

2002 ENGINE PERFORMANCE

Trouble Shooting - No Codes

INTRODUCTION

NOTE: Before using Trouble Shooting - No Codes article, check for any related Technical Service Bulletins (TSBs) that may apply.

Before diagnosing symptoms or intermittent faults, follow proper workflow. See TESTING PROCEDURE under SELF-DIAGNOSTIC SYSTEM in appropriate SELF-DIAGNOSTICS article. If no Diagnostic Trouble Codes (DTC) are present and a no start condition exists, proceed to appropriate BASIC DIAGNOSTIC PROCEDURES article. If no DTCs are present and a driveability condition exists, diagnosis by symptom (i.e., ROUGH IDLE, ENGINE STALLS, etc.).

NOTE: Some driveability problems may have been corrected by manufacturer with a revised Engine Control Module (ECM). Check with manufacturer for latest ECM application.

Symptom checks can direct the technician to malfunctioning component(s) for further diagnosis. A symptom should lead to a specific component, system test or adjustment.

Use intermittent test procedures to locate driveability problems that do not occur when the vehicle is being tested. These test procedures should also be used if an intermittent diagnostic trouble code was present, but no problem was found during self-diagnostic testing.

SYMPTOMS

SYMPTOM DIAGNOSIS

CAUTION: When battery is disconnected, vehicle computer may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

Symptom checks cannot be used properly unless the problem occurs while the vehicle is being tested. To reduce diagnostic time, ensure steps in appropriate BASIC DIAGNOSTIC PROCEDURES and appropriate SELF-DIAGNOSTICS articles were performed before diagnosing a symptom. Following symptoms are available for diagnosis.

- Does Not Start
- Difficult To Start
- Poor Idling
- Poor Driveability
- Engine Stalls

- **Refueling Problem**
- **A/C Switch Indicator Blinking**

DOES NOT START

Engine Does Not Crank

- On all models except Prius, check battery and battery cables.
- On all models except Prius, check starter. See appropriate STARTERS article in STARTING & CHARGING SYSTEMS.
- On all models except Prius, check starter relay. See appropriate STARTERS article in STARTING & CHARGING SYSTEMS.
- On A/T models except MR2 and Prius, check park/neutral position switch. See PARK/NEUTRAL POSITION SWITCH under ENGINE SENSORS & SWITCHES in appropriate SYSTEM & COMPONENT TESTING article.
- On Prius, the Hybrid Vehicle (HV) control Electronic Control Unit (ECU) or Motor Generator No. 1 (MG1) may be the problem. Consult authorized dealer for servicing.

No Initial Combustion

- Check Engine Control Module (ECM) power source circuit. See ENGINE CONTROL MODULE POWER SOURCE CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Highlander, Land Cruiser, MR2, Prius, RAV4, Sequoia, Sienna and 4Runner, check engine immobilizer system (if equipped). See appropriate ENGINE IMMOBILIZER SYSTEMS article in ACCESSORIES & EQUIPMENT.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article. Also, check fuel pump switch. See **FUEL PUMP SWITCH (LAND CRUISER)** under FUEL DELIVERY under FUEL SYSTEM in SYSTEM & COMPONENT TESTING - V6 & V8 article.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.
- On all models, check Engine Control Module (ECM) electrical connector for loose, damaged or corroded terminals and repair as necessary. For illustration of ECM location, see **THEORY & OPERATION** article. If electrical connector is okay, check ECM ground circuits. See **WIRING DIAGRAMS** article. Repair as necessary. If ground circuits are okay, replace ECM with a known-good ECM and retest.

No Complete Combustion

- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

DIFFICULT TO START

Difficult To Start & Engine Cranks Normally

- On Avalon, Camry, Camry Solara, Corolla, Highlander, Land Cruiser, MR2, RAV4, Sequoia, Sienna, Tacoma, Tundra and 4Runner, check starter signal circuit. See STARTER SIGNAL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Celica and ECHO, check starter signal circuit at STA terminal on Engine Control Module (ECM). See **WIRING DIAGRAMS** article. For illustration of ECM location, see THEORY & OPERATION article. No other testing information is available from manufacturer.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.
- On all models, check engine compression. See MECHANICAL INSPECTION under PRELIMINARY INSPECTION & ADJUSTMENTS in appropriate BASIC DIAGNOSTIC PROCEDURES article.

Difficult To Start When Engine Is Hot Or Cold

- On Avalon, Camry, Camry Solara, Corolla, Highlander, Land Cruiser, MR2, RAV4, Sequoia, Sienna, Tacoma, Tundra and 4Runner, check starter signal circuit. See STARTER SIGNAL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Celica and ECHO, check starter signal circuit at STA terminal on Engine Control Module (ECM). See **WIRING DIAGRAMS** article. For illustration of ECM location, see **THEORY & OPERATION** article. No other testing information is available from manufacturer.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla,

ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.

- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On MR2 with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

POOR IDLING

High Idle Speed

- Check A/C signal. A/C signal may also be referred to as A/C switch signal or compressor circuit. See appropriate MANUAL or AUTOMATIC A/C-HEATER SYSTEMS article in AIR CONDITIONING & HEATING.
- On MR2 with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.
- On all models, check Engine Control Module (ECM) power source circuit. See ENGINE CONTROL MODULE POWER SOURCE CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.

Low Idle Speed

- Check A/C signal. A/C signal may also be referred to as A/C switch signal or compressor circuit. See appropriate MANUAL or AUTOMATIC A/C-HEATER SYSTEMS article in AIR CONDITIONING & HEATING.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On MR2 with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.

- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

Rough Idle

- Check engine compression. See MECHANICAL INSPECTION under PRELIMINARY INSPECTION & ADJUSTMENTS in appropriate BASIC DIAGNOSTIC PROCEDURES article.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

Surging

- Check Engine Control Module (ECM) power source circuit. See ENGINE CONTROL MODULE POWER SOURCE CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On MR2 with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

POOR DRIVEABILITY

Hesitation/Poor Acceleration

- On Avalon, Camry 2.2L 4-cylinder gasolines models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On all models except MR2 and Prius, on models with electronic controlled automatic transaxle/transmission, check for problem with electronic controls for automatic transaxle/transmission.

See appropriate ELECTRONIC CONTROLS article in AUTOMATIC TRANSMISSIONS.

- On Corolla, check A/C-cut control system circuit. See A/C-CUT CONTROL SYSTEM CIRCUIT under COMPUTERIZED ENGINE CONTROLS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On Prius, there may be a problem with the hybrid transaxle.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

Surging

- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

ENGINE STALLS

Engine Starts And Then Stalls

- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Celica, Corolla, ECHO, Highlander, MR2, Prius, RAV4, Sienna, Tacoma, Tundra 3.4L V6 and 4Runner, check fuel pump control circuit. See FUEL PUMP CONTROL CIRCUIT under COMPUTERIZED ENGINE CONTROLS in appropriate SYSTEM & COMPONENT TESTING article.
- On Land Cruiser, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY/ECU CIRCUIT test in **SELF-DIAGNOSTICS - LAND CRUISER** article.
- On MR2 with sequential manual transaxle, check throttle body and components for Electronic Throttle Control System (ETCS). See THROTTLE BODY under IDLE CONTROL SYSTEMS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article. Models with sequential manual transaxle may be identified by the shift lever pattern which consists of "R", "N", "S" and "+" in place of the conventional type shift lever pattern and no clutch pedal is used.
- On Sequoia and Tundra 4.7L V8, check fuel pump control circuit. See DTC P1200: FUEL PUMP RELAY CIRCUIT test in appropriate SELF-DIAGNOSTICS article.

Engine Stall During A/C Operation

- Check A/C signal. A/C signal may also be referred to as A/C switch signal or compressor circuit. See appropriate MANUAL or AUTOMATIC A/C-HEATER SYSTEMS article in AIR CONDITIONING & HEATING.

- Check Engine Control Module (ECM) electrical connector for loose, damaged or corroded terminals and repair as necessary. For illustration of ECM location, see THEORY & OPERATION article. If electrical connector is okay, check ECM ground circuits. See **WIRING DIAGRAMS** article. Repair as necessary. If ground circuits are okay, replace ECM with a known-good ECM and retest.

REFUELING PROBLEM

NOTE: **On-Board Refilling Vapor Recovery (ORVR) system is used to recover fuel vapors into charcoal canister that are generated during refueling. Manufacturer provides procedure for only the models listed.**

Unable/Difficult To Refuel

- On Avalon, Camry 2.2L 4-cylinder gasoline models, Camry 3.0L V6, Camry Solara, Corolla, ECHO, Highlander and Prius, a problem may exist in the On-Board Refilling Vapor Recovery (ORVR) system. Check fuel evaporative system. See FUEL EVAP SYSTEM under EMISSION SYSTEMS & SUB-SYSTEMS in appropriate SYSTEM & COMPONENT TESTING article.
- Check fuel evaporative system. See FUEL EVAPORATIVE SYSTEM under EMISSION SYSTEMS & SUB-SYSTEMS in appropriate SYSTEM & COMPONENT TESTING article.

A/C SWITCH INDICATOR BLINKING

NOTE: **Manufacturer provides procedure for only the models listed.**

- On Camry 2.2L 4-cylinder and Camry Solara 2.2L 4-cylinder, check A/C compressor lock sensor circuit. See A/C COMPRESSOR LOCK SENSOR CIRCUIT under COMPUTERIZED ENGINE CONTROLS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article.
- On Camry 2.2L 4-cylinder and Camry Solara 2.2L 4-cylinder, check A/C evaporator temperature sensor circuit. See A/C EVAPORATOR TEMPERATURE SENSOR CIRCUIT under COMPUTERIZED ENGINE CONTROLS in **SYSTEM & COMPONENT TESTING - 4-CYLINDER** article.

INTERMITTENTS

INTERMITTENT PROBLEM DIAGNOSIS

Intermittent fault testing requires duplicating circuit or component failure to identify the problem. These procedures may lead to the computer setting a diagnostic trouble code (on some systems) which may help in diagnosis.

If problem vehicle does not produce diagnostic trouble code codes, monitor voltage or resistance values using a DVOM while attempting to reproduce conditions causing intermittent fault. A status change on DVOM indicates a fault has been located.

Use a DVOM to pinpoint faults. When monitoring voltage, ensure ignition switch is in ON position or engine is running. Ensure ignition switch is in OFF position or negative battery cable is disconnected when monitoring

circuit resistance. Status changes on DVOM during test procedures indicate area of fault.

TEST PROCEDURES

Intermittent Simulation

To reproduce the conditions creating an intermittent fault, use the following methods:

- Lightly vibrate component. See **VIBRATION METHOD** .
- Heat component. See **HEATING METHOD** .
- Wiggle or bend wiring harness. See **VIBRATION METHOD** .
- Spray component with water. See **WATER APPLICATION METHOD** .

Monitor circuit/component voltage or resistance while simulating intermittent. If engine is running, monitor for diagnostic trouble codes. Use test results to identify a faulty component or circuit.

VIBRATION METHOD

Wiring Harness Testing

Using DVOM, monitor suspected circuit or component. Lightly shake wiring harness while noting fluctuation in DVOM reading. Inspect wiring harness at area where it goes through the body for signs of damage.

Component, Relay & Sensor Testing

Using DVOM, monitor suspected circuit or component. Lightly vibrate suspected component, relay or sensor while noting fluctuation in DVOM reading.

Electrical Connector Testing

Using DVOM, monitor suspected circuit or component. Lightly shake electrical connector while noting fluctuation in DVOM reading. Visually inspect electrical connector for damage.

HEATING METHOD

Component Testing

Heat suspected component with a hair dryer while checking for a malfunction to occur. DO NOT apply heat directly to components in Engine Control Module (ECM). DO NOT heat any component to more than 140°F (60°C).

WATER APPLICATION METHOD

CAUTION: Ensure vehicle does not have water leaks before using water application method. If water leak exists, use care when applying water that no water is sprayed directly on any electronic components.

Spray outside of vehicle and front of radiator with water while checking for a malfunction to occur. DO NOT spray water directly into engine compartment. Temperature and humidity may be changed by spraying water onto front of radiator. DO NOT spray electronic components directly with water.