

Heating, Ventilation, and Air Conditioning

Heating

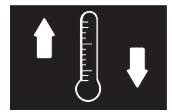
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Heating/Air Conditioning

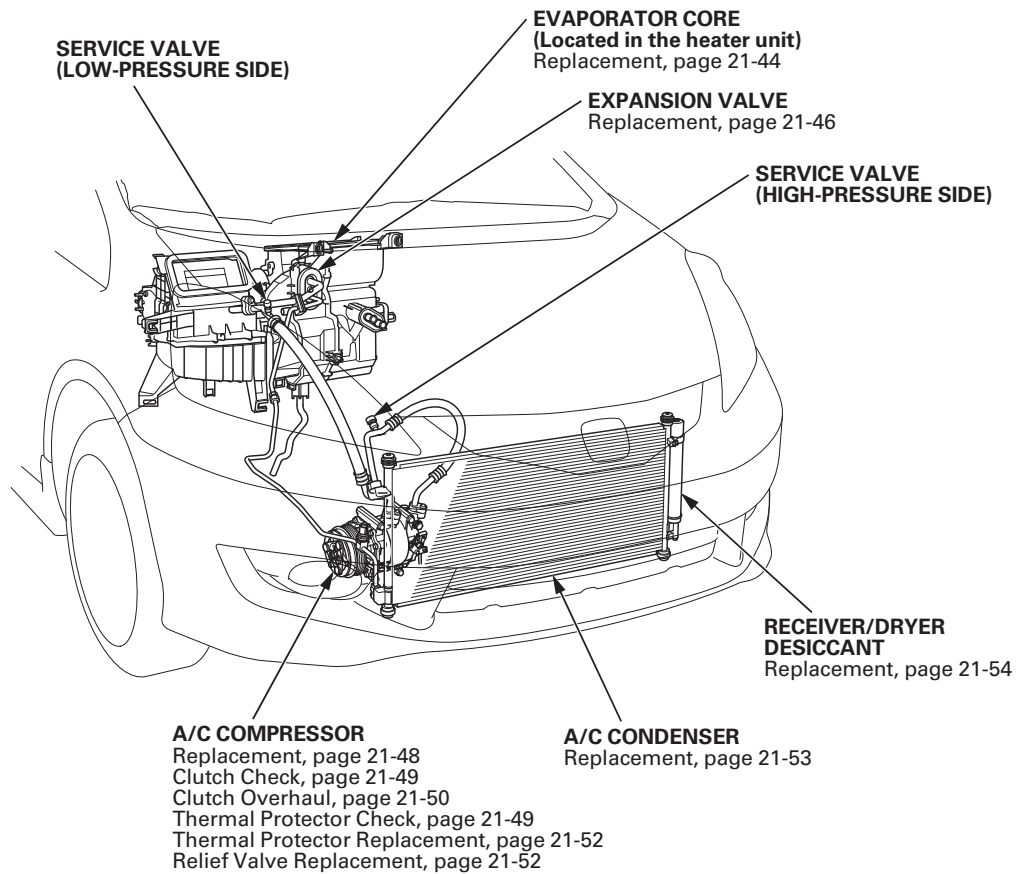
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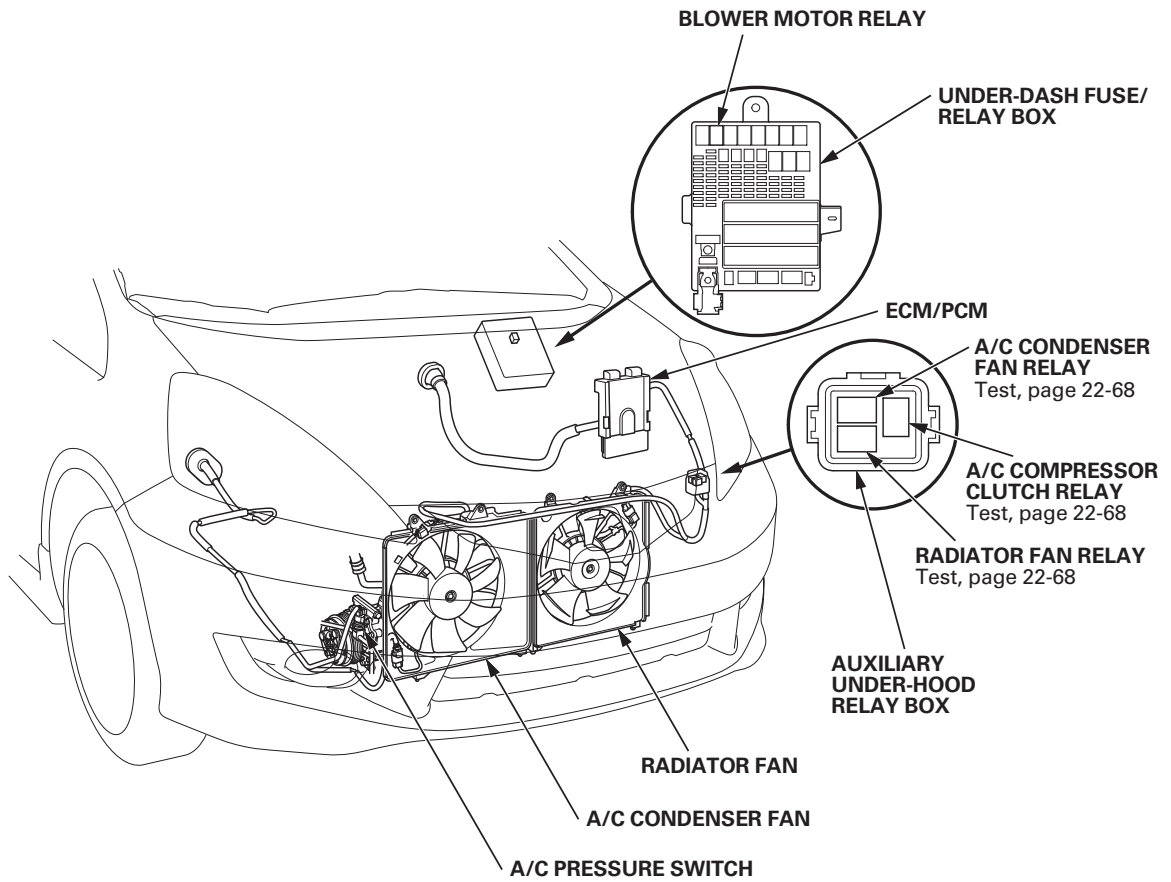
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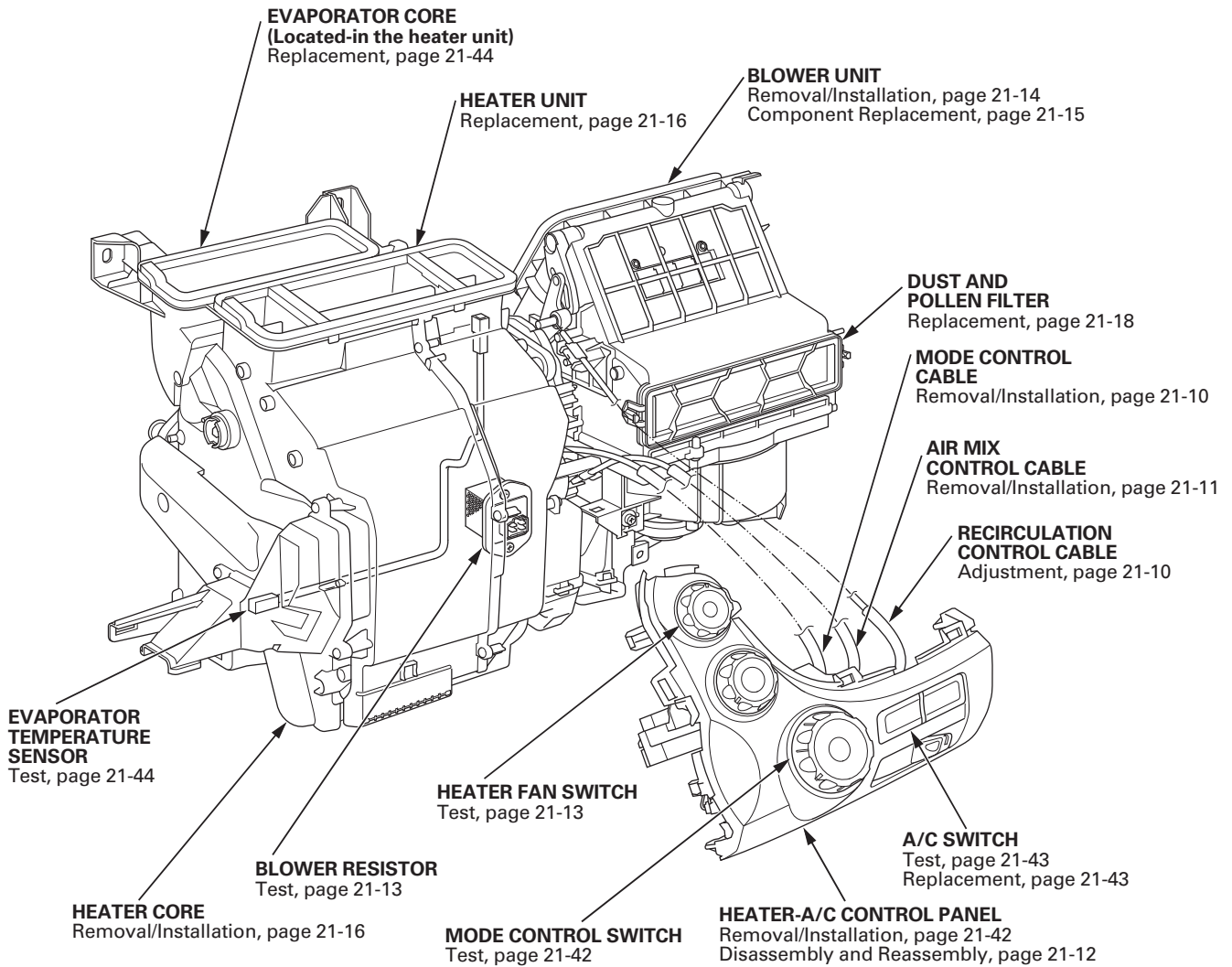


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Heating/Air Conditioning

Component Location Index (cont'd)





Heating/Air Conditioning

A/C Service Tips and Precautions

⚠ WARNING

- Compressed air mixed with the 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 or 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.

Separate the manifold gauge sets (pressure gauges, hoses, joints) for refrigerants R-12 and R-134a. Do not confuse them.

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 an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

Recommended PAG oil: SP-10

P/N 38897-P13-A01AH: 120 mL (4 fl-oz)

It is important to have the correct amount of refrigerant oil in the A/C system to ensure proper lubrication of the compressor. Too little oil damages the compressor; too much oil reduces the cooling capacity of the system, and can produce high vent temperatures.

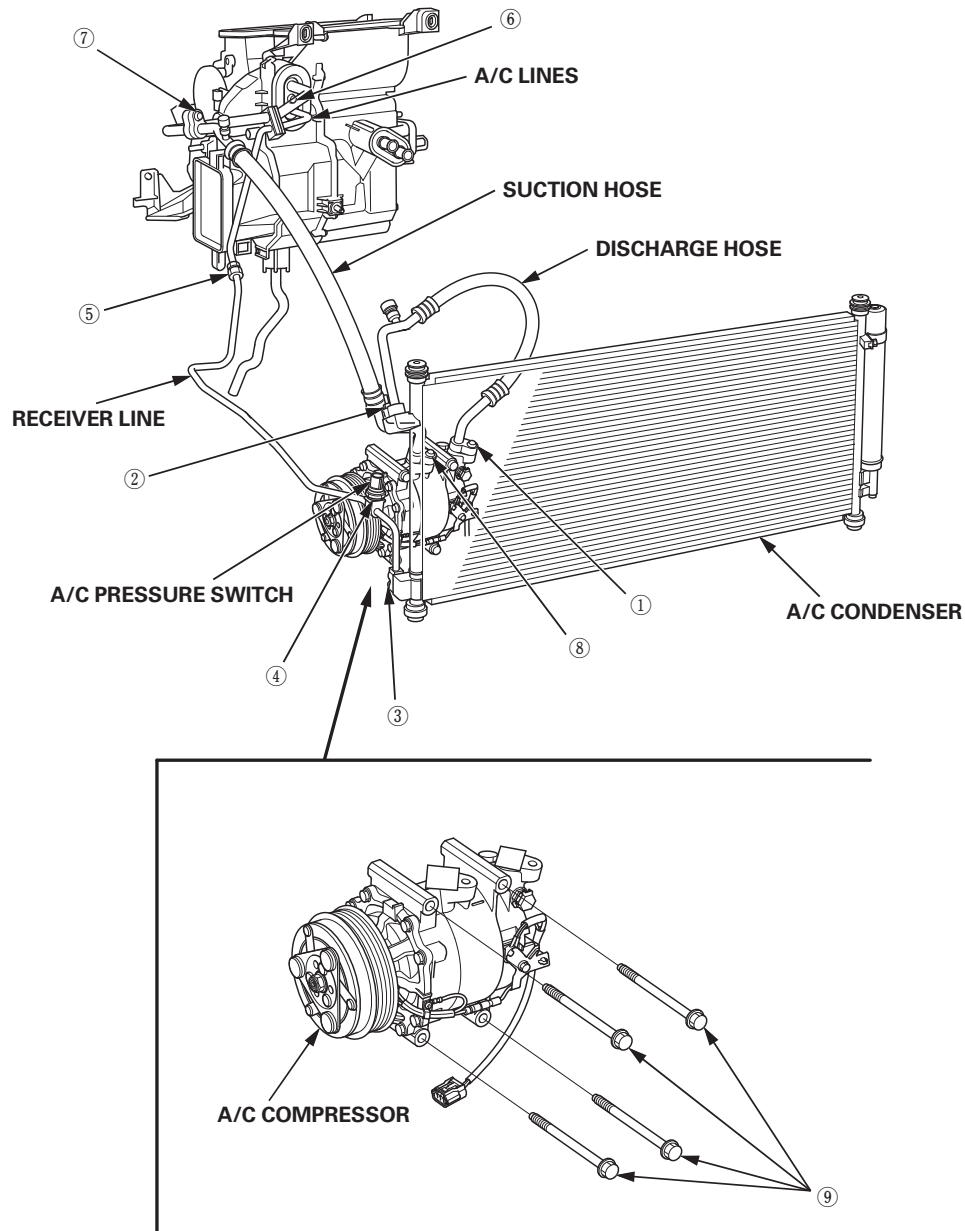
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage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

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

A/C condenser (including dryer desiccant)	25 mL (5/6 fl-oz)
Evaporator	35 mL (1 1/6 fl-oz)
Line or hose	10 mL (1/3 fl-oz)
Receiver/dryer desiccant	10 mL (1/3 fl-oz)
Leakage repair	25 mL (5/6 fl-oz)
A/C compressor	Because this compressor is equipped with an oil separator, oil drainage is unnecessary at the time of compressor replacement.



A/C Line Replacement



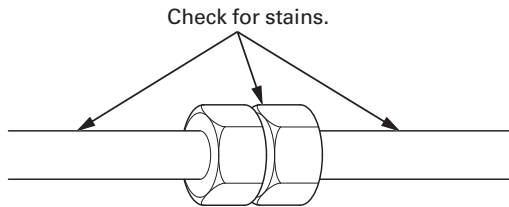
- ① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ④ A/C pressure switch to the receiver line (11 x 1.0 mm): 10.8 N·m (1.1 kgf·m, 8.0 lbf·ft)
- ⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.3 N·m (1.4 kgf·m, 9.8 lbf·ft)
- ⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑦ A/C line to the suction hose (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑨ A/C compressor to the engine block (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)

Heating/Air Conditioning

A/C System Inspection

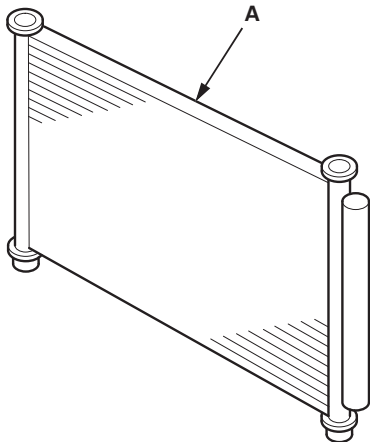
Before troubleshooting any problem with the air conditioning system, do the following:

1. With the ignition switch in LOCK (0), inspect the A/C components, the pressure lines, and the hoses for stains that may indicate a refrigerant or a compressor oil leak.

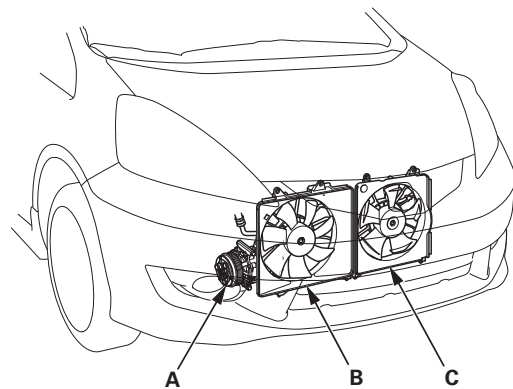


2. Check the A/C condenser (A) for material clogging the fins or for damage to the fins:

- Carefully clean any material from the A/C condenser fins with water and detergent. If deeper cleaning is required, clean the fins with HondaBrite cleaner (P/N 08732-0020B).
- Be sure to dry the A/C condenser completely.
- Refer to the refrigerant leak check (see page 21-57) to confirm leaks if there is visible damage to the condenser.



3. Inspect the drive belt (see page 4-29).
4. Make sure no material is blocking the airflow to the A/C condenser.
5. Check the dust and pollen filter, and replace it if it is clogged (see page 21-18).
6. Check for kinks or sharp bends in the A/C lines and hoses, which can greatly reduce system performance. Replace A/C lines and hoses if they are kinked or damaged (see page 21-23).
7. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.
8. Check that the A/C operates at each position of the blower fan switch (except OFF). If the A/C does not operate, refer to the symptom troubleshooting index.
9. Check that the A/C compressor clutch (A) is engaged. The pressure plate should be rotating at the same speed as the pulley. If the pressure plate does not engage, or fails to disengage, refer to the symptom troubleshooting index.



10. Check that the A/C condenser fan (B) and radiator fan (C) operate when the A/C compressor clutch is engaged. If either fan fails to operate when the A/C compressor clutch is engaged, refer to the symptom troubleshooting index.
11. Check that the engine idle speed is correctly maintained when the A/C is switched on and off, and when the A/C compressor clutch is engaged and disengaged.



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
The blower motor does not run at all	Probable cause: A problem in the blower motor power or ground circuit Do the blower motor circuit troubleshooting (see page 21-7)	<ul style="list-style-type: none"> Blown fuse No. 10 (7.5 A) or No. 57 (30 A) in the under-dash fuse/relay box Faulty blower motor relay Faulty heater fan switch Poor ground at G501 (see page 22-14) Poor ground at G502: With navigation (see page 22-14), Without navigation (see page 22-14) Poor or loose connections at the terminals
The blower motor runs, but one or more speeds are inoperative	Probable cause: A problem in the circuits between the heater fan switch and the blower resistor Do the blower motor circuit troubleshooting (see page 21-7)	<ul style="list-style-type: none"> Faulty blower resistor Faulty blower fan switch Poor or loose connections at the terminals
The blower motor runs with the fan switch off	Probable cause: A short in the blower motor ground circuit Do the blower motor circuit troubleshooting (see page 21-7)	<ul style="list-style-type: none"> Faulty heater fan switch Poor or loose connections at the terminals
The A/C compressor clutch and the A/C condenser/radiator fans are inoperative, but the blower and heater controls work	Probable cause: A/C pressure switch circuit malfunction Do the A/C pressure switch circuit troubleshooting (see page 21-38)	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3) Poor or loose connections at the terminals
The A/C compressor clutch does not engage, but the A/C condenser/radiator fans operate, and the blower and heater controls work	Probable cause: No power to the A/C compressor clutch Do the A/C compressor clutch circuit troubleshooting (see page 21-36)	<ul style="list-style-type: none"> Blown fuse No. 43 (7.5 A) in the under-dash fuse/relay box A/C system pressure is normal (see page 21-63) A/C thermal protector has continuity (see page 21-49) Faulty heater fan switch Poor or loose connections at the terminals
The A/C condenser fan, or the radiator fan (or both) are inoperative with the A/C on	Probable cause: Condenser/radiator circuit malfunction <ul style="list-style-type: none"> Do the A/C condenser fan circuit troubleshooting (see page 21-34) Do the radiator fan circuit troubleshooting (see page 10-24) Do the radiator and A/C condenser fan common circuit troubleshooting (see page 21-35) 	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3) Poor or loose connections at the terminals
The A/C compressor clutch cycles rapidly on and off	Probable cause: A/C system is very low on refrigerant, indicating a possible leak Do the refrigerant leak check (see page 21-57) and repair any leaks. Replace the receiver/dryer (see page 21-54), then recharge the system to specifications (see page 21-56)	If there is no leak and the refrigerant level is normal, do the A/C compressor clutch circuit troubleshooting (see page 21-36), and look for an intermittent problem

(cont'd)

Heating/Air Conditioning

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
The A/C compressor clutch does not disengage when the A/C switch is off	<p>Probable cause: The A/C compressor clutch circuit is on (energized) continuously, or the compressor clutch is mechanically jammed</p> <ul style="list-style-type: none"> Do the A/C compressor clutch circuit troubleshooting (see page 21-36), and repair any circuit problems If the A/C compressor clutch circuit is OK, then do the A/C compressor clutch check (see page 21-49), and repair any problems with the compressor clutch 	<ul style="list-style-type: none"> The A/C compressor relief valve. If it has vented refrigerant to the atmosphere, correct the problem with the compressor clutch or clutch circuit, then replace the relief valve (see page 21-52) Poor or loose connections at the terminals
The A/C compressor relief valve has vented refrigerant	<ul style="list-style-type: none"> Probable cause: The A/C condenser/radiator fans are inoperative: <ul style="list-style-type: none"> Do the A/C condenser fan circuit troubleshooting (see page 21-34) Do the radiator fan circuit troubleshooting (see page 10-24) Do the radiator and A/C condenser fan common circuit troubleshooting (see page 21-35) Probable cause: the A/C compressor clutch is not disengaging: <ul style="list-style-type: none"> Do the A/C compressor clutch circuit troubleshooting (see page 21-36) Do the A/C compressor clutch check (see page 21-49) Probable cause: A restriction in the high-pressure side of the system <ul style="list-style-type: none"> Recover A/C refrigerant (see page 21-55), then check the A/C condenser, the receiver/dryer, and the liquid line for restrictions. Repair as needed. Recharge the system to specifications (see page 21-56) 	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3) Poor or loose connections at the terminals
Warm air comes out of the vents, and the high pressure liquid line is very hot	<p>Probable cause: The A/C system is overcharged (too much refrigerant), or the condenser is malfunctioning</p> <p>Recover A/C refrigerant (see page 21-55), then check the A/C condenser for restrictions or poor airflow. Repair as needed. Recharge the system to specifications (see page 21-56)</p>	<ul style="list-style-type: none"> Incorrect tension or abnormal wear on the drive belt. Replace the belt and/or the belt tensioner as needed Proper operation of the condenser/radiator fans. Repair as needed Signs of an overheated engine. Repair as needed
Warm air comes out of the vents. The suction line is cool to warm, and the discharge line is warm to hot	<p>Probable cause: A/C system is low on refrigerant, indicating a possible leak</p> <p>Do the refrigerant leak check (see page 21-57) and repair any leaks. Recharge the system to specifications (see page 21-56)</p>	<p>Add refrigerant oil depending on the part you replaced (see page 21-22)</p>
Warm air comes out of the vents. The suction line is cool to warm, the discharge line is warm to hot, and there is no frost on the expansion valve	<p>Probable cause: Excessive air and/or moisture in the system, indicating a possible leak</p> <p>Do the refrigerant leak check (see page 21-57) and repair any leaks. Replace the receiver/dryer (see page 21-54), then recharge the system to specifications (see page 21-56)</p>	<p>Check the amount of refrigerant oil in the system. Adjust the oil level as needed</p>

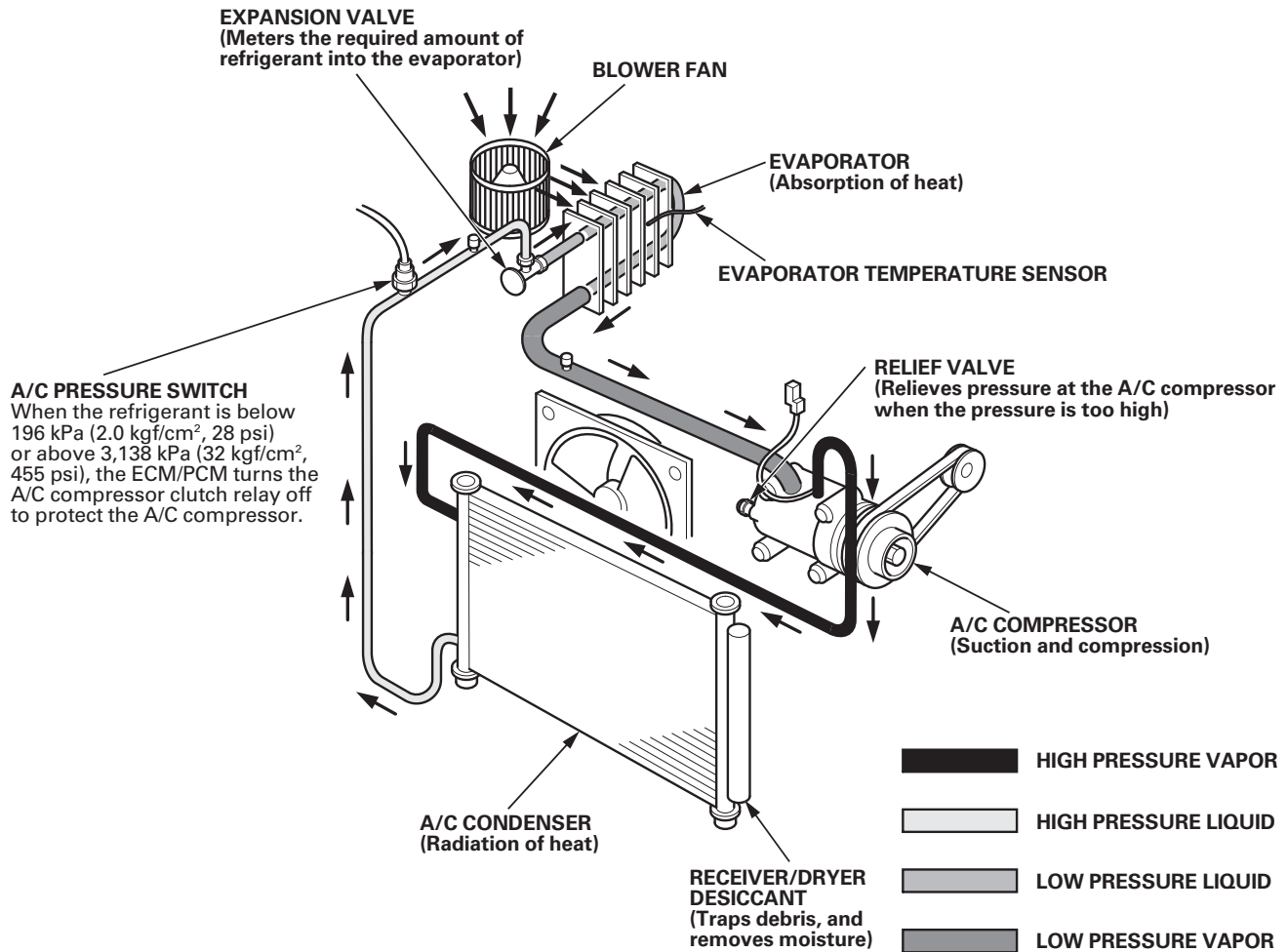


Symptom	Diagnostic procedure	Also check for
Warm air comes out of the vents. The liquid line or the condenser outlet is abnormally cool, or there is frost or condensation on the receiver/dryer	Probable cause: A restriction in the high-pressure side of the system Recover A/C refrigerant (see page 21-55), then check the condenser, the receiver/dryer, and the liquid line for restrictions. Repair as needed. Recharge the system to specifications (see page 21-56)	
There is heavy frost or condensation on the expansion valve, and frost on the suction line	Probable cause: A restriction in the low-pressure side of the system Recover A/C refrigerant (see page 21-55), then check the suction line, and the expansion valve for restrictions. Repair as needed. Recharge the system to specifications (see page 21-56)	
Warm air comes out of the vents, and there is frost on the expansion valve	Probable cause: The expansion valve is stuck closed Replace the expansion valve (see page 21-46)	Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
The temperature of the liquid line is the same on both sides of the expansion valve, and the evaporator coil or suction line has heavy condensation	Probable cause: The expansion valve is stuck open Replace the expansion valve (see page 21-46)	Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
Warm air comes out of the vents, but operation is normal otherwise	Probable cause: Compressor failure Do the A/C system test (see page 21-63), and correct any problems. If necessary, replace the compressor (see page 21-48)	Add refrigerant oil depending on the part you replaced (see page 21-22).
Driver's and passenger's side vent temperatures vary by more than 20 °F (11 °C)	Probable cause: The recirculation control door or the air mix door is malfunctioning <ul style="list-style-type: none"> • Check the operation of the recirculation control cable and linkage (see page 21-10). Adjust or repair as needed • Check the operation of the air mix door cable and linkage (see page 21-11). Repair as needed 	<ul style="list-style-type: none"> • Faulty heater controls (see page 21-12) • Clogged heater core • Clogged evaporator • Low refrigerant level
Insufficient heating	<ol style="list-style-type: none"> 1. Check the coolant level (see page 10-6) 2. Check the radiator cap (see page 10-3) 3. Check the coolant temperature during normal operation 4. Check the heater core inlet hose temperature: <ul style="list-style-type: none"> • If it is COLD, check for restrictions in the hose, a damaged or leaking thermostat, or a damaged or leaking water pump • If it is HOT, check for restrictions in the heater core. Back flush or replace the heater core 5. Check the operation of the air mix cable and linkage (see page 21-11) 6. Check the blower motor unit for obstructions 7. Check for air leaks around the ducts and vents 	Damaged cylinder head gasket

Heating/Air Conditioning

System Description

The A/C system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The A/C refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



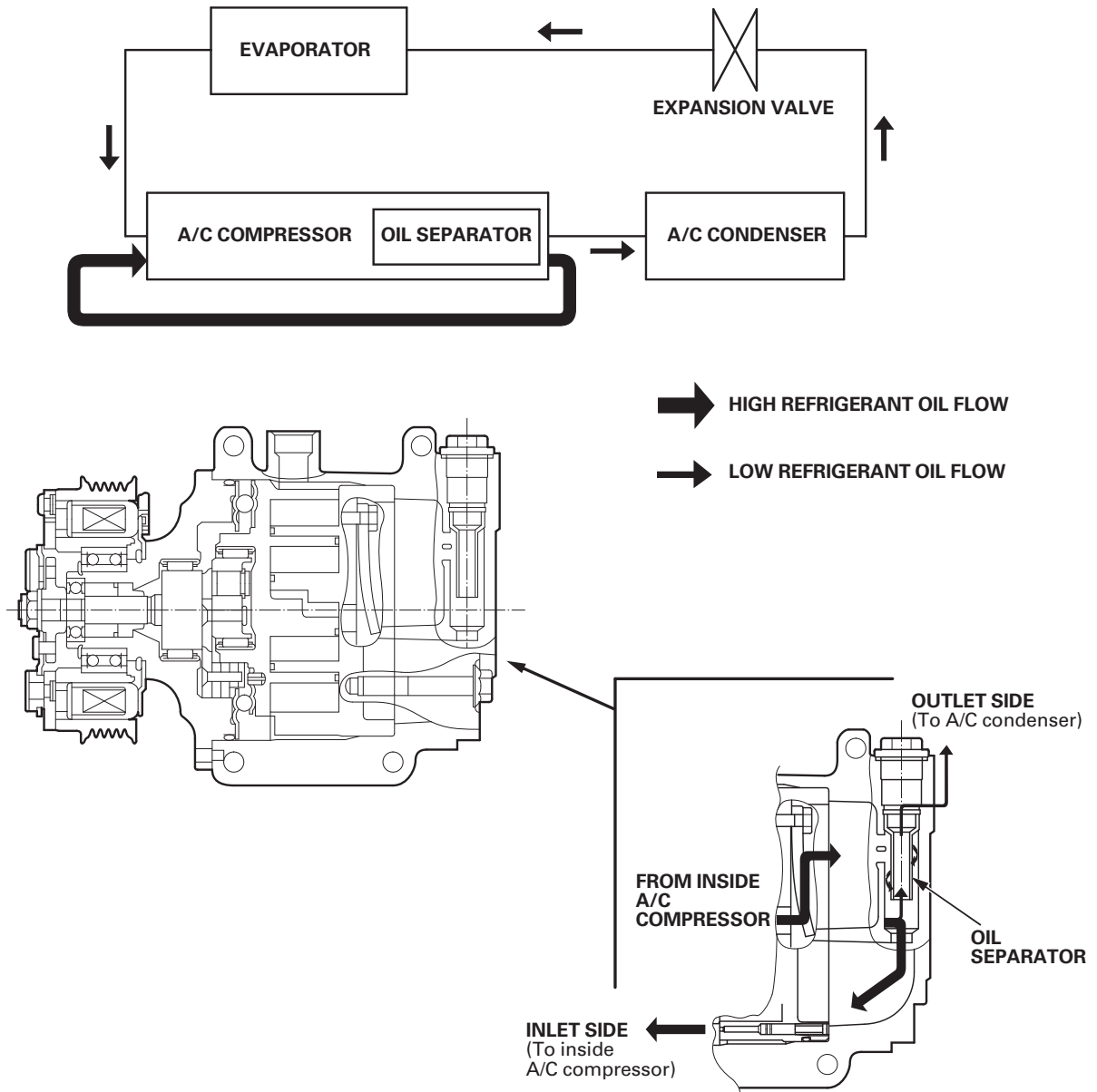
This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- 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 (SP-10) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are 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 systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.



Oil Separator

Oil emission from the A/C compressor to the A/C line is reduced by placing an oil separator in the A/C compressor. This results in a thinner oil film inside the heat exchangers (A/C condenser and evaporator). Air conditioning efficiency is increased without sacrificing engine performance.

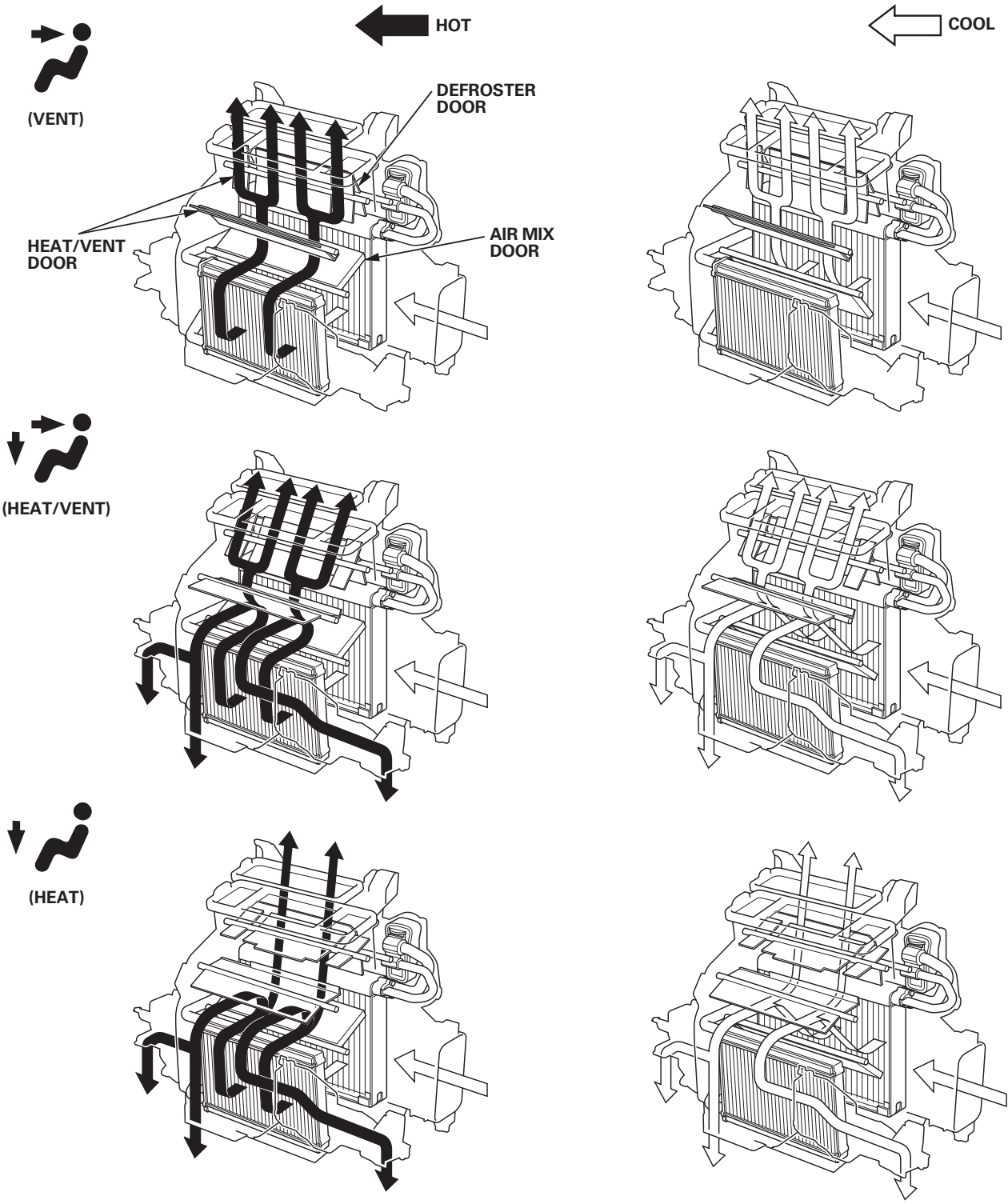


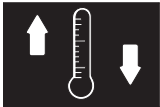
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Heating/Air Conditioning

System Description (cont'd)

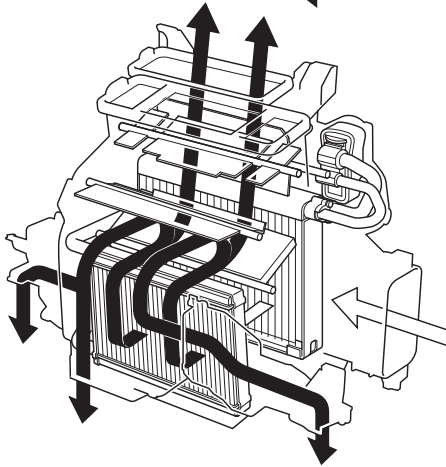
Heating/Air Conditioning Door Positions



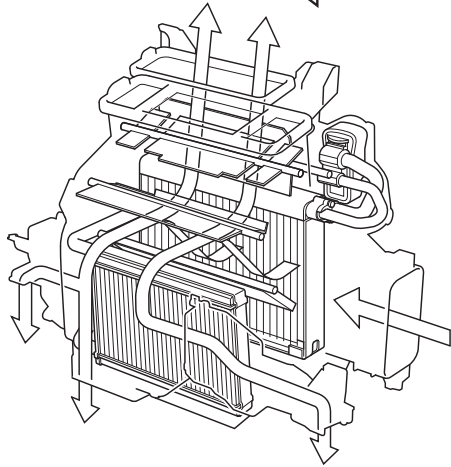


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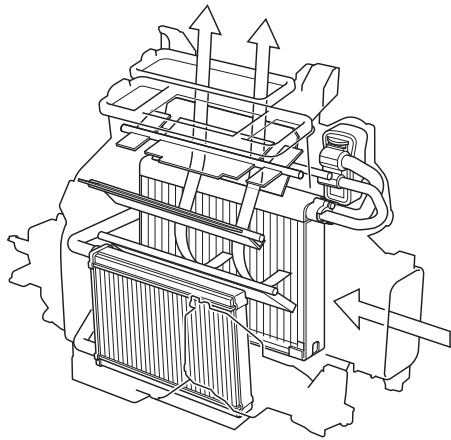
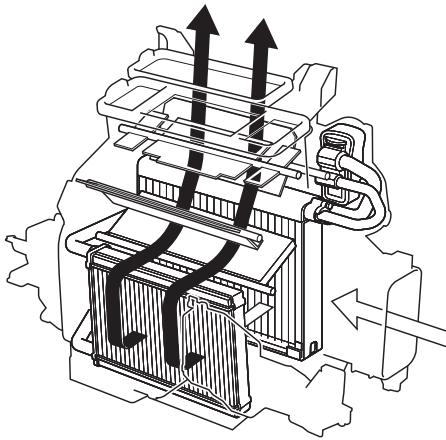
HOT ←



← COOL

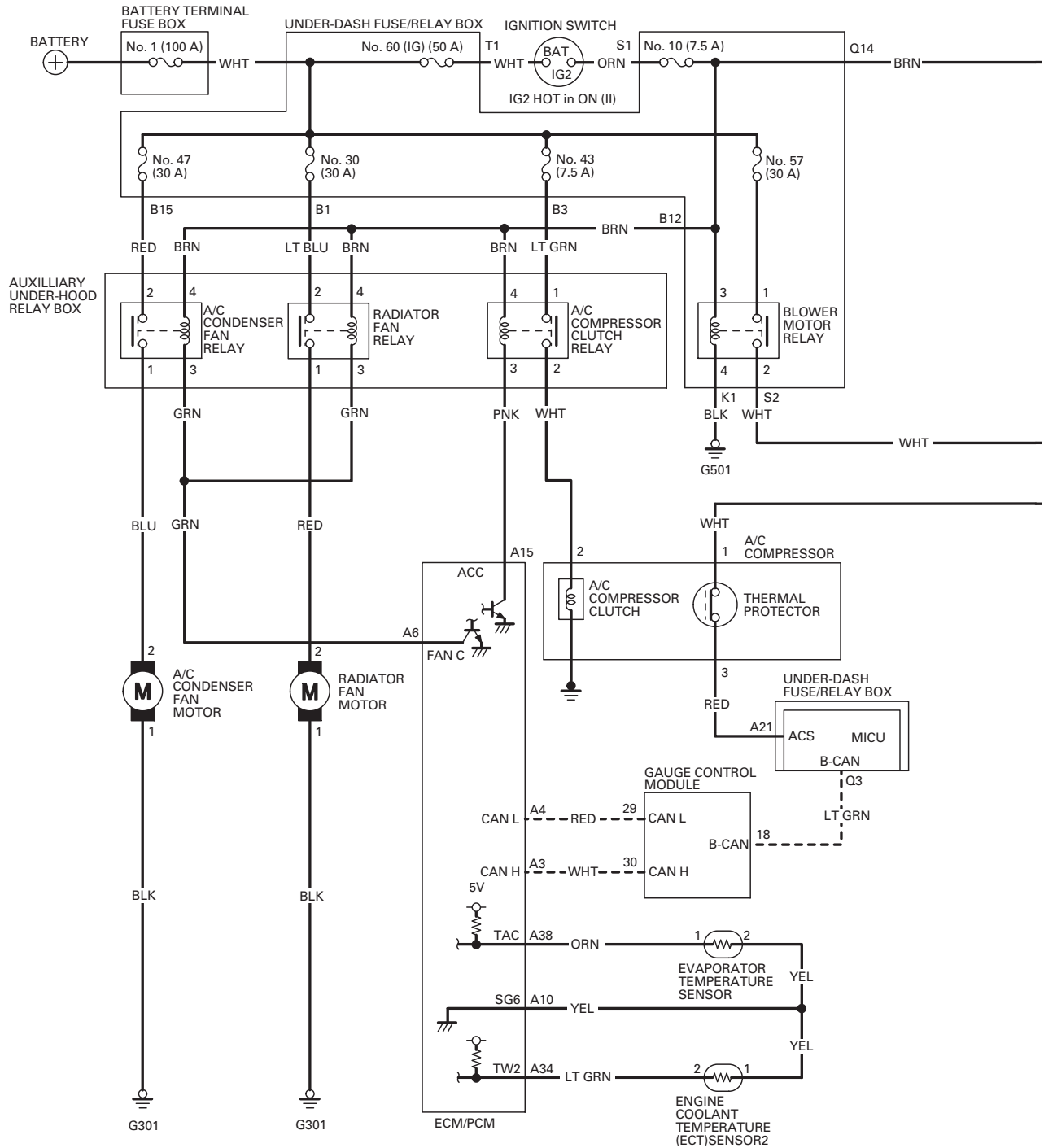


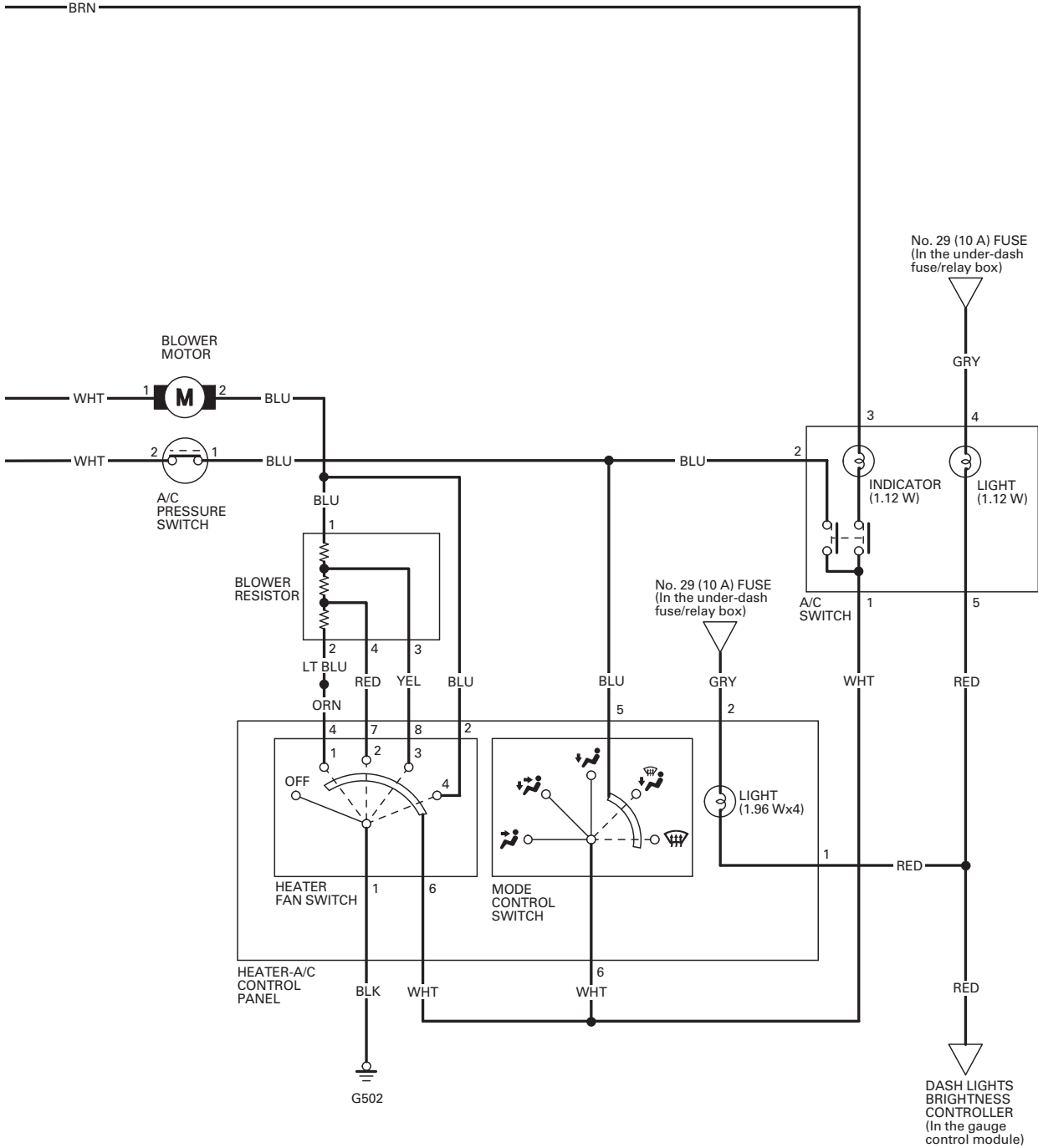
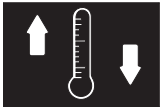
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Heating/Air Conditioning

Circuit Diagram





Heating/Air Conditioning

A/C Condenser Fan Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the compressor is also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs. (see page 11-3)

1. Check the No. 47 (30 A) and the No. 10 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the blown fuses, and recheck. If either fuse blows again, check for a short in the No. 47 (30 A) or No. 10 (7.5 A) fuse circuits. ■

2. Remove the A/C condenser fan relay from the auxiliary under-hood relay box, and test it (see page 22-68).

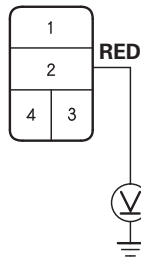
Is the relay OK?

YES—Go to step 3.

NO—Replace the A/C condenser fan relay. ■

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

A/C CONDENSER FAN RELAY 4P SOCKET



Terminal side of female terminals

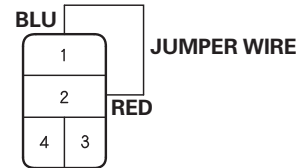
Is there battery voltage?

YES—Go to step 4.

NO—Repair an open in the wire between the No. 47 (30 A) fuse in the under-dash fuse/relay box and the A/C condenser fan relay. ■

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

A/C CONDENSER FAN RELAY 4P SOCKET



Terminal side of female terminals

Does the A/C condenser fan run?

YES—Go to step 5.

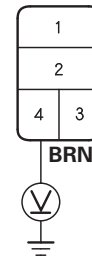
NO—Go to step 8.

5. Disconnect the jumper wire.

6. Turn the ignition switch to ON (II).

7. Measure the voltage between A/C condenser fan relay 4P socket terminal No. 4 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Terminal side of female terminals

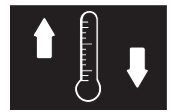
Is there battery voltage?

YES—Repair an open in the wire between the A/C condenser fan relay and the ECM/PCM. ■

NO—Repair an open in the wire between the No. 10 (7.5 A) fuse in the under-dash fuse/relay box and the A/C condenser fan relay. ■

8. Disconnect the jumper wire.

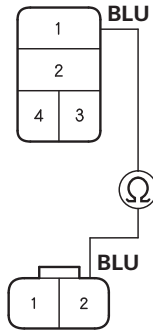
9. Disconnect the A/C condenser fan 2P connector.



Radiator and A/C Condenser Fan Common Circuit Troubleshooting

10. Check for continuity between A/C condenser fan relay 4P socket terminal No. 1 and A/C condenser fan motor 2P connector terminal No. 2.

A/C CONDENSER FAN RELAY 4P SOCKET
Terminal side of female terminals



A/C CONDENSER FAN 2P MOTOR CONNECTOR
Wire side of female terminals

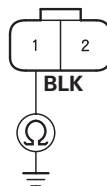
Is there continuity?

YES—Go to step 11.

NO—Repair an open in the wire between the A/C condenser fan relay and the A/C condenser fan motor. ■

11. Check for continuity between A/C condenser fan 2P motor connector terminal No. 1 and body ground.

A/C CONDENSER FAN 2P MOTOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the A/C condenser fan motor (see page 10-14). ■

NO—Check for an open in the wire between the A/C condenser fan motor and body ground. If the wire is OK, check for poor ground at G301 (see page 22-14). ■

NOTE:

- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

- Remove the radiator fan relay and A/C condenser fan relay from the auxiliary under-hood relay box, and test them (see page 22-68).

Are the relays OK?

YES—Go to step 2.

NO—Replace the relays. ■

- Reinstall the relays.

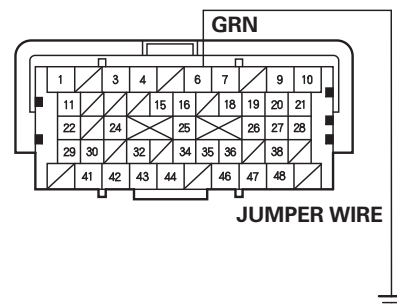
- Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module/powertrain control module (ECM/PCM) from damage.

- Disconnect ECM/PCM connector A (49P).

- Connect the ECM/PCM connector A (49P) terminal No. 6 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

- Turn the ignition switch to ON (II).

Do the fans run?

YES—Check for loose wires or poor connections at ECM/PCM connector A (49P). If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-201). ■

NO—Repair an open in the wire between the radiator fan relay, the A/C condenser fan relay, and the ECM/PCM. ■

Heating/Air Conditioning

A/C Compressor Clutch Circuit Troubleshooting

NOTE:

- It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, hard acceleration, or high/low refrigerant pressure.
- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 43 (7.5 A) and the No. 10 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the blown fuses, and recheck. If either fuse blown again, check for a short in the No. 43 (7.5 A) or No. 10 (7.5 A) fuse circuits.■

2. Connect the HDS to the DLC.

3. Start the engine.

4. Turn on the A/C.

5. Check the A/C CLUTCH in the PGM-FI Data List with the HDS.

Is the A/C CLUTCH on?

YES—Go to step 7.

NO—Go to step 6.

6. Check the engine coolant temperature and idle speed (use the HDS PGM-FI Data List if possible).

TP sensor	About 0.5 V at idle	
RPM	A/T	740—840 at idle
	M/T	700—800 at idle
ECT sensor 2	176—212 °F (80—100 °C)	

Are the coolant temperature and idle speed OK?

YES—Go to A/C pressure switch circuit troubleshooting (see page 21-38).■

NO—Troubleshoot and repair the cause of the high engine coolant temperature or low idle.■

7. Turn the ignition switch to LOCK (0).

8. Remove the A/C compressor clutch relay from the auxiliary under-hood relay box, and test it (see page 22-68).

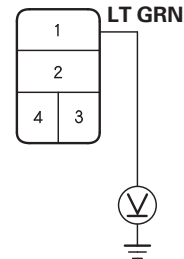
Is the relay OK?

YES—Go to step 9.

NO—Replace the A/C compressor clutch relay.■

9. Measure the voltage between A/C compressor clutch relay 4P socket terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

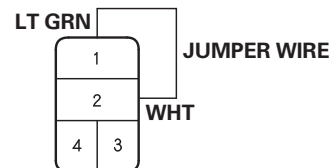
Is there battery voltage?

YES—Go to step 10.

NO—Repair an open in the wire between the No. 43 (7.5 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay.■

10. Connect A/C compressor clutch relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

Does the A/C compressor clutch click?

YES—Go to step 11.

NO—Go to step 21.

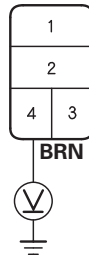
11. Disconnect the jumper wire.

12. Turn the ignition switch to ON (II).



13. Measure the voltage between A/C compressor clutch relay 4P socket terminal No. 4 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 14.

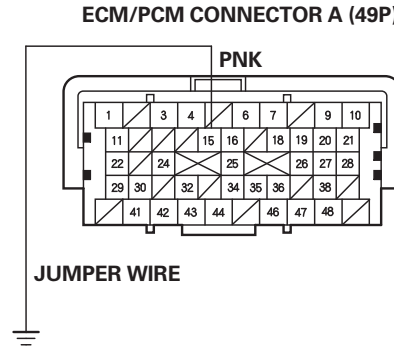
NO—Repair an open in the wire between the No. 10 (7.5 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay.■

14. Turn the ignition switch to LOCK (0).
15. Reinstall the A/C compressor clutch relay.
16. Make sure the A/C switch is OFF.
17. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module/powertrain control module (ECM/PCM) from damage.

18. Disconnect ECM/PCM connector A (49P).

19. Connect the ECM/PCM connector A (49P) terminal No. 15 to body ground with a jumper wire.



Terminal side of female terminals

20. Turn the ignition switch to ON (II).

Does the A/C compressor click?

YES—Check for loose wires or poor connections at ECM/PCM connector A (49P). If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-201).■

NO—Repair an open in the wire between the A/C compressor clutch relay and the ECM/PCM.■

21. Disconnect the jumper wire.
22. Disconnect the A/C compressor clutch 3P connector.

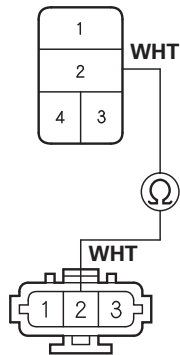
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Heating/Air Conditioning

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

23. Check for continuity between A/C compressor clutch relay 4P socket terminal No. 2 and A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET
Terminal side of female terminals



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, the thermal protector circuit, and the A/C compressor clutch field coil (see page 21-49). ■

NO—Repair an open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

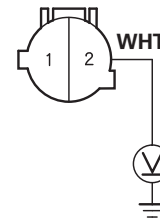
A/C Pressure Switch Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if any of the following items are operative; the condenser fan, the radiator fan, the A/C compressor, or if the heater is inoperative. Refer to the symptom troubleshooting index.
- Check the A/C high-side pressure.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Disconnect the A/C pressure switch 2P connector.
2. Turn the ignition switch to ON (II).
3. Measure the voltage between A/C pressure switch 2P connector terminal No. 2 and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 4.

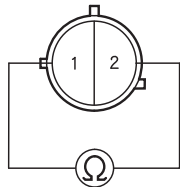
NO—Go to step 20.

4. Turn the ignition switch to LOCK (0).



5. Check for continuity between A/C pressure switch terminals No. 1 and No. 2.

A/C PRESSURE SWITCH



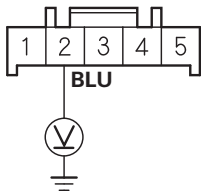
Is there continuity?

YES—Go to step 6.

NO—Replace the A/C pressure switch. ■

6. Reconnect the A/C pressure switch 2P connector.
7. Disconnect the A/C switch 5P connector.
8. Turn the ignition switch to ON (II).
9. Measure the voltage between A/C switch 5P connector terminal No. 2 and body ground.

A/C SWITCH 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Repair an open in the wire between the A/C pressure switch and the A/C switch. ■

10. Turn the ignition switch to LOCK (0).

11. Test the A/C switch (see page 21-43).

Is the A/C switch OK?

YES—Go to step 12.

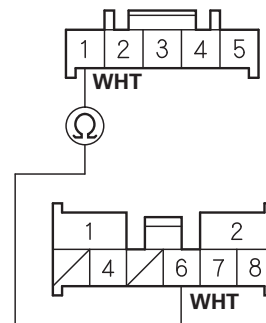
NO—Replace the A/C switch (see page 21-43). ■

12. Disconnect the heater fan switch 8P connector.

13. Check for continuity between A/C switch 5P connector terminal No. 1 and heater fan switch 8P connector terminal No. 6.

A/C SWITCH 5P CONNECTOR

Wire side of female terminals



HEATER FAN SWITCH 8P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair an open in the wire between the A/C switch and the heater fan switch. ■

14. Test the heater fan switch (see page 21-13).

Is the heater fan switch OK?

YES—Go to step 15.

NO—Replace the heater fan switch (see page 21-12). ■

15. Remove the evaporator temperature sensor (see page 21-44) and test it (see page 21-44).

Is the evaporator temperature sensor OK?

YES—Go to step 16.

NO—Replace the evaporator temperature sensor (see page 21-44). ■

16. Jump the SCS line with the HDS.

NOTE: This step must be done to protect engine control module/powertrain control module (ECM/PCM) from damage.

17. Disconnect ECM/PCM connector A (49P).

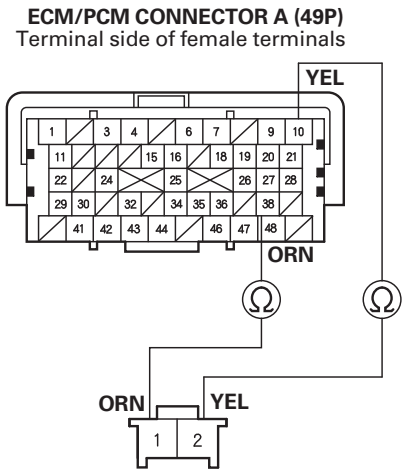
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Heating/Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

18. Check for continuity between the following terminals of ECM/PCM connector A (49P) and the evaporator temperature sensor 2P connector.

49P: 2P:
 No. 10 No. 2
 No. 38 No. 1



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
 Wire side of female terminals

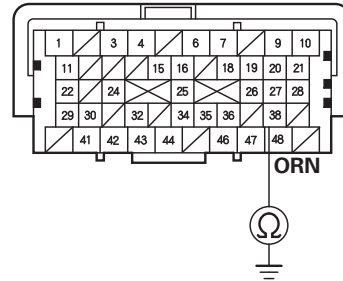
Is there continuity?

YES—Go to step 19.

NO—Repair an open in the wire(s) between the ECM/PCM and the evaporator temperature sensor. ■

19. Check for continuity between ECM/PCM connector A (49P) terminal No. 38 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair a short to body ground in the wire between the ECM/PCM and the evaporator temperature sensor. ■

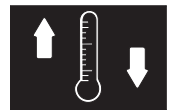
NO—Check for loose wires or poor connections at ECM/PCM connector A (49P), the evaporator temperature sensor 2P connector, the A/C pressure switch 2P connector, the A/C switch 5P connector, and at the heater fan switch 8P connector. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM. ■

20. Turn the ignition switch to LOCK (0).

21. Reconnect the A/C pressure switch 2P connector.

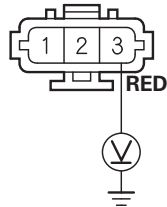
22. Disconnect the A/C compressor clutch 3P connector.

23. Turn the ignition switch to ON (II).



24. Measure the voltage between A/C compressor clutch 3P connector terminal No. 3 and body ground.

A/C COMPRESSOR CLUTCH 3P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 25.

NO—Go to step 27.

25. Turn the ignition switch to LOCK (0).
26. Test the A/C compressor thermal protector (see page 21-49).

Is the A/C compressor thermal protector OK?

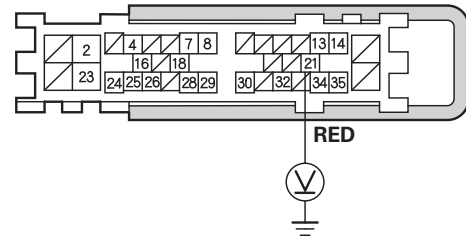
YES—Repair an open in the wire between the A/C compressor clutch and the A/C pressure switch. ■

NO—Replace the A/C compressor thermal protector (see page 21-52). ■

27. Turn the ignition switch to LOCK (0).
28. Reconnect the A/C pressure switch 3P connector.
29. Make sure the A/C switch is OFF.
30. Turn the ignition switch to ON (II).

31. Measure the voltage between under-dash fuse/relay box connector A (36P) terminal No. 21 and body ground with the under-dash fuse/relay box connectors connected.

UNDER-DASH FUSE/RELAY BOX CONNECTOR A (36P)



Wire side of female terminals

Is there battery voltage?

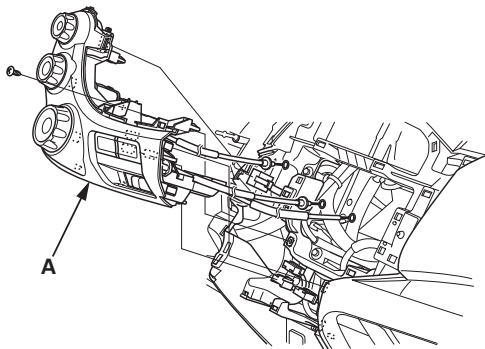
YES—Repair an open in the wire between the A/C compressor and the MICU. ■

NO—Check for loose wires or poor connections at the under-dash fuse/relay box. If the connections are OK, substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU. ■

Heating/Air Conditioning

Heater-A/C Control Panel Removal/Installation

1. Remove the center panel:
 - With navigation system (see page 23-151)
 - Without navigation system (see page 23-65)
2. Remove the control cables from the blower/heater unit (see page 21-10).
3. Pull out the right portion of the instrument panel (see page 20-91).
4. Remove the screw, and pull out the heater-A/C control panel (A) to access the electrical connectors.

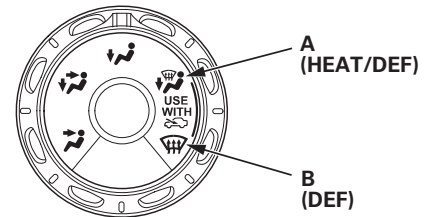


5. Disconnect the connectors, and remove the heater-A/C control panel along with the control cables.
6. Install the control panel in the reverse order of removal. After installation, operate the controls to make sure they work properly.

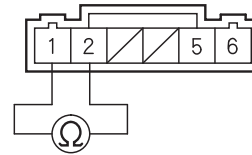
Mode Control Switch Test

1. Remove the heater-A/C control panel (see page 21-42).
2. Check for continuity between heater-A/C control panel 6P connector terminals No. 1 and No. 2, while rotating the mode control dial from (A) and (B).

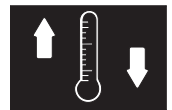
MODE CONTROL DIAL



HEATER-A/C CONTROL PANEL 6P CONNECTOR

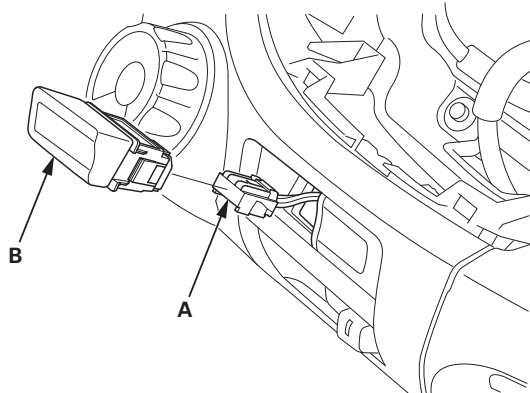


3. If there is no continuity, replace the mode control switch (see page 21-12).

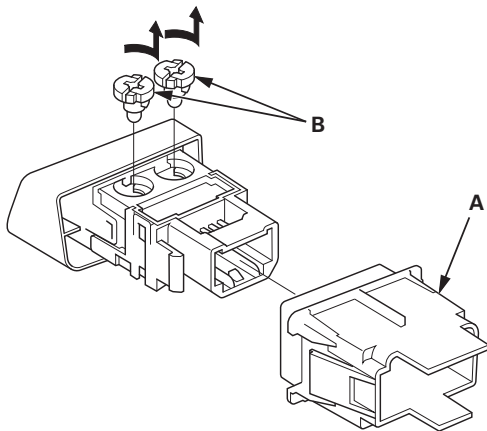


A/C Switch Replacement

1. Remove the heater-A/C control panel (see page 21-42).
2. Disconnect the 5P connector (A), and push out the A/C switch (B) from behind the heater control panel.



3. Remove the holder (A) and the bulbs (B).



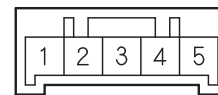
4. Install the A/C switch in the reverse order of removal.

A/C Switch Test

1. Remove the A/C switch (see page 21-43).
2. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	1	2	3	4	5
ON	○	○	○		
OFF				○	○

A/C SWITCH



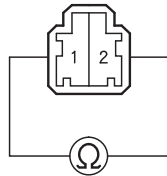
3. If the continuity is not as specified, replace the bulbs or the switch.

Heating/Air Conditioning

Evaporator Temperature Sensor Test

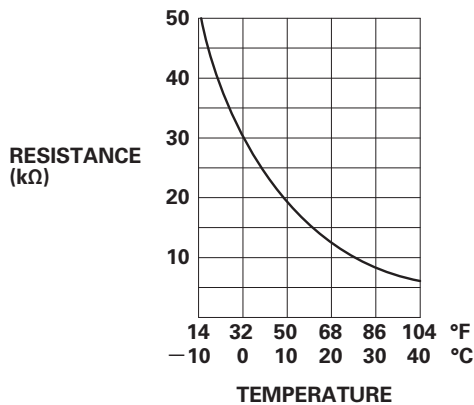
1. Remove the evaporator core and the evaporator temperature sensor (see page 21-44).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

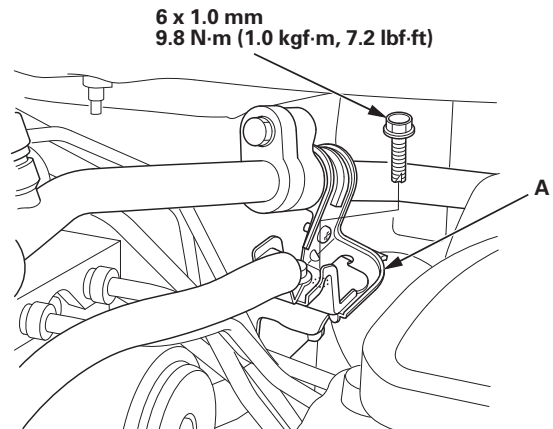
3. Pour warm water on the sensor, and check for a change in resistance.
4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



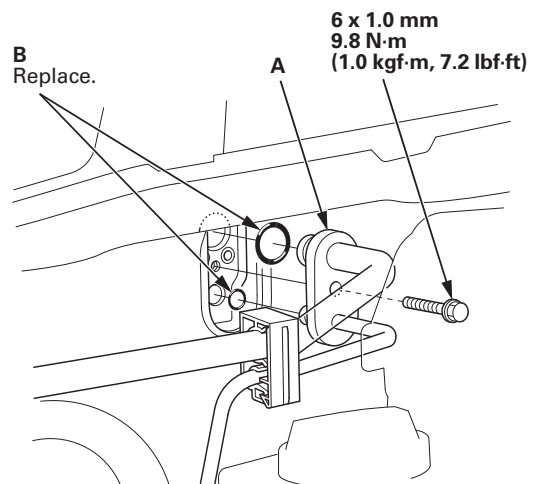
5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-44).

Evaporator Core Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-55).
2. Remove the bolt from the A/C line clamp (A).

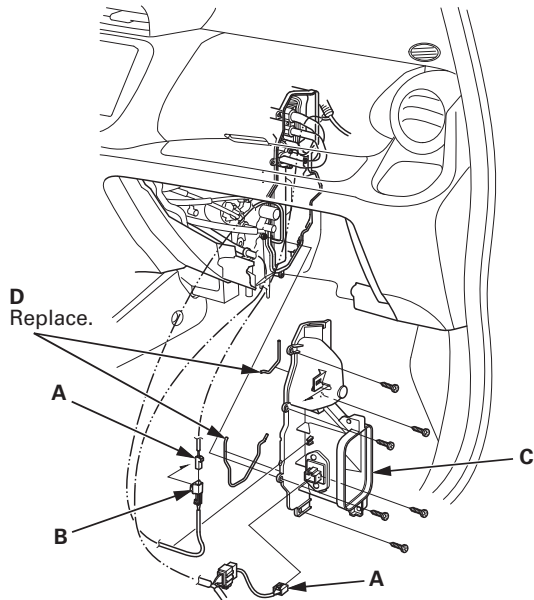


3. Remove the blower unit (see page 21-14).
4. Remove the bolt, then disconnect the A/C line (A) from the evaporator core and remove the O-rings (B).

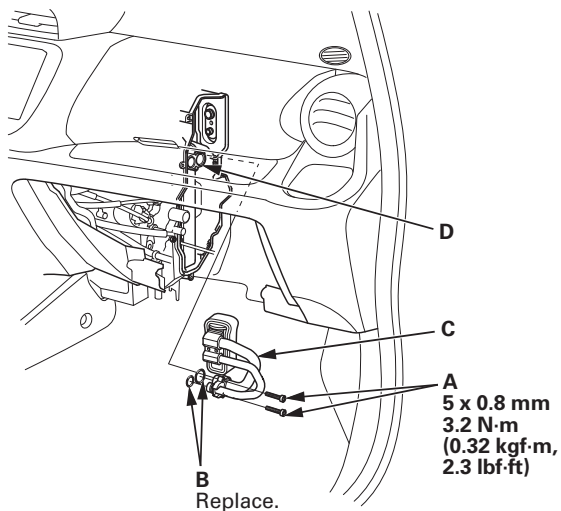




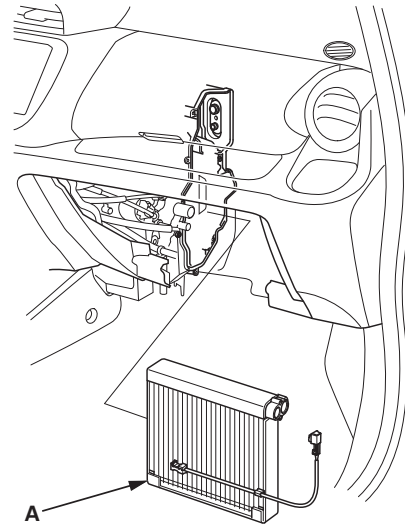
5. Disconnect the connectors (A) from the evaporator temperature sensor and the blower resistor, then remove the connector clip (B). Remove the self-tapping screws, the expansion valve cover (C), and the seals (D).



6. Remove the bolts (A), the O-rings (B), and the inlet and outlet lines (C) from the evaporator core (D). Be careful not to bend the lines.

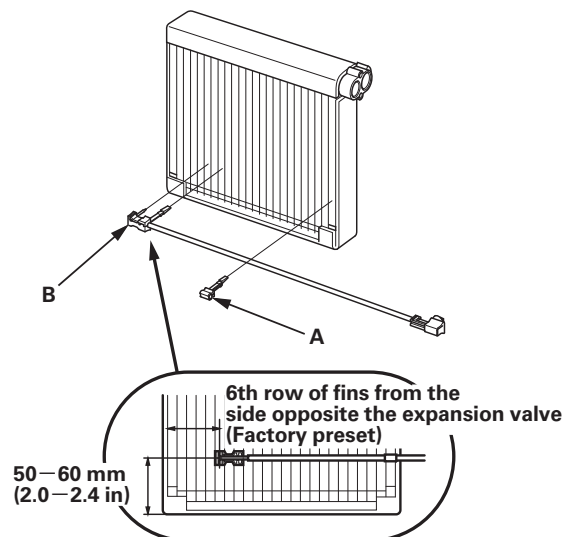


7. Carefully pull out the evaporator core (A).



8. Remove the clip (A) and the evaporator temperature sensor (B).

NOTE: At the factory, the evaporator temperature sensor is installed at the 6th row of fins from the side opposite of the expansion valve.

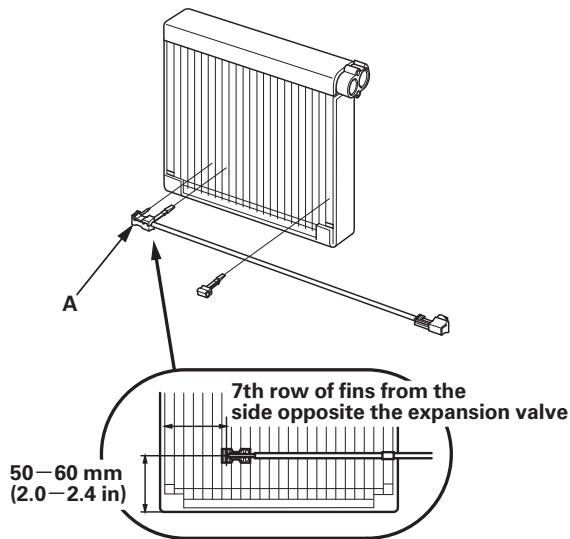


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Heating/Air Conditioning

Evaporator Core Replacement (cont'd)

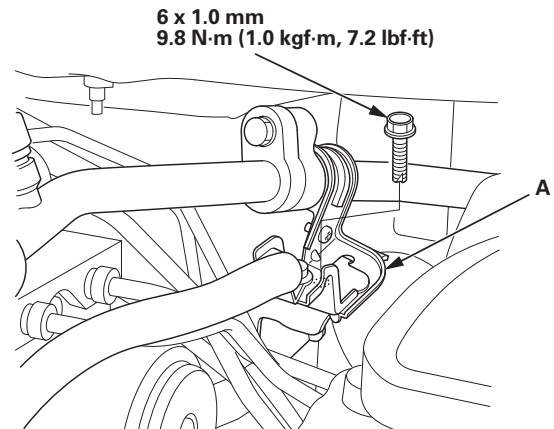
9. Reinstall the evaporator temperature sensor. If the evaporator is new, install the sensor on the 6th row of fins, counting from the side opposite the expansion valve. If you are reinstalling the old evaporator, install the sensor on the 7th row of fins.



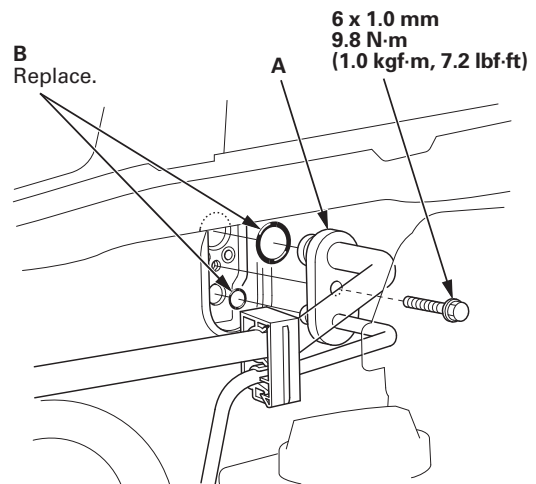
10. Install the evaporator core in the reverse order of removal, and note these items:
- If you're installing a new evaporator core, add refrigerant oil (SP-10) (see page 21-22).
 - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be 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.
 - Make sure that there is no air leakage.
 - Charge the system (see page 21-56).

Expansion Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-55).
2. Remove the bolt from the A/C line clamp (A).

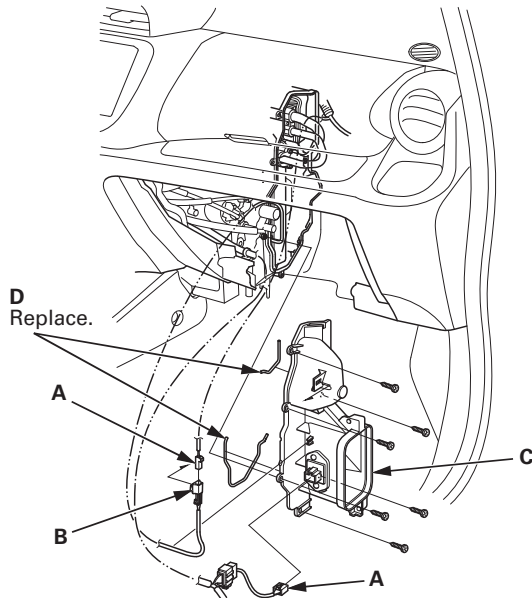


3. Remove the blower unit (see page 21-14).
4. Remove the bolt, then disconnect the A/C line (A) from the evaporator core and remove the O-rings (B).

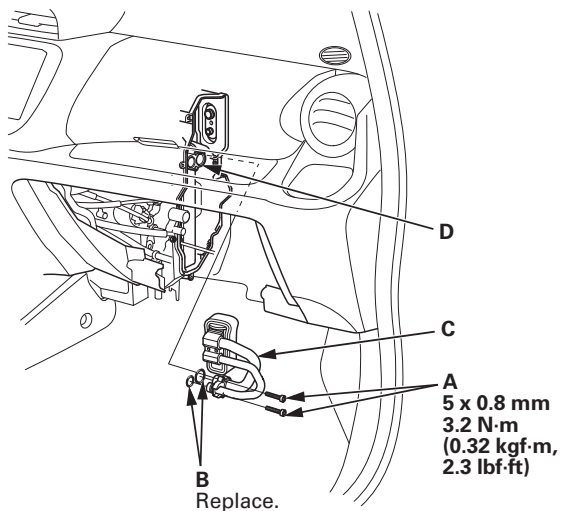




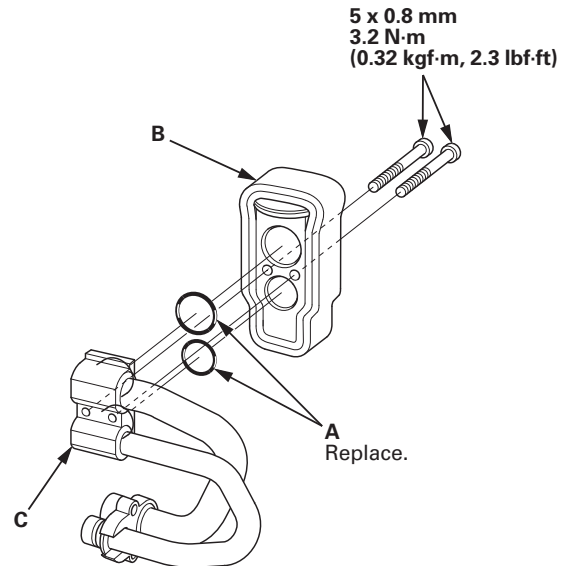
5. Disconnect the connectors (A) from the evaporator temperature sensor and the blower resistor, then remove the connector clip (B). Remove the self-tapping screws, the expansion valve cover (C), and the seals (D).



6. Remove the bolts (A), the O-rings (B), and the inlet and outlet lines (C) from the evaporator core (D). Be careful not to bend the lines.



7. Remove the bolts, O-rings (A) and the expansion valve (B) from the inlet and outlet lines (C).



8. Install the expansion valve in the reverse order of removal, and note these items:

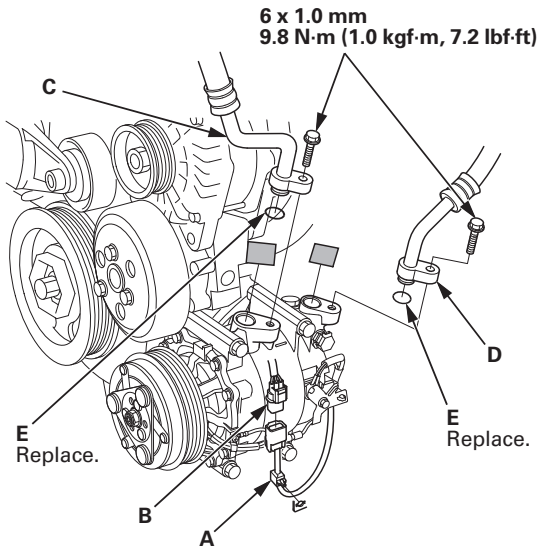
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- 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.
- Make sure that there is no air leakage.
- Charge the system (see page 21-56).

Heating/Air Conditioning

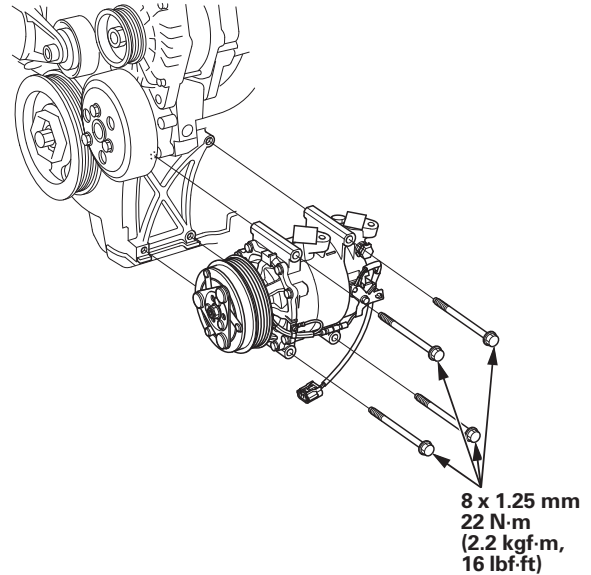
A/C Compressor Replacement

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

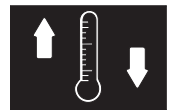
1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-55).
3. Remove the splash shield (see page 20-172).
4. Remove the drive belt (see page 4-29).
5. Remove the compressor clutch harness clump (A) from the condenser fan shroud, then disconnect the compressor clutch connector (B). Remove the bolts, then disconnect the suction line (C) and the discharge line (D) from the A/C compressor, and remove the O-rings (E). Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



6. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.



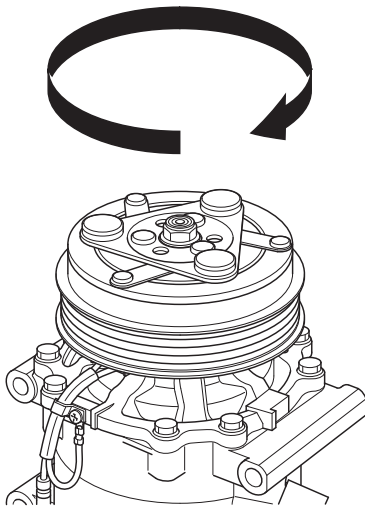
7. Install the compressor in the reverse order of removal, and note these items:
 - Inspect the A/C lines for any signs of contamination.
 - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
 - Use refrigerant oil (SP-10) for HFC-134a SANDEN A/C compressors 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 refrigerant oil on the vehicle; it may damage the paint; if refrigerant oil contacts the paint, wash it off immediately.
 - Charge the system (see page 21-56).



A/C Compressor Clutch Check

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-50).
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Also check for grease leakage from the bearing. Replace the clutch set with a new one if it is noisy, or has excessive play/drag, or has bearing grease contamination on the clutch faces (see page 21-50).

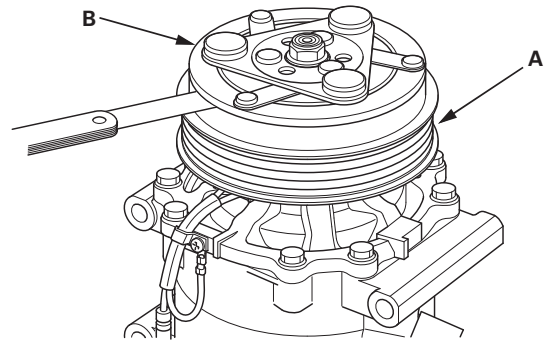
NOTE: The rotor pulley and the armature plate are mated at the factory by a burnishing operation. Always replace the pulley and the plate as a set. Replacing only one part of the clutch set will cause clutch slippage.



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 21-50) and add or remove shims as needed to increase or decrease clearance.

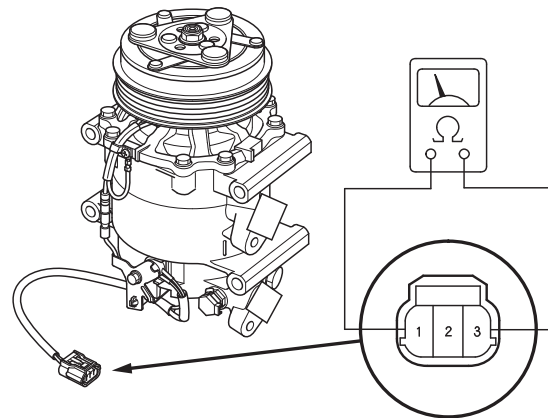
Clearance: 0.35—0.65 mm (0.014—0.026 in)

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



4. Check for continuity between A/C compressor clutch connector terminals No. 1 and No. 3. If there is no continuity, replace the thermal protector (see page 21-52).

NOTE: The thermal protector will have no continuity above about 252 to 262 °F (122 to 128 °C). When the temperature drops below about 241 to 219 °F (116 to 104 °C), the thermal protector will have continuity.



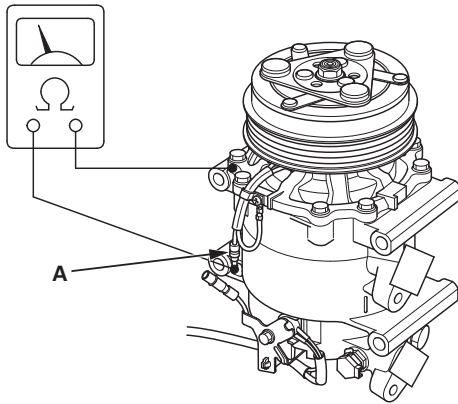
(cont'd)

Heating/Air Conditioning

A/C Compressor Clutch Check (cont'd)

5. Disconnect the field coil connector (A). Check the resistance of the field coil. If the resistance is not within specifications, replace the field coil (see page 21-50).

Field Coil Resistance: 3.15—3.45 Ω 68°F (20°C)



6. Remove the armature plate (see page 21-50), and inspect the armature plate and pulley friction surfaces for wear. If there is excessive wear, roughness, or scoring, replace the clutch set.
7. Inspect the friction surfaces and the compressor shaft hub for excess oil. If excess oil is present, and it is not from the engine or power steering system, then the compressor shaft seal is leaking. Replace the compressor (see page 21-48).

A/C Compressor Clutch Overhaul

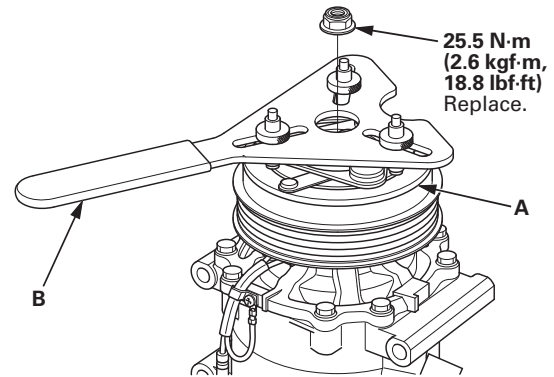
Special Tools Required

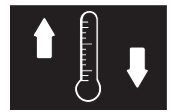
A/C Clutch Holder Robinair 10290, commercially available

NOTE:

- Do not use a hammer to remove the snap rings. Using a hammer damages compressor.
- Do not hammer or pry on the pulley to remove it. If the pulley is difficult to remove, use a commercially available pulley removing tool. Make sure the jaws of the pulling tool engage the back face of the pulley, not the pulley grooves.

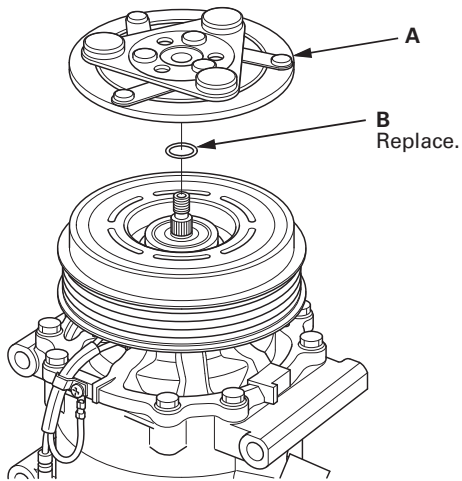
1. Remove the center nut while holding the armature plate (A) with a commercially available A/C clutch holder (B).



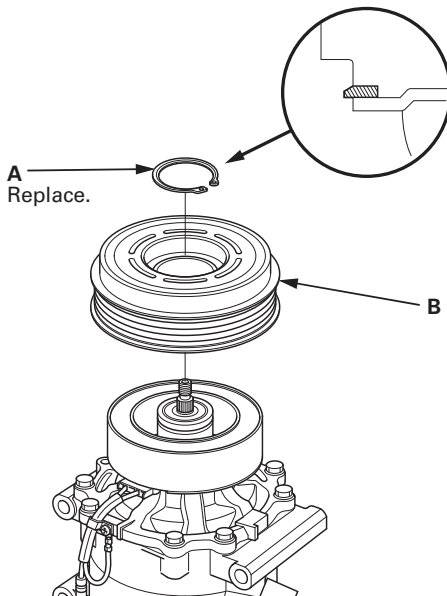


- Remove the armature plate (A) and the shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-49).

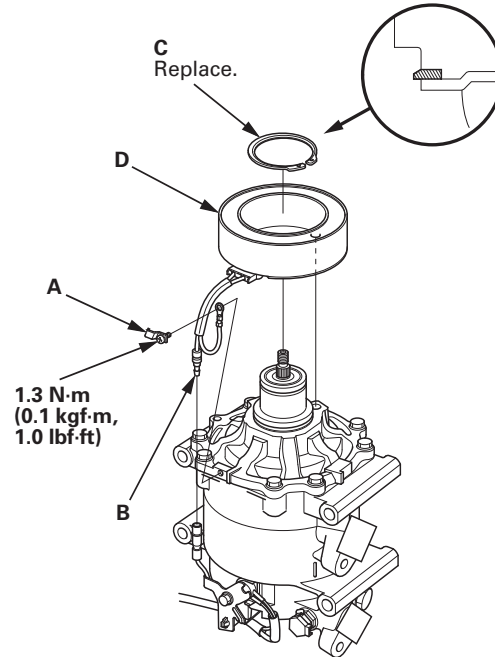
NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



- 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 A/C compressor.



- Remove the bolt and the holder (A), then disconnect the field coil connector (B). Remove the snap ring (C) with snap ring pliers, then remove the field coil (D). Be careful not to damage the field coil or the A/C compressor.



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

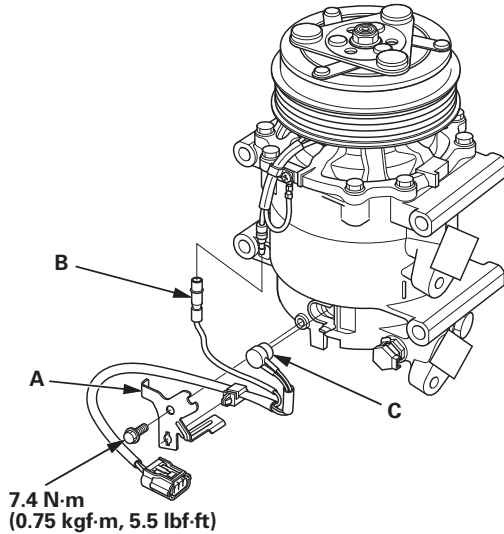
- When replacing the field coil, check that the new coil has the correct resistance (see page 21-49).
- Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
- Clean the rotor pulley and the A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
- Install new snap rings, note the installation direction, and make sure they are fully seated in the grooves.
- Make sure that the rotor pulley turns smoothly after it's reassembled.
- Route and clamp the wires properly to prevent damage by the rotor pulley.

- After reinstallation, cycle the A/C clutch approximately 20 times by running the engine at 1,500–2,000 RPM and setting the A/C switch to ON. This procedure seats the clutch friction surfaces and increases clutch torque capacity.

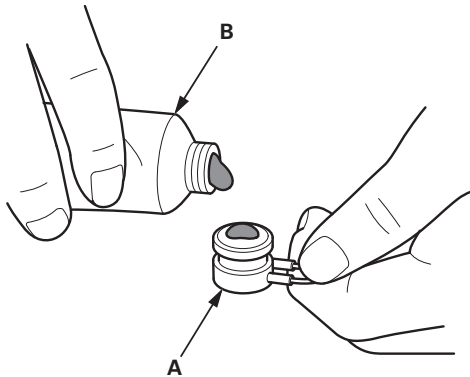
Heating/Air Conditioning

A/C Compressor Thermal Protector Replacement

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



2. Replace the thermal protector (A) with a new one, and apply silicone grease (P/N 08798-9028) (B) to the bottom of the thermal protector.

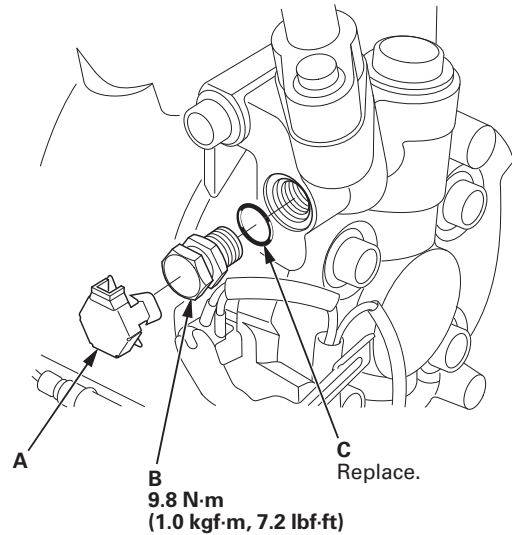


3. Install the thermal protector in the reverse order of removal.

A/C Compressor Relief Valve Replacement

NOTE: If the A/C compressor relief valve has opened, diagnose and correct the cause of the excessive A/C refrigerant pressure, then replace the relief valve.

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-55).
2. Remove the relief valve cover (A), the relief valve (B), and the O-ring (C). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.

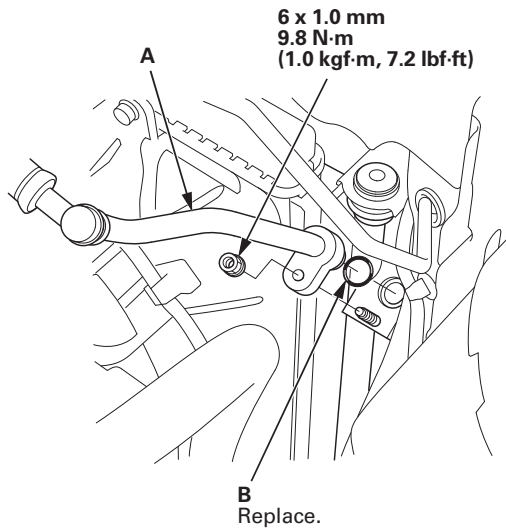


3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug you installed in step 2, then install and tighten the relief valve.
6. Charge the system (see page 21-56).

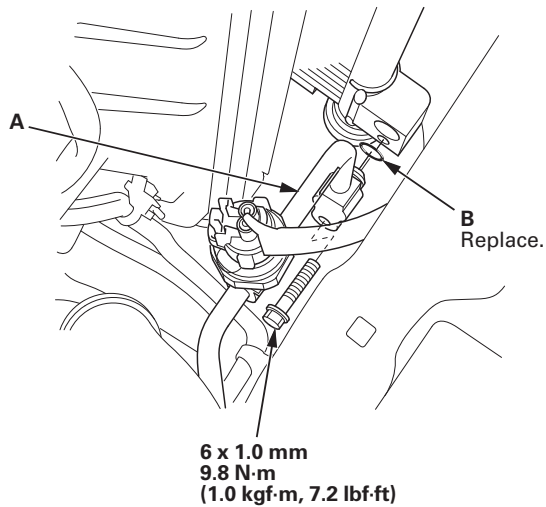


A/C Condenser Replacement

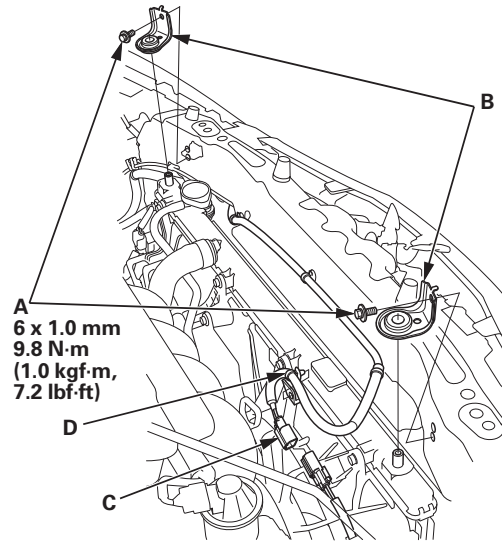
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-55).
2. Remove the nut, then disconnect the discharge hose (A) from the A/C condenser. Remove the O-ring (B), from the discharge hose.



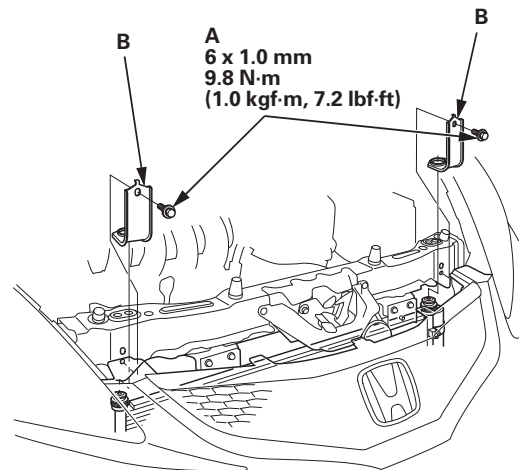
3. Remove the bolt, then disconnect the receiver line (A) from the A/C condenser. Remove the O-ring (B), from the receiver line.



4. Remove the bolts (A) and the radiator upper mount brackets (B).



5. Disconnect the fan motor connector (C), then remove the harness clamp (D).
6. Remove the front grille cover (see page 20-159).
7. Remove the bolts (A) and the condenser upper mount brackets (B).



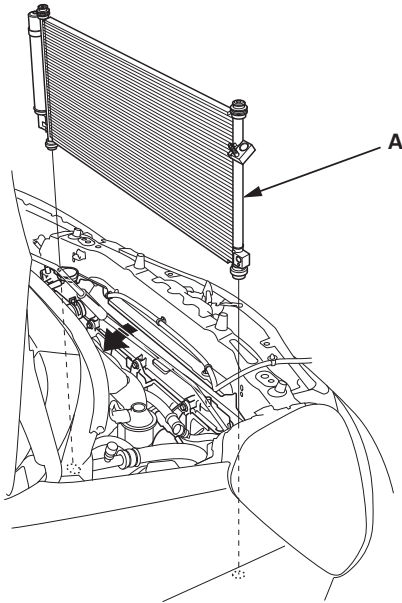
(cont'd)

Heating/Air Conditioning

A/C Condenser Replacement (cont'd)

8. Remove the A/C condenser (A) by lifting it up.

NOTE: Be careful not to damage the radiator or condenser fins when removing the A/C condenser.



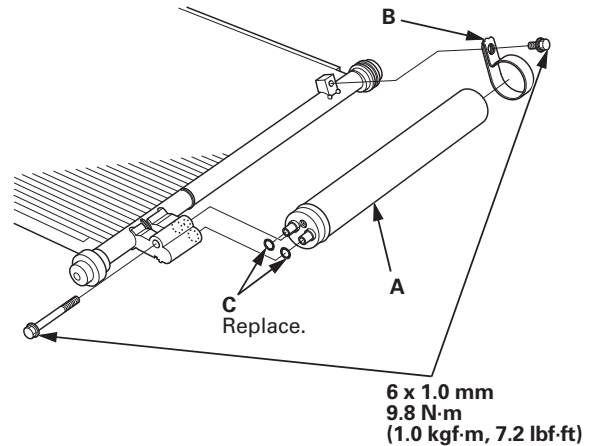
9. Install the A/C condenser in the reverse order of removal, and note these items:

- If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see page 21-22).
- 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 A/C condenser fins when installing the A/C condenser.
- Charge the system (see page 21-56).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see page 21-53).
2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.



Refrigerant Recovery

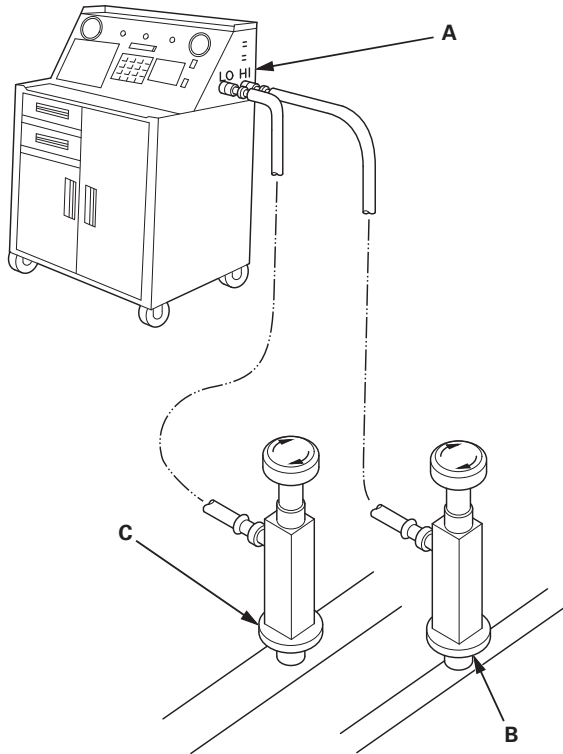
⚠ CAUTION

- 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.

NOTE:

- 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 an 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.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Do not allow moisture to contaminate the A/C system oil. Moisture in the oil is difficult to remove, and it can damage the A/C compressor.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

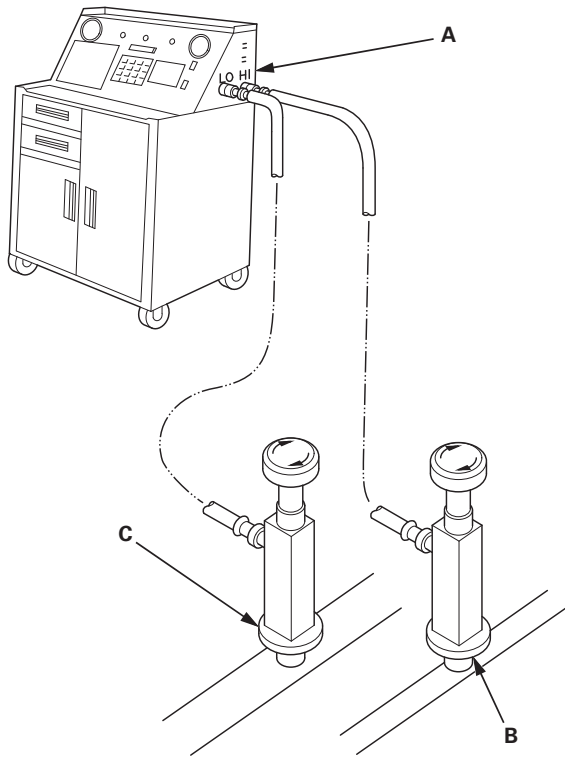
1. When an A/C system has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, refrigerant oil should be drained and replaced with new oil, and the system should be evacuated for several hours.

(cont'd)

Heating/Air Conditioning

System Evacuation (cont'd)

2. Connect an 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. Recover the refrigerant, if any, from the A/C system (see page 21-55).



3. Evacuate the system. The vacuum pump should run for a minimum of 45 minutes to eliminate all moisture from the system. When the suction gauge reads -93.3 kPa (-700 mmHg, -27.6 inHg) for at least 45 minutes, close all valves, and turn off the vacuum pump.
4. If the suction gauge does not reach approximately -93.3 kPa (-700 mmHg, -27.6 inHg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see page 21-57).

System Charging

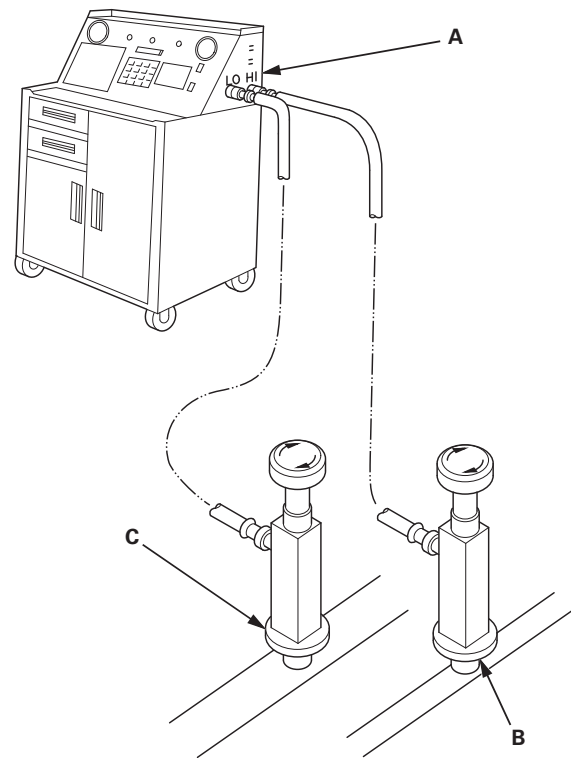
⚠ CAUTION

- 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.

NOTE:

- 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 an 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.





Refrigerant Leak Check

2. Recover the refrigerant in the A/C system (see page 21-55).
3. Evacuate the system (see page 21-55). If the system cannot reach a vacuum of -93.3 kPa (700 mmHg, 27.6 inHg) in 15 minutes, or cannot hold a vacuum for at least 15 minutes, there is probably a leak. Do the refrigerant leak check (see page 21-57), and repair any leaks before charging the system.
4. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only SP-10 refrigerant oil.
5. 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:

370—420g

0.37 to 0.42 kg

0.82 to 0.93 lbs

13.1 to 14.8 oz

6. Check for refrigerant leaks (see page 21-57).
7. Check for system performance (see page 21-63).

Special Tools Required

- Leak Detector YGK-H-10PM*
 - Leak Detector HLD-100*
 - Leak Detector TIFZX-1*
 - OPTIMAX Jr. A/C Leak Detection Kit TRP124893*
- *Available through the Honda Tool and Equipment Program; call 888-424-6857

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.

NOTE:

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

Leak Detector Usage Tips (Refer to the Operator's Manual for complete operating instructions):

- Position the vehicle in a wind-free work area. This will aid in detecting small leaks.
- When using the leak detector for the first time, allow it to warm up for 2 minutes with the probe in a clean atmosphere. This lets the temperature sensor in the detector stabilize.
- The calibration check should be done in the "Search 2" mode. Once that is done, the other check modes do not need calibrating.
- When leak checking through the HVAC module drain hose, avoid drawing water into the probe. Water can damage the internal pump and sensor.
- Avoid creasing the flexible probe extension. Creases can restrict air flow and give false readings.
- Because the detector recalibrates itself for ambient gases, it may be necessary to move the detector away from the leak to clear the sensor. Once the sensor has cleared, recheck the suspected leak.
- When removing the clear probe tip, be careful not to lose the flow ball.
- R-134a is heavier than air; always check below and to the sides of all potential leak sources.
- Halogen leak detectors are sensitive to chemicals: windshield washing solutions, solvents/cleaners, and some vehicle adhesives. Keep these chemicals out of the area when doing leak detection.

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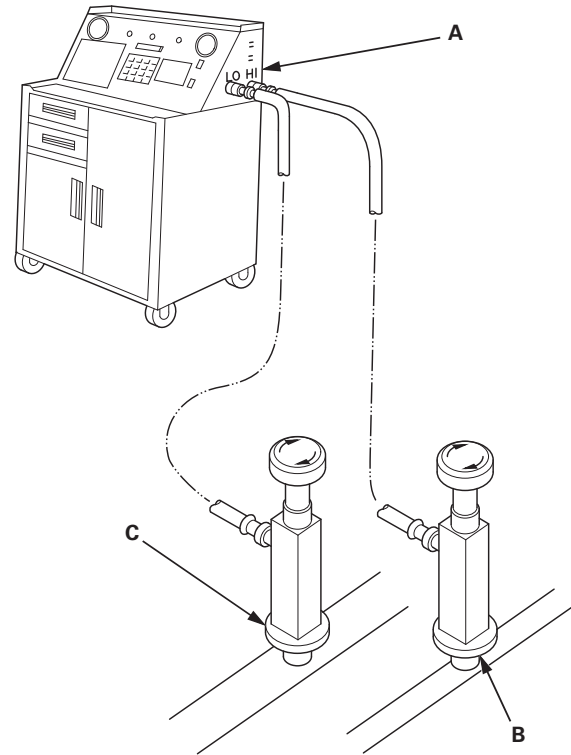
Heating/Air Conditioning

Refrigerant Leak Check (cont'd)

Fluorescent Dye Usage Tips

- Use only Tracer-Stick single dose fluorescent dye capsules from Tracerline®. Other dyes contain solvents that may contaminate the refrigerant oil, leading to component failure.
- Adding excessive amounts of dye can damage the A/C compressor.
- PAG oil is water-soluble, so condensation on the evaporator core or the refrigerant lines may wash the PAG oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the HVAC module drain.
- After checking and repairing leaks, thoroughly clean any residual dye from the areas where leaks were found. Use GLO-AWAY dye cleaner, from Tracerline®, and hot water to remove the dye (follow the instructions on the bottle). Residual dye stains can cause misdiagnosis of any future A/C system leaks.
- If any refrigerant dye contacts an exterior paint surface, remove it by doing this:
 - Carefully wash the affected surfaces to remove any dirt, and to prevent paint scratching.
 - Mix water and isopropyl alcohol in a 50/50 mixture. Soak a soft 100 percent cotton towel with the water/alcohol mixture, and place the cloth on the affected areas to remove the dye.
 - After removing the dye with the water/alcohol-soaked cloth, carefully wash the affected areas, and check that there is no remaining dye.

1. Connect an 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. Recover refrigerant from the A/C system (see page 21-55), and evacuate the system (see page 21-55). If the system achieves a vacuum of approximately 93.3 kPa (700 mmHg, 27.6 inHg) in 15 minutes, and holds the vacuum for 15 minutes, then the system does not have a leak at this time. If the system cannot achieve or hold a vacuum, continue the refrigerant leak check.
3. Open the high pressure valve to charge the system to the specified capacity, then shut off the valve, and disconnect the charging station fittings.

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

Refrigerant Capacity:

370—420g
0.37 to 0.42 kg
0.82 to 0.93 lbs
13.1 to 14.8 oz



4. With the engine OFF, use a halogen leak detector first to detect the leak source. Follow a continuous path in order to ensure that you will not miss any possible leaks. Test the following areas of the system for leaks:

Possible Leak Area	Diagnostic Procedure with the Leak Detector	Notes
Service Ports	<ul style="list-style-type: none">• Check the service ports with the detector.• If the detector “sniffs” a leak, use fluorescent dye to confirm it.	When capping the service ports, ensure that the seals on the port caps are in place, and that the caps are tight. The caps are used as the final seals in the system.
A/C Condenser	If the detector “sniffs” a leak, use fluorescent dye to confirm it.	<ul style="list-style-type: none">• Check for joints or connections coated with oily dust.• Check for damaged and corroded areas.• Check all fittings, couplings, brazed/welded areas and areas around attachment points.• Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak.• If you detect a leak, blow compressed air over the area, then recheck for leaks. For large leaks, cleaning the area with compressed air may help you pinpoint the leak source.
A/C Lines (Low pressure side)	<ul style="list-style-type: none">• Wiggle the rubber hoses when checking crimped metal ends.• If the detector “sniffs” a leak, use fluorescent dye to confirm it.	<ul style="list-style-type: none">• Check all fittings, couplings, pressure switches, brazed/welded areas, and areas around attachment points on A/C lines and components.• Check for damaged and corroded areas.• Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak.

5. Close the quick coupler valves, then disconnect the quick couplers from the vehicle service ports.
6. Attach the universal connect set, from the Optimax Jr. Leak Detection Kit, to the service valve fitting. Close the control valve (the black knob on the connect set).
7. Attach the charging station low pressure hose quick coupler to the service valve fitting, and open the quick coupler valve. Evacuate the connect set using the charging station vacuum pump, then close the quick coupler valve.
8. Detach the universal connect set, and install a Tracer-Stick® dye capsule between the connect set and the service valve fitting (see the manufacturer's instructions for more detail).
9. Attach the quick coupler on the universal connect set to the low pressure service port on the vehicle. Open the charging station low pressure hose quick coupler valve, but do not open the control valve.
10. Start the engine, and set the A/C system to maximum cooling. Open the control valve to let refrigerant and the dye enter the A/C system through the low pressure service port. Close the control valve when the Tracer-Stick® dye capsule is empty.

(cont'd)

Heating/Air Conditioning

Refrigerant Leak Check (cont'd)

11. Run the engine and A/C system for 15 minutes to thoroughly circulate the dye. Then shut the engine off, and inspect the following areas of the system for leaks.

NOTE:

- Check for leaks in a dark work area, and use the UV light and the special glasses from the leak check kit. Other UV lights may not work well with the Tracer-Stick® dye.
- Small leaks may take up to 1 week of vehicle operation (with normal A/C use) to become visible.

Possible Leak Area	Diagnostic Procedure with Fluorescent Dye
Service Ports	If a leak is found, replace the Schrader valve on the service port.
A/C Lines	<ul style="list-style-type: none"> • Use a permanent marker pen to circle the leak area. • If a leak is found, remove and replace the A/C line (see page 21-23).
A/C Condenser	<ul style="list-style-type: none"> • If a leak is found, remove the A/C condenser (see page 21-53). • Determine whether leak is in the condenser or the receiver/dryer. • Use a permanent marker pen to circle the leak area. • Replace either the receiver/dryer (see page 21-54), or the A/C condenser (see page 21-53), depending upon which is leaking.
A/C Compressor	<ul style="list-style-type: none"> • Check for leaks at all of the A/C compressor joints, the clutch center, the A/C compressor front housing bolts, and the scroll bolts on the back of the A/C compressor. • If a leak is found, use a permanent marker pen to circle the leak area. • If the A/C compressor relief valve appears to be leaking, determine whether the leak is coming from the relief valve, or the joint between the A/C compressor casing and the valve. <ul style="list-style-type: none"> – If the leak is from the relief valve, diagnose and repair the cause of excessive A/C system pressure, then replace the compressor relief valve (see page 21-52). – If the leak is from the casing/valve joint, replace the compressor relief valve (see page 21-52). • If the leak is coming from the suction hose and/or discharge hose fittings on the A/C compressor, clean the A/C fittings, and replace the suction/discharge fitting O-rings. • For all other A/C compressor leaks, remove and replace the A/C compressor (see page 21-48).
Evaporator	<ul style="list-style-type: none"> • Start checking for evaporator leaks by illuminating the evaporator drain tube area. • If a leak is found, remove the evaporator core (see page 21-44). • Determine whether leak is from the evaporator or the expansion valve. • Use a permanent marker pen to circle the leak area. • Replace the expansion valve (see page 21-46), or the evaporator core (see page 21-44), depending upon which is leaking.



A/C System Noise Check

⚠ 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 A/C system noise check will help you determine the source of abnormal A/C system noise.

NOTE:

- If an 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.
 - Identify the conditions when the noise occurs. The weather, the vehicle speed, the vehicle being in gear or in neutral, the engine temperature, or other conditions may be factors in determining the noise source.
 - Do an A/C system inspection (see page 21-24), and correct any problems found prior to diagnosing abnormal noises.
 - Abnormal A/C noises can be misleading. For example, a sound similar to a failed bearing may be caused by loose fasteners, loose mounting brackets, or a faulty A/C compressor clutch assembly.
1. Inspect the air inlet grille in the cowl cover for debris. If debris is present, remove it.
 2. Sit inside the vehicle, close the doors and windows, and turn the ignition switch to ON (II), but do not start the engine. Cycle the HVAC system through all blower speeds and all air distribution modes to determine where and when the noise occurs.

3. Operate the blower at each speed with the engine and A/C off, and check for unusual noises and excessive vibration. If noise and/or vibration are present, do the following checks:

- 1. If the noise or vibration occurs only in a specific mode or setting, then check these items:
 - Operation of the mode control cable, door, and linkage
 - Operation of the air mix control cable, door, and linkage
 - Operation and adjustment of the recirculation control cable, door, and linkage
- 2. If there is a squeaking or chirping noise, but no unusual vibration, replace the blower motor (see page 21-15).
- 3. Remove the blower unit (see page 21-14), and check for foreign material (leaves or twigs, for example) on the blower motor and fan. If foreign material is present, remove it, and recheck for noise. If you don't find any foreign material, remove the blower motor (see page 21-15), and check these items:
 - Check if the fan blades are cracked or broken
 - Make sure the fan retainer is tight
 - Inspect the fan alignment on the blower motor shaft

Replace the blower motor if any problems are present.

4. Set up the vehicle for the running A/C checks:

- Select a quiet area for testing
- Apply the parking brake
- Shift the vehicle in PARK or in Neutral
- Start the engine
- Set the temperature control dial to Max Cool
- Set the mode control switch to Vent
- Set the fan control dial to minimum (but not OFF)
- Turn the A/C switch ON

Switch the A/C compressor on and off several times to clearly identify the sound during A/C compressor operation. Listen to the noise while the A/C compressor clutch is engaged and disengaged. Probe the A/C system with a stethoscope to pinpoint the noise.

NOTE: If the noise does not change when the A/C compressor clutch engages or disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.

(cont'd)

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A/C System Noise Check (cont'd)

5. Turn the ignition switch to LOCK (0), and check the drive belt for excessive wear, oil contamination, improper routing (see page 4-29), or a faulty belt tensioner (see page 4-30). Correct any problems found. Start the engine, run the A/C system, and check if the noise is coming from the drive belt, the belt tensioner or any of the pulleys. Repair or replace any faulty components.
6. Listen for noises coming from the A/C lines, the A/C hoses, the condenser, the evaporator, the receiver/drier, or the expansion valve, and check these items:
 - Noises caused by A/C components touching other components or the body. Reroute or insulate the A/C component(s) as needed, and recheck for noise.
 - Loose, damaged, or excessively worn A/C components or mounting hardware. Repair or replace the faulty component(s) of hardware, and recheck for noise.
 - A moaning noise from the A/C suction line. If there is a moaning noise, check the system refrigerant charge (see page 21-56). If the refrigerant charge is OK, replace the receiver/dryer (see page 21-54).
7. Check the operation of the A/C compressor clutch:
 - Make sure the A/C compressor clutch engages without slipping. If the clutch does not engage, troubleshoot the A/C compressor clutch circuit (see page 21-36). If the A/C compressor clutch slips, replace the complete clutch assembly (see page 21-50).
 - Make sure the A/C compressor clutch disengages. If the clutch does not disengage, do the A/C compressor clutch circuit troubleshooting (see page 21-36). If the clutch is OK, do the A/C compressor clutch check (see page 21-49), and see if the clutch is mechanically jammed. If there are no electrical or mechanical problems with the A/C compressor clutch, replace the A/C compressor (see page 21-48).
 - Make sure the A/C compressor clutch cycles normally. If the A/C compressor clutch is cycling rapidly, the A/C system is probably low on refrigerant due to a leak. Do the refrigerant leak check (see page 21-57). If the refrigerant charge is OK, and there are no leaks, troubleshoot the A/C compressor clutch circuit (see page 21-36).
8. Listen with a stethoscope for noises coming from the A/C compressor, and check these items:
 - The noise changes when the A/C compressor clutch disengages. If the noise does not change when the A/C compressor disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.
 - The A/C system operating pressures are normal. If the system pressures are abnormal, troubleshoot the problem using the pressure test table in the A/C system test (see page 21-63). Correct the pressure-related problem(s), and recheck for noise.
 - The A/C compressor hose connections, mounting brackets, and fasteners are in good condition. If any of these components are loose, damaged, or excessively worn, repair or replace the faulty component(s), and recheck for noise. If these components are in good condition, and the noise is still present, replace the A/C compressor (see page 21-48).



A/C System Test

Performance Test

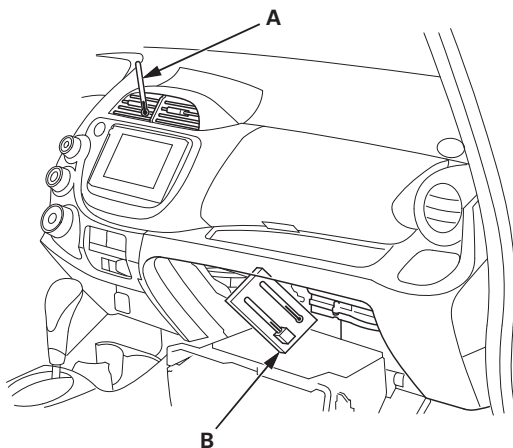
⚠ CAUTION

- 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 A/C system is operating within specifications.

NOTE:

- 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. Do the A/C system inspection (see page 21-24), and correct any problems found.
 2. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
 3. Determine the relative humidity and air temperature.
 4. Open the globe box. Release the glove box stop on each side, then let the glove box hang down (see page 20-96).
 5. Insert a thermometer (A) in the center vent.



6. Place a thermometer (B) near the blower unit's recirculation inlet duct.

7. Test conditions:

- Move the vehicle out of direct sunlight and let it cool down to the surrounding (ambient) temperature. If necessary, wash the vehicle to cool it down more quickly.
- The ambient temperature must be at least 60 °F (16 °C).
- Open the hood.
- Open the front doors.
- Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control knob to Recirculate.
- Turn the A/C switch ON and the fan switch to Max.
- Run the engine at 1,500 rpm.
- No driver or passengers in the vehicle.

8. Inspect the A/C components for the following conditions:

- A/C compressor clutch not engaged
- Abnormal frost areas
- Unusual noises

If you observe any of these conditions, refer to the symptom troubleshooting index.

9. 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 discharge (high) and suction (low) system pressures on the A/C gauges.

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Heating/Air Conditioning

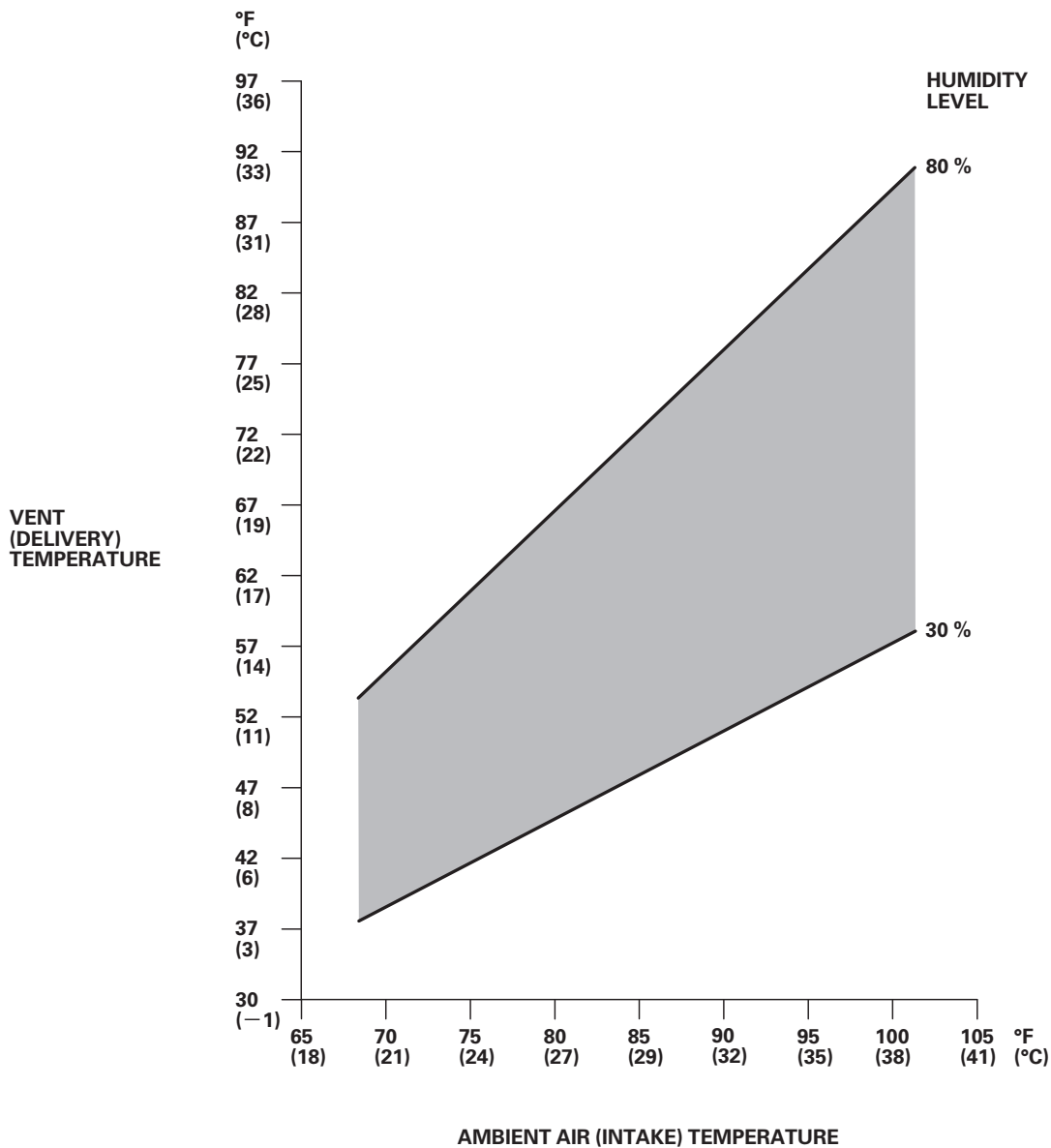
A/C System Test (cont'd)

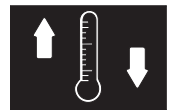
10. To complete the vent (delivery)/ambient air (intake) temperature chart:

- Mark the vent (delivery) temperature on the vertical line.
- Mark the ambient air (intake) temperature on the bottom line.
- Draw a vertical line from the ambient air (intake) temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark until it intersects the vertical line.

NOTE: The vent temperature and the ambient air temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

Ambient Air (Intake) Temperature vs. Vent (Delivery) Temperature



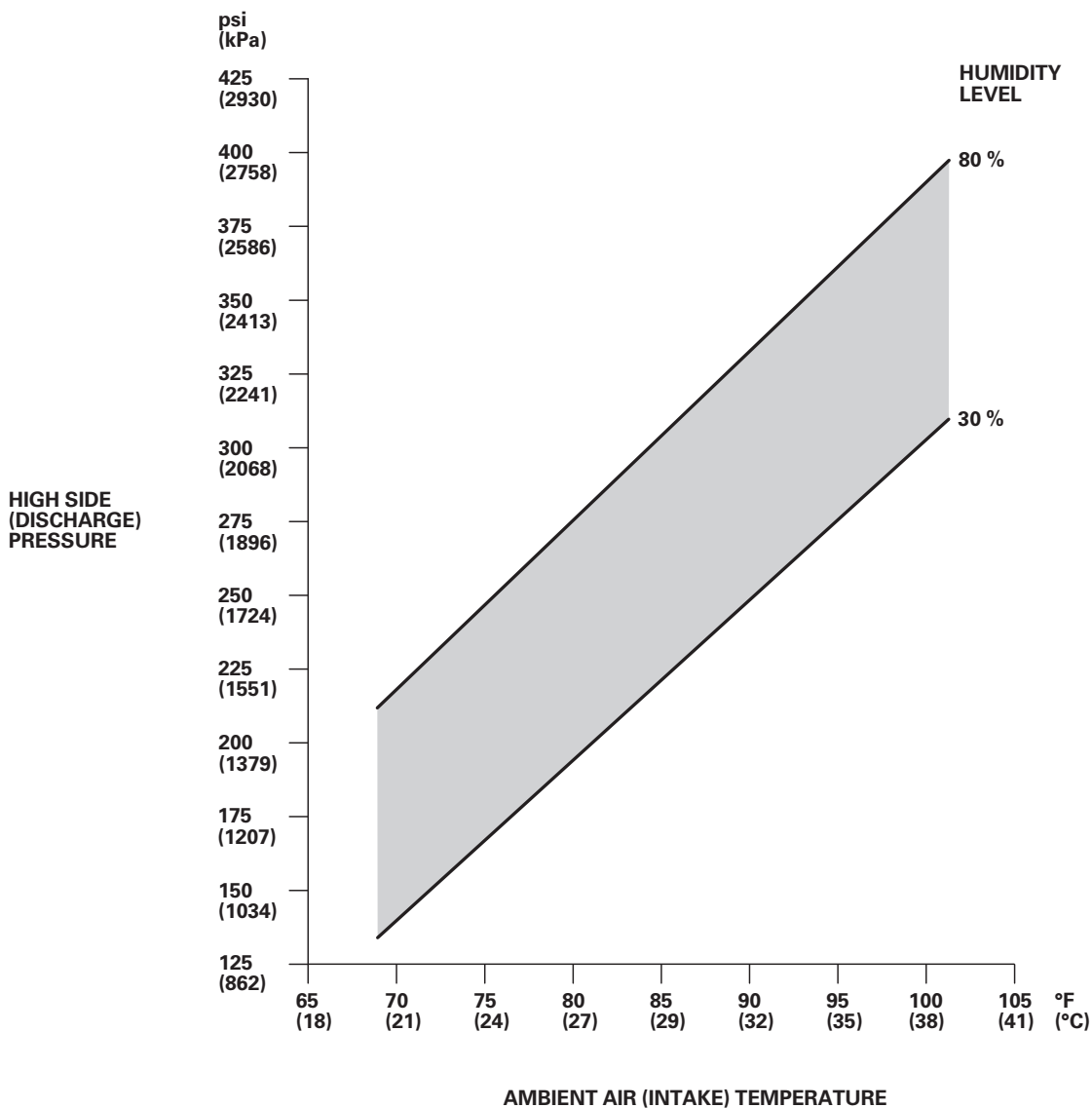


11. To complete the high side (discharge) pressure/ambient air (intake) temperature chart:

- Mark the high side (discharge) pressure temperature on the vertical line.
- Mark the ambient air (intake) temperature on the bottom line.
- Draw a vertical line from the ambient air (intake) temperature mark.
- Draw a horizontal line from the high side (discharge) pressure mark until it intersects the vertical line.

NOTE: The high side pressure and the ambient air temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

Ambient Air (Intake) Temperature vs. High Side (Discharge) Pressure



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Heating/Air Conditioning

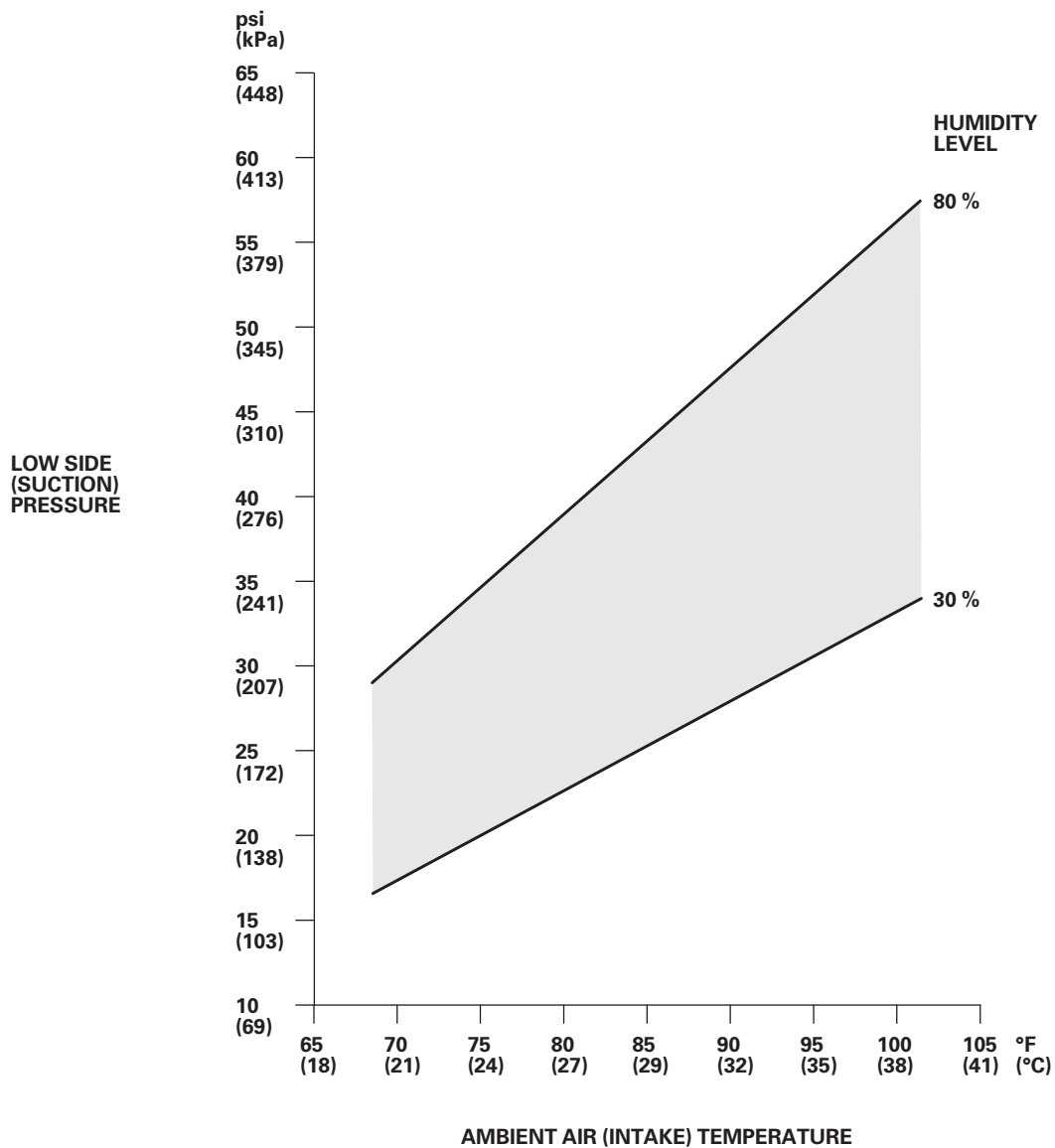
A/C System Test (cont'd)

12. To complete the low side (suction) pressure/ambient air (intake) temperature chart:

- Mark the low side (suction) pressure along the vertical line.
- Mark the ambient air (intake) temperature along the bottom line.
- Draw a vertical line from the ambient air (intake) temperature mark.
- Draw a horizontal line from the low side (suction) pressure mark until it intersects the vertical line.

NOTE: The low side pressure and the ambient air temperature should intersect in the shaded area. Any measurements outside the line may indicate the need for further inspection.

Ambient Air (Intake) Temperature vs. Low Side (Suction) Pressure





Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Suction and discharge pressures are normal	Warm air from the vents.	<ul style="list-style-type: none"> The A/C system contains too much refrigerant oil. The air mix door is not operating properly. 	<ul style="list-style-type: none"> Recover refrigerant (see page 21-55) and evacuate the system (see page 21-55). Adjust the amount of oil in the system, then recharge the system (see page 21-56). Check air mix door operation (see page 21-11), and repair as needed.
Suction and discharge pressures are roughly equal and steady	The suction and discharge pressures equalize when the engine is revved.	The A/C compressor clutch or the drive belt is slipping, or the compressor shaft seal is leaking.	<ul style="list-style-type: none"> Check whether the A/C compressor clutch or the drive belt is slipping. If the drive belt is slipping, replace the drive belt (see page 4-29). Also inspect the drive belt auto-tensioner (see page 4-30). If the A/C compressor clutch is slipping, replace it (see page 21-50). Check the A/C compressor shaft seal. If it's leaking, replace the A/C compressor (see page 21-48).
Suction and discharge pressures are roughly equal but fluctuate	Suction and discharge pressures fluctuate while running. Pressures equalize as soon as the A/C compressor clutch disengages.	The A/C compressor discharge valve or the compressor gasket is faulty.	Replace the A/C compressor (see page 21-48).
Suction and discharge pressures are roughly equal and abnormally low	The suction and discharge pressures do not change during continued operation.	The A/C system is undercharged.	Recover refrigerant (see page 21-55), then do the refrigerant leak check (see page 21-57). Repair any leaks, then recharge the system (see page 21-56).
Suction and discharge pressures are abnormally high, but normalize when the condenser is cooled	The suction pressure decreases when cool water is sprayed on the A/C condenser.	The A/C system is overcharged.	Recover refrigerant (see page 21-55), evacuate the system (see page 21-55), and recharge the system to specifications (see page 21-56).
Suction and discharge pressures are abnormally high, and refrigerant line temperatures are abnormal	<ul style="list-style-type: none"> The high pressure vapor line to the A/C condenser is too hot. The low pressure liquid line from the expansion valve is not cold. There is an abrupt temperature drop along a refrigerant line, or in the condenser or evaporator. 	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
Discharge pressure is so high that the A/C compressor relief valve has opened. Suction pressure is normal or below normal	The temperature drop between the A/C condenser inlet and outlet is less than 30 °F (–1 °C) or 60 °F (16 °C).	The A/C condenser or receiver/dryer is restricted.	Replace the restricted component; the A/C condenser (see page 21-53) or the receiver/dryer (see page 21-54).
Discharge pressure is so high that the A/C compressor relief valve has opened. Suction pressure is also above normal	<ul style="list-style-type: none"> No evidence of restricted refrigerant flow. The A/C compressor clutch stays engaged even if the A/C switch is turned off. 	The A/C compressor clutch circuit is always on (energized), or the A/C compressor clutch is mechanically jammed.	<ul style="list-style-type: none"> Do the A/C compressor clutch circuit troubleshooting (see page 21-36), and repair the problem with the circuit. If the A/C compressor clutch circuit is OK, do the A/C compressor clutch check (see page 21-49), and repair as needed.
Suction and discharge pressures are abnormally high, but drop rapidly when the A/C compressor disengages	<ul style="list-style-type: none"> After stopping the A/C compressor, the discharge pressure quickly drops about 196 kPa (28 psi), then falls gradually. The input and output temperatures at the expansion valve are not similar. 	There is excess air in the A/C system.	Recover refrigerant (see page 21-55), evacuate the system (see page 21-55), and recharge the system (see page 21-56).
Suction and discharge pressures are abnormally high, and there is little or no airflow through the A/C condenser	Suction and discharge pressures normalize when water is sprayed on the A/C condenser.	<ul style="list-style-type: none"> The A/C condenser and/or radiator fins are clogged. The A/C condenser fins are damaged. The A/C condenser and/or radiator fans are not working properly. 	<ul style="list-style-type: none"> Clean debris from the condenser and/or radiator fins. Comb the condenser fins to repair any damage. Troubleshoot the A/C condenser fan and/or the radiator fan circuit(s).
The suction pressure is high and the discharge pressure is low. Both pressures are steady	<ul style="list-style-type: none"> The liquid line temperature is similar on both sides of expansion valve. System pressures do not vary at a steady engine speed. 	The expansion valve is stuck open.	Replace the expansion valve (see page 21-46).

(cont'd)

Heating/Air Conditioning

A/C System Test (cont'd)

Test results	Related symptoms	Probable cause	Remedy
The suction pressure is low, the discharge pressure is high, and the refrigerant temperature changes abnormally somewhere in the system	<ul style="list-style-type: none"> The high pressure liquid line going into the expansion valve is cold. There is an abrupt temperature drop in the line between the A/C compressor and the A/C condenser, or in the line between the A/C condenser and the expansion valve. 	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
The suction pressure is high, the discharge pressure is low, and there are particle contaminants in the refrigerant lines	The expansion valve and/or the A/C compressor discharge hose are contaminated with metal flakes or desiccant particles.	The A/C compressor is malfunctioning.	Replace the A/C compressor (see page 21-48). If the system is contaminated with desiccant, replace the receiver/dryer (see page 21-54).
The suction pressure is high, the discharge pressure is low, and the pressures quickly change when the A/C disengages	The discharge and suction pressures equalize soon after the A/C compressor stops.	The A/C compressor seal is faulty.	Replace the A/C compressor (see page 21-48).
Suction and discharge pressures are both low and none of the refrigerant lines are cold	There is no frost on the expansion valve, and the low-pressure liquid line is not cold.	The A/C system has a leak (very low refrigerant charge).	Do the refrigerant leak check (see page 21-57), repair any leaks, and recharge the A/C system (see page 21-56).
Suction and discharge pressures are both low, and the expansion valve or the suction line is abnormally cold	<ul style="list-style-type: none"> The temperature around the expansion valve is too low compared to the temperature around the receiver/dryer. The low pressure (suction) hose/line is cooler than the evaporator. 	The discharge hose/line is clogged or kinked, which is restricting refrigerant flow. The suction hose/line is clogged or kinked, which is restricting refrigerant flow.	Repair or replace the faulty A/C line (see page 21-23).
Initially, the suction and discharge pressure are normal, but both become abnormally low during operation	During extended operation, the air flow from the vents decreases.	The evaporator is freezing up.	Run the fan with A/C compressor off to warm the evaporator, then test the evaporator temperature sensor (see page 21-44). If necessary, replace the evaporator temperature sensor.
Suction and discharge pressures are both low and there are abnormal temperature changes at the expansion valve	<ul style="list-style-type: none"> During extended operation, warm air comes out of the vents, the suction pressure decreases, and heavy frost occurs on the low pressure liquid line. The low pressure liquid line is cold at the expansion valve, but warm after the valve. There is frost on the expansion valve. 	The expansion valve is stuck closed.	<ul style="list-style-type: none"> Replace the expansion valve (see page 21-46), and the receiver/dryer (see page 21-54). Check the old expansion valve for contamination. If contaminants are found, replace the component that caused the contamination.
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve outlet is abnormally warm	There is no frost on the expansion valve outlet, and the liquid line temperature changes significantly across the expansion valve.	There is excessive moisture in the A/C system.	Recover refrigerant (see page 21-55), then replace the receiver/dryer (see page 21-54). Evacuate the system (see page 21-55) and recharge the A/C system (see page 21-56).
The discharge pressure is low, the suction pressure is extremely low, and the suction line is abnormally cold	There is frost on the line from the evaporator to the A/C compressor.	The evaporator is internally contaminated or plugged.	Recover refrigerant (see page 21-55), then replace the evaporator (see page 21-44). Evacuate the system (see page 21-55) and recharge the A/C system (see page 21-56).
The discharge pressure is low, the suction pressure is extremely low, and the refrigerant temperature doesn't change going through the expansion valve	<ul style="list-style-type: none"> There is no frost on the expansion valve, and the low pressure liquid line is not cold. The liquid line temperatures are similar on both sides of expansion valve. 	The expansion valve is faulty.	Replace the expansion valve (see page 21-46).
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve is abnormally cold	There is frost on the expansion valve.	Excessive moisture in the system is freezing the expansion valve.	Recover refrigerant (see page 21-55), then replace the receiver/dryer (see page 21-54). Evacuate the system (see page 21-55), and recharge the A/C system (see page 21-56).
The discharge pressure is low, the suction pressure is extremely low, and the high pressure liquid line is abnormally cold	There is frost on the line from the receiver/dryer to the expansion valve.	The receiver/dryer is clogged.	Recover refrigerant (see page 21-55), then replace the receiver/dryer (see page 21-54). Evacuate the system (see page 21-55) and recharge the A/C system (see page 21-56).