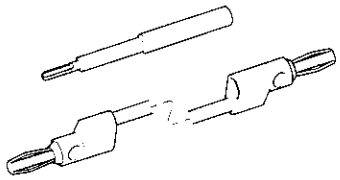
HVAC (Heating, Ventilation, and Air Conditioning)

Heating and Air Conditioning

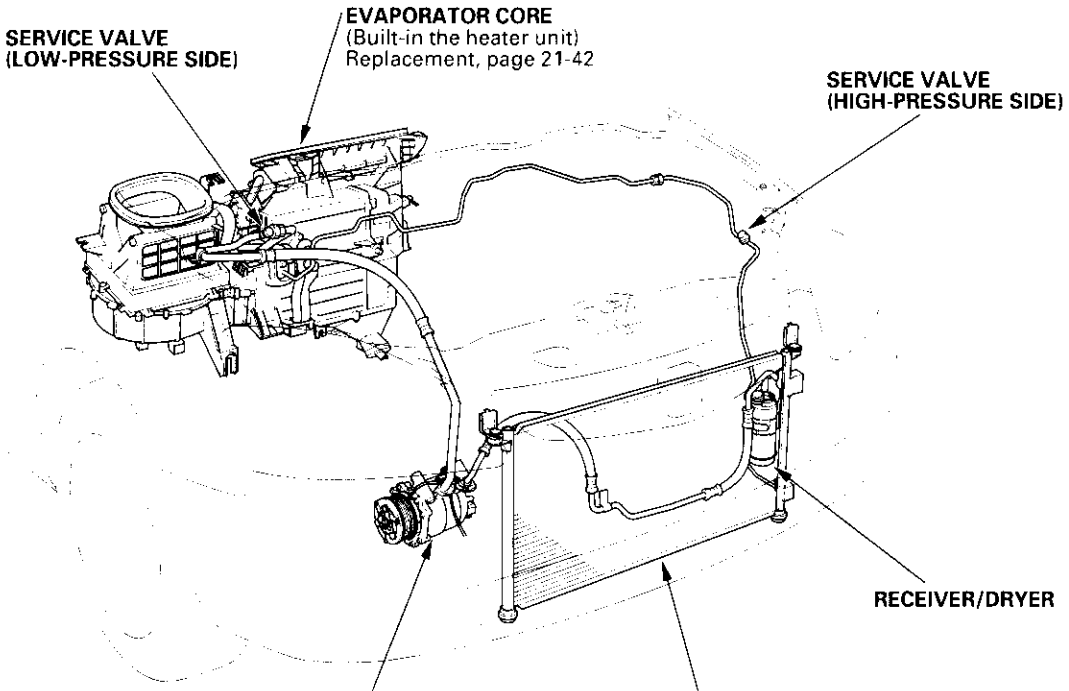
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Component Location Index



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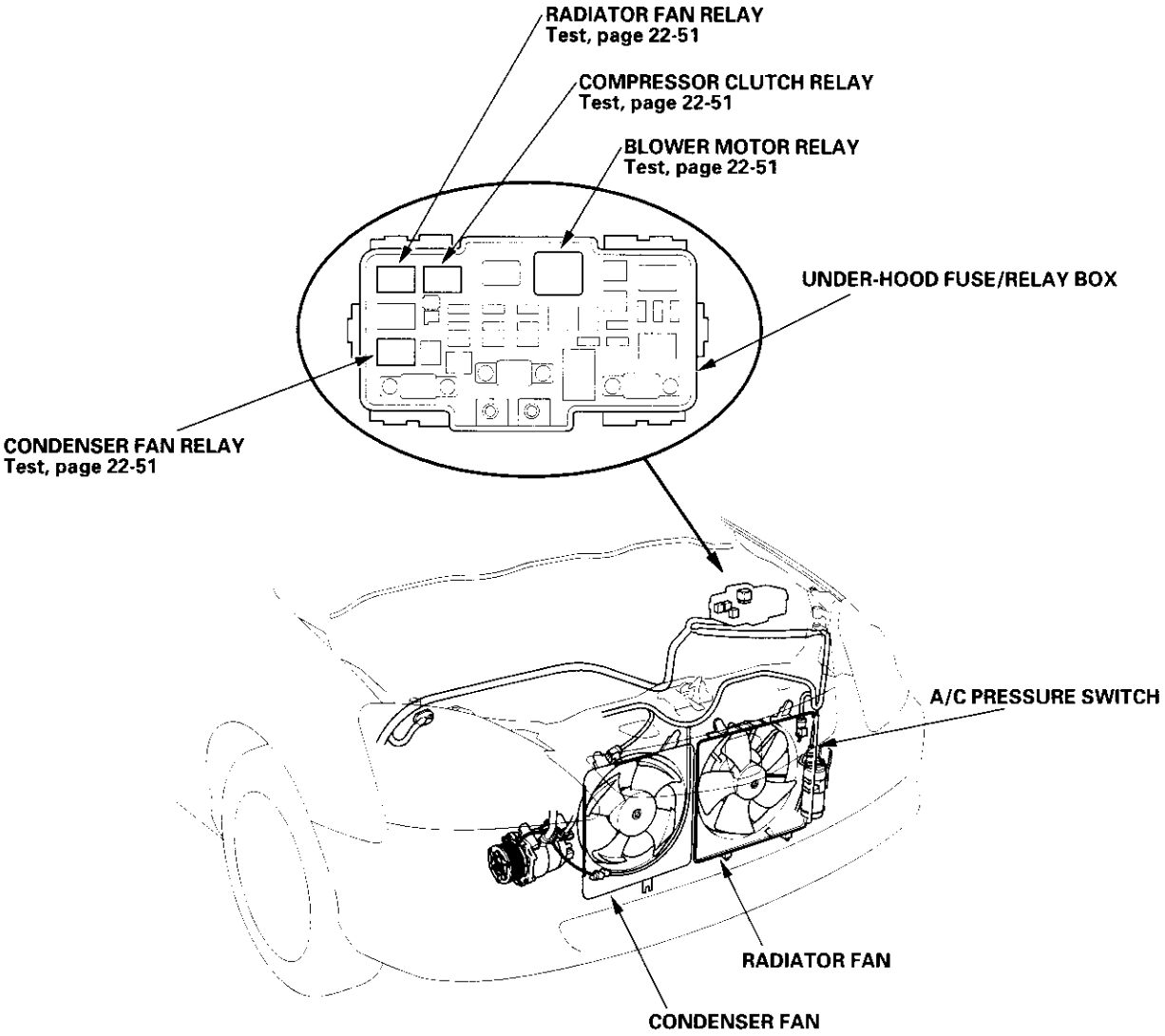
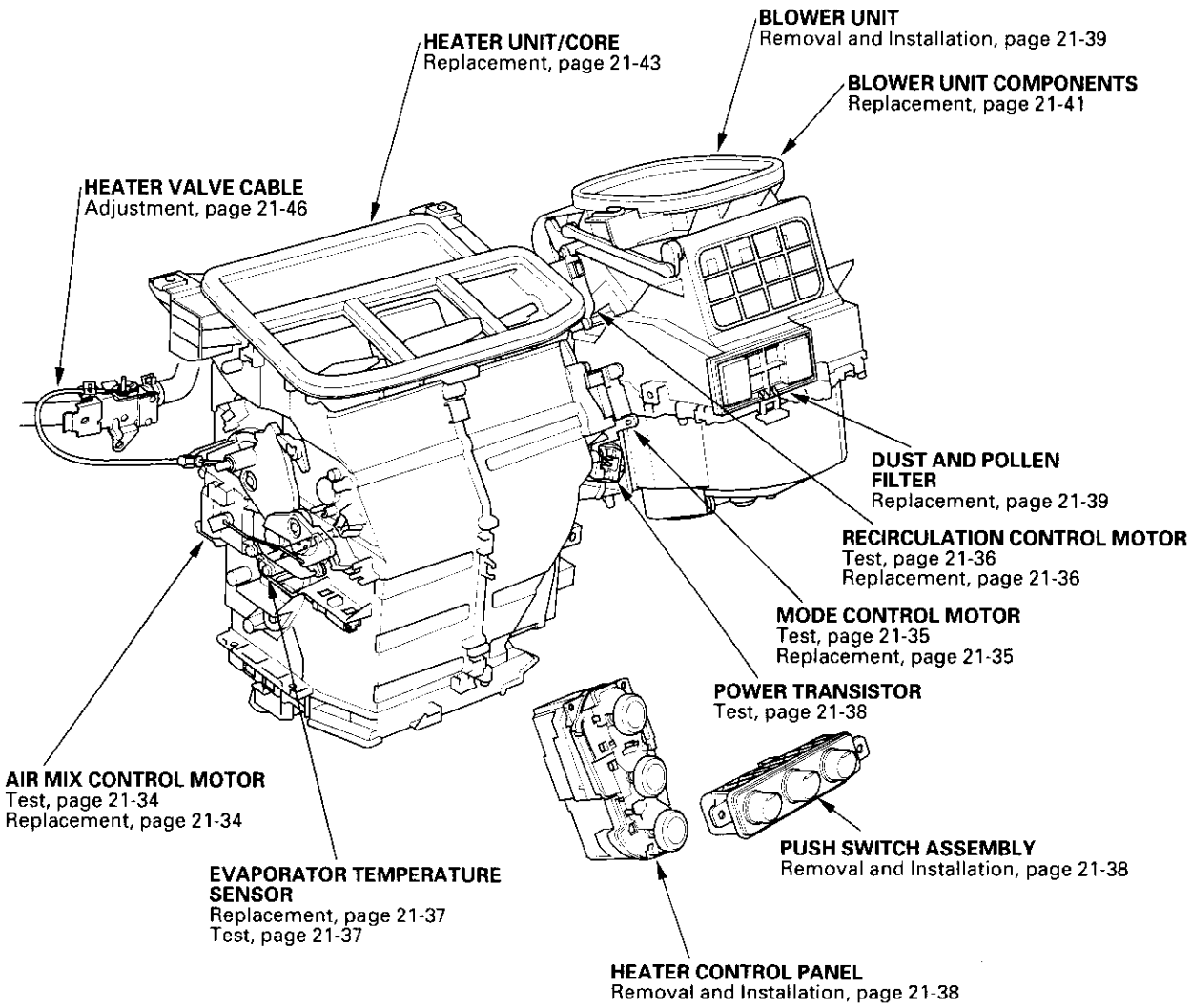
Component Location Index (cont'd)




HEATER UNIT/CORE
Replacement, page 21-43
BLOWER UNIT
Removal and Installation, page 21-39
BLOWER UNIT COMPONENTS
Replacement, page 21-41
HEATER VALVE CABLE
Adjustment, page 21-46
DUST AND POLLEN FILTER
Replacement, page 21-39
RECIRCULATION CONTROL MOTOR
Test, page 21-36
Replacement, page 21-36
MODE CONTROL MOTOR
Test, page 21-35
Replacement, page 21-35
POWER TRANSISTOR
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AIR MIX CONTROL MOTOR
Test, page 21-34
Replacement, page 21-34
PUSH SWITCH ASSEMBLY
Removal and Installation, page 21-38
EVAPORATOR TEMPERATURE SENSOR
Replacement, page 21-37
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HEATER CONTROL PANEL
Removal and Installation, page 21-38

A/C Service Tips and Precautions

⚠WARNING

- Compressed air mixed with R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result. Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use a R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

Recommended PAG oil: KEIHIN SP-10:

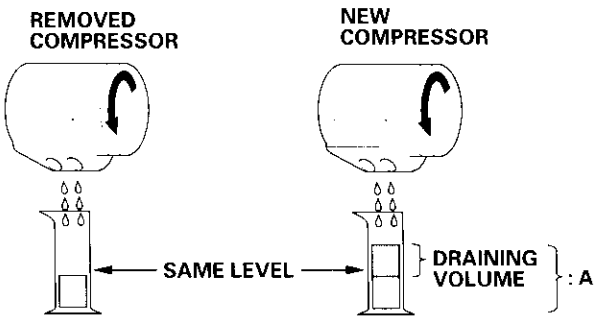
- P/N 38897-P13-A01AH: 120 mℓ (4 fl·oz)
- P/N 38899-P13-A01: 40 mℓ (1 1/3 fl·oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

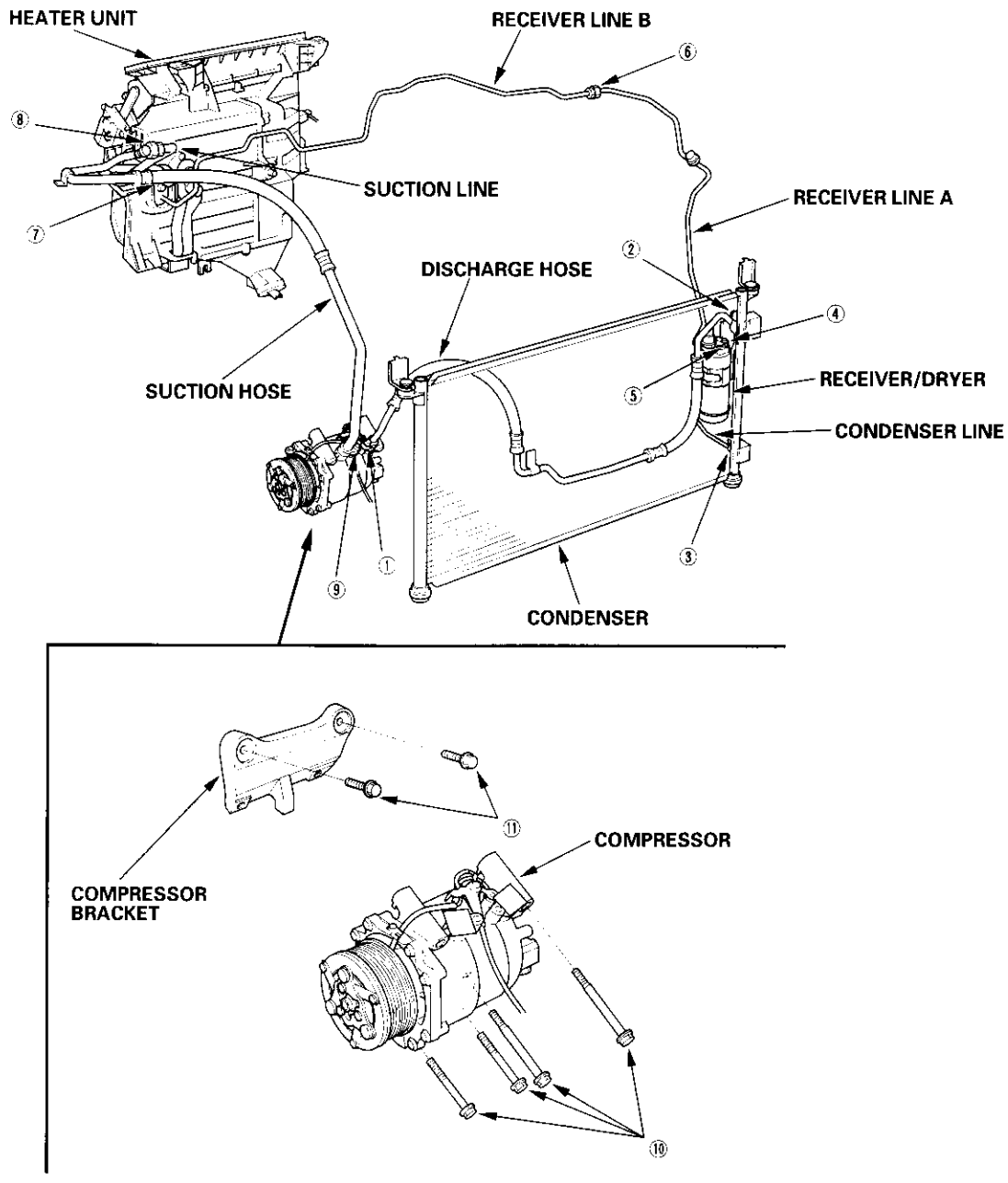
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint. If it gets on the paint, wash it off immediately.

Condenser ..... 25 mℓ (5/6 fl·oz, 0.9 Imp·oz)
Evaporator ..... 45 mℓ (1 1/3 fl·oz, 1.4 Imp·oz)
Line or hose ..... 10 mℓ (1/3 fl·oz, 0.4 Imp·oz)
Receiver/Dryer .... 10 mℓ (1/3 fl·oz, 0.4 Imp·oz)
Leakage repair .... 25 mℓ (5/6 fl·oz, 0.9 Imp·oz)
Compressor ..... For compressor replacement, subtract the volume of oil drained from the removed compressor from 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz), and drain the calculated volume of oil from the new compressor: 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz) − Volume of removed compressor = Volume to drain from new compressor.

NOTE: Even if no oil is drained from the removed compressor, don't drain more than 50 mℓ (1 2/3 fl·oz, 1.8 Imp·oz) from the new compressor.



A: 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz)



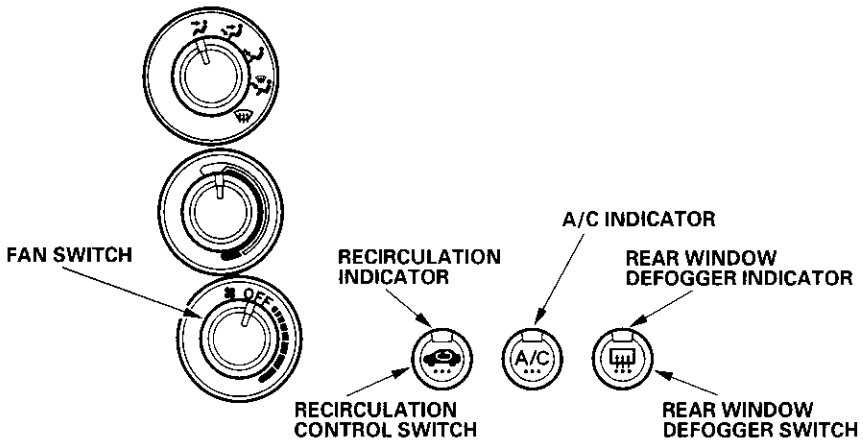
① Discharge hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Condenser line to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ Condenser line to the receiver/dryer (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑤ Receiver line A to the receiver/dryer (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑥ Receiver line A to the receiver line B : 13 N·m (1.3 kgf·m, 9.4 lbf·ft)
⑦ Receiver line B and the suction line to the evaporator (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑧ Suction line to the suction hose : 31 N·m (3.2 kgf·m, 23 lbf·ft)
⑨ Suction hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑩ Compressor to the compressor bracket (8 x 1.25 mm) : 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑪ Compressor bracket to the engine block (10 x 1.25 mm) : 44 N·m (4.5 kgf·m, 33 lbf·ft)

General Troubleshooting Information

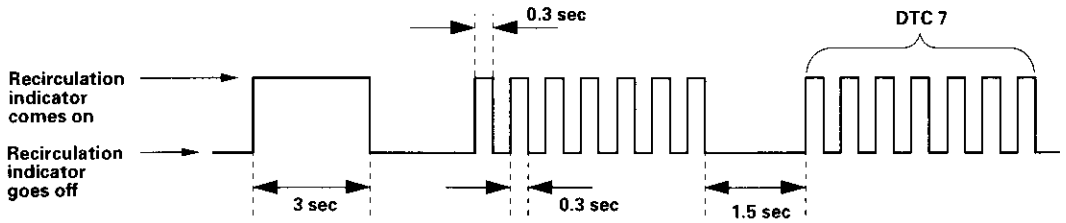
How to Retrieve a DTC

The heater control panel has a self-diagnosis function. To run the self-diagnosis function, do the following:

1. Turn the fan switch OFF.
2. Press and hold the recirculation control switch and the rear window defogger switch down.
3. Turn the ignition switch ON (II).
4. Release both switches. The recirculation indicator and the rear window defogger indicator come on. The recirculation indicator goes off 3 seconds later and the A/C indicator comes on, then the self-diagnosis will begin. About 10 seconds later, the self-diagnosis will finish and the A/C indicator goes off.
   - If any trouble is found, the recirculation indicator blinks the diagnostic trouble code (DTC) to indicate a faulty circuit or component.
   - If the system is OK, the recirculation indicator stays off.



Example of DTC indication Pattern (DTC 7)



Resetting the Self-diagnosis Function

Turn the ignition switch OFF to cancel the self-diagnosis function. After completing repair work, run the self-diagnosis function again to make sure that there are no other malfunctions.

DTC Troubleshooting Index

DTC (Recirculation Indication Blinks)	Detection Item	Page
7	An open in the air mix control motor circuit	(see page 21-16)
8	A short in the air mix control motor circuit	(see page 21-16)
9	A problem in the air mix control linkage, door, or motor	(see page 21-17)
10	An open or short in the mode control motor circuit	(see page 21-18)
11	A problem in the mode control linkage, doors, or motor	(see page 21-19)
12	A problem in the blower motor circuit	(see page 21-20)
13	A problem in the EEPROM in the heater control panel; the control panel must be replaced	(see page 21-38)
14	An open in the evaporator temperature sensor circuit	(see page 21-23)
15	A short in the evaporator temperature sensor circuit	(see page 21-24)

- In case of multiple problems, the recirculation indicator will indicate only the DTC with the least number of blinks.
- In case of an intermittent failure, the heater control panel will store the DTC until the ignition is turned off.

Symptom Troubleshooting Index

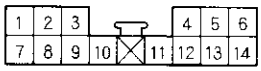
Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-25)	Cleanliness and tightness of all connectors
Both heater and A/C do not work	Heater Control Power and Ground Circuits Troubleshooting (see page 21-27)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G501 • Cleanliness and tightness of all connectors
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-28)	• Poor ground at G301 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-29)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box • Poor ground at G301 • Cleanliness and tightness of all connectors
Compressor clutch does not engage (both fans run with A/C on)	Compressor Clutch Circuit Troubleshooting (see page 21-30)	Cleanliness and tightness of all connectors
A/C system does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-32)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box • Poor ground at G301 • Cleanliness and tightness of all connectors

System Description

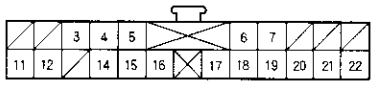
Heater Control Panel Inputs and Outputs

HEATER CONTROL PANEL CONNECTORS

CONNECTOR A (14P)



CONNECTOR B (22P)



Wire side of female terminals

CONNECTOR A (◌ on Circuit Diagram)

Cavity	Wire color	Signal	
1	GRY	AIR MIX POTENTIAL +5V	OUTPUT
2	LT GRN	SENSOR COMMON GROUND	INPUT
3	PNK/BLU	AIR MIX HOT	OUTPUT
4	BLU	A/C PRESSURE SWITCH	INPUT
5	GRN/YEL	RECIRCULATE	INPUT
6	GRN/WHT	FRESH	INPUT
7	BLU/YEL	POWER TRANSISTOR	OUTPUT
8	BLU/RED	BLOWER FEEDBACK	INPUT
9	GRN	AIR MIX COOL	OUTPUT
10	YEL/RED	MODE DEF	OUTPUT
11	YEL/BLU	MODE VENT	OUTPUT
12	YEL/BLK	REAR WINDOW DEFOGGER RELAY	INPUT
13	BLK	GROUND	OUTPUT
14	BLK/YEL	IG2 (Power)	INPUT

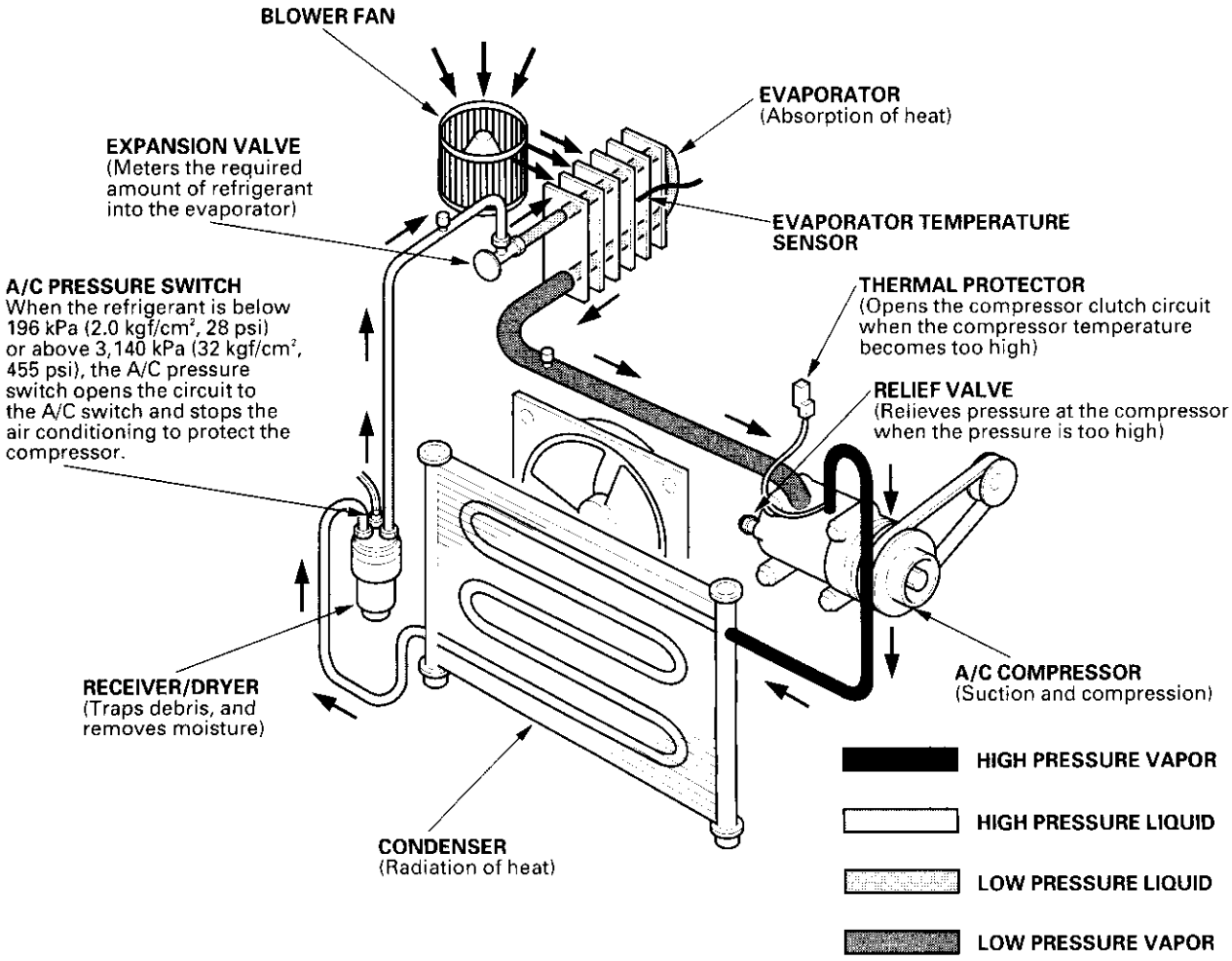
CONNECTOR B (_ on Circuit Diagram)

Cavity	Wire color	Signal	
1	———	———	———
2	———	———	———
3	BLK/RED	REAR WINDOW DEFOGGER SWITCH LED	INPUT
4	LT GRN	A/C SWITCH LED	INPUT
5	LT GRN/BLK	RECIRCULATION CONTROL SWITCH LED	INPUT
6	PNK/BLK	AIR MIX POTENTIAL	OUTPUT
7	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
8	———	———	———
9	———	———	———
10	———	———	———
11	RED	GAUGE ASSEMBLY	OUTPUT
12	RED/BLK	TAILLIGHTS RELAY	INPUT
13	———	———	———
14	BLU	REAR WINDOW DEFOGGER SWITCH	INPUT
15	LT GRN/RED	A/C SWITCH	INPUT
16	YEL/RED	RECIRCULATION CONTROL SWITCH	INPUT
17	YEL/GRN	MODE 4	OUTPUT
18	WHT/BLU	MODE 3	OUTPUT
19	RED/BLU	MODE 2	OUTPUT
20	RED/YEL	MODE 1	OUTPUT
21	BRN/WHT	IGN (Power)	OUTPUT
22	RED/WHT	(Not used)	

(cont'd)

System Description (cont'd)

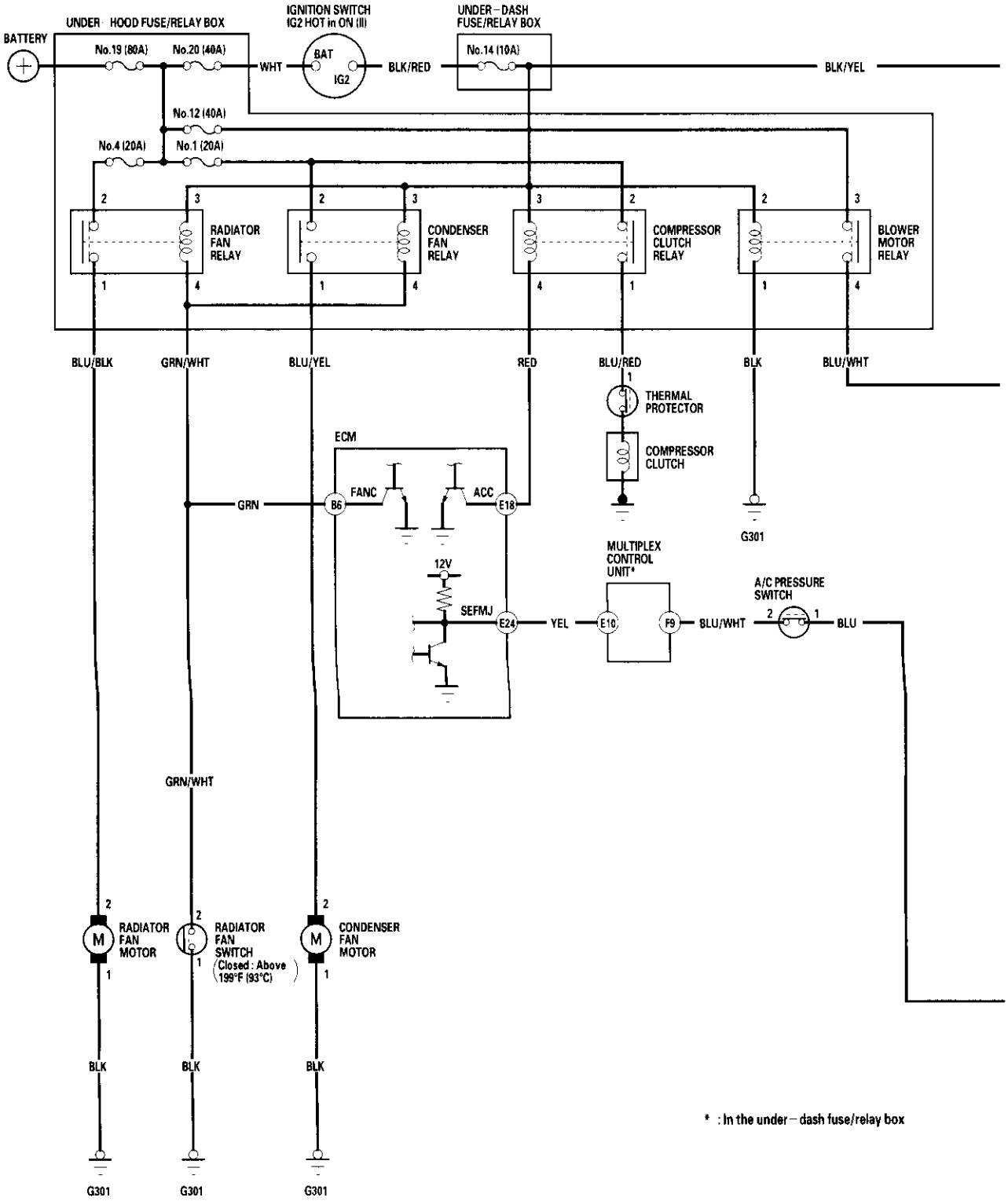
The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system as shown below.

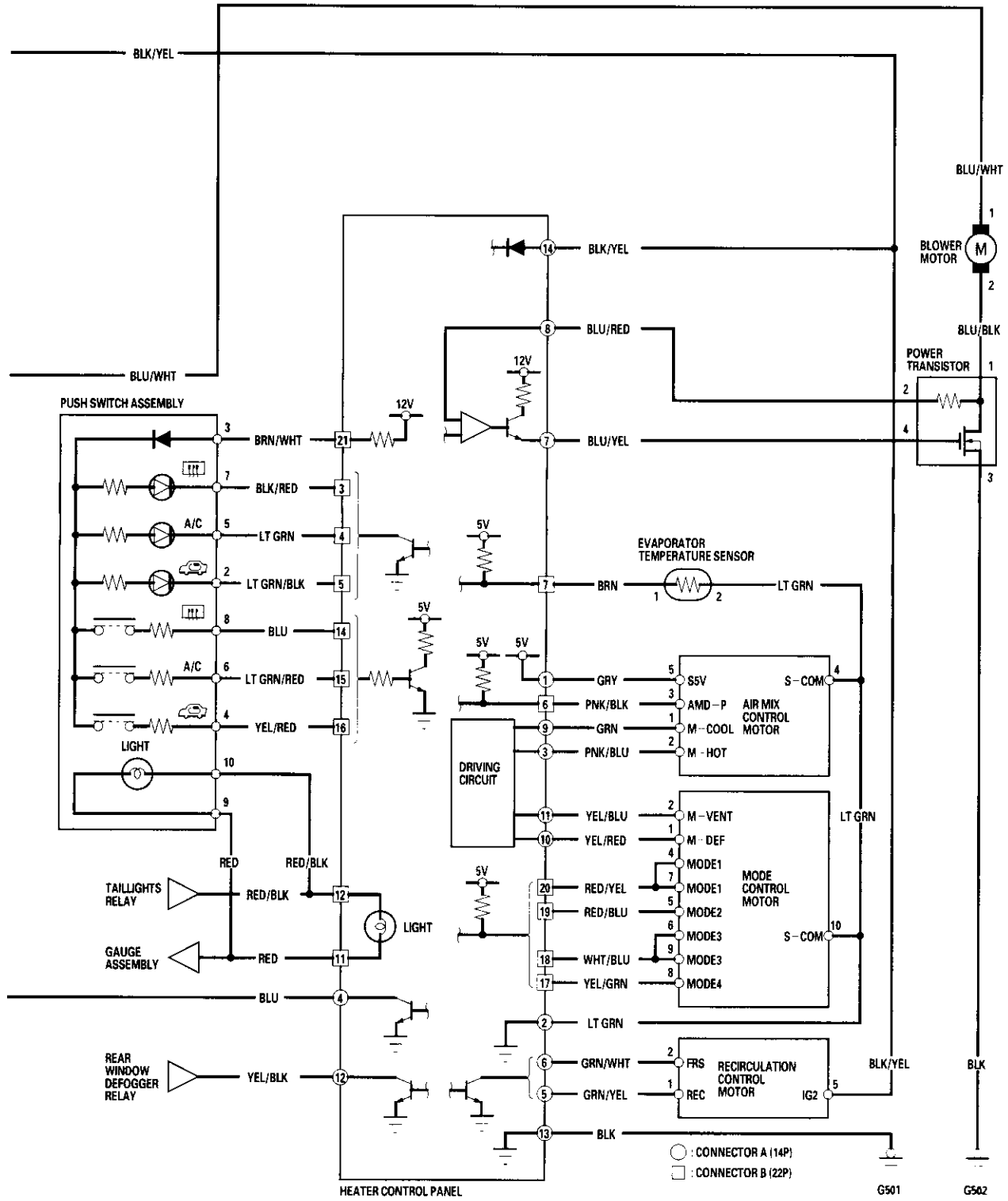


This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (KEIHIN SP-10) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in compressor failure.
- All A/C system parts (compressor, discharge line, suction line, evaporator, condenser, receiver/dryer, expansion valve, O-rings for joints) have to be designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service R-134a air conditioning system.
- Always recover the refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

Circuit Diagram




BLK/YEL
BLU/WHT
PUSH SWITCH ASSEMBLY
BRN/WHT
BLK/RED
A/C
LT GRN
LT GRN/BLK
BLU
A/C
LT GRN/RED
YEL/RED
LIGHT
RED
RED/BLK
TAILLIGHTS RELAY
RED/BLK
GAUGE ASSEMBLY
RED
LIGHT
BLU
REAR WINDOW DEFOGGER RELAY
YEL/BLK
12V
5V
BLK/YEL
BLU/RED
BLU/YEL
BLOWER MOTOR
BLU/WHT
BLU/BLK
POWER TRANSISTOR
EVAPORATOR TEMPERATURE SENSOR
BRN
LT GRN
DRIVING CIRCUIT
GRY
PNK/BLK
GRN
PNK/BLU
S5V
AMD-P
M-COOL
M-HOT
S-COM
AIR MIX CONTROL MOTOR
YEL/BLU
YEL/RED
M-VENT
M-DEF
MODE1
MODE2
MODE3
MODE4
MODE CONTROL MOTOR
RED/YEL
RED/BLU
WHT/BLU
YEL/GRN
LT GRN
GRN/WHT
GRN/YEL
FRS
REC
IG2
RECIRCULATION CONTROL MOTOR
BLK/YEL
BLK
: CONNECTOR A (14P)
: CONNECTOR B (22P)
HEATER CONTROL PANEL
G501
G502

DTC Troubleshooting

DTC 7: An Open in the Air Mix Control Motor Circuit

1. Test the air mix control motor (see page 21-34).

   Is the air mix control motor OK?
   YES—Go to step 2.
   NO—Replace the air mix control motor.■

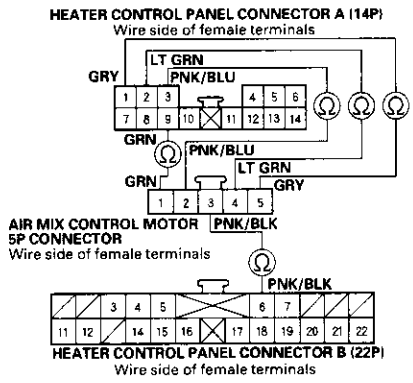
2. Disconnect the air mix control motor 5P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

4. Check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the air mix control motor 5P connector.

14P:	5P:
No. 1	No. 5
No. 2	No. 4
No. 3	No. 2
No. 9	No. 1

22P:	5P:
No. 6	No. 3



Is there continuity?
YES—Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the air mix control motor 5P connector. If the connections are good, substitute a known-good air mix control motor, and recheck. If the symptom/indication goes away, replace the original air mix control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■
NO—Repair any open in the wire(s) between the heater control panel and the air mix control motor.■

DTC 8: A Short in the Air Mix Control Motor Circuit

1. Test the air mix control motor (see page 21-34).

   Is the air mix control motor OK?

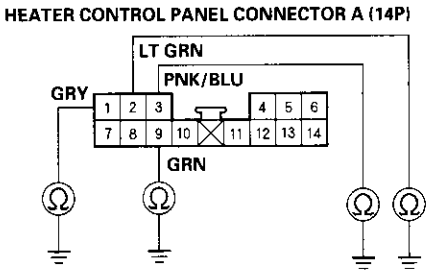
   YES—Go to step 2.

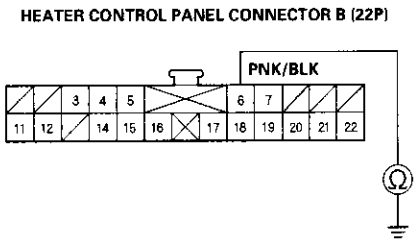
   NO—Replace the air mix contorol motor.■

2. Disconnect the air mix control motor 5P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

4. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 1, 2, 3, and 9 individually, and between body ground and heater control panel connector B (22P) terminal No. 6.





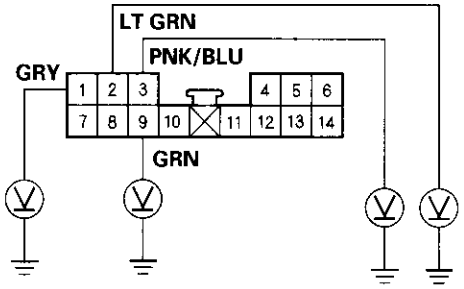
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the air mix control motor.■

NO—Go to step 5.

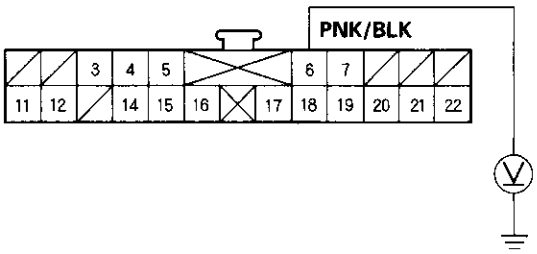
5. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the air mix control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO—Substitute a known-good air mix control motor, and recheck. If the symptom/indication goes away, replace the original air mix control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

DTC 9: A Problem in the Air Mix Control Linkage, Door, or Motor

1. Test the air mix control motor (see page 21-34).

Is the air mix control motor OK?

YES—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the air mix control motor, or repair the linkage and door. ■

DTC Troubleshooting (cont'd)

DTC 10: An Open or Short in the Mode Control Motor Circuit

1. Test the mode control motor (see page 21-35).

   Is the mode cotrol motor OK?

   YES—Go to step 2.

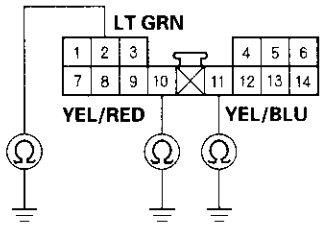
   NO—Replace the mode control motor.■

2. Disconnect the mode control motor 10P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

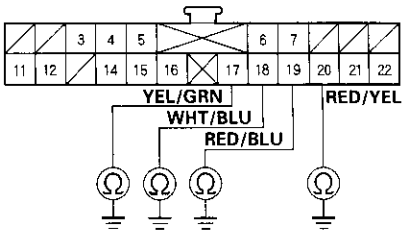
4. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 2, 10, and 11 individually, and between body ground and heater control panel connector B (22P) terminals No. 17, 18, 19, and 20 individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

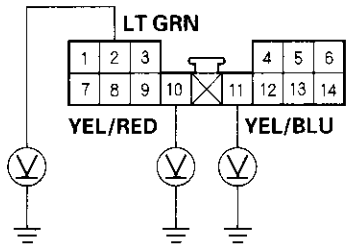
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the mode control motor.■

NO—Go to step 5.

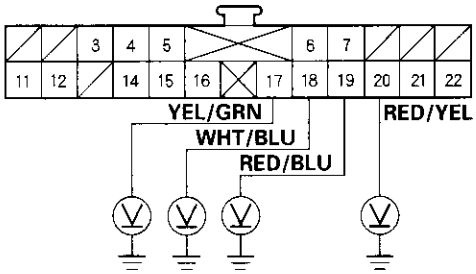
5. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the mode control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.■

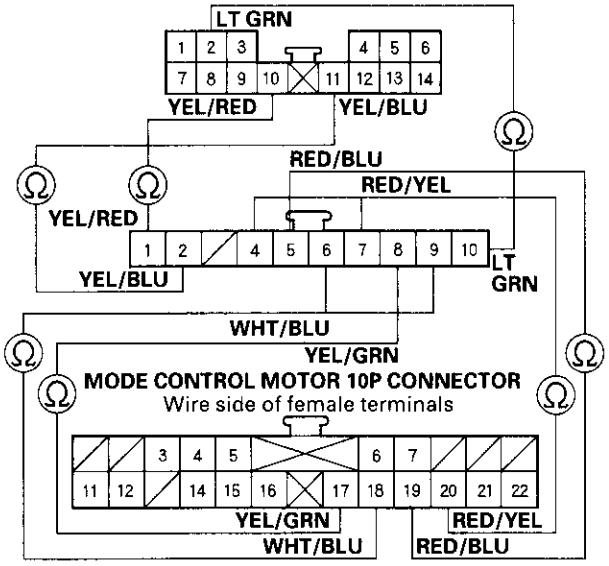
NO—Go to step 6.

6. Turn the ignition switch OFF, and check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the mode control motor 10P connector.

14P:	10P:
No. 2	No. 10
No. 10	No. 1
No. 11	No. 2

22P:	10P:
No. 17	No. 8
No. 18	No. 6, 9
No. 19	No. 5
No. 20	No. 4, 7

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



HEATER CONTROL PANEL CONNECTOR B (22P)
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P), and at the mode control motor 10P connector. If the connections are good, substitute a known-good mode control motor, and recheck. If the symptom/indication goes away, replace the original mode control motor.If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

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

DTC 11: A Problem in the Mode Control Linkage, Doors, or Motor

1. Test the mode control motor (see page 21-35).

Is the mode control motor OK?

YES—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the mode control motor, or repair the linkage and doors. ■

DTC Troubleshooting (cont'd)

DTC 12: A Problem in the Blower Motor Circuit

1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

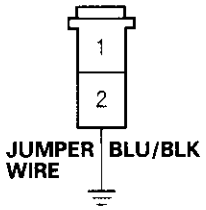
   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck.■

2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. Turn the ignition switch ON (II).

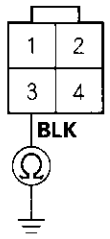
   Does the blower motor run?

   YES—Go to step 4.

   NO—Go to step 17.

4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.
7. Check for continuity between the No. 3 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

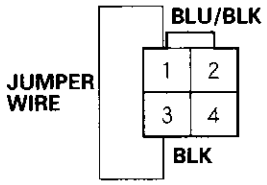
Is there continuity?

YES—Go to step 8.

NO—Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G502.■

8. Connect the No. 1 and No. 3 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

   Does the blower motor run at high speed?

   YES—Go to step 10.

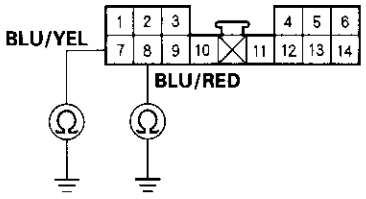
   NO—Repair open in the wire between the power transistor and the blower motor.■

10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

12. Disconnect heater control panel connector A (14P).

13. Check for continuity between the No. 7 and No. 8 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

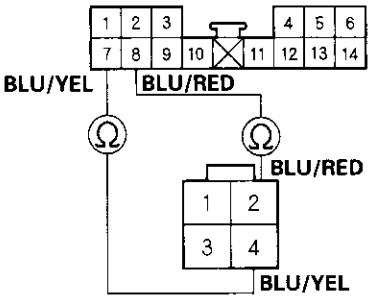
YES—Repair any short to body ground in the wire(s) between the heater control panel and the power transistor. ■

NO—Go to step 14.

14. Check for continuity between the following terminals of heater control panel connector A (14P) and power transistor 4P connector.

14P:	4P:
No. 7	No. 4
No. 8	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair any open in the wire(s) between the heater control panel and the power transistor. ■

15. Reconnect heater control panel connector A (14P).

16. Test the power transistor (see page 21-38).

Is the power transistor OK?

YES—Check for loose wires or poor connections at heater control panel connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

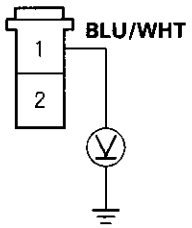
NO—Replace the power transistor. ■

17. Disconnect the jumper wire.

18. Disconnect the blower motor 2P connector.

19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 20.

20. Turn the ignition switch OFF.

21. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-51).

Is the relay OK?

YES—Go to step 22.

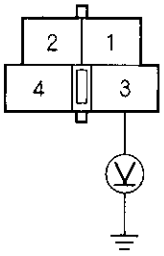
NO—Replace the blower motor relay. ■

(cont'd)

DTC Troubleshooting (cont'd)

22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

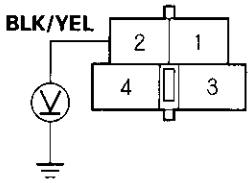
YES—Go to step 23.

NO—Replace the under-hood fuse/relay box. ■

23. Turn the ignition switch ON (II).

24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

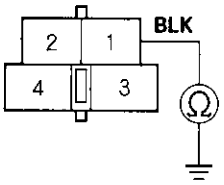
YES—Go to step 25.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

25. Turn the ignition switch OFF.

26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the BLU/WHT wire between the blower motor relay and the blower motor. ■

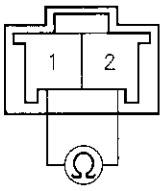
NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301. ■

DTC 14: An Open in the Evaporator Temperature Sensor Circuit

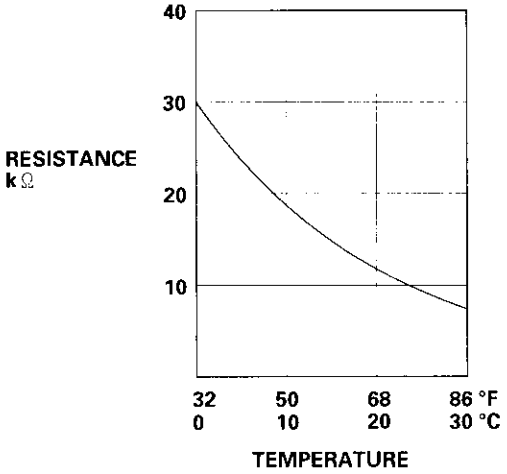
1. Remove the evaporator temperature sensor (see page 21-37).

2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.
   * Dip the sensor in ice water, and measure resistance. Then pour hot water on the sensor, and check for change in resistance.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

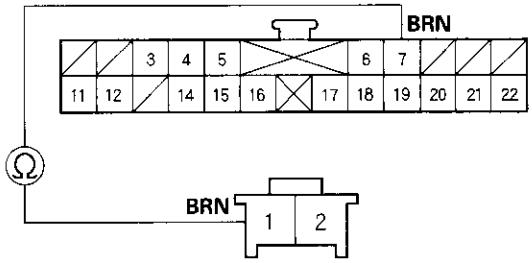
YES—Go to step 3.

NO—Replace the evaporator temperature sensor. ■

3. Disconnect heater control panel connector B (22P).

4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR B (22P)
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

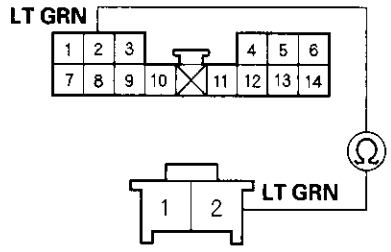
5. Disconnect heater control panel connector A (14P).

(cont'd)

DTC Troubleshooting (cont'd)

6. Check for continuity between the No. 2 terminal of heater control panel connector A (14P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connector A (14P) and B (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. Remove the evaporator temperature sensor (see page 21-37).
2. Test the evaporator temperature sensor (see page 21-37).

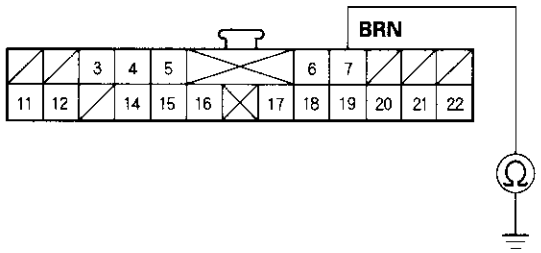
Is the resistance within the specifications shown on the graph?

YES—Go to step 3.

NO—Replace the evaporator temperature sensor. ■

3. Disconnect heater control panel connector B (22P).
4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and body ground.

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the heater control panel and the evaporator temperature sensor. ■

NO—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

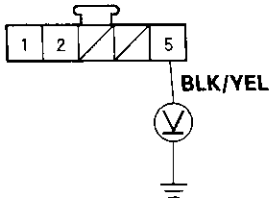
   NO—Replace the fuse, and recheck.■

2. Disconnect the recirculation control motor 5P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 5 terminal of the recirculation control motor 5P connector and body ground.

RECIRCULATION CONTROL MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the recirculation control motor.■

5. Turn the ignition switch OFF.

6. Test the recirculation control motor (see page 21-36).

   Is the recirculation control motor OK?

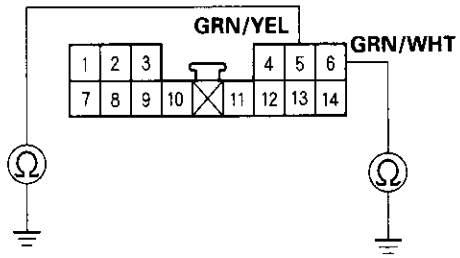
   YES—Go to step 7.

   NO—Replace the recirculation control motor, or repair the linkage and doors.■

7. Disconnect heater control panel connector A (14P).

8. Check for continuity between the No. 5 and No. 6 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

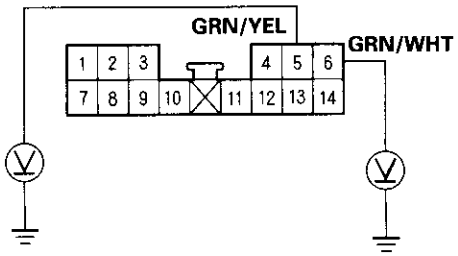
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the recirculation control motor.■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same wires for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the recirculation control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.■

NO—Go to step 10.

(cont'd)

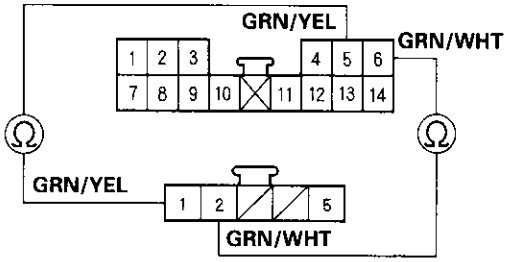
Recirculation Control Motor Circuit Troubleshooting (cont'd)

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of heater control panel connector A (14P) and the recirculation control motor 5P connector.

14P:	5P:
No. 5	No. 1
No. 6	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connector A (14P) and at the recirculation control motor 5P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■

NO—Repair any open in the wire(s) between the heater control panel and the recirculation control motor.■

Heater Control Power and Ground Circuits Troubleshooting

1. Check the No.14 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

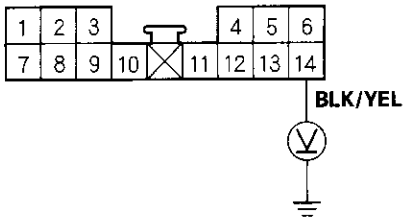
   NO—Replace the fuse, and recheck.■

2. Disconnect heater control panel connector A (14P).

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 14 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

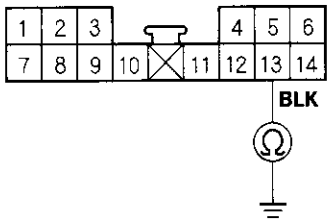
YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the heater control panel.■

5. Turn the ignition switch OFF.

6. Check for continuity between the No. 13 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connector A (14P). If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■

NO—Check for an open in the wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G501.■

Condenser Fan Circuit Troubleshooting

NOTE: If neither the condenser fan nor the radiator fan work, go to Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-29).

1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck.■

2. Remove the condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-51).

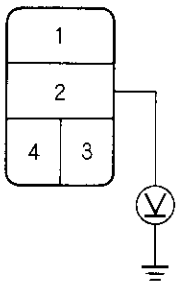
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the condenser fan relay.■

3. Measure the voltage between the No. 2 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



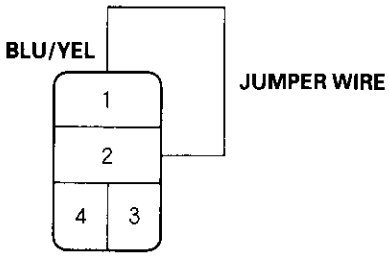
   Is there battery voltage?

   YES—Go to step 4.

   NO—Replace the under-hood fuse/relay box.■

4. Connect the No. 1 and No. 2 terminals of the condenser fan relay 4P socket with a jumper wire.

   CONDENSER FAN RELAY 4P SOCKET



   Does the condenser fan run?

   YES—Go to step 5.

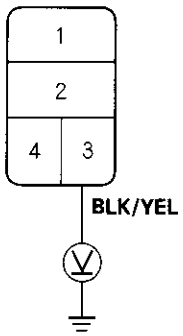
   NO—Go to step 8.

5. Disconnect the jumper wire.

6. Turn the ignition switch ON (II).

7. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



   Is there battery voltage?

   YES—Replace the under-hood fuse/relay box.■

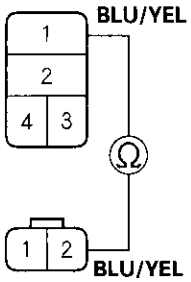
   NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the condenser fan relay.■

8. Disconnect the jumper wire.

9. Disconnect the condenser fan 2P connector.

10. Check for continuity between the No. 1 terminal of the condenser fan relay 4P socket and the No. 2 terminal of the condenser fan 2P connector.

CONDENSER FAN RELAY 4P SOCKET



CONDENSER FAN 2P CONNECTOR
Wire side of female terminals

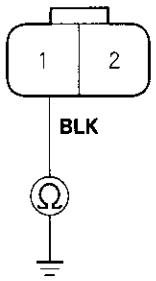
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the condenser fan relay and the condenser fan.■

11. Check for continuity between the No. 1 terminal of the condenser fan 2P connector and body ground.

CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the condenser fan motor.■

NO—Check for an open in the wire between the condenser fan and body ground. If the wire is OK, check for poor ground at G301.■

Radiator and Condenser Fans Common Circuit Troubleshooting

NOTE: If both fans and the A/C compressor clutch do not work when the A/C switch is on, go to A/C Pressure Switch Circuit Troubleshooting (see page 21-32).

1. Check the No. 1 (20A) and No. 4 (20A) fuses in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

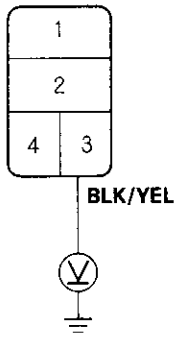
   NO—Replace the fuse(s), and recheck.■

2. Remove the condenser fan relay from the under-hood fuse/relay box.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the radiator fan relay, and the condenser fan relay.■

5. Turn the ignition switch OFF.

6. Reinstall the condenser fan relay.

7. Make sure the A/C switch is OFF.

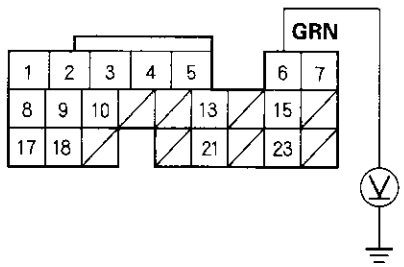
8. Turn the ignition switch ON (II).

(cont'd)

Radiator and Condenser Fans Common Circuit Troubleshooting (cont'd)

9. Using a Backprobe Set, measure the voltage between the No. 6 terminal of ECM connector B (24P) and body ground with the ECM connectors connected.

ECM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Repair open in the wire between the radiator fan relay, the condenser fan relay and the ECM. ■

Compressor Clutch Circuit Troubleshooting

1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck. ■

2. Check the engine coolant temperature, the throttle position sensor, and the idle speed (use the Honda PGM Tester PGM-FI data list if possible).

   Is the coolant temperature above nomal, the throttle position sensor reading too high, or the idle speed too low?

   YES—Troubleshoot and repair the cause of the high engine coolant temperature, high throttle position sensor reading, or low idle speed. ■

   NO—Go to step 3.

3. Remove the compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-51).

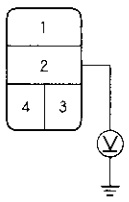
   Is the relay OK?

   YES—Go to step 4.

   NO—Replace the compressor clutch relay. ■

4. Measure the voltage between the No. 2 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



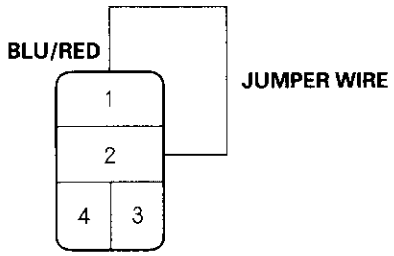
Is there battery voltage?

YES—Go to step 5.

NO—Replace the under-hood fuse/relay box. ■

5. Connect the No. 1 and No. 2 terminals of the compressor clutch relay 4P socket with a jumper wire.

COMPRESSOR CLUTCH RELAY 4P SOCKET



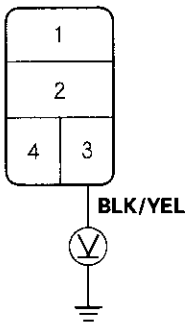
Does the compressor clutch click ?

YES—Go to step 6.

NO—Go to step 14.

6. Disconnect the jumper wire.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the No. 3 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



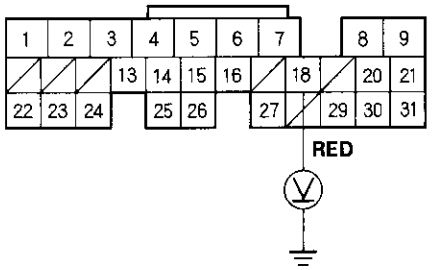
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the compressor clutch relay.■

9. Turn the ignition switch OFF.
10. Reinstall the compressor clutch relay.
11. Make sure the A/C switch is OFF.
12. Turn the ignition switch ON (II).
13. Using the Backprobe Set, measure the voltage between the No. 18 terminal of ECM connector E (31P) and body ground with the ECM connectors connected.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Repair open in the wire between the compressor clutch relay and the ECM.■

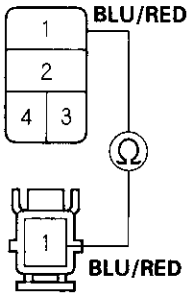
14. Disconnect the jumper wire.
15. Disconnect the compressor clutch 1P connector.

(cont'd)

Compressor Clutch Circuit Troubleshooting (cont'd)

16. Check for continuity between the No. 1 terminal of the compressor clutch relay 4P socket and the No. 1 terminal of the compressor clutch 1P connector.

COMPRESSOR CLUTCH RELAY 4P SOCKET



COMPRESSOR CLUTCH 1P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the compressor clutch clearance, the thermal protector, and the compressor clutch field coil (see page 21-48).■

NO—Repair open in the wire between the compressor clutch relay and the compressor clutch.■

A/C Pressure Switch Circuit Troubleshooting

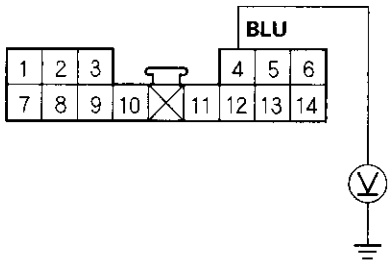
1. Turn the ignition switch ON (II).
2. Turn the blower switch on, and check for blower motor operation.

   Does the blower motor run on all speeds?

   YES—Go to step 3.

   NO—Troubleshoot the blower motor circuit (see page 21-20).
3. Turn the ignition switch OFF.
4. Disconnect heater control panel connector A (14P).
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 4 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

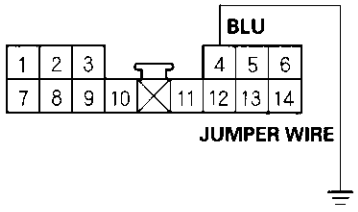
YES—Go to step 7.

NO—Go to step 9.

7. Start the engine.

8. Connect the No.4 terminal of heater control connector A (14P) to body ground with a jumper wire.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

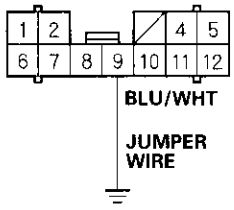
Does the A/C system come on?

YES—Replace the heater control panel. ■

NO—Refer to the multiplex control system (see page 22-168). ■

9. Using the Backprobe Set, connect the No. 9 terminal of under-dash fuse/relay box connector F (12P) to body ground with a jumper wire.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



Wire side of female terminals

Does the A/C system come on?

YES—Go to step 10.

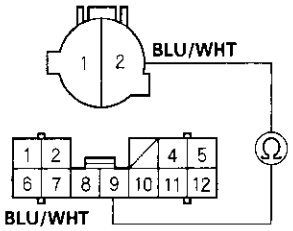
NO—Refer to the multiplex control system (see page 22-168). ■

NOTE: Check for multiplex codes in mode 1. Follow the troubleshooting for any codes found. If no codes are found, subsititute a known-good multiplex control unit and a ECM one at a time.

10. Disconnect the A/C pressure switch 2P connector and under-dash fuse/relay box connector F (12P).

11. Check for continuity between the No. 2 terminal of the A/C pressure switch 2P connector and the No. 9 terminal of under-dash fuse relay box connector F (12P).

A/C PRESSURE SWITCH 2P CONNECTOR
Wire side of female terminals



UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)
Wire side of female terminals

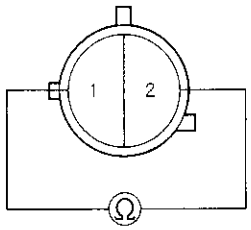
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

12. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



Is there continuity?

YES—Repair open in the wire between the heater control panel and the A/C pressure switch. ■

NO—Go to step 13.

13. Check for proper A/C system pressure.

Is the pressure within specifications?

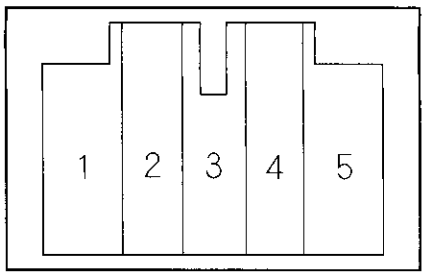
YES—Replace the A/C pressure switch. ■

NO—Repair the A/C pressure problem. ■

Air Mix Control Motor Test

1. Disconnect the 5P connector from the air mix control motor.
2. Connect battery power to the No. 1 terminal of the air mix control motor, and ground the No. 2 terminal; the air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Hot. If the air mix control motor does not run, remove it, then check the air mix control linkage and door for smooth movement.
   - If the linkage and door move smoothly, replace the air mix control motor.
   - If the linkage or door stick or bind, repair them as needed.
   - If the air mix control motor runs smoothly, go to step 3.

AIR MIX CONTROL MOTOR



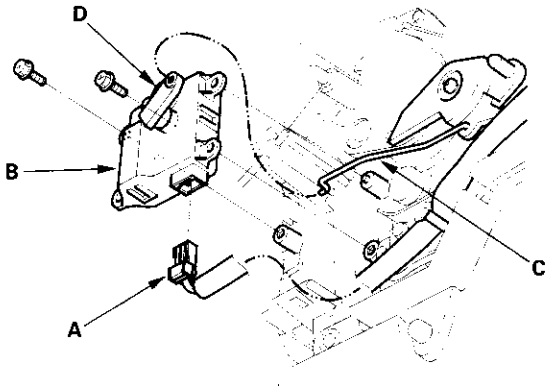
3. Measure the resistance between the No. 4 and No. 5 terminals. It should be between 2.1 k to 3.9 kΩ.
4. Reconnect the air mix control motor 5P connector, then turn the ignition switch ON (II).
5. Using the Backprobe Set, measure the voltage between the No. 3 and No. 4 terminals.

   Max Cool — about 1 V
   Max Hot — about 4 V

6. If either the resistance or voltage readings are not as specified, replace the air mix cotrol motor.

Air Mix Control Motor Replacement

1. Remove the under-dash fuse/relay box (see page 22-49).
2. Disconnect the 5P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit. Remove the rod (C) from the arm (D) of the air mix control motor.



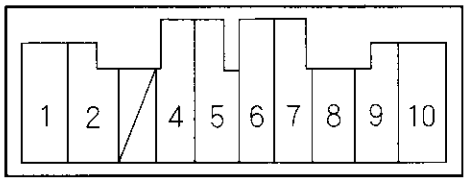
3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Mode Control Motor Test

1. Disconnect the 10P connector from the mode control motor.

2. Connect battery power to the No. 1 terminal of the mode control motor, and ground the No. 2 terminal; the mode control motor should run smoothly and stop at Defrost. If it doesn't, reverse the connections; the mode control motor should run smoothly and stop at Vent. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR



3. If the mode control motor does not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.

   - If the linkage and doors move smoothly, replace the mode control motor.
   - If the linkage or doors stick or bind, repair them as needed.
   - If the mode control motor runs smoothly, go to step 4.

4. Use a digital multimeter with an output of 1 mA or less at the 20 kΩ range. With the mode control motor running as in step 2, check for continuity between the No. 4, 5, 6, 7, 8, and 9 terminals and the No. 10 terminal individually. There should be continuity for a moment at each terminal as the motor moves past each mode position.

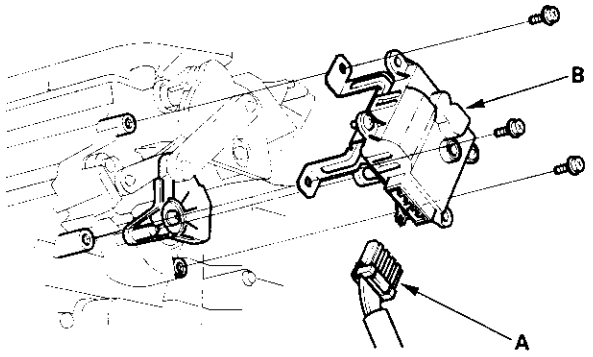
5. If there is no continuity for a moment at each terminal, replace the mode control motor.

Mode Control Motor Replacement

1. Remove the ECM (see page 11-4).

2. Remove the relay mount bracket bolt, and move the relays out of the way.

3. Disconnect the 10P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the linkage is properly engaged with the motor. After installation, make sure the motor runs smoothly.

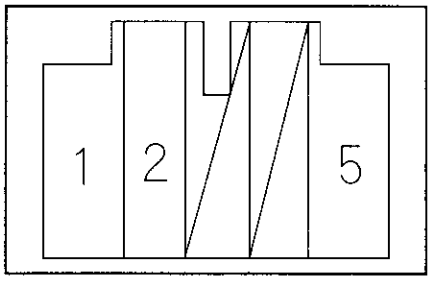
Recirculation Control Motor Test

1. Disconnect the 5P connector from the recirculation control motor.

NOTICE
Incorrectly applying power and ground to the recirculation control motor will damge it. Follow the instructions carefully.

2. Connect battery power to the No. 5 terminal of the recirculation control motor, and ground the No. 1 and No. 2 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 1 or No. 2 terminals from ground; the recirculation control motor should stop at Fresh or Recirculate. Don't cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR



3. If the recirculation control motor does not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.

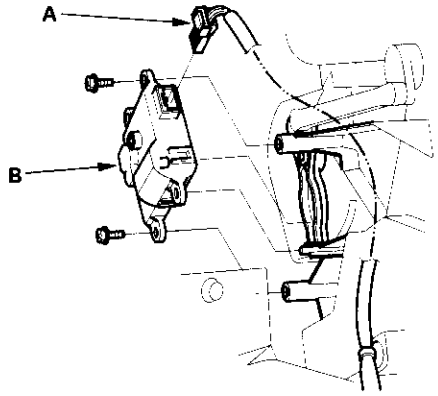
- If the linkage and doors move smoothly, replace the recirculation control motor.
- If the linkage or doors stick or bind, repair them as needed.

Recirculation Control Motor Replacement

1. Remove the ECM (see page 11-4).

2. Remove the relay mount bracket bolt, and move the relays out of the way.

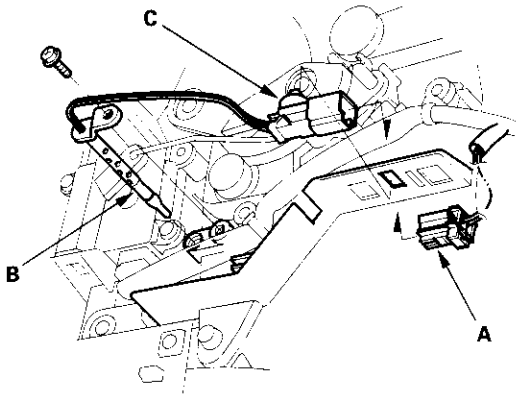
3. Disconnect the 5P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Evaporator Temperature Sensor Replacement

1. Remove the driver's dashboard lower cover (see page 20-59) and the under cover (see page 20-60).
2. Remove the under-dash fuse/relay box (see page 22-49).
3. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw, and carefully pull out the evaporator temperature.

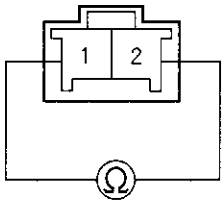


4. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

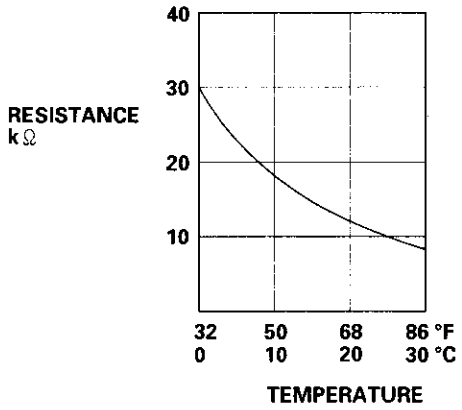
1. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

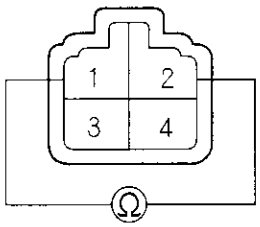
2. Then pour hot water on the sensor, and check for a change in resistance.
3. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



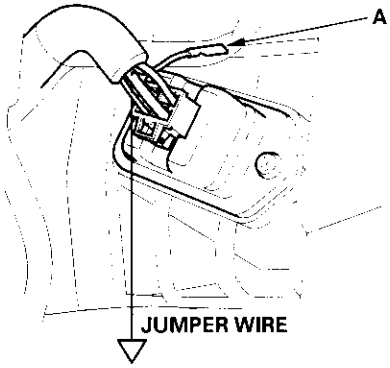
Power Transistor Test

1. Disconnect the 4P connector from the power transistor.
2. Measure the resistance between the No. 1 and No. 2 terminals of the power transistor. It should be about 1.4—1.5 kΩ.
   - If the resistance is within the specifications, go to step 3.
   - If the resistance is not within the specifications, replace the power transistor.

POWER TRANSISTOR



3. Carefully release the lock tab on the No. 4 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

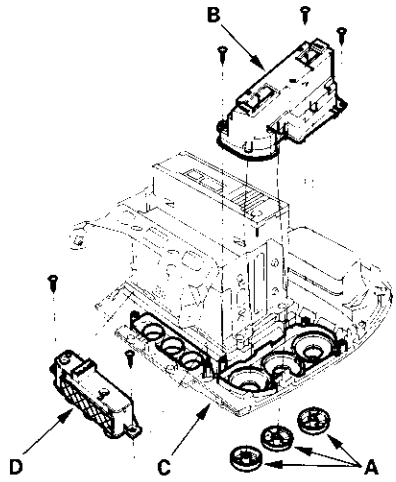


(To 12 V power source on vehicle)

4. Reconnect the 4P connector to the power transistor.
5. Supply 12 volts to the No. 4 cavity with a jumper wire.
6. Turn the ignition switch ON (II), and check that the blower motor runs.
   - If the blower motor does not run, replace the power transistor.
   - If the blower motor runs, the power transistor is OK.

Heater Control Panel and Push Switch Assembly Removal and Installation

1. Remove the center panel (see page 20-62).
2. Remove the dials (A), then remove the self-tapping screws and the heater control panel (B) from the center panel (C). Remove the self-tapping screws and the push switch assembly (D) from the center panel.

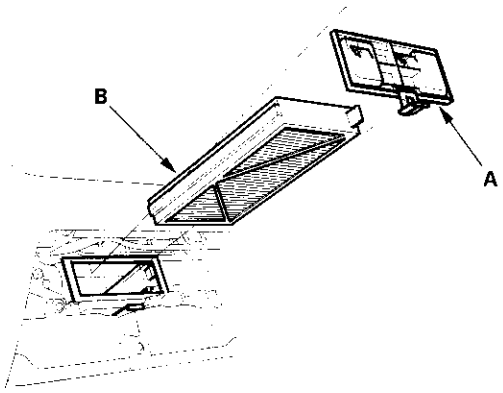


3. Install the control panel and push switch assembly in the reverse order of removal. After installation, operate the control panel controls to see whether it works properly.
4. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-8).

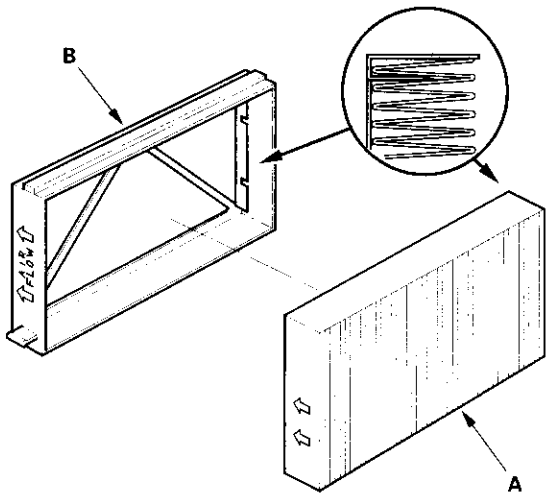
Dust and Pollen Filter Replacement

The dust and pollen filters should be replaced every 30,000 miles (48,000 km) or 24 months whichever comes first. Replace the filters more often if the air flow is less than usual.

1. Open the glove box. Remove both glove box stops, then let the glove box hang down (see page 20-63).
2. Remove the filter lid (A) from the blower unit, then pull out the first dust and pollen filter (B). Slide the second filter to the left, and pull it out.



3. Remove the filter (A) from the housing (B), and replace the filter.

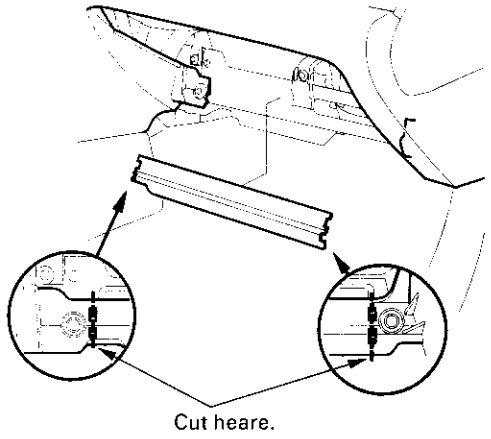


4. Install the filters in the reverse order of removal.

Blower Unit Removal and Installation

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

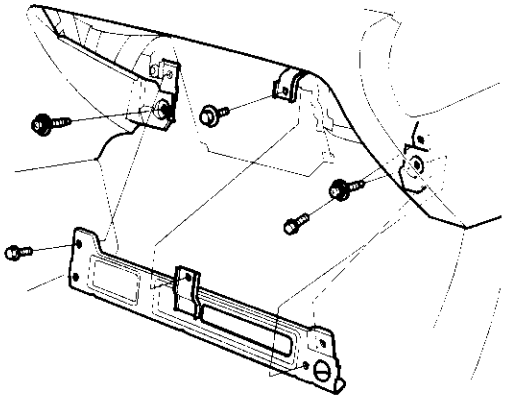
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the battery negative cable, and wait 3 minutes before beginning work.
3. Remove the right kick panel (see page 20-50), passenger's dashboard lower cover, and the glove box (see page 20-63).
4. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown. Remove and discard the plastic cross brace.



(cont'd)

Blower Unit Removal and Installation (cont'd)

5. Remove the steering hanger beam bracket cover from the right side of the glove box opening, then remove the bolts and the glove box frame.

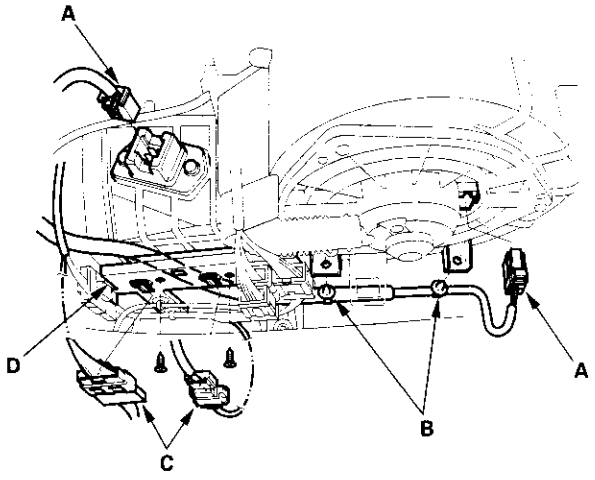


6. Remove the ECM (see page 11-4).

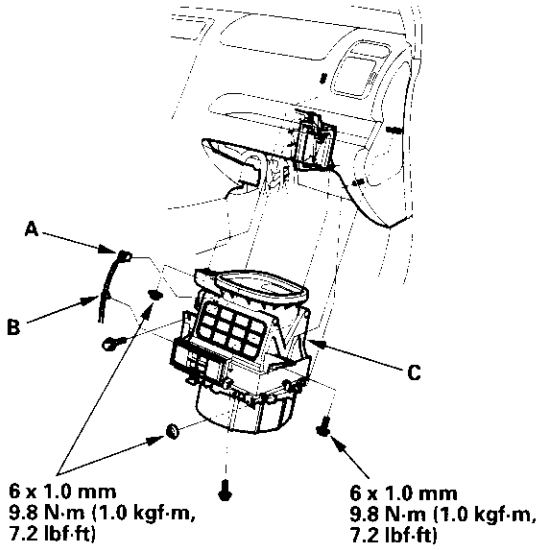
7. Remove the EPS control unit (see page 17-67).

8. Disconnect and remove the PGM-FI main relays and bracket assembly, then remove the ECM bracket.

9. Disconnect the connectors (A) from the blower motor and the power transistor, then remove the wire harness clips (B) and the connectors (C). Remove the self-tapping screws and the bracket (D).



10. Disconnect the connector (A) from the recirculation control motor, then remove the wire harness clip (B). Remove the mounting bolts, the mounting nuts and the blower unit (C).



11. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

12. Reconnect the negative battery terminal.

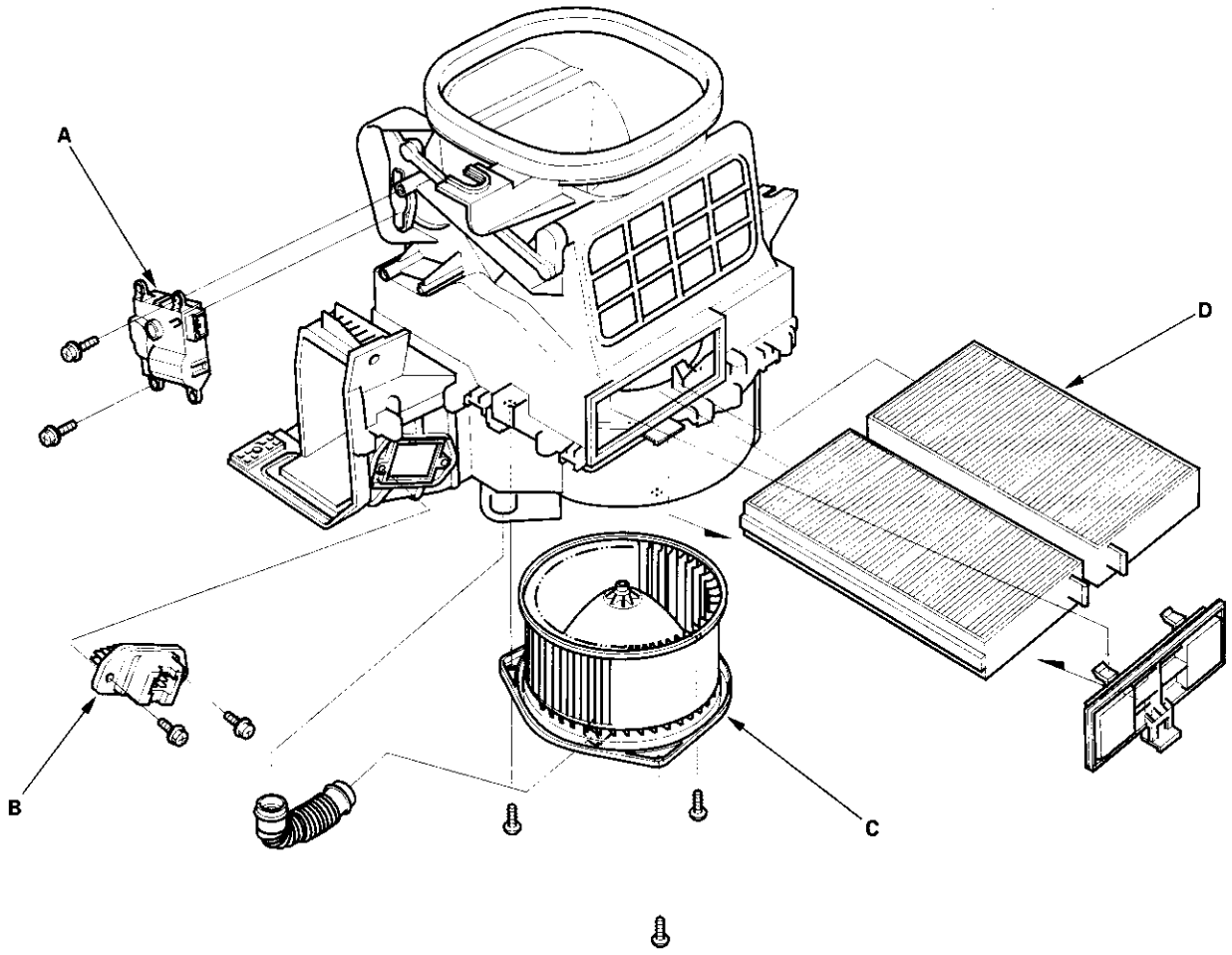
13. Do the engine control module (ECM) idle learn procedure (see page 11-139).

14. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Blower Unit Components Replacement

Note these items when overhauling the blower unit:

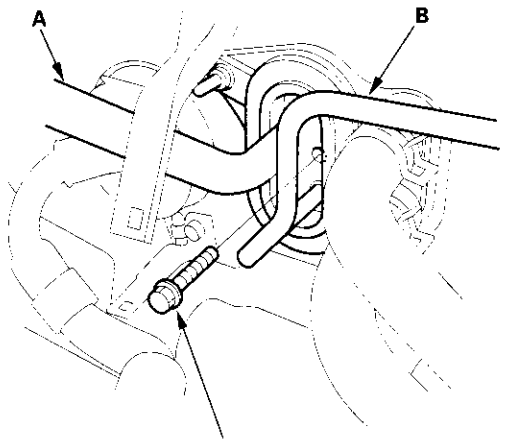
- The recirculation control motor (A), the power transistor (B), the blower motor (C), and the dust and pollen filters (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-36).



Evaporator Core Replacement

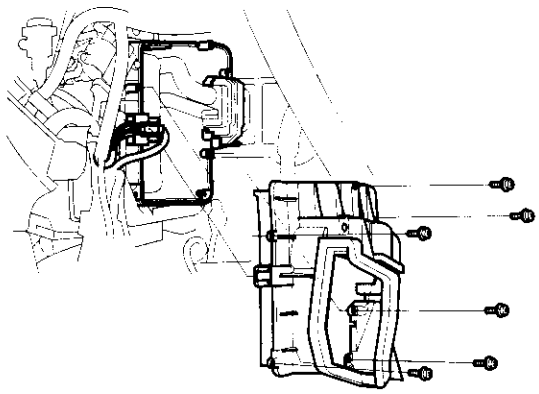
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).

2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.

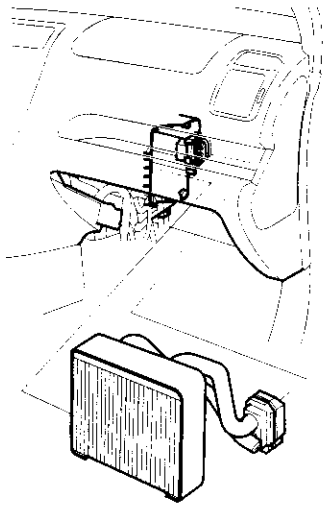


3. Remove the blower unit (see page 21-39).

4. Remove the self-tapping screws and the expansion valve cover.



5. Carefully pull out the evaporator core without bending the pipes.



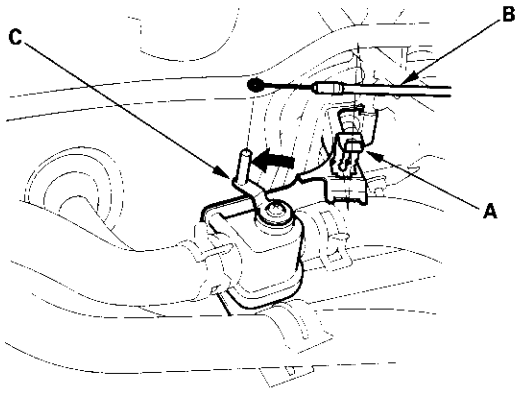
6. Install the core in the reverse order of removal, and note these items.

   - If you're installing a new evaporator core, add refrigerant oil (KEIHIN SP-10) (see page 21-6).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint. If the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-55).

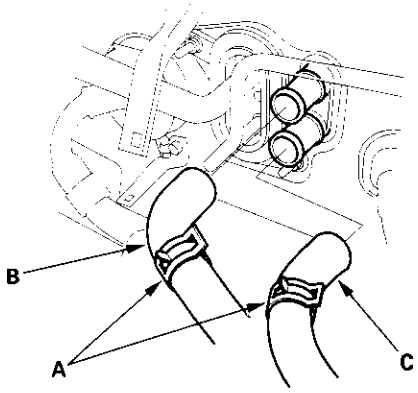
Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-13), and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

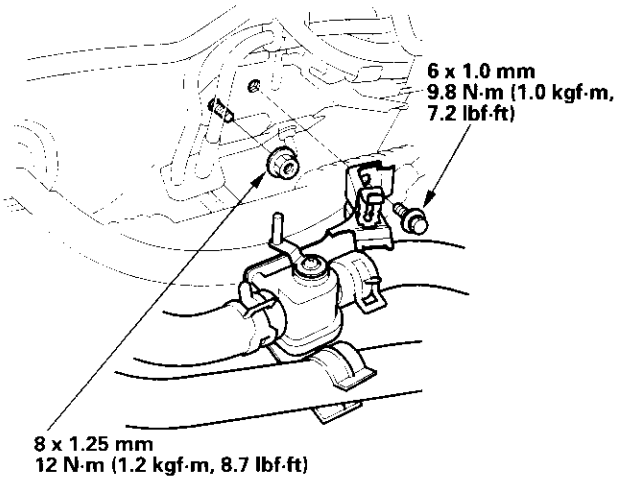
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery.
3. Disconnect the suction and receiver lines from the evaporator core (see page 21-42).
4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.



5. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
6. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater core. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



7. Remove the bolt and the heater valve, then remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.

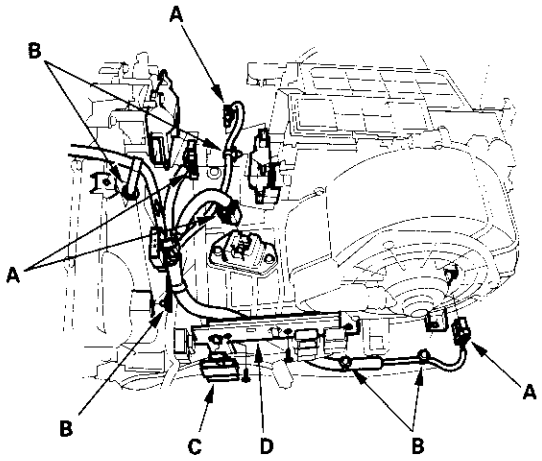


(cont'd)

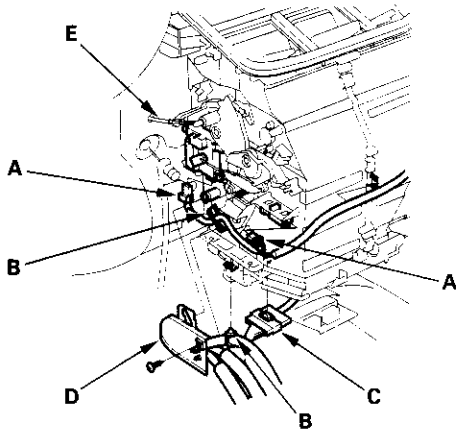
Heater Unit/Core Replacement (cont'd)

8. Remove the dashboard (see page 20-66).

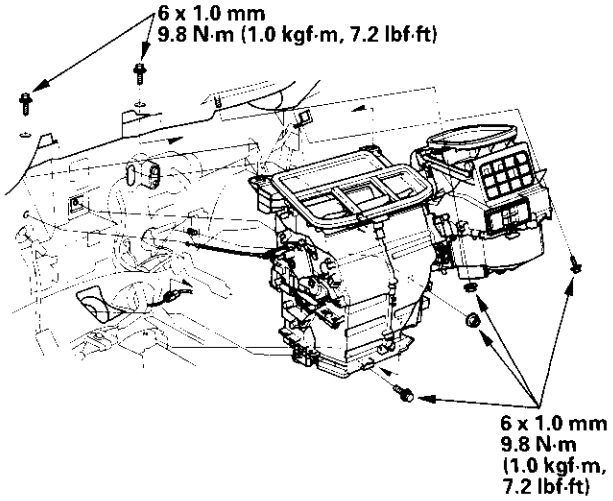
9. Disconnect the connectors (A) from the blower motor, the recirculation control motor, the mode control motor, and the power transistor, then remove the wire harness clips (B) and the connector (C). Remove the self-tapping screws and the bracket (D).



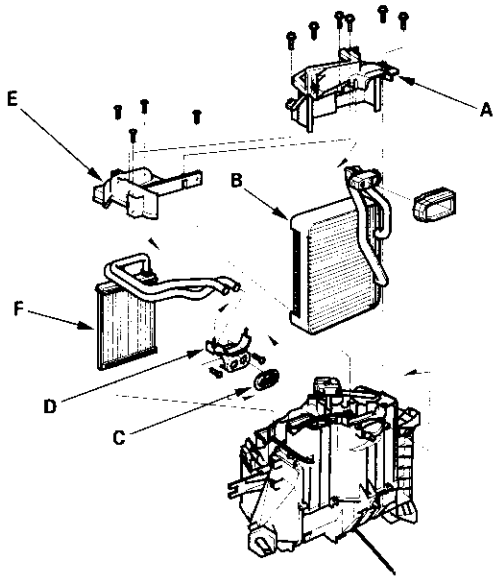
10. Disconnect the connectors (A) from the evaporator temperature sensor and the air mix control motor, then remove the wire harness clips (B) and the connector (C). Remove the self-tapping screw and the cover (D). Disconnect the heater valve cable (E).



11. Remove the mounting bolts, the mounting nuts, and the heater unit.



12. Remove the self-tapping screws and the expansion valve cover (A). Carefully pull out the evaporator core (B) so you don't bend the inlet and outlet pipes. Remove the grommet (C), then remove the self-tapping screws and the flange cover (D). Remove the self-tapping screws and the pipe cover (E), then carefully pull out the heater core (F) so you don't bend the inlet and outlet pipes.



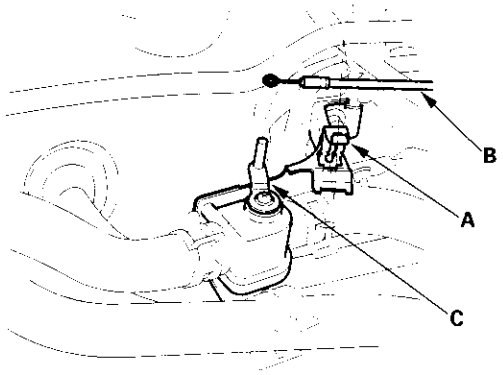
13. Install the heater core and the evaporator core in the reverse order of removal.

14. Install the heater unit in the reverse order of removal, and note these items:

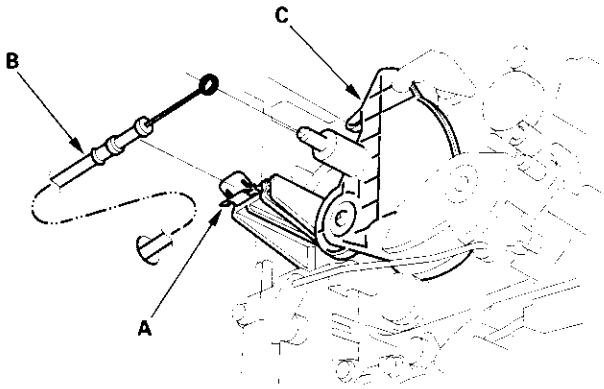
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-6).
    - Adjust the heater valve cable (see page 21-46).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to evaporator core replacement (see step 6 on page 21-42).
    - Do the engine control module (ECM) idle learn procedure (see page 11-139).
    - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



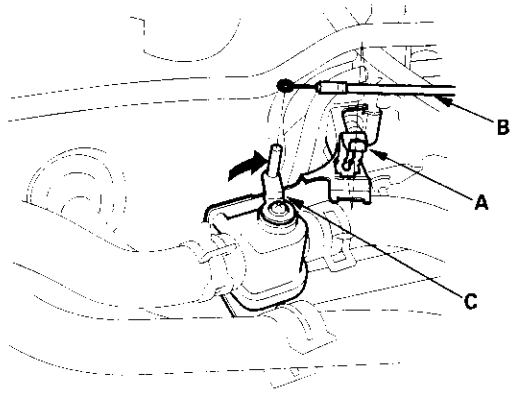
2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).



3. Set the temperature control dial on Max Cool with the ignition switch ON (II).

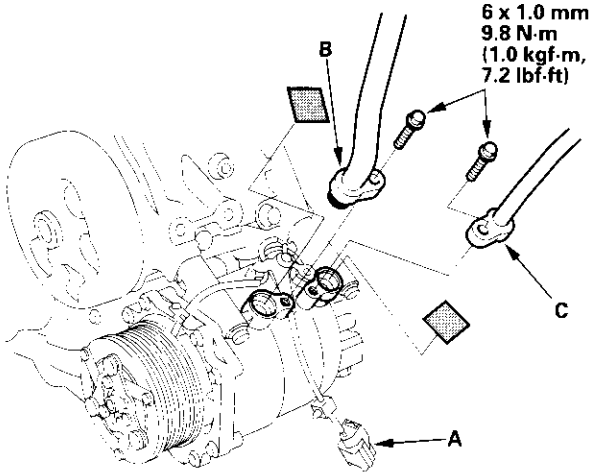
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown above, then snap the heater valve cable housing into the cable clamp (A).

5. From under the hood, turn the heater valve arm (C) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (A).

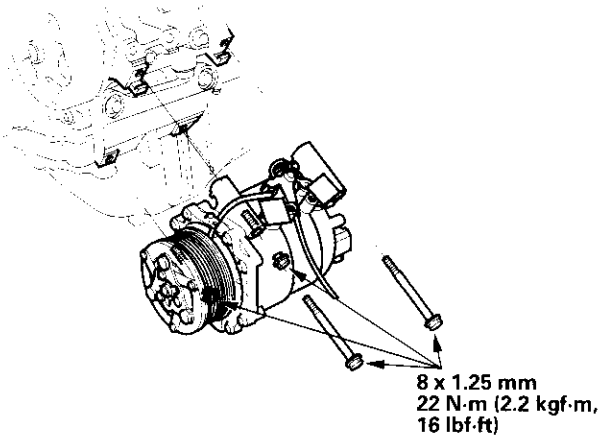


Compressor Replacement

1. If the compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
3. Disconnect the negative cable from the battery.
4. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).
5. Remove the alternator (see page 4-29).
6. Remove the A/C condenser fan assembly (see page 10-10).
7. Disconnect the compressor clutch connector (A), remove the bolts, then disconnect the suction line (B) and the discharge line (C) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



8. Remove the mounting bolts and the compressor.



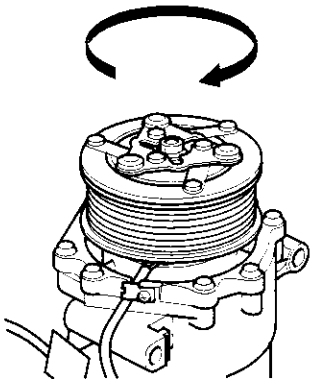
9. Install the compressor in the reverse order of removal, and note these items:

- Before installing the new compressor, check for metal or other contamination in the line. Replace any contaminated parts.
- If you're installing a new compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Use refrigerant oil (KEIHIN SP-10) for HFC-134a KEIHIN spiral type compressor only.
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint. If the refrigerant oil contacts the paint, wash it off immediately.
- Charge the system (see page 21-55).
- Do the engine control module (ECM) idle learn procedure (see page 11-139).
- Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Compressor Clutch Check

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-49).

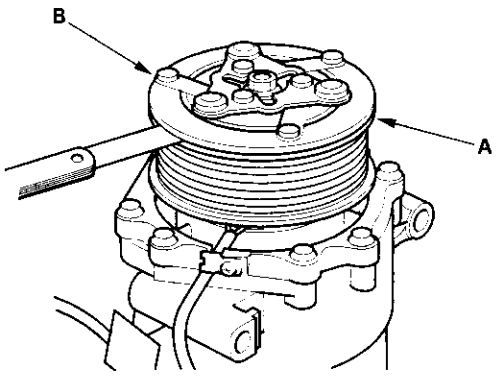
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-49).



3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see page 21-49) and add or remove shims as needed to increase or decrease clearance.

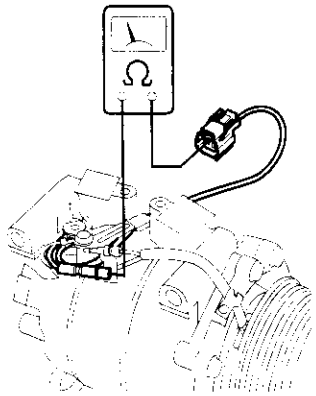
Clearance: 0.5±0.15 mm (0.020±0.006 in.)

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



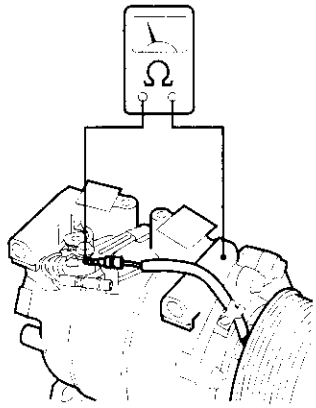
4. Release the field coil connector from the holder, then disconnect it. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see page 21-51).

NOTE: The thermal protector will have no continuity above 252 to 270°F (122 to 132°C). When the temperature drops below 241 to 219°F (116 to 104°C), the thermal protector will have continuity.



5. Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-49).

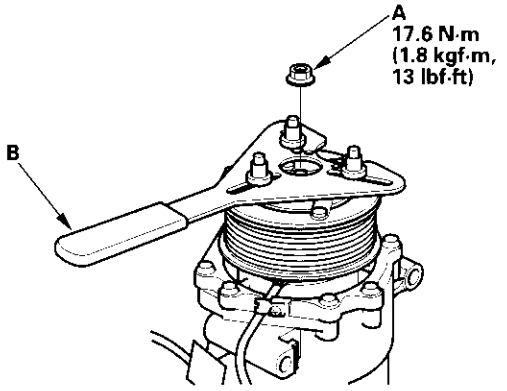
Field Coil Resistance: 3.05–3.35 ohms at 68°F (20°C)



Compressor Clutch Overhaul

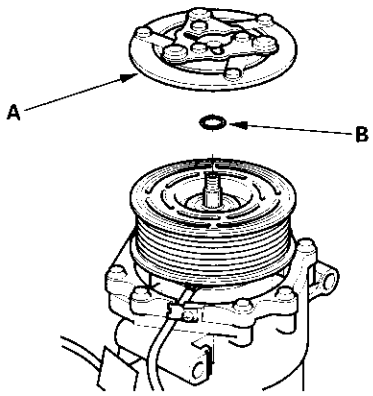
Special Tool Required
A/C clutch holder, Robinair 10204, Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut (A) while holding the armature plate with a commercially available A/C clutch holder (B).

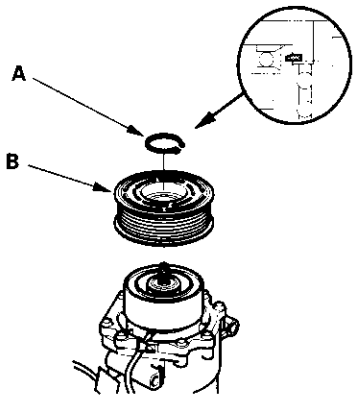


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-48).

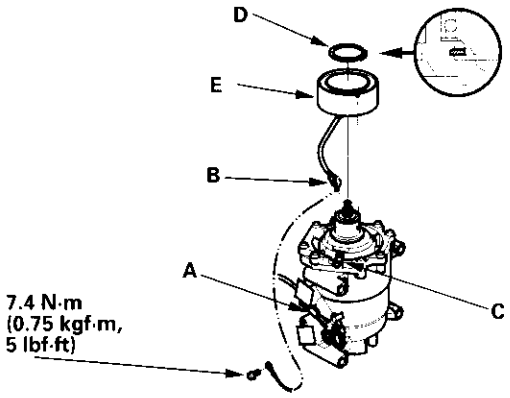
   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley or the compressor.



4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Loosen the clamp screw (C) to free the field coil wire. Remove the snap ring (D) with snap ring pliers, then remove the field coil (E). Be careful not to damage the field coil or the compressor.



(cont'd)

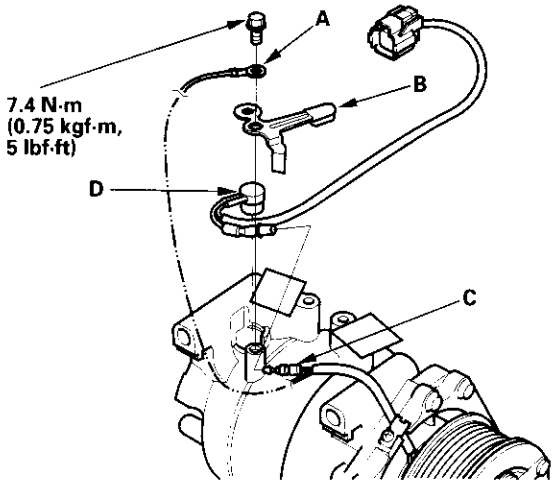
Compressor Clutch Overhaul (cont'd)

5. Reassemble the clutch in the reverse order of disassembly, and note these items:

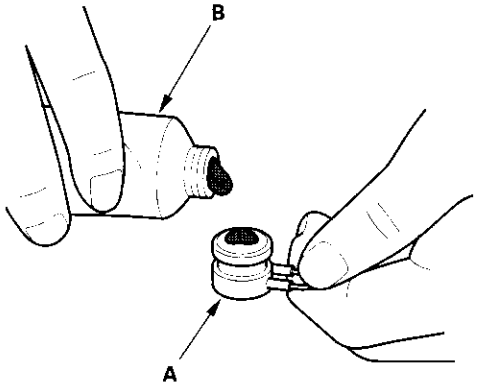
   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the compressor.
   - Clean the rotor pulley and compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
   - Make sure that the rotor pulley turns smoothly after it's reassembled.
   - Route and clamp the wires properly or they can be damaged by the rotor pulley.

Compressor Thermal Protector Replacement

1. Remove the bolt, the ground terminal (A), and the holder (B). Disconnect the field coil connector (C), then remove the thermal protector (D).



2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.

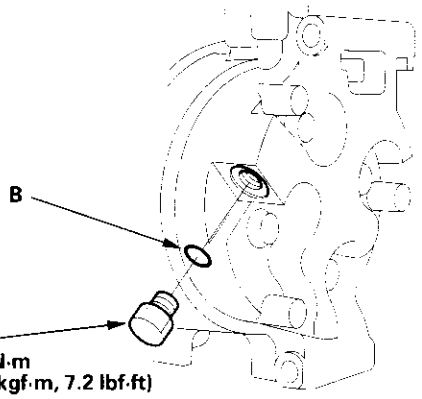


3. Install in the reverse order of removal.

Compressor Relief Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).

2. Remove the relief valve (A) and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the compressor oil from running out.



3. Clean the mating surfaces.

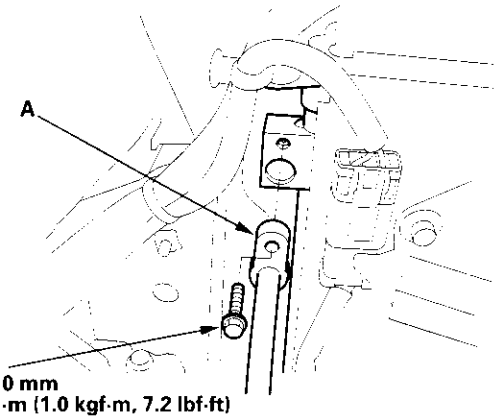
4. Install a new O-ring on the relief valve, and apply a thin coat of refrigerant oil to the O-ring.

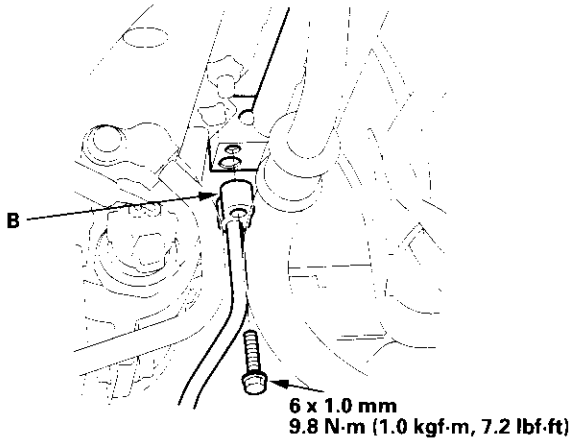
5. Remove the plug, and install and tighten the relief valve.

6. Charge the system (see page 21-55).

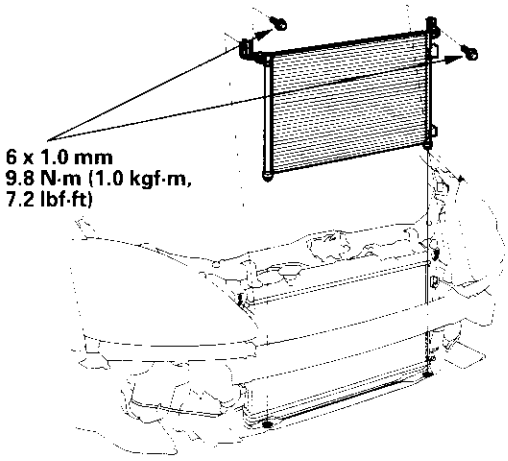
Condenser Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).
2. Remove the front bumper (see page 20-85).
3. Remove the bolts, then disconnect the discharge line (A) and the condenser line (B) from the condenser. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.





4. Remove the mounting bolts, then remove the condenser by lifting it up. Be careful not to damage the radiator or the condenser fins when removing the condenser.



5. Install the condenser in the reverse order of removal, and note these items.

- If you're installing a new condenser, add refrigerant oil (KEIHIN SP-10) (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint. If the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator or the condenser fins when installing the condenser.
- Charge the system (see page 21-55).

Refrigerant Recovery

⚠CAUTION

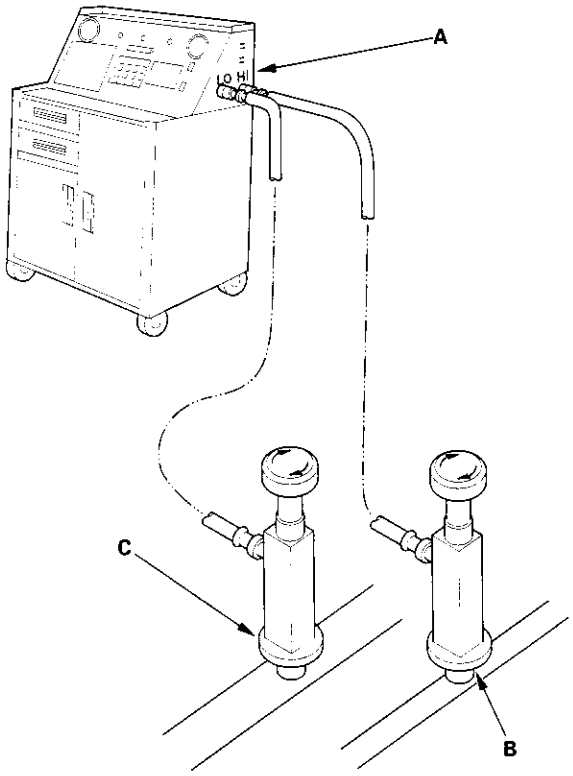
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

System Evacuation

⚠CAUTION

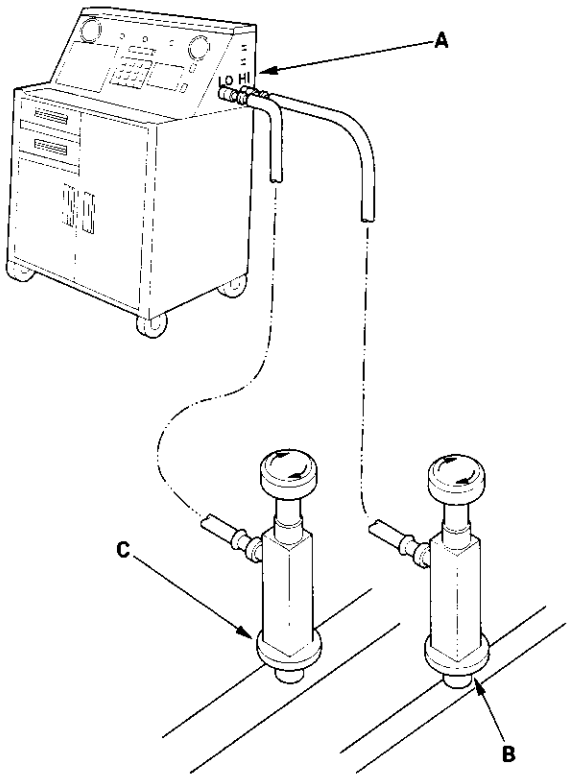
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. When an A/C system has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a R-134a refrigerant recovery/recycling/charging station (If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.)
2. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.



3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 on page 21-56).

System Charging

⚠CAUTION

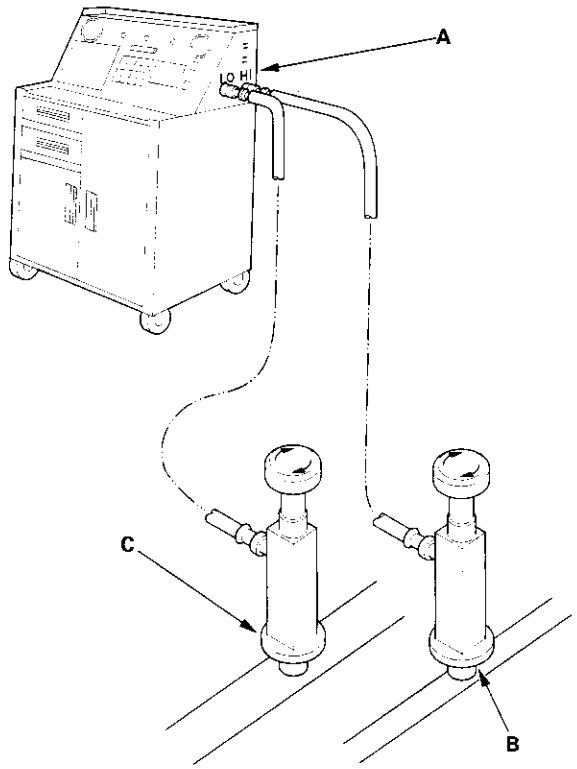
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Evacuate the system (see page 21-54).
3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only KEIHIN SP-10 refrigerant oil.
4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the compressor will be damaged.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant capacity:
   500 to 550 g
   0.50 to 0.55 kg
   1.10 to 1.21 lbs
   17.6 to 19.4 oz
5. Check for refrigerant leaks (see page 21-56).
6. Check for system performance (see page 21-58).

Refrigerant Leak Test

Special Tool Required
Leak detector, Honda Tool and Equipment YGK-H-10PM commercially available

⚠ WARNING

- Compressed air mixed with R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning system.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

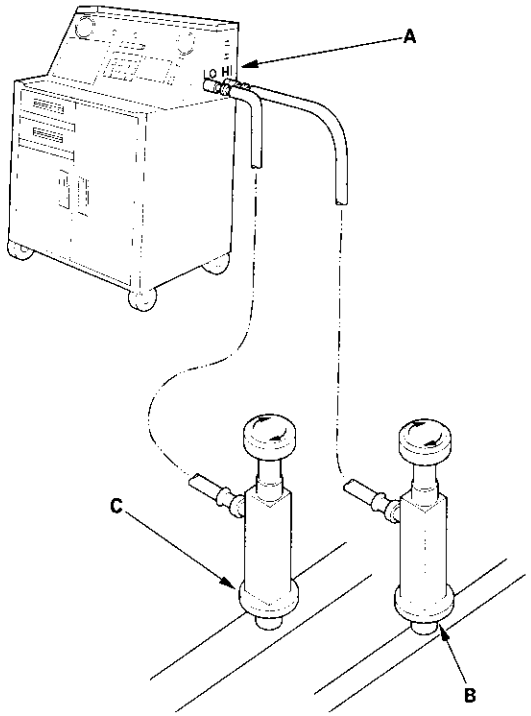
Use only service equipment that is U.L.-listed and is certiified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Open the high pressure valve to charge the system to the specified capacity, then close the supply valve, and remove the charging system couplers.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant capacity:
   500 to 550 g
   0.50 to 0.55 kg
   1.10 to 1.21 lbs
   17.6 to 19.4 oz

3. Check the system for leaks using a R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.

4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), recover the system.

5. After checking and repairing leaks, evacuate the system.

A/C System Tests

Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops quickly, and then continues to fall gradually.	Air in system	Recover, evacuate (see page 21-54), and recharge with specified amount (see page 21-55).
	Reduced or no air flow through condenser	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check fan voltage and rpm. • Check fan direction.
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	Replace restricted lines.
Discharge pressure abnormally low	High and low pressures are balanced soon after stopping compressor. Low side is higher than normal.	• Faulty compressor discharge valve • Faulty compressor seal	Replace the compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace the expansion valve. • Recover, evacuate for at least 30 minutes, and recharge with specified amount.
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Recover, evacuate for at least 30 minutes, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the air flow from vents is restricted.	Frozen evaporator	Run the fan with compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
	Receiver/dryer outlet is cool, and inlet is warm (should be warm during operation).	Clogged receiver/dryer	Replace receiver/dryer.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	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 the compressor.
Suction and discharge pressures abnormally high	Reduced air flow through condenser.	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
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 the 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 the compressor.

(cont'd)

A/C System Tests (cont'd)

Performance Test

⚠ WARNING

- Compressed air mixed with R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

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

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

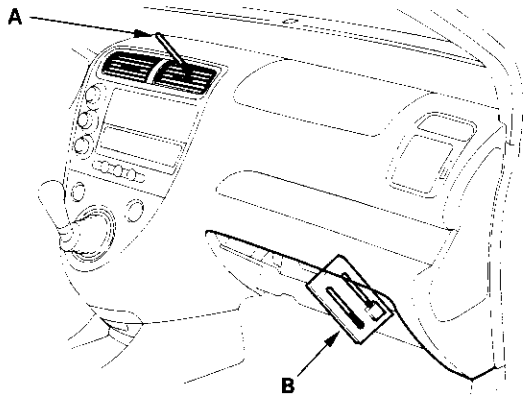
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recover/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.

2. Determine the relative humidity and air temperature.

3. Open the glove box. Remove both glove box stops, then let the glove box hang down (see page 20-63).

4. Insert a thermometer (A) in the center vent, and place another thermometer (B) near the blower unit.



5. Test conditions:

   - Avoid direct sunlight.
   - Open the hood.
   - Open the front doors.
   - Set the temperature control dial on Max Cool, the mode control dial on Vent, and the recirculation control switch on Recirculate.
   - Turn the A/C switch on and the fan switch on Max.
   - Run the engine at 750 rpm.
   - No driver or passengers in vehicle.

6. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the high and low system pressure from the A/C gauges.

7. To complete the charts:

- Mark the delivery temperature along the vertical line.
- Mark the intake temperature (ambient air temperature) along the bottom line.
- Draw a line straight up from the air temperature to the humidity.
- Mark a point 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.