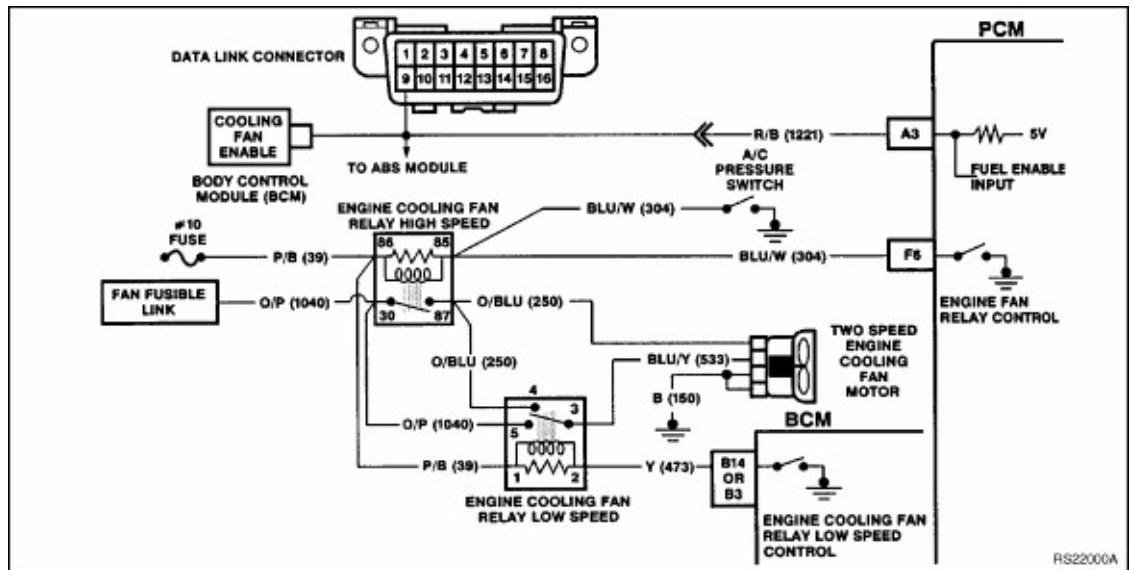


CHART A-12.3 V6 PCM



ELECTRIC FAN CONTROL

Circuit Description:

The V6 engine has a two speed electric fan which provides the primary means of moving air through the engine radiator. The two speed electric cooling fan is used to cool engine coolant flowing through the radiator. It is also used to cool the refrigerant flowing through the A/C condenser.

The engine cooling fan high speed relay is controlled by the PCM. The PCM controls the earth path for the engine cooling fan high speed relay.

The low speed of the electric fan is controlled by the PCM through special Data Communication to the BCM. The BCM controls the earth path for the engine cooling fan low speed relay.

Both relays are used to control the high current flow to power the electric motor that drives the five bladed fan

Engine Cooling Fan Low Speed.

The engine cooling fan low speed relay is energised by the BCM. The PCM determines when to enable the engine cooling fan low speed based on inputs from the A/C request signal, vehicle speed and engine coolant temperature. The engine cooling low speed fan will be turned "ON" when:

- A/C request indicated (YES) and
- Vehicle speed less than 64 Km/h
- or
- Coolant temperature is greater than 104 degrees C and will remain on until coolant temperature goes down below 99 degrees C

Engine Cooling Fan High Speed

The engine cooling fan high speed is controlled by the PCM based on input from the Engine Coolant Temperature Sensor (ECT). The PCM will only turn "ON" the engine cooling fan high speed if the engine cooling low speed fan has been "ON" for 2 seconds and the following conditions are satisfied.

- There is a BCM message response fault which will cause a DTC 92.
- An engine coolant temperature sensor failure is detected, such as DTC 14,15,16,17.
- Coolant temperature greater than 109 C.

If the fan low speed was "OFF" when the criteria was met to turn the fan high speed "ON", the fan high speed will come "ON" 5 seconds after the fan low speed is turned "ON". The engine speed engine cooling fan relay can also be enable by the A/C pressure switch. The A/C pressure switch will provide an earth path when A/C pressure becomes to high approximately 1770 kPa.

Test Description: Number(s) below refer to step number(s) on the diagnostic chart.

3. This checks for +12 volts to the fan relay on both supply circuits.

CHART A-12.3 V6 PCM

ELECTRIC FAN CONTROL

| STEP | ACTION | VALUE | YES | NO |
|------|--|-------|---------------|--|
| 1. | Was the "On-Board Diagnostic" (OBD) System Check performed? | | Go to Step 2. | Go to OBD System Check . |
| 2. | 1. Ignition "OFF". 2. Remove engine cooling fan low speed relay ("LO FAN") from relay housing. 3. Ignition "ON". 4. Probe relay socket, circuit 250 with a test light connected to earth. 5. Using TECH 1, select F4: MISC TEST; F0: OUTPUT TEST; F3: HIGH FAN, enable fan "ON" by pressing up/down arrow keys. 6. Is test light "ON" ? | | Go to Step 3 | Go to Step 8 |
| 3. | 1. Ignition "OFF". 2. Remove engine cooling fan low speed relay ("LO FAN") from relay housing. 3. Ignition "ON" 4. Probe relay socket, circuits 39 and 1040 with test light connected to earth 5. Is test light "ON" for both circuits? | | Go to Step 4 | Go to Step 10 |
| 4. | 1. Ignition "ON". 2. Probe "LO FAN" relay socket, circuit 473 with a test light connected to +12 volts. 2. Using TECH 1; Select F5: FUNCTIONS; F4: LOW FAN, enable fan "ON" with yes/no buttons. 4. Is test light "ON"? | | Go to Step 5 | Go to Step 9 |
| 5. | 1. Ignition "ON". 2. Reinstall engine cooling fan low speed relay ("LO FAN"). 3. Back-probe "LO FAN" relay wiring harness connector, circuit 533 with test light connected to earth. 4. Using TECH 1; Select F5: FUNCTIONS; F4: LOW FAN, enable fan "ON" with yes/no buttons. 5. Is test light "ON" | | Go to Step 6 | Go to Step 11 |
| 6. | 1. Ignition "OFF". 2. Disconnect electric cooling fan wiring harness connector. 3. Probe wiring harness connector circuit 533 with test light connected to earth. 4. Using TECH 1; Select F5: FUNCTIONS; F4: LOW FAN, enable fan "ON" with yes/no buttons. 5. Is test light "ON" | | Go to Step 7 | Go to Step 13 |
| 7. | 1. Probe both fan harness connector earth circuits 150, with a test light connected to +12 volts. 2. Is test light "ON" for both circuits ? | | Go to Step 12 | Go to Step 15 |
| 8. | Repair fault connection or open in circuit 250 between relays | | Verify Repair | |
| 9. | 1. Ignition "ON". 2. Using TECH 1; Select F5: FUNCTIONS; F4: LOW FAN, enable fan "ON" with yes/no buttons. 3. Backprobe BCM terminal "B3" (High Series BCM) or "B14" (Low Series) with a test light connected to +12 volts. 4. Is test light "ON"? | | Go to Step 14 | Go to Step 16 |

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|-----|--|---------------|
| 10. | Repair open in circuit which causes test light not to come "ON". Is repair complete? | Verify Repair |
| 11. | Replace "LO FAN" relay. Is repair complete? | Verify Repair |
| 12. | Replace electric fan motor. Is repair complete? | Verify Repair |
| 13. | Repair open in circuits 533 or 250. Is repair complete? | Verify Repair |
| 14. | Repair open in circuit 301 between PCM and engine cooling fan ("ENG. FAN") relay Is repair complete? | Verify Repair |
| 15. | Repair open in fan motor earth circuit that did not light test light. Is repair complete? | Verify Repair |
| 16. | Check for faulty connection at BCM, if OK replace BCM. Is repair complete? | Verify Repair |