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## Powertrain DTC Summaries (All Gasoline Models)

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### INTRODUCTION

This document provides a summary for each powertrain Diagnostic Trouble Code (DTC) that may be logged on the Denso 32-bit engine management system. The Denso 32-bit engine management system is fitted to gasoline-fueled, Jaguar X-TYPE, new lightweight aluminum-bodied XJ, S-TYPE and XK vehicles.

**Note:** Transmission P-codes are listed after the Engine P-codes. Use the 'search' feature to find specific P-codes.

The Denso 32-bit engine control module (ECM) has an aluminium case with a steel lid. The module has a single electrical connector and the case dimensions are 175mm x 155mm x 40mm. 'Denso' is printed on the part number label. The part number is \*\*\*\* - 10K975 - \*\*.

On all vehicles except the XK, the ECM is installed in the passenger footwell, through the bulkhead between passenger compartment and engine compartment. On the XK it is installed in the powertrain housing (a black plastic box with a screw-down lid), which is located at the back of the engine compartment on the passenger side of the vehicle.

**Note:** Not all DTCs may be logged by all vehicle types. Some DTCs changed at 04MY and 05MY and three DTCs (P0106, P0107 and P0108) were reallocated to a different component. The VIN change-point for each vehicle of these reallocated DTCs is detailed in the notes column of this summary.

DTCs are listed in numerical order and a key to the column headings is shown below:

Column Heading	Explanation
DTC	Diagnostic Trouble Code
Notes	Details any care points relating to the failure; includes VIN change-points.
Indication	2-trip MIL means that the failure must be detected on two subsequent drive cycles for the MIL to illuminate. Any other lamp indicator will be recorded in this column. There may also be a message displayed on the instrument cluster while the failure is being detected that is not detailed in this document.
Default Action	A description of any default action the module undertakes in response to the detection of the failure.
Possible Causes	A list of possible causes of the failure.
CM pin	The pin(s) (if any) on the control module that might be associated with the failure.
DTC Description	The DTC description.
Test Conditions	Operating the vehicle as described in this column should result in the running of the monitor relating to the DTC. <b>Note:</b> the operating conditions described have been specified to ensure successful monitor operation is possible; in most cases the monitor may operate outside of these conditions.

## OBD MONITOR OPERATION

Some OBD monitors are continuous, that is, they operate all the time the ignition is on.

Some OBD monitors have conditions that must be satisfied before the monitor is allowed to operate, for example: engine speed 1000 – 4000 rpm; engine airflow 10 – 100 g/sec; intake air temperature -10°C – +50°C. These conditions ensure the vehicle is operating in such a manner that the failure may be correctly diagnosed. If the conditions are not met, it may be possible for a failure to be present on the vehicle but remain undetected by the module.

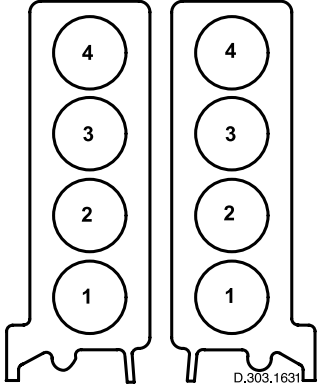
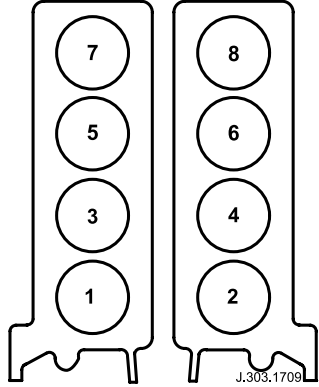
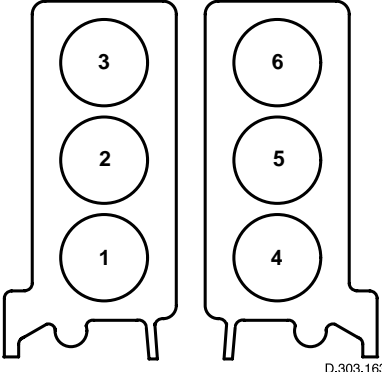
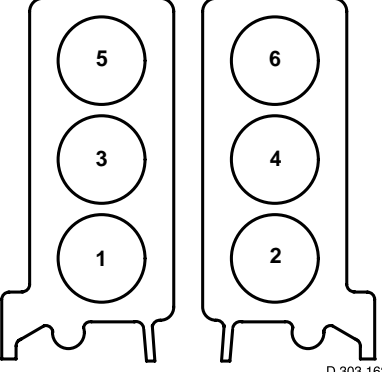
Most OBD monitors use 2-trip detection: on the first occasion the failure is detected, a pending DTC is recorded. If on the subsequent drive cycle, the failure is again detected, then a confirmed DTC is logged and the MIL may be illuminated.

A few OBD monitors operate on a single trip basis where the MIL is illuminated as soon as the failure is diagnosed.

Detection of a failure may inhibit the operation of other OBD monitors to ensure that multiple DTCs are not logged due to a single fault being present.

**Note:** The system is not infallible and a single fault may result in two or more failures being detected and hence the recording of two or more DTCs.

## CYLINDER NUMBERING

<p style="text-align: center;"><b>V8 up to 2002.5 MY</b></p>  <p style="text-align: center;">Front of engine</p>	<p style="text-align: center;"><b>V8 2002.5 MY onwards</b></p>  <p style="text-align: center;">Front of engine</p>
<p style="text-align: center;"><b>V6 S-TYPE up to 2002.5 MY</b></p>  <p style="text-align: center;">Front of engine</p>	<p style="text-align: center;"><b>V6 X-TYPE 2001.5 MY onwards S-TYPE 2002.5 MY onwards XJ 2003.5 MY onwards</b></p>  <p style="text-align: center;">Front of engine</p>

## **OBD SYSTEM READINESS – ENGINE MANAGEMENT**

If DTC P1000 is flagged after DTCs have been cleared, all engine management OBD diagnostic monitor drive cycles HAVE NOT BEEN COMPLETED.

If DTC P1111 is flagged after DTCs have been cleared, all engine management OBD diagnostic monitor drive cycles HAVE BEEN COMPLETED.

## **OBD SYSTEM READINESS – TRANSMISSION**

Use WDS Datalogger "TOTAL NUMBER OF DTC SET" to determine if transmission OBD monitoring has been completed. Refer to page 7.

## **OBD "TRIPS"**

The OBD system defines 1 TRIP as an ignition cycle (ignition key OFF; wait 30 seconds; ignition key ON) plus a minimum engine coolant temperature increase of 22 °C (40 °F) after which, the engine coolant temperature has to reach a minimum of 71°C (160 °F).

## **OBD DIAGNOSTIC MONITORS**

During vehicle operation, the on-board diagnostic (OBD) facilities of the Engine Control Module (ECM) and Transmission Control Module (TCM), continuously check the Engine Management and Transmission Control systems. The Powertrain OBD incorporates several diagnostic monitors; each monitor has an associated group of DTCs. The diagnostic monitors will complete the diagnostic test(s) if a specified service "drive cycle" is carried out.

The diagnostic monitors are:

- Heated Oxygen Sensors Monitor
- Adaptive Fuel Monitor
- Misfire Monitor
- Catalyst Efficiency Monitor
- Evaporative System Monitor
- Exhaust Gas Recirculation Monitor (not applicable for X400)
- Comprehensive Component Monitor (Engine Management / Transmission)

## **DIAGNOSTIC MONITORS DRIVE CYCLES**

Technicians can ensure that an OBD Monitor drive cycle is completed and that all or specific components have been checked by completing a specified drive cycle. Use the following service drive cycles to confirm that the components and subsystems covered by the Diagnostic Monitors are operating correctly.

## **HEATED OXYGEN SENSORS MONITOR DRIVE CYCLE**

### **Upstream (Universal) oxygen sensors:**

1. Engine OFF; cooling fans inoperative > 20 seconds.
2. Start engine and bring to normal operating temperature > 82 °C (180 °F).
3. Drive the vehicle between 3000 – 4000 rpm in 3rd gear at a steady speed. Lift foot completely off accelerator and coast to a stop within 30 seconds. Do not touch accelerator pedal for 4 seconds after coming to a stop.
4. Repeat step 3.
5. Idle engine for 11 minutes.

### **Downstream oxygen sensors:**

1. Start engine and bring to normal operating temperature > 82 °C (180 °F).
2. Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 10 minutes.
3. Drive the vehicle above 3000 rpm in 3rd gear at a steady speed. Lift foot completely off accelerator and coast for 30 seconds.

### **Oxygen sensor heaters:**

1. Start engine and bring to normal operating temperature > 82 °C (180 °F).
2. Idle engine for 3 minutes.

### **ADAPTIVE FUEL MONITOR DRIVE CYCLE**

1. Start engine and bring to normal operating temperature > 82 °C (180 °F).
2. Idle for a minimum of 10 minutes.

### **MISFIRE MONITOR DRIVE CYCLE**

1. Record flagged DTC (s) and accompanying WDS DTC Monitor freeze frame(s) data.
2. Fuel level > 25%.
3. Start engine and bring to normal operating temperature > 82 °C (180 °F).
4. Drive vehicle to the recorded freeze frame conditions (from step 1).
5. Repeat several times.

#### **Notes regarding misfire monitor DTCs:**

- If on the first trip, the misfire is severe enough to cause excess exhaust emission, the individual cylinder DTC plus DTC P1316 will be logged. The CHECK ENGINE MIL will not be activated. If the fault reoccurs on the second trip, the individual cylinder DTC plus DTC P1316 will be flagged, and the CHECK ENGINE MIL will be activated.
- If on the first trip, the misfire is severe enough to cause catalyst damage (more severe than excess exhaust emission), the CHECK ENGINE MIL will flash while the fault is present and the individual cylinder DTC plus DTC P1313 (bank 1), DTC P1314 (bank 2) will be logged. When the fault is no longer present the MIL will be deactivated.
- If the fault reoccurs on the second trip, the CHECK ENGINE MIL will flash while the fault is present and the individual cylinder DTC plus DTC P1313 (bank 1), DTC P1314 (bank 2) will be flagged. When the fault is no longer present the CHECK ENGINE MIL will be activated.

### **CATALYST EFFICIENCY MONITOR DRIVE CYCLE**

1. Start engine and bring to normal operating temperature > 75 °C (167 °F).
2. With the gear selector in Park or Neutral, hold the engine speed at 2500 rpm for 5 minutes.
3. Drive vehicle ensuring that vehicle speed exceeds 15 km/h (10 mph) and the engine speed exceeds 1500 rpm.
4. Stop the vehicle and check for any temporary DTCs using WDS.

### **EVAPORATIVE SYSTEM MONITOR DRIVE CYCLE**

1. Ensure that fuel filler cap is fully closed (minimum three clicks).
2. Fuel level > 30% and < 85%.
3. Using WDS, perform ECM DTC Clear (even if no DTCs are flagged).
4. Drive vehicle for a minimum of 2 minutes, and until engine is at normal operating temperature.
5. Using WDS, ensure that the EVAP Canister Purge Valve is operating by observing "PURGE VAPOR MANAGEMENT VALVE – DUTY CYCLE". If the valve is not active, ECM adaptations have not been learned. Conduct a "green ECM" Drive Cycle as described in Technical Service Bulletin.
6. Drive vehicle to the road where the EVAP System Drive Cycle will be conducted. Stop vehicle and switch OFF the ignition. Leave ignition OFF for 30 seconds, and then restart the engine.
7. Accelerate briskly to 80 km/h (50 mph) ensuring that the engine speed reaches a minimum of 3500 rpm for a minimum of 5 seconds.
8. (0.040-inch EVAP Test) View WDS "PURGE VAPOR MANAGEMENT VALVE – DUTY CYCLE", "CANISTER CLOSE VALVE – VAPOR RECOVERY SYSTEM", and FUEL TANK PRESSURE – VAPOR RECOVERY SYSTEM". Avoiding high engine loads, drive the vehicle steadily between 65 km/h (40 mph) and 100 km/h (60 mph). Avoid driving conditions that will produce excessive fuel movement. WDS should give an indication that the test is active (it may take up to 30 minutes before the test will initialize). When the test has initialized (EVAP Canister Close Valve CLOSED), it will take approximately 90 seconds for the test to complete.
9. (0.020-inch EVAP Test) Continue driving vehicle as explained in Step 8 for an additional 10 minutes.

10. Gently coast the vehicle to a stop. Allow the engine to idle for 2 minutes and view WDS "PURGE VAPOR MANAGEMENT VALVE – DUTY CYCLE", "CANISTER CLOSE VALVE – VAPOR RECOVERY SYSTEM", and FUEL TANK PRESSURE – VAPOR RECOVERY SYSTEM". WDS should give an indication that the test is active. When the test has initialized (EVAP Canister Close Valve CLOSED), it will take approximately 90 seconds for the test to complete.
11. If the 0.020-inch EVAP Test is not activated, the purge system vapor concentration may be too great. To reduce the vapor concentration proceed as follows:
12. Drive the vehicle for an additional 30 minutes avoiding driving conditions that will produce excessive fuel movement. Repeat Step 10. If the 0.020-inch EVAP Test is still not activated, repeat the Drive Cycle from Step 6.
13. Using WDS, check for and clear flagged DTCs.

#### **EXHAUST GAS RECIRCULATION MONITOR DRIVE CYCLE (not applicable to X400)**

1. Start engine and bring to normal operating temperature > 82 °C (180 °F).
2. Drive the vehicle in 3rd gear at 2500 rpm. Maintain a steady speed for 1 minute; lift foot completely off accelerator and coast for a minimum of 10 seconds.

#### **COMPREHENSIVE COMPONENT MONITOR ENGINE MANAGEMENT DRIVE CYCLE**

To avoid unnecessary complexity, a single comprehensive engine management drive cycle has not developed for X-TYPE. Refer to the individual DTC for specific drive cycle / monitoring conditions.

#### **COMPREHENSIVE COMPONENT MONITOR TRANSMISSION DRIVE CYCLE**

The Comprehensive Component Monitor transmission drive cycle will "check" all transmission system components:

1. Engine and transmission at normal operating temperature. Ignition OFF; ensure that SPORT mode is NOT selected.
2. With gear selector in P and the ignition ON. Check gearshift interlock by attempting to move selector without pressing the brake pedal. Verify P state illumination.
3. Press and hold the brake pedal. Move the gear selector to R. Verify R state illumination.
4. Set the parking brake. Press and hold the brake pedal. Attempt to start the engine. The engine should not start.
5. Move the gear selector to N. Verify N state illumination. Start the engine.
6. With the hand brake set and the brake pedal pressed, move the gear selector to the remaining positions in the J-Gate (D, 4, 3, 2) for five (5) seconds each. Verify the state illumination in each position.
7. Move the gear selector back to 4. Verify 4 state illumination.
8. Move the gear selector to D. Verify D state illumination.
9. Move the gear selector to N. Verify N state illumination.
10. Select R, release the brakes and drive the vehicle in Reverse for a short distance.
11. Stop the vehicle.
12. Select 2 and drive the vehicle up to 65 km/h (40 mph). Hold 65 km/h (40 mph) for a minimum of five (5) seconds.
13. Select 3 and hold 65 km/h (40 mph) for a minimum of five (5) seconds.
14. Select 4 and hold 65 km/h (40 mph) for a minimum of five (5) seconds.
15. Select D and accelerate to a minimum speed of 80 km/h (50 mph). Hold 80 – 129 km/h (50 – 80 mph) for a minimum of 1.7 kilometers (1 mile).
16. Stop the vehicle; do not switch OFF the engine.
17. Use WDS Datalogger "TOTAL NUMBER OF DTC SET" to ensure that transmission DTC monitoring is complete.

**POWERTRAIN CONTROL ACRONYMS:**

A/C	Air conditioning	HO2 Sensor 1 / 2	Heated Oxygen Sensor – Bank 1 / Downstream
APP	Accelerator Pedal Position Sensor	HO2 Sensor 2 / 1	Heated Oxygen Sensor – Bank 2 / Upstream
ASC	Adaptive Speed Control	HO2 Sensor 2 / 2	Heated Oxygen Sensor – Bank 2 / Downstream
B+	Battery Voltage	IAT Sensor	Intake Air Temperature Sensor
Bank 1	RH Engine cylinder bank (A Bank)	IC	Instrument Cluster
Bank 2	LH Engine cylinder bank (B Bank)	IMT Valve 1	Intake Manifold Tuning Valve: Bottom
BARO Sensor	Barometric Pressure Sensor	IMT Valve 2	Intake Manifold Tuning Valve: Top
CAN	Controller Area Network	IP Sensor	Injection Pressure Sensor
CKP Sensor	Crankshaft Position Sensor	KS 1	Knock Sensor – Bank 1
CMP Sensor 1	Camshaft Position Sensor – Bank 1	KS 2	Knock Sensor – Bank 2
CMP Sensor 2	Camshaft Position Sensor – Bank 2	MAF Sensor	Mass Air Flow Sensor
DLC	Data Link Connector	MAP Sensor	Manifold Absolute Pressure Sensor
DSC	Dynamic Stability Control	N/A	Normally Aspirated
ECM	Engine Control Module	SC	Supercharged
ECT Sensor	Engine Coolant Temperature Sensor	TCC	Torque converter clutch
EFT Sensor	Engine Fuel Temperature Sensor	TCM	Transmission Control Module
EGR	Exhaust Gas Recirculation	TFT Sensor	Transmission Fluid Temperature Sensor
EOT Sensor	Engine Oil Temperature Sensor	TP Sensor	Throttle Position Sensor
EVAP Canister Close Valve	Evaporative Emission Canister Close Valve	V6	V6 Engine
EVAP Canister Purge Valve	Evaporative Emission Canister Purge Valve	V8	V8 Engine
FTP Sensor	Fuel Tank Pressure Sensor	VVT Valve 1	Variable Valve Timing Valve – Bank 1
HO2 Sensor 1 / 1	Heated Oxygen Sensor – Bank 1 / Upstream	VVT Valve 2	Variable Valve Timing Valve – Bank 2

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0010		2 trip MIL	ECM Default: – VVT inhibited	VVT solenoid valve disconnected VVT solenoid valve to ECM PWM drive circuit: open circuit, short circuit, high resistance VVT solenoid failure	109	VVT circuit malfunction – bank 1	Idle engine 30 seconds  Accelerate from stop through complete engine rpm range.
P0020		2 trip MIL	ECM Default: – VVT inhibited	VVT solenoid valve disconnected VVT solenoid valve to ECM PWM drive circuit: open circuit, short circuit, high resistance VVT solenoid failure	110	VVT circuit malfunction – bank 2	Idle engine 30 seconds  Accelerate from stop through complete engine rpm range.
P0031		2 trip MIL	ECM Default: – Bank 1 adaptive fuel metering inhibited  – All HO2S control circuit switched off	HO2 Sensor 1/1 heater power supply circuit: open circuit  HO2 Sensor 1/1 heater control circuit: open circuit, high resistance  HO2 Sensor 1/1 heater ground circuit(s) fault (-029, -030)  HO2 Sensor 1/1 heater failure	1 2 29 30	HO2 Sensor heater control circuit low current – bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle – page 5  (Oxygen sensor heaters)
P0032		2 trip MIL	ECM Default: – Bank 1 adaptive fuel metering inhibited  – All HO2S control circuit switched off	HO2 Sensor 1/1 heater control circuit: short circuit to ground  HO2 Sensor 1/1 heater ground circuit(s) fault (-029, -030)  HO2 Sensor 1/1 heater failure	1 2 29 30	HO2 Sensor heater control circuit high current – bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)
P0037		2 trip MIL		HO2 Sensor 1/2 heater control circuit: short circuit to ground  HO2 Sensor 1/2 heater failure	91 92	HO2 Sensor heater control circuit low resistance – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0038		2 trip MIL		HO2 Sensor 1/2 heater control circuit: open circuit; high resistance HO2 Sensor 1/2 heater failure	91 92	HO2 Sensor heater control circuit high resistance – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)
P0051		2 trip MIL	ECM Default:  – Bank 2 adaptive fuel metering inhibited  – All HO2S control circuit switched off	HO2 Sensor 2/1 heater power supply circuit: open circuit  HO2 Sensor 2/1 heater control circuit: open circuit, high resistance  HO2 Sensor 2/1 heater ground circuit(s) fault (-081, -082) HO2 Sensor 2/1 heater failure	55 56 81 82	HO2 Sensor heater control circuit low current – bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)
P0052		2 trip MIL	ECM Default:  – Bank 2 adaptive fuel metering inhibited  – All HO2S control circuit switched off	HO2 Sensor 2/1 heater control circuit: short circuit to ground  HO2 Sensor 2/1 heater ground circuit(s) fault (-081, -082)  HO2 Sensor 2/1 heater failure	55 56 81 82	HO2 Sensor heater control circuit high current – bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)
P0057		2 trip MIL		HO2 Sensor 2/2 heater control circuit:  short circuit to ground HO2 Sensor 2/2 heater failure	91 93	HO2 Sensor heater control circuit low resistance – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)
P0058		2 trip MIL		HO2 Sensor 2/2 heater control circuit: open circuit; high resistance  HO2 Sensor 2/2 heater failure	91 93	HO2 Sensor heater control circuit high resistance – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 5 (Oxygen sensor heaters)



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0069		2 trip MIL	ECM Default: – Default value of 1 BAR (29.53 in hg, 100 kPa) used	MAP sensor failure  BARO Sensor failure (internal ECM fault)		BARO Sensor / MAP Sensor correlation check	Engine temperature not very hot (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start) Repeat cycle twice more
P0096		2 trip MIL  amber lamp	ECM Default: – Default value of 90°C (194°F) used	IAT Sensor 2 failure	72	IAT Sensor 2 (intercooler air temp.) circuit range / performance	Engine coolant temperature < 40°C (104°F)  Ambient temperature < 40°C (104°F)  Engine coolant temperature and ambient temperature within 10°C (20°F) of each other Start engine and drive above 1500 rpm at a steady speed for a minimum of 2 minutes
P0097		2 trip MIL  amber lamp	ECM Default: – Default value of 90°C (194°F) used	IAT Sensor 2 disconnected IAT Sensor 2 to ECM wiring: open circuit or high resistance IAT Sensor 2 to ECM sensing circuit: short circuit to B+ voltage IAT Sensor 2 failure	72	IAT Sensor 2 (intercooler air temp.) circuit high voltage (low air temperature)	Ignition ON, engine OFF 10 seconds
P0098		2 trip MIL  amber lamp	ECM Default: – Default value of 90°C (194°F) used	IAT Sensor 2 to ECM wiring: short circuit to ground  IAT Sensor 2 failure	72	IAT Sensor 2 (intercooler air temp.) circuit low voltage (high air temperature)	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0101		2 trip MIL  amber lamp	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited  – Maximum engine speed reduced	Blocked air cleaner  Air intake leak  Engine breather leak MAF Sensor to ECM sensing circuit: high resistance, intermittent short circuit to ground MAF Sensor supply circuit: high resistance  Throttle adaption fault (check throttle position voltage at Ignition ON)  MAF Sensor failure	44  45  46	MAF Sensor circuit range / performance	Fuel level > 25%  Start engine and bring to normal operating temperature > 82°C (180°F)  Drive the vehicle steadily between 1000 and 5000 rpm; hold steady engine and throttle conditions for 20 seconds.
P0102		2 trip MIL  amber lamp	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	MAF Sensor supply circuit: open circuit, short circuit to ground  MAF Sensor failure	44 45  46	MAF Sensor circuit low voltage	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0103		2 trip MIL  amber lamp	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	MAF Sensor to ECM sensing circuit: short circuit to B+ voltage MAF Sensor to ECM sensor ground circuit: open circuit  MAF Sensor failure	44 45  46	MAF Sensor circuit high voltage	Ignition ON, engine OFF 10 seconds
P0105		2 trip MIL	ECM Default: – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	Intake manifold air leak (loose or missing component)  MAP Sensor to ECM circuit(s) fault  Throttle adaption fault (check throttle position voltage at Ignition ON)  MAP Sensor failure	127	MAP Sensor circuit malfunction	Fuel level > 25%  Start engine and bring to normal operating temperature > 82°C (180°F) Drive the vehicle steadily between 1000 and 5000 rpm; hold steady engine and throttle conditions for 20 seconds.
P0106	upto VIN A40265, D86654, N13088, last XJ 04MY	2 trip MIL	ECM Default:  – Default value of 1 BAR (29.53 in hg, 100 kPa) used	MAP sensor failure  BARO Sensor failure (internal ECM fault)		BARO Sensor / MAP Sensor correlation check	Engine temperature not very hot (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start) Repeat cycle twice more

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0106	from VIN A40266, D86655, N13089, XJ 05MY	2 trip MIL	ECM Default:  – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	Intake manifold air leak (loose or missing component)  MAP Sensor to ECM circuit(s) fault  Throttle adaption fault (check throttle position voltage at Ignition ON)  MAP Sensor failure	127	MAP Sensor circuit malfunction	Fuel level > 25%  Start engine and bring to normal operating temperature > 82°C (180°F)  Drive the vehicle steadily between 1000 and 5000 rpm; hold steady engine and throttle conditions for 20 seconds.
P0107	upto VIN A40265, D86654, N13088, last XJ 04MY	2 trip MIL	ECM Default:  – Default value of 1 BAR (29.53 in hg, 100 kPa) used	BARO Sensor failure (internal ECM fault)		BARO Sensor circuit low voltage	Ignition ON, engine OFF 10 seconds
P0107	from VIN A40266, D86655, N13089, XJ 05MY	2 trip MIL	ECM Default:  – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	MAP Sensor to ECM circuit: open circuit, short circuit to ground  MAP Sensor sensor supply circuit: open circuit  MAP Sensor failure	127	MAP Sensor circuit low voltage	Ignition ON, engine OFF 10 seconds
P0108	upto VIN A40265, D86654, N13088, last XJ 04MY	2 trip MIL	ECM Default:  – Default value of 1 BAR (29.53 in hg, 100 kPa) used	BARO Sensor failure (internal ECM fault)		BARO Sensor circuit high voltage	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0108	from VIN A40266, D86655, N13089, XJ 05MY	2 trip MIL	ECM Default: – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	MAP Sensor sensor ground circuit: open circuit  MAP Sensor to ECM sense circuit: short circuit to high voltage  MAP Sensor failure	127	MAP Sensor circuit high voltage	Ignition ON, engine OFF 10 seconds
P0111		2 trip MIL	ECM Default: – Default value substituted 50°C (122°F)	IAT Sensor to ECM wiring: open circuit or high resistance  IAT Sensor failure	71	IAT Sensor circuit range / performance	Engine OFF; coolant temperature < 35°C (95°F)  Start engine and hold 3000 rpm in P or N for 30 seconds
P0112		2 trip MIL	ECM Default: – Default value substituted 50°C (122°F)	IAT Sensor disconnected IAT Sensor to ECM wiring: open circuit or high resistance IAT Sensor to ECM sensing circuit: short circuit to B+ voltage IAT Sensor failure	71	IAT Sensor circuit high voltage (low air temperature)	Ignition ON, engine OFF 10 seconds
P0113		2 trip MIL	ECM Default: – Default value substituted 50°C (122°F)	IAT Sensor to ECM wiring: short circuit to ground  IAT Sensor failure	71	IAT Sensor circuit low voltage (high air temperature)	Ignition ON, engine OFF 10 seconds
P0116		2 trip MIL  amber lamp	ECM Default:  – EOT value substituted (no greater than 95°C (203°F))  – Maximum engine speed reduced	Low coolant level  ECT Sensor to ECM sensing circuit: open circuit, high resistance when hot, intermittent high resistance  Engine thermostat failure  ECT Sensor failure	70	ECT Sensor circuit range / performance	Engine coolant temperature and ambient temperature within 10°C (20°F) of each other  Start engine and drive the vehicle steadily above 1700 rpm until the engine coolant temperature reaches 80°C (176°F)  CAUTION: Overheating is possible if the ECT sensor is faulty and cooling fans do not operate

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0117		2 trip MIL  amber lamp	ECM Default: – EOT value substituted (no greater than 95°C (203°F))  – Maximum engine speed reduced	ECT Sensor disconnected  ECT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to B+ voltage  ECT Sensor failure	70	ECT Sensor circuit high voltage (low coolant temperature)	Ignition ON, engine OFF 10 seconds
P0118		2 trip MIL  amber lamp	ECM Default: – EOT value substituted (no greater than 95°C (203°F))  – Maximum engine speed reduced	Engine overheat condition / cooling fan failure  ECT Sensor to ECM wiring: short circuit to ground  ECT Sensor failure	70	ECT Sensor circuit low voltage (high coolant temperature)	Ignition ON, engine OFF 10 seconds
P0121		2 trip MIL  red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM wiring: open circuit, high resistance TP Sensor to ECM sensing circuits (TP1 or TP2): short circuit to B+ voltage  TP Sensor failure	, 75, 76	TP Sensor range / performance (TP1 compared to TP2)	Battery voltage > 10 volts  Ignition ON, engine OFF, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0122		2 trip MIL  red lamp	ECM Default:  – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM sensing circuit (TP1): open circuit, short circuit to ground, high resistance  TP Sensor failure	75	TP Sensor circuit 1 low voltage	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P0123		2 trip MIL  red lamp	ECM Default:  – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM sensing circuit (TP1): short circuit to high voltage  TP Sensor failure	75	TP Sensor circuit 1 high voltage	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0125		2 trip MIL  amber lamp	ECM Default:  – EOT value substituted (no greater than 95°C (203°F))  – Maximum engine speed reduced	Low coolant level  ECT Sensor to ECM sensing circuit: open circuit, high resistance when hot, intermittent high resistance  Engine thermostat failure  ECT Sensor failure	70	ECT Sensor temperature insufficient for closed loop fuel control.	Start engine and drive the vehicle steadily until the engine coolant temperature reaches above -15°C (5°F)  CAUTION: Overheating is possible if the ECT sensor is faulty and cooling fans do not operate
P0128		2 trip MIL		Engine coolant thermostat failure  ECT Sensor problem		Coolant thermostat range / performance	Engine OFF; coolant temperature < 35°C (95°F) Start engine and drive until normal engine operating temperature > 85°C (180°F)
P0131		2 trip MIL		HO2 Sensor 1/1 disconnected  HO2 Sensor 1/1 to ECM variable current circuit fault (HO2 Sensor pin 3) ECM to HO2 Sensor 1/1 constant current circuit fault (HO2 Sensor pin 4) HO2 Sensor 1/1 failure	83, 84	HO2 Sensor circuit low current bank 1, upstream (1/1) (Universal oxygen sensor: rich condition at ECM low current at sensor)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0132		2 trip MIL		HO2 Sensor 1/1 disconnected HO2 Sensor 1/1 to ECM variable current circuit fault (HO2 Sensor pin 3) ECM to HO2 Sensor 1/1 constant current circuit fault (HO2 Sensor pin 4) HO2 Sensor 1/1 failure	83, 84	HO2 Sensor circuit high current bank 1, upstream (1/1) (Universal oxygen sensor: lean condition at ECM high current at sensor)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)
P0133		2 trip MIL	ECM Default: – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited	HO2 Sensor 1/1 to ECM wiring shield open circuit Exhaust leak Fuel control system fault HO2 Sensor 1/1 failure	83, 84	HO2 Sensor circuit slow response bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)
P0137		2 trip MIL		HO2 Sensor 1/2 disconnected HO2 Sensor 1/2 to ECM wiring open circuit HO2 Sensor 1/2 short circuit to ground Fuel control system lean fault HO2 Sensor 1/2 failure	128	HO2 Sensor circuit low voltage bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle page 5  (Downstream oxygen sensors)
P0138		2 trip MIL		HO2 Sensor 1/2 sensing circuit: short circuit to high voltage HO2 Sensor 1/2 ground (BRD braided shield) open circuit HO2 Sensor 1/2 failure	128	HO2 Sensor circuit high voltage bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle page 5  (Downstream oxygen sensors)

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0140		2 trip MIL		HO2 Sensor 1/2 disconnected HO2 Sensor 1/2 mechanical damage HO2 Sensor 1/2 to ECM wiring open circuit HO2 Sensor 1/2 sensing circuit: short circuit to high voltage HO2 Sensor 1/2 short circuit to ground HO2 Sensor 1/2 ground (BRD braided shield) open circuit Exhaust leak Fuel control system fault HO2 Sensor 1/2 failure	128	HO2 Sensor circuit no activity bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle page 5  (Downstream oxygen sensors)
P0151		2 trip MIL		HO2 Sensor 2/1 disconnected HO2 Sensor 2/1 to ECM variable current circuit fault (HO2 Sensor pin 3) ECM to HO2 Sensor 2/1 constant current circuit fault (HO2 Sensor pin 4) HO2 Sensor 2/1 failure	107, 108	HO2 Sensor circuit low current bank 2, upstream (2/1) (Universal oxygen sensor: rich condition at ECM low current at sensor)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0152		2 trip MIL		HO2 Sensor 2/1 disconnected HO2 Sensor 2/1 to ECM variable current circuit fault (HO2 Sensor pin 3) ECM to HO2 Sensor 2/1 constant current circuit fault (HO2 Sensor pin 4) HO2 Sensor 2/1 failure	107, 108	HO2 Sensor circuit high current bank 2, upstream (2/1) (Universal oxygen sensor: lean condition at ECM high current at sensor)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)
P0153		2 trip MIL	ECM Default: – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited	HO2 Sensor 2/1 to ECM wiring shield open circuit Exhaust leak Fuel control system fault HO2 Sensor 2/1 failure	107, 108	HO2 Sensor circuit slow response bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle page 5  (Upstream oxygen sensors)
P0157		2 trip MIL		HO2 Sensor 2/2 disconnected HO2 Sensor 2/2 to ECM wiring open circuit HO2 Sensor 2/2 short circuit to ground Fuel control system lean fault HO2 Sensor 2/2 failure	129	HO2 Sensor circuit low voltage bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle page 5  (Downstream oxygen sensors)
P0158		2 trip MIL		HO2 Sensor 2/2 sensing circuit: short circuit to high voltage HO2 Sensor 2/2 ground (BRD braided shield) open circuit HO2 Sensor 2/2 failure	129	HO2 Sensor circuit high voltage bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle page 5  (Downstream oxygen sensors)

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0160		2 trip MIL		HO2 Sensor 2/2 disconnected HO2 Sensor 2/2 mechanical damage HO2 Sensor 2/2 to ECM wiring open circuit HO2 Sensor 2/2 sensing circuit: short circuit to high voltage HO2 Sensor 2/2 short circuit to ground HO2 Sensor 2/2 ground (BRD braided shield) open circuit Exhaust leak Fuel control system fault HO2 Sensor 2/2 failure	129	HO2 Sensor circuit no activity bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle page 5 (Downstream oxygen sensors)
P0171	address other DTCs first	2 trip MIL	ECM Default: – Bank 1 catalyst warm-up ignition retard inhibited – Maximum engine speed reduced	Air intake leak between MAF Sensor and cylinder head Fuel filter / system restriction Fuel injector restriction MAF Sensor fault (low intake air flow) Exhaust leak (before catalyst)		Bank 1 combustion too lean	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0172	address other DTCs first	2 trip MIL	ECM Default: – Bank 1 catalyst warm-up ignition retard inhibited  – Maximum engine speed reduced	Restricted air filter  Leaking fuel injector(s)  Oil contaminated with fuel (too many cold starts with vehicle subsequently not getting hot enough for long enough) MAF Sensor fault (high intake air flow)		Bank 1 combustion too rich	Start engine and bring to normal operating temperature > 82°C (180°F)  Idle for 10 minutes
P0174	address other DTCs first	2 trip MIL	ECM Default: – Bank 2 catalyst warm-up ignition retard inhibited – Maximum engine speed reduced	Air intake leak between MAF Sensor and cylinder head  Fuel filter / system restriction  Fuel injector restriction  MAF Sensor fault (low intake air flow) Exhaust leak (before catalyst)		Bank 2 combustion too lean	Start engine and bring to normal operating temperature > 82°C (180°F)  Idle for 10 minutes
P0175	address other DTCs first	2 trip MIL	ECM Default: – Bank 2 catalyst warm-up ignition retard inhibited  – Maximum engine speed reduced	Restricted air filter  Leaking fuel injector(s)  Oil contaminated with fuel (too many cold starts with vehicle subsequently not getting hot enough for long enough) MAF Sensor fault (high intake air flow)		Bank 2 combustion too rich	Start engine and bring to normal operating temperature > 82°C (180°F)  Idle for 10 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0181		2 trip MIL	ECM Default: – Default value of 60°C (140°F) used	EFT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to ground short circuit to high voltage  EFT Sensor ground circuit: high resistance, open circuit  EFT Sensor failure	50	EFT Sensor range / performance	Engine OFF; coolant temperature < 35°C (95°F)  Start engine and drive until normal engine operating temperature > 82°C (180°F)  Drive for an additional 25 minutes
P0182		2 trip MIL	ECM Default: – Default value of 60°C (140°F) used	EFT Sensor to ECM sensing circuit: short circuit to ground EFT Sensor to splice sensor ground circuit: short circuit EFT Sensor failure	50	EFT Sensor circuit low voltage (high temperature)	Ignition ON, engine OFF 10 seconds
P0183		2 trip MIL	ECM Default: – Default value of 60°C (140°F) used	EFT Sensor disconnected  EFT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to high voltage  EFT Sensor to splice sensor ground circuit: high resistance, open circuit  EFT Sensor failure	50	EFT Sensor circuit high voltage (low temperature)	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0191		2 trip MIL	ECM Default: – Default value of 3.80 BAR (55.11 psi, 380 kPa) used  – Fuel pump feedback control inhibited	Fuel filter / system restriction  Fuel system leak  Incorrect fuel pump output  IP Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to ground, short circuit to high voltage IP Sensor supply circuit: high resistance, open circuit IP Sensor ground circuit: high resistance, open circuit, short circuit to ground, short circuit to high voltage IP Sensor failure	73	IP Sensor circuit range / performance	Fuel level > 25%  Idle engine 30 seconds  Drive the vehicle fully warm for 5 minutes and include some hard acceleration and hard over run conditions.
P0192		2 trip MIL	ECM Default: – Default value of 3.80 BAR (55.11 psi, 380 kPa) used  – Fuel pump feedback control inhibited	IP Sensor disconnected  IP Sensor to ECM sensing circuit: open circuit or short circuit to ground  IP Sensor to supply circuit: high resistance open circuit  IP Sensor failure	73	IP Sensor sensor circuit low voltage (low pressure)	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0193		2 trip MIL	ECM Default: – Default value of 3.80 BAR (55.11 psi, 380 kPa) used – Fuel pump feedback control inhibited	IP Sensor to ECM wiring (supply, sense): short circuit to each other IP Sensor to ECM sense circuit: short circuit to high voltage IP Sensor ground circuit: open circuit IP Sensor failure	73	IP Sensor sensor circuit high voltage (high pressure)	Ignition ON, engine OFF 10 seconds
P0196		2 trip MIL	ECM Default: – ECT substituted	EOT Sensor to ECM sensing circuit; high resistance when hot, intermittent high resistance EOT Sensor failure	78	EOT Sensor range / performance	Engine OFF; coolant temperature < 35°C (95°F) Start engine and drive until normal engine operating temperature > 82°C (180°F)
P0197		2 trip MIL	ECM Default: – ECT substituted	EOT Sensor to ECM sensing circuit: short circuit to ground EOT Sensor failure	78	EOT Sensor low voltage (high temperature)	Ignition ON, engine OFF 10 seconds
P0198		2 trip MIL	ECM Default: – ECT substituted	EOT Sensor disconnected EOT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to B+ voltage EOT Sensor failure	78	EOT Sensor high voltage (low temperature)	Ignition ON, engine OFF 10 seconds



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0201		2 trip MIL amber lamp	ECM Default: – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Bank 1 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	120	Fuel injector 1 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes
P0202		2 trip MIL amber lamp	ECM Default: – Bank 2 closed loop fuel metering inhibited  – Bank 2 adaptive fuel metering inhibited  – Bank 2 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	115	Fuel injector 2 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0203		2 trip MIL amber lamp	ECM Default: – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Bank 1 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	114	Fuel injector 3 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes
P0204		2 trip MIL amber lamp	ECM Default: – Bank 2 closed loop fuel metering inhibited  – Bank 2 adaptive fuel metering inhibited  – Bank 2 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	119	Fuel injector 4 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0205		2 trip MIL amber lamp	ECM Default: – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Bank 1 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	113	Fuel injector 5 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes
P0206		2 trip MIL amber lamp	ECM Default: – Bank 2 closed loop fuel metering inhibited  – Bank 2 adaptive fuel metering inhibited  – Bank 2 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	118	Fuel injector 6 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0207		2 trip MIL  amber lamp	ECM Default: – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Bank 1 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	117	Fuel injector 7 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes
P0208		2 trip MIL  amber lamp	ECM Default: – Bank 2 closed loop fuel metering inhibited  – Bank 2 adaptive fuel metering inhibited  – Bank 2 catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	Injector disconnected  Injector harness wiring: open circuit, short circuit  Injector failure	112	Fuel injector 8 circuit malfunction	Start engine  Battery voltage 10 - 16 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0222		2 trip MIL  red lamp	ECM Default:  – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM sensing circuit (TP2): open circuit, short circuit to ground, high resistance  TP Sensor failure	76	TP Sensor circuit 2 (TP2) low voltage	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P0223		2 trip MIL  red lamp	ECM Default:  – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM sensing circuit (TP2): short circuit to high voltage  TP Sensor failure	76	TP Sensor circuit 2 (TP2) high voltage	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0226		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuits: short circuit, open circuit, high resistance APP Sensor sensor supply circuits: short circuit, open circuit, high resistance APP Sensor sensor ground circuits: open circuit  APP Sensor failure	102, 103	APP Sensor circuits APP1 and APP2 range / performance	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P0227		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuit (APP1): open circuit, short circuit to ground, high resistance  APP Sensor sensor supply circuit: open circuit, high resistance  APP Sensor failure	102	APP Sensor circuit low voltage APP1	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period.  Slowly return the pedal to rest  Repeat 3 times



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0301		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 1 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0302		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 2 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0303		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 3 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0304		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 4 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0305		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 5 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0306		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 6 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0307		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 7 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0308		1 or 2 trip MIL*		Refer to P0300 Possible Causes		Misfire detected cylinder 8 *Refer to Misfire Note, page 6	Misfire monitor drive cycle page 6
P0324		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	ECM Failure		ECM internal Knock Sensor CPU self test failure	Start engine Battery voltage > 10 volts Idle for 2 minutes



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0327		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure	98	Bank 1 KS circuit out of range low voltage	Start engine  Battery voltage> 10 volts  Idle for 2 minutes
P0328		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	Poor sensor contact with the cylinder block KS to ECM sense circuit: high resistance, open circuit, short circuit to high voltage KS failure	98	Bank 1 KS circuit out of range high voltage	Start engine  Battery voltage> 10 volts  Idle for 2 minutes
P0332		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure	99	Bank 2 KS circuit out of range low voltage	Start engine  Battery voltage> 10 volts  Idle for 2 minutes
P0333		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	Poor sensor contact with the cylinder block KS to ECM sense circuit: high resistance, open circuit, short circuit to high voltage KS failure	99	Bank 2 KS circuit out of range high voltage	Start engine  Battery voltage> 10 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0335		2 trip MIL  amber lamp	ECM Default:  – Maximum engine speed reduced  – CMP Sensor 1 signal used for synchronization	CKP Sensor disconnected  CKP Sensor gap incorrect / foreign matter on sensor face / damaged teeth on rotor  CKP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage  CKP Sensor failure	36, 37	CKP Sensor circuit malfunction	Start engine; increase engine speed to 1500 rpm and hold for 30 seconds  Repeat 2 additional times  Note: If CKP Sensor fault exists, engine will start after approximately 5 seconds of cranking as the ECM will default to CMP Sensor 1 signal for synchronization.
P0336		2 trip MIL  amber lamp	ECM Default:  – Maximum engine speed reduced	CKP Sensor gap incorrect / foreign matter on sensor face / damaged teeth on rotor CKP Sensor sensing circuit: intermittent open circuit, short circuit to ground, short circuit to high voltage  CKP Sensor failure	36, 37	CKP Sensor circuit range / performance	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Start engine; drive vehicle; select 2nd gear Accelerate smoothly through complete accelerator pedal travel; coast to a stop

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0340		2 trip MIL		CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 1 failure	94 95	CMP Sensor 1 circuit malfunction bank 1	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Idle engine 1 minute
P0341		2 trip MIL		CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 1 failure	94, 95	CMP Sensor 1 circuit range / performance bank 1	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Idle engine 1 minute
P0345		2 trip MIL		CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage  CMP Sensor 2 failure	68, 69	CMP Sensor 2 circuit malfunction bank 2   * P0345 Early production vehicles; P1340 later production vehicles	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Idle engine 1 minute

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0346		2 trip MIL		<p>CMP Sensor disconnected</p> <p>CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor</p> <p>CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage</p> <p>CMP Sensor 2 failure</p>	68, 69	<p>CMP Sensor 2 circuit range / performance bank 2</p> <p>* P0346 Early production vehicles; P1341 later production vehicles</p>	<p>Start engine; momentarily race the engine; stop engine</p> <p>Repeat 2 additional times</p> <p>Idle engine 1 minute</p>
P0351		2 trip MIL  amber lamp	<p>ECM Default:</p> <ul style="list-style-type: none"> <li>– Bank 1 closed loop fuel metering inhibited</li> <li>– Bank 1 adaptive fuel metering inhibited</li> <li>– Maximum engine speed reduced</li> <li>– Fuel injection cut off (cylinder 1)</li> </ul>	<p>ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance</p> <p>Ignition module / coil ground circuit: open circuit, high resistance</p> <p>Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)</p> <p>Ignition module / coil failure</p>	87	<p>Ignition module primary circuit malfunction cylinder 1</p>	<p>Start engine</p> <p>Battery voltage &gt; 10 volts</p> <p>Idle for 2 minutes</p>

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0352		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 2)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	61	Ignition module primary circuit malfunction cylinder 2	Start engine  Battery voltage > 10 volts  Idle for 2 minutes
P0353		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 3)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	88	Ignition module primary circuit malfunction cylinder 3	Start engine  Battery voltage > 10 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0354		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 4)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	62	Ignition module primary circuit malfunction cylinder 4	Start engine  Battery voltage > 10 volts  Idle for 2 minutes
P0355		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 5)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	89	Ignition module primary circuit malfunction cylinder 5	Start engine  Battery voltage > 10 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0356		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 6)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	63	Ignition module primary circuit malfunction cylinder 6	Start engine  Battery voltage > 10 volts  Idle for 2 minutes
P0357		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 7)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	90	Ignition module primary circuit malfunction cylinder 7	Start engine  Battery voltage > 10 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0358		2 trip MIL  amber lamp	ECM Default:  – Bank 1 closed loop fuel metering inhibited  – Bank 1 adaptive fuel metering inhibited  – Maximum engine speed reduced – Fuel injection cut off (cylinder 8)	ECM to ignition module / coil drive circuit: open circuit, short circuit to ground, high resistance  Ignition module / coil ground circuit: open circuit, high resistance  Ignition module / coil B+ voltage supply circuit: open circuit (including relay, if fitted)  Ignition module / coil failure	64	Ignition module primary circuit malfunction cylinder 8	Start engine  Battery voltage > 10 volts  Idle for 2 minutes
P0400		2 trip MIL		EGR valve incorrectly fitted or loose  EGR pipe blocked EGR valve stuck open / closed, blocked EGR valve failure		EGR flow malfunction	EGR Monitor drive cycle page 8
P0405		2 trip MIL		EGR valve power supply circuit open circuit EGR valve to ECM drive circuit pair (EGR valve pins 1/4, 6/3): open circuit, high resistance EGR valve failure (stepper motor open circuit)	57, 58, 59, 60	EGR valve drive circuits low voltage	Ignition ON, engine OFF 10 seconds
P0406		2 trip MIL		EGR valve to ECM drive circuit pair (EGR valve pins 1/4, 6/3): short circuit to ground or high voltage EGR valve failure (stepper motor short circuit)	57, 58, 59, 60	EGR valve drive circuits high voltage	Ignition ON, engine OFF 10 seconds



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0420	address other DTCs first	2 trip MIL		Catalyst failure due to: overheating damage caused by misfire and/or lean combustion poisoning caused by excessive oil consumption and/or contaminated fuel		Catalytic converter system efficiency below threshold bank 1	Catalyst efficiency monitor drive cycle page 6
P0430	address other DTCs first	2 trip MIL		Catalyst failure due to: overheating damage caused by misfire and/or lean combustion		Catalytic converter system efficiency below threshold bank 2	Catalyst efficiency monitor drive cycle page 6
P0441		2 trip MIL		EVAP Canister purge pipe restricted, leaking, disconnected EVAP Canister vent restricted EVAP Canister purge valve to engine pipe(s) restricted, leaking, disconnected EVAP Canister purge valve failure		EVAP system incorrect purge flow	Purge system monitor drive cycle page 5
P0442		2 trip MIL		Fuel cap not fitted correctly Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAP Canister leaking EVAP canister close valve failure Fuel tank leak		EVAP system leak detected small (0.040 in.)	Evaporative system monitor drive cycle page 7
P0443		2 trip MIL	ECM Default: – Adaptive fuel metering inhibited	EVAP Canister purge valve failure (leaking)		EVAP canister purge valve failure	Evaporative system monitor drive cycle page 7

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0444		2 trip MIL	ECM Default: – Canister purge inhibited	EVAP Canister purge valve disconnected EVAP Canister purge valve to ECM drive circuit: open circuit, high resistance EVAP Canister purge valve failure	66	EVAP canister purge valve circuit open circuit	Evaporative system monitor drive cycle page 7 Purge system monitor drive cycle page 7
P0445		2 trip MIL	ECM Default: – Canister purge inhibited – Adaptive fuel metering inhibited	EVAP Canister purge valve to ECM drive circuit: short circuit to ground EVAP Canister purge valve failure	66	EVAP canister purge valve circuit short circuit	Evaporative system monitor drive cycle page 7 Purge system monitor drive cycle page 7
P0446		2 trip MIL		Fuel tank / EVAP canister atmospheric port: restricted, blocked EVAP canister close valve failure (stuck closed)		EVAP canister close valve malfunction	Evaporative system monitor drive cycle page 7
P0447		2 trip MIL		EVAP canister close valve power supply circuit: open circuit, short circuit EVAP canister close valve to ECM drive circuit: open circuit, high resistance, short circuit to B+ voltage EVAP canister close valve failure	67	EVAP canister close valve circuit open circuit	Ignition ON, engine OFF 10 seconds
P0448		2 trip MIL		EVAP canister close valve to ECM drive circuit: short to ground EVAP canister close valve failure	67	EVAP canister close valve circuit short circuit	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0450		2 trip MIL		FTP Sensor failure		FTP Sensor failure	Evaporative system monitor drive cycle page 7
P0452		2 trip MIL		FTP Sensor disconnected FTP Sensor to ECM sense circuit: open circuit, short circuit to ground FTP Sensor to splice sensor supply circuit: open circuit, high resistance FTP Sensor failure	104	FTP Sensor circuit low voltage (low pressure)	Ignition ON, engine OFF 10 seconds
P0453		2 trip MIL		FTP Sensor ground circuit: open circuit, high resistance FTP Sensor to ECM sense circuit: short circuit to high voltage FTP Sensor failure	104	FTP Sensor circuit high voltage (high pressure)	Ignition ON, engine OFF 10 seconds
P0455		2 trip MIL		Fuel cap seal defective / missing EVAP system leak (canister damage, pipework damage) EVAP Canister purge valve to engine purge pipe: blocked, leaking, disconnected EVAP Canister purge valve failure (stuck closed) EVAP Canister close valve failure (stuck open) Fuel tank leak		EVAP system leak detected large	Evaporative system monitor drive cycle page 7

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0456		2 trip MIL		Fuel cap not fitted correctly Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAP Canister leaking EVAP Canister close valve failure Fuel tank leak		EVAP system leak detected very small (0.020 in.)	Evaporative system monitor drive cycle page 7
P0457		2 trip MIL		Fuel cap off		EVAP system - fuel cap off detected	Evaporative system monitor drive cycle page 7
P0460		2 trip MIL		Fuel level sensor to Instrument Cluster circuit(s): intermittent short circuit, open circuit, high resistance Fuel level sensor failure		Fuel level sensor(s) circuit range / performance	Visually check fuel gauge reading is rational and changes in response to added fuel
P0480		non MIL	ECM Default: – With ignition ON, fan operates at maximum speed	ECM to radiator cooling fan module drive circuit: short circuit, open circuit, high resistance Radiator cooling fan fault Radiator cooling fan module fault	51	Radiator cooling fan module drive circuit malfunction	Start engine Battery voltage > 10 volts Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0506		2 trip MIL		Air intake restriction Accessory drive overload (defective / seized component)		Idle RPM lower than expected	Start engine and drive until normal engine operating temperature > 82°C (180°F) Stop vehicle and idle 30 seconds Drive vehicle for 2 minutes Stop vehicle and idle 30 seconds Repeat drive / idle two additional times
P0507		2 trip MIL		Intake air leak between MAF sensor and throttle Intake air leak between throttle and engine Engine crankcase breather leak		Idle RPM higher than expected	Start engine and drive until normal engine operating temperature > 82°C (180°F) Stop vehicle and idle 30 seconds Drive vehicle for 2 minutes Stop vehicle and idle 30 seconds Repeat drive / idle two additional times
P0512		2 trip MIL		Starter relay coil to ECM / ignition switch circuit: short circuit to high voltage Ignition switch failure	6	Engine crank signal high voltage	Drive vehicle > 32 km/h (20 mph) between 2000 and 2500 rpm for 10 seconds; stop vehicle
P0532		non MIL	ECM Default: – Air conditioning compressor clutch inhibited	Air conditioning pressure sensor to ECM sense circuit: short circuit to ground Air conditioning pressure sensor to splice sensor supply circuit: open circuit, high resistance Air conditioning pressure sensor failure	121	Air conditioning pressure sensor circuit low voltage (low pressure)	Start engine Use WDS to monitor air conditioning pressure sensor signal voltage Set climate control to a low temperature; operate for 2 minutes Switch off climate control; wait 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0533		non MIL	ECM Default: – Air conditioning compressor clutch inhibited	Air conditioning pressure sensor to splice sensor ground circuit: open circuit, high resistance Air conditioning pressure sensor to ECM sense circuit: short circuit to high voltage, open circuit. Air conditioning pressure sensor failure Air conditioning pressure sensor disconnected.	121	Air conditioning pressure sensor circuit high voltage (high pressure)	Start engine  Use WDS to monitor air conditioning pressure sensor signal voltage  Set climate control to a low temperature; operate for 2 minutes  Switch off climate control; wait 2 minutes
P0560		2 trip MIL		ECM battery power supply open circuit, high resistance	22	Battery power supply voltage malfunction	Ignition key in, position II for 10 seconds (do not start)
P0561		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM to sensors sensor supply voltage circuit(s): short circuit to ground, short circuit to high voltage, open circuit, high resistance	12, 13	Sensor power supply circuit malfunction	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0562		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM to sensors sensor supply voltage circuit(s): short circuit to ground	12, 13	Sensor power supply circuit low voltage	Ignition ON, engine OFF 10 seconds
P0563		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM to sensors supply voltage circuit(s): open circuit, high resistance, short circuit to high voltage	12, 13	Sensor power supply circuit high voltage	Ignition ON, engine OFF 10 seconds
P0565		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: short circuit to ground  ON / OFF switch failure (stuck ON)	47	Cruise control ON / OFF switch fault	Ignition ON, engine OFF 45 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0566		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: short circuit to ground  CANCEL switch failure (stuck ON)	47	Cruise control CANCEL switch ON fault	Ignition ON, engine OFF 45 seconds
P0567		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: short circuit to ground  RESUME switch failure (stuck ON)	47	Cruise control RESUME switch ON fault	Ignition ON, engine OFF 45 seconds
P0568		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: open circuit; high resistance; short circuit to ground. Steering wheel cassette reel open circuit, high resistance, short circuit to ground. Cassette reel to ECM circuit: open circuit, high resistance	47	Cruise control input signal low / high resistance	Ignition ON, engine OFF 45 seconds
P0569		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: short circuit to ground  SET / - switch failure	47	Cruise control SET / - switch ON fault	Ignition ON for more than 5 minutes



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0570		non MIL amber lamp	ECM Default: – cruise control inhibited	Cruise control switches internal steering wheel circuit: short circuit to ground  SET / + switch failure	47	Cruise control SET / + switch ON fault	Ignition ON for more than 5 minutes
P0603		2 trip MIL		ECM Failure		ECM Keep alive memory error	Engine temperature not very hot(cooling fans not running) Remove ignition key for 20 seconds (cooling fans not running) Ignition key in, position II for 5 seconds (do not start) Repeat cycle two additional times
P0607	address any other DTCs and retest	2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	Throttle position sensor input failure.  Pedal position sensor input failure.  Throttle motor control failure.  Cruise control CANCEL failure.		ECM sub CPU failure	Drive vehicle  If fitted, engage speed control  Refer to Owner's Handbook and ensure that speed control engages normally

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0616	engine cranks when key not in position III	2 trip MIL		Starter relay drive circuit: open circuit, high resistance, short circuit to ground. Starter relay failure	41	Starter relay drive circuit low voltage / starter relay request off (ignition switch in position II not position III)	Ignition ON, engine OFF  Battery voltage > 12 volts Automatic: select P for 5 seconds; manual: clutch fully pressed for 5 seconds Ensure engine does not crank when key is not in position III
P0617	engine will not crank	2 trip MIL		Starter relay drive circuit: short circuit to high voltage Starter relay failure	41	Starter relay drive circuit high voltage / starter relay request on (ignition switch position III START)	Ignition ON, engine OFF  Battery voltage > 12 volts Automatic: P or N selected; manual: clutch fully pressed Ensure engine starts as normal
P0627		2 trip MIL	ECM Default:  – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance  Fuel pump control module failure	25, 27	No fuel pump commands received by ECM	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P0628		2 trip MIL	ECM Default:  – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance  Fuel pump control module failure	25, 27	Fuel pump feedback circuit low voltage	Start engine  Battery voltage > 12 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0629		2 trip MIL	ECM Default: – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance Fuel pump control module failure	25, 27	Fuel pump feedback circuit high voltage	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P0646		2 trip MIL		A/C Compressor clutch relay drive circuit: open circuit, high resistance, short circuit to ground. A/C Compressor clutch relay failure	34	A/C Compressor clutch relay drive circuit low voltage (CAN A/C compressor clutch request OFF)	Start engine  Climate control system OFF  Idle for 10 seconds
P0647		2 trip MIL		A/C Compressor clutch relay drive circuit: short circuit to high voltage A/C Compressor clutch relay failure	34	A/C Compressor clutch relay drive circuit high voltage (CAN A/C compressor clutch request ON)	Start engine  Climate control system ON full cooling  Idle for 2 minutes
P0831		2 trip MIL	None	Clutch cancel switch supply circuit: open circuit  Clutch cancel switch to ECM circuit: open circuit, high resistance  Clutch cancel switch failure	33	Clutch cancel (top of travel) switch low voltage (switch normally closed)   * Manual transmission input to ECM	Drive vehicle 60 100 km/h (37 62 mph);  V6: 1800 3000 rpm; engine load > 0.60 g/rpm V8:1800 2500 rpm; engine load > 0.40 g/rpm  Continue for 30 seconds
P0832		2 trip MIL	None	Clutch cancel switch to ECM circuit: short circuit to high voltage  Clutch cancel switch failure	33	Clutch cancel (top of travel) switch high voltage (switch normally closed)  * Manual transmission input to ECM	Drive vehicle > 10 km/h (6 mph); shift from 1st to 2nd; stop vehicle  Repeat 6 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0834		non MIL	None	Clutch pedal safety switch supply circuit: open circuit  Clutch pedal safety switch to ECM circuit: open circuit, high resistance  Clutch pedal safety switch failure	31	Clutch pedal safety (bottom of travel) switch low voltage (switch normally open)  * Manual transmission input to ECM	Drive vehicle > 10 km/h (6 mph); shift from 1st to 2nd; stop vehicle  Repeat 30 times
P0835		non MIL	None	Clutch pedal safety switch to ECM circuit: short circuit to high voltage  Clutch pedal safety switch failure	31	Clutch pedal safety (bottom of travel) switch high voltage (switch normally open)  * Manual transmission input to ECM	Drive vehicle 60 100 km/h (37 62 mph);  V6: 1800 3000 rpm; engine load > 0.60 g/rpm V8: 1800 2500 rpm; engine load > 0.40 g/rpm Continue for 30 seconds
P0851		2 trip MIL  amber lamp	ECM Default:  – cruise control inhibited  – Maximum engine speed reduced	Gear selector cable setting incorrect  Transmission range sensor to ECM circuit: open circuit, high resistance  Transmission range sensor failure  D 4 Switch to TCM circuit: open circuit, high resistance  D 4 Switch failure	31	Gear change P / N driving malfunction	Drive vehicle > 24 km/h (15 mph) between 1500 4000 rpm for 30 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0852		2 trip MIL  amber lamp	ECM Default:  – cruise control inhibited  – Maximum throttle opening for N range inhibited  – Maximum engine speed reduced	Gear selector cable setting incorrect  Transmission range sensor to ECM circuit: open circuit or high resistance  Transmission range sensor failure	31	Gear change P / N starting malfunction	Start engine in P  Start engine in N  Check that engine does not start in R, D, 4, 3, 2  CAUTION: If the P/N switch is faulty, the engine may start while in gear
P0860		non MIL	ECM Default:  – cruise control inhibited  – Maximum throttle opening for N range inhibited  – Throttle opening limited to 30%  – Maximum engine speed reduced	CAN open circuit fault  CAN short circuit fault  J-gate module failure	123, 124	CAN link malfunction to JGM    * Linear Switch Module / CAN monitored by ECM	Ignition ON, engine OFF 30 seconds
P1000		non MIL		Refer to page 3		System (OBD) check not complete since last memory	System Readiness Test

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1104		2 trip MIL  amber lamp	ECM Default:  – Calculated default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	MAF Sensor to ECM sensor ground circuit open circuit, short circuit to high voltage, high resistance  MAF Sensor to ECM sensing circuit: open circuit  MAF Sensor failure	44, 45, 46	MAF Sensor ground malfunction	Ignition ON, engine OFF 10 seconds
P1107		2 trip MIL	ECM Default:  – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	MAP Sensor to ECM circuit: open circuit, short circuit to ground  MAP Sensor sensor supply circuit: open circuit  MAP Sensor failure	127	MAP Sensor circuit low voltage	Ignition ON, engine OFF 10 seconds
P1108		2 trip MIL	ECM Default:  – Default value of 1.013 BAR (29.92 in hg, 101.3 kPa) used	MAP Sensor sensor ground circuit: open circuit  MAP Sensor to ECM sense circuit: short circuit to high voltage  MAP Sensor failure	127	MAP Sensor circuit high voltage	Ignition ON, engine OFF 10 seconds
P1111		non MIL		Refer to page 3		System (OBD) checks complete since last memory	System Readiness Test

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1122		2 trip MIL  red lamp	ECM Default:  – APP angle default value used – Speed control inhibited – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuit (APP1): open circuit, short circuit to ground, high resistance APP Sensor sensor supply circuit: open circuit, high resistance  APP Sensor failure	102	APP Sensor circuit low voltage APP1	Battery voltage > 10 volts  Ignition ON, engine OFF Slowly press accelerator pedal to the floor over a 5 second period.  Slowly return the pedal to rest  Repeat 3 times
P1123		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited  – APP adaptations (wear, variance) inhibited	APP Sensor sensor to ECM sense circuit(s) (APP1 or APP2): short circuit to high voltage APP Sensor sensor ground circuit(s): open circuit  APP Sensor failure	102, 103	APP Sensor circuit high voltage APP1  Note: This DTC could be flagged by both sensor element sensing circuit having faults.	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P1136		non MIL	None	ECM Cooling fan power supply circuit: open circuit, short circuit  ECM Cooling fan drive circuit, open circuit, short circuit, high resistance  ECM Cooling fan failure	38	ECM Cooling fan malfunction	Ignition ON, engine OFF  Start engine

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1146		2 trip MIL  charge lamp	None	Generator to ECM "CHARGE" circuit: open circuit, high resistance  Generator regulator failure	53	Generator "CHARGE" circuit low voltage / request high	Battery voltage > 12 volts  Switch OFF all electrical consumers  Start engine; idle for 16 minutes with all electrical consumers switched OFF
P1215		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited  – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuit (APP2): open circuit, short circuit to ground, high resistance  APP Sensor sensor supply circuit (to splice): open circuit, high resistance  APP Sensor failure	103	APP Sensor circuit low voltage APP2	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1216		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited  – APP adaptations (wear, variance) inhibited	APP Sensor sensor to ECM sense circuit(s) (APP2 or APP1): short circuit to high voltage APP Sensor sensor ground circuit(s) (to splice): open circuit  APP Sensor failure	102, 103	APP Sensor circuit high voltage APP2  Note: This DTC could be flagged by both sensor element sensing circuit having faults.	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P1224		2 trip MIL red lamp	ECM Default: – Engine shut down – Speed control disabled	Throttle motor failure Throttle body failure	80, 106, 52, 134	Throttle control position error	Battery voltage > 10 volts Ignition ON, engine OFF Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times
P1229		2 trip MIL  red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited – Speed control disabled	Throttle motor disconnected  Throttle motor to ECM drive circuits: short circuit or open circuit  ECM ground circuit fault(s) (-004, 005, 054)  Throttle motor failure  Throttle body failure	80, 106, 52, 134, 4, 5, 54	Throttle motor control circuit malfunction	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1233		2 trip MIL	ECM Default: – Fuel pump 2 feedback control inhibited	ECM to Fuel Pump 2 Module control drive circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module failure	53, 11	Fuel pump 2 drive circuit fault	Start engine Battery voltage > 12 volts Idle for 2 minutes
P1234		2 trip MIL	ECM Default: – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance Fuel pump control module failure	25, 27	No fuel pump commands received by ECM	Start engine Battery voltage > 12 volts Idle for 2 minutes
P1236		2 trip MIL	ECM Default: – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance Fuel pump control module failure	25, 27	Fuel pump not activated when requested by ECM	Start engine Battery voltage > 12 volts Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1240		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM to sensors sensor supply voltage circuit(s): short circuit to ground, short circuit to high voltage, open circuit, high resistance	12, 13	Sensor power supply circuit malfunction	Ignition ON, engine OFF 10 seconds
P1241		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM to sensors sensor supply voltage circuit(s): short circuit to ground	12, 13	Sensor power supply circuit low voltage	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1242		2 trip MIL  red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	ECM to sensors supply voltage circuit(s): open circuit, high resistance, short circuit to high voltage	12, 13	Sensor power supply circuit high voltage	Ignition ON, engine OFF 10 seconds
P1243		2 trip MIL		ECM to sensors sensor ground circuit(s): open circuit, high	19, 20	Sensor ground circuits open circuit	Ignition ON, engine OFF 10 seconds
P1244		2 trip MIL  charge lamp	ECM Default: – Cooling fan speed increased	Generator to ECM "CHARGE" circuit: short circuit to high voltage  Generator regulator failure  Generator failure	53	Generator "CHARGE" circuit high voltage / request low	Battery voltage > 12 volts  Switch OFF all electrical consumers  Start engine; idle for 16 minutes with all electrical consumers switched OFF
P1245		2 trip MIL		Starter relay coil to ECM / ignition switch circuit: open circuit, short to ground.	6	Engine crank signal low voltage	Start engine  Starter should stop when the key is released from position III (CRANK)
P1246		2 trip MIL		Starter relay coil to ECM / ignition switch circuit: short circuit to high voltage  Ignition switch failure	6	Engine crank signal high voltage	Drive vehicle > 32 km/h (20 mph) between 2000 2500 rpm for 10 seconds; stop vehicle

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1250		2 trip MIL red lamp	ECM Default: – Vehicle speed limited – Throttle opening limited to 30% – Speed control inhibited	Throttle return spring failure (throttle body failure)		Throttle valve return spring malfunction	Idle engine Switch OFF ignition for 10 seconds Start engine and repeat
P1251		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	Throttle motor relay coil power supply circuit: open circuit (fuse)  Throttle motor relay failure  Throttle motor relay coil to ECM circuit: open circuit  ECM ground circuit fault (relay coil drive)	52	Throttle motor relay OFF failure	Engine temperature cool (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start)  Repeat cycle two additional times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1254		2 trip MIL red lamp	ECM Default: – Vehicle speed limited – Throttle opening limited to 30% – Speed control inhibited	Throttle limp home spring failure (throttle body failure)		Throttle “limp home” spring malfunction	Idle engine Switch OFF ignition for 10 seconds Start engine and repeat
P1260		non MIL	None	Invalid ignition key code Passive anti-theft system (PATS) signal to instrument pack missing or corrupted Security message (PATS) CAN failure NOTE: To clear this DTC, the failure must first be rectified, followed by an ignition ON cycle to allow a successful PATS identification exchange between the ECM and the IC. The fault code can then be cleared.	123, 124	Security input malfunction	Start engine

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1313		2 trip MIL  amber lamp	ECM Default:  – Maximum engine speed reduced	ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Fuel injector circuit fault(s) (Injector DTCs also flagged)  Ignition coil failure  Spark plug failure / fouled / incorrect gap Cylinder compression low Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Worn camshaft / broken valve spring(s)		Misfire rate catalyst damage bank 1  NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 P0308	Misfire monitor drive cycle page 6

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1314		2 trip MIL  amber lamp	ECM Default:  – Maximum engine speed reduced	ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Fuel injector circuit fault(s) (Injector DTCs also flagged)  Ignition coil failure  Spark plug failure / fouled / incorrect gap Cylinder compression low Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Worn camshaft / broken valve spring(s)		Misfire rate catalyst damage bank 2  NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 P0308	Misfire monitor drive cycle page 6



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1316		2 trip MIL		<p>ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged)</p> <p>Fuel injector circuit fault(s) (Injector DTCs also flagged)</p> <p>Ignition coil failure</p> <p>Spark plug failure / fouled / incorrect gap</p> <p>Cylinder compression low</p> <p>Fuel delivery pressure (low / high)</p> <p>Fuel injector(s) restricted / leaking</p> <p>Fuel injector(s) continuously open</p> <p>Fuel contamination</p> <p>Worn camshaft / broken valve spring(s)</p>		<p>Misfire excess emission</p> <p>NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 P0308</p>	Misfire monitor drive cycle page 6
P1338		2 trip MIL	<p>ECM Default:</p> <p>– Fuel pump feedback control inhibited</p>	<p>ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance</p> <p>Fuel pump control module failure</p>	25, 27	Fuel pump feedback circuit low / high voltage	<p>Start engine</p> <p>Battery voltage &gt; 12 volts</p> <p>Idle for 2 minutes</p>

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1339		2 trip MIL	ECM Default: – Fuel pump 2 feedback control inhibited	Fuel Pump 2 Module to fuel pump drive circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module to ECM monitor circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module failure Fuel pump 2 failure	53, 11	Fuel pump 2 drive circuit low voltage / high voltage fault	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P1340		2 trip MIL		CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 2 failure	68, 69	CMP Sensor 2 circuit malfunction bank 2	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Idle engine 1 minute
P1341		2 trip MIL		CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face / damaged rotor CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 2 failure	68, 69	CMP Sensor 2 circuit range / performance bank 2	Start engine; momentarily race the engine; stop engine  Repeat 2 additional times  Idle engine 1 minute

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1344		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited  – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuits: short circuit, open circuit, high resistance APP Sensor sensor supply circuits: short circuit, open circuit, high resistance APP Sensor sensor ground circuits: open circuit  APP Sensor failure	102, 103	APP Sensor circuits APP1 and APP2 range / performance	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P1367		2 trip MIL  amber lamp	ECM Default:  – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced  – Fuel injection cut off (bank 1 cylinders)	Ignition monitoring circuit to ECM: open circuit, short circuit to ground, short circuit to B+ voltage Ignition module / coils bank 1 ground circuit fault	131	Ignition modules, group 1 fault	Start engine  Battery voltage > 10 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1368		2 trip MIL  amber lamp	ECM Default: – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced  – Fuel injection cut off (bank 2 cylinders)	Ignition monitoring circuit to ECM: open circuit, short circuit to ground, short circuit to B+ voltage Ignition module / coils bank 2 ground circuit fault	132	Ignition modules, group 2 fault	Start engine  Battery voltage > 10 volts  Idle for 2 minutes
P1384		2 trip MIL	ECM Default: – Bank 1 VVT hold current set at a constant valve of 450 mA	Oil contamination  VVT 1 oil flow fault  VVT solenoid 1 fault  VVT / camshaft mechanical failure bank 1	109	VVT position malfunction bank 1	Idle engine 30 seconds  Accelerate from stop through complete engine rpm range.  Drive the vehicle steadily between 48-97km/h (30-60mph) for 1 minute

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1396		2 trip MIL	ECM Default: – Bank 2 VVT hold current set at a constant valve of 450 mA	Oil contamination  VVT 2 oil flow fault  VVT solenoid 2 fault  VVT / camshaft mechanical failure bank 2	110	VVT position malfunction bank 2	Idle engine 30 seconds  Accelerate from stop through complete engine rpm range.  Drive the vehicle steadily between 48 97km/h (30 60mph) for 1 minute
P1410		non MIL		ECM to air cleaner solenoid circuit: open circuit, short circuit, high resistance Air cleaner solenoid failure	14	Air cleaner solenoid valve drive circuit malfunction	Start engine  Idle for 2 minutes
P1474		2 trip MIL  Amber lamp	ECM Default:  – Default value of 70°C (158°F) used	Intercooler coolant pump failure	none	Intercooler coolant pump malfunction	Start engine and bring to normal engine operating temperature > 80°C (176°F) Drive vehicle in Drive at 80km/h (50mph) 105km/h (65mph) for > 10 minutes
P1516		2 trip MIL  amber lamp	ECM Default:  – cruise control inhibited  – Maximum engine speed reduced	Gear selector cable setting incorrect  Transmission range sensor to ECM circuit: open circuit, high resistance  Transmission range sensor failure  D 4 Switch to TCM circuit: open circuit, high resistance D 4 Switch failure	31	Gear change P / N driving malfunction	Drive vehicle > 24 km/h (15 mph) between 1500 4000 rpm for 30 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1517		2 trip MIL  amber lamp	ECM Default:  – cruise control inhibited  – Maximum throttle opening for N range inhibited  – Maximum engine speed reduced	Gear selector cable setting incorrect  Transmission range sensor to ECM circuit: open circuit or high resistance  Transmission range sensor failure	31	Gear change P / N starting malfunction	Start engine in P  Start engine in N  Check that engine does not start in R, D, 4, 3, 2  CAUTION: If the P/N switch is faulty, the engine may start while in gear
P1532		2 trip MIL	ECM Default:  – IMT 2 Inhibited	IMT Valve 2 (bottom) disconnected  IMT Valve 2 (bottom) to ECM drive circuit fault  IMT Valve 2 (bottom) power supply circuit fault  IMT Valve 2 (bottom) failure	39	IMT valve 2 (bottom) circuit malfunction	Battery voltage > 10 volts  Start engine and bring to normal operating temperature > 82 °C (180 °F)  Run engine at 5000 rpm in N for 20 seconds
P1549		2 trip MIL	ECM Default:  – IMT 1 Inhibited	IMT Valve 1 (top) disconnected  IMT Valve 1 (top) to ECM drive circuit fault  IMT Valve 1 (top) power supply circuit fault  IMT Valve 1 (top) failure	38	IMT valve 1 (top) circuit malfunction	Battery voltage > 10 volts  Start engine and bring to normal operating temperature > 82 °C (180 °F)  Run engine at 5000 rpm in N for 20 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1571		non MIL  amber lamp	ECM Default:  – cruise control inhibited  – Maximum engine speed reduced	Brake ON / OFF switch to ECM circuit: open circuit, short circuit to ground, high resistance.  Brake ON / OFF switch failure Brake cancel switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake switch power supply circuit: open circuit Brake cancel switch failure	8, 9	Brake ON / OFF switch; brake cancel switch malfunction  (Brake ON / OFF switch normally open; brake cancel switch normally closed)	Start engine; idle in P, N  Press brake pedal for > 30 seconds; release brake pedal  Repeat 10 times  or Hold the vehicle's speed > 60kph for > 30 seconds.  Repeat 10 times  or Using WDS, monitor both circuits  Pedal at rest = "0" (both circuits); pedal pressed = "1" (both circuits)
P1582		non MIL		If none of the five conditions occur, check: Inertia switch to ECM circuit: short circuit to B+ voltage Inertia switch failure	10	"Flight recorder" data is stored if any one of five conditions occur:	1 Inertia switch activated 2 Throttle Limp Home mode 3 Engine starts and stumbles 4 Engine fail to start 5 Engine stall
P1606		1 trip MIL		ECM control relay failure ECM control relay to ECM circuit fault ECM control relay coil power supply open circuit ECM ground circuit fault (relay coil drive)	40	EMS control relay malfunction	Ignition key in, position II for 10 seconds (do not start)

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1609		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	ECM Failure		ECM microprocessor to microprocessor communication failure	Ignition ON, engine OFF 10 seconds
P1611	address any other DTCs and retest	2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	Throttle position sensor input failure. Pedal position sensor input failure. Throttle motor control failure. Cruise control CANCEL failure.		ECM sub CPU failure	Drive vehicle  If fitted, engage speed control  Refer to Owner's Handbook and ensure that speed control engages normally



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1629		non MIL  charge lamp	None	ECM to generator "FIELD" return circuit: open circuit, high resistance, short circuit to ground, short circuit to battery.  Generator regulator failure  Generator failure	65	Generator "FIELD" circuit failure	Battery voltage > 12 volts  Switch OFF all electrical consumers  Ignition ON, engine OFF 15 seconds  Start engine; momentarily idle with all electrical consumers switched OFF Switch ignition OFF Switch Ignition ON, engine OFF
P1631		2 trip MIL  red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	Throttle motor relay coil power supply circuit: open circuit (fuse)  Throttle motor relay failure  Throttle motor relay coil to ECM drive circuit: open circuit, short circuit to ground	52	Throttle motor relay coil drive circuit OFF failure	Engine temperature cool (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start)  Repeat cycle twice more

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1632		2 trip MIL charge lamp	None	ECM to generator "LOAD" feedback circuit: short circuit, open circuit, high resistance Generator regulator failure Generator failure	79	Generator charge system failure / generator "LOAD" feedback circuit failure	Battery voltage > 12 volts  Switch OFF all electrical consumers  Switch ignition off. Switch Ignition ON, engine OFF for 15 seconds, start the engine and leave it idling for 2 minutes.
P1633		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	ECM Failure		ECM main CPU failure	Ignition ON, engine OFF 10 seconds
P1634		2 trip MIL	ECM Default: – Vehicle speed limited – Throttle opening limited to 30% – Speed control inhibited	ECM Failure		Throttle "watch dog" circuit malfunction	Idle engine Switch OFF ignition for 10 seconds  Start engine and repeat

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1637		2 trip MIL  amber lamp	ECM Default: – cruise control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	CAN open circuit fault ABS/TCCM (DSCCM) to ECM  CAN short circuit fault  ABS/TCCM (DSCCM) failure  ECM failure	123, 124	CAN ECM to ABS/TCCM (DSCCM) network malfunction    (TCCM is Traction control control module)	Ignition ON, engine OFF 30 seconds
P1638		1 trip MIL		CAN open circuit fault INST to ECM  CAN short circuit fault INST failure ECM failure	123, 124	CAN ECM / INST network malfunction	Ignition ON, engine OFF 30 seconds
P1642		1 trip MIL  amber lamp	ECM Default: – cruise control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	CAN short circuit fault Control module failure check for additional flagged DTC(s) to locate control module source	123, 124	CAN circuit malfunction	Ignition ON, engine OFF 30 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1643		2 trip MIL amber lamp	ECM Default: – cruise control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	CAN open circuit fault TCM to ECM  CAN short circuit fault  TCM failure  ECM failure	123, 124	CAN ECM / TCM network malfunction	Ignition ON, engine OFF 30 seconds
P1646		2 trip MIL	ECM Default:  – HO2S 1/1 control circuit inhibited	HO2 Sensor 1/1 sensing circuit: short circuit to ground, short circuit to high voltage, open circuit, high resistance  HO2 Sensor 1/1 Failure		ECM HO2 Sensor control malfunction bank 1 upstream (1/1)	Drive vehicle for 10 minutes
P1647		2 trip MIL	ECM Default:  – HO2S 2/1 control circuit inhibited	HO2 Sensor 2/1 sensing circuit: short circuit to ground, short circuit to high voltage, open circuit, high resistance  HO2 Sensor 2/1 Failure		ECM HO2 Sensor control malfunction bank 2 upstream (2/1)	Drive vehicle for 10 minutes
P1648		2 trip MIL amber lamp	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	ECM Failure		ECM internal Knock Sensor CPU self test failure	Start engine Battery voltage > 10 volts Idle for 2 minutes
P1656		2 trip MIL amber lamp	ECM Default: – Maximum engine speed reduced	ECM Failure	75	TP Sensor amplifier circuit malfunction	Ignition ON, engine OFF 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1657		2 trip MIL  red lamp	ECM Default:  – Vehicle speed limited  – Throttle opening limited to 30% – Speed control inhibited	Throttle motor relay failure  Throttle motor relay coil to ECM drive circuit: short circuit to B+ voltage	52, 134	Throttle motor relay coil drive circuit ON failure	Engine temperature cool (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start)  Repeat cycle two additional times
P1658		2 trip MIL  red lamp	ECM Default:  – Vehicle speed limited  – Throttle opening limited to 30% – Speed control inhibited	Throttle motor relay failure  Throttle motor relay coil to ECM drive circuit: short circuit to B+ voltage	52	Throttle motor relay ON failure	Engine temperature cool (cooling fans not running)  Remove ignition key for 20 seconds (cooling fans not running)  Ignition key in, position II for 5 seconds (do not start)  Repeat cycle two additional times
P1672		non MIL	ECM Default:  – cruise control inhibited	CAN open circuit fault ASCM to ECM  CAN short circuit fault  ASCM failure ECM failure	123, 124	CAN ECM / ASCM network malfunction	Ignition ON, engine OFF 30 seconds
P1696		non MIL	ECM Default:  – cruise control inhibited	CAN open circuit fault ACCCM to ECM  CAN short circuit fault  ASCCM failure ECM failure	123, 124	CAN ECM / ACCCM network malfunction	Ignition ON, engine OFF 30 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1697		non MIL  amber lamp	ECM Default:  – cruise control inhibited	cruise control switches internal steering wheel circuit: short circuit to ground  HEADWAY + / - switch(es) failure (stuck ON)	47	Adaptive cruise control HEADWAY switch(es) circuit malfunction	Ignition ON, engine OFF 45 seconds
P1699		2 trip MIL		CAN open circuit fault A/CCM to ECM CAN short circuit fault A/CCM failure ECM failure	123, 124	CAN ECM / A/CCM network malfunction	Ignition ON, engine OFF 30 seconds
P1755		non MIL	ECM Default:  – cruise control inhibited	CAN open circuit fault ECM / EPB CAN short circuit fault EPB failure ECM failure	123, 124	CAN ECM / EPB network malfunction	Ignition ON, engine OFF 30 seconds
P2096		2 trip MIL		HO2 Sensor(s) (1/1, 1/2) circuit fault HO2 Sensor(s) (1/1, 1/2) fault		Bank 1 secondary fuel trim too lean	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes
P2097		2 trip MIL		HO2 Sensor(s) (1/1, 1/2) circuit fault HO2 Sensor(s) (1/1, 1/2) fault		Bank 1 secondary fuel trim too rich	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes
P2098		2 trip MIL		HO2 Sensor(s) (2/1, 2/2) circuit fault HO2 Sensor(s) (2/1, 2/2) fault		Bank 2 secondary fuel trim too lean	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes
P2099		2 trip MIL		HO2 Sensor(s) (2/1, 2/2) circuit fault HO2 Sensor(s) (2/1, 2/2) fault		Bank 2 secondary fuel trim too rich	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P2107		2 trip MIL red lamp	ECM Default: – Vehicle speed limited – Throttle opening limited to 30% – Speed control inhibited	ECM Failure		Throttle “watch dog” circuit malfunction	Idle engine Switch OFF ignition for 10 seconds Start engine and repeat
P2118		2 trip MIL red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited – Speed control disabled	Throttle motor disconnected Throttle motor to ECM drive circuits: short circuit or open circuit ECM ground circuit fault(s) (-004, 005, 054) Throttle motor failure Throttle body failure	80, 106, 52, 134, 4, 5, 54	Throttle motor control circuit malfunction	Battery voltage > 10 volts Ignition ON, engine OFF Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times
P2119		2 trip MIL red lamp	ECM Default: – Engine shut down – Speed control disabled	Throttle motor failure Throttle body failure	80, 106, 52, 134	Throttle control position error	Battery voltage > 10 volts Ignition ON, engine OFF Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P2122		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited – APP adaptations (wear, variance) inhibited	APP Sensor to ECM sense circuit (APP2): open circuit, short circuit to ground, high resistance  APP Sensor sensor supply circuit (to splice): open circuit, high resistance  APP Sensor failure	103	APP Sensor circuit low voltage APP2	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P2123		2 trip MIL  red lamp	ECM Default:  – APP angle default value used  – Speed control inhibited  – APP adaptations (wear, variance) inhibited	APP Sensor sensor to ECM sense circuit(s) (APP2 or APP1): short circuit to high voltage APP Sensor sensor ground circuit(s) (to splice): open circuit  APP Sensor failure	102, 103	APP Sensor circuit high voltage APP2  Note: This DTC could be flagged by both sensor element sensing circuit having faults.	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P2632		2 trip MIL	ECM Default:  – Fuel pump 2 feedback control inhibited	ECM to Fuel Pump 2 Module control drive circuit: open circuit, short circuit, high resistance  Fuel Pump 2 Module failure	11, 53	Fuel pump 2 drive circuit fault	Start engine  Battery voltage > 12 volts  Idle for 2 minutes



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P2135		2 trip MIL  red lamp	ECM Default: – Throttle motor and throttle motor relay disabled – Throttle valve opening set to default value  – Idle speed controlled by fuel injection intervention  – Idle speed adaption inhibited	TP Sensor to ECM wiring: open circuit, high resistance TP Sensor to ECM sensing circuits (TP1 or TP2): short circuit to B+ voltage  TP Sensor failure	75, 76	TP Sensor range / performance (TP1 compared to TP2)	Battery voltage > 10 volts  Ignition ON, engine OFF  Slowly press accelerator pedal to the floor over a 5 second period  Slowly return the pedal to rest  Repeat 3 times
P2228		2 trip MIL	ECM Default: – Default value of 1 BAR (29.53 in hg, 100 kPa) used	BARO Sensor failure (internal ECM fault)		BARO Sensor circuit low voltage	Ignition ON, engine OFF 10 seconds
P2229		2 trip MIL	ECM Default: – Default value of 1 BAR (29.53 in hg, 100 kPa) used	BARO Sensor failure (internal ECM fault)		BARO Sensor circuit high voltage	Ignition ON, engine OFF 10 seconds
P2503		non-MIL charge lamp		Alternator regulator  Alternator regulator to ECM circuit short circuit to ground	79, 53	Charging System voltage Low	Start engine and idle for 5 minutes
P2504		non-MIL charge lamp		Alternator regulator Alternator regulator to E CM circuit open circuit, short to battery.	79, 53	Charging System voltage High	Start engine idle for more than 15 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P2601		2 trip MIL  Amber	ECM Default:  – Default value of 70°C (158°F) used	Intercooler coolant pump failure  Intercooler coolant pump to EMS relay circuit open circuit or failed fuse.  Intercooler coolant pump to ground open circuit.		Intercooler coolant pump malfunction	Start engine and bring to normal engine operating temperature > 80°C (176°F) Drive vehicle in Drive at 80km/h (50mph) 105km/h (65mph) for > 10 minutes
P2633		2 trip MIL	ECM Default:  – Fuel pump 2 feedback control inhibited	Fuel Pump 2 Module to fuel pump drive circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module to ECM monitor circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module failure Fuel pump 2 failure	53, 11	Fuel pump 2 drive circuit low voltage fault	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P2634		2 trip MIL	ECM Default:  – Fuel pump 2 feedback control inhibited	Fuel Pump 2 Module to fuel pump drive circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module to ECM monitor circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module failure Fuel pump 2 failure	53, 11	Fuel pump 2 drive circuit high voltage fault	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P2635		2 trip MIL	ECM Default:  – Fuel pump feedback control inhibited	ECM to fuel pump control module control and / or feedback circuits: open circuit, short circuit, high resistance  Fuel pump control module failure	25, 27	Fuel pump not activated when requested by ECM	Start engine  Battery voltage > 12 volts  Idle for 2 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P2636		2 trip MIL	ECM Default: – Fuel pump 2 feedback control inhibited	Fuel Pump 2 Module to fuel pump drive circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module to ECM monitor circuit: open circuit, short circuit, high resistance Fuel Pump 2 Module failure Fuel pump 2 failure	53, 11	Fuel pump 2 drive circuit output circuit fault	Start engine  Battery voltage > 12 volts  Idle for 2 minutes
P2A01		2 trip MIL		HO2 Sensor(s) (1/1, 1/2) circuit fault HO2 Sensor(s) (1/1, 1/2) fault		Bank 1 secondary fuel trim too rich or lean	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes
P2A04		2 trip MIL		HO2 Sensor(s) (2/1, 2/2) circuit fault HO2 Sensor(s) (2/1, 2/2) fault		Bank 2 secondary fuel trim too rich or lean	Start engine and bring to normal operating temperature > 82°C (180°F) Idle for 10 minutes

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0605	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM failure		TCM Self test error	Ignition ON 10 seconds
P0606	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM failure		TCM “Watch dog” circuit malfunction	Ignition ON 10 seconds
P0610	transmission	non MIL amber lamp	TCM Default: – Electrical limp home mode	Reconfigure TCM using WDS		TCM Configuration error	Ignition ON 10 seconds
P0641	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Sensor supply voltage circuit malfunction	Ignition ON 10 seconds
P0651	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator and shift solenoid supply circuit malfunction	Ignition ON 10 seconds
P0666	transmission	non MIL amber lamp	None	TCM / Control valve failure		Substrate temperature sensor circuit malfunction	Drive the vehicle steadily between 48 97 km/h (30 60 mph) for 5 minutes. Coast to a stop.
P0701	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	DSC Fault (Check for DSC DTCs) TCM / Control valve failure		TCM control errors	Drive vehicle from stop to 113 km/h (70 mph). Coast to a stop.
P0702	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	Battery power supply fuse failure Battery power supply: intermittent open circuit	GB2-14	TCM Battery power supply low voltage (short time)	Ignition ON 10 seconds
P0705	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Gear position switch circuit malfunction	Switch ignition ON. Move the gear selector slowly from P to the 2 position, then back to P

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0706	transmission	non MIL amber lamp	TCM Default: – Shift strategy fixed – J Gate “manual” function disabled – If selected, Sport Mode disabled	TCM / J Gate Module CAN fault  J Gate Module failure		J Gate selector position plausibility fault	Switch ignition ON. Move the gear selector slowly from P to the 2 position, then back to P
P0709	transmission	non MIL amber lamp	TCM Default: – Shift strategy fixed – J Gate “manual” function disabled – If selected, Sport Mode disabled	J Gate Module failure		J Gate selector Intermediate position fault	Switch ignition ON. Move the gear selector slowly from P to the 2 position, then back to P
P0710	transmission	non MIL amber lamp	None	TCM / TCM Fluid temperature sensor failure		Transmission fluid temperature sensor circuit malfunction	Drive the vehicle steadily between 48 97 km/h (30 60 mph) for 5 minutes. Coast to a stop.
P0711	transmission	non MIL	None	Transmission fluid over- temperature: drain and replace transmission fluid		Transmission fluid (ATF) temperature range fault	Drive the vehicle steadily between 48 97 km/h (30 60 mph) for 5 minutes. Coast to a stop.
P0715	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	TCM / Turbine speed sensor failure		Turbine speed sensor circuit failure	Drive the vehicle steadily between 48 97 km/h (30 60 mph) for 5 minutes. Coast to a stop.
P0720	transmission	non MIL	TCM Default: – Substitute DSC vehicle speed for transmission output speed	TCM / Control valve failure		Output speed sensor circuit failure	Drive vehicle from stop to 113 km/h (70 mph). Coast to a stop.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0721	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode – Substitute DSC vehicle speed for transmission output speed	Transmission mechanical failure  TCM / Control valve failure		Output speed sensor signal gradient fault	Drive vehicle from stop to 113 km/h (70 mph). Coast to a stop.
P0725	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	TCM / ECM CAN Fault		Engine over-speed range fault	Using full acceleration, drive vehicle from stop to 113 km/h (70 mph). Coast to a stop.
P0729	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		Sixth gear ratio fault	Drive vehicle from stop to 113 km/h (70 mph). Ensure that Sixth gear is engaged by moving the gear selector to the 5 position and observing that the transmission down shifts. Coast to a stop.
P0730	transmission	non MIL	None	ECM Torque signal fault  Transmission mechanical failure		Gear ratio fault	Drive vehicle from stop to 113 km/h (70 mph). Ensure that Sixth gear is engaged by moving the gear selector to the 5 position and observing that the transmission down shifts. Coast to a stop

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0731	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		First gear ratio fault	Start vehicle and select gear position 2. Accelerate hard until the engine speed reaches 4500 rpm, after the transmission has shifted to second gear. Stop the vehicle.  Repeat two additional times
P0732	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		Second gear ratio fault	Start vehicle and select gear position 2. Accelerate the vehicle until second gear is engaged. Drive the vehicle for 5 minutes in second gear. Vary the vehicle speed and acceleration rate.
P0733	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		Third gear ratio fault	Start vehicle and select gear position 3. Accelerate the vehicle until third gear is engaged. Drive the vehicle for 5 minutes in third gear. Vary the vehicle speed and acceleration rate.
P0734	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		Fourth gear ratio fault	Start vehicle and select gear position 4. Accelerate the vehicle until fourth gear is engaged. Drive the vehicle for 5 minutes in fourth gear. Vary the vehicle speed and acceleration rate.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0735	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	ECM Torque signal fault Transmission mechanical failure		Fifth gear ratio fault	Start vehicle and select gear position 5. Accelerate the vehicle until fifth gear is engaged. Drive the vehicle for 5 minutes in fifth gear. Vary the vehicle speed and acceleration rate.
P0736	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	ECM Torque signal fault Transmission mechanical failure		Reverse gear ratio fault	Start vehicle and select REVERSE gear. Accelerate the vehicle at different rates for 1 minute.
P0740	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Torque converter clutch pressure regulator solenoid circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0741	transmission	2 trip MIL amber lamp	TCM Default: – Deactivate torque converter clutch pressure regulator; lock up clutch disabled	TCM / Control valve failure Transmission mechanical failure		Torque converter clutch pressure regulator solenoid stuck open	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0743	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	TCM / Control valve failure		Torque converter clutch pressure regulator solenoid circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.



DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0750	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 1 circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0753	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 1 circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0755	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 2 circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0758	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 2 circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0760	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 3 circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0763	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 3 circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0765	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 4 circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0768	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 4 circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0770	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 5 circuit malfunction	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0773	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	TCM / Control valve failure		Pressure regulator solenoid 5 circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0780	transmission	non MIL	None	ECM Torque signal fault  Transmission mechanical failure		Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0781	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		12 / 21 Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0782	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		23 / 32 Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0783	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		34 / 43 Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0784	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		45 / 54 Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0787	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Shift solenoid circuit malfunction	Ignition ON 10 seconds
P0788	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	TCM / Control valve failure		Shift solenoid circuit plausibility error	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0825	transmission	non MIL amber lamp	None	J Gate incorrectly adjusted  J Gate Module failure		J Gate positions R, D plausibility error	Ignition ON. Slowly move gear selector from Park to Drive, then back to Park.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P0829	transmission	2 trip MIL  amber lamp	TCM Default:  – Electrical limp home mode	ECM Torque signal fault  Transmission mechanical failure		56 / 65 Gear load fault	Drive the vehicle at 113 km/h (70 mph), then reduce the throttle angle until the torque convertor locks. Ensure that the torque convertor remains locked for at least 1 minute.
P0860	transmission *ECM pins	non MIL  amber lamp	ECM Default: – Speed control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	CAN open circuit fault  CAN short circuit fault  J Gate failure	*123, 124	J Gate CAN network malfunction   * J Gate / CAN monitored by ECM	Ignition ON 10 seconds
P1603	transmission	1 trip MIL amber lamp	None	TCM / Control valve failure		TCM Internal communications error	Ignition ON 10 seconds
P1605	transmission	non MIL	None	Battery power supply circuit: open circuit, short circuit to ground TCM / Control valve failure	GB2-14	TCM RAM error	Ignition ON, then OFF. Cycle ignition switch 6 times.
P1749	transmission	non MIL	None	TCM TO ECM P / N circuit: open circuit, short circuit to ground, short circuit to B+ voltage  TCM / Control valve failure	GB2-10	PARK / NEUTRAL circuit malfunction	Ignition ON. Move gear selector to N; leave in N for 5 seconds, then return to P.

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1774	transmission	non MIL amber lamp	TCM Default: – Manual gear selection disabled – Sport mode disabled	CAN open circuit fault TCM to J Gate Module CAN short circuit fault J Gate Module failure	GB2-2, -6	CAN TCM / J Gate Module network malfunction	Ignition ON 10 seconds
P1783	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	Transmission fluid level low Transmission fluid cooler circuit: obstructed, leaking Transmission fluid cooler fins blocked by debris Transmission mechanical failure		Transmission over-temperature shut- down	Drive vehicle for 1 hour while continually performing hard acceleration starts / stops.
P1794	transmission	2 trip MIL amber lamp	TCM Default: – Mechanical limp home mode	Ignition switched power supply fuse failure Ignition switched power supply circuit: short circuit to ground, open circuit	GB2-9	TCM ignition switched power supply circuit malfunction	Ignition ON 10 seconds
P1796	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	CAN open circuit or short circuit fault TCM / Control valve failure	GB2-2, -6	CAN network fault	Ignition ON 10 seconds
P1797	transmission	2 trip MIL amber lamp	TCM Default: – Electrical limp home mode	CAN open circuit fault TCM to ECM CAN short circuit fault ECM failure TCM / Control valve failure	GB2-2, -6	CAN TCM / ECM network malfunction	Ignition ON 10 seconds
P1798	transmission	non MIL	None	CAN open circuit fault TCM to IC CAN short circuit fault IC failure TCM / Control valve failure	GB2-2, -6	CAN TCM / IC network malfunction	Ignition ON 10 seconds

DTC	Notes	Indication	Default action	Possible causes	CM pin	DTC description	Test conditions
P1799	transmission	non MIL	TCM Default: – Substitute transmission output speed for DSC vehicle speed	CAN open circuit fault TCM to DSCCM  CAN short circuit fault  DSCCM failure TCM / Control valve failure	GB2-2, -6	CAN TCM / DSCCM network malfunction	Ignition ON 10 seconds
P0860	transmission *ECM pins	non MIL  amber lamp	ECM Default: – Speed control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	CAN open circuit fault  CAN short circuit fault  J Gate failure	*123, 124	J Gate CAN network malfunction   * J Gate / CAN monitored by ECM	Ignition ON 10 seconds