Powertrain DTC Summaries – EOBD

Quick Reference Diagnostic Guide

Jaguar X-TYPE 2.0 L 2002.25 Model Year

Refer to page 2 for important information regarding the use of "Powertrain DTC Summaries".

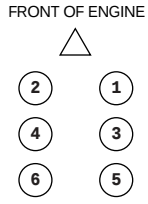
KEY TO COLUMN HEADINGS

DTC	Diagnostic Trouble Code.
SYS	The powertrain system with which the DTC is associated – EMS, TRANS. DTC retrieval tools: EOBD – indicates that the DTC is an EOBD code and can be accessed via a generic scan tool or WDS. JAG – indicates that the DTC is not an EOBD code and is accessed only via WDS.
FAULT DESCRIPTION	Fault description.
MONITORING CONDITIONS	"DIAGNOSTIC MONITOR DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC. Refer to pages 4 – 7. Use WDS Datalogger or Scan Tool to monitor specified engine parameter(s).
CHECK ENGINE MIL (CK ENG)	1 1 TRIP – indicates that the CHECK ENGINE MIL is activated by a fault occurring during ONE "TRIP". 2 2 TRIPS – indicates that the CHECK ENGINE MIL is activated by a fault occurring during TWO CONSECUTIVE "TRIPS". N NO – indicates that the CHECK ENGINE MIL is not activated.
OTHER	Driver Warnings: N None R RED MIL / Message or Powertrain Warning Indicator A AMBER MIL / Message or Powertrain Warning Indicator C Charge indicator
DEFAULT ACTION	Control Module default action: Logged – DTC stored in ECM memory buffer; Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.
CM PIN	ECM (SYS – EMS) / TCM (SYS – TRANS) Connector pin number(s)
POSSIBLE CAUSES	Possible causes are listed in the order of diagnostic checking. HIGH VOLTAGE – High voltage can be either sensor supply voltage (5 volts) or B+ voltage.

REFERENCE: It is recommended that the applicable "Electrical Guide" be referenced when using the information contained in this document.

CYLINDER NUMBERING

Engine cylinder numbering is as follows:



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 DIAGNOSTIC MONITORS

The Engine Management and Transmission Control systems are continuously checked during vehicle operation by the Engine Control Module (ECM) and Transmission Control Module (TCM) on-board diagnostic (OBD) facilities. Powertrain OBD incorporates six 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 six diagnostic monitors are as follows:

- Heated Oxygen Sensors Monitor
- Adaptive Fuel Monitor
- Misfire Monitor
- Catalyst Efficiency Monitor
- Purge System Monitor
- 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 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 4th 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.

Note 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 > 82 °C (180 °F).

2 Drive vehicle steadily between 1700 – 2500 rpm for 5 minutes.

PURGE SYSTEM MONITOR DRIVE CYCLE

1 Fuel level > 15% and < 85%. If it is necessary to add fuel, reduce vapor concentration by driving the vehicle steadily for 30 minutes avoiding driving conditions that will produce excessive fuel movement.

2 Ambient temperature > -5 °C (23 °F); engine at normal operating temperature > 82 °C (180 °F).

3 Drive the vehicle steadily for 15 minutes avoiding driving conditions that will produce excessive fuel movement. Using WDS, ensure that the EVAP Canister Purge Valve is operating by observing "PURGE VAPOR MANAGEMENT VALVE – DUTY CYCLE".

4 Gently coast to a stop. Idle engine 2 minutes. Using WDS, ensure that the EVAP Canister Purge Valve is operating by observing "PURGE VAPOR MANAGEMENT VALVE – DUTY CYCLE".

Note: The diagnostic will not run if the vapor concentration in the fuel tank is too great.

Note: If Purge System DTCs are flagged after conducting the drive cycle, There may be a Purge System mechanical fault. Refer to P0441 Possible Causes.

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
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
B+	Battery Voltage
Bank 1	RH Engine cylinder bank (cylinders 1, 3, 5) (A Bank)
Bank 2	LH Engine cylinder bank (cylinders 2, 4, 6) (B Bank)
BARO Sensor	Barometric Pressure Sensor
CAN	Controller Area Network
CKP Sensor	Crankshaft Position Sensor
CMP Sensor 1	Camshaft Position Sensor – Bank 1
CMP Sensor 2	Camshaft Position Sensor – Bank 2
DLC	Data Link Connector
ECM	Engine Control Module
ECT Sensor	Engine Coolant Temperature Sensor
EOT Sensor	Engine Oil Temperature Sensor
EVAP Canister Purge Valve	Evaporative Emission Canister Purge Valve
HO2 Sensor 1 / 1	Heated Oxygen Sensor – Bank 1 / Upstream
HO2 Sensor 1 / 2	Heated Oxygen Sensor – Bank 1 / Downstream
HO2 Sensor 2 / 1	Heated Oxygen Sensor – Bank 2 / Upstream
HO2 Sensor 2 / 2	Heated Oxygen Sensor – Bank 2 / Downstream
IAT Sensor	Intake Air Temperature Sensor
IMT Valve 1	Intake Manifold Tuning Valve: Bottom
IMT Valve 2	Intake Manifold Tuning Valve: Top
KS	Knock Sensor
MAF Sensor	Mass Air Flow Sensor
MAP Sensor	Manifold Absolute Pressure Sensor
TCC	Torque converter clutch
TCM	Transmission Control Module
TFT Sensor	Transmission Fluid Temperature Sensor
TP Sensor	Throttle Position Sensor
VVT Valve 1	Variable Valve Timing Valve – Bank 1
VVT Valve 2	Variable Valve Timing Valve – Bank 2

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0010	EMS EOBD	VVT circuit malfunction – bank 1	Idle engine 30 seconds Accelerate from stop through complete engine rpm range Coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	ECM Default: – Bank 1 VVT hold current set at a constant value of 450 mA	EN65 -096	VVT solenoid valve to ECM PWM drive circuit: open circuit, short circuit, high resistance VVT solenoid failure
P0020	EMS EOBD	VVT circuit malfunction – bank 2	Idle engine 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	ECM Default: – Bank 2 VVT hold current set at a constant value of 450 mA	EN65 -095	VVT solenoid valve to ECM PWM drive circuit: open circuit, short circuit, high resistance VVT solenoid failure
P0031	EMS EOBD	HO2 Sensor heater control circuit low current – bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor heaters)	2	N	ECM Default: – Bank 1 closed loop fuel metering and adaptive fuel metering inhibited – Canister purge inhibited – Bank 1 upstream HO2S heater control circuit switched off	EN65 -075 -077 -102 -104	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 (EN65-075, EN65-102) HO2 Sensor 1/1 heater failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0032	EMS EOBD	HO2 Sensor heater control circuit high current – bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	ECM Default: – Bank 1 closed loop fuel metering and adaptive fuel metering inhibited – Canister purge inhibited – Bank 1 upstream HO2S heater control circuit switched off	EN65 -075 -077 -102 -104	HO2 Sensor 1/1 heater control circuit: short circuit to ground HO2 Sensor 1/1 heater ground circuit(s) fault (EN65-075, EN65-102) HO2 Sensor 1/1 heater failure
P0037	EMS EOBD	HO2 Sensor heater control circuit low resistance – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	None	EN65 -047	HO2 Sensor 1/2 heater control circuit: short circuit to ground HO2 Sensor 1/2 heater failure
P0038	EMS EOBD	HO2 Sensor heater control circuit high resistance – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	None	EN65 -047	HO2 Sensor 1/2 heater control circuit: open circuit; high resistance HO2 Sensor 1/2 heater failure
P0051	EMS EOBD	HO2 Sensor heater control circuit low current – bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	ECM Default: – Bank 2 closed loop fuel metering and adaptive fuel metering inhibited – Canister purge inhibited – Bank 2 upstream HO2S heater control circuit switched off.	EN65 -052 -076 -078 -103	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 (EN65-052, EN65-078) HO2 Sensor 2/1 heater failure
P0052	EMS EOBD	HO2 Sensor heater control circuit high current – bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	ECM Default: – Bank 2 closed loop fuel metering and adaptive fuel metering inhibited – Canister purge inhibited – Bank 2 upstream HO2S heater control circuit switched off.	EN65 -052 -076 -078 -103	HO2 Sensor 2/1 heater control circuit: short circuit to ground HO2 Sensor 2/1 heater ground circuit(s) fault (EN65-052, EN65-078) HO2 Sensor 2/1 heater failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0057	EMS EOBD	HO2 Sensor heater control circuit low resistance – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	None	EN65 -046	HO2 Sensor 2/2 heater control circuit: short circuit to ground HO2 Sensor 2/2 heater failure
P0058	EMS EOBD	HO2 Sensor heater control circuit high resistance – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 4 (Oxygen sensor hearers)	2	N	None	EN65 -046	HO2 Sensor 2/2 heater control circuit: open circuit; high resistance HO2 Sensor 2/2 heater failure
P0101	EMS EOBD	MAF Sensor circuit range / performance	Fuel level > 25%. Start engine and bring to normal operating temperature > 82 °C (180 °F) Drive the vehicle steadily in 4th or 5th gear on a level road between 1700 – 2300 rpm; hold the engine speed constant for 40 seconds while maintaining a steady throttle	2	A	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -030	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction MAF Sensor to ECM sensing circuit: high resistance, intermittent short circuit to ground MAF Sensor supply circuit: high resistance MAF Sensor failure
P0102	EMS EOBD	MAF Sensor circuit low voltage	Ignition ON 10 seconds	2	A	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -030	Blocked air cleaner MAF Sensor to ECM sensing circuit: high resistance, open circuit, intermittent short circuit to ground MAF Sensor supply circuit: open circuit, short circuit to ground MAF Sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0103	EMS EOBD	MAF Sensor circuit high voltage	Ignition ON 10 seconds	2	A	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -029 -030 -031	MAF Sensor to ECM sensing circuit: short circuit to B+ voltage MAF Sensor to ECM sensor ground circuit: open circuit MAF Sensor failure
P0105	EMS EOBD	MAP Sensor circuit malfunction	Fuel level > 25% Start engine and bring to normal operating temperature > 82 °C (180 °F) Drive the vehicle steadily in 4th or 5th gear on a level road between 1700 – 2300 rpm; hold the engine speed constant for 40 seconds while maintaining a steady throttle	2	N	ECM Default: – Default value of 1.013 BAR (29.92 in hg) used	EN65 -001	MAP Sensor to ECM circuit(s) fault MAP Sensor failure
P0106	EMS EOBD	BARO Sensor circuit range / performance	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	2	N	ECM Default: – Default value of 1 BAR (29.53 in hg) used	—	BARO Sensor failure (internal ECM fault)
P0107	EMS EOBD	BARO Sensor circuit low voltage	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 1 BAR (29.53 in hg) used	—	BARO Sensor failure (internal ECM fault)

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0108	EMS EOBD	BARO Sensor circuit high voltage	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 1 BAR (29.53 in hg) used	—	BARO Sensor failure (internal ECM fault)
P0111	EMS EOBD	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	2	N	ECM Default: – Default value of 25 °C (77 °F) used	EN65 -081	Blocked air cleaner Air intake leak Engine breather leak IAT Sensor to ECM wiring: open circuit or high resistance IAT Sensor to ECM sensing circuit: short circuit to high voltage IAT Sensor failure
P0112	EMS EOBD	IAT Sensor circuit high voltage (low air temperature)	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 25 °C (77 °F) used	EN65 -081	IAT Sensor to ECM wiring: open circuit or high resistance IAT Sensor to ECM sensing circuit: short circuit to B+ voltage IAT Sensor failure
P0113	EMS EOBD	IAT Sensor circuit low voltage (high air temperature)	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 25 °C (77 °F) used	EN65 -081	IAT Sensor to ECM wiring: short circuit to ground IAT Sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0116	EMS EOBD	ECT Sensor circuit range / performance	Engine coolant temperature and ambient temperature within 10 °C (50 °F) Drive the vehicle steadily in 4th or 5th gear above 1700 rpm for 5 minutes Idle engine until engine coolant temperature reaches 80 °C (176 °F) CAUTION: Overheating is possible if the ECT sensor is faulty and cooling fans do not operate	2	A	ECM Default: – EOT value substituted (no greater than 95 °C (203 °F) – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm-up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -080	Low coolant level Contaminated coolant Engine thermostat failure ECT Sensor to ECM sensing circuit: high resistance when hot, intermittent high resistance ECT Sensor failure
P0117	EMS EOBD	ECT Sensor circuit high voltage (low coolant temperature)	Ignition ON 10 seconds	2	A	ECM Default: – EOT value substituted (no greater than 95 °C (203 °F) – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm-up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -080	ECT Sensor disconnected ECT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to B+ voltage ECT Sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0118	EMS EOBD	ECT Sensor circuit low voltage (high coolant temperature)	Ignition ON 10 seconds	2	A	ECM Default: – EOT value substituted (no greater than 95 °C (203 °F) – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm-up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -080	Engine overheat condition ECT Sensor to ECM wiring: short circuit to ground ECT Sensor failure
P0121	EMS EOBD	TP Sensor range / performance	Battery voltage > 10 v Ignition ON Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times	2	R	ECM Default: – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited – VVT inhibited	EN65 -027	TP Sensor to ECM wiring: open circuit, high resistance TP Sensor to ECM sensing circuit: short circuit to B+ voltage TP Sensor failure
P0122	EMS EOBD	TP Sensor circuit low voltage	Battery voltage > 10 v Ignition ON Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times	2	R	ECM Default: – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited – VVT inhibited	EN65 -027	TP Sensor to ECM sensing circuit: open circuit, high resistance TP Sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0123	EMS EOBD	TP Sensor circuit high voltage	Battery voltage > 10 v Ignition ON Slowly press accelerator pedal to the floor over a 5 second period Slowly return the pedal to rest Repeat 3 times	2	R	ECM Default: – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited – VVT inhibited	EN65 -027	TP Sensor to ECM sensing circuit: short circuit to high voltage TP Sensor failure
P0125	EMS EOBD	ECT Sensor response (for closed loop fuel control)	Engine coolant temperature and ambient temperature within 10 °C (50 °F) Drive the vehicle steadily in 4th or 5th gear above 1700 rpm for 5 minutes Idle engine until engine coolant temperature reaches 80 °C (176 °F) CAUTION: Overheating is possible if the ECT sensor is faulty and cooling fans do not operate	2	A	ECM Default: – EOT value substituted (no greater than 95 °C (203 °F) – Closed loop fuel metering inhibited – Adaptive fuel metering inhibited – Catalyst warm-up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -080	Low coolant level Contaminated coolant Engine coolant thermostat failure ECT Sensor to ECM sensing circuit: high resistance, open circuit or short circuit to high voltage Engine cooling fan stuck on high speed Above normal air flow through engine compartment due to accident damage and/or missing panels
P0131	EMS EOBD	HO2 Sensor sense circuit low current – bank 1, upstream (1/1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	None	EN65 -050 -051	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

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0132	EMS EOBD	HO2 Sensor sense circuit high current – bank 1, upstream (1/1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	None	EN65 -050 -051	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
P0133	EMS EOBD	HO2 Sensor sense circuit slow response – bank 1, upstream (1/1)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	ECM Default: – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited	EN65 -050 -051	Engine misfire HO2 Sensor 1/1 disconnected HO2 Sensor 1/1 mechanical damage HO2 Sensor 1/1 to ECM wiring fault HO2 Sensor 1/1 short circuit to ground HO2 Sensor 1/1 to ECM wiring shield open circuit HO2 Sensor 1/1 heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2 Sensor 1/1 failure
P0137	EMS EOBD	HO2 Sensor sense circuit low voltage – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -053	HO2 Sensor 1/2 disconnected HO2 Sensor 1/2 to ECM wiring open circuit HO2 Sensor 1/2 short circuit to ground HO2 Sensor 1/2 failure
P0138	EMS EOBD	HO2 Sensor sense circuit high voltage – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -053	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

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0140	EMS EOBD	HO2 Sensor sense circuit no activity – bank 1, downstream (1/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -053	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 Low exhaust temperature HO2 Sensor 1/2 failure
P0151	EMS EOBD	HO2 Sensor sense circuit low current –bank 2, upstream (2/1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	None	EN65 -025 -026	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
P0152	EMS EOBD	HO2 Sensor sense circuit high current – bank 2, upstream (2/1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	None	EN65 -025 -026	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

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0153	EMS EOBD	HO2 Sensor sense circuit slow response – bank 2, upstream (2/1)	Heated oxygen sensors monitor drive cycle – page 4 (Upstream oxygen sensors)	2	N	ECM Default: – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited	EN65 -025 -026	Engine misfire HO2 Sensor 2/1 disconnected HO2 Sensor 2/1 mechanical damage HO2 Sensor 2/1 to ECM wiring fault HO2 Sensor 2/1 short circuit to ground HO2 Sensor 2/1 to ECM wiring shield open circuit HO2 Sensor 2/1 heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2 Sensor 2/1 failure
P0157	EMS EOBD	HO2 Sensor sense circuit low voltage – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -054	HO2 Sensor 2/2 disconnected HO2 Sensor 2/2 to ECM wiring open circuit HO2 Sensor 2/2 short circuit to ground HO2 Sensor 2/2 failure
P0158	EMS EOBD	HO2 Sensor sense circuit high voltage – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -054	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

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0160	EMS EOBD	HO2 Sensor sense circuit no activity – bank 2, downstream (2/2)	Heated oxygen sensors monitor drive cycle – page 4 (Downstream oxygen sensors)	2	N	None	EN65 -054	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 Low exhaust temperature HO2 Sensor 2/2 failure
P0171	EMS EOBD	Bank 1 combustion too lean	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle for 10 minutes	2	A	ECM Default: – Bank 1 catalyst warm-up ignition retard inhibited – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited – Maximum engine speed reduced	—	Engine misfire Air intake leak between MAF Sensor and throttle Fuel filter / system restriction Fuel injector restriction Low fuel pump output HO2 Sensor(s) (1/1, 1/2) harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECT Sensor, MAF Sensor, IAT Sensor, TP Sensor

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0172	EMS EOBD	Bank 1 combustion too rich	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle for 10 minutes	2	A	ECM Default: – Bank 1 catalyst warm-up ignition retard inhibited – Bank 1 closed loop fuel metering inhibited – Canister purge inhibited – Maximum engine speed reduced	—	Restricted air filter Leaking fuel injector(s) ECM receiving incorrect signal from one or more of the following components: ECT Sensor, MAF Sensor, IAT Sensor, TP Sensor
P0174	EMS EOBD	Bank 2 combustion too lean	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle for 10 minutes	2	A	ECM Default: – Bank 2 catalyst warm-up ignition retard inhibited – Bank 2 closed loop fuel metering inhibited – Canister purge inhibited – Maximum engine speed reduced	—	Engine misfire Air intake leak between MAF Sensor and throttle Fuel filter / system restriction Fuel injector restriction Low fuel pump output HO2 Sensor(s) (2/1, 2/2) harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECT Sensor, MAF Sensor, IAT Sensor, TP Sensor
P0175	EMS EOBD	Bank 2 combustion too rich	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle for 10 minutes	2	A	ECM Default: – Bank 2 catalyst warm-up ignition retard inhibited – Bank 2 closed loop fuel metering inhibited – Canister purge inhibited – Maximum engine speed reduced	—	Restricted air filter Leaking fuel injector(s) ECM receiving incorrect signal from one or more of the following components: ECT Sensor, MAF Sensor, IAT Sensor, TP Sensor

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0196	EMS EOBD	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)	2	N	ECM Default: – ECT substituted	EN65 -079	EOT Sensor to ECM sensing circuit: high resistance when hot, intermittent high resistance EOT Sensor failure
P0197	EMS EOBD	EOT Sensor low voltage (high temperature)	Ignition ON 10 seconds	2	N	ECM Default: – ECT substituted	EN65 -079	EOT Sensor to ECM sensing circuit: short circuit to ground EOT Sensor failure
P0198	EMS EOBD	EOT Sensor high voltage (low temperature)	Ignition ON 10 seconds	2	N	ECM Default: – ECT substituted	EN65 -079	EOT Sensor disconnected EOT Sensor to ECM sensing circuit: high resistance, open circuit, short circuit to B+ voltage EOT Sensor failure
P0201	EMS EOBD	Fuel injector 1 circuit malfunction	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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	EN65 -065	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0202	EMS EOBD	Fuel injector 2 circuit malfunction	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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	EN65 -092	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure
P0203	EMS EOBD	Fuel injector 3 circuit malfunction	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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	EN65 -066	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure
P0204	EMS EOBD	Fuel injector 4 circuit malfunction	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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	EN65 -093	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0205	EMS EOBD	Fuel injector 5 circuit malfunction	Start engine. Battery voltage > 12 v Idle for 2 minutes.	2	A	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	EN65 -067	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure
P0206	EMS EOBD	Fuel injector 6 circuit malfunction	Start engine. Battery voltage > 12 v Idle for 2 minutes.	2	A	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	EN65 -094	Injector disconnected Injector harness wiring: open circuit, short circuit Injector failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0300	EMS EOBD	Random misfire detected *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Fuel injector circuit fault(s) (Injector DTCs also flagged) Spark plug failure / fouled / incorrect gap ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition coil failure
P0301	EMS EOBD	Misfire detected – cylinder 1 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes
P0302	EMS EOBD	Misfire detected – cylinder 2 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes
P0303	EMS EOBD	Misfire detected – cylinder 3 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes
P0304	EMS EOBD	Misfire detected – cylinder 4 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes
P0305	EMS EOBD	Misfire detected – cylinder 5 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes
P0306	EMS EOBD	Misfire detected – cylinder 6 *Refer to Misfire Note, page 5	Misfire monitor drive cycle – page 5	1 or 2*	N	None	—	Refer to P0300 Possible Causes

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0332	EMS EOBD	KS sense circuit out of range – low voltage	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	EN65 -037	Poor sensor contact with the cylinder block KS to ECM sense circuit: short circuit to ground KS failure
P0333	EMS EOBD	KS sense circuit out of range – high voltage	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	EN65 -037	Poor sensor contact with the cylinder block KS to ECM sense circuit: high resistance, open circuit, short circuit to high voltage KS failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0335	EMS EOBD	CKP Sensor circuit malfunction	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine; idle 30 seconds. Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds Note: If CKP Sensor fault exists and engine will not start, battery voltage must drop below 10.5 V during cranking for DTC to be flagged. (Crank period – 30 seconds.) If CKP Sensor fault exists, engine will start on the second crank as the ECM will default to CMP signals for synchronization.	2	A	ECM Default: – Maximum engine speed reduced	EN65 -061 -062	CKP Sensor disconnected CKP Sensor gap incorrect / foreign matter on sensor face CKP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CKP Sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0336	EMS EOBD	CKP Sensor circuit range / performance	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine; idle 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	A	ECM Default: – Maximum engine speed reduced	EN65 -061 -062	CKP Sensor reluctor: foreign matter / damaged teeth CKP Sensor sensing circuit: intermittent open circuit, short circuit to ground, short circuit to high voltage CKP Sensor failure
P0340	EMS EOBD	CMP Sensor 1 circuit malfunction – bank 1	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine idle 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	None	EN65 -059 -060	CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 1 failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0341	EMS EOBD	CMP Sensor 1 circuit range / performance – bank 1	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine; idle 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	None	EN65 -059 -060	CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 1 failure
P0351	EMS EOBD	Ignition module primary circuit malfunction – cylinder 1	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 1)	EN65 -014	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0352	EMS EOBD	Ignition module primary circuit malfunction – cylinder 2	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 2)	EN65 -040	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure
P0353	EMS EOBD	Ignition module primary circuit malfunction – cylinder 3	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 3)	EN65 -015	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0354	EMS EOBD	Ignition module primary circuit malfunction – cylinder 4	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 4)	EN65 -041	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure
P0355	EMS EOBD	Ignition module primary circuit malfunction – cylinder 5	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 5)	EN65 -016	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0356	EMS EOBD	Ignition module primary circuit malfunction – cylinder 6	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 – Fuel injection cut off (cylinder 6)	EN65 -042	ECM to ignition module primary circuit: open circuit, short circuit to ground, high resistance Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure
P0420	EMS EOBD	Catalytic converter system efficiency below threshold – bank 1	Catalyst efficiency monitor drive cycle – page 5	2	N	None	—	HO2 Sensor disconnected HO2 Sensor to ECM wiring fault HO2 Sensor heater to ECM wiring fault HO2 Sensor heater failure Upstream HO2 Sensor failure Downstream HO2 Sensor failure Catalyst failure
P0430	EMS EOBD	Catalytic converter system efficiency below threshold – bank 2	Catalyst efficiency monitor drive cycle – page 5	2	N	None	—	HO2 Sensor disconnected HO2 Sensor to ECM wiring fault HO2 Sensor heater to ECM wiring fault HO2 Sensor heater failure Upstream HO2 Sensor failure Downstream HO2 Sensor failure Catalyst failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0441	EMS EOBD	EVAP system incorrect purge flow	Purge system monitor drive cycle – page 5	2	N	ECM Default: – Canister purge inhibited – Adaptive fuel metering inhibited	—	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
P0443	EMS EOBD	EVAP canister purge valve circuit malfunction	Purge system monitor drive cycle – page 5	2	N	ECM Default: – Canister purge inhibited – Adaptive fuel metering inhibited	EN65 -074	EVAP Canister purge valve to ECM drive circuit: open circuit, short circuit, high resistance EVAP Canister purge valve power supply circuit: open circuit, short circuit EVAP Canister purge valve operating vacuum hose leak / restriction EVAP Canister purge valve failure
P0444	EMS EOBD	EVAP canister purge valve circuit open circuit	Purge system monitor drive cycle – page 5	2	N	ECM Default: – Canister purge inhibited – Adaptive fuel metering inhibited	EN65 -074	EVAP Canister purge valve disconnected EVAP Canister purge valve to ECM drive circuit: open circuit, high resistance EVAP Canister purge valve failure
P0445	EMS EOBD	EVAP canister purge valve circuit short circuit	Purge system monitor drive cycle – page 5	2	N	ECM Default: – Canister purge inhibited – Adaptive fuel metering inhibited	EN65 -074	EVAP Canister purge valve to ECM drive circuit: short circuit to ground EVAP Canister purge valve failure
P0460	EMS EOBD	Fuel level sensor circuit range / performance	Fuel tank empty Fill in stages: 1/4, 1/2, 3/4, full Check fuel gauge reading at each stage	2	N	None	—	Fuel level sensor to instrument pack circuit: intermittent short circuit; open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0480	EMS JAG	Radiator cooling fan module drive circuit malfunction	Start and run engine > 2000 rpm for 2 minutes (Ensures voltage stays above 14 V for the required time)	N	N	ECM Default: – With ignition ON, fan operates at maximum speed	EN65 -044	ECM to radiator cooling fan module drive circuit: short circuit, open circuit, high resistance Radiator cooling fan module fault
P0506	EMS EOBD	Idle RPM lower than expected	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle > 15 seconds	2	N	None	EN65 -097 -098	Air intake restriction Accessory drive overload (defective / seized component) Idle speed control valve drive circuit(s): open circuit, short circuit, high resistance Idle speed control valve stuck closed Idle speed control valve failure
P0507	EMS EOBD	Idle RPM higher than expected	Start engine and bring to normal operating temperature > 82 °C (180 °F) Idle > 15 seconds	2	N	None	EN65 -097 -098	Idle speed control valve drive circuit(s): short circuit to high voltage Idle speed control valve stuck open Idle speed control valve failure
P0560	EMS EOBD	Battery power supply voltage malfunction Note: This DTC can be flagged due to fuel injection pressure sensor fault. If P0193 is also flagged, correct first.	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	2	N	None	EN65 -021	ECM battery power supply open circuit, high resistance

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0603	EMS EOBD	ECM Keep alive memory error	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.	2	N	None	—	ECM Failure
P0616	EMS EOBD	Starter relay drive circuit low voltage / starter relay request off (ignition switch position III OFF)	Ignition ON Battery voltage > 12 v Automatic – P for 5 seconds; manual – clutch fully pressed for 5 seconds Start engine	2	N	None	EN65 -006 -068	Starter relay drive circuit: open circuit, high resistance Starter relay failure
P0617	EMS EOBD	Starter relay drive circuit high voltage / starter relay request on (ignition switch position III ON)	Ignition ON Battery voltage > 12 v Automatic – P for 5 seconds; manual – clutch fully pressed for 5 seconds Start engine	2	N	None	EN65 -006 -068	Starter relay drive circuit: short circuit to high voltage Starter relay failure
P0646	EMS EOBD	A/C Compressor clutch relay drive circuit low voltage / A/C (compressor clutch request off [CAN])	Start engine Climate control system OFF Idle for 10 seconds	2	N	None	EN65 -020	A/C Compressor clutch relay drive circuit: open circuit, high resistance A/C Compressor clutch relay failure
P0647	EMS EOBD	A/C Compressor clutch relay drive circuit high voltage / A/C (compressor clutch request on [CAN])	Start engine Climate control system ON – full cooling Idle for 2 minutes	2	N	None	EN65 -020	A/C Compressor clutch relay drive circuit: short circuit to high voltage A/C Compressor clutch relay failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0706	TRANS EOBD	Transmission range sensor circuit – no signal; incorrect signal(s)	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – 4, 3, 2 Cannot be selected – No J Gate illumination – Reverse disengaged above 10 km/h (6 mph) (Poor shift quality)	JB131 -007 -008 -025 -026 -027 -030 -009	J-Gate adjustment incorrect Selector cable adjustment / installation incorrect Range sensor incorrect installation / adjustment Range sensor to TCM circuit(s): open circuit, short circuit to ground TCM Ground circuit: open circuit, high resistance Range sensor failure
P0710	TRANS EOBD	TFT Sensor circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	None (Poor shift quality)	JB131 -039 -020	Transmission to TCM temperature sensor circuit: open circuit, short circuit, high resistance Transmission internal temperature sensor circuit (internal harness): open circuit, short circuit; high resistance Sensor ground circuit fault TFT Sensor failure
P0715	TRANS EOBD	Turbine speed sensor circuit malfunction	Start and run engine – 10 seconds	2	A	None (Poor shift quality)	JB131 -024 -020	Transmission to TCM turbine speed sensor circuit: open circuit, short circuit, high resistance Transmission internal turbine speed sensor circuit: open circuit, short circuit, high resistance Transmission to TCM turbine speed sensor circuit: shielding defective Sensor ground circuit fault Turbine speed sensor failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0720	TRANS EOBD	Output speed sensor circuit malfunction (Automatic Transmission)	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – ABS Wheel speed (CAN) substituted (Poor shift quality) – If ABS Wheel speed message incorrect – fixed 4th gear	JB131 -005 -020	Transmission to TCM output speed sensor circuit: open circuit, short circuit, high resistance Transmission internal output speed sensor circuit: open circuit, short circuit, high resistance Transmission to TCM output speed sensor circuit: shielding defective Sensor ground circuit fault Output speed sensor failure
P0731	TRANS EOBD	1st Gear ratio error Note: If a shift solenoid failure DTC is also flagged, correct shift solenoid DTC first.	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure
P0732	TRANS EOBD	2nd Gear ratio error Note: If a shift solenoid failure DTC is also flagged, correct shift solenoid DTC first.	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure
P0733	TRANS EOBD	3rd Gear ratio error Note: If a shift solenoid failure DTC is also flagged, correct shift solenoid DTC first.	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure
P0734	TRANS EOBD	4th Gear ratio error Note: If a shift solenoid failure DTC is also flagged, correct shift solenoid DTC first.	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0735	TRANS EOBD	5th Gear ratio error Note: If a shift solenoid failure DTC is also flagged, correct shift solenoid DTC first.	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure
P0736	TRANS JAG	Reverse gear ratio error	Comprehensive component monitor transmission drive cycle – page 6	N	A	TCM Default: – Fixed 4th gear in D (R range not effected)	—	Transmission oil level low Transmission mechanical failure
P0740	TRANS EOBD	TCC malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – No TCC control	—	J-Gate adjustment incorrect Transmission oil level low Transmission mechanical failure
P0743	TRANS EOBD	TCC Solenoid circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – If short circuit to B+ V – TCC permanently engaged – If other cause – TCC inoperative	JB131 -016 -009	Transmission to TCM TCC solenoid circuit: open circuit, short circuit to B+ V, short circuit to ground Transmission internal TCC solenoid circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance TCC Solenoid failure
P0748	TRANS EOBD	Line pressure control solenoid circuit malfunction	Start and run engine – 10 seconds	2	A	TCM Default: – Fixed 4th gear	JB131 -018 -009	Transmission to TCM line pressure solenoid circuit: open circuit, short circuit Transmission internal line pressure solenoid circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance Line pressure solenoid failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0753	TRANS EOBD	Shift solenoid A circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – If short circuit to B+ V – fixed 2nd gear at low vehicle speed; fixed 5th gear at high vehicle speed – If other cause – fixed 3rd gear at low vehicle speed; fixed 4th gear at high vehicle speed	JB131 -015 -009	Transmission to TCM shift solenoid A circuit: open circuit, short circuit to B+ V, short circuit to ground Transmission internal shift solenoid A circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance Shift solenoid A pressure solenoid failure
P0758	TRANS EOBD	Shift solenoid B circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – If short circuit to B+ V: fixed 3nd gear – If other cause: fixed 4rd gear	JB131 -014 -009	Transmission to TCM shift solenoid B circuit: open circuit, short circuit to B+ V, short circuit to ground Transmission internal shift solenoid B circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance Shift solenoid B pressure solenoid failure
P0763	TRANS EOBD	Shift solenoid C circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	JB131 -052 -009	Transmission to TCM shift solenoid C circuit: open circuit, short circuit to B+ V, short circuit to ground Transmission internal shift solenoid C circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance Shift solenoid C pressure solenoid failure
P0778	TRANS EOBD	2/4 Brake pressure control solenoid circuit malfunction	Start and run engine – 10 seconds	2	A	TCM Default: – Fixed 4th gear	JB131 -003 -009	Transmission to TCM 2/4 Brake pressure solenoid circuit: open circuit, short circuit Transmission internal 2/4 Brake pressure solenoid circuit: open circuit, short circuit TCM Ground circuit: open circuit, high resistance 2/4 Brake pressure solenoid failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0791	TRANS EOBD	Intermediate speed sensor circuit malfunction (Automatic transmission)	Comprehensive component monitor transmission drive cycle – page 6	2	A	None (Poor shift quality)	JB131 -021 -020	Transmission to TCM intermediate speed sensor circuit: open circuit, short circuit, high resistance Transmission internal intermediate speed sensor circuit: open circuit, short circuit, high resistance Transmission to TCM intermediate speed sensor circuit: shielding defective Sensor ground circuit fault Intermediate speed sensor failure
P0831	TRANS (ECM*) JAG	Clutch cancel switch low voltage (switch normally closed) * Manual transmission input to ECM	Drive vehicle 60 – 100 km/h (37 – 62 mph); 1800 – 2500 rpm; engine load > 0.40 g/rpm	N	N	None	EN65 -084	Clutch cancel switch supply circuit: open circuit Clutch cancel switch to ECM circuit: open circuit, high resistance Clutch cancel switch failure
P0832	TRANS (ECM*) JAG	Clutch cancel switch high voltage (switch normally closed) * Manual transmission input to ECM	Drive vehicle; shift from 1st to 2nd; stop vehicle Repeat 5 times	N	N	None	EN65 -084	Clutch cancel switch to ECM circuit: short circuit to high voltage Clutch cancel switch failure
P0860	TRANS (ECM*) JAG	J Gate CAN network malfunction * J Gate / CAN monitored by ECM	Ignition ON 10 seconds	2	A	ECM Default: – Speed control inhibited – Maximum throttle opening for N range inhibited – Throttle opening limited to 30% – Maximum engine speed reduced	EN16 -123 -124	CAN open circuit fault CAN short circuit fault J Gate failure
P1000	EMS JAG	System (OBD) check not complete since last memory clear	System Readiness Test	N	N	None	—	Refer to page 3

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1104	EMS EOBD	MAF Sensor ground malfunction	Ignition ON 10 seconds	2	A	ECM Default: – Default air mass used – Adaptive fuel metering inhibited – Catalyst warm up ignition retard inhibited – Canister purge inhibited – Maximum engine speed reduced	EN65 -029 -031	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
P1107	EMS EOBD	MAP Sensor sense circuit low voltage	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 1.013 BAR (29.92 in hg) used	EN65 -001	MAP Sensor to ECM sense circuit: open circuit, short circuit to ground MAP Sensor sensor supply circuit (to splice): open circuit MAP Sensor failure
P1108	EMS EOBD	MAP Sensor sense circuit high voltage	Ignition ON 10 seconds	2	N	ECM Default: – Default value of 1.013 BAR (29.92 in hg) used	EN65 -001	MAP Sensor sensor ground circuit (to splice): open circuit MAP Sensor to ECM sense circuit: short circuit to high voltage MAP Sensor failure
P1111	EMS JAG	System (OBD) checks complete since last memory clear	System Readiness Test	N	N	None	—	Refer to page 3
P1146	EMS EOBD	Generator “CHARGE” circuit low voltage / request high	Battery voltage > 12 v Switch OFF all electrical consumers Start engine; idle for 16 minutes with all electrical consumers switched OFF	2	C	None	EN65 -043	Generator to ECM “CHARGE” circuit: open circuit, high resistance Generator regulator failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1240	EMS EOBD	Sensor power supply circuit malfunction (TP Sensor, MAP Sensor, A/C Pressure Sensor)	Ignition ON 10 seconds	2	N	None	EN65 -011	ECM to sensors sensor supply voltage circuit(s): short circuit to ground, short circuit to high voltage, open circuit, high resistance TP Sensor, MAP Sensor, AC Pressure Sensor failure(s)
P1241	EMS EOBD	Sensor power supply circuit low voltage (TP Sensor, MAP Sensor, AC Pressure Sensor)	Ignition ON 10 seconds	2	R	ECM Default: – Idle speed control valve disabled – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	EN65 -011	ECM to sensors sensor supply voltage circuit(s): short circuit to ground TP Sensor, MAP Sensor, AC Pressure Sensor failure(s)
P1242	EMS EOBD	Sensor power supply circuit high voltage (TP Sensor, MAP Sensor, AC Pressure Sensor)	Ignition ON 10 seconds	2	R	ECM Default: – Idle speed control valve disabled – Idle speed controlled by fuel injection intervention – Idle speed adaption inhibited	EN65 -011	ECM to sensors supply voltage circuit(s): open circuit, high resistance, short circuit to high voltage TP Sensor, MAP Sensor, AC Pressure Sensor failure(s)
P1243	EMS EOBD	Sensor ground circuit open circuit (TP Sensor, MAP Sensor, AC Pressure Sensor)	Ignition ON 10 seconds	2	N	None	EN65 -003	ECM to sensors sensor ground circuit(s): open circuit, high resistance TP Sensor, MAP Sensor, AC Pressure Sensor failure(s)
P1244	EMS EOBD	Generator "CHARGE" circuit high voltage / request low	Battery voltage > 12 v Switch OFF all electrical consumers Start engine; idle for 16 minutes with all electrical consumers switched OFF	2	C	ECM Default: – Cooling fan speed increased	EN65 -043	Generator to ECM "CHARGE" circuit: short circuit to high voltage Generator regulator failure Generator failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1245	EMS EOBD	Engine crank signal low voltage	Start engine Starter should stop when the key is released from position III (CRANK)	2	N	None	EN65 -006	Starter relay coil to ECM / ignition switch circuit: open circuit
P1246	EMS EOBD	Engine crank signal high voltage	Drive vehicle > 32 km/h (20 mph) between 2000 – 2500 rpm for10 seconds; stop vehicle Repeat 10 times	2	N	None	EN65 -006	Starter relay coil to ECM / ignition switch circuit: short circuit to high voltage Ignition switch failure
P1260	EMS JAG	Security input malfunction	Start engine	N	N	None	—	Invalid ignition key code Passive anti-theft system (PATS) signal to instrument pack missing or corrupted Security message (PATS) CAN failure
P1313	EMS EOBD	Misfire rate catalyst damage – bank 1 NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0306	Misfire monitor drive cycle – page 5	2	A	ECM Default: – Maximum engine speed reduced	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Fuel injector circuit fault(s) (Injector DTCs also flagged) Spark plug failure / fouled / incorrect gap ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition coil failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1314	EMS EOBD	Misfire rate catalyst damage – bank 2 NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0306	Misfire monitor drive cycle – page 5	2	A	ECM Default: – Maximum engine speed reduced	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Fuel injector circuit fault(s) (Injector DTCs also flagged) Spark plug failure / fouled / incorrect gap ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition coil failure
P1316	EMS EOBD	Misfire excess emission NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0306	Misfire monitor drive cycle – page 5	2	N	None	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) restricted / leaking Fuel injector(s) continuously open Fuel contamination Fuel injector circuit fault(s) (Injector DTCs also flagged) Spark plug failure / fouled / incorrect gap ECM to ignition coil primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition coil failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1340	EMS EOBD	CMP Sensor 2 circuit malfunction – bank 2	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine; idle 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	None	EN65 -086 -087	CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 2 failure
P1341	EMS EOBD	CMP Sensor 2 circuit range / performance – bank 2	Start engine; momentarily race the engine; stop engine Repeat two additional times Start engine; idle 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	None	EN65 -086 -087	CMP Sensor disconnected CMP Sensor gap incorrect / foreign matter on sensor face CMP Sensor sensing circuit: open circuit, short circuit to ground, short circuit to high voltage CMP Sensor 2 failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1367	EMS EOBD	Ignition amplifier bank 1 (1, 3, 5) fault	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 (cylinders 1, 3, 5)	EN65 -012	Ignition monitoring circuit between splice and ECM: open circuit, short circuit to ground, short circuit to B+ voltage Ignition module / coil bank 1 ground circuit fault
P1368	EMS EOBD	Ignition amplifier bank 2 (2, 4, 6) fault	Start engine Battery voltage > 12 v Idle for 2 minutes	2	A	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 (cylinders 2, 4, 6	EN65 -013	Ignition monitoring circuit between splice and ECM: open circuit, short circuit to ground, short circuit to B+ voltage Ignition module / coil bank 2 ground circuit fault

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1384	EMS EOBD	VVT solenoid malfunction – bank 1	Idle engine 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	ECM Default: – Bank 1 VVT hold current set at a constant valve of 450 mA	EN65 -096	VVT solenoid valve 1 to ECM PWM drive circuit fault VVT solenoid valve 1 ground circuit fault VVT solenoid 1 failure VVT 1 oil flow fault VVT / camshaft mechanical failure – bank 1
P1396	EMS EOBD	VVT solenoid malfunction – bank 2	Idle engine 30 seconds Accelerate from stop through complete engine rpm range; coast to a stop Drive the vehicle steadily between 48 – 97 km/h (30 – 60 mph) for 5 minutes; coast to a stop Accelerate smoothly through complete accelerator pedal travel; coast to a stop Idle engine 30 seconds	2	N	ECM Default: – Bank 2 VVT hold current set at a constant valve of 450 mA	EN65 -095	VVT solenoid valve 2 to ECM PWM drive circuit fault VVT solenoid valve 2 ground circuit fault VVT solenoid 2 failure VVT 2 oil flow fault VVT / camshaft mechanical failure – bank 2
P1516	EMS EOBD	Gear change P / N driving malfunction	Drive vehicle > 24 km/h (15 mph) between 1500 – 4000 rpm for30 seconds	2	A	ECM Default: – Speed control inhibited – Maximum engine speed reduced	EN65 -085	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

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1517	EMS JAG	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	N	A	ECM Default: – Speed control inhibited – Maximum throttle opening for N range inhibited – Maximum engine speed reduced	EN65 -085	Gear selector cable setting incorrect Transmission range sensor to ECM circuit: open circuit or high resistance Transmission range sensor failure
P1532	EMS EOBD	IMT valve 2 (bottom) circuit malfunction	Battery voltage > 12 v Start engine and bring to normal operating temperature > 82 °C (180 °F) Run engine at 5000 rpm in N for 20 seconds	2	N	ECM Default: – IMT 2 Inhibited	EN65 -070	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
P1549	EMS EOBD	IMT valve 1 (top) circuit malfunction	Battery voltage > 12 v Start engine and bring to normal operating temperature > 82 °C (180 °F) Run engine at 5000 rpm in N for 20 seconds	2	N	ECM Default: – IMT 1 Inhibited	EN65 -071	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
P1571	EMS JAG	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 5 times Momentarily press brake pedal and release; press again and hold > 30 seconds; release brake pedal Repeat 5 times	N	A	ECM Default: – Speed control inhibited – Maximum engine speed reduced	EN65 -007 -034	Brake ON / OFF switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake ON / OFF power supply circuit: open circuit Brake ON / OFF switch failure Brake cancel switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake cancel switch power supply circuit: open circuit Brake cancel switch failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1573	TRANS JAG	CAN throttle angle error	Ignition ON – 5 seconds	N	A	None (Poor shift quality)	JB131 -012 -013	TP Sensor fault (TP Sensor DTC flagged – P0121, P0122, P0123) ECM CAN message error
P1582	EMS JAG	"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	N	N	None	EN65 -036	If none of the five conditions occur, check: Inertia switch to ECM circuit, short circuit to B+ voltage Inertia switch failure
P1601	TRANS EOBD	Incorrect TCM fitted to vehicle	Ignition ON – 5 seconds	1	A	TCM Default: – Fixed 4th gear	JB131 -012 -013 -033 -034	Configure TCM using WDS
P1603	TRANS EOBD	TCM EEPROM failure	Ignition ON – 5 seconds	1	A	None	JB131 -015 -009	Battery disconnected while the ignition is switched ON B+ power supply circuit: open circuit TCM failure
P1606	EMS EOBD	EMS control relay malfunction Note: This DTC could be flagged along with P0032 and P0052, which if flagged, should be corrected first.	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	2	N	None	EN65 -069	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)

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1629	EMS EOBD	Generator "FIELD" circuit failure	Battery voltage > 12 v Switch OFF all electrical consumers Ignition ON 15 seconds Start engine; momentarily idle with all electrical consumers switched OFF Switch ignition OFF Switch ignition ON	2	C	None	EN65 -008	ECM to generator "FIELD" return circuit: open circuit, high resistance Generator regulator failure Generator failure
P1632	EMS EOBD	Generator charge system failure / generator "LOAD" feedback circuit failure	Battery voltage > 12 v Switch OFF all electrical consumers Start engine; idle for 16 minutes with all electrical consumers switched OFF If no reoccurrence of DTC(s): hold engine > 1500 rpm for one minute in N	2	C	None	EN65 -035	ECM to generator "LOAD" feedback circuit: short circuit, open circuit, high resistance Generator regulator failure Generator failure
P1637	EMS EOBD	CAN ECM to ABSCM (DSCCM) network malfunction	Ignition ON 10 seconds	2	A	ECM Default: – Speed control inhibited – Maximum engine speed reduced	EN65 -088 -089	CAN open circuit fault – ABSCM (DSCCM) to ECM CAN short circuit fault ABSCM (DSCCM) failure ECM failure
P1638	EMS EOBD	CAN ECM / INST network malfunction	Ignition ON 10 seconds	2	N	None	EN65 -088 -089	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1642	EMS EOBD	CAN circuit malfunction	Ignition ON 10 seconds	2	A	ECM Default: – Speed control inhibited – Maximum engine speed reduced	EN65 -088 -089	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source
P1643	EMS EOBD	CAN ECM / TCM network malfunction	Ignition ON 10 seconds	2	A	ECM Default: – Speed control inhibited – Maximum engine speed reduced	EN65 -088 -089	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure
P1646	EMS EOBD	ECM HO2 Sensor control malfunction – bank 1 upstream (1/1)	Drive vehicle for 10 minutes	2	N	ECM Default: – HO2S 1/1 control circuit inhibited	—	HO2 Sensor 1/1 heater failure HO2 Sensor 1/1 sensing circuit: short circuit to ground, short circuit to high voltage, open circuit ECM Failure
P1647	EMS EOBD	ECM HO2 Sensor control malfunction – bank 2 upstream (2/1)	Drive vehicle for 10 minutes	2	N	ECM Default: – HO2S 2/1 control circuit inhibited	—	HO2 Sensor 2/1 heater failure HO2 Sensor 2/1 sensing circuit: short circuit to ground, short circuit to high voltage, open circuit ECM Failure
P1648	EMS EOBD	ECM KS self test failure	Start engine Battery voltage > 12 v. Idle for 2 minutes	2	A	ECM Default: – Maximum ignition retard – Maximum engine speed reduced	—	ECM Failure
P1699	EMS EOBD	CAN ECM / A/CCM network malfunction	Ignition ON 10 seconds	2	N	None	EN65 -088 -089	CAN open circuit fault – A/CCM to ECM CAN short circuit fault A/CCM failure ECM failure

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1710	TRANS EOBD	Control valve solenoids ground circuit malfunction	Ignition ON – 5 seconds	2	A	TCM Default: – Fixed 4th gear	JB131 -017 -009	TCM to transmission sensor ground circuit: open circuit TCM ground circuit: open circuit, high resistance
P1745	TRANS EOBD	Low clutch timing solenoid circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	JB131 -053 -009	Transmission to TCM low clutch timing solenoid circuit: open circuit, short circuit Transmission internal low clutch timing solenoid circuit: open circuit, short circuit TCM ground circuit: open circuit, high resistance Low clutch timing solenoid failure
P1746	TRANS EOBD	Reduction timing solenoid circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – If short circuit to B+ V: no engine braking in D, 4, 3, 2 – If other cause: poor shift quality	JB131 -010 -009	Transmission to TCM reduction timing solenoid circuit: open circuit, short circuit to B+ V, short circuit to ground Transmission internal reduction timing solenoid circuit: open circuit, short circuit TCM ground circuit: open circuit, high resistance Reduction timing solenoid failure
P1747	TRANS EOBD	2/4 Brake timing solenoid circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	TCM Default: – Fixed 4th gear	JB131 -004 -009	Transmission to TCM 2/4 brake timing solenoid circuit: open circuit, short circuit Transmission internal 2/4 brake timing solenoid circuit: open circuit, short circuit TCM ground circuit: open circuit, high resistance 2/4 Brake timing solenoid failure
P1777	TRANS EOBD	CAN torque reduction error	Comprehensive component monitor transmission drive cycle – page 6	2	A	None (D poor shift quality)	JB131 -012 -013	ECM CAN message error

DTC	SYS	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1780	TRANS EOBD	D – 4 Switch circuit malfunction	Comprehensive component monitor transmission drive cycle – page 6	2	A	None (D – 4 Switch signal ignored)	JB131 -045 -009	J-Gate adjustment incorrect Selector cable adjustment / installation incorrect Range sensor incorrect installation / adjustment D – 4 Switch to TCM circuit: short circuit, open circuit, high resistance J-Gate ground circuit: open circuit, high resistance TCM Ground circuit: open circuit, high resistance
P1793	TRANS EOBD	TCM Ignition switched power supply circuit malfunction	Ignition ON – 5 seconds	2	A	TCM Default – Fixed 4th gear	JB131 -036 -054 -009	TCM Power supply circuit: open circuit (fuse) TCM Relay failure TCM Relay ground circuit: open circuit, high resistance TCM Relay supply circuits: open circuit (fuse) TCM Ground circuit: open circuit, high resistance
P1796	TRANS EOBD	CAN network malfunction	Ignition ON – 5 seconds	2	A	TCM Default – Fixed 4th gear	JB131 -012 -013	CAN open circuit fault CAN short circuit fault TCM failure
P1797	TRANS EOBD	CAN TCM / ECM network malfunction	Ignition ON – 5 seconds	2	A	TCM Default – Fixed 4th gear	JB131 -012 -013	CAN open circuit fault – TCM to ECM CAN short circuit fault ECM failure TCM failure
P1799	TRANS EOBD	CAN TCM / ABS (DSCCM) network malfunction	Ignition ON – 5 seconds	2	A	None	JB131 -012 -013	CAN open circuit fault – TCM to ABS (DSCCM) CAN short circuit fault ABSCM (DSCCM) failure TCM failure