

6. Attempt to start the engine. Verify the engine starts and idles.

If the engine does not start and idle, refer to *Engine Cranks But Does Not Run*.

Important: Do not clear any SPNs unless instructed to do so by a diagnostic procedure.

7. Use the appropriate scan tool selections to obtain SPNs from each of the vehicle modules. Verify there are no SPNs reported from any module.

If any SPNs are present, refer to *Diagnostic Trouble Code (DTC) List* and diagnose any current SPNs in the following order:

7.1. Any of the following: 630, 65580, 65581, or 65582.

7.2. SPN 627.

7.3. Component level SPNs.

7.4. System level SPNs.

7.5. Any remaining SPNs.

If none of the previous tests or inspections addresses the concern, refer to *Symptoms - Engine Controls*.

SPN 94

SPN Descriptors

SPN 94 FMI 3: Fuel Pressure Sensor Voltage Above Normal or Shorted High

SPN 94 FMI 4: Fuel Pressure Sensor Voltage Below Normal or Shorted Low

SPN 94 FMI 15: Fuel Pressure Data Valid But Above Normal Range-Least Severe Level +

SPN 94 FMI 17: Fuel Pressure Data Valid But Below Normal Range-Least Severe Level -

SPN 98

SPN Descriptor

SPN 98 FMI 17: Oil Level Switch Signal Data Valid But Below Normal Range-Least Severe Level

SPN 100

SPN Descriptors

SPN 100 FMI 3: Engine Oil Pressure (EOP) Sensor Circuit Voltage Above Normal or Shorted High

SPN 100 FMI 4: Engine Oil Pressure (EOP) Sensor Circuit Voltage Below Normal or Shorted Low

SPN 100 FMI 17: Engine Oil Pressure (EOP) Sensor Data Valid But Below Normal Range-Least Severe Level

SPN 105

SPN Descriptors

SPN 105 FMI 3: Manifold Air Temperature (MAT) Sensor Circuit Voltage Above Normal or Shorted High

SPN 105 FMI 4: Manifold Air Temperature (MAT) Sensor Circuit Voltage Below Normal or Shorted Low

SPN 106

SPN Descriptors

SPN 106 FMI 0: Manifold Absolute Pressure (MAP) Sensor Circuit Voltage Data Valid But Above Normal

SPN 106 FMI 1: Manifold Absolute Pressure (MAP) Sensor Circuit Voltage Data Valid But Below Normal

SPN 106 FMI 3: Manifold Absolute Pressure (MAP) Sensor Circuit Voltage Above Normal or Shorted High

SPN 106 FMI 4: Manifold Absolute Pressure (MAP) Sensor Circuit Voltage Below Normal or Shorted Low

SPN 108

SPN Descriptors

SPN 108 FMI 2: Barometric Pressure (BARO) Sensor Voltage Data Erratic, Intermittent or Incorrect

SPN 108 FMI 3: Barometric Pressure (BARO) Sensor Voltage Above Normal or Shorted High

SPN 108 FMI 4: Barometric Pressure (BARO) Sensor Voltage Below Normal or Shorted Low

SPN 108 FMI 10: Barometric Pressure (BARO) Sensor Abnormal Rate of Change

SPN 110

SPN Descriptors

SPN 110 FMI 3: Engine Coolant Temperature (ECT) Sensor Circuit Voltage Above Normal or Shorted High

SPN 110 FMI 4: Engine Coolant Temperature (ECT) Sensor Circuit Voltage Below Normal or Shorted Low

SPN 110 FMI 15: Engine Coolant Temperature (ECT) Sensor Circuit Voltage Data Valid But Above Normal Range-Least Severe Level

SPN 627

SPN Descriptor

SPN 627 FMI 15: System Voltage Data Valid But Above Normal Range-Least Severe Level

SPN 627 FMI 17: System Voltage Data Valid But Below Normal Range-Least Severe Level

SPN 630, 65580, 65581, or 65582

SPN Descriptors

SPN 630 FMI 13: Cal Memory Out of Calibration

SPN 65580 FMI 12: CPU Bad Intelligent Device or Component

SPN 65581 FMI 12: MHC Failure Bad Intelligent Device or Component

SPN 65582 FMI 12: NV RAM Failure Data Erratic, Intermittent or Incorrect

SPN 636

SPN Descriptors

SPN 636 FMI 2: Crankshaft Position (CKP) Sensor Circuit Data Erratic, Intermittent or Incorrect

SPN 636 FMI 8: Crankshaft Position (CKP) Sensor Signal Abnormal Frequency or Pulse Width

SPN 651, 652, 653, 654, 655, 656, 657, or 658

SPN Descriptors

SPN 651 FMI 3: Fuel Injector 1 Voltage Above Normal or Shorted High
SPN 651 FMI 5: Fuel Injector 1 Current Below Normal or Open Circuit
SPN 652 FMI 3: Fuel Injector 2 Voltage Above Normal or Shorted High
SPN 652 FMI 5: Fuel Injector 2 Current Below Normal or Open Circuit
SPN 653 FMI 3: Fuel Injector 3 Voltage Above Normal or Shorted High
SPN 653 FMI 5: Fuel Injector 3 Current Below Normal or Open Circuit
SPN 654 FMI 3: Fuel Injector 4 Voltage Above Normal or Shorted High
SPN 654 FMI 5: Fuel Injector 4 Current Below Normal or Open Circuit
SPN 655 FMI 3: Fuel Injector 5 Voltage Above Normal or Shorted High
SPN 655 FMI 5: Fuel Injector 5 Current Below Normal or Open Circuit
SPN 656 FMI 3: Fuel Injector 6 Voltage Above Normal or Shorted High
SPN 656 FMI 5: Fuel Injector 6 Current Below Normal or Open Circuit
SPN 657 FMI 3: Fuel Injector 7 Voltage Above Normal or Shorted High
SPN 657 FMI 5: Fuel Injector 7 Current Below Normal or Open Circuit
SPN 658 FMI 3: Fuel Injector 8 Voltage Above Normal or Shorted High
SPN 658 FMI 5: Fuel Injector 8 Current Below Normal or Open Circuit

SPN 3563

SPN Descriptors

SPN 3563 FMI 0: Supercharger Inlet Pressure (SCIP) Sensor Circuit Data Valid but Above Normal
SPN 3563 FMI 1: Supercharger Inlet Pressure (SCIP) Sensor Circuit Data Valid but Below Normal
SPN 3563 FMI 2: Supercharger Inlet Pressure (SCIP) Sensor Circuit Data Erratic, Intermittent, or Incorrect
SPN 3563 FMI 3: Supercharger Inlet Pressure (SCIP) Sensor Circuit Voltage Above Normal or Shorted High
SPN 3563 FMI 4: Supercharger Inlet Pressure (SCIP) Sensor Circuit Voltage Below Normal or Shorted Low

SPN 65541, 65542, 65543, 65544, 65545, 65546, 65547, or 65548

SPN Descriptors

SPN 65541 FMI 4: Ignition Coil 1 Voltage Below Normal or Shorted Low
SPN 65541 FMI 5: Ignition Coil 1 Current Below Normal or Open Circuit
SPN 65542 FMI 4: Ignition Coil 2 Voltage Below Normal or Shorted Low
SPN 65542 FMI 5: Ignition Coil 2 Current Below Normal or Open Circuit
SPN 65543 FMI 4: Ignition Coil 3 Voltage Below Normal or Shorted Low
SPN 65543 FMI 5: Ignition Coil 3 Current Below Normal or Open Circuit
SPN 65544 FMI 4: Ignition Coil 4 Voltage Below Normal or Shorted Low
SPN 65544 FMI 5: Ignition Coil 4 Current Below Normal or Open Circuit
SPN 65545 FMI 4: Ignition Coil 5 Voltage Below Normal or Shorted Low
SPN 65545 FMI 5: Ignition Coil 5 Current Below Normal or Open Circuit
SPN 65546 FMI 4: Ignition Coil 6 Voltage Below Normal or Shorted Low
SPN 65546 FMI 5: Ignition Coil 6 Current Below Normal or Open Circuit
SPN 65547 FMI 4: Ignition Coil 7 Voltage Below Normal or Shorted Low
SPN 65547 FMI 5: Ignition Coil 7 Current Below Normal or Open Circuit
SPN 65548 FMI 4: Ignition Coil 8 Voltage Below Normal or Shorted Low
SPN 65548 FMI 5: Ignition Coil 8 Current Below Normal or Open Circuit

SPN 65550, 65551, or 65552

SPN Descriptor

SPN 65550 FMI 2: Knock Sensor (KS) Circuit Data Erratic, Intermittent or Incorrect

SPN 65551 FMI 2: Knock Sensor (KS) Bank 1 Circuit Data Erratic, Intermittent or Incorrect

SPN 65552 FMI 2: Knock Sensor (KS) Bank 2 Circuit Data Erratic, Intermittent or Incorrect

SPN 65559

SPN Descriptors

SPN 65559 FMI 11: CAN Bus Hardware Fault Root Cause Unknown

SPN 65560

SPN Descriptors

SPN 65560 FMI 9: CAN Bus Governor Command Abnormal Update Rate

SPN 65565 or 65566

SPN Descriptors

SPN 65565 FMI 0: Fuel Trim Bank 1 Data Valid But Above Normal

SPN 65565 FMI 1: Fuel Trim Bank 1 Data Valid But Below Normal

SPN 65566 FMI 0: Fuel Trim Bank 2 Data Valid But Above Normal

SPN 65566 FMI 1: Fuel Trim Bank 2 Data Valid But Below Normal

SPN 65570

SPN Descriptors

SPN 65570 FMI 2: Cam Phaser W Data Erratic, Intermittent, or Incorrect

SPN 65570 FMI 4: Cam Phaser W Voltage Below Normal or Shorted Low

SPN 65570 FMI 5: Cam Phaser W Short High or Open

SPN 65570 FMI 7: Cam Phaser W Accuracy Mechanical System Not Responding or Out of Adjustment

SPN 65590, 65591, 65592, 65593, 65594, 65595, 65596, 65597, 65598, or 65599

SPN Descriptors

SPN 65590 FMI 7: Misfire Mechanical System Not Responding or Out of Adjustment

SPN 65591 FMI 7: Misfire Cylinder 1 Mechanical System Not Responding or Out of Adjustment

SPN 65592 FMI 7: Misfire Cylinder 2 Mechanical System Not Responding or Out of Adjustment

SPN 65593 FMI 7: Misfire Cylinder 3 Mechanical System Not Responding or Out of Adjustment

SPN 65594 FMI 7: Misfire Cylinder 4 Mechanical System Not Responding or Out of Adjustment

SPN 65595 FMI 7: Misfire Cylinder 5 Mechanical System Not Responding or Out of Adjustment

SPN 65596 FMI 7: Misfire Cylinder 6 Mechanical System Not Responding or Out of Adjustment

SPN 65597 FMI 7: Misfire Cylinder 7 Mechanical System Not Responding or Out of Adjustment
SPN 65598 FMI 7: Misfire Cylinder 8 Mechanical System Not Responding or Out of Adjustment
SPN 65599 FMI 7: Misfire Random Mechanical System Not Responding or Out of Adjustment

SPN 65601, 65602, or 65610

SPN Descriptors

SPN 65601 FMI 2: Throttle Position (TP) Sensor 2 Data Erratic, Intermittent or Incorrect
SPN 65602 FMI 2: Throttle Position (TP) Sensor 1 Data Erratic, Intermittent or Incorrect
SPN 65610 FMI 2: Throttle Position (TP) Sensor 1 and 2 Data Erratic, Intermittent or Incorrect

SPN 65604, 65605, or 65613

SPN Descriptors

SPN 65604 FMI 2: Pedal Position (PP) Sensor 2 Data Erratic, Intermittent or Incorrect
SPN 65604 FMI 12: Pedal Position (PP) Sensor 2 Bad Intelligent Device or Component
SPN 65605 FMI 2: Pedal Position (PP) Sensor 1 Data Erratic, Intermittent or Incorrect
SPN 65605 FMI 12: Pedal Position (PP) Sensor 1 Bad Intelligent Device or Component
SPN 65613 FMI 2: Pedal Position (PP) Sensor 1 and 2 Data Erratic, Intermittent or Incorrect

SPN 65615, 65616, or 65618

SPN Descriptors

SPN 65615 FMI 7: Electronic Throttle Control (ETC) Actuation Fault Mechanical System Not Responding or Out of Adjustment
SPN 65616 FMI 12: Electronic Throttle Control (ETC) Process Fault Bad Intelligent Device or Component
SPN 65618 FMI 7: Electronic Throttle Control (ETC) Return Fault Mechanical System Not Responding or Out of Adjustment

SPN 65620 or 65621

SPN Descriptors

SPN 65620 FMI 4: 5 Volt Reference A Circuit Voltage Below Normal or Shorted Low
SPN 65621 FMI 4: 5 Volt Reference B Circuit Voltage Below Normal or Shorted Low

SPN 65673 or 65674

SPN Descriptors

SPN 65673 FMI 15: Catalytic Converter A Temperature Sensor Data Valid But Above Normal Range-Least Severe Level
SPN 65674 FMI 15: Catalytic Converter B Temperature Sensor Data Valid But Above Normal Range-Least Severe Level

SPN 65690

SPN Descriptors

SPN 65690 FMI 3: Variable Governor Control Voltage Above Normal or Shorted High

SPN 65690 FMI 4: Variable Governor Control Voltage Below Normal or Shorted Low

SPN 65701 or 65702

SPN Descriptors

SPN 65701 FMI 31: General Warning Sensor 1 Not Available

SPN 65702 FMI 31: General Warning Sensor 2 Not Available

SPN 65710

SPN Descriptors

SPN 65710 FMI 31: Emergency Stop Warning Not Available

SPN 65723

SPN Descriptors

SPN 65723 FMI 2: Camshaft Position (CMP) Sensor Circuit Data Erratic, Intermittent or Incorrect

SPN 65723 FMI 7: Camshaft Position (CMP) Sensor Mechanical System Not Responding or Out of Adjustment

SPN 65723 FMI 8: Camshaft Position (CMP) Sensor Signal Abnormal Frequency or Pulse Width

SPN 66001

SPN Descriptor

SPN 66001 FMI 3: Starter Relay Low Side Driver Voltage Above Normal or Shorted High

SPN 66001 FMI 5: Starter Relay Low Side Driver Current Below Normal or Open Circuit

SPN 66002

SPN Descriptor

SPN 66002 FMI 4: Starter Relay High Side Driver Voltage Below Normal or Shorted Low

SPN 66002 FMI 5: Starter Relay High Side Driver Current Below Normal or Open Circuit

SPN 66003

SPN Descriptor

SPN 66003 FMI 3: Malfunction Indicator Lamp (MIL) Driver Voltage Above Normal or Shorted High

SPN 66003 FMI 5: Malfunction Indicator Lamp (MIL) Driver Current Below Normal or Open Circuit

SPN 66004

SPN Descriptor

SPN 66004 FMI 3: Service Vehicle Soon Lamp (SVS) Voltage Above Normal or Shorted High

SPN 66004 FMI 5: Service Vehicle Soon Lamp (SVS) Current Below Normal or Open Circuit

SPN 66005

SPN Descriptor

SPN 66005 FMI 3: Governor Status Lamp (GSL) Voltage Above Normal or Shorted High

SPN 66005 FMI 5: Governor Status Lamp (GSL) Current Below Normal or Open Circuit

SPN 66006

SPN Descriptor

SPN 66006 FMI 3: DTC Lamp 3 Voltage Above Normal or Shorted High

SPN 66006 FMI 5: DTC Lamp 3 Current Below Normal or Open Circuit

SPN 66007

SPN Descriptor

SPN 66007 FMI 3: Buzzer Driver Short Voltage Above Normal or Shorted High

SPN 66007 FMI 5: Buzzer Driver Current Below Normal or Open Circuit

SPN 66008

SPN Descriptor

SPN 66008 FMI 3: DTC Lamp 1 Voltage Above Normal or Shorted High

SPN 66008 FMI 5: DTC Lamp 1 Current Below Normal or Open Circuit

SPN 66009

SPN Descriptor

SPN 66009 FMI 3: DTC Lamp 2 Voltage Above Normal or Shorted High

SPN 66009 FMI 5: DTC Lamp 2 Current Below Normal or Open Circuit

SPN 66010

SPN Descriptor

SPN 66010 FMI 3: Slow Mode Lamp Voltage Above Normal or Shorted High

SPN 66010 FMI 5: Slow Mode Lamp Current Below Normal or Open Circuit

SPN 66013 or 66014

SPN Descriptor

SPN 66013 FMI 3: Powertrain Relay Voltage Above Normal or Shorted High

SPN 66013 FMI 5: Powertrain Relay Current Below Normal or Open Circuit

SPN 66014 FMI 4: Powertrain Relay Contact Voltage Below Normal or Shorted Low

SPN 66017

SPN Descriptors

SPN 66017 FMI 4: Fuel Pump Relay 1 Voltage Below Normal or Shorted Low

SPN 66017 FMI 5: Fuel Pump Relay 1 Current Below Normal or Open Circuit

SPN 66018

SPN Descriptor

SPN 66018 FMI 3: Tachometer Voltage Above Normal or Shorted High

SPN 66018 FMI 5: Tachometer Current Below Normal or Open Circuit

SPN 66025

SPN Descriptor

SPN 66025 FMI 4: Fuel Pump Relay 2 Voltage Below Normal or Shorted Low

SPN 66025 FMI 5: Fuel Pump Relay 2 Current Below Normal or Open Circuit

SPN 66030

SPN Descriptor

SPN 66030 FMI 3: Intercooler Relay Voltage Above Normal or Shorted High

SPN 66030 FMI 5: Intercooler Relay Voltage Below Normal or Shorted Low

SPN 66035

SPN Descriptor

SPN 66035 FMI 0: Supercharger Boost Control Solenoid Data Valid but Above Normal

SPN 66035 FMI 3: Supercharger Boost Control Solenoid Data Valid but Below Normal

SPN 66035 FMI 5: Supercharger Boost Control Solenoid Current Below Normal or Open Circuit

SPN 66035 FMI 7: Supercharger Boost Control Solenoid Mechanical System Not Responding or Out of Adjustment

SPN 66040-66043

SPN Descriptor

SPN 66040 FMI 3: OEM Output Driver 1 Voltage Above Normal or Shorted High

SPN 66040 FMI 5: OEM Output Driver 1 Current Below Normal or Open Circuit

SPN 66041 FMI 3: OEM Output Driver 2 Voltage Above Normal or Shorted High

SPN 66041 FMI 5: OEM Output Driver 2 Current Below Normal or Open Circuit

SPN 66042 FMI 3: OEM Output Driver 3 Voltage Above Normal or Shorted High

SPN 66042 FMI 5: OEM Output Driver 3 Current Below Normal or Open Circuit

SPN 66043 FMI 3: OEM Output Driver 4 Voltage Above Normal or Shorted High

SPN 66043 FMI 5: OEM Output Driver 4 Current Below Normal or Open Circuit