

Automotive Heating And Air Conditioning

Eighth Edition

Automotive Heating and Air Conditioning

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Chapter 13

Heating and Air-Conditioning System Inspection

ALWAYS LEARNING

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Learning Objectives

13.1 Describe how to verify AC compressor clutch operation.

13.2 Discuss normal AC discharge outlet temperatures.

13.3 Discuss how to verify proper heating and cooling airflow to the inside of the vehicle.

13.4 Explain how to inspect the AC condenser.

13.5 Discuss AC odors and how to eliminate them.

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AC System Working As Designed (1 of 2)

- Verify
- AC Compressor Operation
- Compressor Drive Belt
 - Belt tension gauge
 - Marks on a tensioner
 - Torque wrench reading
 - Deflection

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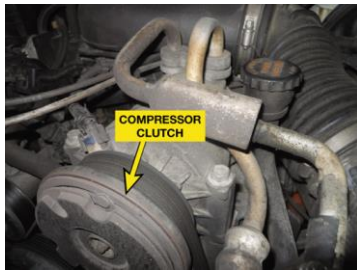
AC System Working As Designed (2 of 2)

- AC Temperature Readings
 - Steps 1-2
 - If the temperature is 35°F to 45°F (2°C to 7°C)...
 - If the temperature is over 45°F (7°C)...

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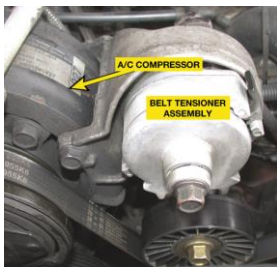
FIGURE 13-1 The compressor is working if the center of the compressor clutch is rotating with the engine running.



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FIGURE 13-2 The AC compressor drive belt tensioner is used to keep a constant and even tension on the drive belt so it can properly transfer engine torque to the AC compressor.



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FIGURE 13-3 An air-conditioning thermometer being used to check the discharge temperature at the center vents.



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HVAC System Inspection (1 of 2)

- Visual Inspection
- Cab in Filter
- AC and Heater Duct Inspection
 - Steps 1-4
- Heater Hose Inspection
- Condenser Inspection

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HVAC System Inspection (2 of 2)

- AC Leak Detection
 - Visual inspection
 - Electronic leak detector
 - Dye in the refrigerant
 - Soap solution

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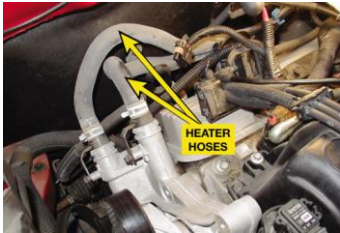
FIGURE 13-4 A dirty cabin filter removed from a Subaru that driver complained of poor cooling from the air conditioning system.



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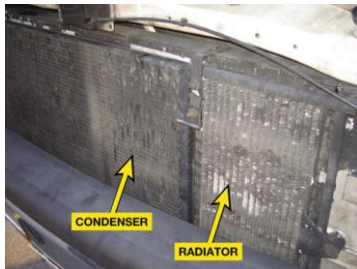
FIGURE 13-5 Heater hoses are the smaller coolant hoses that run from and back to the engine.



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FIGURE 13-6 The air-conditioning condenser is located in front of the radiator and is therefore more likely to become partially restricted due to road debris and dirt.



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FIGURE 13-7 A fin comb is used to straighten the fins on the condenser to help increase airflow and heat transfer.



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FIGURE 13-8 A typical electronic leak detector being used to locate a possible leak in a system.



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FIGURE 13-9 A black light being used to look for refrigerant leakage after a fluorescent dye was installed in the system.



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Summary (1 of 2)

- The heating and air-conditioning system should be checked to see if it functioning as designed.
- Belt tension in factory specifications
- When checking for proper air-conditioning operation, the discharge vent temperature should be 35°F to 45°F (2°C to 7°C).

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Summary (2 of 2)

- Cabin filters should be checked regularly and replaced as per vehicle manufacturers recommended intervals.
- Poor air-conditioning performance (lack of cooling) can be caused by a partially clogged condenser.
- Several different methods of leak detection are available.

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