

2004 ENGINE COOLING

Electric Cooling Fans - TSX

DESCRIPTION

NOTE: For cooling system bleeding procedures, see **BLEEDING COOLING SYSTEM** in appropriate **SPECIFICATIONS & DRIVE BELT ROUTING** article.

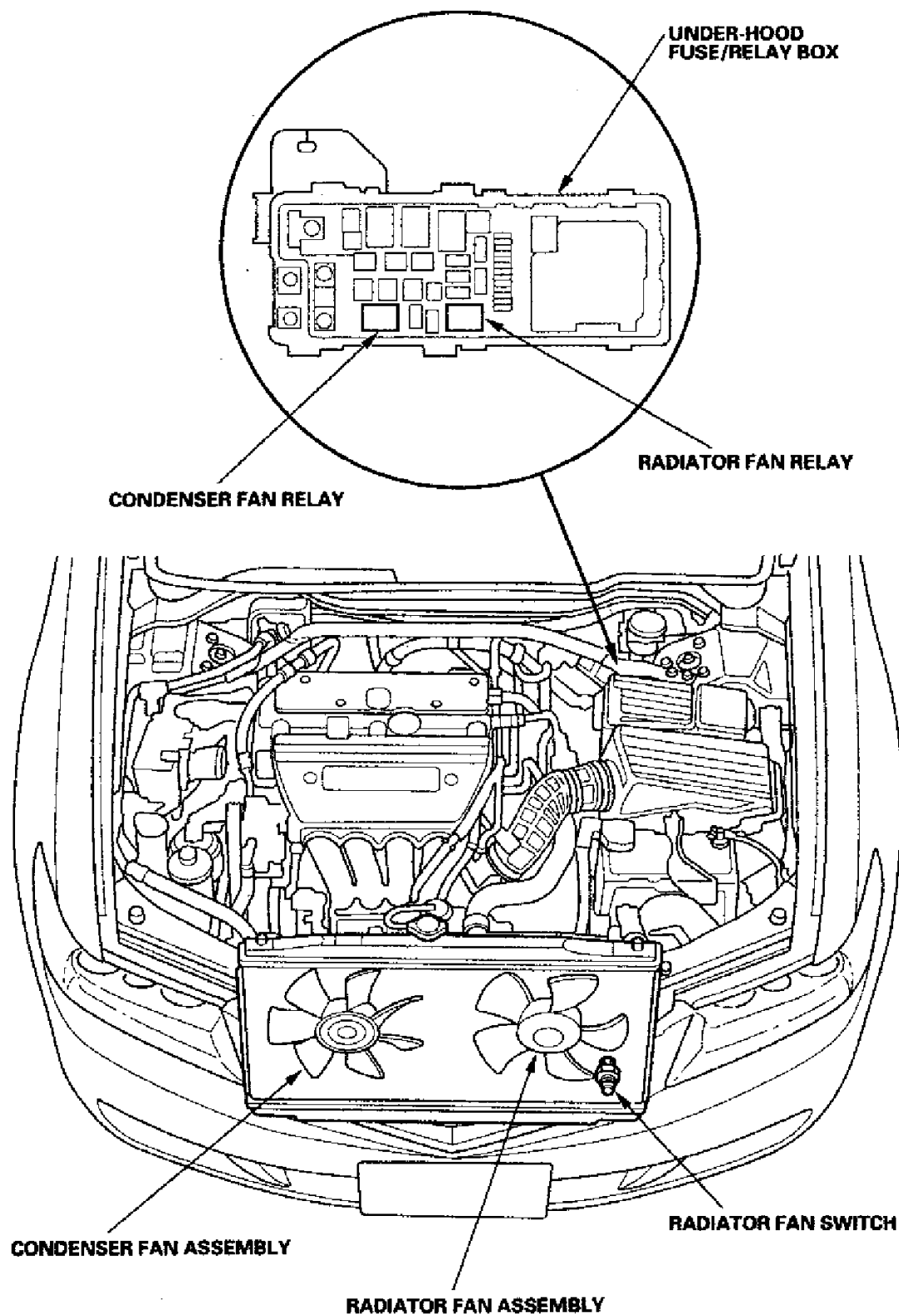
Vehicle has 2 electric cooling fans (radiator and condenser).

OPERATION

Relays are grounded by either the radiator fan switch or the PCM. Grounding relays energizes their coils and supplies battery voltage to radiator and condenser fan motors. Fans run until ground is removed from relay coils.

COMPONENT LOCATIONS

NOTE: For location of cooling fan system components, see **Fig. 1** .



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Fig. 1: Locating Cooling Fan Components

Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING**SYMPTOM TROUBLE SHOOTING INDEX**

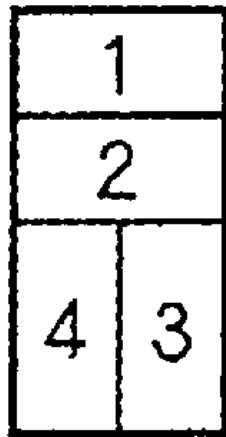
Symptom	Perform Test
Engine overheats.	1. Inspect the water pump. 2. Check for a broken drive belt. 3. Check the drive belt auto-tensioner. 4. Check the thermostat. 5. Check for coolant leakage (from gaskets, hoses, O-rings, etc.). 6. Check for dirt, leaves, or insects on radiator and condenser. 7. Check for damaged or deformed fan shroud. 8. Check for plugged or deteriorated radiator hoses. 9. Check the radiator cap. 10. Inspect the fan motors or fan relays. 11. Check for plugged heater core or hose(s). 12. Check the coolant level. 13. Check for deteriorated coolant. 14. Check for a damaged cylinder head gasket.
Radiator fan does not run at all.	<u>RADIATOR FAN CIRCUIT TROUBLE SHOOTING .</u>
Radiator fan does not run for engine cooling, but it runs with A/C ON.	<u>RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (OPEN) .</u>
Radiator fan runs with ignition switch ON, A/C OFF, and engine temperature below 199°F (93°C).	<u>RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (SHORT) .</u>
Radiator fan does not run with the A/C ON, but it runs for engine cooling.	See TROUBLE SHOOTING in appropriate A/C-HEATER SYSTEMS article.

RADIATOR FAN CIRCUIT TROUBLE SHOOTING

1. Check the No. 11 (20-amp) fuse in the under-hood fuse/relay box, and the No. 30 (7.5-amp) fuse in the under-dash fuse/relay box. If fuses are OK, go to next step. If fuses are not OK, replace the fuse(s) and recheck.
2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it. See **FAN RELAYS** under COMPONENT TESTS. If the relay is OK, go to next step. If relay is not OK, replace radiator fan relay.
3. Measure the voltage between radiator fan relay 4-pin socket, terminal No. 2 and body ground. See **Fig. 2** .

If there is battery voltage, go to next step. If battery voltage is not present, replace the under-hood fuse/relay box.

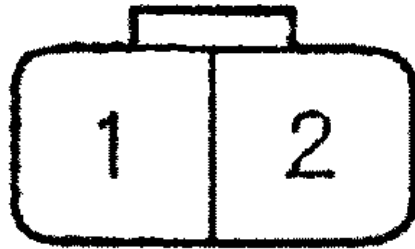
4. Connect radiator fan relay 4-pin socket, terminal No. 1 and No. 2 with a jumper wire. See **Fig. 2** . If the radiator fan runs, go to next step. If radiator fan does not run, go to step 6 .
5. Disconnect the jumper, and turn the ignition switch ON. Check for voltage between radiator fan relay 4-pin socket, terminal No. 3 and body ground. See **Fig. 2** . If there is battery voltage, go to step 8 . If battery voltage is not present, check for an open in the Black/Yellow wire between the under-hood fuse/relay box and under-dash fuse/relay box.
6. Disconnect the radiator fan motor 2-pin connector. Check for continuity between radiator fan relay 4-pin socket, terminal No. 1 and radiator fan motor 2-pin connector, terminal No. 2. See **Fig. 2** and **Fig. 3** . If there is continuity, go to next step. If there is no continuity, repair open in the wire between the under-hood fuse/relay box and radiator fan motor 2-pin connector, terminal No. 2.
7. Check for continuity between radiator fan motor 2-pin connector, terminal No. 1 and body ground. See **Fig. 3** . If there is continuity, replace the radiator fan motor. See **COOLING FANS** under REMOVAL & INSTALLATION. If there is no continuity, check for an open in the wire between radiator fan motor 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.
8. Reinstall the radiator fan relay. Disconnect the radiator fan switch 2-pin connector. Connect radiator fan switch 2-pin connector, terminal No. 1 and No. 2 with a jumper wire. See **Fig. 4** . If the radiator fan runs, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION. If radiator fan does not run, go to next step.
9. Remove the jumper wire, and measure the voltage between radiator fan switch 2-pin connector, terminal No. 2 and body ground. See **Fig. 4** . If there is battery voltage, check for an open in the wire between radiator fan switch 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301. If battery voltage is not present, repair-open in the wire between radiator fan switch 2-pin connector, terminal No. 2 and the under-hood fuse/relay box.



Terminal side of female terminals

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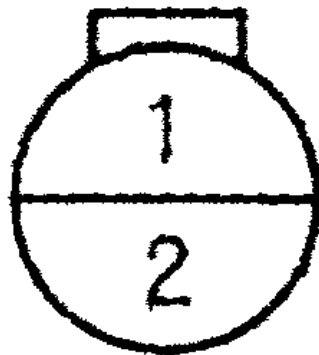
Fig. 2: Identifying Radiator Fan Relay 4-pin Socket Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.



Wire side of female terminals

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Fig. 3: Identifying Radiator Fan Motor 2-pin Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.



Wire side of female terminals

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Fig. 4: Identifying Radiator Fan Switch 2-pin Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (OPEN)

1. Disconnect the radiator fan switch 2-pin connector. Turn the ignition switch ON. Measure voltage between radiator fan switch 2-pin connector, terminal No. 2 and body ground. See **Fig. 4** . If there is battery voltage, go to next step. If battery voltage is not present, repair open in the wire between radiator fan switch 2-pin connector, terminal No. 2 and under-hood fuse/relay box.
2. Turn the ignition switch OFF, and check for continuity between radiator fan switch 2-pin connector, terminal No. 1 and body ground. See **Fig. 4** . If there is continuity, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION. If there is no continuity, check for an open in the wire between radiator fan switch 2-pin connector, terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.

RADIATOR FAN SWITCH CIRCUIT TROUBLE SHOOTING (SHORT)

1. Remove the radiator fan relay from the under-hood fuse/relay box, and test it. See **FAN RELAYS** under COMPONENT TESTS. If the relay is OK, go to next step. If the relay is not OK, replace the radiator fan relay.
2. Remove the radiator fan switch, and test it. See **RADIATOR FAN SWITCH** under COMPONENT TESTS. If the radiator fan switch is OK, go to next step. If the radiator fan switch is not OK, replace the radiator fan switch. See **RADIATOR FAN SWITCH** under REMOVAL & INSTALLATION.
3. Disconnect the under-hood fuse relay box 20-pin connector. Check for continuity between radiator fan switch 2-pin connector, terminal No. 2 and body ground. See **Fig. 4** . If there is continuity, repair short in the wire between radiator fan switch 2-pin connector, terminal No. 2 and under-hood fuse/relay box. If there is no continuity, replace the under-hood fuse/relay box.

COMPONENT TESTS

FAN MOTOR

Disconnect appropriate fan motor connector. Apply battery voltage and ground between fan motor terminals. If fan motor operates, check related components and wiring. If fan motor does not operate, reverse battery leads. If fan still does not operate, replace fan motor. See **COOLING FANS** under REMOVAL & INSTALLATION.

FAN RELAYS

1. Although physical appearance of relays may be different, basic relay operation is similar. Remove relay to be tested. Check continuity between relay terminals No. 1 and 3. See **WIRING DIAGRAMS** . Continuity should not exist.
2. Apply battery voltage between terminals No. 2 and 4. Continuity should exist between terminals No. 1 and 3. If continuity is not as specified, replace relay.

RADIATOR FAN SWITCH

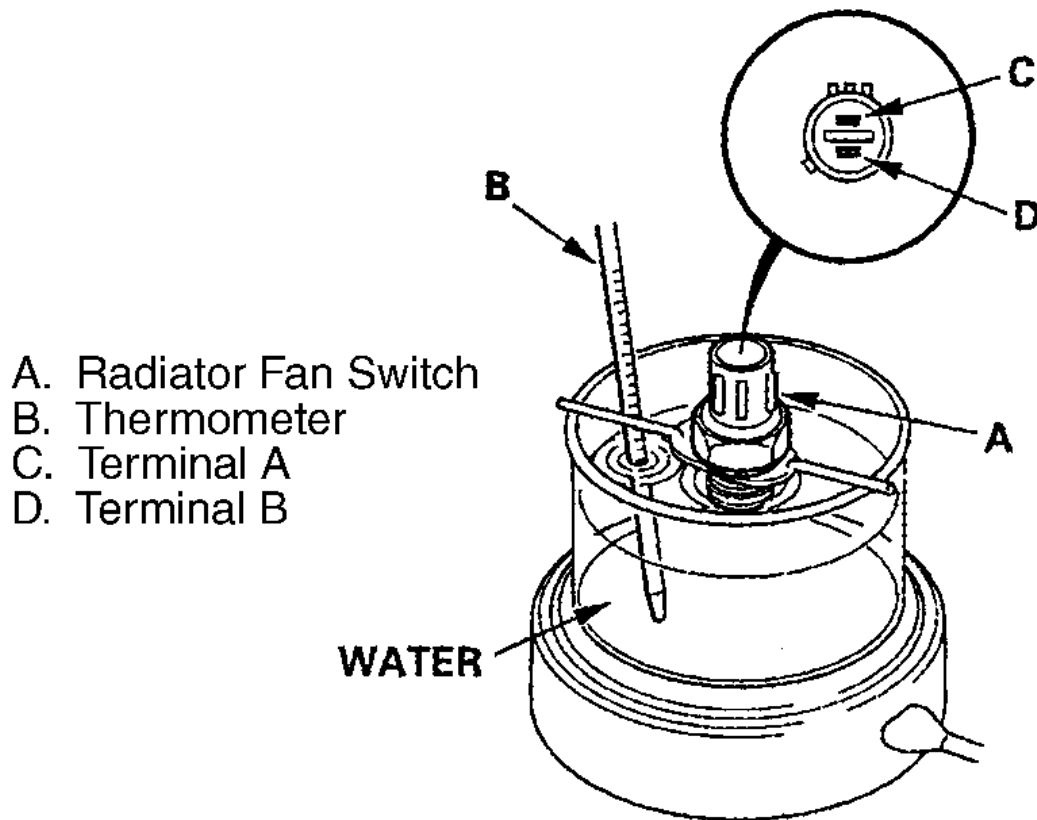
1. Remove the radiator fan switch from the radiator. Suspend the radiator fan switch in a container of water.

See **Fig. 5** .

- Heat the water, and check the temperature with a thermometer. Do not let the thermometer touch the bottom of the hot container. Measure the continuity between terminal "A" and terminal "B" according to **RADIATOR FAN SWITCH CONTINUITY SPECIFICATIONS** .

RADIATOR FAN SWITCH CONTINUITY SPECIFICATIONS

Application	(1) Temperature - °F (°C)
Switch	196-203 (91-95)
(1) Switch opens when temperature drops to 5-15°F (3-8°C) less than continuity temperature.	



- A. Radiator Fan Switch
- B. Thermometer
- C. Terminal A
- D. Terminal B

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Fig. 5: Testing Radiator Fan Switch

Courtesy of AMERICAN HONDA MOTOR CO., INC.

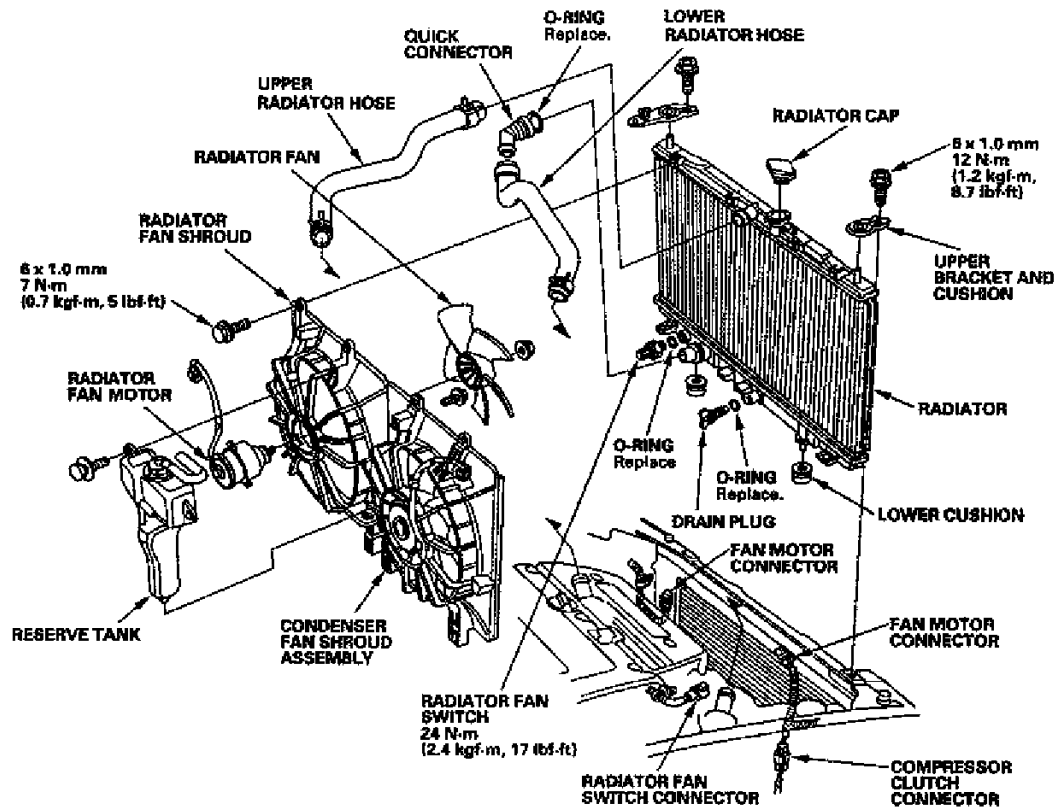
REMOVAL & INSTALLATION

COOLING FANS

Removal & Installation

For removal and installation, see **Fig. 6**.

1. Drain engine coolant.
2. Remove the lower radiator hose from the radiator.
3. Remove the automatic transmission fluid (ATF) cooler hoses (A/T).



4. Remove the upper radiator hose from the radiator.
5. Disconnect the fan motor connectors, radiator fan switch connector, and compressor clutch connector.
6. Remove the upper bracket cushions, then pull up the radiator.
7. Remove the fan shroud assemblies and other parts from the radiator.
8. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
9. Fill the radiator with engine coolant and bleed the air.

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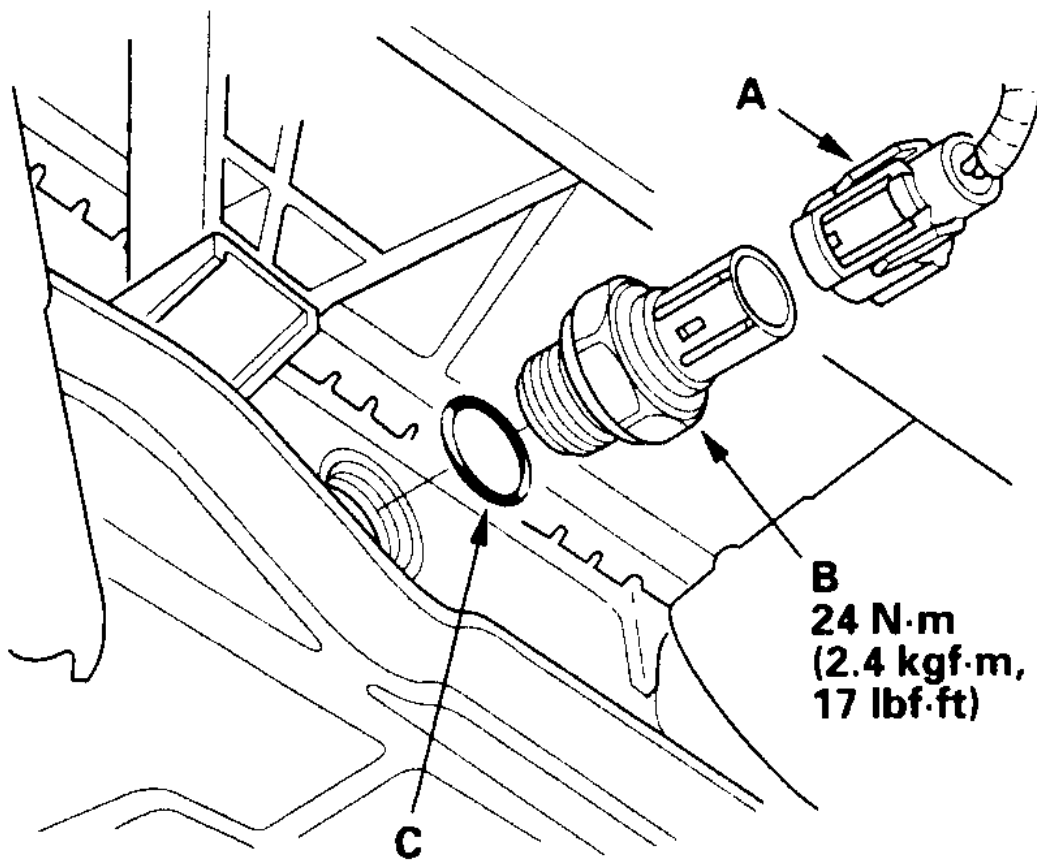
Fig. 6: Removing Cooling Fans

Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN SWITCH

Removal & Installation

1. Drain the engine coolant.
2. Remove the splash shield.
3. Disconnect the radiator fan switch connector, then remove the radiator fan switch. See **Fig. 7**.
4. Install the radiator fan switch with a new "O" ring.
5. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open.



- A. Radiator Fan Switch Connector
B. Radiator Fan Switch
C. O-Ring

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Fig. 7: Removing Radiator Fan Switch

Courtesy of AMERICAN HONDA MOTOR CO., INC.

WIRING DIAGRAMS

2004 Acura TSX

2004 ENGINE COOLING Electric Cooling Fans - TSX

For 2004 wiring diagram, see appropriate WIRING DIAGRAM under SYSTEM WIRING DIAGRAMS in ELECTRICAL.