side



(cont'd)

Flowchart — Condenser Fan (cont'd)

From page 22-7

Disconnect the jumper wire

Turn the ignition switch ON

Measure voltage between the YEL wire terminal (+) and body ground (–).

Is there battery voltage?

YES → **Repair open in the YEL/WHT wire between the condenser fan relay and A/C thermostat.**

NO

Remove the diode and test it (page 22-16)

Is the diode OK?

NO → **Replace the diode**

YES

Measure voltage between the BLK/YEL wire terminal (+) and body ground (–)

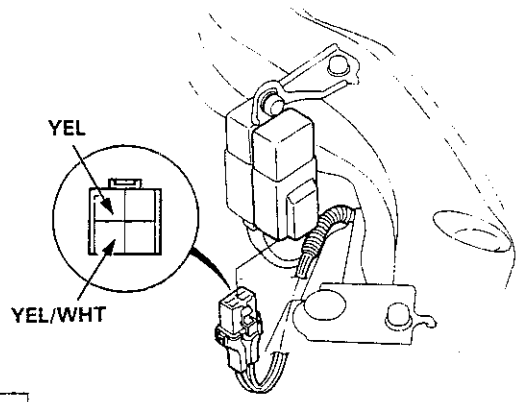
Is there battery voltage?

NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and condenser fan relay**

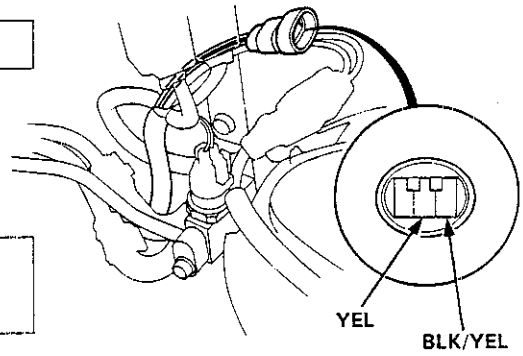
YES

Repair open in the YEL wire between the diode and condenser fan relay.

View from terminal side



View from terminal side



Flowchart — Compressor

NOTE: First, check for refrigerant pressure.

Compressor clutch does not engage.

Disconnect the compressor clutch 4P connecttor

Measure voltage between the WHT wire terminal (+) and body ground (−)

Is there battery voltage? — NO → **Repair open in the WHT wire between the under-hood fuse/relay box and the compressor clutch relay**

YES

Turn the ignition switch ON.

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−)

Is there battery voltage? — NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and the compressor clutch relay.**

YES

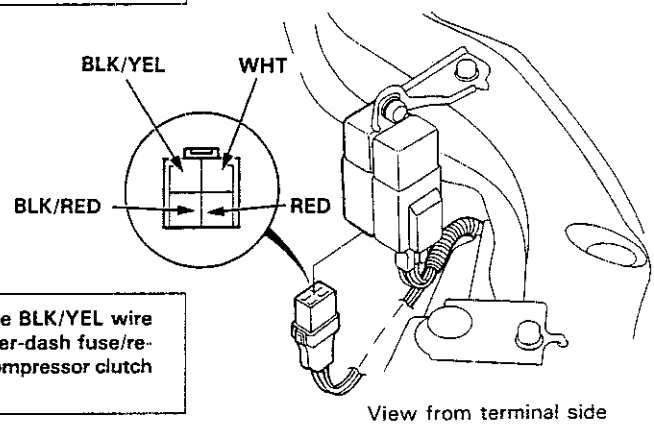
Turn the ignition switch OFF

Remove the compressor clutch relay and test it (page 22-16).

Is the relay OK? — NO → **Replace the compressor clutch relay**

YES

To page 22-10



View from terminal side

(cont'd)

Flowchart — Compressor (cont'd)

From page 22-9

Disconnect the compressor clutch 1P connector

Check for continuity in the RED wire between the compressor clutch relay and compressor clutch

Is there continuity?

NO → **Repair open in the RED wire between the compressor clutch relay and compressor clutch**

YES

Test the compressor clutch coil
Nippondenso (page 22-29)
Sanden (page 22-36)

Is the compressor clutch coil?

NO → **Replace the compressor clutch coil**

YES

Reconnect the compressor clutch relay 4P connector

Disconnect the A/C pressure switch 2P connector

Turn the ignition switch, A/C switch and heater fan switch ON

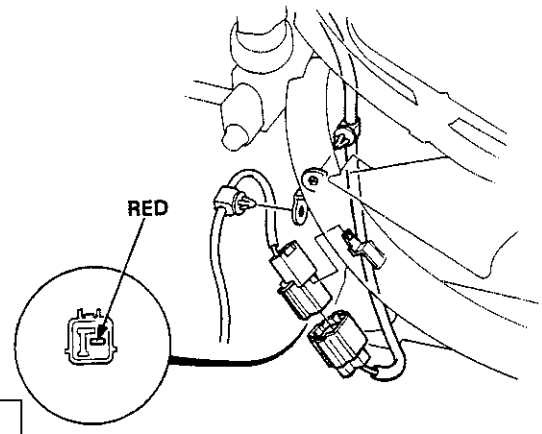
Connect the BLU/RED and YEL/WHT wire terminals with a jumper wire

Does the compressor clutch engage?

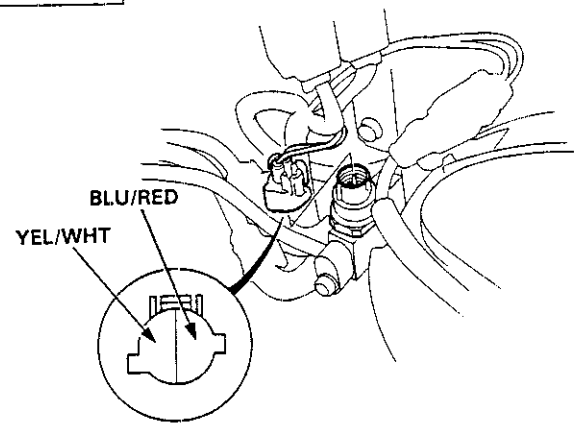
YES → **Replace the A/C pressure switch**

NO

To page 22-11



View from terminal side



View from terminal side

From page 22-10

Connect the BLU/RED wire terminal to body ground with a jumper wire

Does the compressor clutch engage?

YES → **Repair open in the YEL/WHT wire between the A/C thermostat and A/C pressure switch.**

NO

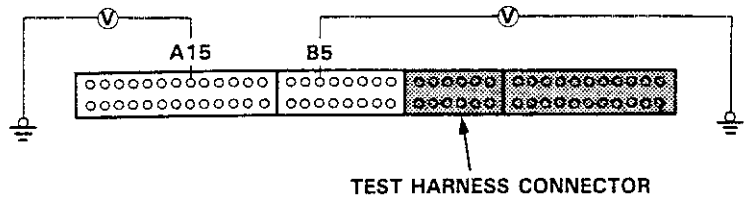
Turn the ignition switch, A/C switch, and heater fan switch OFF

Reconnect the A/C pressure switch 2P connector

Connect the test harness "A" and "B" connectors to the wire harness only, not the ECM (section 11)

Turn the ignition switch ON and the A/C switch OFF

Measure voltage between the A15 terminal (+) and body ground (−)



Is there battery voltage?

NO → **Repair open in the BLK/RED wire between the compressor clutch relay and ECM.**

YES

Measure voltage between the B5 terminal (+) and body ground (−)

Is there battery voltage?

NO → **Repair open in the BLU/RED wire between the A/C pressure switch and ECM.**

YES

Substitute a known-good ECM and recheck. If symptom/indication goes away, replace the original ECM.

Flowchart-A/C System

A/C system does not come ON (compressor and fan)

Check for blown No 13 (7.5 A) and No 35 (20 A) fuses

Are the fuses OK? — NO → **Replace the blown fuse(s).**

YES

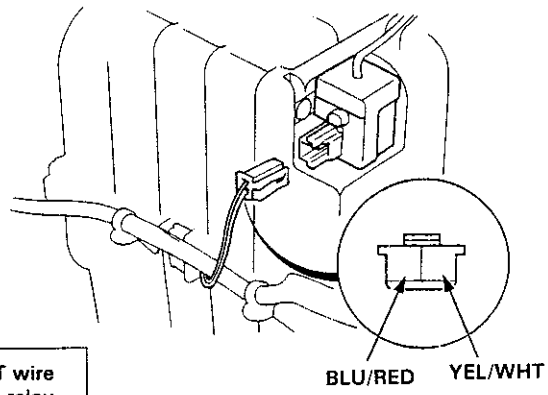
A → To RH type: page 22-13

LH type

Disconnect the A/C thermostat 2P connector

Turn the ignition switch ON

Measure voltage between the YEL/WHT wire terminal (+) and body ground (−)



View from wire side

Is there battery voltage? — NO → **Repair open in the YEL/WHT wire between the condenser fan relay and A/C thermostat.**

YES

Turn the ignition switch OFF

Test the A/C thermostat (page 22-15)

Is the A/C thermostat OK? — NO → **Replace the A/C thermostat.**

YES

To page 22-14

From page 22-12

RH type — A

Disconnect the A/C thermostat 3P connector.

Turn the ignition switch ON

Measure voltage between the BLK/YEL wire terminal (+) and body ground (−).

Is there battery voltage?

NO → **Repair open in the BLK/YEL wire between the under-dash fuse/relay box and A/C thermostat.**

YES

Measure voltage between the YEL/WHT wire terminal (+) and body ground (−).

Is there battery voltage?

NO → **Repair open in the YEL/WHT wire between the condenser fan relay and A/C thermostat**

YES

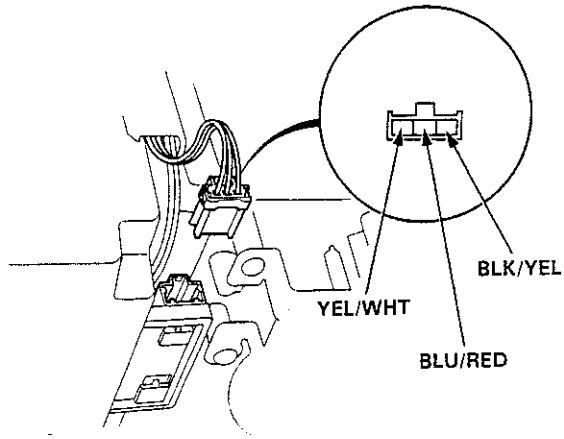
Reconnect the A/C thermostat 3P connector and connect the BLU/RED wire terminal to ground with a jumper wire

Does the condenser fan run and the compressor clutch engage?

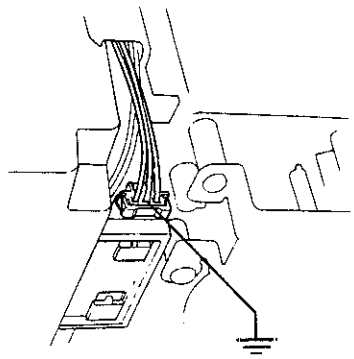
NO → **Replace the A/C thermostat**

YES

Turn the ignition switch OFF.



View from wire side



To page 22-14

(cont'd)

Flowchart — A/C System (cont'd)

From page 22-12 13

Remove the heater control panel (page 21-25).

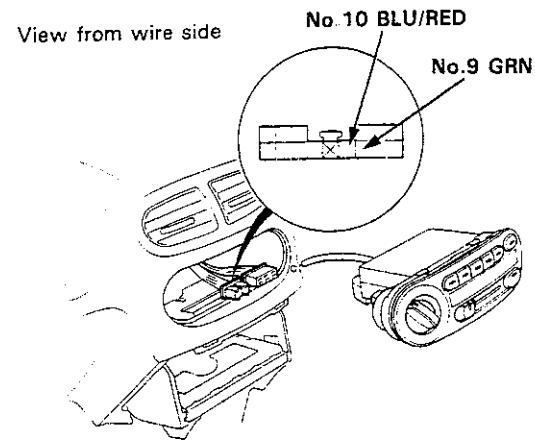
Disconnect the heater control panel 14P connector

Check for continuity in the BLU/RED wire between the A/C thermostat and heater control panel.

Is there continuity?

NO → **Repair open in the BLU/RED wire between the A/C thermostat and heater control panel**

YES



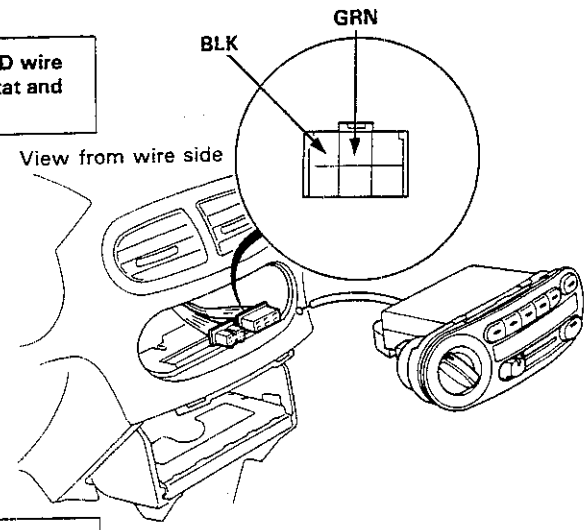
Disconnect the heater fan switch 6P connector

Check for continuity in the GRN wire between the heater control panel and heater fan switch.

Is there continuity?

NO → **Repair open in the GRN wire between the heater control panel and heater fan switch**

YES



Check for continuity in the BLK wire between the heater fan switch and body ground

Is there continuity?

NO → **Repair open in the BLK wire between the heater fan switch and body ground. If the wire is OK, check for proper ground at G201 (LHD), G301 (RHD), and G401.**

YES

Replace the heater control panel (A/C switch)

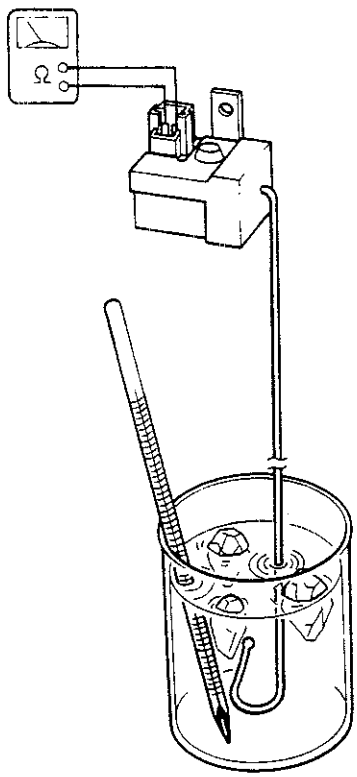
A/C Thermostat

Test

LH type:
Dip the A/C thermostat into a pan filled with ice water, and check for continuity between the terminals.

Cut off: 1.5—−0.5°C (35—31°F)
Cut in: 2.5—5°C (36—41°F)

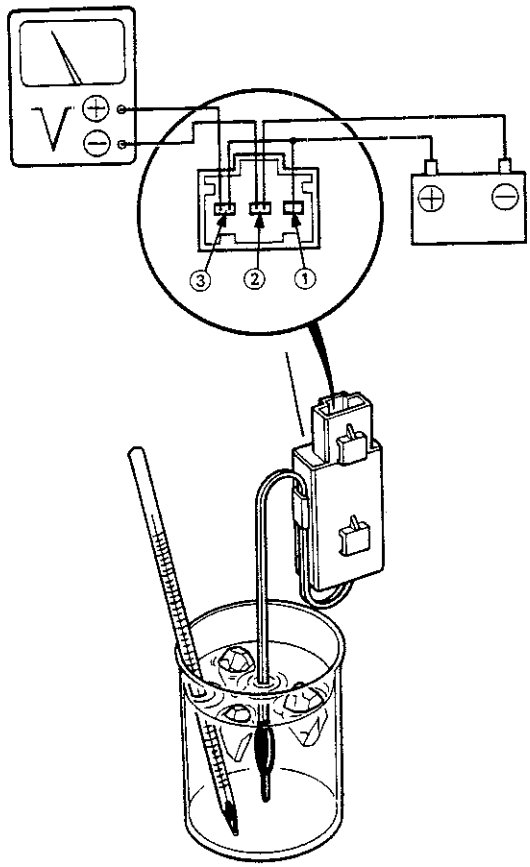
If cut off or cut in temperature is too low or too high, replace the A/C thermostat.



RH type:
Connect battery power to the No ① and No ③ terminals, ground to the No ② terminal, the voltmeter positive terminal to terminal No ③, and the voltmeter negative terminal to terminal No ② as shown below

Dip the A/C thermostat into a pan filled with ice water, and check the voltage
There should be battery voltage at 5°C or less, and 0 V at 6°C or more.

If voltage doesn't change as specified, replace the A/C thermostat.

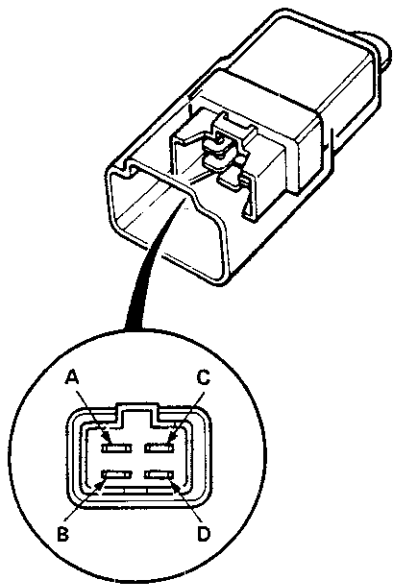


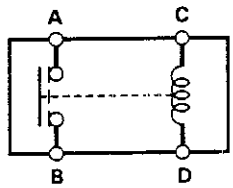
Relay

Test

There should be continuity between the C and D terminals

There should be continuity between the A and B terminals when the battery is connected to the C and D terminals. There should be no continuity when the battery is disconnected.



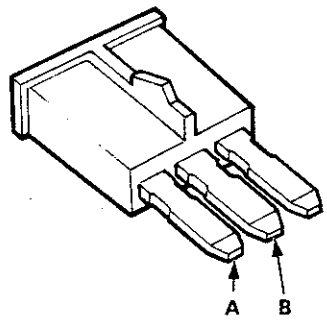


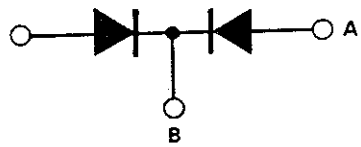
Diode

Test

NOTE: The diodes are designed to pass current in one direction while blocking it in the opposite direction. Most ohmmeters, unless equipped with a diode tester, should not be used to test diodes.

Check for continuity in both directions between the A and B terminals. There should be continuity in only one direction



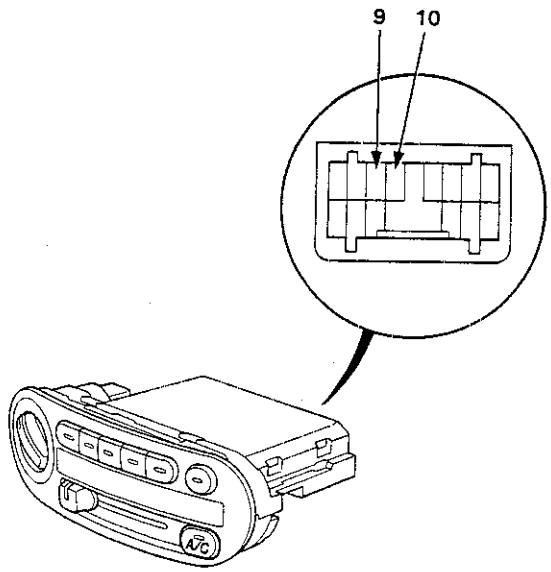


A/C Switch

Test

Check for continuity between the terminals according to the table below.

Terminal No / Position	9	10
ON	○	○
OFF		



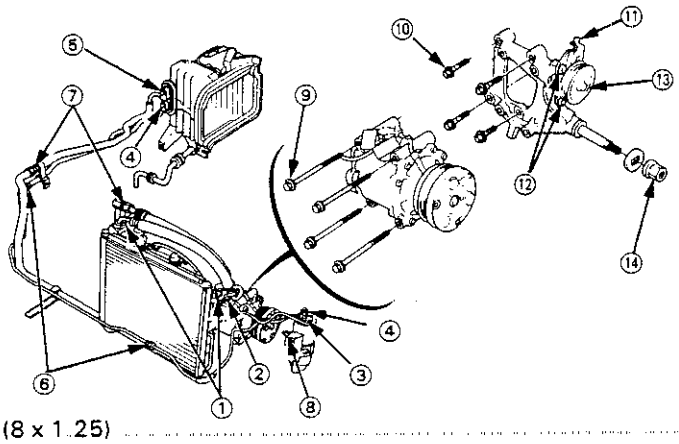
A/C Service Tips and Precautions

⚠WARNING When handling refrigerant (R-12):

- **Always wear eye protection.**
- **Do not let refrigerant get on your skin or your eyes; if it does:**
  - **— Do not rub your eyes or skin.**
  - **— Splash large quantities of cool water in your eyes or on your skin.**
  - **— Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.**
- **Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).**
- **Do not handle or discharge refrigerant in an enclosed area near an open flame; it may ignite and produce poisonous gas.**
- **Chlorine from chemicals called chlorofluorocarbons (CFCs) destroy the ozone in the stratosphere. Automotive air conditioning systems currently use chlorofluorocarbons as the refrigerant. Auto air conditioning service equipment has been developed to minimize the release of CFCs to the atmosphere. All service procedures should be performed using this equipment and the manufacturer's instructions.**

1. Always disconnect the negative cable from the battery whenever replacing air conditioner parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before the lines are reconnected.
3. Before connecting any hose or line, apply a few drops of refrigerant oil to the seat of the O-ring or flare nut
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, use a refrigerant recovery system; don't release refrigerant into the atmosphere.
6. Add refrigerant oil after replacing the following parts;

	Nippondenso	Sanden
Condenser	15 cc (1/2 fl oz)	20 cc (2/3 fl oz)
Evaporator	35 cc (1-1/6 fl oz)	45 cc (1-1/2 fl oz)
Line or Hose	10 cc (1/3 fl oz)	10 cc (1/3 fl oz)
Receiver	10 cc (1/3 fl oz)	10 cc (1/3 fl oz)
Compressor	On compressor replacement, subtract the volume of oil drained from the removed compressor from A, and drain the calculated volume of oil from the new compressor. A – Volume of removed compressor = Draining volume A: Nippondenso: 80 cc (2-2/3 fl oz), Sanden: 120 cc (4 fl oz)	



① Discharge hose bolts (8 x 1.25)	22 N·m (2.2 kg-m, 16 lb-ft)
② Suction hose bolt (6 x 1.0)	22 N·m (2.2 kg-m, 16 lb-ft)
③ Condenser pipe bolts (6 x 1.0)	10 N·m (1.0 kg-m, 7 lb-ft)
④ Receiver pipe bolts (6 x 1.0)	10 N·m (1.0 kg-m, 7 lb-ft)
⑤ Suction pipe bolt (8 x 1.25)	22 N·m (2.2 kg-m, 16 lb-ft)
⑥ Receiver pipe joint nuts	14 N·m (1.4 kg-m, 10 lb-ft)
⑦ Suction pipe joint nuts	33 N·m (3.3 kg-m, 24 lb-ft)
⑧ Receiver and filter/dryer bolts (6 x 1.0)	10 N·m (1.0 kg-m, 7 lb-ft)
⑨ Compressor mounting bolts	25 N·m (2.5 kg-m, 18 lb-ft)
⑩ Compressor bracket mounting bolts	48 N·m (4.8 kg-m, 35 lb-ft)
⑪ Adjusting bolt	8 N·m (0.8 kg-m, 5.8 lb-ft)
⑫ Idler pulley bracket bolts	25 N·m (2.5 kg-m, 18 lb-ft)
⑬ Idler pulley center nut	48 N·m (4.8 kg-m, 35 lb-ft)
⑭ Engine mount bracket nut	70 N·m (7.0 kg-m, 50 lb-ft)

A/C System Service

Discharge

⚠WARNING

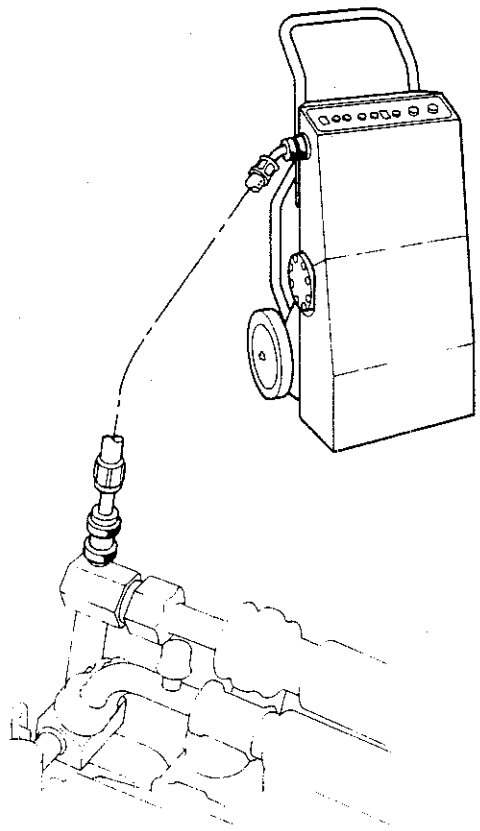
- **Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.**
- **Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.**

1. Connect a Refrigerant Recovery System to the A/C system.

2. Operate the Refrigerant Recovery System according to the manufacturer's instructions.

   IMPORTANT: Do not vent refrigerant to the atmosphere. The chlorofluorocarbons (CFCs) used in conventional refrigerant (R-12) damage the earth's ozone layer. Always use UL-listed, refrigerant recovery/recycling equipment to extract the refrigerant before you open an A/C system to make repairs. Follow the equipment manufacturer's instructions.

REFREGERANT RECOVERY/
RECYCLING SYSTEM



Performance Test

The performance test will help to determine if the air conditioning system is operating within specifications.

1. Connect the Air Conditioning Service Station as shown.

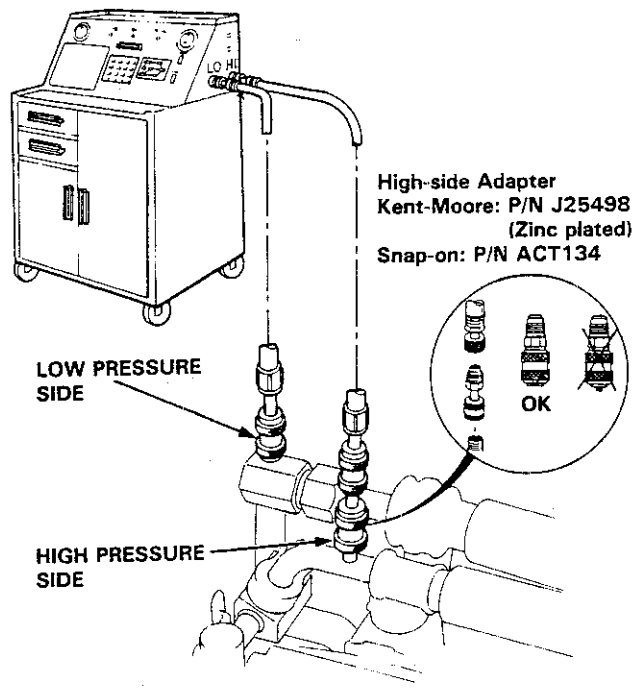
   NOTE: Connect the adapter to the high pressure hose first, then connect the hoses to the car as shown. When testing is completed, disconnect the hose adapter from the high-side fitting; do not disconnect the hose from the adapter, or refrigerant may escape from the system.

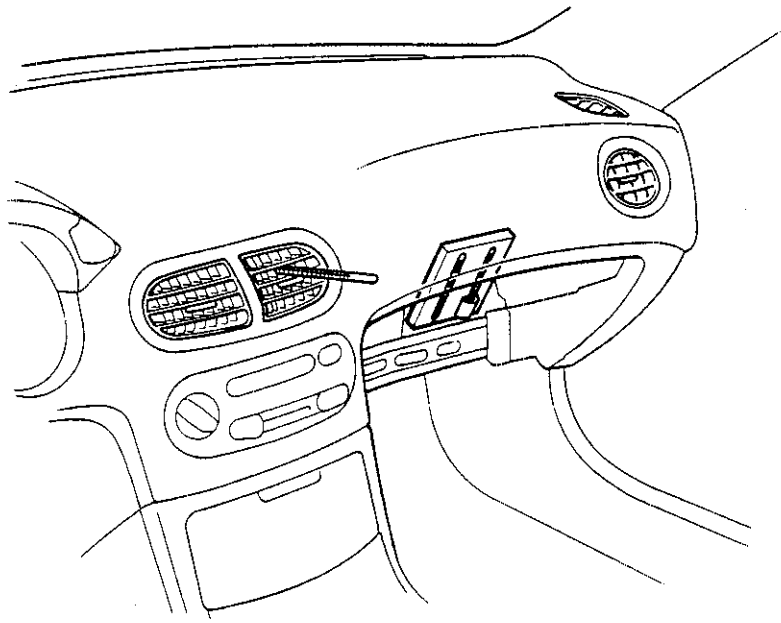
2. Insert a thermometer in the center vent outlet. Determine the relative humidity and ambient air temperature by calling the local weather station.

3. Test conditions:
   - Avoid direct sunlight.
   - Open hood.
   - Open front doors.
   - Set the temperature control lever to COOL and push the mode control button to VENT position and recirculation control button to REC position.
   - Turn the fan switch to the highest position.
   - Run the engine at 1,500 rpm
   - No driver or passengers in the vehicle.

4. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the dash vent and the high and low system pressure from the Air Conditioning Service Station.

AIR CONDITIONING SERVICE STATION

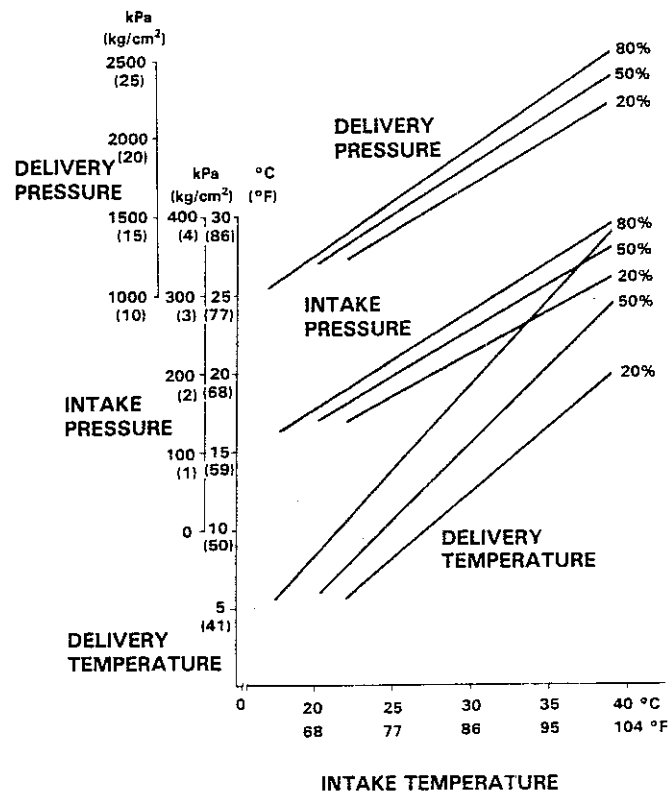




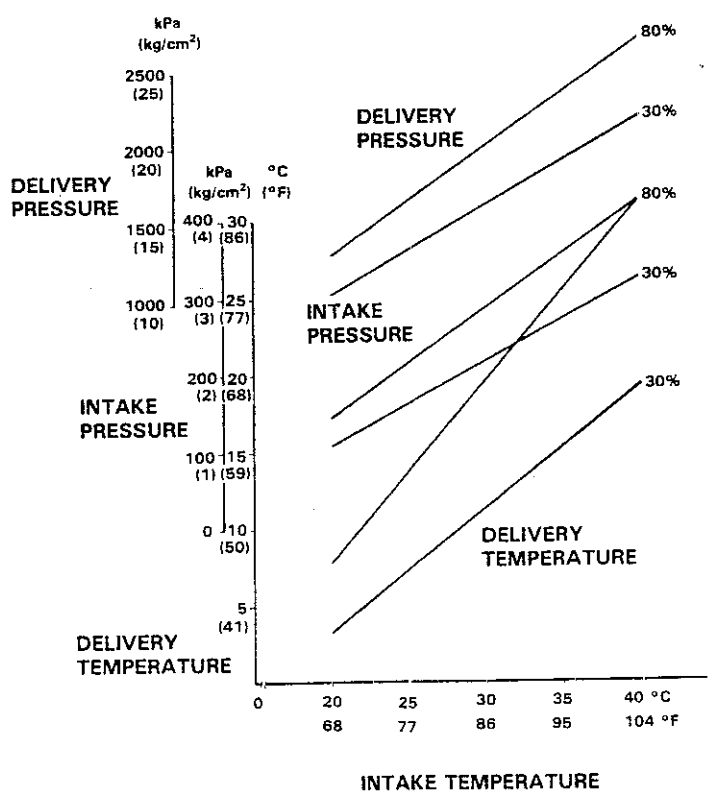
5 To complete the charts:

- Mark the delivery temperature along the vertical line.
- Mark the intake temperature (ambient air temperature) along the bottum line
- Draw a line straight up from the air temperature to the humidity
- Mark a point one line above and one line below the humidity level (10% above and 10% below the humidity level)
- From each point, draw a horizontal line across the delivery temperature.
- The delivery temperature should fall between the two lines.
- Complete the low side pressure test and high side pressure test in the same way.
- Any measurements outside the line may indicate the need for further inspection.

Nippondenso:



Sanden:



Pressure Test Chart

TEST RESULT	RELATED SYMPTOMS	PROBABLE CAUSE	REMEDY
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (28 psi) quickly, and then falls gradually	Air in system	Evacuate system: then recharge Evacuation: page 22-41 Recharging: page 22-42
	No bubbles in sight glass when condenser is cooled by water.	Excessive refrigerant in system	Discharge refrigerant as necessary
	Reduced or no air flow through condenser	• Clogged condenser fins • Condenser fan not working properly	• Clean • Check voltage and fan rpm • Check fan direction
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	• Expansion valve • Restricted lines
Discharge pressure abnormally low	Excessive bubbles in sight glass; condenser is not hot.	Insufficient refrigerant in system	• Check for leak • Charge system
	High and low pressures are balanced soon after stopping compressor	• Faulty compressor discharge or inlet valve • Faulty compressor seal	Replace
	Outlet of expansion valve is not frosted, low pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace • Flush and evacuate
Suction (low) pressure abnormally low	Excessive bubbles in sight glass: condenser is not hot.	Insufficient refrigerant	Check for leaks Charge as required.
	Expansion valve is not frosted and low pressure line is not cold. Low pressure gauge indicates vacuum.	• Frozen expansion valve • Faulty expansion valve	Replace expansion valve
	Discharge temperature is low and the air flow from vents is restricted	Frozen evaporator	Run the fan with compressor off, then check capillary tube.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace
	Receiver dryer is cool (should be warm during operation).	Clogged receiver dryer	Replace
Suction pressure abnormally high	Low pressure hose and check joint are cooler than around evaporator	• Expansion valve open too long • Loose expansion valve	Repair or replace.
	Suction pressure is lowered when condenser is cooled by water.	Excessive refrigerant in system	Discharge refrigerant as necessary
	High and low pressure are equalized as soon as the compressor is stopped and both gauges fluctuate while running.	• Faulty gasket • Faulty high pressure valve • Foreign particle stuck in high pressure valve	Replace compressor
Suction and discharge pressures abnormally high	Reduced air flow through condenser	• Clogged condenser fins • Condenser fan not working properly	• Clean • Check voltage and fan rpm • Check fan direction
	No bubbles in sight glass when condenser is cooled by water.	Excessive refrigerant in system	Evacuate and recharge
Suction and discharge pressure abnormally low	Low pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low pressure hose parts	Repair or replace
	Temperature around expansion valve is too low compared with that around receiver dryer.	Clogged high pressure line	Repair or replace
Refrigerant leaks	Compressor clutch is dirty.	Compressor shaft seal leaking	Replace compressor
	Compressor bolt(s) are dirty	Leaking around bolt(s)	Tighten bolt(s) or replace compressor
	Compressor gasket is wet with oil.	Gasket leaking	Replace compressor
Compressor heat damage	Black soot inside compressor and hoses.	Restriction or leak in system	Flush entire system, replace rubber lines or hoses.

Evaporator

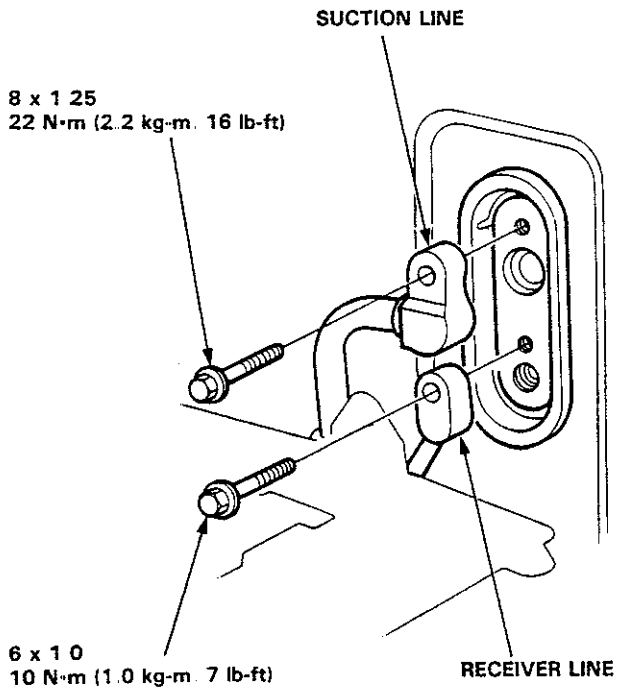
Replacement

1 Disconnect the battery negative cable, then disconnect the positive cable.
Remove the battery.

2 Discharge refrigerant using a refrigerant recovery system (page 22-19)

3. Remove the bolts and disconnect the receiver line and suction line from the evaporator.

CAUTION: Cap the open fittings immediately to keep moisture out of the system.

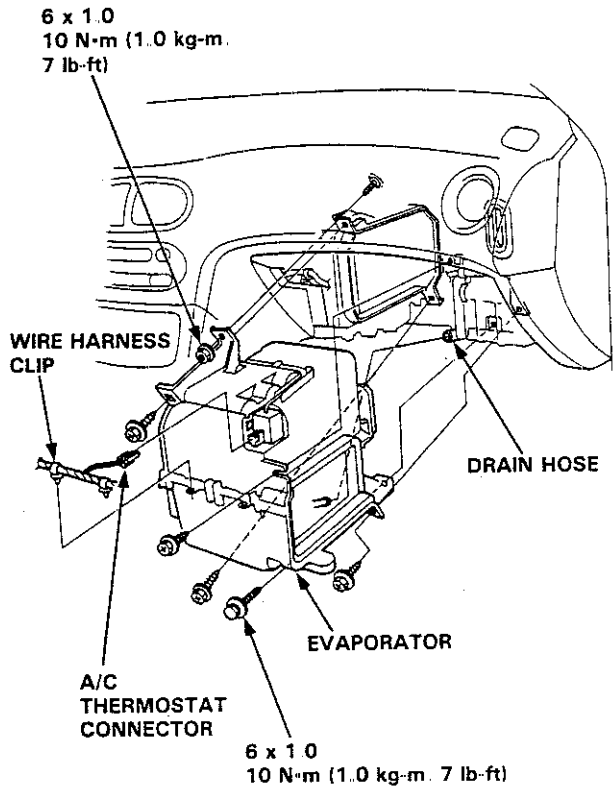


4 Remove the glove box and glove box frame (section 20)

5. Disconnect the connector from the A/C thermostat, and remove the wire harness clip from the evaporator

6 Remove the four self-tapping screws, bolt and nut.

7. Disconnect the drain hose, and remove the evaporator.



8. Install in the reverse order of removal, and:

- Apply a sealant to the grommets.
- Make sure that there is no air leakage.
- Charge the A/C system (page 22-42).
- Test the A/C system performance (page 22-20)

Evaporator

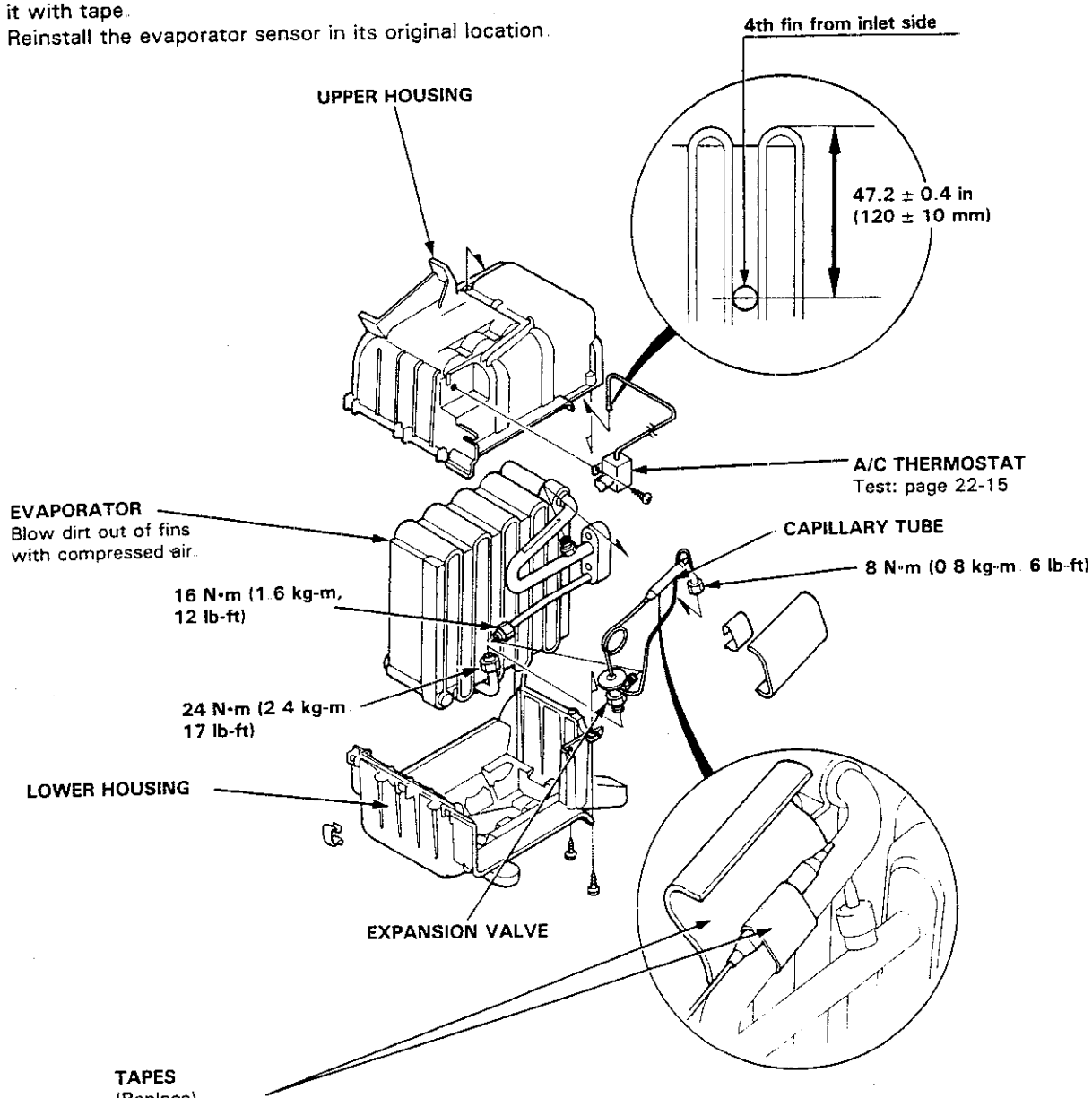
Overhaul

1. Pull the evaporator sensor out of the evaporator fins
2. Remove the self-tapping screws and clips from the housing.
3. Carefully separate the housings, and remove the evaporator covers.
4. Remove the expansion valve if necessary

NOTE: When loosening the expansion valve nuts, use a second wrench to hold the valve or evaporator pipe or they can be cracked.

Assemble the evaporator in the reverse order of disassembly, and:

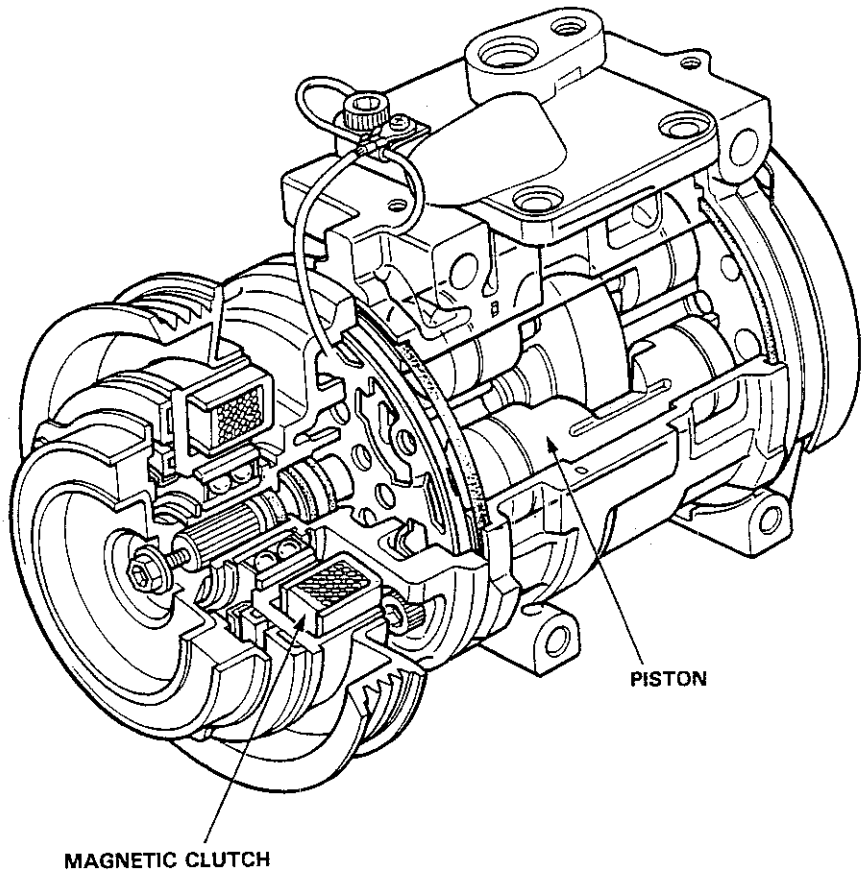
- Apply a thin coat of refrigerant oil to the new O-rings at joint nuts.
- Install the expansion valve capillary tube with the capillary tube in contact with the suction line directly, and wrap it with tape.
- Reinstall the evaporator sensor in its original location.

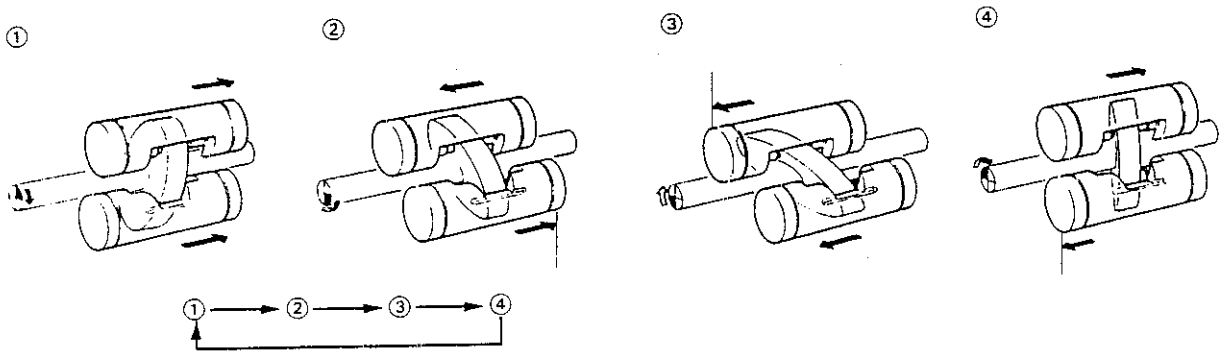


Compressor (Nippondenso)

Description

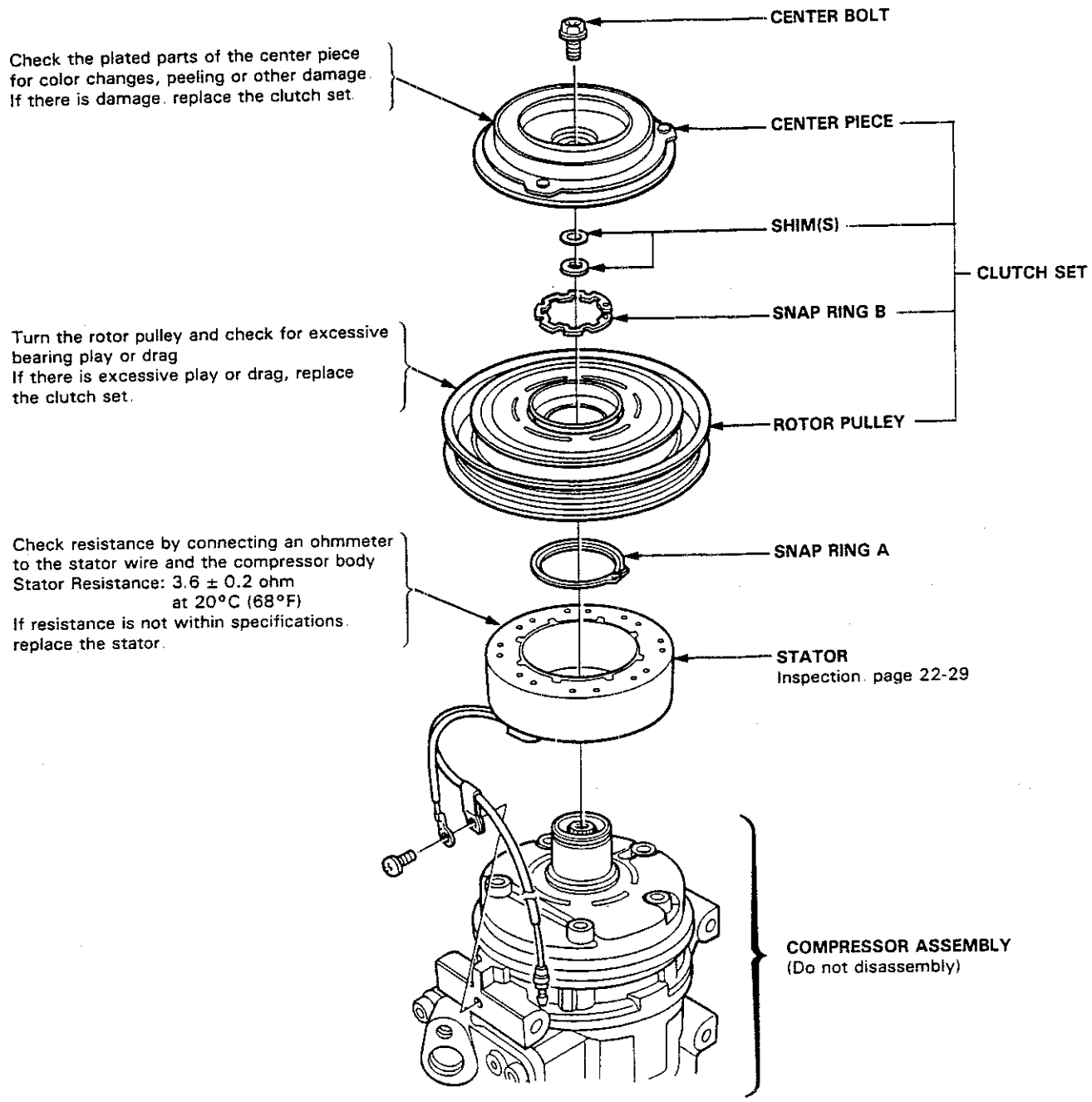
This compressor is a piston type. A revolving inclined disc drives the surrounding 10 reciprocating pistons. As the inclined disc revolves, it pushes the pistons, protected by a ceramic shoe, thus compressing the refrigerant





Compressor (Nippondenso)

Illustrated Index



Replacement

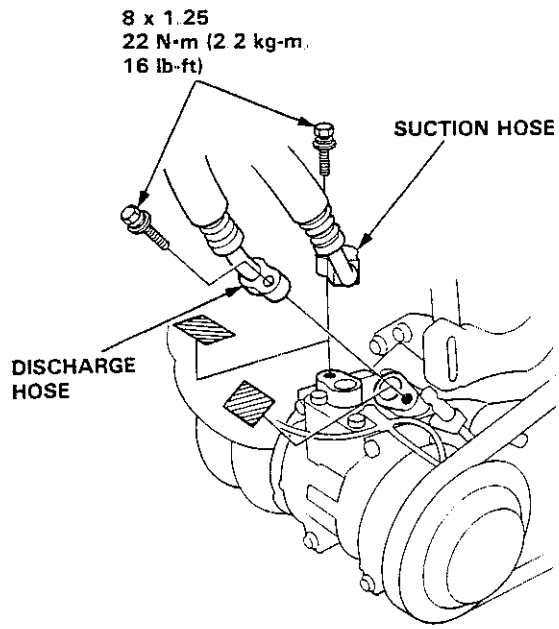
1. If the compressor is marginally operable, run the engine at idle speed and turn the air conditioner fan on for a few minutes, then shut the engine off and disconnect the battery negative cable.

2. Discharge refrigerant using a refrigerant recovery system (page 22-19)

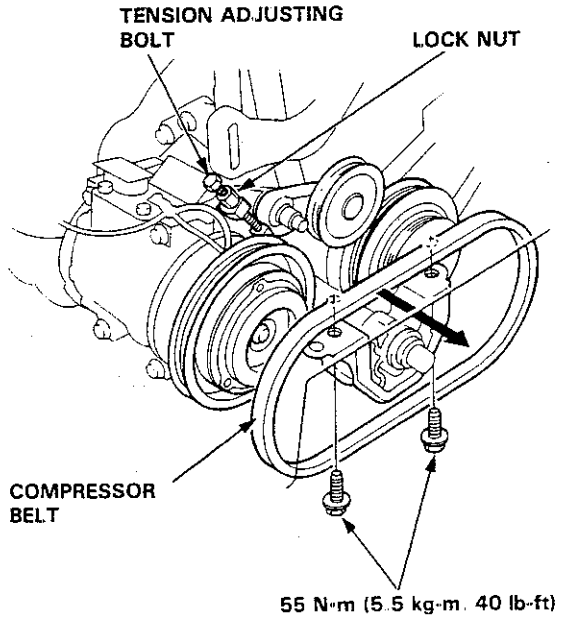
3. Remove the power steering pump (section 17).

4. Remove the two bolts, and disconnect the suction hose and discharge hose from the compressor.

   CAUTION: Cap the open fittings immediately to keep moisture out of the system.

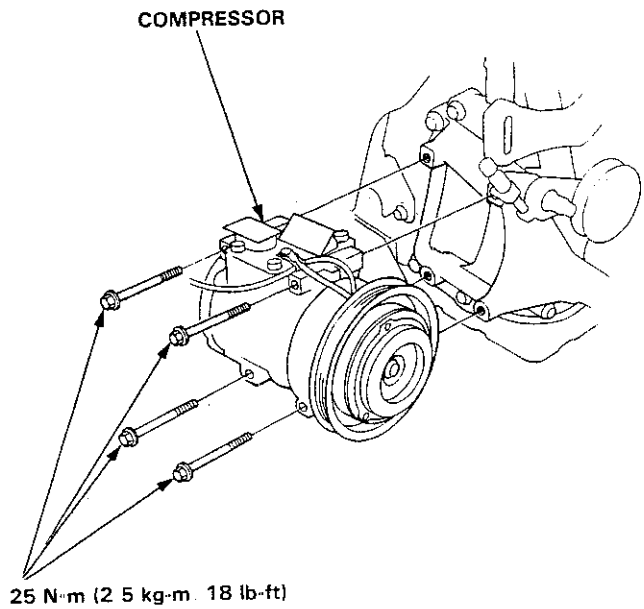


5. Loosen the compressor belt tension adjusting bolt, and remove the belt from the pulleys.
   Remove the two left engine mount bracket bolts, and pass the belt through the gap between the body and left engine mount bracket.



6. Disconnect the compressor clutch 1P connector.

7. Remove the four compressor mounting bolts and the compressor.



(cont'd)

Compressor (Nippondenso)

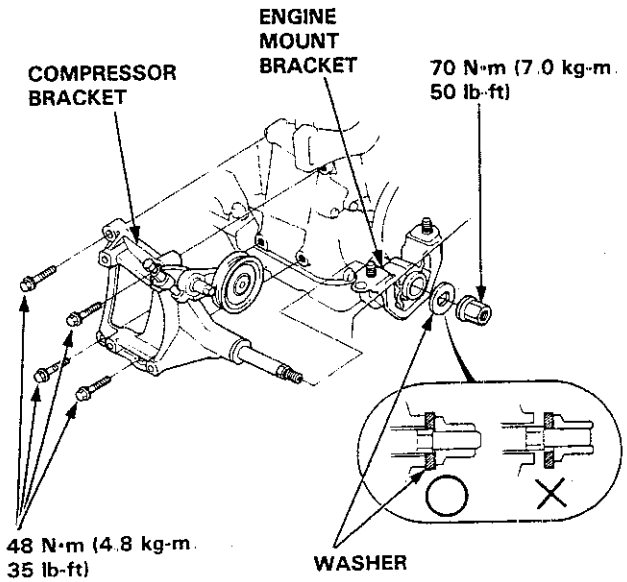
Replacement (cont'd)

8. If necessary, remove the compressor bracket as follows:

   – Remove the nut, washer and left engine mount bracket.

   NOTE: When tightening the left engine mount nut, make sure the washer is set properly on the engine mount bracket as shown

   – Remove the four compressor bracket mounting bolts and bracket.

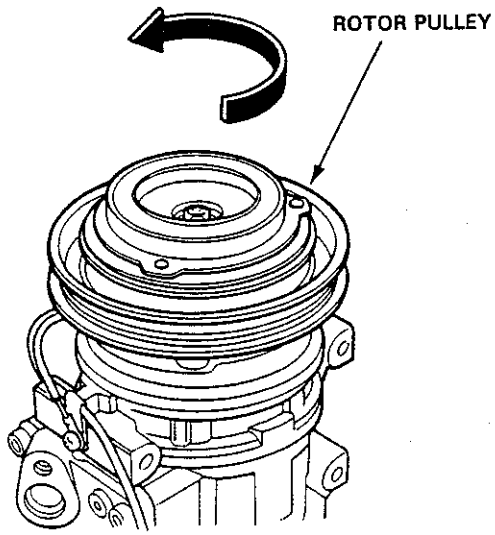


9 Install the removed parts in the reverse order of removal, and:

- If a new compressor is installed, calculate the refrigerant oil as below and drain through the suction fitting on the compressor:
  80 cc (2-2/3 fl-oz) minus contents of old compressor, equals amount to drain from new compressor.
- Do not damage the condenser fins when removing/installing the compressor
- Adjust the compressor belt (page 22-40)
- Adjust the power steering pump belt (section 17).
- Charge the A/C system (page 22-42).
- Test the A/C system performance (page 22-20).

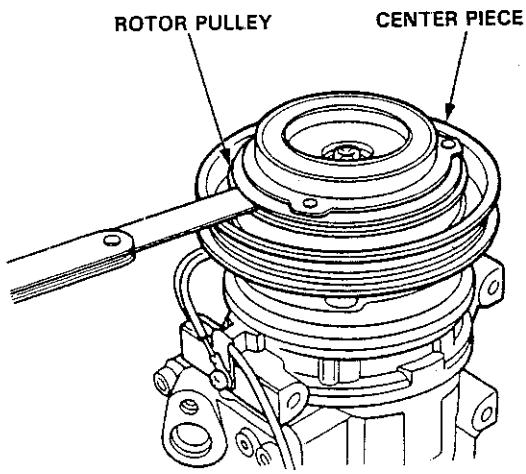
Clutch Inspection

- Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the rotor pulley with a new one if it is noisy or has excessive play/drag.



- Measure the clearance between the rotor pulley and center piece all the way around. If the clearance is not within specified limits, the center piece must be removed and shims added or removed as required.

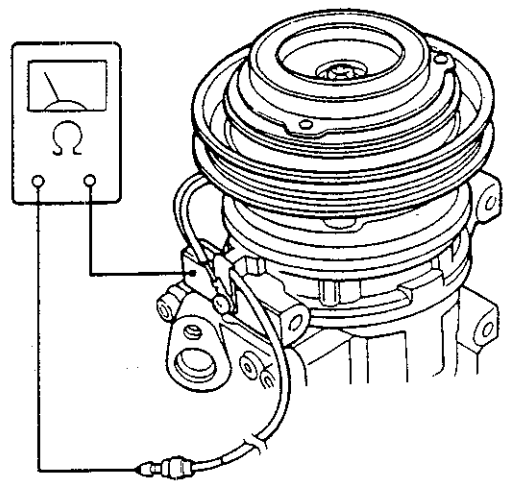
CLEARANCE: 0.50 ± 0.15 mm (0.02 ± 0.006 in)



NOTE: The shims are available in three sizes: 0.1 mm, 0.3 mm and 0.5 mm of thickness

- Check resistance of the stator:
  Stator Resistance: 3.6 ± 0.2 ohm at 20°C (68°F)

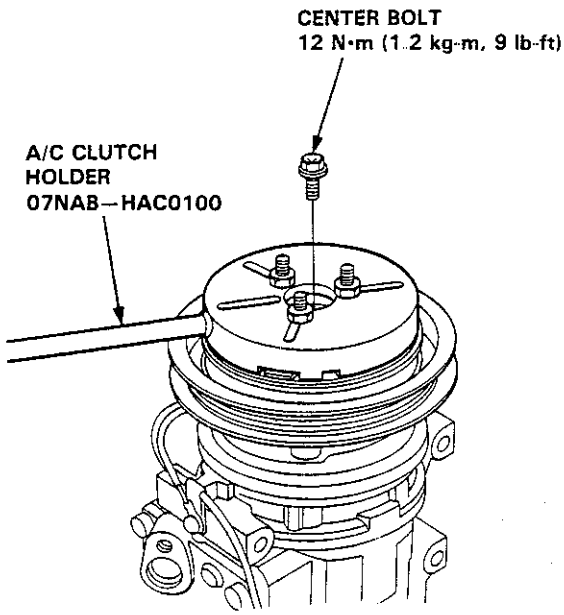
If resistance is not within specifications, replace the stator.



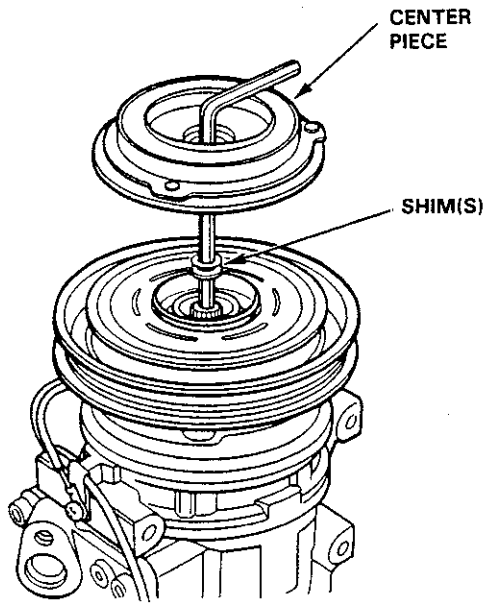
Compressor (Nippondenso)

Clutch Overhaul

1. Remove the center bolt and washers.

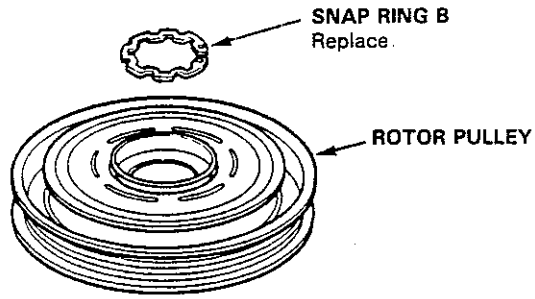


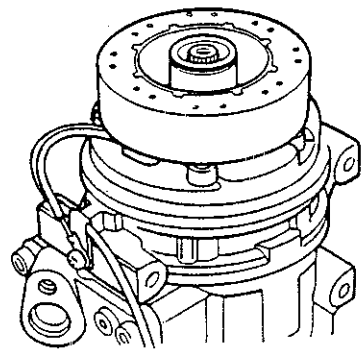
2. Remove the center piece and shim(s) taking care not to lose the shims.



3. Use snap ring pliers to remove the snap ring B, then remove the rotor pulley.

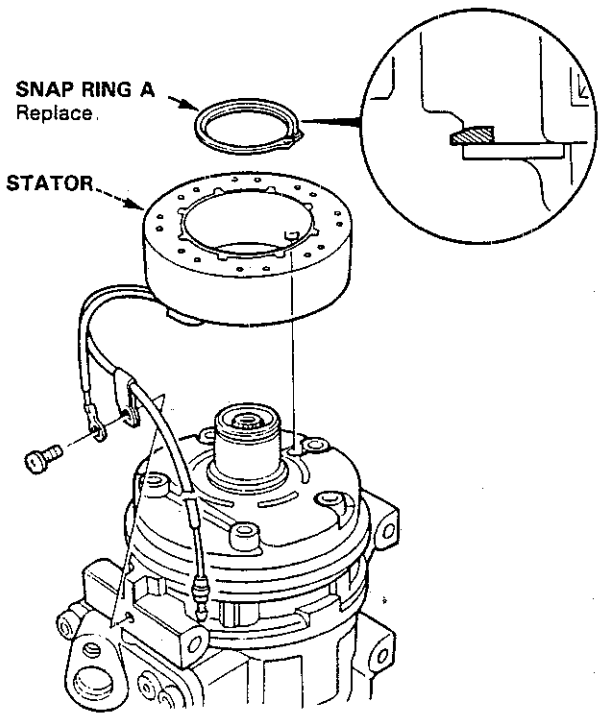
NOTE:
- Be careful not to damage the rotor and compressor during removal/installation.
- Once the snap ring was removed, replace it with a new one





4. Remove the snap ring A and the stator.

NOTE:
- Be careful not to damage the compressor during removal/installation.
- Once the snap ring was removed, replace it with a new one



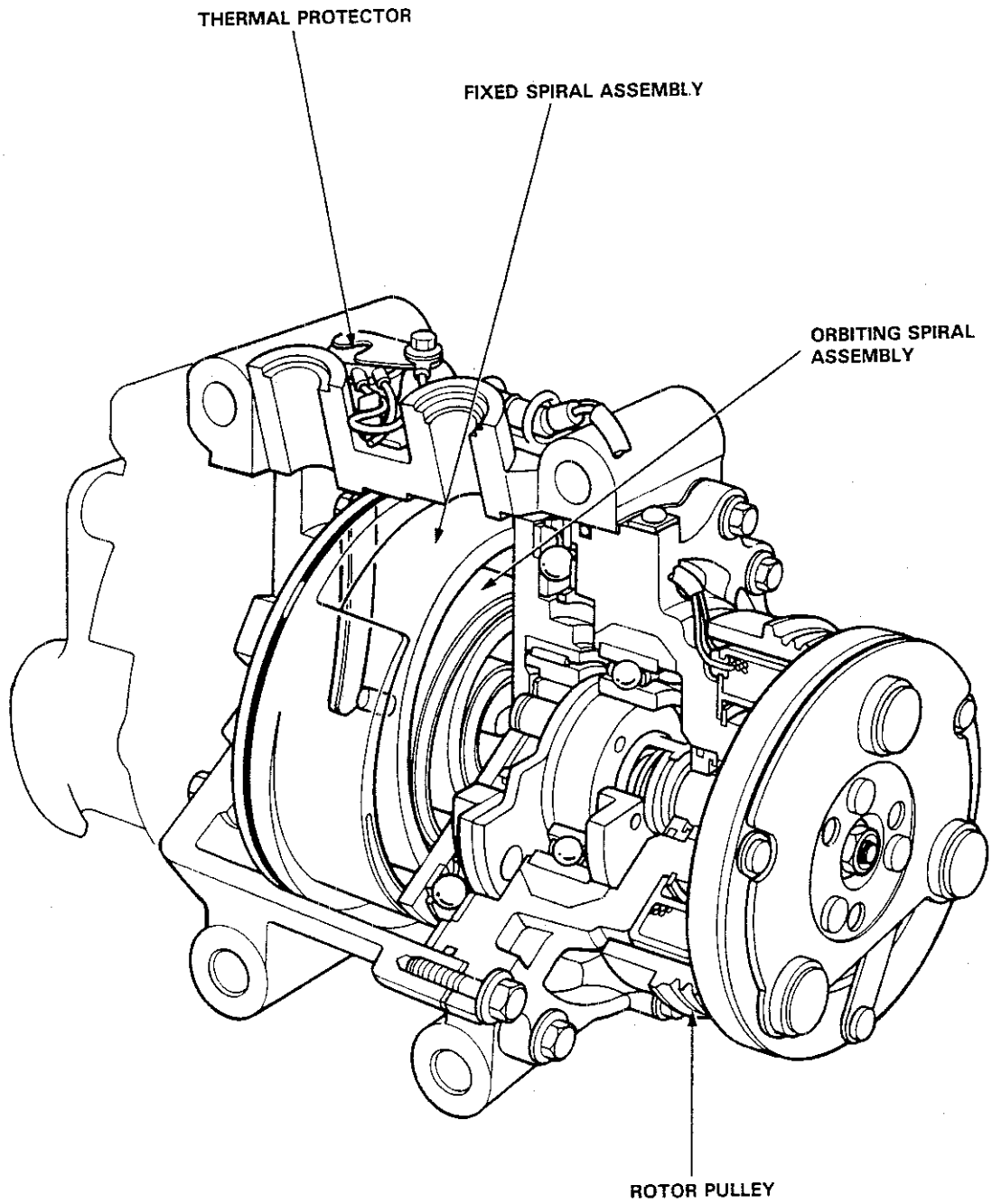
5. Install the removed parts in the reverse order of removal, and:

- Install the stator with the wire side facing up (see above).
- Clean the rotor pulley and compressor sliding surfaces with non-petroleum solvent
- Check the rotor pulley bearings for excessive play
- Make sure the snap ring is in the groove properly (see above).
- Apply a locking agent to the threads of the center bolt and tighten it securely.
- Make sure that the rotor pulley turns smoothly

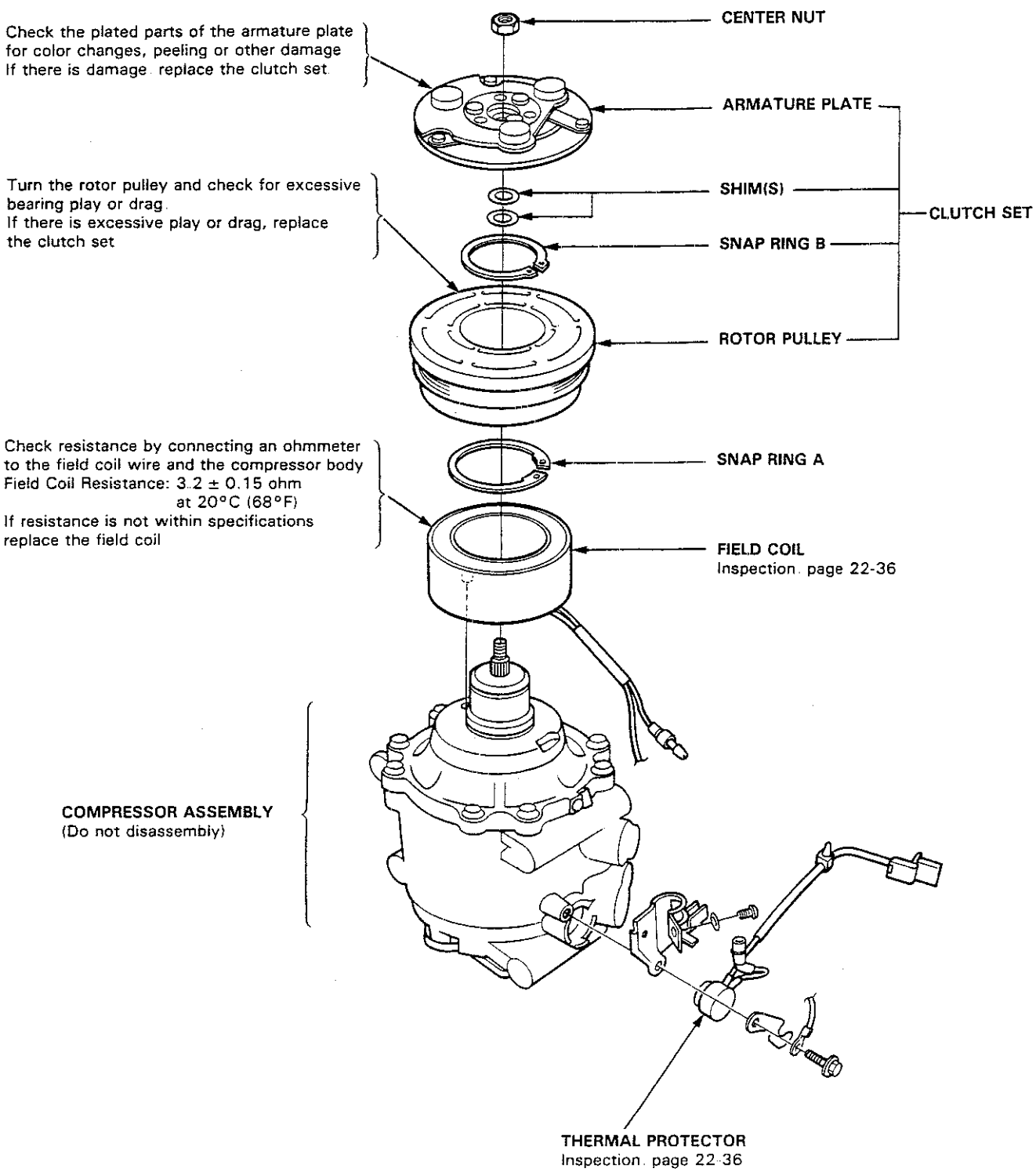
Compressor (Sanden)

Description

This compressor is the spiral type. Refrigerant is compressed between a fixed spiral assembly and an orbiting spiral assembly. A thermal protector is installed on this compressor



Illustrated Index



Compressor (Sanden)

Replacement

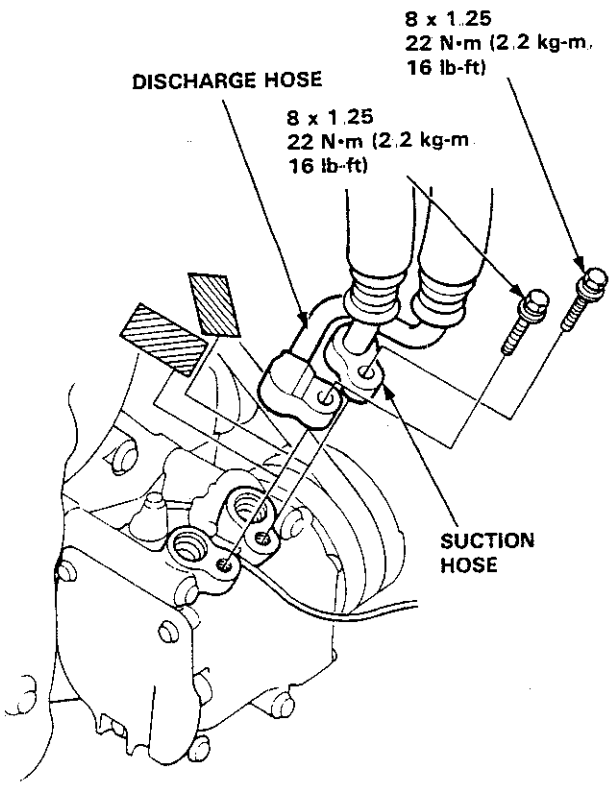
1. If the compressor is marginally operable, run the engine at idle speed and turn the air conditioner fan on for a few minutes, then shut the engine off and disconnect the battery negative cable.

2. Discharge refrigerant using a refrigerant recovery system (page 22-19).

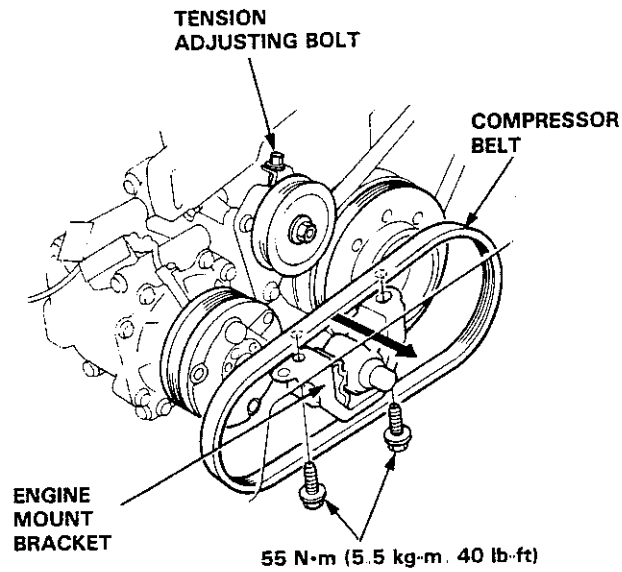
3. Remove the power steering pump (section 17).

4. Remove the two bolts, and disconnect the suction hose and discharge hose from the compressor.

   CAUTION: Cap the open fittings immediately to keep moisture out of the system.

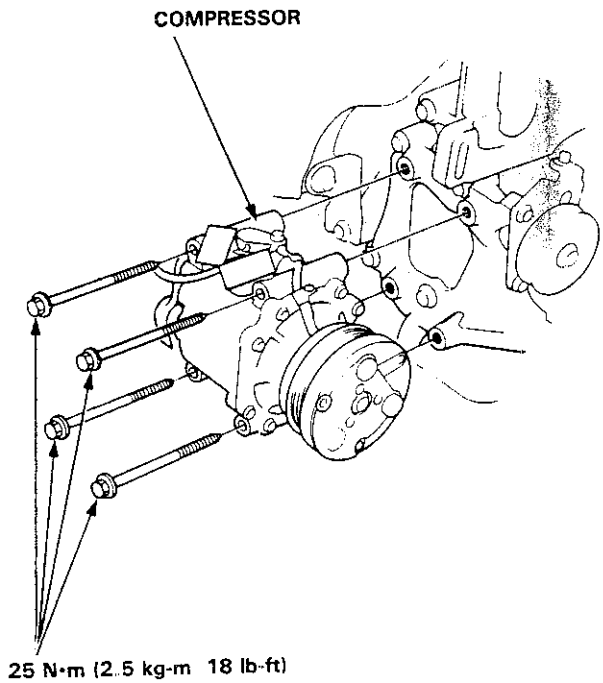


5. Loosen the compressor belt tension adjusting bolt, and remove the belt from the pulleys.
   Remove the two left engine mount bracket bolts, and pass the belt through the gap between the body and left engine mount bracket.



6. Disconnect the compressor clutch 1P connector.

7. Remove the four compressor mounting bolts and the compressor.

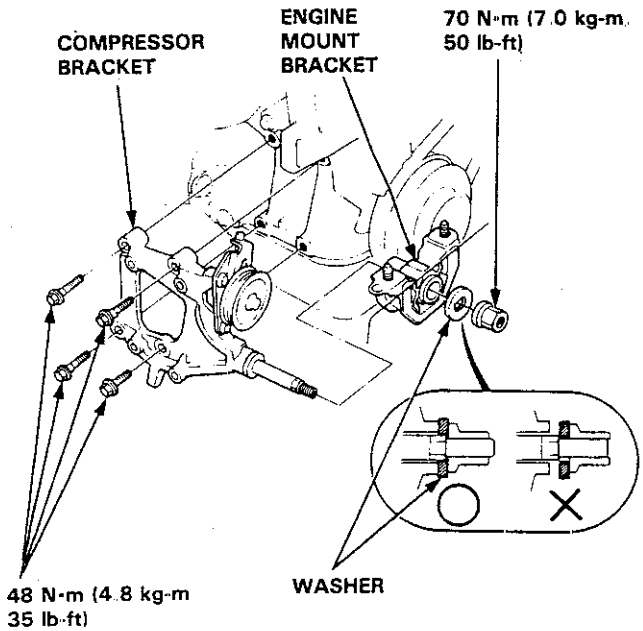


8. If necessary, remove the compressor bracket as follows:

   – Remove the nut, washer and left engine mount bracket.

   NOTE: When tightening the left engine mount nut, make sure the washer is set properly on the engine mount bracket as shown

   – Remove the four compressor bracket mounting bolts and bracket.



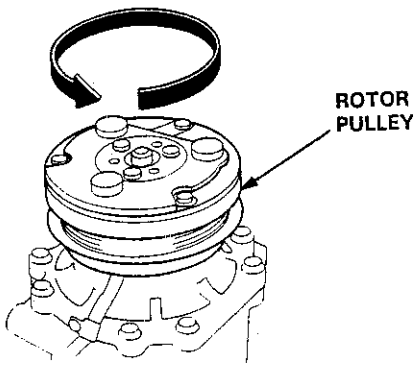
9. Install the removed parts in the reverse order of removal, and:

   - If a new compressor is installed, calculate the refrigerant oil as below and drain through the suction fitting on the compressor:
     120 cc (4 fl-oz) minus contents of old compressor, equals amount to drain from new compressor.
   - Do not damage the condenser fins when removing/installing the compressor
   - Adjust the compressor belt (page 22-40)
   - Adjust the power steering pump belt (section 17).
   - Charge the A/C system (page 22-42).
   - Test the A/C system performance (page 22-20)

Compressor (Sanden)

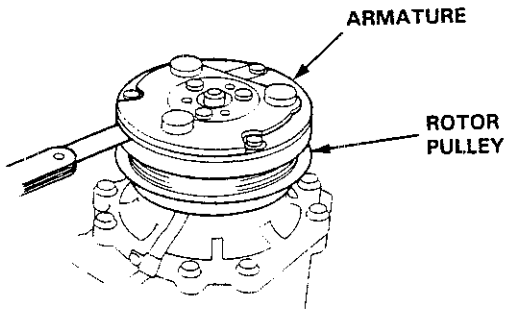
Clutch Inspection

- Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the rotor pulley with a new one if it is noisy or has excessive play/drag

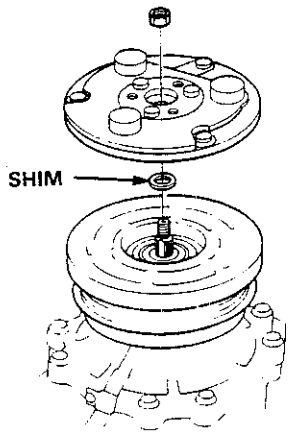


- Turn the rotor pulley by hand and measure the clearance between the rotor pulley and armature plate all the way around. If the clearance is not within specified limits, the armature plate must be removed and shims added or removed as required.

CLEARANCE: 0.50 ± 0.15 mm (0.02 ± 0.006 in)



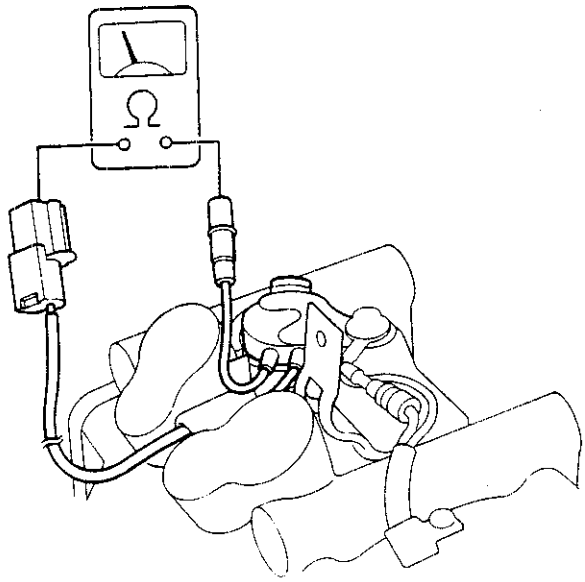
NOTE: The shims are available in four sizes: 0.1 mm, 0.2 mm, 0.4 mm and 0.5 mm of thickness.



- Release the compressor clutch connector from the connector holder.

Check the thermal protector for continuity.

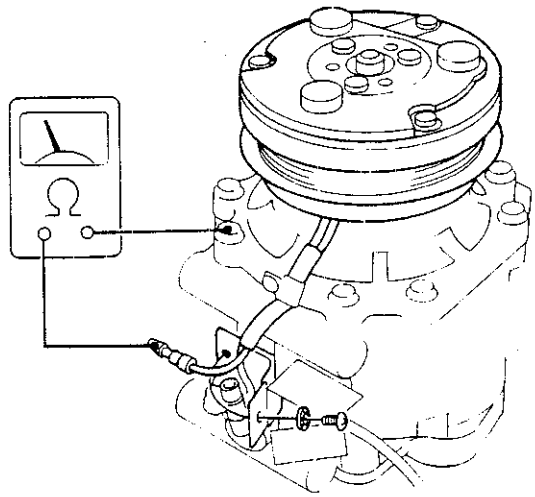
If there is no continuity, replace the thermal protector



Check the field coil for resistance:

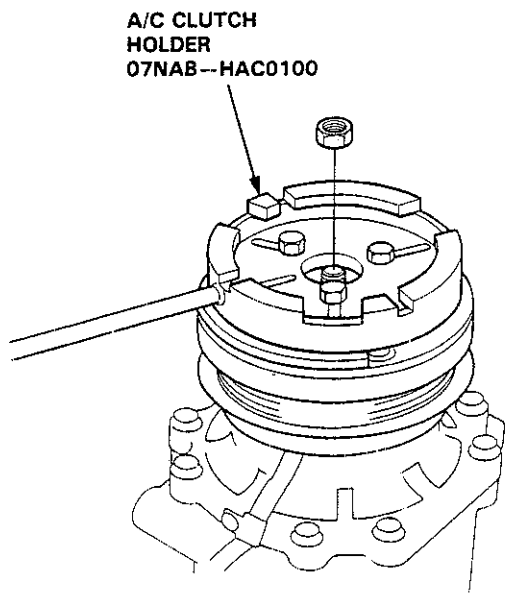
Fiel Coil Resistance:
3.2 ± 0.15 ohm at 20°C (68°F)

If resistance is not within specifications, replace the field coil.

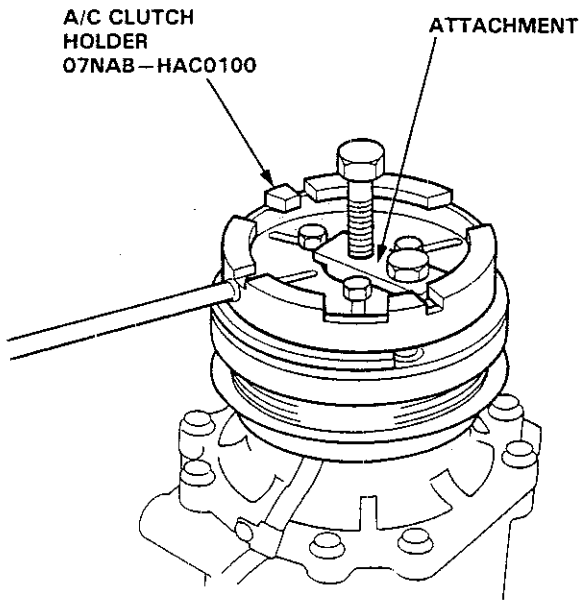


Clutch Overhaul

1 Remove the center nut while holding the armature plate.

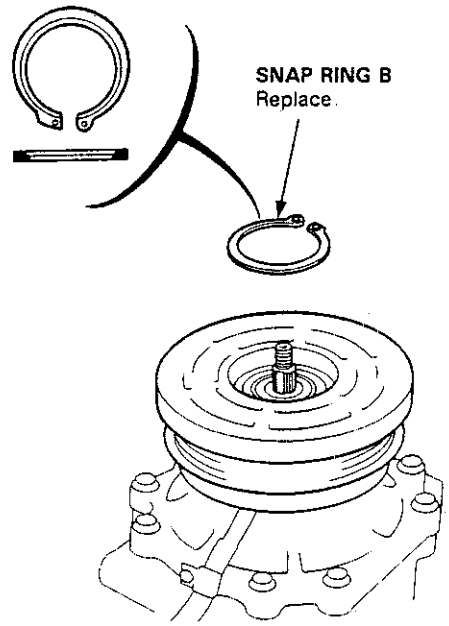


2. Remove the armature plate by pulling it up by hand. If you can not remove it by hand, attach the attachment to the A/C clutch holder, screw the bolt in the center and remove the armature plate.



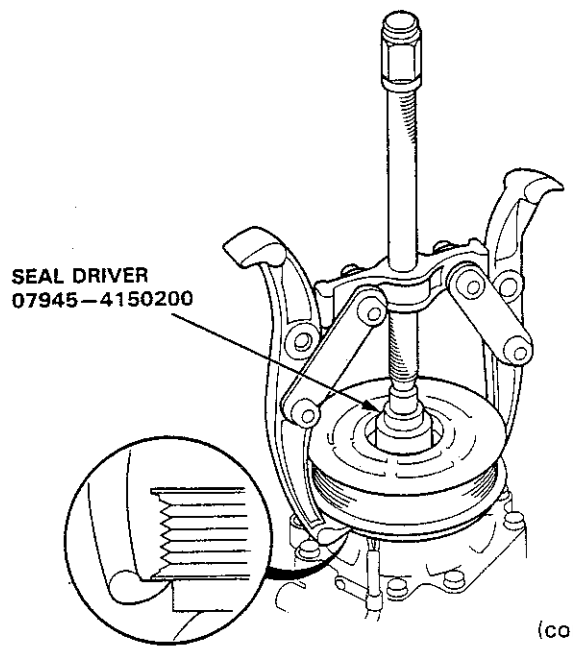
3. Remove the snap ring B with a snap ring pliers

NOTE: Once the snap ring B is removed, replace it with a new one.



4. Remove the rotor pulley from the shaft with a pulley and the special tool.

NOTE: Put the claws of the puller on the back of the pully, not on the belt area; otherwise the pulley can be damaged

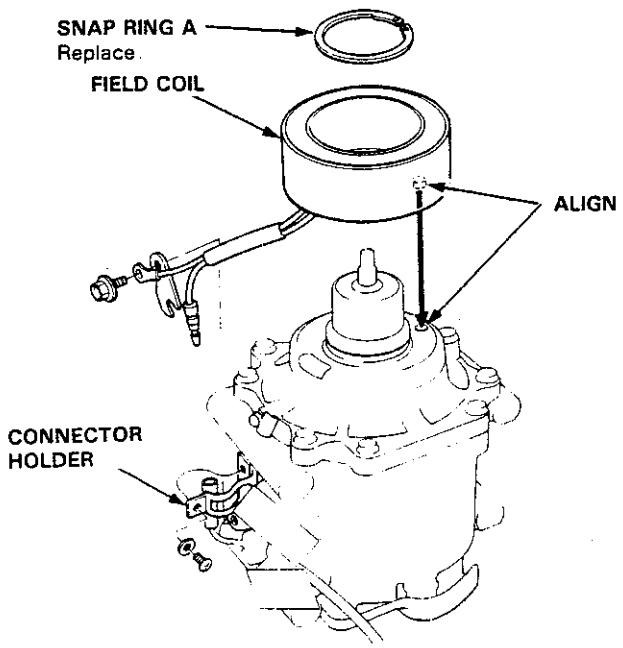


(cont'd)

Clutch Overhaul

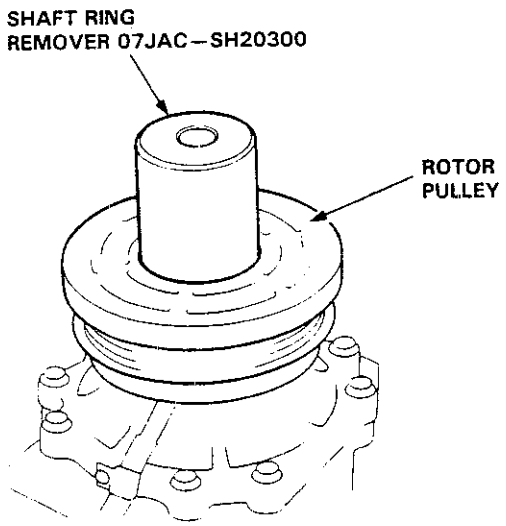
5. Remove the snap ring A with a snap ring pliers
Release the field coil connector from the connector holder and disconnect the connector and field coil ground terminal.
Remove the field coil from the compressor cover

NOTE:
- Once the snap ring A is removed, replace it with a new one.
- When installing the field coil, align the boss on the field coil with the hole in the compressor



6. Press the rotor pulley onto the field coil with a shaft ring remover.

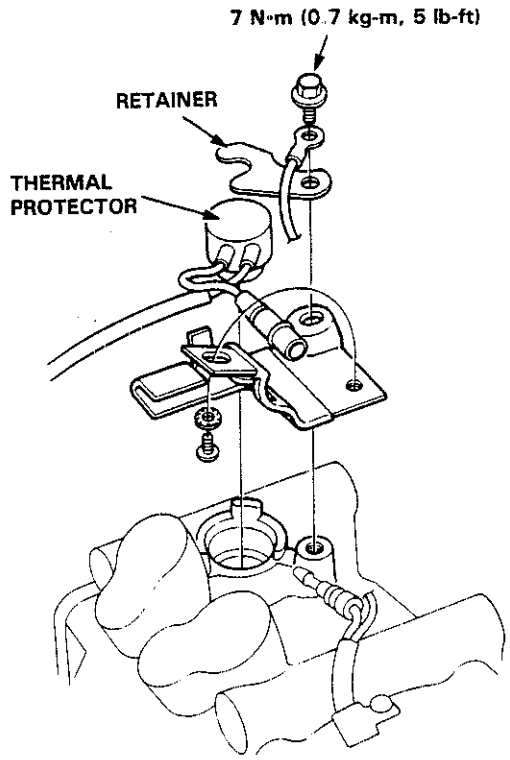
CAUTION: Maximum press load: 0.4 tons.



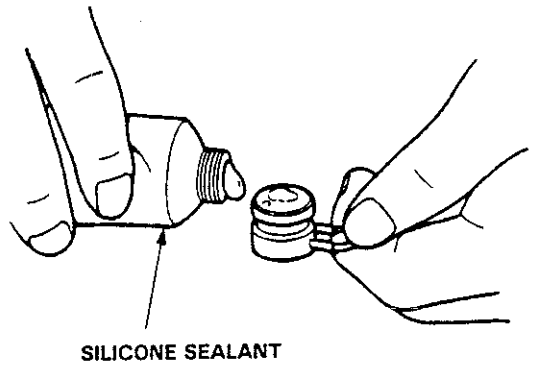
7. Install the removed parts in the reverse order of removal, and:
- Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
- Install the snap rings with the chamfered side facing out and make sure the snap rings are in the groove completely.
- After installing, make sure that the rotor pulley turns smoothly.
- Route and clamp the wires properly or they can be damaged by the rotor pulley.

Thermal Protector Replacement

1. Remove the bolt, field coil terminal, and thermal protector retainer.
2. Remove the thermal protector.
   Remove the residue of silicone sealant from the top of the thermal protector.



3. Apply silicone sealant to the top of the thermal protector.



4. Install in the reverse order of removal.

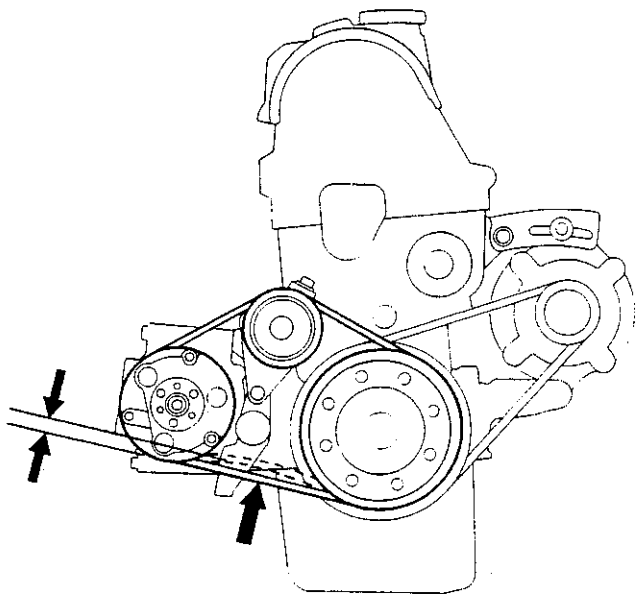
Belt Adjustment

1. Apply a force of 100 N (10 kg, 22 lb) and measure the deflection between the A/C compressor and crankshaft pullies

Compressor belt
Deflection:
Used Belt: 6.5—10.5 mm (0.26—0.41 in)
New Belt: 5.0—7.0 mm (0.20—0.31 in)

P/S Belt
Deflection:
Used Belt: D16A engine 8.0—12.0 mm (0.31—0.47 in)
Other engine 8.0—12.0 mm (0.31—0.47 in)
New Belt: D16A engine 5.5—9.0 mm (0.22—0.35 in)
Other engine 6.0—9.5 mm (0.24—0.37 in)

NOTE:
- If there are cracks or any damage evident on the belt, replace it with a new one
- "Used belt" means a belt which has been used for five minutes or more.
- "New belt" means a belt which has been used for less than five minutes

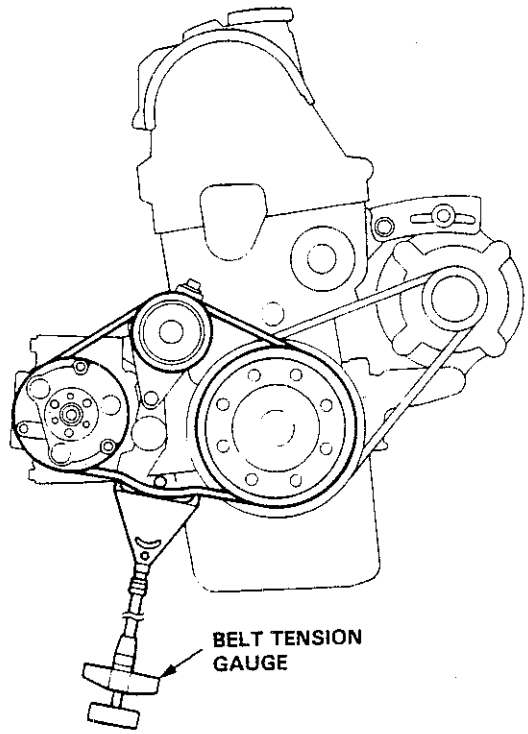


Measure with Belt Tension Gauge:
Attach the belt tension gauge to the belt and measure the tension of the belt.

Compressor Belt
Tension:
Used Belt: 350—500 N (35—50 kg, 77—110 lb)
New Belt: 600—800 N (60—80 kg, 132—176 lb)

P/S Belt
Tension:
Used Belt: D16A engine 350—500 N (35—50 kg, 77—110 lb)
Other engine 350—500 N (35—50 kg, 77—110 lb)
New Belt: D16A engine 550—750 N (55—75 kg, 121—165 lb)
Other engine 500—700 N (50—70 kg, 110—154 lb)

NOTE:
- If there are cracks or any damage evident on the belt, replace it with a new one.
- See the instructions for the tension gauge.



2. Loosen the A/C adjust pulley nut or bolt and the adjusting bolt lock nut.
3. Turn the adjusting bolt to get proper belt tension, then retighten the bolt and nuts
4. Recheck the deflection of the belt.

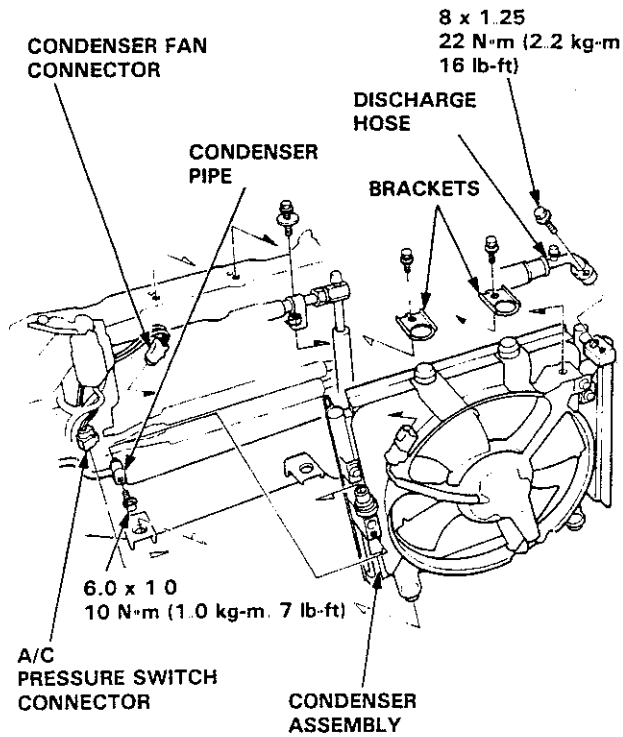
Condenser

Replacement

1. Discharge refrigerant using a refrigerant recovery system (page 22-19).
2. Disconnect the A/C pressure switch connector and condenser fan connector
3. Remove the compressor clutch connector from the condenser fan shroud
4. Disconnect the discharge hose and condenser pipe from the condenser

   CAUTION: Cap the open fittings immediately to keep moisture and dirt out of the system.
5. Remove the suction hose clamp bolt and condenser brackets
6. Remove the condenser assembly by pulling it up

   NOTE:
   - Be careful not to damage the condenser fins when removing/installing the condenser
   - Be careful not to hit the side of the radiator during removal/installation.



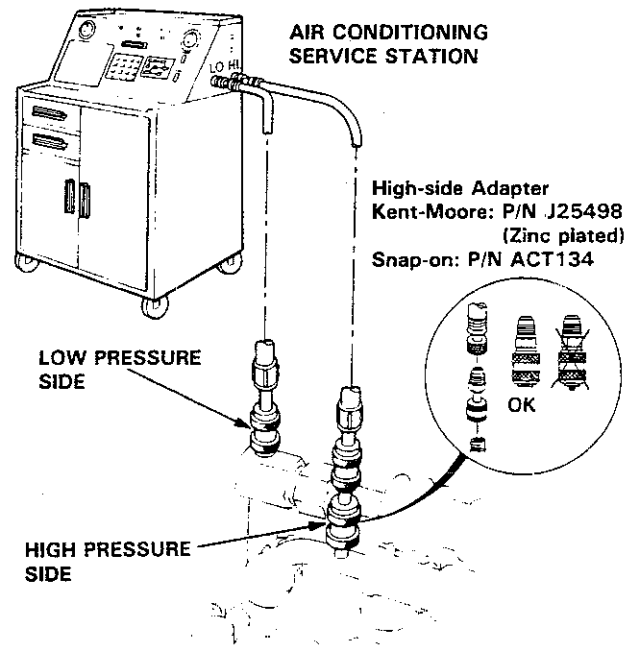
7. Install the removed parts in the reverse order of removal, and:
   - Replace O-rings with new ones at the pipe joints.
   - Charge the A/C system (page 22-42).
   - Test the A/C system performance (page 22-20).

A/C System Service

Evacuation

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced).
2. Attach an Air Conditioning Service Station as shown.
   Follow the equipment manufacturer's instructions.

   NOTE:
   - Connect the adapter to the high pressure hose first, then connect the hoses to the car as shown. When testing is completed, disconnect the hose adapter from the high-side fitting; do not disconnect the hose from the adapter, or refrigerant may escape from the system
   - If low pressure does not reach more than 700 mm-Hg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system and check for leaks (see page 22-43 for leak test).



A/C System Service

Charging

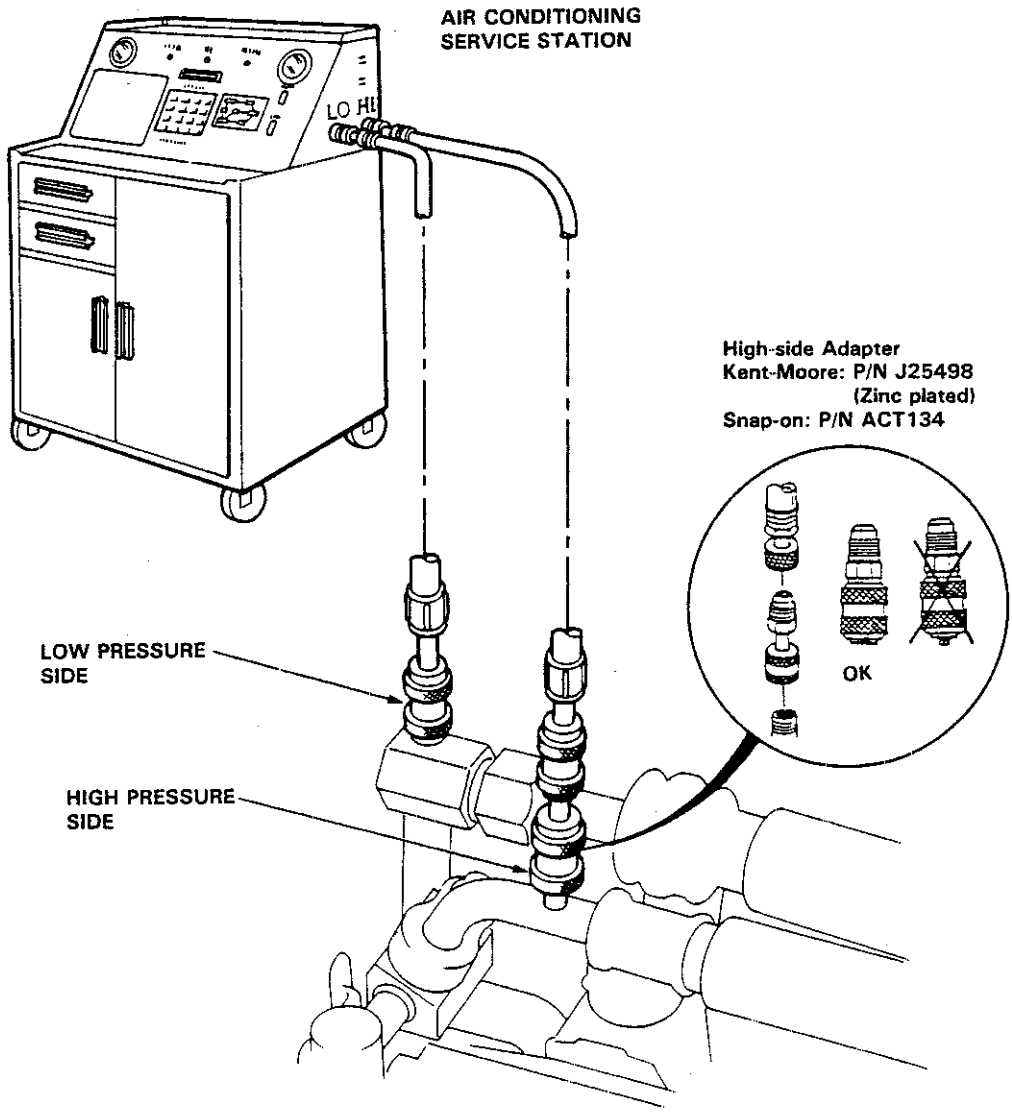
Refrigerant capacity: 600—650 g (21—23 oz)

⚠WARNING Always wear eye protection when charging the system.

CAUTION: Do not overcharge the system; the compressor will be damaged.

Attach an Air Conditioning Service Station as shown. Follow the equipment manufacturer's instructions.

NOTE: Connect the adapter to the high pressure hose first, then connect the hoses to the car as shown. When testing is completed, disconnect the hose adapter from the high-side fitting; do not disconnect the hose from the adapter, or refrigerant may escape from the system.



Leak Test

⚠WARNING When handling refrigerant (R-12):

- Always wear eye protection.
- Do not let refrigerant get on your skin or in your eyes. If it does:
  - Do not rub your eyes or skin.
  - Splash large quantities of cool water in your eyes or on your skin.
  - Rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.
- Keep refrigerant containers (cans of R-12) stored below 40°C (100°F).
- Keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.
- Work in a well-ventilated area. Refrigerant evaporates quickly and can force all the air out of a small, enclosed area.

IMPORTANT: Do not vent refrigerant to the atmosphere. The chlorofluorocarbons (CFCs) used in conventional refrigerant (R-12) damage the earth's ozone layer. Always use UL-listed, refrigerant recovery/recycling equipment to extract the refrigerant before you open an A/C system to make repairs. Follow the equipment manufacturer's instructions.

1. Attach an Air Conditioning Service Station as shown

   NOTE: Connect the adapter to the high pressure hose first, then connect the hoses to the car as shown. When testing is completed, disconnect the hose adapter from the high-side fitting; do not disconnect the hose from the adapter or refrigerant may escape from the system

2. Open the high pressure valve to charge the system to about 100 kPa (14 psi), then close the supply valve.

3. Check the system for leaks using an electronic leak tester
   Follow the manufacturer's instructions.

4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system according to the Discharge Procedure on page 22-19

5. After checking and repairing leaks, the system must be evacuated (see System Evacuation on page 22-41).