On-Board Diagnostic

NOTE:
The in-vehicle temperature should be greater than 10°C (50°F) for all DTCs shown to be valid.

- The control assembly will detect electrical concerns occurring during the On-Board Diagnostic.
- Ensure that the engine is warm, at least 120°F coolant temperature.
- To display the DTCs, initiate the On-Board Diagnostic by pushing OFF and FLOOR simultaneously and then AUTOMATIC within two seconds. The test may run as long as 30 seconds, during which time the display will be blank. If the display is blank for more than 30 seconds, go to System Diagnosis When On-Board Diagnostic Indicates No Errors Found.
- The On-Board Diagnostic Test can be initiated at any time with the resulting DTCs being displayed. Normal operation of the system stops when On-Board Diagnostic is activated. To exit the On-Board Diagnostic and restart the system, push the BLUE button. The On-Board Diagnostic should be deactivated before powering the system down. Refer to the «Symptom Chart» for an explanation of DTCs.

DIAGNOSIS WHEN ON-BOARD DIAGNOSTIC INDICATES NO ERRORS FOUND

Condition(s):

☐ Cool Discharge Air When System Is Set To AUTO/90°F

Possible Source(s):
- Heater system malfunction.

Action(s) to Take:
- Check coolant level.
- Check engine thermostat.

Possible Source(s):
- A/C air temperature control door not in max heat.

Action(s) to Take:
- Check position of A/C air temperature control door.
- Check shaft attachment.
- Test per A/C Electronic Door Actuator Motor Diagnosis (assume 02 was displayed in On-Board Diagnostic).

☐ Warm Discharge Air In Auto/16°C (60°F)

Possible Source(s):
- A/C clutch circuit malfunction.

Action(s) to Take:
- Test A/C clutch circuit per Magnetic A/C clutch does not engage. Refer to «Section 12-00».

Possible Source(s):
- Check refrigerant.

Action(s) to Take:

- Check refrigerant system pressures.

Possible Source(s):
- A/C air temperature control not in max A/C position.

Action(s) to Take:
- Check position of A/C air temperature control door.
- Check shaft attachment.
- Test per A/C Electronic Door Actuator Motor Actuator Diagnosis (assume 02 was displayed in On-Board Diagnostic).

Possible Source(s):
- Heater and A/C air inlet duct door (18731) door not in recirc.

Action(s) to Take:
- Test per Vacuum System Diagnosis, refer to «Section 12-00».

☐ Cool Air In 29°C (85°F), Max Heat in 32°C (90°F)

Possible Source(s):
- Automatic temperature control sensor shorted.
- Automatic temperature control sensor open.

Action(s) to Take:
- Troubleshoot according to Automatic Temperature Control Sensor Diagnosis.

☐ Heat in 18°C (65°F), Max Cool in 16°C (60°F)

Possible Source(s):
- Automatic temperature control sensor shorted.
- Automatic temperature control sensor open.

Action(s) to Take:
- Troubleshoot according to Automatic Temperature Control Sensor Diagnosis.

☐ No A/C Blower Motor Operation

Possible Source(s):
- Damaged temperature control lockout valve and switch/wiring.
- Blown fuse.
- Damaged pulse width modulator (A/C blower motor speed control).
- Damaged EATC control assembly.
- Damaged A/C blower motor.
- Damaged wiring.

Action(s) to Take:
- Test per A/C blower motor does not run at any speed. Refer to «Section 12-00».

☐ High A/C Blower Motor Operation Only

Possible Source(s):
- Damaged EATC control assembly.
- Damaged blower controller.
- Damaged wiring.

Action(s) to Take:
- Test per A/C blower motor in High at all blower motor speed override thumbwheel positions. Refer to «Section 12-00».

☐ A/C Clutch Is Engaged When System Is Off

Possible Source(s):
- Damaged EATC control assembly.
- Damaged wiring or interface components.

Action(s) to Take:
- Test per Magnetic A/C Clutch does not disengage. Refer to «Section 12-00».

☐ EATC Control Assembly Does Not Light Up, A/C Blower Motor Off

Possible Source(s):
- Blown fuse

Action(s) to Take:
- Replace fuse.

Possible Source(s):
- Ignition switch Circuit 298 open.

Action(s) to Take:
- Check Circuit 298.

Possible Source(s):
- Ignition switch Circuit 797 open.

Action(s) to Take:
- Check Circuit 797.

Possible Source(s):
- Ground Circuit 57 open.

Action(s) to Take:
- Check Circuit 57.

Possible Source(s):
- EATC control assembly inoperative.

Action(s) to Take:
- Replace EATC control assembly.

☐ Cold Air Is Delivered During Heating When Engine Is Cold

Possible Source(s):
- Damaged wiring.

Action(s) to Take:
- Place system at 32°C (90°F)/AUTOMATIC with ignition switch OFF (ignition must be OFF when grounding circuit 244 at engine coolant temperature sensor) start vehicle. If A/C blower motor is off, replace temperature control lockout valve and switch. If A/C blower motor is on, check wiring. If OK, replace EATC control assembly.

Possible Source(s):
- Damaged or inoperative temperature control lockout valve and switch.

Action(s) to Take:
- Replace temperature control lockout valve and switch.

☐ Temperature Set Point Does Not Repeat After Turning Ignition Switch OFF

Possible Source(s):
- Circuit 797 not connected to EATC control assembly.

Action(s) to Take:
- Remove EATC control assembly connector. With ignition switch OFF, check for 12 volts at Pin 12 (driver's side connector VA).

Possible Source(s):
- Damaged or inoperative EATC control assembly.

Action(s) to Take:
- If no voltage, check fuse/wiring. If voltage, replace EATC control assembly.

☐ System Does Not Control Temperature

Possible Source(s):
- Automatic temperature control sensor hose and elbow not connected to aspirator or automatic temperature control sensor.
- A/C evaporator air control venturi (19E628) not secured to A/C evaporator core housing (19A553).
- Automatic temperature control sensor seal(s) missing or not installed properly.
- A/C evaporator air control venturi or automatic temperature control sensor hose and elbow kinked or blocked with foreign matter.
- Damaged aspirator hose.

Action(s) to Take:
- Inspect and service.

☐ EATC Control Assembly Turns On And Off Erratically, No Control Of System

Possible Source(s):
- Damaged charging system. EATC will not function with too low or too high battery voltage.

Action(s) to Take:
- Check battery voltage. If battery voltage is less than 10 volts or greater than 16 volts, check charging system. Do not replace EATC control assembly.

AUTOMATIC TEMPERATURE CONTROL SENSOR DIAGNOSIS

Condition(s):

☐ On-Board Diagnosis DTC 03 (Warm Air Discharge at 18°C (65°F) or Cool Air Discharge at 29°C (85°F).

Possible Source(s):
- Automatic temperature control sensor open or shorted.

Action(s) to Take:
- Disconnect wire harness connector at automatic temperature control sensor. Measure resistance across automatic temperature control sensor terminals and compare with specifications in the following Automatic Temperature Control Sensor Resistance Table. If resistance is out of specifications, replace automatic temperature control sensor. If automatic temperature control sensor is OK, proceed to "Wire harness open or shorted."

☐ On-Board Diagnosis DTC 03 (Warm Air Discharge at 18°C (65°F) or Cool Air Discharge at 29°C (85°F).

Possible Source(s):
- Wire harness open or shorted.

Action(s) to Take:
- Disconnect battery cables. Disconnect wire harness connector from automatic temperature control sensor and disconnect both connectors from EATC control assembly. Check for continuity and for possible shorting between the two wires (Pin 2 (470 PK/BK) and Pin 17 (790 W/O)). Service as necessary. Reconnect wire harness and battery ground cables.

Sensor Resistance Table

Approximate Temperature	Sensor Resistance Acceptance Range
50°F to 68°F (10°C to 20°C)	37K to 58K ohms

68°F to 86°F (20°C to 30°C)	24K to 37K ohms
86°F to 104°F (30°C to 40°C)	16K to 24K ohms

A/C AMBIENT AIR TEMPERATURE SENSOR DIAGNOSIS

Condition(s):

- ☐ On-Board Diagnosis DTC 04 and Outside Temperature Display is Reading -40°C (-40°F) or 60°C (140°F) (Warm Air Discharge at 18°C (65°F) or Cool Air Discharge at 30°C (86°F).

  Possible Source(s):
  - A/C ambient air temperature sensor and bracket open or shorted.

    Action(s) to Take:
    - Disconnect battery cables (necessary to reset outside temperature display memory). Disconnect wire harness connector at Automatic temperature control sensor. Measure resistance across A/C ambient air temperature sensor and bracket terminal and compare with Automatic Temperature Control Sensor Resistance Table. If resistance is out of specifications, replace A/C ambient air temperature sensor and bracket. If A/C ambient air temperature sensor and bracket is OK, proceed to A/C ambient air temperature sensor wire harness open or shorted. Reconnect battery ground cable (14301).
      NOTE:
      Install A/C ambient air temperature sensor and bracket and electrical connections before battery (10653) is reconnected.

- ☐ On-Board Diagnosis DTC 04 and Outside Temperature Display is Reading -40°C (-40°F) or 60°C (140°F) (Warm Air Discharge at 18°C (65°F) or Cool Air Discharge at 30°C (86°F).

  Possible Source(s):
  - A/C ambient air temperature sensor and bracket wire harness open or shorted.

    Action(s) to Take:
    - Disconnect battery cables. Disconnect wire harness connector from A/C ambient air temperature sensor and disconnect both connectors from the EATC control assembly. Check for continuity and for possible shorting between two wires (Pin 1 (788 R/O), and Pin 2 (470 PK/BK)). Service as necessary. Reconnect wire harness and battery cables.

A/C SUNLOAD SENSOR DIAGNOSIS

Condition(s):

- ☐ On-Board Diagnostics DTC 05

  Possible Source(s):
  - A/C sunload sensor shorted.

    Action(s) to Take:
    - Disconnect battery. Disconnect wire harness connector at A/C sunload sensor and disconnect both connectors from EATC control assembly.
      NOTE:
      Check A/C sunload sensor for a short using an ohmmeter. The A/C sunload sensor is a photodiode so there should be some unspecified resistance across the terminals depending on the light available in the area. The only test that should be made is for a short circuit (zero resistance). If resistance is zero ohms, replace the A/C sunload sensor.
    - Check for continuity and for possible shorting between two wires (Pin 3 (476 BR/Y) and Pin 16 (468 BR)). REPEAT if necessary. Reconnect battery.