INTRODUCTION

The following diagnostic steps will help prevent overlooking a simple problem. This is also where to begin diagnosis for a no-start condition.

The first step in diagnosing any driveability problem is verifying the customer's complaint with a test drive under the conditions during which the problem reportedly occurred.

Before entering self-diagnostics, perform a careful and complete visual inspection. Most engine control problems result from mechanical breakdowns, poor electrical connections or damaged/misrouted vacuum hoses. Before condemning the computerized system, perform each test listed in this article.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION section before disconnecting battery.

NOTE: Unless otherwise instructed in test procedures, perform all voltage tests using a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm input impedance.

PRELIMINARY INSPECTION & ADJUSTMENTS

VISUAL INSPECTION

Visually inspect all electrical wiring, looking for chafed, stretched, cut or pinched wiring. Ensure electrical connectors fit tightly and are not corroded. Ensure vacuum hoses are properly routed and not pinched or cut. If necessary, see VACUUM DIAGRAMS article to verify routing and connections. Inspect air induction system for possible vacuum leaks.

MECHANICAL INSPECTION

Compression

Check engine mechanical condition with a compression gauge, vacuum gauge, or an engine analyzer. See engine analyzer manual for specific instructions. For compression specifications, see SPECIFICATIONS article.

WARNING: Because fuel injectors on many models are triggered by ignition switch during cranking mode, DO NOT use ignition switch during compression tests. Use a remote starter to crank engine to prevent fire hazard or

engine oiling system contamination.

Exhaust System Backpressure

Before replacing any components, check exhaust system for restrictions. Use a vacuum gauge or a low-pressure (0-5 psi) gauge to check exhaust system.

If a vacuum gauge is used, connect vacuum gauge hose to intake manifold vacuum port and start engine. Observe vacuum gauge. Partially open throttle and hold steady. If vacuum gauge reading slowly drops after stabilizing, exhaust system should be checked for a restriction. If using a low pressure gauge, connect gauge in one of the following manners:

- **Check At AIR Check Valve**

  Remove AIR check valve. Install backpressure tester in place of AIR check valve.

- **Check At Oxygen Sensor**

  Remove oxygen sensor. Install backpressure tester in place of oxygen sensor. After test is completed, coat oxygen sensor threads with anti-seize compound before installation.

Diagnosis

1. Start engine and bring to operating temperature. Increase engine speed to 2000-2500 RPM and note gauge. If reading exceeds 1.25 psi (.09 kg/cm^2), exhaust system is restricted.
2. Check exhaust system for collapsed pipe, heat distress and possible internal muffler failure. If none of these conditions exist, check for restricted catalytic converter. Replace as required.

NO START DIAGNOSIS

NOTE: Some vehicles are equipped with anti-theft systems (VATS or PASS-Key(R)) which will not allow vehicle to be started if improper starting procedures or improperly coded ignition keys are used. Both fuel injection and cranking systems will be disabled. Loss of fuel enable signal from anti-theft decoder module should set a diagnostic trouble code in PCM memory.

NOTE: For terminal and circuit identification, see WIRING DIAGRAMS article.

Definition

No start is defined as engine cranks properly, but does not start. Engine may fire a few times.

NO START - ENGINE CRANKS OKAY (WITH DIS)

NOTE: Before performing following tests, check battery condition, engine cranking

speed and for adequate fuel in tank.

General Inspection

1. Ensure proper starting procedure is being used. Visually check vacuum hoses for splits, kinks and proper connections, as shown on Vehicle Emission Control Information label. Check ignition wires for cracking, hardness and proper connections at both coil pack and spark plugs.
2. Remove spark plugs. Check and replace as necessary. In very cold temperatures, ensure oil is proper viscosity and not contaminated with gasoline.

Ignition System ("F" Body)

1. Perform On-Board Diagnostic (OBD) System Check. See ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in TESTS W/CODES article. After performing OBD system check, go to next step.
2. Turn ignition on with engine off. Using test light connected to ground, probe terminals of the following fuses located in underhood electrical center No. 2.
   - A/C CRUISE
   - ENG CTRL
   - ENG SEN
   - INJR1
   - INJR2

   If test light illuminates on all fuses, go to next step. If test light does not illuminate, diagnose ignition relay circuit. See IGNITION RELAY CIRCUIT under **BASIC IGNITION SYSTEM CHECKS** .
3. Using scan tool, select ENG DTC, DTC INFO, and then select LAST TST FAIL function. If Diagnostic Trouble Code (DTC) P0230, P0335, P0336, P0601, P0602 or P0604 is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, go to next step.
4. Using scan tool, monitor VTD fuel enabled status. If scan tool displays NO, diagnose theft deterrent system. See ANTI-THEFT SYSTEMS article in ACCESSORIES/SAFETY EQUIPMENT section. If scan tool does not display NO, go to next step.
5. Using scan tool, monitor engine speed while cranking engine. If engine RPM is indicated on scan tool, go to step 9). If engine RPM is not indicated on scan tool, go to next step.
6. Disconnect Crankshaft Position (CKP) sensor connector. Using DVOM, measure voltage at ignition feed circuit of CKP sensor connector. See WIRING DIAGRAMS article. If voltage is about battery voltage, go to step 13). If voltage is not about battery voltage, go to next step.
7. Disconnect Camshaft Position (CMP) sensor connector. Using DVOM, measure voltage at ignition feed circuit of CMP sensor connector. See WIRING DIAGRAMS article. If voltage is about battery voltage, go to step 14). If voltage is not about battery voltage, go to next step.
8. Check for short to ground in CKP sensor ignition feed circuit and CMP sensor ignition feed circuit. Repair as necessary. After repairs, go to step 16). If circuits are okay, go to step 15).
9. Using scan tool, monitor engine coolant temperature. If scan tool value is close to actual value, go to next step. If scan tool value is not close to actual value, diagnose problem using DTC P0118. See TESTS

W/CODES article.

10. Using scan tool, enable fuel pump. If fuel pump operates, go to next step. If fuel pump does not operate, diagnose fuel pump relay circuit. See FUEL SYSTEM ELECTRICAL CIRCUIT.
11. Turn ignition off. Install fuel pressure gauge. Turn ignition on with engine off and observe fuel pressure. Fuel pressure should be 55-61 psi (3.8-4.2 kg/cm^2). If fuel pressure is as specified, go to next step. If fuel pressure is not present, go to FUEL SYSTEM ELECTRICAL CIRCUIT. If fuel pressure is present, but not as specified, diagnose fuel system. See **BASIC FUEL SYSTEM CHECKS** .
12. Check for air leaks in ducts between Mass Airflow (MAF) sensor and throttle body. Ensure throttle angle is zero percent at closed throttle. A faulty MAF sensor may cause no-start or stalling after start condition. Disconnecting MAF sensor will cause PCM to default to speed density (MAP, IAT, RPM) to calculate load and intake airflow. If fault condition is corrected and connections are okay, replace MAF sensor. Check if spark plugs are gas fouled by a rich condition. Check for engine mechanical failure causing no-start condition (i.e. timing chain, low compression, etc.). Compare MAP/BARO parameters to a similar vehicle and ensure values are similar. If a problem is found and repaired, go to step 16). If no problem is found, see **H - TESTS W/O CODES** article.
13. Replace CKP sensor. After replacing CKP sensor, go to step 16).
14. Replace CMP sensor. After replacing CMP sensor, go to step 16).
15. Replace PCM. Perform PCM relearn procedures. After replacing PCM, go to next step.
16. Using scan tool, select DTC, and then CLEAR INFO function. Attempt to start engine. If engine starts and continues to run, go to next step. If engine does not start, or starts and stalls, go to step 2).
17. Allow engine to idle until normal operating temperature is reached. Using scan tool, select DTC, and then FAIL THIS IGN function. If any DTC(s) is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, go to next step.
18. Using scan tool, select CAPTURE INFO, REVIEW INFO function. If any DTC(s) is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, system is okay.

Ignition System ("Y" Body)

1. Perform On-Board Diagnostic (OBD) System Check. See ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in TESTS W/CODES article. After performing OBD system check, go to next step.
2. Turn ignition on with engine off. Using test light connected to ground, probe terminals of the following fuses located in underhood electrical center No. 2.
   - A/C
   - ENG IGN1
   - INJR1
   - INJR2
   - THROT CONT

   If test light illuminates on all fuses, go to next step. If test light does not illuminate, diagnose ignition relay circuit. See IGNITION RELAY CIRCUIT under **BASIC IGNITION SYSTEM CHECKS** .

3. Using scan tool, select ENG DTC, DTC INFO, and then select LAST TST FAIL function. If any Powertrain Control Module (PCM) Diagnostic Trouble Codes (DTCs) related to Throttle Actuator

Control (TAC) system is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, go to next step.

4. Check if any Body Control Module (BCM) DTC(s) related to vehicle theft deterrent system are present. This indicates problem with column lock or VTD fuel enable circuit. See BODY CONTROL MODULE article in ACCESSORIES/SAFETY EQUIPMENT section. Using scan tool, select ENG DTC, DTC INFO, and then select LAST TST FAIL function. If Diagnostic Trouble Code (DTC) P0230, P0335, P0336, P0601, P0602, P0606 or P1624 is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, go to next step.
5. Using scan tool, monitor engine speed while cranking engine. If engine RPM is indicated on scan tool, go to step 9). If engine RPM is not indicated on scan tool, go to next step.
6. Disconnect Crankshaft Position (CKP) sensor connector. Using DVOM, measure voltage at ignition feed circuit of CKP sensor connector. See WIRING DIAGRAMS article. If voltage is about battery voltage, go to step 13). If voltage is not about battery voltage, go to next step.
7. Disconnect Camshaft Position (CMP) sensor connector. Using DVOM, measure voltage at ignition feed circuit of CMP sensor connector. See WIRING DIAGRAMS article. If voltage is about battery voltage, go to step 14). If voltage is not about battery voltage, go to next step.
8. Check for short to ground in CKP sensor ignition feed circuit and CMP sensor ignition feed circuit. Repair as necessary. After repairs, go to step 16). If circuits are okay, go to step 15).
9. Using scan tool, monitor engine coolant temperature. If scan tool value is close to actual value, go to next step. If scan tool value is not close to actual value, diagnose problem using DTC P0118. See TESTS W/CODES article.
10. Using scan tool, enable fuel pump. If fuel pump operates, go to next step. If fuel pump does not operate, diagnose fuel pump relay circuit. See FUEL SYSTEM ELECTRICAL CIRCUIT.
11. Turn ignition off. Install fuel pressure gauge. Turn ignition on with engine off and observe fuel pressure. Fuel pressure should be 55-61 psi (3.8-4.2 kg/cm^2). If fuel pressure is as specified, go to next step. If fuel pressure is not present, go to FUEL SYSTEM ELECTRICAL CIRCUIT. If fuel pressure is present, but not as specified, diagnose fuel system. See **BASIC FUEL SYSTEM CHECKS** .
12. Check for air leaks in ducts between Mass Airflow (MAF) sensor and throttle body. A faulty MAF sensor may cause no-start or stalling after start condition. Disconnecting MAF sensor will cause PCM to default to speed density (MAP, IAT, RPM) to calculate load and intake airflow. If fault condition is corrected and connections are okay, replace MAF sensor. Check if spark plugs are gas fouled by a rich condition. Check for engine mechanical failure causing no-start condition (i.e. timing chain, low compression, etc.). Compare MAP/BARO parameters to a similar vehicle and ensure values are similar. If a problem is found and repaired, go to step 16). If no problem is found, see **H - TESTS W/O CODES** article.
13. Replace CKP sensor. After replacing CKP sensor, go to step 16).
14. Replace CMP sensor. After replacing CMP sensor, go to step 16).
15. Replace PCM. Perform PCM relearn procedures. After replacing PCM, go to next step.
16. Using scan tool, select DTC, and then CLEAR INFO function. Attempt to start engine. If engine starts and continues to run, go to next step. If engine does not start, or starts and stalls, go to step 2).
17. Allow engine to idle until normal operating temperature is reached. Using scan tool, select DTC, and then FAIL THIS IGN function. If any DTC(s) is present, diagnose DTC (s). See TESTS W/CODES article. If DTC(s) is not present, go to next step.
18. Using scan tool, select CAPTURE INFO, REVIEW INFO function. If any DTC(s) is present, diagnose

DTC(s). See TESTS W/CODES article. If DTC(s) is not present, system is okay.

Fuel System Electrical Circuit

1. Perform On-Board Diagnostic (OBD) System Check. See ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in TESTS W/CODES article. After performing OBD system check, go to next step.
2. Check fuel pump fuse. If fuse is okay, go to next step. If fuse is open, go to step 9).
3. Install scan tool. Remove fuel pump relay from underhood electrical center. Turn ignition on with engine off. Using a test light connected to ground, probe fuel pump relay connector ignition feed circuit. See WIRING DIAGRAMS article. If test light illuminates, go to next step. If test light does not illuminate, go to step 12).
4. Using a test light connected to battery voltage, probe fuel pump relay connector ground circuit. See WIRING DIAGRAMS article. If test light illuminates, go to next step. If test light does not illuminate, go to step 13).
5. Using a test light connected to ground, probe fuel pump relay connector fuel pump control circuit. See WIRING DIAGRAMS article. Using scan tool, enable fuel pump. If test light illuminates, go to next step. If test light does not illuminate, go to step 11).
6. Using a fused jumper wire, jumper fuel pump relay connector ignition feed circuit to fuel pump circuit. See WIRING DIAGRAMS article. Fuel pump should operate. If fuel pump operates, go to step 18). If fuel pump does not operate, go to next step.
7. Leave jumper wire connected. Disconnect fuel pump connector at fuel pump. Using a test light connected to ground, probe fuel pump connector power feed circuit. See WIRING DIAGRAMS article. If test light illuminates, go to next step. If test light does not illuminate, go to step 14).
8. Leave jumper wire connected. Connect test light between fuel pump connector ignition feed circuit and fuel pump connector ground circuit. See WIRING DIAGRAMS article. If test light illuminates, go to step 20). If test light does not illuminate, go to step 15).
9. Turn ignition off. Remove fuel pump fuse. Disconnect fuel pump connector at fuel pump. Using a test light connected to battery voltage, probe fuel pump connector power feed circuit. See WIRING DIAGRAMS article. If test light illuminates, go to step 16). If test light does not illuminate, go to next step.
10. Reconnect fuel pump connector. Install NEW fuel pump fuse. Turn ignition on with engine off. Recheck fuel pump fuse. If fuse is open, go to step 20). If fuse is okay, original fuse was faulty, fuel pump power feed circuit experienced an intermittent short, or fuel pump experienced an intermittent internal fault.
11. Turn ignition off. Disconnect Powertrain Control Module (PCM) connector located on same side as manufacture's logo. Using DVOM, check continuity of fuel pump relay control circuit between fuel pump relay connector and PCM connector. See WIRING DIAGRAMS article. If resistance is 5 ohms or less, go to step 22). If resistance is greater than 5 ohms, go to step 17).
12. Repair open in fuel pump relay ignition feed circuit. After repairs, go to step 24).
13. Repair open in fuel pump relay ground circuit. After repairs, go to step 24).
14. Repair open in circuit between fuel pump relay and fuel pump. After repairs, go to step 24).
15. Repair open in fuel pump ground circuit. After repairs, go to step 24).
16. Repair short to ground in fuel pump feed circuit between fuel pump relay and fuel pump. After repairs, go to step 24).

17. Repair fuel pump relay control circuit. After repairs, go to step 24).
18. Check for poor connections at fuel pump relay connector. If connection is okay, go to next step. If connection is faulty, repair as necessary and go to step 24).
19. Replace fuel pump relay. After replacing fuel pump relay, go to step 24).
20. Check fuel pump harness for damage. If harness is okay, go to next step. If harness is faulty, repair as necessary and go to step 24).
21. Replace fuel pump. After replacing fuel pump, go to step 24).
22. Check for poor connection at PCM. If connection is okay, go to next step. If connection is faulty, repair as necessary and go to step 24).
23. Replace PCM. Perform PCM relearn procedures. After replacing PCM, go to next step.
24. Using scan tool, clear DTC(s). Attempt to start engine. If engine starts and continues to run, go to next step. If engine does not start, or starts but dies, go to step 2).
25. Warm engine to operating temperature. Check for DTC(s). If DTC(s) is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, go to next step
26. Using scan tool, select CAPTURE INFO, REVIEW INFO function. If any DTC(s) is present, diagnose DTC(s). See TESTS W/CODES article. If DTC(s) is not present, system is okay.

BASIC FUEL SYSTEM CHECKS

CAUTION: Begin fuel system trouble shooting and diagnosis with checking fuel injection system pressure. High fuel pressure may be present in fuel lines and component parts. Relieve fuel pressure before disconnecting any fuel system components.

NOTE: For fuel pump circuit testing, see FUEL SYSTEM ELECTRICAL CIRCUIT under NO START DIAGNOSIS .

FUEL SYSTEM PRESSURE RELIEF

Fuel system is under pressure. Pressure must be relieved prior to servicing fuel system. Fuel pressure may be relieved by using the following method:

- Disconnect negative battery terminal. Loosen fuel filler cap. Install Fuel Pressure Gauge (J-34730-1A) on fuel pressure connector of fuel rail. Wrap shop towel around pressure connection when installing fuel pressure gauge to absorb fuel leakage. Install gauge bleed hose in container. Open bleed valve to bleed fuel pressure.

FUEL SYSTEM PRESSURE TEST

CAUTION: Begin fuel system trouble shooting and diagnosis with checking fuel injection system pressure. High fuel pressure may be present in fuel lines and component parts. Relieve fuel pressure before disconnecting any fuel system components.

1. Perform On-Board Diagnostic (OBD) System Check. See ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in TESTS W/CODES article. After performing OBD system check, go to next step.
2. Turn ignition off. Turn A/C system off. Connect Fuel Pressure Gauge (J-34730-1A) to fuel pressure fitting on fuel rail. Place fuel pressure gauge bleed hose into container. Turn ignition on. Bleed air out of fuel pressure gauge. Turn ignition off for 10 seconds. Turn ignition on. Fuel pump should run for about 2 seconds. Cycle ignition to obtain highest fuel pressure possible. Observe fuel pressure with fuel pump running. Fuel pressure should be within specification. See **FUEL PRESSURE** table. If fuel pressure is within specification, go to next step. If fuel pressure is not within specification, go to step 12).
3. Fuel pressure may vary slightly when fuel pump stops. After fuel pump stops, fuel pressure should stabilize and remain constant. Note fuel pressure when fuel pump stops running. If fuel pressure decreases more than 5 psi (0.3 kg/cm^2) in 10 minutes, go to step 10). If fuel pressure does not decrease more than 5 psi (0.3 kg/cm^2) in 10 minutes, go to next step.
4. Relieve fuel pressure until pressure is 10 psi (0.7 kg/cm^2). If fuel pressure decreases more than 2 psi (0.1 kg/cm^2) in 10 minutes, go to step 19). If fuel pressure does not decrease more than 2 psi (0.1 kg/cm^2) in 10 minutes, go to next step.
5. If fuel pressure is suspected of decreasing during acceleration, cruise or hard cornering, go to next step. If fuel pressure is not suspected of decreasing during acceleration, cruise or hard corning, go to step 8).
6. Inspect in-line fuel filter and fuel feed pipe for restriction. If restriction is found, go to step 24). If restriction is not found, go to next step.
7. Remove fuel sending unit assembly. Inspect fuel pump strainer for restriction, fuel pump strainer for proper positioning and installation on fuel sending unit assembly, fuel pump flex pipe for leaks, and ensure fuel pump is proper pump for vehicle. If a problem is found, go to step 24). If a problem is not found, go to step 19).
8. Turn ignition off for 10 seconds. Turn ignition on. Fuel pump should run for about 2 seconds. Cycle ignition to obtain highest fuel pressure possible. Note fuel pressure. Start engine. Allow engine to idle until normal operating temperature is reached. If fuel pressure is less than previously noted pressure by 3-10 psi (0.2-0.7 kg/cm^2), see TESTS W/O CODES article. If fuel pressure is greater than previously noted pressure by 3-10 psi (0.2-0.7 kg/cm^2), go to next step.
9. Disconnect vacuum hose from fuel pressure regulator. With engine idling, apply 12-14" of vacuum to fuel pressure regulator. If fuel pressure decreases by 3-10 psi (0.2-0.7 kg/cm^2), go to step 20). If fuel pressure does not decrease by 3-10 psi (0.2-0.7 kg/cm^2), go to step 21).
10. Turn ignition off. Relieve fuel pressure. See **FUEL SYSTEM PRESSURE RELIEF** . Place bleed hose into container. Turn ignition on. Bleed air out of fuel pressure gauge. Using scan tool, pressurize fuel system. DO NOT allow fuel pressure to exceed 65 psi (4.5 kg/cm^2). Excess pressure may damage fuel pressure regulator. Wait for fuel pressure to build. Using scan tool, obtain highest fuel pressure possible. Gradually pinch off fuel feed hose. If fuel pressure remains constant, go to step 19). If fuel pressure does not remain constant, go to next step.
11. Gradually unpinch fuel feed hose. Using scan tool, pressurize fuel system. Wait for fuel pressure to build. Gradually pinch off fuel return hose. If fuel pressure remains constant, go to step 21). If fuel pressure does not remain constant, go to step 22).
12. If fuel pressure is greater than specification, go to next step. See **FUEL PRESSURE** table. If fuel pressure is less than specification, go to step 15).

13. Relieve fuel pressure. See **FUEL SYSTEM PRESSURE RELIEF** . Disconnect fuel return pipe from fuel rail. Attach a flexible fuel hose to fuel rail return outlet passage. Place other end of flexible hose into container. Turn ignition off for about 10 seconds. Turn ignition on. Observe fuel pressure gauge with fuel pump running. Fuel pressure should be within specification. See **FUEL PRESSURE** table. If fuel pressure is within specification, go to step 23). If fuel pressure is not within specification, go to next step.
14. Inspect fuel rail outlet passage for restriction. If restriction is found, go to step 24). If restriction is not found, go to step 21).
15. If fuel pressure is greater than zero psi, go to next step. If fuel pressure is zero psi, go to step 17).
16. Turn ignition off. Relieve fuel pressure. See **FUEL SYSTEM PRESSURE RELIEF** . Place bleed hose into container. Turn ignition on. Bleed air out of fuel pressure gauge. Using scan tool, pressurize fuel system. DO NOT allow fuel pressure to exceed 65 psi (4.5 kg/cm^2). Excess pressure may damage fuel pressure regulator. Wait for fuel pressure to build. Using scan tool, obtain highest fuel pressure possible. Gradually pinch off fuel return hose. If fuel pressure increases to greater than specification, go to step 21). See **FUEL PRESSURE** table. If fuel pressure does not increase to greater than specification, go to step 7).
17. Check fuel pump electrical circuit. See FUEL SYSTEM ELECTRICAL CIRCUIT under **NO START DIAGNOSIS** . If a problem is found in electrical circuit, go to step 24). If electrical circuit is okay, go to next step.
18. Remove fuel sending unit assembly. Inspect in-line fuel filter for obstructions, fuel feed pipe for a restriction, fuel pump strainer for obstructions, and fuel pump flex pipe for leaks. If a problem is found, go to step 24). If a problem is not found, go to next step.
19. Replace fuel sending unit assembly. After replacing fuel sending unit assembly, go to step 25).
20. Locate and repair loss of vacuum to fuel pressure regulator. After repairing vacuum loss, go to step 25).
21. Replace fuel pressure regulator. After replacing fuel pressure regulator, go to step 25).
22. Locate and replace leaking fuel injector(s). After replacing fuel injector(s), go to step 25).
23. Locate and repair restriction in fuel return pipe. After repairing restriction, go to step 25).
24. Repair problem as necessary. After repairing problem, go to step 25).
25. Turn ignition off. Turn A/C system off. Connect Fuel Pressure Gauge (J-34730-1A) to fuel pressure fitting on fuel rail. Install Fuel Pressure Gauge (J-29658-D). This kit modifies fuel pressure gauge so it may be installed in fuel delivery line with quick-connect fittings. On all models, place fuel pressure gauge bleed hose into container. Turn ignition on. Bleed air out of fuel pressure gauge. Turn ignition off for 10 seconds. Turn ignition on. Fuel pump should run for about 2 seconds. Cycle ignition to obtain highest fuel pressure possible. Observe fuel pressure with fuel pump running. Fuel pressure should be within specification. See **FUEL PRESSURE** table. If fuel pressure is within specification, go to next step. If fuel pressure is not within specification, go to step 11).
26. Fuel pressure may vary slightly when fuel pump stops. After fuel pump stops, fuel pressure should stabilize and remain constant. Note fuel pressure when fuel pump stops running. If fuel pressure decreases more than 5 psi (0.3 kg/cm^2) in 10 minutes, go to step 10). If fuel pressure does not decrease more than 5 psi (0.3 kg/cm^2) in 10 minutes, system is okay.

FUEL PRESSURE

Application	**psi (kg/cm^2)**

BASIC IGNITION SYSTEM CHECKS

DIS

Spark

1. If factory tachometer is connected to coil tachometer terminal, disconnect tachometer before performing tests. When removing spark plug wire from spark plug, twist and pull on boot. DO NOT pull on wire.
2. Using Spark Tester (J-26792), check for spark at each spark plug wire. Leave other wires connected while checking for spark. Check spark plug wire resistance on suspect wires. Resistance should be about 30,000 ohms.

Ignition Coil Power Source

Turn ignition on. Check ignition positive voltage circuit of ignition control module for battery voltage. See WIRING DIAGRAMS article. If battery voltage is not present, check ignition or PCM fuse. If fuse is not blown, check for open between fuse and ignition control module.

Ignition Coil Resistance

If ignition coil is suspected of causing misfire or no-spark condition, switch coil locations on ignition control module. If problem follows questionable coil, check ignition coil resistance or replace original coil. For ignition coil resistance, see **IGNITION COIL RESISTANCE** table.

IGNITION COIL RESISTANCE

Application	Ohms
Primary	(1)
Secondary	(2)

(1) Information not available at time of publication. Refer to NO START DIAGNOSIS.

(2) Information not available at time of publication.

Ignition Relay Circuit

1. Perform On-Board Diagnostic (OBD) System Check. See ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in TESTS W/CODES article. After performing OBD system check, go to next step.
2. Turn ignition off. Remove IGN relay from underhood electrical center. Using test light connected to ground, probe IGN relay connector battery positive feed circuit. See WIRING DIAGRAMS article. If test light illuminates, go to next step. If test light does not illuminate, go to step 8).
3. Turn ignition on with engine off. Using test light connected to ground, probe IGN relay connector ignition feed circuit. See WIRING DIAGRAMS article. If test light illuminates, go to next step. If test light does not illuminate, go to step 9).

4. Turn ignition off. Using DVOM connected to ground, check resistance of IGN relay connector ground circuit. See WIRING DIAGRAMS article. If resistance is less than 5 ohms, go to next step. If resistance is greater than 5 ohms, go to step 10).
5. Turn ignition off. Connect a fused jumper wire between IGN relay battery positive feed circuit and IGN relay load circuit. See WIRING DIAGRAMS article. Using test light connected to ground, probe terminals of the following fuses located in underhood electrical center No. 2.
    - A/C ("Y" Body)
    - A/C CRUISE ("F" Body)
    - AIR PUMP ("Y" Body)
    - ENG CTRL ("F" Body)
    - ENG IGN1 ("Y" Body)
    - ENG SEN ("F" Body)
    - INJR1
    - INJR2
    - THROT CONT ("Y" Body)

    If test light illuminates on all fuses, go to next step. If test light does not illuminate, go to step 11 .
6. Check for poor terminal connection at IGN relay connector. Repair or replace as necessary. If terminal connection is okay, go to next step.
7. Replace IGN relay.
8. Repair open in IGN relay battery voltage feed circuit.
9. Repair IGN relay ignition feed circuit.
10. Repair open in IGN relay ground circuit.
11. Repair IGN relay load circuit.

Crankshaft Position (CKP) Sensor Pick-Up Coil Short & Resistance Checks

1. Set DVOM on 2000-ohm scale. Connect DVOM leads to CKP sensor connector located on side of engine block. Turn ignition off. Disconnect ignition control module connectors. Check resistance between CKP sensor terminals at ignition control module connector.
2. CKP sensor resistance should be within specification range. See **CRANKSHAFT POSITION (CKP) SENSOR RESISTANCE** table. If resistance is not within specification, replace CKP sensor. If sensor is within specification, go to next step.
3. With CKP sensor installed in block, connect one ohmmeter lead to either sensor terminal at ignition control module. Touch other lead of ohmmeter to engine block. No continuity should exist. If continuity exists, CKP sensor is shorted to ground and must be repaired or replaced.

CRANKSHAFT POSITION (CKP) SENSOR RESISTANCE (1)

Application	Ohms
5.7L	(2)

(1) For more testing information, see **G - TESTS W/CODES** article.

(2) Information not available at time of publication.

Crankshaft Position (CKP) Sensor Output Signal

Set DVOM on 2-volt AC scale. Connect DVOM leads to CKP sensor located on side of engine block. Crank engine and observe voltmeter reading. CKP sensor should generate a voltage signal of about 2 volts.

Tach Pulse (RPM) Signal

Connect scan tool to DLC. RPM should be indicated on scan tool when engine is cranked or running. Tach pulse (RPM reference) will be indicated as a voltage signal when a DVOM (with a minimum 10-megohm input impedance connected to ground) is used to backprobe RPM high reference circuit. If tach pulse signal is not present, vehicle will not run. For circuit and terminal identification, see WIRING DIAGRAMS article.

IDLE SPEED & IGNITION TIMING

Ensure idle speed and ignition timing are set to specification. For specifications, see SPECIFICATIONS article. For adjustment procedures, see ADJUSTMENTS article.

SUMMARY

If no faults were found while performing BASIC DIAGNOSTIC PROCEDURES, no trouble codes (or only intermittent ones) were found while performing ON-BOARD DIAGNOSTIC SYSTEM CHECK and driveability problems exist, proceed to appropriate TESTS W/O CODES article for diagnosis by symptom (i.e., ROUGH IDLE, NO-START, etc.) or intermittent diagnostic procedures.