

SECTION C12

ELECTRIC COOLING FAN(S)

CONTENTS

General Description	C12-1	Late Production A/C	C12-1
Operation	C12-1	On-Vehicle Service	C12-3
Non A/C and Early Production A/C ...	C12-1	Cooling Fan Relay	C12-3

GENERAL DESCRIPTION

The electric cooling fan(s) are used to cool engine coolant flowing through the radiator. They are also used to cool the refrigerant (R134a) flowing through the A/C condenser.

Vehicles without A/C use a single electric cooling fan. Vehicles with A/C will have either an early production or late production system both using dual electric cooling fans. The two systems have completely different operating strategies.

OPERATION - NON A/C AND EARLY PRODUCTION A/C

The electric cooling fan(s) are controlled by the PCM. The PCM controls the ground path for the cooling fan relay(s).

The relay(s) are used to control the high current flow to power the cooling fan motor(s). The PCM determines operation of the independent fans based on various sensor inputs.

Primary Cooling Fan (Fan 1)

The primary cooling fan is controlled by the PCM based on inputs from the A/C system, Engine Coolant Temperature (ECT) sensor, Vehicle Speed Sensor (VSS).

The PCM will turn the primary cooling fan "ON" when any of the following conditions exist at idle.

- Certain PCM Diagnostic Trouble Codes (DTCs) set.
- ECT above 108°C (226°F).
- A/C head pressure above 248 psi.

If the primary fan has been turned "ON" by the Engine Coolant Temperature (ECT) sensor, the PCM will turn the fan "OFF" when that temperature has dropped about 3°C (5°F). If the primary cooling fan has been turned "ON" by high A/C head pressure, the PCM will turn the fan "OFF" when the pressure has dropped to 208 psi. The minimum "ON" time for the primary cooling fan is 50 seconds.

Secondary Cooling Fan (Fan 2) (With A/C)

The secondary cooling fan is controlled by the PCM based on inputs from the A/C system, Engine Coolant Temperature (ECT) sensor, Vehicle Speed Sensor (VSS).

The PCM will turn the secondary cooling fan "ON" when any of the following conditions exist at idle:

- Certain Diagnostic Trouble Codes (DTCs) set.
- ECT above 113°C (235°F).
- A/C head pressure above 248 psi.

Once the secondary fan has been turned "ON" by the ECT, the PCM will turn the fan "OFF" when that temperature has dropped about 3°C (5°F). If the secondary cooling fan has been turned "ON" by high A/C head pressure, the PCM will turn the fan "OFF" when the pressure has dropped to 208 psi. The minimum "ON" time for the secondary cooling fan is 30 seconds.

OPERATION - LATE PRODUCTION A/C

The electric cooling fans are controlled by the PCM. The PCM controls the ground path for the three cooling fan relays. The relays are used to control the high current flow to power the cooling fan motors. Both fans operate together. When minimum cooling is required, the PCM energizes cooling fan relay #1 and both fans operate at low speed, since the fan are connected in series through cooling fan relay #3, and cooling fan relay #2 is open. When maximum cooling is required, the PCM energizes all three cooling fan relays. The left fan is still powered through cooling fan relay #1, but is now grounded through cooling fan relay #3. The right fan is now powered directly through cooling fan relay #2 and both fans operate at high speed.

Low Speed Fans

The cooling fans are controlled by the PCM based on inputs from the A/C system, Engine Coolant Temperature (ECT) sensor and Vehicle Speed Sensor (VSS).

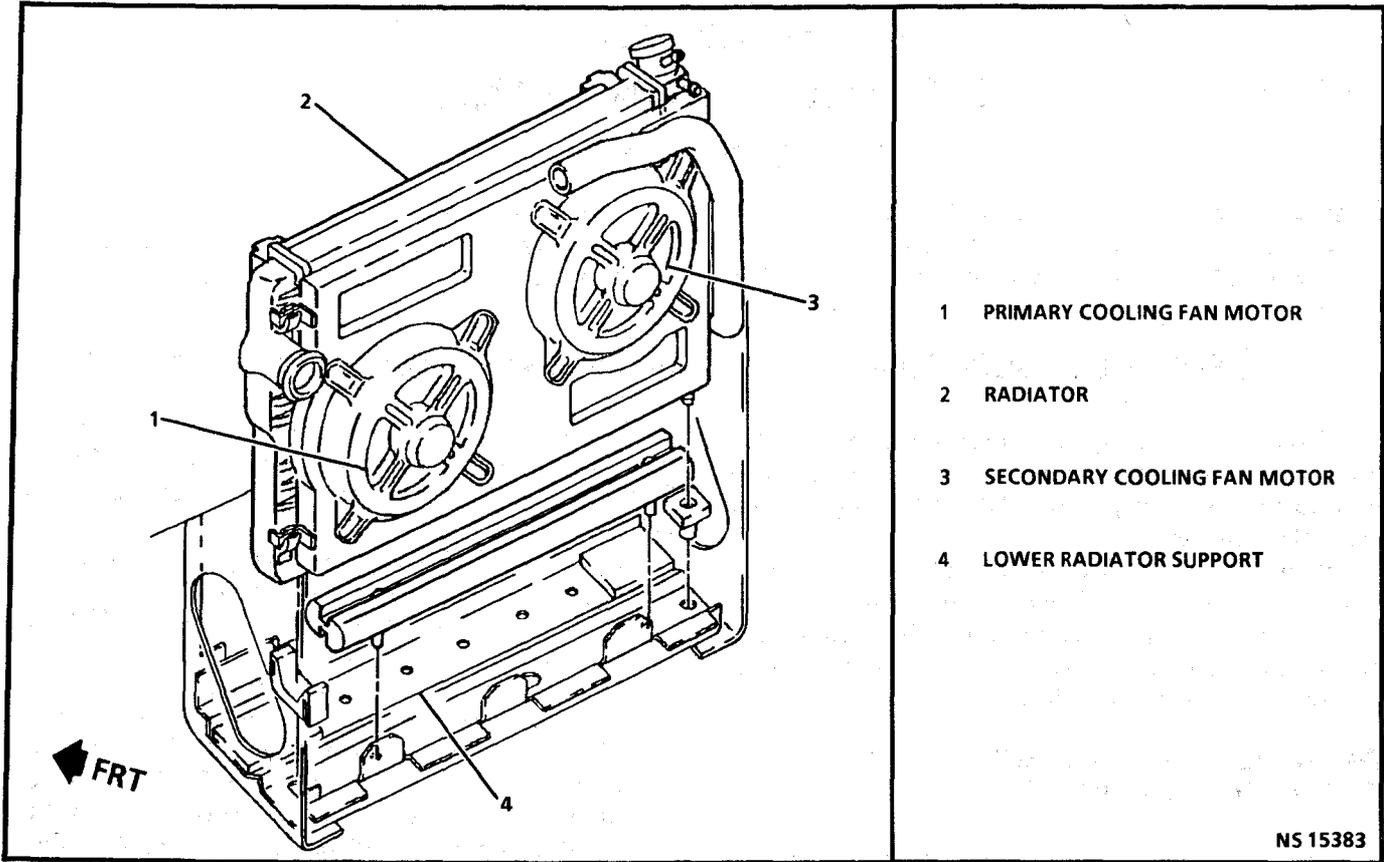


Figure C12-1 - Cooling Fan Configurations

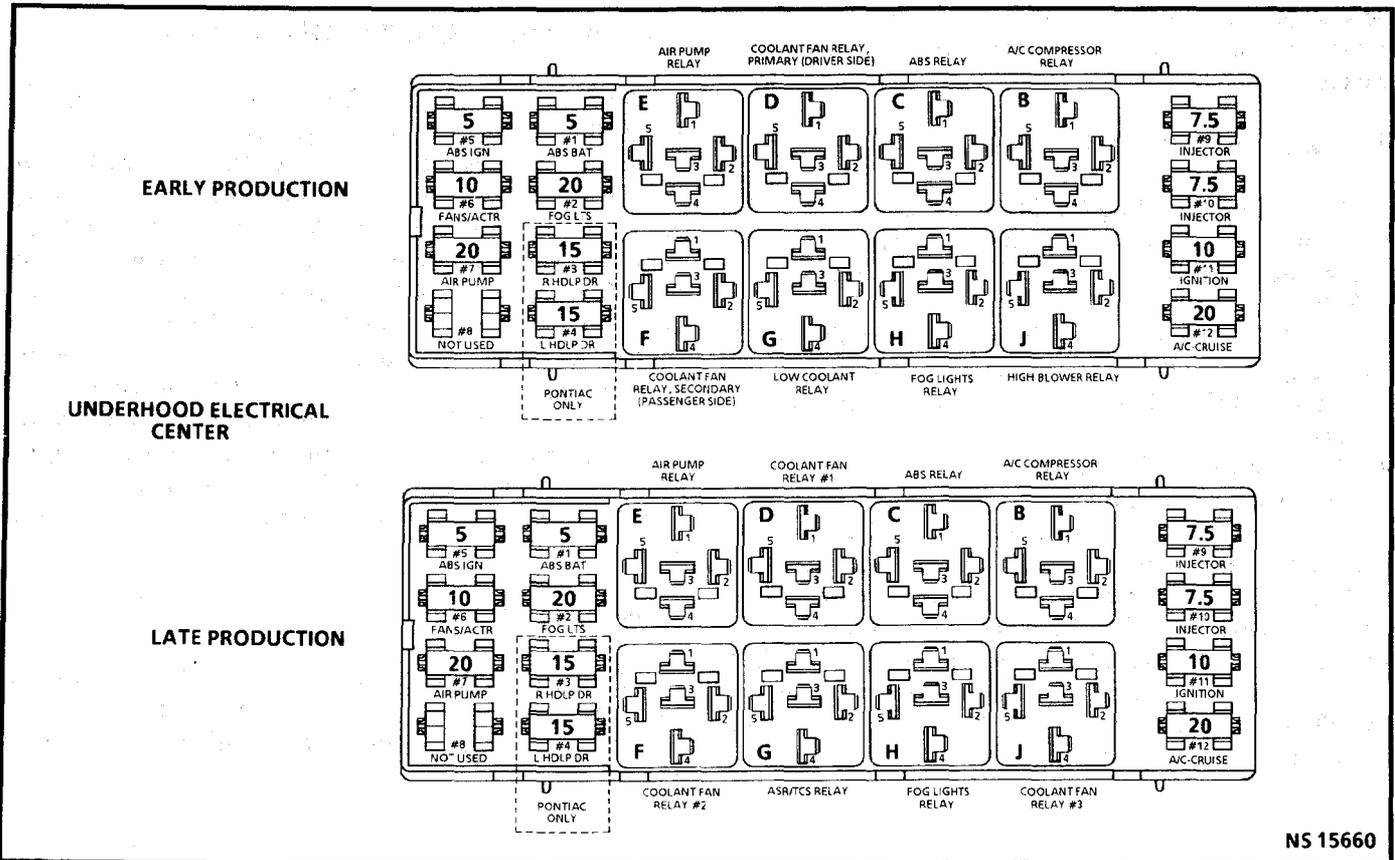


Figure C12-2 - Cooling Fan Relay Location

The PCM will command low speed fans "ON" when Engine Coolant Temperature (ECT) is above 108°C (226°F). The PCM will turn the fans "OFF" when the temperature drops about 3°C (5°F). The minimum "ON" time for low speed fans is 50 seconds.

High Speed Fans

The PCM will command high speed fans "ON" when any of the following conditions exist at idle.

- Certain Diagnostic Trouble Codes (DTCs) set.
- ECT above 113°C (235°F).
- A/C head pressure above 248 psi.

If the high speed fans were turned "ON" by the ECT, the PCM will switch the fans back to low speed when the temperature drops about 3°C (5°F). Minimum "ON" time for HI speed fans is 30 seconds.

ON-VEHICLE SERVICE

COOLING FAN RELAY

Remove or Disconnect

1. Negative battery cable.
2. Cover from underhood electrical center.
3. Relay from underhood electrical center.

Install or Connect

1. Relay to underhood electrical center.
2. Cover to underhood electrical center.
3. Negative battery cable.

Cooling system component replacement can be found in SECTION 6B.

For removal and replacement procedures of A/C components, refer to SECTION 1B.

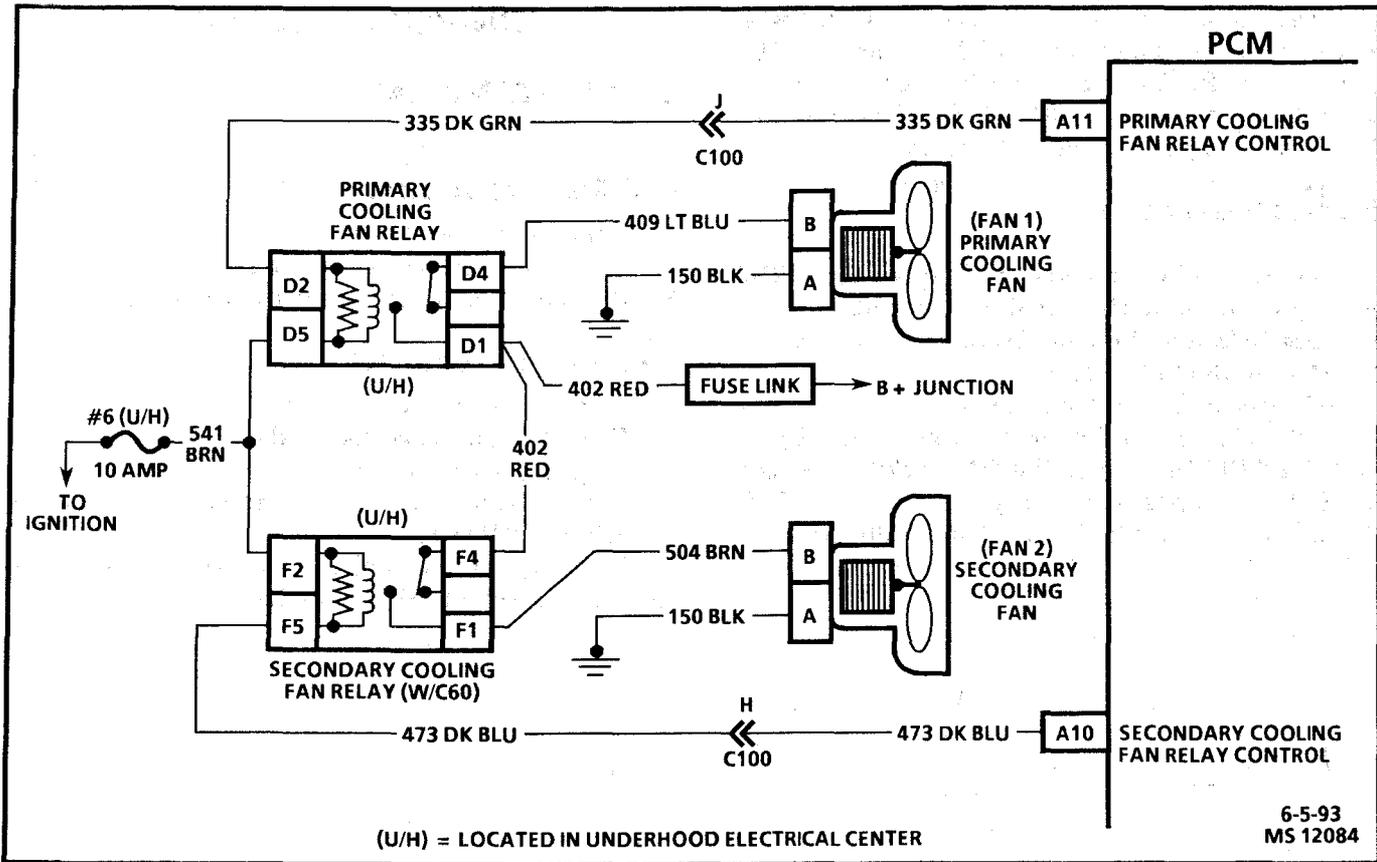


CHART C-12A (Page 1 of 2)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (NON A/C AND EARLY PRODUCTION A/C) 5.7L (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Battery voltage is supplied to the primary fan relay on terminal "D1" and on "F4" of the secondary fan relay. Ignition voltage is supplied to terminal "D5" of the primary fan relay and "F2" of the secondary fan relay. Grounding CKT 335 (relay terminal "D2") will energize the primary cooling fan relay (Fan 1) and supply battery voltage to the primary cooling fan motor. Grounding CKT 473 (relay terminal "F5") will energize the secondary cooling fan relay (Fan 2) and supply battery voltage to the secondary fan motor.

When certain Diagnostic Trouble Codes (DTCs) are set, the PCM will enable the cooling fans.

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

- With the output/field service enable terminal grounded, the cooling fan control driver(s) will close, which should energize the fan control relay(s).
If vehicle is equipped with one cooling fan (non A/C) and cooling fan operation is OK, refer to diagnostic aids below for further diagnosis of cooling system.
- Engine coolant temperature must be below 100°C (212°F) to perform this step. The cooling fans should come "ON" anytime A/C system is operating.
- Comparing Tech 1 pressure and manifold gage set pressure will determine if the A/C refrigerant pressure sensor is out of range. An out of range A/C refrigerant pressure sensor can cause the cooling fans to operate at the wrong times.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the complaint was due to an actual boil over, or the warning indicator light, or engine coolant temperature gage indicated overheating.

The gage accuracy can also be checked by comparing the Engine Coolant Temperature (ECT) sensor reading using a Tech 1 and comparing its reading with the gage reading.

If the engine is actually overheating and the gage indicated overheating, but the cooling fan is not coming "ON," the Engine Coolant Temperature (ECT) sensor has probably shifted out of calibration and should be replaced.

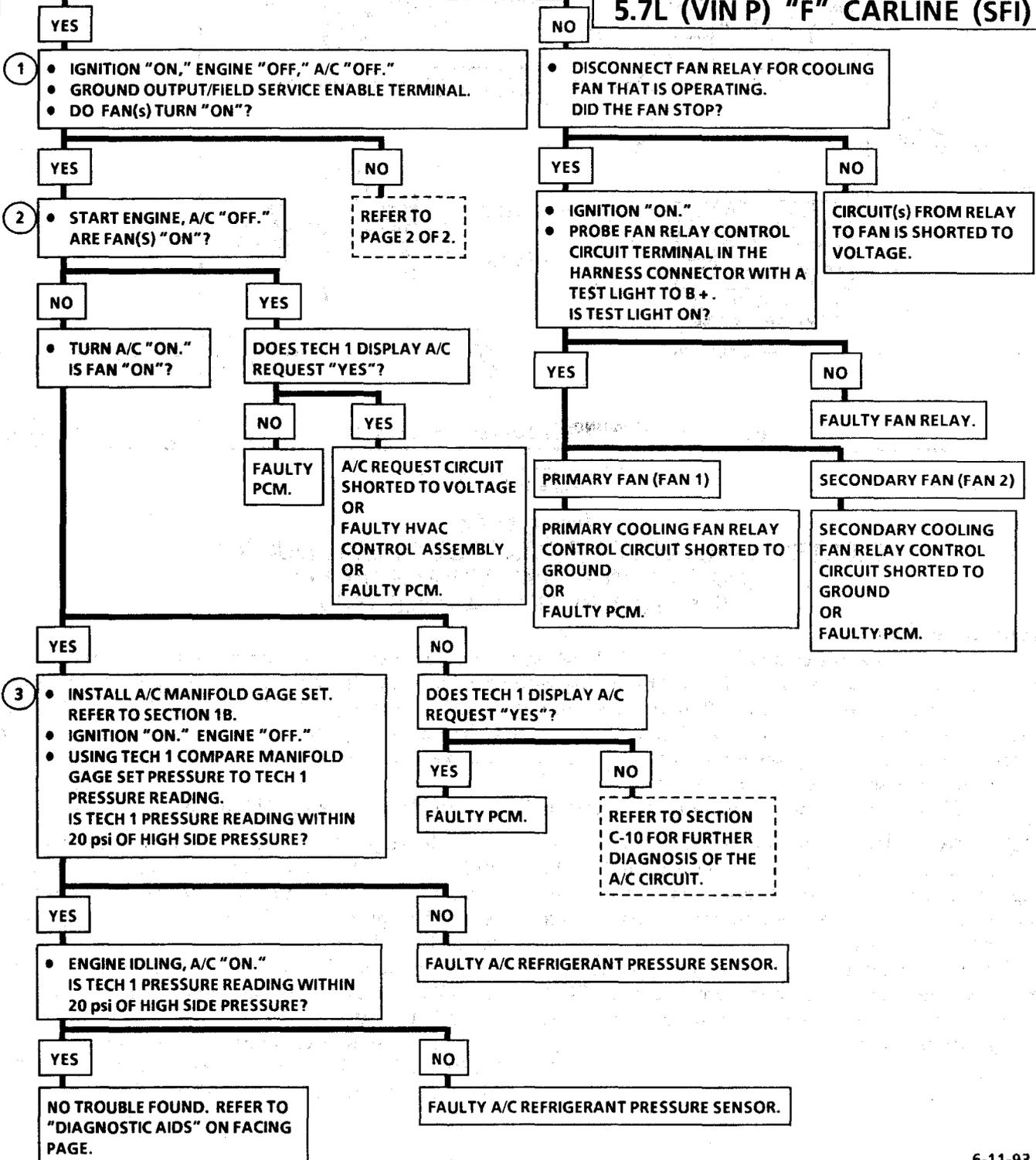
If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command fan 1 "ON" at 108°C (226°F) and "OFF" at 105°C (221°F) and, fan 2 "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

CHART C-12A

(Page 1 of 2)
**ELECTRIC COOLING FAN
 CONTROL CIRCUIT DIAGNOSIS
 (NON A/C AND
 EARLY PRODUCTION A/C)
 5.7L (VIN P) "F" CARLINE (SFI)**

- IF ANY PCM DTC(s) ARE SET REFER TO DTC (s) CHART FIRST.
- BE SURE COOLING SYSTEM AND BELTS ARE OK.
- ENGINE COOLANT TEMPERATURE BELOW 100°C (212°F).
- IGNITION "ON," ENGINE "OFF," A/C "OFF."
- ARE COOLING FAN(S) "OFF"?



"AFTER REPAIRS," CONFIRM "CLOSED LOOP" OPERATION AND NO MIL (SERVICE ENGINE SOON).

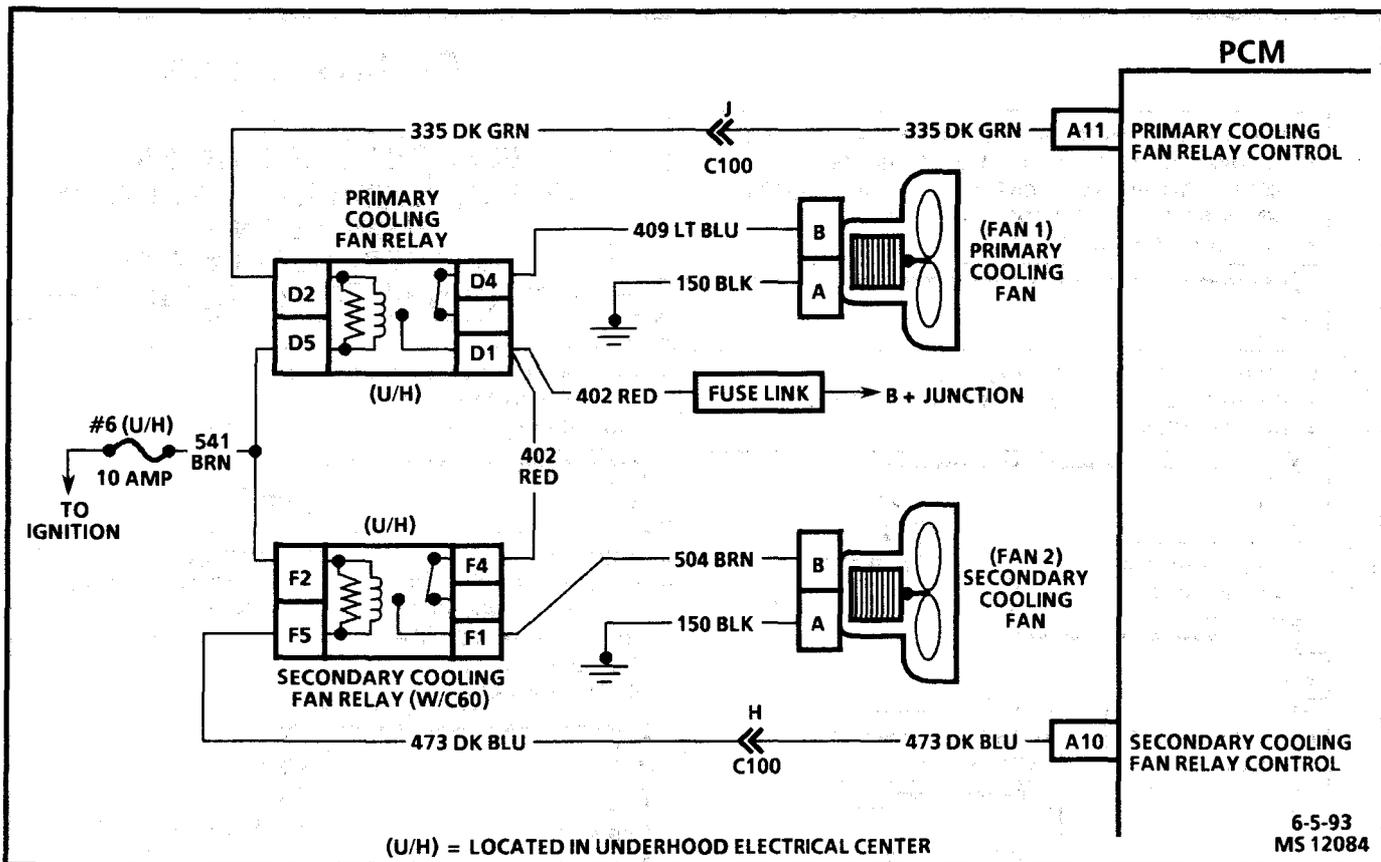


CHART C-12A

(Page 2 of 2)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (NON A/C AND EARLY PRODUCTION A/C) 5.7L (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Battery voltage is supplied to the primary fan relay on terminals "D1" and "F4" of the secondary fan relay. Ignition voltage is supplied to terminal "D5" of the primary fan relay and "F2" of the secondary fan relay. Grounding CKT 335 (relay terminal "D2") will energize the primary cooling fan relay (Fan 1) and supply battery voltage to the primary cooling fan motor. Grounding CKT 473 (relay terminal "F5") will energize the secondary cooling fan relay (Fan 2) and supply battery voltage to the secondary fan motor.

The PCM will enable the cooling fans, when certain Diagnostic Trouble Codes (DTCs) are set.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the complaint was due to an actual boil over, the warning indicator light, or engine coolant temperature gage indicated overheating.

The gage accuracy can also be checked by comparing the Engine Coolant Temperature (ECT) sensor reading using a Tech 1 and comparing its reading with the gage reading.

If the engine is actually overheating and the gage indicated overheating, but the cooling fan is not coming "ON," the Engine Coolant Temperature (ECT) sensor has probably shifted out of calibration and should be replaced.

If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command fan 1 "ON" at 108°C (226°F) and "OFF" at 105°C (221°F) and an 2 "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

FROM
CHART C-12
(1 OF 2)

CHART C-12A (Page 2 of 2)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (NON A/C AND EARLY PRODUCTION A/C) 5.7L (VIN P) "F" CARLINE (SFI)

PRIMARY

SECONDARY

- IGNITION "OFF."
- DISCONNECT PRIMARY COOLING FAN RELAY
- IGNITION "ON."
- PROBE FAN RELAY HARNESS TERMINALS "D1" AND "D5" WITH A TEST LIGHT CONNECTED TO GROUND.

- IGNITION "OFF."
- DISCONNECT SECONDARY COOLING FAN RELAY
- IGNITION "ON."
- PROBE FAN RELAY HARNESS TERMINALS "F2" AND "F4" WITH A TEST LIGHT CONNECTED TO GROUND.

LIGHT "ON" BOTH

LIGHT "OFF" ONE OR BOTH

LIGHT "ON" BOTH

LIGHT "OFF" ONE OR BOTH

- USING TECH 1 ACTIVATE "FAN CTRL PCM A11."
- PROBE HARNESS TERMINAL "D2" WITH A TEST LIGHT CONNECTED TO B+ . IS TEST LIGHT "ON"?

REPAIR OPEN OR SHORT TO GROUND IN CIRCUIT THAT DID NOT LIGHT.

- USING TECH 1 ACTIVATE "FAN CTRL PCM A10."
- PROBE HARNESS TERMINAL "F5" WITH A TEST LIGHT CONNECTED TO B+ . IS TEST LIGHT "ON"?

REPAIR OPEN OR SHORT TO GROUND IN CIRCUIT THAT DID NOT LIGHT.

YES

NO

YES

NO

- USING A FUSED JUMPER WIRE, JUMPER FAN RELAY HARNESS TERMINALS "D1" AND "D4" TOGETHER. DOES FAN OPERATE?

REPAIR OPEN OR SHORT TO VOLTAGE IN CKT 335. OR FAULTY PCM CONNECTION OR FAULTY PCM.

- USING A FUSED JUMPER WIRE, JUMPER FAN RELAY HARNESS TERMINALS "F1" AND "F4" TOGETHER. DOES FAN OPERATE?

REPAIR OPEN OR SHORT TO VOLTAGE IN CKT 473. OR FAULTY PCM CONNECTION OR FAULTY PCM.

NO

YES

NO

YES

- IGNITION "OFF."
- DISCONNECT PRIMARY COOLING FAN ELECTRICAL CONNECTOR
- IGNITION "ON."
- JUMPER WIRE STILL INSTALLED AT RELAY HARNESS.
- CONNECT A TEST LIGHT ACROSS COOLING FAN ELECTRICAL CONNECTOR TERMINALS. IS TEST LIGHT "ON"?

FAULTY RELAY CONNECTION OR FAULTY RELAY.

- IGNITION "OFF."
- DISCONNECT SECONDARY COOLING FAN ELECTRICAL CONNECTOR
- IGNITION "ON."
- JUMPER WIRE STILL INSTALLED AT RELAY HARNESS.
- CONNECT A TEST LIGHT ACROSS COOLING FAN ELECTRICAL CONNECTOR TERMINALS. IS TEST LIGHT "ON"?

FAULTY RELAY CONNECTION OR FAULTY RELAY.

NO

YES

NO

YES

- PROBE COOLING FAN MOTOR HARNESS CONNECTOR TERMINAL "B" WITH A TEST LIGHT CONNECTED TO GROUND. IS TEST LIGHT "ON"?

FAULTY CONNECTION AT FAN MOTOR OR FAULTY FAN MOTOR.

- PROBE COOLING FAN MOTOR HARNESS CONNECTOR TERMINAL "B" WITH A TEST LIGHT CONNECTED TO GROUND. IS TEST LIGHT "ON"?

FAULTY CONNECTION AT FAN MOTOR OR FAULTY FAN MOTOR.

YES

NO

YES

NO

FAULTY FAN MOTOR CONNECTION OR CIRCUIT 150 OPEN.

OPEN IN CIRCUIT 409 BETWEEN RELAY AND COOLING FAN MOTOR.

FAULTY FAN MOTOR CONNECTION OR CIRCUIT 150 OPEN.

OPEN IN CIRCUIT 504 BETWEEN RELAY AND COOLING FAN MOTOR.

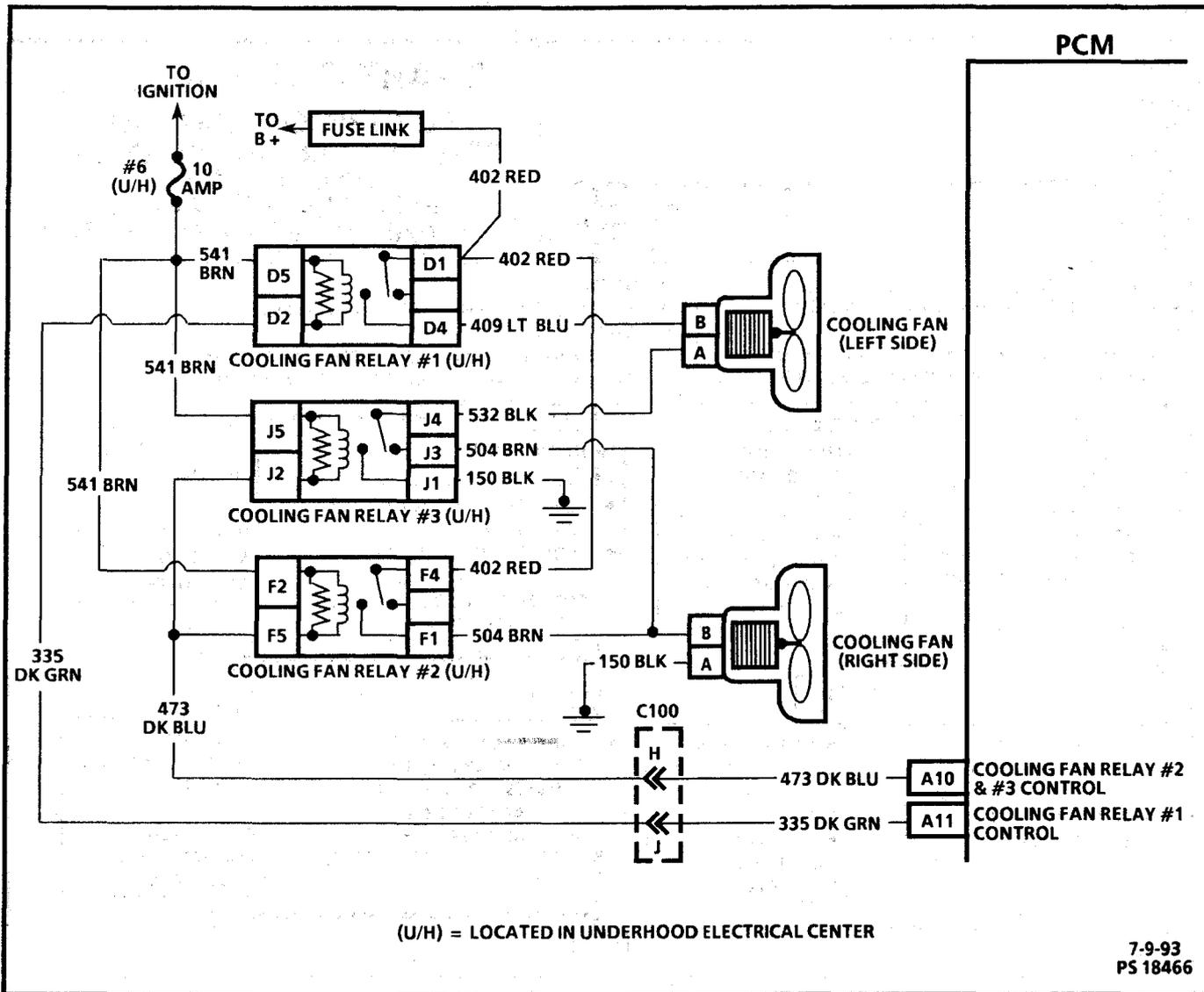


CHART C-12B (Page 1 of 4)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (LATE PRODUCTION A/C)

5.7 (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Ignition voltage is supplied to all three cooling fan relay coils on CKT 541. The PCM controls cooling fan relay #1 by providing the ground path through CKT 335. The PCM controls cooling fan relays #2 and #3 together by providing the ground path through CKT 473. When cooling fan relay #1 is energized the cooling fans are connected in series and operate together at low speed. When all three relays are energized the fans are connected in parallel and operate together at high speed. When certain DTCs are set, the PCM will enable cooling fans.

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

1. The cooling fans should come "ON" anytime A/C system is operating.
2. Comparing Tech 1 pressure and manifold gage set pressure will determine if the A/C refrigerant pressure sensor is out of range. An out of range A/C refrigerant pressure sensor can cause the cooling fans to operate at the wrong times.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the

complaint was due to an actual boil over, or the warning indicator light, or engine coolant temperature gage indicated overheating.

If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command low speed fans "ON" at 108°C (226°F) and "OFF" at 105°C (221°F) and, high speed fans "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

CHART C-12B

(Page 1 of 4)
**ELECTRIC COOLING FAN CONTROL
 CIRCUIT DIAGNOSIS
 (LATE PRODUCTION A/C)
 5.7L (VIN P) "F" CARLINE (SFI)**

- IF ANY DTCs ARE SET PERFORM THOSE CHARTS FIRST.
- CHECK COOLING SYSTEM.
- COOLANT BELOW 100°C (212°F).
- IGNITION "ON," ENGINE "OFF," A/C "OFF."
- FANS SHOULD BE "OFF." ARE THEY?

YES

- USING TECH 1 ACTIVATE FAN CTRL PCM A11". DO BOTH FANS TURN "ON"?

YES

- USING TECH 1 ACTIVATE "FAN CTRL PCM A10". DO BOTH FANS SWITCH TO HIGH SPEED?

YES

- USING TECH 1 EXIT OUTPUTS START ENGINE, A/C "OFF." ARE FANS "ON"?

NO

1

- TURN A/C "ON." ARE FANS "ON"?

YES

2

- INSTALL A/C MANIFOLD GAGE SET. REFER TO SECTION 1B.
- IGNITION "ON." ENGINE "OFF."
- USING TECH 1 COMPARE MANIFOLD GAGE SET PRESSURE TO TECH 1 PRESSURE READING. IS TECH 1 PRESSURE READING WITHIN 20 psi OF HIGH SIDE PRESSURE?

YES

- ENGINE IDLING, A/C "ON." IS TECH 1 PRESSURE READING WITHIN 20 psi OF HIGH SIDE PRESSURE?

YES

NO TROUBLE FOUND. REFER TO "DIAGNOSTIC AIDS" ON FACING PAGE.

NO

- DISCONNECT FAN RELAY #1.
- FANS SHOULD BE "OFF." ARE THEY?

NO

- DISCONNECT FAN RELAY #3.
- FANS SHOULD BE "OFF." ARE THEY?

NO

- WITH TEST LIGHT TO B + PROBE FAN RELAY #3 CONNECTOR TERMINAL "F5". IS THE LIGHT ON?

YES

- WITH LIGHT STILL CONNECTED, DISCONNECT PCM CONNECTOR "A". IS LIGHT "ON"?

YES

CONTROL CIRCUIT SHORT TO GROUND.

CIRCUITS 409 AND/OR 504 SHORTED TO B +.

NO

REFER TO SECTION C-10 FOR FURTHER DIAGNOSIS OF THE A/C CIRCUIT.

NO

FAULTY A/C REFRIGERANT PRESSURE SENSOR.

NO

FAULTY A/C REFRIGERANT PRESSURE SENSOR.

YES

- WITH TEST LIGHT TO B +, PROBE FAN RELAY #1 CONNECTOR TERMINAL "D2". IS THE LIGHT "ON"?

YES

- IGNITION "OFF."
- WITH LIGHT STILL CONNECTED, DISCONNECT PCM CONNECTOR "A".
- IGNITION "ON." IS LIGHT "ON"?

YES

CONTROL CIRCUIT SHORT TO GROUND.

NO

FAULTY PCM

NO

FAULTY FAN RELAY #1

NO

FAULTY PCM

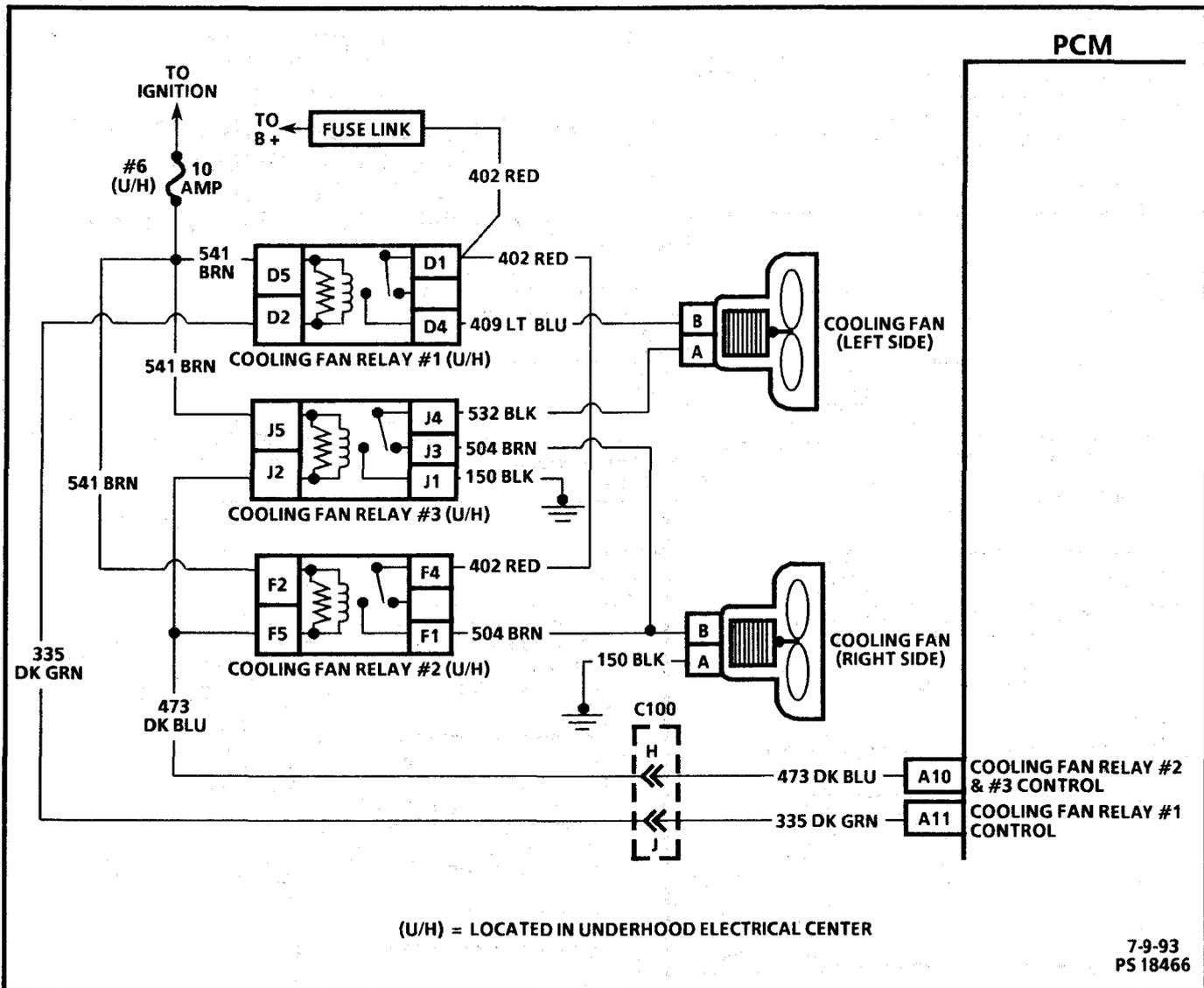


CHART C-12B (Page 2 of 4)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (LATE PRODUCTION A/C) 5.7 (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Ignition voltage is supplied to all three cooling fan relay coils on CKT 541. The PCM controls cooling fan relay #1 by providing the ground path through CKT 335. The PCM controls cooling fan relays #2 and #3 together by providing the ground path through CKT 473. When cooling fan relay #1 is energized the cooling fans are connected in series and operate together at low speed. When all three relays are energized the fans are connected in parallel and operate together at high speed. When certain DTCs are set, the PCM will enable cooling fans.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the complaint was due to an actual boil over, or the warning indicator light, or engine coolant temperature gage indicated overheating.

If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command low speed fans "ON" at 108°C (226°F) and "OFF" at 105° C (221°F) and, high speed fans "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

CHART C-12B

(Page 2 of 4)
**ELECTRIC COOLING FAN CONTROL
 CIRCUIT DIAGNOSIS
 (LATE PRODUCTION A/C)
 5.7L (VIN P) "F" CARLINE (SFI)**

FROM CHART C-12
 1 OF 4.

DID EITHER FAN
 TURN "ON"?

NO

- USING TECH 1 ACTIVATE "FAN CTRL PCM A11".
- DISCONNECT FAN RELAY #1
- WITH TEST LIGHT TO B+, PROBE RELAY CONNECTOR TERMINAL "D2". IS LIGHT "ON"?

YES

- WITH TEST LIGHT TO GROUND PROBE FAN RELAY CONNECTOR TERMINALS "D5" AND "D1."
- LIGHT SHOULD BE "ON" FOR BOTH CIRCUITS. IS IT?

YES

REPAIR OPEN OR SHORT TO GROUND ON CIRCUIT THAT DID NOT LIGHT.

NO

NO

- TEST LIGHT STILL CONNECTED.
- IGNITION "OFF."
- DISCONNECT PCM CONNECTOR "A".
- PROBE PCM HARNESS CONNECTOR TERMINAL "A11" WITH FUSED JUMPER TO GROUND. IS LIGHT "ON"?

NO

RELAY CONTROL CIRCUIT OPEN OR SHORTED TO B+.

YES

FAULTY PCM CONNECTIONS OR FAULTY PCM.

YES

- USING TECH 1 ACTIVATE "FAN CTRL PCM A11".
- DISCONNECT THE FAN WHICH IS NOT OPERATING. DID THE OTHER FAN TURN "OFF"?

NO

- DISCONNECT FAN RELAY #2. DID THE FAN TURN "OFF"?

YES

RELAY #2 FAULTY.

YES

THE FAN WHICH WAS NOT OPERATING IS FAULTY.

NO

CIRCUIT 532 SHORTED TO GROUND.

- CONNECT A JUMPER BETWEEN FAN RELAY CONNECTOR TERMINALS "D1" AND "D4". LEAVE THIS JUMPER IN PLACE FOR THE REMAINDER OF THIS CHART. DO THE FANS COME "ON"?

NO

- DISCONNECT THE LEFT FAN.
- WITH A TEST LIGHT TO GROUND, PROBE FAN HARNESS CONNECTOR TERMINAL "B". IS THE LIGHT "ON"?

YES

- CONNECT A SECOND FUSED JUMPER WIRE BETWEEN FAN HARNESS CONNECTOR TERMINALS. IS THE RIGHT FAN "ON"?

NO

- RECONNECT LEFT FAN.
- DISCONNECT FAN RELAY #3.
- USING A TEST LIGHT TO GROUND. PROBE FAN RELAY #3 HARNESS CONNECTOR TERMINAL "J4." IS THE LIGHT "ON"?

YES

CONTINUED ON PAGE 3 OF 4.

YES

FAN RELAY #1 FAULTY

NO

OPEN CIRCUIT 409.

YES

FAULTY LEFT FAN MOTOR CONNECTIONS OR FAULTY LEFT FAN MOTOR.

NO

OPEN CIRCUIT 532.

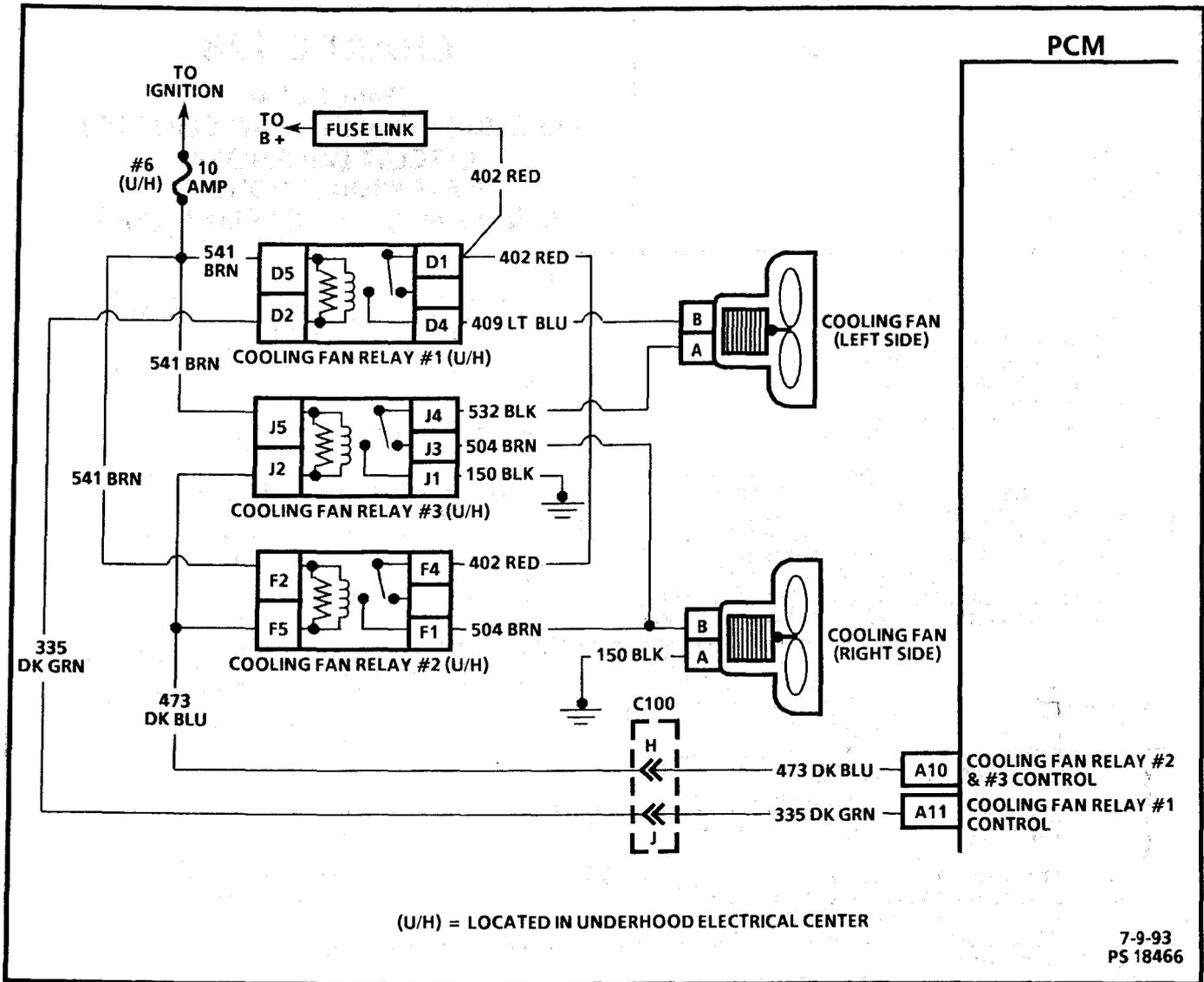


CHART C-12B (Page 3 of 4)
ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS
 (LATE PRODUCTION A/C)
5.7 (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Ignition voltage is supplied to all three cooling fan relay coils on CKT 541. The PCM controls cooling fan relay #1 by providing the ground path through CKT 335. The PCM controls cooling fan relays #2 and #3 together by providing the ground path through CKT 473. When cooling fan relay #1 is energized the cooling fans are connected in series and operate together at low speed. When all three relays are energized the fans are connected in parallel and operate together at high speed. When certain DTCs are set, the PCM will enable cooling fans.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the complaint was due to an actual boil over, or the warning indicator light, or engine coolant temperature gage indicated overheating.

If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command low speed fans "ON" at 108°C (226°F) and "OFF" at 105°C (221°F) and, high speed fans "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

CHART C-12B

(Page 3 of 4)
**ELECTRIC COOLING FAN CONTROL
 CIRCUIT DIAGNOSIS**
 (LATE PRODUCTION A/C)
 5.7L (VIN P) "F" CARLINE (SFI)

CONTINUED FROM PAGE 2 OF 4

- USING THE SECOND JUMPER WIRE, CONNECT FAN RELAY #3 HARNESS CONNECTOR TERMINALS "J4" AND "J3." DO THE FANS COME "ON"?

NO

- RECONNECT FAN RELAY #3.
- DISCONNECT RIGHT FAN.
- WITH A TEST LIGHT TO GROUND, PROBE FAN HARNESS CONNECTOR TERMINAL "B". IS THE LIGHT "ON"?

YES

- CONNECT THE SECOND JUMPER WIRE BETWEEN FAN HARNESS CONNECTOR TERMINALS. IS THE LEFT FAN "ON"?

YES

FAULTY RIGHT FAN MOTOR CONNECTIONS OR
 FAULTY RIGHT FAN MOTOR.

YES

FAN RELAY #3 FAULTY.

NO

CKT 504 OPEN BETWEEN
 SPLICE AND FAN RELAY #3.

NO

CKT 150 OPEN.

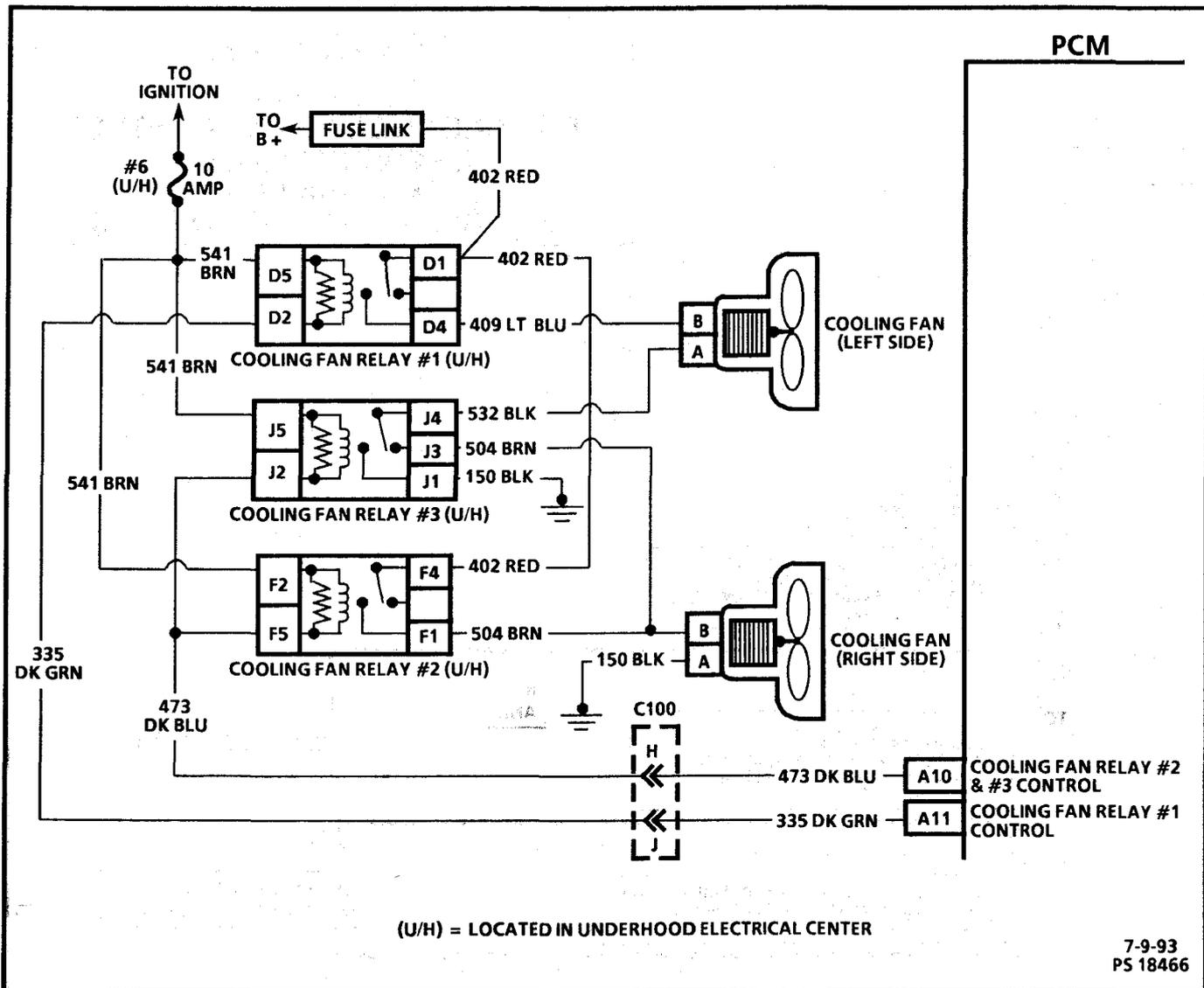


CHART C-12B (Page 4 of 4)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (LATE PRODUCTION A/C) 5.7 (VIN P) "F" CARLINE (SFI)

Circuit Description:

The cooling fans are controlled by the PCM based on various inputs. Ignition voltage is supplied to all three cooling fan relay coils on CKT 541. The PCM controls cooling fan relay #1 by providing the ground path through CKT 335. The PCM controls cooling fan relays #2 and #3 together by providing the ground path through CKT 473. When cooling fan relay #1 is energized the cooling fans are connected in series and operate together at low speed. When all three relays are energized the fans are connected in parallel and operate together at high speed. When certain DTCs are set, the PCM will enable cooling fans.

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

1. It may be necessary to raise the vehicle and observe the cooling fans from underneath during this test. Both fans should operate at low speed when "FAN CTRL PCM A11" is activated. Both fans should operate at high speed when "FAN CTRL PCM A10" is activated.

Diagnostic Aids: If the owner complained of an overheating problem, it must be determined if the complaint was due to an actual boil over, or the warning indicator light, or engine coolant temperature gage indicated overheating.

If the engine is overheating and the cooling fans are "ON," the cooling system should be checked, refer to SECTION 6B.

The PCM will command low speed fans "ON" at 108°C (226°F) and "OFF" at 105° C (221°F) and, high speed fans "ON" at 113°C (235°F) and "OFF" at 110°C (230°F).

CHART C-12B

(Page 4 of 4)

ELECTRIC COOLING FAN CONTROL CIRCUIT DIAGNOSIS (LATE PRODUCTION A/C) 5.7L (VIN P) "F" CARLINE (SFI)

FROM CHART C-12
1 OF 4.

- 1
- USING TECH 1 ACTIVATE "FAN CTRL PCM A11".
 - WHILE OBSERVING FANS, ACTIVATE "FAN CTRL PCM A10".

BOTH FANS OPERATE (NO CHANGE).

- IGNITION "OFF."
- DISCONNECT PCM CONNECTOR "A".
- DISCONNECT FAN RELAY #1.
- JUMPER RELAY HARNESS CONNECTOR TERMINAL "D1" TO "D4".
- IGNITION "ON."
- PROBE PCM HARNESS CONNECTOR TERMINAL "A10" WITH A FUSED JUMPER TO GROUND. DO THE FANS SWITCH FROM LOW TO HIGH SPEED?

NO
CKT 473 OPEN OR SHORTED TO B+.

YES
FAULTY PCM CONNECTIONS OR FAULTY PCM.

LEFT FAN STOPS OPERATING.

- DISCONNECT FAN RELAY #3.
- PROBE RELAY HARNESS CONNECTOR TERMINAL "J2" WITH A TEST LIGHT TO B+.
- USING TECH 1 ACTIVATE "FAN CTRL PCM A10". IS THE LIGHT "ON"?

YES
PROBE FAN RELAY #3 HARNESS CONNECTOR TERMINAL "J1" WITH A TEST LIGHT TO B+. IS THE LIGHT "ON"?

NO
CIRCUIT 473 OPEN BETWEEN FAN RELAY #3 AND SPLICE.

YES
PROBE FAN RELAY #3 HARNESS CONNECTOR TERMINAL "J5" WITH A TEST LIGHT TO GROUND. IS THE LIGHT "ON"?

NO
CKT 150 OPEN.

YES
FAN RELAY #3 FAULTY.

NO
CIRCUIT 541 OPEN TO FAN RELAY #3.

RIGHT FAN STOPS OPERATING.

- DISCONNECT FAN RELAY #2.
- PROBE RELAY HARNESS CONNECTOR TERMINAL "F5" WITH A TEST LIGHT TO B+.
- USING TECH 1 ACTIVATE "FAN CTRL PCM A10". IS THE LIGHT "ON"?

YES
PROBE FAN RELAY #2 HARNESS CONNECTOR TERMINAL "F2" WITH A TEST LIGHT TO GROUND. IS THE LIGHT "ON"?

NO
CIRCUIT 473 OPEN BETWEEN FAN RELAY #2 AND SPLICE.

YES
PROBE RELAY #2 HARNESS CONNECTOR TERMINAL "F4" WITH A TEST LIGHT TO GROUND. IS THE LIGHT "ON"?

NO
CIRCUIT 402 OPEN BETWEEN RELAY #2 AND FUSELINK.

YES
JUMPER RELAY #2 HARNESS CONNECTOR TERMINAL "F4" TO "F1". IS THE RIGHT FAN "ON"?

NO
CKT 541 OPEN TO FAN RELAY #2.

YES
FAN RELAY #2 FAULTY.

NO
CIRCUIT 504 OPEN BETWEEN FAN RELAY #2 AND SPLICE.