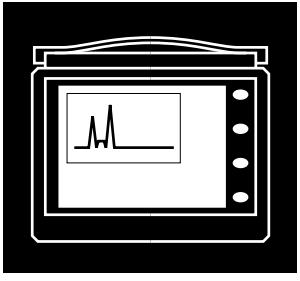


DTC Summaries

XJ Sedan Range, XK8 Range through 2002 MY and XJS Range

If you already know which DTC Summary you need, use the bookmarks at left.
If not, refer to the matrix on the following pages.

CONTINUE

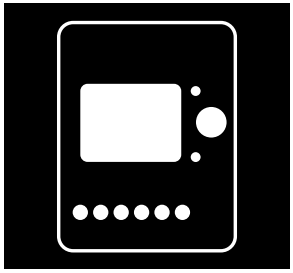
JAGUAR

To access the required DTC Summary, click on the title in the matrix below. Model Years 1999 – 2002 are listed on the following page.

	Engine Management System	Transmission Control System	Anti-Lock Braking / Traction Control System	Airbag / SRS System	Climate Control System
1995 MY					
XJS Range	AJ16 Engine Management 1995 MY	ZF 4 HP 24 Transmission	Mk IV ABS/TC	———	———
XJ6 Sedan Range N/A	AJ16 Engine Management 1995 MY	ZF 4 HP 24 Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XJ6 Sedan Range SC (XJR)	AJ16 Engine Management 1995 MY	PowerTrain 4L80-E Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XJ12 Sedan	V12 ND Engine Management	PowerTrain 4L80-E Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
1996 MY					
XJS Range	AJ16 Engine Management 1996 / 97 MY	ZF 4 HP 24 Transmission	Mk IV ABS/TC	———	———
XJ6 Sedan Range N/A	AJ16 Engine Management 1996 / 97 MY	ZF 4 HP 24 Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XJ6 Sedan Range SC (XJR)	AJ16 Engine Management 1996 / 97 MY	PowerTrain 4L80-E Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XJ12 Sedan	V12 ND Engine Management	PowerTrain 4L80-E Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
1997 MY					
XJ6 Sedan Range N/A	AJ16 Engine Management 1996 / 97 MY	ZF 4 HP 24 Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XJ6 Sedan Range SC (XJR)	AJ16 Engine Management 1996 / 97 MY	PowerTrain 4L80-E Transmission	Mk IV ABS/TC	Electromechanical Airbag SRS Sedan Range 1995 – 97 MY	ND Climate Control
XK8 Range	AJ26 Engine Management 1997	5HP 24 Transmission 1997 MY	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
1998 MY					
XK8 Range N/A	AJ26 Engine Management 1998 / 99 MY	5HP 24 Transmission 1998 MY	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XK8 Range SC (XKR)	AJ26 Engine Management 1998 / 99 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XJ8 Sedan Range N/A	AJ26 Engine Management 1998 / 99 MY	5HP 24 Transmission 1998 MY	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
XJ8 Sedan Range SC (XJR)	AJ26 Engine Management 1998 / 99 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control

To access the required DTC Summary, click on the title in the matrix below. Model Years 1995 – 1998 are listed on the previous page.

	Engine Management System	Transmission Control System	Anti-Lock Braking / Traction Control System	Airbag / SRS System	Climate Control System
1999 MY					
XK8 Range N/A	AJ27 Engine Management 1999 MY	5HP 24 Transmission 1999 MY	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XK8 Range SC (XKR)	AJ26 Engine Management 1998 / 99 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XJ8 Sedan Range N/A	AJ27 Engine Management 1999 MY	5HP 24 Transmission 1999 MY	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
XJ8 Sedan Range SC (XJR)	AJ26 Engine Management 1998 / 99 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
2000 MY					
XK8 Range N/A	AJ27 Engine Management 2000 MY	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XK8 Range SC (XKR)	AJ27 Engine Management 2000 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electromechanical Airbag SRS XK8 1997 – 2000 MY	ND Climate Control
XJ8 Sedan Range N/A	AJ27 Engine Management 2000 MY	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
XJ8 Sedan Range SC (XJR)	AJ27 Engine Management 2000 MY	W5A-580 Transmission	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
2001 MY					
XK8 Range N/A	AJ27 Engine Management 2001 MY ON	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Advanced Restraint System	ND Climate Control
XK8 Range SC (XKR)	AJ27 Engine Management 2001 MY ON	W5A-580 Transmission	Mk 20-I ABS/TC	Advanced Restraint System	ND Climate Control
XJ8 Sedan Range N/A	AJ27 Engine Management 2001 MY ON	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
XJ8 Sedan Range SC (XJR)	AJ27 Engine Management 2001 MY ON	W5A-580 Transmission	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
2002 MY					
XK8 Range N/A	AJ27 Engine Management 2001 MY ON	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Advanced Restraint System	ND Climate Control
XK8 Range SC (XKR)	AJ27 Engine Management 2001 MY ON	W5A-580 Transmission	Mk 20-I ABS/TC	Advanced Restraint System	ND Climate Control
XJ8 Sedan Range N/A	AJ27 Engine Management 2001 MY ON	5HP 24 Transmission 2000 MY ON	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control
XJ8 Sedan Range SC (XJR)	AJ27 Engine Management 2001 MY ON	W5A-580 Transmission	Mk 20-I ABS/TC	Electronic Airbag SRS / Single Point Sensor 1998 ON	ND Climate Control



DTC Summaries

AJ16 Engine Management – 1995 MY

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

Use the PDU "Scantool Application" disc to communicate with the EMS ECM.

The Systems Readiness Test occurs automatically when PDU establishes communication with the ECM. PDU will report if any portion of the Systems Readiness Test has not been completed in the following format:

The following tests have been identified as incomplete:

- Module $51 (identifies EMS ECM)
  - Catalyst
  - Evaporative purge system
  - Secondary air system
  - O_2 sensor
  - EGR system

PDU DATALOGGER ACRONYMS

ACLOAD	Air conditioning request
ADAPT	Adaptive rate
AMFR	Adaptive air mass flow rate
BATT	Battery voltage
CRANK	Engine cranking signal
DTCS	Number of DTCs flagged
ECT	Engine coolant temperature
EGRT	Exhaust gas temperature sensor
EVP	Exhaust gas recirculation valve position
FMFR	Adaptive fuel mass flow rate
FUEL	Fuel level
GEAR	Drive / Neutral
HO2S1B1	Heated oxygen sensor cyl 1 3 upstream
HO2S1B2	Heated oxygen sensor cyl 4 6 upstream
HO2S2B1	Heated oxygen sensor cyl 1 3 downstream
HO2S2B2	Heated oxygen sensor cyl 4 6 downstream
HO2S1HM	Oxygen sensor heaters upstream
HO2S2HM	Oxygen sensor heaters downstream
IAT	Intake air temperature
ISCPOS	Idle air control valve (IAC)
MAFS	Mass airflow sensor
MIL	CHECK ENGINE MIL
REFIDLE	Idle reference speed
RPM	Engine speed
TCMRET	Torque reduction request
TMS-MAFS	Mass airflow
TPS	Throttle position sensor
TPS-INT	Closed throttle adaptive position Intel processor
TPS-TMS	Closed throttle adaptive position TMS processor
VSS	Vehicle speed

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0101	MAFS range / performance	Drive > 1500 rpm > 4 seconds	2	TPS signal voltage high, but undetected Blocked air filter Blocked exhaust system Air intake leak MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Engine run > 4 seconds	2	Blocked air filter Blocked exhaust system MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit MAFS supply circuit short circuit to ground MAFS failure
P0103	MAFS sense circuit high voltage	Engine idle < 1000 rpm > 4 seconds	2	MAFS to ECM signal ground wire open circuit MAFS to ECM sensing circuit short circuit to B+ voltage MAFS failure
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 4 seconds	2	IATS disconnected IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to B+ voltage IATS internal failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 4 seconds	2	IATS to ECM wiring short circuit to ground IATS internal failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0116	ECTS range / performance	Engine at normal operating temperature; drive at highway speed	2	Low coolant level Engine thermostat stuck open ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS internal failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Engine run > 4 seconds	2	ECTS disconnected ECTS to ECM sensing circuit high resistance ECTS to ECM sensing circuit open circuit ECTS to ECM sensing circuit short circuit to B+ voltage ECTS internal failure
P0118	ECTS sense circuit low voltage (high coolant temperature)	Engine run > 4 seconds	2	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS internal failure
P0122	TPS sense circuit low voltage	Ignition ON > 1 second	2	TPS disconnected TPS supply circuit high resistance or short circuit to ground TPS to ECM position sense circuit open circuit or short circuit to ground TPS internal failure
P0123	TPS sense circuit high voltage	Drive steadily < 35% load > 25 seconds	2	TPS to ECM signal ground circuit open circuit TPS to ECM wiring (supply, sense) short circuit to each other TPS position sense circuit short circuit to B+ voltage MAFS signal voltage low, but undetected TPS internal failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0125	Insufficient coolant temperature for closed loop fuel control	Engine run > 7 minutes	2	Low coolant level Engine thermostat stuck open ECTS to ECM sensing circuit high resistance ECTS internal failure
P0131	HO2S sense circuit low voltage – cyl 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	HO2S sense wire short circuit to ground HO2S failure HO2S heater malfunction (tip temperature too hot)
P0132	HO2S sense circuit high voltage – cyl 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	HO2S disconnected HO2S signal ground wire open circuit HO2S sense wire open circuit HO2S sense wire short circuit to B+ voltage HO2S failure HO2S heater malfunction (tip temperature too cold)
P0133	HO2S sense circuit slow response – cyl 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	HO2S contaminated HO2S wiring harness high resistance fault HO2S failure
P0137	HO2S sense circuit low voltage – cyl 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P1137	HO2S sense circuit lack of "swing" – cyl 1, 2, 3 (A bank), downstream (2) Sense circuit indicates lean combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Downstream HO2S harness connectors (cyl 1, 2, 3 / cyl 4, 5, 6) reversed (Perform HO2S orientation) HO2S loose in exhaust pipe screw threads HO2S sense wire open circuit Exhaust leak before catalyst HO2S heater malfunction (tip temperature too cold) HO2S failure
P0138	HO2S sense circuit high voltage – cyl 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1138	HO2S sense circuit lack of "swing" – cyl 1, 2, 3 (A bank), downstream (2) Sense circuit indicates rich combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Downstream HO2S harness connectors (cyl 1, 2, 3 / cyl 4, 5, 6) reversed (Perform HO2S orientation) HO2S sense wire short circuit to ground HO2S heater malfunction (tip temperature too hot) HO2S failure
P0139	HO2S sense circuit slow response – cyl 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Refer to P0133 possible causes
P0151	HO2S sense circuit low voltage – cyl 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P0152	HO2S sense circuit high voltage – cyl 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes
P0153	HO2S sense circuit slow response – cyl 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Refer to P0133 possible causes
P0157	HO2S sense circuit low voltage – cyl 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P1157	HO2S sense circuit lack of "swing" – cyl 4, 5, 6 (B bank), downstream (2) Sense circuit indicates lean combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Downstream HO2S harness connectors (cyl 1, 2, 3 / cyl 4, 5, 6) reversed (Perform HO2S orientation) HO2S loose in exhaust pipe screw threads HO2S sense wire open circuit Exhaust leak before catalyst HO2S heater malfunction (tip temperature too cold) HO2S failure
P0158	HO2S sense circuit high voltage – cyl 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1158	HO2S sense circuit lack of "swing" – cyl 4, 5, 6 (B bank), downstream (2) Sense circuit indicates rich combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Downstream HO2S harness connectors (cyl 1, 2, 3 / cyl 4, 5, 6) reversed (Perform HO2S orientation) HO2S sense wire short circuit to ground HO2S heater malfunction (tip temperature too hot) HO2S failure
P0159	HO2S sense circuit slow response – cyl 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Refer to P0133 possible causes
P0171	Cylinders 1, 2, 3 (A bank) combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Fuel injector blockage Fuel injector wiring open circuit Engine misfire Intake manifold air leak Exhaust air leak (before catalyst)
P1171	All cylinders combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Fuel filter, system blockage Fuel system leak Fuel pressure regulator failure (low fuel pressure) Low fuel pump output Fuel injectors blocked MAFS signal fault (low voltage) SC engine – Incorrect MAFS installed
P0172	Cylinders 1, 2, 3 (A bank) combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Exhaust air leak (before catalyst) Fuel injector blockage Engine misfire
P1172	All cylinders combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Fuel return pipe blocked Fuel pressure regulator failure (high fuel pressure) Fuel injectors leaking MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed
P0174	Cylinders 4, 5, 6 (B bank) combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Refer to P0171 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0175	Cylinders 4, 5, 6 (B bank) combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Refer to P0172 possible causes
P1176	Adaptive fuel metering trim too lean (fuel flow rate)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Fuel injector supply wiring short circuit to ground Fuel filter, system blockage Fuel system leak Fuel pressure regulator failure (low fuel pressure) Low fuel pump output Fuel injectors blocked MAFS signal fault (low voltage) SC engine – Incorrect MAFS installed
P1177	Adaptive fuel metering trim too rich (fuel flow rate)	Engine at normal operating temperature; drive steadily at > 20 mph for > 25 seconds	2	Fuel return pipe blocked Fuel pressure regulator failure (high fuel pressure) Fuel injectors leaking MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed SC engine – Intake air leak
P1178	Adaptive fuel metering trim too lean (air flow rate)	Engine at normal operating temperature; idle > 3 minutes; drive steadily at > 20 mph for > 3 minutes; idle > 3 minutes	2	Air intake leak Low fuel pressure at idle Blocked injector MAFS signal fault (low voltage)
P1179	Adaptive fuel metering trim too rich (air flow rate)	Engine at normal operating temperature; idle > 3 minutes; drive steadily at > 20 mph for > 3 minutes; idle > 3 minutes	2	High fuel pressure at idle MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed
P1187	HO2S heater circuit open circuit – both upstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	Both HO2S heater circuits high resistance HO2S heater harness wiring high resistance HO2S heater harness wiring open circuit MAFS signal fault Ignition fault (ignition retard causing high exhaust gas temperature)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1188	HO2S heater circuit high resistance – both upstream sensors	Engine idle > 25 seconds	2	ECM to HO2S heater wiring open circuit (or intermittent open circuit) ECM to HO2S heater wiring short circuit to ground Both HO2S heater circuits high resistance or open circuit Both HO2S heaters failure
P1190	HO2S heater circuit low resistance – both upstream sensors	Engine idle > 25 seconds	2	High battery voltage (>17v) producing excess heater current ECM to HO2S heater wiring short circuit to B+ voltage Both HO2S heater circuits short circuit to ground Both HO2S heaters failure
P1193	HO2S heater circuit open circuit – both downstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	Refer to P1187 possible causes
P1194	HO2S heater circuit high resistance – both downstream sensors	Engine idle > 25 seconds	2	Refer to P1188 possible causes
P1196	HO2S heater circuit low resistance – both downstream sensors	Engine idle > 25 seconds	2	Refer to P1190 possible causes
P1199	Fuel level sense circuit malfunction	Start and run engine	2	Instrument pack to ECM fuel level signal circuit open circuit Instrument pack to ECM fuel level signal circuit short circuit to ground Instrument pack to ECM fuel level signal circuit short circuit to B+ voltage Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0201	Fuel injector circuit malfunction – cylinder 1	Engine running > 2 seconds	2	Injector disconnected Injector harness wiring open or short circuit Injector failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1201	Fuel injector circuit open or short circuit – cylinder 1	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P0202	Fuel injector circuit malfunction – cylinder 2	Engine running > 2 seconds	2	Refer to P0201 possible causes
P1202	Fuel injector circuit open or short circuit – cylinder 2	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P0203	Fuel injector circuit malfunction – cylinder 3	Engine running > 2 seconds	2	Refer to P0201 possible causes
P1203	Fuel injector circuit open or short circuit – cylinder 3	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P0204	Fuel injector circuit malfunction – cylinder 4	Engine running > 2 seconds	2	Refer to P0201 possible causes
P1204	Fuel injector circuit open or short circuit – cylinder 4	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P0205	Fuel injector circuit malfunction – cylinder 5	Engine running > 2 seconds	2	Refer to P0201 possible causes
P1205	Fuel injector circuit open or short circuit – cylinder 5	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P0206	Fuel injector circuit malfunction – cylinder 6	Engine running > 2 seconds	2	Refer to P0201 possible causes
P1206	Fuel injector circuit open or short circuit – cylinder 6	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0300**	Random misfire detected	Run engine steady > 2 minutes	1 or 2	Fuel contaminated Fuel injector(s) blocked or leaking Ignition secondary circuit breakdown (coils, spark plugs) Fuel pressure low Cylinder compression low Broken valve spring(s) CKPS circuit fault (CKPS DTCs also flagged) Fuel injector(s) circuit fault(s) (Injector DTCs also flagged) Ignition coil primary circuit fault(s) (Ignition coil DTCs also flagged)
P0301**	Misfire detected – cylinder 1	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P0302**	Misfire detected – cylinder 2	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P0303**	Misfire detected – cylinder 3	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P0304**	Misfire detected – cylinder 4	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P0305**	Misfire detected – cylinder 5	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P0306**	Misfire detected – cylinder 6	Run engine steady > 2 minutes	1 or 2	Refer to P0300 possible causes
P1313	Catalyst damage misfire detected – cyl 1, 2, 3 (A bank)	Run engine steady > 2 minutes	1	Refer to P0300 possible causes
P1314	Catalyst damage misfire detected – cyl 4, 5, 6 (B bank)	Run engine steady > 2 minutes	1	Refer to P0300 possible causes
P1315**	Persistent misfire (one cylinder identified and injector switched off)	Run engine steady > 2 minutes	1	Refer to P0300 possible causes
P1316	Misfire excess emission	Run engine steady > 2 minutes	2	Refer to P0300 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** DTCs P1313, P1314, P1315 and P1316 will not activate the CHECK ENGINE MIL on 1995 Model Year vehicles. If DTCs P1313, P1314 or P1316 are flagged, one or more of the cylinder identification DTCs will also be flagged (random misfire P0300 or individual cylinder P0301 – P0306). If DTC P1315 is flagged, one or more of the individual cylinder identification DTCs will also be flagged P0301 – P0306.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0327	Knock sensing circuits out of range (low voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	One or both knock sensors loose in block ECM to knock sensors wiring open circuit ECM to knock sensors wiring short circuit to ground ECM to knock sensors wiring high resistance Knock sensor(s) failure
P0332	Knock sensing circuits out of range (high voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Knock sensor harness wiring shield condition (RFI interference) Knock sensor(s) failure
P0335	CKPS circuit malfunction	Engine idle > 10 seconds	2	CKPS mounting bracket loose CKPS / reluctor ring alignment CKPS to ECM sensing circuit open circuit CKPS to ECM sensing circuit short circuit to ground CKPS to ECM sensing circuit short circuit to B+ voltage CKPS internal failure
P0336	CKPS range / performance	Engine idle > 10 seconds	2	Foreign material on CKPS face Reluctor ring damaged CKPS harness wiring shield condition (RFI interference) CKPS internal failure
P0340	CMPS circuit malfunction	Engine idle > 10 seconds	2	CMPS alignment CMPS tooth damage CMPS harness wiring shield condition (RFI interference) CMPS internal failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1361	Ignition coil primary circuit malfunction – cylinder 1	Engine running > 1 second	2	ECM to ignition coil primary circuit open circuit ECM to ignition coil primary circuit high resistance ECM to ignition coil primary circuit short circuit to ground CKPS malfunction (refer to P0335, P0336) Ignition coil failure
P1362	Ignition coil primary circuit malfunction – cylinder 2	Engine running > 1 second	2	Refer to P1361 possible causes
P1363	Ignition coil primary circuit malfunction – cylinder 3	Engine running > 1 second	2	Refer to P1361 possible causes
P1364	Ignition coil primary circuit malfunction – cylinder 4	Engine running > 1 second	2	Refer to P1361 possible causes
P1365	Ignition coil primary circuit malfunction – cylinder 5	Engine running > 1 second	2	Refer to P1361 possible causes
P1366	Ignition coil primary circuit malfunction – cylinder 6	Engine running > 1 second	2	Refer to P1361 possible causes
P1371	Ignition coil primary circuit: incorrect spark timing – cylinder 1	Engine running > 1 second	2	ECM to ignition coil primary circuit short circuit Ignition coil failure
P1372	Ignition coil primary circuit: incorrect spark timing – cylinder 2	Engine running > 1 second	2	Refer to P1371 possible causes
P1373	Ignition coil primary circuit: incorrect spark timing – cylinder 3	Engine running > 1 second	2	Refer to P1371 possible causes
P1374	Ignition coil primary circuit: incorrect spark timing – cylinder 4	Engine running > 1 second	2	Refer to P1371 possible causes
P1375	Ignition coil primary circuit: incorrect spark timing – cylinder 5	Engine running > 1 second	2	Refer to P1371 possible causes
P1376	Ignition coil primary circuit: incorrect spark timing – cylinder 6	Engine running > 1 second	2	Refer to P1371 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0400	EGR temperature sensor circuit malfunction	Engine at normal operating temperature; drive at 35% load > 5 minutes	2	ECM to EGR temp. sensor sense wire open circuit EGR temp. sensor "coked up" EGR valve, pipework blocked (insufficient EGR flow) EGR pipework leak (insufficient EGR flow) EGR temp. sensor failure
P1400	EGR valve position malfunction	Ignition ON > 1 second	2	EGR valve sticky, dirty or seized ECM to EGR valve position signal wire short or open circuit
P1401	EGR position circuit out of range (low or high voltage)	Ignition ON > 1 second	2	ECM to EGR valve position signal wire open circuit ECM to EGR valve position signal wire short circuit to ground ECM to EGR valve position signal wire short circuit to B+ voltage EGR valve position sensor supply wire short or open circuit EGR valve position sensor ground wire short circuit to supply wire or open circuit EGR valve position sensor failure (EGR valve assembly)
P1408	EGR temperature sensor circuit out of range (high voltage)	Ignition ON > 1 second	2	ECM to EGR temp. sensor sense wire short circuit to ground ECM to EGR temp. sensor sense wire short circuit to supply wire EGR temp. sensor failure
P1409	EGR valve drive circuit malfunction	Ignition ON > 1 second	2	ECM to EGR valve drive wire open circuit ECM to EGR valve drive wire short circuit to ground EGR valve failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0411	AIR system insufficient air flow to exhaust	Engine at normal operating temperature; start; idle 30 seconds	2	Sedan Range up to VIN 734672, XJS Range up to VIN 199153 – Incorrect air pump to check valve hose. Refer to Technical Bulletin 18-47 AIR system pipework blocked or leaking AIR pump stuck ON or OFF AIR pump control circuit fault AIR pump supply circuit fault AIR pump failure
P0413	AIR pump relay drive (coil) circuit open circuit	Ignition ON > 1 second	2	Air injection relay removed Air injection relay (coil circuit) open circuit ECM to air injection relay (coil) wiring open circuit ECM to air injection relay (coil) wiring short circuit to B+ voltage
P0414	AIR pump relay drive (coil) circuit short circuit	Ignition ON > 1 second	2	Air injection relay (coil circuit) short circuit ECM to air injection relay (coil) wiring short circuit to ground
P0420	Catalyst efficiency below threshold – cyl 1, 2, 3 (A bank)	Engine at normal operating temperature; drive steadily > 20 mph > 1 minute, 10 seconds	****	Exhaust leak Upstream HO2S slow response Upstream HO2S sense wire open or short circuit Intake air leak MAFS fault
P0430	Catalyst efficiency below threshold – cyl 4, 5, 6 (B bank)	Engine at normal operating temperature; drive steadily > 20 mph > 1 minute, 10 seconds	****	Refer to P0420 possible causes
P0441	EVAP system incorrect purge flow	Engine at normal operating temperature; varied driving for 15 minutes; hot idle > 1 minute	2	EVAP valve sticking EVAP valve blocked EVAP purge hose blocked or disconnected EVAP canister atmosphere vent blocked EVAP valve failure AIR pump stuck ON

* Number of consecutive trips required to activate CHECK ENGINE MIL.

**** Three successive fail judgments. Diagnostic tests are performed continuously. Use PDU "Scantool" Systems Readiness Test to determine if tests are complete.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0443	EVAP valve circuit malfunction	Ignition ON > 1 second	2	EVAP valve disconnected ECM to EVAP valve "drive" circuit open circuit ECM to EVAP valve "drive" circuit short circuit to ground ECM to EVAP valve "drive" circuit short circuit to B+ voltage EVAP valve failure
P0500	Vehicle speed sensor malfunction (signal from instrument pack)	Drive > 1900 rpm; high load > 40 seconds; 40 gear changes	2	ECM to instrument pack wiring open circuit, short circuit or high resistance Vehicle speed signal from instrument pack incorrect TCM fault – requests torque reduction while vehicle stopped ABS / TC CM vehicle speed signal incorrect ABS wheel speed sensor fault
P0506	Idle air control system: rpm lower than expected	Engine at normal operating temperature; idle > 10 seconds	2	IACV disconnected IACV passages blocked IACV stepper motor jammed or mounted incorrectly MAFS signal fault (steady high voltage) Engine incorrect operation – open throttle / engine still idle
P0507	Idle air control system: rpm higher than expected	Engine at normal operating temperature; idle > 10 seconds	2	IACV disconnected Air leak past throttle IACV passages blocked IACV stepper motor jammed or mounted incorrectly MAFS signal fault (steady low voltage)
P1508	IACV circuit open circuit	Ignition ON > 15 seconds; ignition OFF	2	IACV disconnected IACV harness wiring open circuit IACV stepper motor failure (open circuit)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1509	IACV circuit short circuit	Ignition ON > 15 seconds; ignition OFF	2	IACV harness wiring short circuit IACV stepper motor failure (short circuit)
P1514	High load NEUTRAL / DRIVE malfunction	Drive at > 90% load	2	MAFS signal voltage high, but undetected NEUTRAL / PARK wiring (decoder to ECM) short circuit to ground BPM fault (NEUTRAL / PARK parallel circuit)
P1516	Gear change NEUTRAL / DRIVE malfunction	Drive > 30 gear changes	2	NEUTRAL / PARK wiring (decoder to ECM) short circuit to ground BPM low resistance fault (NEUTRAL / PARK parallel circuit) TCM to ECM torque reduction request fault Vehicle speed signal fault, but undetected
P1517	Engine cranking NEUTRAL / DRIVE malfunction	Start engine	2	BPM cranking inhibit fault BPM high resistance fault (NEUTRAL / PARK parallel circuit) NEUTRAL / PARK wiring (decoder to ECM) open circuit NEUTRAL / PARK wiring (decoder to ECM) short circuit to B+ voltage
P0605	ECM data corrupted	Ignition ON	1	ECM failure
P1607	CHECK ENGINE MIL circuit malfunction	Ignition ON	2	ECM to instrument pack / BPM wiring open circuit, short circuit or high resistance BPM fault (CHECK ENGINE) Instrument pack fault (CHECK ENGINE)
P1775	TCM CHECK ENGINE MIL request	Ignition ON	1	Possible transmission fault – check for flagged TCM DTCs
P1776	Torque reduction request signal duration fault	Drive vehicle to initiate automatic gear changes	1	Driver placing rapid repeated shift demands on transmission requiring torque reduction – torque reduction may not be possible Possible TCM fault (request too long)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1777	Torque reduction circuit malfunction	Engine running; normal operating temperature	2	Torque reduction signal wire open circuit Torque reduction signal wire short circuit to ground Torque reduction signal wire short circuit to B+ voltage Possible TCM fault (invalid signal)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC Summaries

AJ16 Engine Management – 1996/97 MY

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

Use the PDU "Scantool Application" disc to communicate with the EMS ECM.

The Systems Readiness Test occurs automatically when PDU establishes communication with the ECM. PDU will report if any portion of the Systems Readiness Test has not been completed in the following format:

The following tests have been identified as incomplete:

- Module $51 (identifies EMS ECM)
  - Catalyst
  - Evaporative purge system
  - Secondary air system
  - O_2 sensor
  - EGR system

PDU DATALOGGER ACRONYMS

ACLOAD	Air conditioning request
ADAPT	Adaptive rate
AMFR	Adaptive air mass flow rate
BATT	Battery voltage
CRANK	Engine cranking signal
DTCS	Number of DTCs flagged
ECT	Engine coolant temperature
EGRT	Exhaust gas temperature sensor
EVP	Exhaust gas recirculation valve position
FMFR	Adaptive fuel mass flow rate
FUEL	Fuel level
GEAR	Drive / Neutral
HO2S1B1	Heated oxygen sensor cyl 1 3 upstream
HO2S1B2	Heated oxygen sensor cyl 4 6 upstream
HO2S2B1	Heated oxygen sensor cyl 1 3 downstream
HO2S2B2	Heated oxygen sensor cyl 4 6 downstream
HO2S1HM	Oxygen sensor heaters upstream
HO2S2HM	Oxygen sensor heaters downstream
IAT	Intake air temperature
ISCPOS	Idle air control valve (IAC)
MAFS	Mass airflow sensor
MIL	CHECK ENGINE MIL
REFIDLE	Idle reference speed
RPM	Engine speed
TCMRET	Torque reduction request
TMS-MAFS	Mass airflow
TPS	Throttle position sensor
TPS-INT	Closed throttle adaptive position Intel processor
TPS-TMS	Closed throttle adaptive position TMS processor
VSS	Vehicle speed

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0101	MAFS range / performance	Drive > 1500 rpm > 4 seconds	2	TPS signal voltage high, but undetected Blocked air filter Blocked exhaust system Air intake leak MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Engine run > 4 seconds	2	Blocked air filter Blocked exhaust system MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit or short circuit to ground MAFS failure
P0103	MAFS sense circuit high voltage	Engine idle < 1000 rpm > 4 seconds	2	MAFS to ECM signal ground wire open circuit MAFS to ECM sensing circuit short circuit to B+ voltage MAFS failure
P0111	IATS range / performance	Engine at normal operating temperature, drive; idle; drive	2	IATS disconnected Engine compartment hot air leak into intake tract IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to B+ voltage IATS failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 20 seconds	2	IATS disconnected IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to B+ voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 20 seconds	2	IATS to ECM wiring short circuit to ground IATS failure
P0116	ECTS range / performance	Engine at normal operating temperature; drive at highway speed	2	Low coolant level Engine thermostat stuck open ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Engine run > 4 seconds	2	ECTS disconnected ECTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage ECTS failure
P0118	ECTS sense circuit low voltage (high coolant temperature)	Engine run > 4 seconds	2	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS failure
P0121	TPS performance	Drive at highway speed	2	Intake air or exhaust restricted Extreme high altitude operation Intermittent / incorrect , but undetected; TPS, engine speed, IATS, MAFS or IACV signals

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0123	TPS sense circuit high voltage	Drive steadily < 35% load > 25 seconds	2	TPS to ECM signal ground circuit open circuit TPS to ECM wiring (supply, sense) short circuit to each other TPS position sense circuit short circuit to B+ voltage MAFS signal voltage low, but undetected TPS failure
P0125	ECTS response	Engine coolant temperature < 68° F (20° C) Run engine to coolant temperature > 68° F (20° C) > 1 minute, 25 seconds	2	ECTS disconnected Low coolant level Engine thermostat stuck open ECTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage ECTS failure
P0131	HO2S sense circuit low voltage – cylinders 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	HO2S sense wire short circuit to ground HO2S failure HO2S heater malfunction (tip temperature too hot)
P0132	HO2S sense circuit high voltage – cylinders 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	HO2S disconnected HO2S signal ground wire open circuit HO2S sense wire open circuit or short circuit to B+ voltage HO2S failure HO2S heater malfunction (tip temperature too cold)
P0133	HO2S sense circuit slow response – cylinders 1, 2, 3 (A bank), upstream (1)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	HO2S contaminated HO2S wiring harness high resistance fault HO2S failure
P0137	HO2S sense circuit low voltage – cylinders 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P0138	HO2S sense circuit high voltage – cylinders 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0139	HO2S sense circuit slow response – cylinders 1, 2, 3 (A bank), downstream (2)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Refer to P0133 possible causes
P0151	HO2S sense circuit low voltage – cylinders 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P0152	HO2S sense circuit high voltage – cylinders 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes
P0153	HO2S sense circuit slow response – cylinders 4, 5, 6 (B bank), upstream (1)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Refer to P0133 possible causes
P0157	HO2S sense circuit low voltage – cylinders 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0131 possible causes
P0158	HO2S sense circuit high voltage: cylinders 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; idle > 25 seconds	2	Refer to P0132 possible causes
P0159	HO2S sense circuit slow response – cylinders 4, 5, 6 (B bank), downstream (2)	Engine at normal operating temperature; steadily at > 20 mph (32 km/h) for > 25 seconds	2	Refer to P0133 possible causes
P0171	Cylinders 1, 2, 3 (A bank) combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Fuel injector blockage Fuel injector wiring open circuit Engine misfire Intake manifold air leak Exhaust air leak (before catalyst)
P0172	Cylinders 1, 2, 3 (A bank) combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Exhaust air leak (before catalyst) Fuel injector blockage Engine misfire
P0174	Cylinders 4, 5, 6 (B bank) combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Refer to P0171 possible causes
P0175	Cylinders 4, 5, 6 (B bank) combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Refer to P0172 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0201	Fuel injector circuit malfunction – cylinder 1	Engine running > 2 seconds	2	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction – cylinder 2	Engine running > 2 seconds	2	Refer to P0201 possible causes
P0203	Fuel injector circuit malfunction – cylinder 3	Engine running > 2 seconds	2	Refer to P0201 possible causes
P0204	Fuel injector circuit malfunction – cylinder 4	Engine running > 2 seconds	2	Refer to P0201 possible causes
P0205	Fuel injector circuit malfunction – cylinder 5	Engine running > 2 seconds	2	Refer to P0201 possible causes
P0206	Fuel injector circuit malfunction – cylinder 6	Engine running > 2 seconds	2	Refer to P0201 possible causes
P0300	Random misfire detected	Run engine steady > 2 minutes	2	Fuel contaminated Fuel injector(s) blocked or leaking Ignition secondary circuit breakdown (coils, spark plugs) Fuel pressure low Cylinder compression low Broken valve spring(s) CKPS circuit fault (CKPS DTCs also flagged) Fuel injector(s) circuit fault(s) (Injector DTCs also flagged) Ignition coil primary circuit fault(s) (Ignition coil DTCs also flagged)
P0301	Misfire detected – cylinder 1	Run engine steady > 2 minutes	2	Refer to P0300 possible causes
P0302	Misfire detected – cylinder 2	Run engine steady > 2 minutes	2	Refer to P0300 possible causes
P0303	Misfire detected – cylinder 3	Run engine steady > 2 minutes	2	Refer to P0300 possible causes
P0304	Misfire detected – cylinder 4	Run engine steady > 2 minutes	2	Refer to P0300 possible causes
P0305	Misfire detected – cylinder 5	Run engine steady > 2 minutes	2	Refer to P0300 possible causes
P0306	Misfire detected – cylinder 6	Run engine steady > 2 minutes	2	Refer to P0300 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0326	Knock sensing circuit 1 (cylinders 1, 2, 3) at maximum correction	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Low coolant level Poor quality fuel Knock sensor harness wiring shield condition (RFI interference) Combustion chamber deposits (pre ignition) Mechanical or background noise ECM failure
P0327	Knock sensing circuit 1 (cylinders 1, 2, 3) out of range (low voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	One or both knock sensors loose in block ECM to knock sensors wiring high resistance, open circuit or short circuit to ground Knock sensor(s) failure
P0328	Knock sensing circuit 1 (cylinders 1, 2, 3) out of range (high voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Knock sensor harness wiring shield condition (RFI interference) Knock sensor(s) failure
P0331	Knock sensing circuit 2 (cylinders 4, 5, 6) at maximum correction	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Low coolant level Poor quality fuel Knock sensor harness wiring shield condition (RFI interference) Combustion chamber deposits (pre ignition) Mechanical or background noise ECM failure
P0332	Knock sensing circuit 2 (cylinders 4, 5, 6) out of range (low voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Refer to P0327 possible causes
P0333	Knock sensing circuit 2 (cylinders 4, 5, 6) out of range (high voltage)	Drive steadily @ 2000 rpm, 50% load > 15 seconds	2	Refer to P0328 possible causes
P0335	CKPS circuit malfunction	Engine idle > 10 seconds	2	CKPS mounting bracket loose CKPS / reluctor ring alignment CKPS to ECM sensing circuit; open circuit, short circuit to ground or B+ voltage CKPS failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0336	CKPS range / performance	Engine idle > 10 seconds	2	Foreign material on CKPS face Reluctor ring damaged CKPS harness wiring shield condition (RFI interference) CKPS failure
P0340	CMPS circuit malfunction	Engine idle > 10 seconds	2	CMPS alignment CMPS tooth damage CMPS harness wiring shield condition (RFI interference) CMPS failure
P0400	EGR temperature sensor circuit malfunction	Engine at normal operating temperature; drive at 35% load > 1 minutes	2	ECM to EGR temperature sensor sense wire open circuit EGR temperature sensor "coked up" EGR valve, pipework blocked (insufficient EGR flow) EGR pipework leak (insufficient EGR flow) EGR temperature sensor failure
P0411	AIR system insufficient air flow to exhaust	Engine at normal operating temperature; start; idle 30 seconds	2	AIR system pipework blocked or leaking AIR pump stuck ON or OFF AIR pump control circuit fault AIR pump supply circuit fault AIR pump failure
P0413	AIR pump relay drive (coil) circuit open circuit	Ignition ON > 1 second	2	Air injection relay removed Air injection relay (coil circuit) open circuit ECM to air injection relay (coil) wiring open circuit or short circuit to B+ voltage

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0414	AIR pump relay drive (coil) circuit short circuit	Ignition ON > 1 second	2	Air injection relay (coil circuit) short circuit ECM to air injection relay (coil) wiring short circuit to ground
P0420	Catalyst efficiency below threshold – cylinders 1, 2, 3 (A bank)	Engine at normal operating temperature; drive steadily > 20 mph (32 km/h) > 1 minute, 10 seconds	***	Exhaust leak Upstream HO2S slow response Upstream HO2S sense wire open or short circuit Intake air leak MAFS fault
P0430	Catalyst efficiency below threshold – cylinders 4, 5, 6 (B bank)	Engine at normal operating temperature; drive steadily > 20 mph (32 km/h) > 1 minute, 10 seconds	***	Refer to P0420 possible causes
P0441	EVAP system incorrect purge flow	Engine at normal operating temperature; varied driving for 15 minutes; hot idle > 1 minute	2	EVAP valve sticking EVAP valve blocked EVAP purge hose blocked or disconnected EVAP canister atmosphere vent blocked EVAP valve failure AIR pump stuck ON
P0442	EVAP system pressure leak (enhanced evaporative emissions vehicles)	Engine at normal operating temperature; fuel level between 1/4 and 3/4 full; varied driving for > 22 minutes; drive > 30 mph (48 km/h) > 10 seconds	2 **	Fuel tank, fuel filler cap or pipework pressure leak EVAP hoses / lines pressure leak EVAP valve pressure leak to engine Fuel tank pressure sensor signal high
P0443	EVAP valve circuit malfunction	Ignition ON > 1 second	2	EVAP valve disconnected ECM to EVAP valve "drive" circuit; open circuit, short circuit to ground or B+ voltage EVAP valve failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** Through 1996 MY: DTC does not activate the CHECK ENGINE MIL.

*** Three successive fail judgements. Diagnostic tests are performed continuously. Use the PDU "Scantool" Systems Readiness Test to determine if tests are complete.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0446	Canister close valve circuit malfunction	Engine at normal operating temperature; varied driving for > 22 minutes; drive > 30 mph (48 km/h) > 10 seconds	2	ECM to canister close valve open circuit, short circuit to ground or B+ voltage Canister close valve electrical failure
P0452	Fuel tank pressure sensor signal low (enhanced evaporative emissions vehicles)	Engine run	2	ECM to fuel tank pressure sensor circuit; open circuit or short circuit to ground Fuel tank pressure sensor failure
P0453	Fuel tank pressure sensor signal high (enhanced evaporative emissions vehicles)	Engine run	2	ECM to fuel tank pressure sensor circuit; open circuit, short circuit to 5V supply or B+ voltage Fuel tank pressure sensor failure
P0460	Fuel level sense circuit malfunction	Engine idle < 2 minutes	2	Instrument pack to ECM fuel level signal circuit; open circuit, short circuit to ground or B+ voltage Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0461	Fuel level sense signal performance	Drive > 10 mph (16 km/h) > 50 minutes	2	Instrument pack to ECM fuel level signal circuit; open circuit, short circuit to ground or B+ voltage Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0500	Vehicle speed sensor malfunction (signal from instrument pack)	Drive > 1900 rpm; high load > 40 seconds; 40 gear changes	2	ECM to instrument pack wiring: open circuit, short circuit or high resistance Vehicle speed signal from instrument pack incorrect TCM fault – requests torque reduction while vehicle stopped ABS / TC CM vehicle speed signal incorrect ABS wheel speed sensor fault

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0506	Idle air control system: rpm lower than expected	Engine at normal operating temperature; idle > 10 seconds	2	IACV disconnected IACV passages blocked IACV stepper motor jammed or mounted incorrectly MAFS signal fault (steady high voltage) Engine incorrect operation – open throttle / engine still idle
P0507	Idle air control system: rpm higher than expected	Engine at normal operating temperature; idle > 10 seconds	2	IACV disconnected IACV passages blocked IACV stepper motor jammed or mounted incorrectly MAFS signal fault (steady low voltage)
P0508	IACV circuit: open circuit	Run engine; switch ignition OFF	2	IACV circuit open circuit IACV malfunction
P0509	IACV circuit: short circuit	Run engine; switch ignition OFF	2	IACV circuit short circuit to ground or B+ voltage IACV malfunction
P0605	ECM data corrupted	Ignition ON	1	ECM failure
P1137	HO2S sense circuit lack of "swing" – cylinders 1, 2, 3 (A bank), downstream (2) Sense circuit indicates lean combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 30 seconds	2	Downstream HO2S harness connectors (cylinders 1, 2, 3 / cylinders 4, 5, 6) reversed (Perform HO2S orientation) HO2S loose in exhaust pipe screw threads HO2S sense wire open circuit Exhaust leak before catalyst HO2S heater malfunction (tip temperature too cold) HO2S failure
P1138	HO2S sense circuit lack of "swing" – cylinders 1, 2, 3 (A bank), downstream (2) Sense circuit indicates rich combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 30 seconds	2	Downstream HO2S harness connectors (cylinders 1, 2, 3 / cylinders 4, 5, 6) reversed (Perform HO2S orientation) HO2S sense wire short circuit to ground HO2S heater malfunction (tip temperature too hot) HO2S failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1157	HO2S sense circuit lack of "swing" – cylinders 4, 5, 6 (B bank), downstream (2) Sense circuit indicates lean combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 30 seconds	2	Refer to P1137 possible causes
P1158	HO2S sense circuit lack of "swing" – cylinders 4, 5, 6 (B bank), downstream (2) Sense circuit indicates rich combustion (No HO2S response)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 30 seconds	2	Refer to P1138 possible causes
P1171	All cylinders combustion too lean	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Fuel filter, system blockage Fuel system leak Fuel pressure regulator failure (low fuel pressure) Low fuel pump output Fuel injectors blocked MAFS signal fault (low voltage) SC engine – Incorrect MAFS installed
P1172	All cylinders combustion too rich	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Fuel return pipe blocked Fuel pressure regulator failure (high fuel pressure) Fuel injectors leaking MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed
P1176	Adaptive fuel metering trim too lean (fuel flow rate)	Engine at normal operating temperature; drive steadily at > 20 (32 km/h) mph for > 25 seconds	2	Fuel injector supply wiring short circuit to ground Fuel filter, system blockage Fuel system leak Fuel pressure regulator failure (low fuel pressure) Low fuel pump output Fuel injectors blocked MAFS signal fault (low voltage) SC engine – Incorrect MAFS installed

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1177	Adaptive fuel metering trim too rich (fuel flow rate)	Engine at normal operating temperature; drive steadily at > 20 mph (32 km/h) for > 25 seconds	2	Fuel return pipe blocked Fuel pressure regulator failure (high fuel pressure) Fuel injectors leaking MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed SC engine – Intake air leak
P1178	Adaptive fuel metering trim too lean (air flow rate)	Engine at normal operating temperature; idle > 3 minutes; drive steadily at > 20 mph (32 km/h) for > 3 minutes; idle > 3 minutes	2	Air intake leak Low fuel pressure at idle Blocked injector MAFS signal fault (low voltage)
P1179	Adaptive fuel metering trim too rich (air flow rate)	Engine at normal operating temperature; idle > 3 minutes; drive steadily at > 20 mph (32 km/h) for > 3 minutes; idle > 3 minutes	2	High fuel pressure at idle MAFS signal fault (high voltage) NA engine – Incorrect MAFS installed
P1185	HO2S heater circuit open circuit – both upstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	HO2S heater circuits high resistance HO2S heater harness wiring high resistance, open circuit or short circuit to ground
P1186	HO2S heater circuit short circuit – both upstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	HO2S heater circuits short circuit to sensor HO2S heater harness wiring short circuit to B+ voltage
P1187	HO2S heater circuit open circuit – both upstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	HO2S heater circuits high resistance HO2S heater harness wiring high resistance HO2S heater harness wiring open circuit MAFS signal fault Ignition fault (ignition retard causing high exhaust gas temperature)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1188	HO2S heater circuit high resistance – both upstream sensors	Engine idle > 25 seconds	2	ECM to HO2S heater wiring open circuit (or intermittent open circuit) ECM to HO2S heater wiring short circuit to ground HO2S heater circuits high resistance or open circuit HO2S heaters failure
P1189	HO2S heater circuit low resistance – both upstream sensors	Engine idle > 25 seconds	2	HO2S loose HO2S heater circuit; short circuit to ground or B+ voltage HO2S heater circuits; high resistance or open circuit HO2S heaters failure
P1190	HO2S heater circuit low resistance – both upstream sensors	Engine idle > 25 seconds	2	High battery voltage (>17v) producing excess heater current ECM to HO2S heater wiring; short circuit to B+ voltage HO2S heater circuits; short circuit to ground Both HO2S heaters failure
P1191	HO2S heater circuit open circuit – both downstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	Refer to P1185 possible causes
P1192	HO2S heater circuit short circuit – both downstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	Refer to P1186 possible causes
P1193	HO2S heater circuit open circuit – both downstream sensors	Engine idle < 1000 rpm > 3 minutes, 20 seconds	2	Refer to P1187 possible causes
P1194	HO2S heater circuit high resistance – both downstream sensors	Engine idle > 25 seconds	2	Refer to P1188 possible causes
P1195	HO2S heater circuit low resistance – both downstream sensors	Engine idle > 25 seconds	2	Refer to P1189 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1196	HO2S heater circuit low resistance – both downstream sensors	Engine idle > 25 seconds	2	Refer to P1190 possible causes
P1201	Fuel injector circuit open or short circuit – cylinder 1	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1202	Fuel injector circuit open or short circuit – cylinder 2	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1203	Fuel injector circuit open or short circuit – cylinder 3	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1204	Fuel injector circuit open or short circuit – cylinder 4	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1205	Fuel injector circuit open or short circuit – cylinder 5	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1206	Fuel injector circuit open or short circuit – cylinder 6	Run engine; ignition OFF > 2 seconds	2	Refer to P0201 possible causes
P1313	Catalyst damage misfire detected – cylinders 1, 2, 3 (A bank)	Run engine steady > 2 minutes	1 **	Refer to P0300 possible causes
P1314	Catalyst damage misfire detected – cylinders 4, 5, 6 (B bank)	Run engine steady > 2 minutes	1 **	Refer to P0300 possible causes
P1315	Persistent misfire (one cylinder identified and injector switched off)	Run engine steady > 2 minutes	1	Refer to P0300 possible causes
P1316	Misfire excess emission	Run engine steady > 2 minutes	2 **	Refer to P0300 possible causes
P1361	Ignition coil primary circuit malfunction – cylinder 1	Engine running > 1 second	2	ECM to ignition coil primary circuit high resistance, open circuit or short circuit to ground CKPS malfunction (refer to P0335, P0336) Ignition coil failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** Through 1996 MY: DTC does not activate CHECK ENGINE MIL. If DTCs P1313, P1314 or P1316 are flagged, one or more of the cylinder identification DTCs will also be flagged (random misfire P0300 or individual cylinder P0301 – P0306). If DTC P1315 is flagged, one or more of the individual cylinder identification DTCs (P0301 – P0306) will also be flagged.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1362	Ignition coil primary circuit malfunction – cylinder 2	Engine running > 1 second	2	Refer to P1361 possible causes
P1363	Ignition coil primary circuit malfunction – cylinder 3	Engine running > 1 second	2	Refer to P1361 possible causes
P1364	Ignition coil primary circuit malfunction – cylinder 4	Engine running > 1 second	2	Refer to P1361 possible causes
P1365	Ignition coil primary circuit malfunction – cylinder 5	Engine running > 1 second	2	Refer to P1361 possible causes
P1366	Ignition coil primary circuit malfunction – cylinder 6	Engine running > 1 second	2	Refer to P1361 possible causes
P1371	Ignition coil primary circuit: incorrect spark timing – cylinder 1	Engine running > 1 second	2	ECM to ignition coil primary circuit short circuit Ignition coil failure
P1372	Ignition coil primary circuit: incorrect spark timing – cylinder 2	Engine running > 1 second	2	Refer to P1371 possible causes
P1373	Ignition coil primary circuit: incorrect spark timing – cylinder 3	Engine running > 1 second	2	Refer to P1371 possible causes
P1374	Ignition coil primary circuit: incorrect spark timing – cylinder 4	Engine running > 1 second	2	Refer to P1371 possible causes
P1375	Ignition coil primary circuit: incorrect spark timing – cylinder 5	Engine running > 1 second	2	Refer to P1371 possible causes
P1376	Ignition coil primary circuit: incorrect spark timing – cylinder 6	Engine running > 1 second	2	Refer to P1371 possible causes
P1400	EGR valve position malfunction	Ignition ON > 1 second	2	EGR valve sticky, dirty or seized ECM to EGR valve position signal wire short or open circuit

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1401	EGR position circuit out of range (low or high voltage)	Ignition ON > 1 second	2	ECM to EGR valve position signal wire open circuit, short circuit to ground or B+ voltage EGR valve position sensor supply wire short or open circuit EGR valve position sensor ground wire short circuit to supply wire or open circuit EGR valve position sensor failure (EGR valve assembly)
P1408	EGR temperature sensor circuit out of range (high voltage)	Ignition ON > 1 second	2	ECM to EGR temperature sensor sense wire short circuit to ground ECM to EGR temperature sensor sense wire short circuit to supply wire EGR temperature sensor failure
P1409	EGR valve drive circuit malfunction	Ignition ON > 1 second	2	ECM to EGR valve drive wire open circuit ECM to EGR valve drive wire short circuit to ground EGR valve failure
P1440	EVAP valve incorrect flow (enhanced evaporative emissions vehicles)	Engine at normal operating temperature; fuel level between 1/4 and 3/4 full; varied driving for > 22 minutes; drive > 30 mph (48 km/h) > 10 seconds	2	EVAP valve stuck open Fuel tank pressure sensor low output (but in range) Fuel tank filled with engine running
P1447	Canister close valve low flow (enhanced evaporative emissions vehicles)	Engine at normal operating temperature; varied driving for 15 minutes; hot idle > 1 minute	2 **	Canister close valve blocked or stuck closed
P1448	Enhanced evaporative emissions system performance fault 2 (vacuum test OK but no feedback change)	Engine at normal operating temperature; fuel level between 1/4 and 3/4 full; varied driving for > 22 minutes; drive > 30 mph (48 km/h) > 10 seconds	2 **	Fuel tank, fuel filler cap or pipework pressure leak EVAP hoses / lines pressure leak EVAP valve leaking pressure to engine Canister close valve stuck open

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** Through 1996 MY: DTC does not activate the CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1496	Enhanced evaporative emissions system performance fault 1 (vacuum test failed and no feedback change)	Engine at normal operating temperature; fuel level between 1/4 and 3/4 full; varied driving for > 22 minutes; drive > 30 mph (48 km/h) > 10 seconds	2 **	Fuel tank filled with engine running Fuel tank, fuel filler cap or pipework pressure leak EVAP hoses / lines pressure leak EVAP valve stuck closed Canister close valve stuck open Fuel tank pressure sensor signal circuit resistance Fuel tank pressure sensor malfunction
P1508	IACV circuit open circuit	Ignition ON > 15 seconds; ignition OFF	2	IACV disconnected IACV harness wiring open circuit IACV stepper motor failure (open circuit)
P1509	IACV circuit short circuit	Ignition ON > 15 seconds; ignition OFF	2	IACV harness wiring short circuit IACV stepper motor failure (short circuit)
P1514	High load NEUTRAL / DRIVE malfunction	Drive at > 90% load	2	MAFS signal voltage high, but undetected NEUTRAL / PARK wiring (decoder to ECM) short circuit to ground BPM fault (NEUTRAL / PARK parallel circuit)
P1516	Gear change NEUTRAL / DRIVE malfunction	Drive > 30 gear changes	2	NEUTRAL / PARK wiring (decoder to ECM) short circuit to ground BPM low resistance fault (NEUTRAL / PARK parallel circuit) TCM to ECM torque reduction request fault Vehicle speed signal fault, but undetected
P1517	Engine cranking NEUTRAL / DRIVE malfunction	Start engine	2	BPM cranking inhibit fault BPM high resistance fault (NEUTRAL / PARK parallel circuit) NEUTRAL / PARK wiring (decoder to ECM) open circuit or short circuit to B+ voltage

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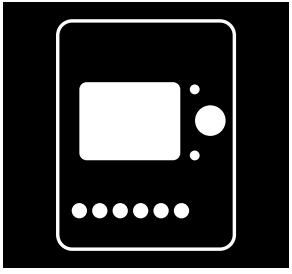
** Through 1996 MY: DTC does not activate the CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1607	CHECK ENGINE MIL circuit malfunction	Ignition ON	2	ECM to instrument pack / BPM wiring open circuit, short circuit or high resistance BPM fault (CHECK ENGINE) Instrument pack fault (CHECK ENGINE)
P1775	TCM CHECK ENGINE MIL request	Ignition ON	1	Possible transmission fault – check for flagged TCM DTCs
P1776	Torque reduction request signal duration fault	Drive vehicle to initiate automatic gear changes	1	Driver placing rapid repeated shift demands on the transmission requiring torque reduction – torque reduction may not be possible Possible TCM fault (request too long)
P1777	Torque reduction circuit malfunction	Engine running; normal operating temperature	2	Torque reduction signal wire open circuit, short circuit to ground or B+ voltage Possible TCM fault (invalid signal)
P1794	ECM B+ supply voltage low (below 10.5 V)	Run engine > 1600 rpm	2	Generator drive belt loose ECM B+ supply circuit; high resistance, open circuit or short circuit to ground Battery malfunction Charging system malfunction

* Number of consecutive trips required to activate CHECK ENGINE MIL.



DTC Summaries

NipponDenso V12 Engine Management

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test occurs automatically when the PDU reads the DTCs from the ECM memory and reports if a full OBD check has or has not been completed since the memory was last cleared.

If DTC P1000 is stored in memory, the on-board diagnostic tests **have not** been completed; if DTC P1111 is stored in memory, all on-board diagnostic tests **have** been completed.

PDU DATALOGGER ACRONYMS

ACCLTCH	Compressor clutch
ACLOAD	Air conditioning request
AIRPUMP	Secondary air injection pump (AIRP) relay
AIRVLV	Air valve
BATT	Battery voltage
DTCS	Number of DTCs flagged
ECT	Engine coolant temperature
ETS	Engine torque reduction
EVAPPA	Evaporative emission (purge) valve Bank A
EVAPPB	Evaporative emission (purge) valve Bank B
FUEL	Fuel level
GEAR	Park / Neutral
HO2S1A	Heated oxygen sensor Bank A upstream
HO2S1AM	Oxygen sensor heater Bank A upstream
HO2S1B	Heated oxygen sensor Bank B upstream
HO2S1BM	Oxygen sensor heater Bank B upstream
HO2S2A	Heated oxygen sensor Bank A downstream
HO2S2AM	Oxygen sensor heater Bank A downstream
HO2S2B	Heated oxygen sensor Bank B downstream
HO2S2BM	Oxygen sensor heater Bank B downstream
HTDSC	Heated windshield request
IAT	Intake air temperature
IDLE	Idle switch
ISCPOSA	Idle air control valve (IAC) Bank A
ISCPOSB	Idle air control valve (IAC) Bank B
LOADINH	Load inhibit
MAPSA	Manifold absolute pressure sensor Bank A
MAPSB	Manifold absolute pressure sensor Bank B
MIL	CHECK ENGINE MIL
PSTEER	Power steering switch
RPM	Engine speed
TPS	Throttle position sensor
CRANK	Engine cranking signal
VSS	Vehicle speed

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0105	HACS circuit malfunction	Ignition ON > 1 second	1	HACS failure (internal ECM fault)
P0106	A Bank MAPS range / performance	Engine at normal operating temperature; idle 17 minutes then accelerate	2	Throttle rod disconnected or incorrectly adjusted Leaking or blocked hose between MAPS and intake manifold Blocked gas filter Failed sensor element
P0107	A Bank MAPS sense circuit low voltage	Ignition ON > 5 seconds	1	MAPS disconnected MAPS to ECM sense wire open circuit or short circuit to ground MAPS to ECM power supply wire open circuit or short circuit to ground MAPS failure
P0108	A Bank MAPS sense circuit high voltage	Ignition ON > 5 seconds	1	MAPS to ECM signal ground wire open circuit MAPS to ECM wiring (supply, sense, signal ground) short circuit to each other MAPS sensing circuit short circuit to B+ voltage MAPS failure
P0111	IATS range / performance	Engine idle > 30 seconds	2	IATS power supply failure; short or open circuit IATS failure
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	1	IATS disconnected IATS to ECM wiring open circuit or high resistance IATS sensing circuit short circuit to B+ voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	1	IATS to ECM wiring short circuit to ground IATS failure
P0116	ECTS range / performance	Engine at normal operating temperature; idle > 20 minutes	2	Low coolant level Engine thermostat stuck open ECTS connector high resistance when hot ECTS element failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0117	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	1	ECTS disconnected ECTS to ECM wiring open circuit or high resistance ECTS sensing circuit short circuit to B+ voltage ECTS failure
P0118	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 minutes	1	ECTS to ECM wiring short circuit to ground ECTS failure
P0121	TPS range / performance	Engine at normal operating temperature; drive steadily at 45 mph (72 km/h) (engine between 1500 – 2000 rpm) > 5 seconds	2	Blocked air filter Incorrect TPS setting or loose mounting screws Incorrect throttle linkage setting TPS power supply failure MAPS signal incorrect or not sensed IATS signal incorrect or not sensed TPS failure
P0122	TPS sense circuit low voltage	Ignition ON > 5 seconds	1	TPS disconnected TPS to ECM position sense wire open circuit or short circuit to ground TPS to ECM power supply wire open circuit or short circuit to ground TPS failure
P0123	TPS sense circuit high voltage	Ignition ON > 5 seconds	1	TPS to ECM signal ground wire open circuit TPS to ECM wiring (supply, sense, signal ground) short circuit to each other TPS sensing circuit short circuit to B+ voltage TPS failure
P0125	Insufficient coolant temperature for closed loop fuel control	Engine at normal operating temperature; idle > 20 minutes	2	Low coolant level Engine thermostat stuck open ECTS connector high resistance when hot ECTS failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0131	HO2S sense circuit low voltage – A bank, upstream (1)	Engine at normal operating temperature; drive steadily at 56 mph (90 km/h) > 1 minute (DTC P0131 may flag with warm engine @ 2000 rpm for 3 minutes)	2	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0132	HO2S sense circuit high voltage – A bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	HO2S sensing circuit short circuit to B+ voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0133	HO2S sense circuit slow response – A bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to B+ voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust gas temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure HO2S heater circuit failure
P0134	HO2S sense circuit no activity – A bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to B+ voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust gas temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0135	HO2S heater circuit malfunction – A bank, upstream (1)	Engine run > 45 seconds, idle	2	HO2S disconnected No HO2S heater power supply HO2S heater to power supply wiring open circuit HO2S heater to ECM wiring short circuit HO2S heater to ECM wiring open circuit HO2S failure
P0137	HO2S sense circuit low voltage – A bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0131 possible causes
P0138	HO2S sense circuit high voltage – A bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph 90 km/h) > 1 minute	2	Refer to P0132 possible causes
P0139	HO2S sense circuit slow response – A bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0133 possible causes
P0140	HO2S sense circuit no activity – A bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0134 possible causes
P0141	HO2S heater circuit malfunction – A bank, downstream (2)	Engine run > 45 seconds, idle	2	Refer to P0135 possible causes
P0151	HO2S sense circuit low voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute (DTC P0131 may flag with warm engine @ 2000 rpm for 3 minutes)	2	Refer to P0131 possible causes
P0152	HO2S sense circuit high voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0132 possible causes
P0153	HO2S sense circuit slow response – B bank), upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0133 possible causes
P0154	HO2S sense circuit no activity – B bank, upstream (1)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0134 possible causes
P0155	HO2S heater circuit malfunction – B bank, upstream (1)	Engine run > 45 seconds, idle	2	Refer to P0135 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0157	HO2S sense circuit low voltage – B bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0131 possible causes
P0158	HO2S sense circuit high voltage – B bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0132 possible causes
P0159	HO2S sense circuit slow response – B bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0133 possible causes
P0160	HO2S sense circuit no activity – B bank, downstream (2)	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0134 possible causes
P0161	HO2S heater circuit malfunction – B bank, downstream (2)	Engine run > 45 seconds, idle	2	Refer to P0135 possible causes
P0171	A Bank combustion too lean –	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Engine misfire Fuel filter, system blockage Fuel injector blockage Fuel injector wiring open circuit Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAPS, TPS, IATS
P0172	A Bank combustion too rich	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Blocked air filter Fuel system return pipe blockage Leaking fuel injector Fuel injector harness short circuit to ground Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAPS, TPS, IATS

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0174	B Bank combustion too lean	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0171 possible causes
P0175	B Bank combustion too rich	Engine at normal operating temperature; drive at 56 mph (90 km/h) > 1 minute	2	Refer to P0172 possible causes
P0201	Fuel injector circuit malfunction – A bank, cylinder 1	Engine at normal operating temperature; engine run > 10 seconds (DTC P0201 may flag at fast idle)	2	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction – A bank, cylinder 2	Engine at normal operating temperature; engine run > 10 seconds (DTC P0202 may flag at fast idle)	2	Refer to P0201 possible causes
P0203	Fuel injector circuit malfunction – A bank, cylinder 3	Engine at normal operating temperature; engine run > 10 seconds (DTC P0203 may flag at fast idle)	2	Refer to P0201 possible causes
P0204	Fuel injector circuit malfunction – A bank, cylinder 4	Engine at normal operating temperature; engine run > 10 seconds (DTC P0204 may flag at fast idle)	2	Refer to P0201 possible causes
P0205	Fuel injector circuit malfunction – A bank, cylinder 5	Engine at normal operating temperature; engine run > 10 seconds (DTC P0205 may flag at fast idle)	2	Refer to P0201 possible causes
P0206	Fuel injector circuit malfunction – A bank, cylinder 6	Engine at normal operating temperature; engine run > 10 seconds (DTC P0206 may flag at fast idle)	2	Refer to P0201 possible causes
P0207	Fuel injector circuit malfunction – B bank, cylinder 1	Engine at normal operating temperature; engine run > 10 seconds (DTC P0207 may flag at fast idle)	2	Refer to P0201 possible causes
P0208	Fuel injector circuit malfunction – B bank, cylinder 2	Engine at normal operating temperature; engine run > 10 seconds (DTC P0208 may flag at fast idle)	2	Refer to P0201 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0209	Fuel injector circuit malfunction – B bank, cylinder 3	Engine at normal operating temperature; engine run > 10 seconds (DTC P0209 may flag at fast idle)	2	Refer to P0201 possible causes
P0210	Fuel injector circuit malfunction – B bank, cylinder 4	Engine at normal operating temperature; engine run > 10 seconds (DTC P0209 may flag at fast idle)	2	Refer to P0201 possible causes
P0211	Fuel injector circuit malfunction – B bank, cylinder 5	Engine at normal operating temperature; engine run > 10 seconds (DTC P0209 may flag at fast idle)	2	Refer to P0201 possible causes
P0212	Fuel injector circuit malfunction – B bank, cylinder 6	Engine at normal operating temperature; engine run > 10 seconds (DTC P0209 may flag at fast idle)	2	Refer to P0201 possible causes
P0300**	Random misfire detected	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Fuel contaminated Fuel injector(s) blocked or leaking Ignition secondary circuit breakdown (spark plugs, leads) Ignition coil pack failure Fuel pressure low Cylinder compression low Broken valve spring(s)
P0301**	Misfire detected – A bank, cylinder 1	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0302**	Misfire detected – A bank, cylinder 2	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0303**	Misfire detected – A bank, cylinder 3	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** If DTCs P1313, P1314 or P1316 are flagged, one or more of the cylinder identification DTCs will also be flagged (random misfire P0300 or individual cylinder P0301 – P0306).

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0304**	Misfire detected – A bank, cylinder 4	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0305**	Misfire detected – A bank, cylinder 5	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0306**	Misfire detected – A bank, cylinder 6	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0307**	Misfire detected – B bank, cylinder 1	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0308**	Misfire detected – B bank, cylinder 2	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0309**	Misfire detected – B bank, cylinder 3	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0310**	Misfire detected – B bank, cylinder 4	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0311**	Misfire detected – B bank, cylinder 5	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0312**	Misfire detected – B bank, cylinder 6	Engine at idle > 2 minutes; drive below 2000 rpm > 2 minutes	1 or 2	Refer to P0300 possible causes
P0335	RPM Sensor circuit malfunction	Start engine, idle	1	RPM Sensor disconnected RPM Sensor sensing circuit open circuit, short circuit to ground or B+ voltage RPM Sensor failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** If DTCs P1313, P1314 or P1316 are flagged, one or more of the cylinder identification DTCs will also be flagged (random misfire P0300 or individual cylinder P0301 – P0306).

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0336	RPM Sensor range / performance	Start engine, idle	1	Foreign material on RPM Sensor face RPM Sensor / flywheel disc alignment Damaged flywheel disc Excessive crankshaft end float RPM Sensor failure
P0340	CMPS circuit malfunction	Start engine, idle	1	CMPS disconnected CMPS sensing circuit open circuit, short circuit to ground or B+ voltage Damaged or missing CMPS camshaft peg CMPS failure
P0410	AIR System malfunction	Engine at normal operating temperature; start, idle > 30 seconds	2	AIR pump drive belt failure AIR hose(s) failure AIR relay power supply failure AIR relay failure AIR pump clutch failure AIR pump failure AIR wiring harness open or short circuit ASV disconnected (vacuum) ASV failure AIR VSV wiring harness open or short circuit AIR check valve failure
P0414	AIR system VSV circuit short circuit	Fuel system tests complete (Refer to DTCs P0171 and P0172)	2	Refer to P0410 possible causes
P0420	Catalyst efficiency below threshold – A bank	Engine at normal operating temperature; drive steadily at 35 mph (56 km/h) > 3 minutes	3	Fuel contamination Exhaust system air leak (before catalyst) Engine misfire Catalyst mechanical damage Downstream HO2S fault present but undetected Excessive oil consumption

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0430	Catalyst efficiency below threshold – B bank	Engine at normal operating temperature; drive steadily at 35 mph (56 km/h) > 3 minutes	3	Refer to P0420 possible causes
P0441	EVAP system incorrect purge flow – A bank	Engine at normal operating temperature; vehicle stopped, idle > 2 minutes; fuel tank < 1/2 full; A/C OFF	2	A and B Bank EVAP valve harness connectors reversed EVAP purge hose blocked or disconnected EVAP canister atmosphere vent blocked EVAP valve failure
P0443	EVAP valve circuit malfunction – A bank	Ignition ON, not cranking > 10 seconds	2	EVAP valve disconnected ECM to EVAP valve "drive" circuit short circuit to EVAP valve "supply" circuit ECM to EVAP valve "drive" circuit short circuit to B+ voltage EVAP valve failure
P0461	Fuel level sense signal performance	Drive > 30 miles (48 km)	2	Instrument pack to ECM fuel level signal circuit; open circuit, short circuit to ground Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0462	Fuel level sense signal low voltage	Ignition ON > 1 minute	1	Instrument pack to ECM fuel level signal circuit; open circuit, short circuit to ground Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0463	Fuel level sense signal high voltage	Ignition ON > 1 minute	1	Instrument pack to ECM fuel level signal circuit; short circuit to B+ voltage Instrument pack fault (incorrect fuel level signal) Fuel level sensor failure
P0500	Vehicle speed sensor malfunction (signal from TCM)	Engine at normal operating temperature; drive at engine speed > 1600 rpm; release throttle and decelerate 1600 – 1400 rpm in DRIVE, without using brakes	2	VSS Wiring harness between TCM and ECM open or short circuit VSS failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P0506	Idle air control system: rpm lower than expected – A bank	Engine at normal operating temperature; vehicle stopped, idle > 3 minutes	2	IACV hoses blocked or leaking IACV disconnected IACV failure IACV stuck closed (foreign material) IACV "drive" circuits open or short circuit Undetected MAPS fault (hose blocked or disconnected) Incorrect fuel pressure Misfire Seized power steering pump Seized air conditioning compressor
P0507	Idle air control system: rpm higher than expected – A bank	Engine at normal operating temperature; vehicle stopped, idle > 3 minutes	2	IACV disconnected Brake servo diaphragm failure Intake manifold leak IACV gasket air leak IACV stuck open (foreign material) IACV "drive" circuits open or short circuit Undetected MAPS fault (hose blocked or disconnected) Incorrect fuel pressure TPS setting incorrect Throttle linkage / valve setting incorrect
P0603	ECM PECUS programmed data corrupted	Ignition ON > 5 seconds	1	ECM failure
P0605	ECM ROM data corrupted	Ignition ON > 5 seconds	1	ECM failure
P1000	System Readiness Check	OBD tests not complete since last memory clear	1 **	System Readiness Check report only
P1106	B Bank MAPS range / performance	Engine at normal operating temperature; idle > 4 seconds then accelerate	2	Throttle rod disconnected or incorrectly adjusted Leaking or blocked hose between MAPS and intake manifold Blocked gas filter Failed sensor element

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** DTC does not activate the CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1107	B Bank MAPS sense circuit low voltage	Ignition ON > 5 seconds	1	MAPS disconnected MAPS to ECM sense wire open circuit or short circuit to ground MAPS to ECM power supply wire open circuit or short circuit to ground MAPS failure
P1108	B Bank MAPS sense circuit high voltage	Ignition ON > 5 seconds	1	MAPS to ECM wiring (supply, sense, signal ground) short circuit to each other MAPS sensing circuit short circuit to B+ voltage MAPS failure
P1111	System Readiness Check	OBD tests completed since last memory clear	1 **	System Readiness Check report only
P1198	Fuel level sense circuit high voltage	Ignition ON > 1 minute	1	Fuel level sense wire open circuit, short circuit to B+ voltage Fuel level sensor failure
P1199	Fuel level sense circuit low voltage / malfunction	Ignition ON > 1 minute	1	Fuel level sense wire short circuit to ground Fuel level sensor failure
P1240	MAPS and TPS power supply malfunction	Engine at normal operating temperature; MAPS and TPS tests complete	2	A Bank MAPS, B Bank MAPS and TPS failure DTCs flagged at once Refer to P1241 and P1242 possible causes
P1241	MAPS and TPS power supply circuit low voltage	Ignition ON > 5 seconds	2	MAPS and TPS sensor power supply wire(s) short circuit to ground
P1242	MAPS and TPS power supply circuit high voltage	Ignition ON > 5 seconds	2	MAPS and TPS sensor power supply wire(s) high resistance or short circuit MAPS and TPS sensor power supply wire(s) short circuit to B+ voltage
P1244	HACS range / performance	Ignition ON > 5 seconds; not cranking	2	HACS failure (ECM fault)

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** DTC does not activate the CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1245	Engine crank signal low voltage	Start engine, idle	2	Starter relay coil to ECM wire (parallel circuit to BPM) open circuit
P1246	Engine crank signal high voltage	Engine at normal operating temperature; accelerate from stop to 31 mph (50 km/h); decelerate to stop; repeat 5 times	2	Starter relay coil to ECM wire (parallel circuit to BPM) short circuit to B+ voltage Body Processor Module (BPM) fault
P1313**	Catalyst damage misfire detected – A bank	Drive with rpm below 2100 at steady speed > 2 minutes	1	Refer to P0300 possible causes
P1314**	Catalyst damage misfire detected – B bank	Drive with rpm below 2100 at steady speed > 2 minutes	1	Refer to P0300 possible causes
P1316**	Misfire excess emission	Drive with rpm below 2100 at steady speed > 2 minutes	2	Refer to P0300 possible causes
P1335	CKPS circuit malfunction	Engine run > 5 seconds, idle	1	CKPS disconnected CKPS sensing circuit open circuit, short circuit to ground or B+ voltage CKPS / crankshaft disc alignment Damaged or missing pulser ring tooth CKPS failure
P1336	CKPS range / performance	Engine run > 5 seconds, idle	1	Foreign material on CKPS face CKPS / crankshaft disc alignment Damaged or missing pulser ring tooth CKPS failure
P1367	Ignition monitor – A bank	Engine run > 10 seconds, idle	1	Ignition module disconnected Ignition module to ECM harness open circuit, short circuit to ground or B+ voltage Ignition coil failure Ignition coil relay failure Ignition module failure

* Number of consecutive trips required to activate CHECK ENGINE MIL.

** If DTCs P1313, P1314 or P1316 are flagged, one or more of the cylinder identification DTCs will also be flagged (random misfire P0300 or individual cylinder P0301 – P0306).

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1368	Ignition monitor – B bank	Engine run > 10 seconds, idle	1	Refer to P1367 possible causes
P1441	EVAP system incorrect purge flow – B bank	Engine at normal operating temperature; vehicle stopped, idle > 2 minutes; fuel tank < 1/2 full; A/C OFF	2	Refer to P0441 possible causes
P1443	EVAP valve circuit malfunction – B bank	Ignition ON, not cranking > 10 seconds	2	Refer to P0433 possible causes
P1506	Idle air control system: rpm lower than expected – B bank	Engine at normal operating temperature; vehicle stopped, idle > 3 minutes	2	Refer to P0506 possible causes
P1507	Idle air control system: rpm higher than expected – B bank	Engine at normal operating temperature; vehicle stopped, idle > 3 minutes	2	Refer to P0507 possible causes
P1512	TPS Idle switch sense circuit low voltage	Accelerate from stop to > 20 mph (32 km/h); decelerate to stop; repeat 5 times	2	TPS incorrect setting TPS harness short circuit to ground TPS harness short circuit across wires
P1513	TPS Idle switch sense circuit high voltage	Accelerate from stop to > 20 mph (32 km/h); decelerate to stop; repeat 5 times	2	TPS incorrect setting TPS disconnected TPS harness open circuit
P1516	Gear change NEUTRAL / DRIVE malfunction	Drive steadily at 55 mph (88 km/h) > 30 seconds	2	Linear gear position switch setting incorrect Gear selector cable setting incorrect Linear gear position switch to ECM wiring harness open circuit
P1517	Engine cranking NEUTRAL / DRIVE malfunction	Start engine	2	Linear gear position switch setting incorrect Gear selector cable setting incorrect Linear gear position switch wiring harness short circuit to ground
P1641	Fuel pump relay 1 malfunction	Ignition ON > 5 seconds	2	Relay failure Relay to ECM wiring (coil circuit) open or short circuit Relay to fuel pump wiring (switched circuit) open or short circuit

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS (see page 1)	TRIPS*	POSSIBLE CAUSES
P1646	Fuel pump relay 2 malfunction	Ignition ON > 5 seconds	2	Refer to P1641 possible faults
P1775	TCM / CHECK ENGINE MIL request	Ignition ON > 5 seconds	1	Possible transmission fault – check for flagged TCM DTCs
P1776	Torque reduction request signal duration fault	Ignition ON > 12 seconds	1	Torque reduction signal wire open circuit Torque reduction signal wire short circuit to ground Torque reduction signal wire short circuit to B+ voltage

* Number of consecutive trips required to activate CHECK ENGINE MIL.

DTC Summaries

V8 AJ26 Engine Management – 1997 MY

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test occurs automatically when DTC retrieval is initiated.

If DTC P1000 is stored in memory, the on-board diagnostic tests **have not** been completed.
If DTC P1111 is stored in memory, all on-board diagnostic tests **have** been completed.

To identify which portions of the Systems Readiness Test have not been completed, access OBD Logger from PDU Toolbox. PDU will report in the following manner:

- Module ECM:

The following tests have been identified as incomplete:
Catalyst
Evaporative purge system
O2 Sensor
EGR system

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS	"SERVICE DRIVE CYCLE" For the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y YES – indicates that the DTC is an OBD II DTC. N NO – indicates that the DTC is a non OBD II DTC.
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	N None 1 1 "TRIP" to activate indicator(s). 2 2 CONSECUTIVE "TRIPS" to activate indicator(s). R RED MIL A AMBER MIL M MESSAGE
DEFAULT ACTION	ECM default action; Logged – DTC stored in memory buffer; Flagged – DTC stored in memory / CHECK ENGINE MIL activated.
POSSIBLE CAUSES	HIGH VOLTAGE – High voltage can be either EMS sensor supply voltage (5 volt) or B+ voltage.

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

PDU DATALOGGER ACRONYMS

ACCREQ	A/C compressor clutch request
ACHPS	A/C refrigerant high pressure switch
ACLPS	A/C refrigerant low pressure switch
ADV	Ignition timing advance (Cyl 1, A bank)
BARO	Barometric pressure sensor
BAT1+	Battery B+ supply to ECM
CLV	Calculated load value
CRANKREQ	Crank request (from BPM)
CRUISEA	Cruise control accel / decel switch
CRUISEB	Cruise resume / cancel switch
CRUISEC	Cruise cancel switch
CRUISED	Cruise control set / inch / decel switch
CRUISEO	Cruise control ON / OFF switch
CRUISER	Cruise control resume switch
CRUISES	Cruise control set / inch / accel switch
CRUISEC1	Cruise control cancel switch
DTC1	Number of DTCs logged this trip
DTCS	Number of permanent DTCs logged
ECT	Engine coolant temperature
EGR	Exhaust gas recirculation
EVAP	Evaporative emission system monitor
FANF	Cooling fan fast
FANFRLY	Cooling fan relay fast
FANS	Cooling fan slow
FANSRLY	Cooling fan relay slow
FBRAKE2	Brake switch
FP	Fuel pump
FPRLY	Fuel pump relay
GUARD1	Mechanical guard sensor
O2SB1D	Oxygen sensor (downstream) A bank
O2SB2D	Oxygen sensor (downstream) B bank
HO2SB1U	Heated oxygen sensor (upstream) A bank
HO2SB2U	Heated oxygen sensor (upstream) B bank
HTDSC	Heated windshield request
IAT	Intake air temperature
KS1A	Knock sensor 1 A bank
KS1B	Knock sensor 1 B bank
KS4A	Knock sensor 4 A bank
KS4B	Knock sensor 4 B bank
KSFA	Knock sensor fail A bank
KSFB	Knock sensor fail B bank
LTFT1	Long term fuel trim A bank
LTFT2	Long term fuel trim B bank
MAF	Mass air flow
MAFGND1	MAFS ground
MAFS1	Mass air flow sensor
MPROBE	Measurement probe (RED)
PKBRAKE	Park brake switch
PNPS	Park / neutral position switch (rotary switch)
PPS1	Pedal position sensor track A
PPS2	Pedal position sensor track B
RPM	Engine speed
SPS	Sensor power supply monitor
STFT1	Short term fuel trim A bank
STFT2	Short term fuel trim B bank
STFTB1D	Short term fuel trim A bank downstream
STFTB1U	Short term fuel trim A bank upstream
STFTB2D	Short term fuel trim B bank downstream
STFTB2U	Short term fuel trim B bank upstream
TPS	Throttle position sensor
TPS1	Throttle position sensor track 1
TPS2	Throttle position sensor track 2
TTP	Target throttle position
VSS	Vehicle speed
VSVRM	Vacuum switching valve release monitor
VSVAM	Vacuum switching valve atmosphere monitor
VSVVM	Vacuum switching valve vacuum monitor
VVTBM	Variable valve timing (B bank) monitor

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0101	MAFS range / performance	Engine at normal operating temperature; drive 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction (TPS) MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit or short circuit to ground MAFS failure
P0103	MAFS sense circuit high voltage	Ignition ON > 5 seconds	Y	2	1	When AMBER MIL is activated [A, M] (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	MAFS to ECM reference ground circuit open circuit MAFS to ECM sensing circuit short circuit to high voltage MAFS failure
P0106	BARO circuit low voltage	Ignition ON > 5 seconds	Y	2	N	None	BARO failure (internal ECM fault)
P0107	BARO circuit high voltage	Ignition ON > 5 seconds	Y	2	N	None	BARO failure (internal ECM fault)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0111	IATS range / performance	Engine idle > 40 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	Blocked air cleaner Air intake leak Engine breather leak IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	IATS to ECM wiring short circuit to ground IATS failure
P0116	ECTS range / performance	Engine coolant temperature ambient; start engine; drive at normal operating temperature > 13 mph (20 km/h) > 3 minutes	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	ECTS disconnected ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage ECTS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0118	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	Refer to P0117 Default Action	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS failure
P0121	TPS circuit range / performance	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits (“1” or “2”) short circuit to high voltage TPS failure
P0122	TPS circuit “1” low voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit “1” (TPS pin 3) open circuit or high resistance TPS failure
P0123	TPS circuit “1” high voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit “1” (TPS pin 3) short circuit to high voltage TPS failure
P0125	ECTS response (for closed loop fuel control)	Engine coolant temperature ambient; start engine; run engine to > 60 °C (140 °F) > 2 minutes	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage
P0131	HO2S sense circuit low voltage – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 40 mph (60 km/h); engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0132	HO2S sense circuit high voltage – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 3 mph (4 km/h)	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0133	HO2S sense circuit slow response – A bank, upstream (1)	Engine at normal operating temperature; drive at 50 – 62 mph (80 – 100 km/h); engine speed 1500 – 2500 rpm >10 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring intermittent open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0135	HO2S heater circuit malfunction – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 20 mph (30 km/h)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream O2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0137	O2S sense circuit low voltage – A bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S disconnected O2S to ECM wiring open circuit O2S short circuit to ground O2S failure
P0138	O2S sense circuit high voltage – A bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S sensing circuit short circuit to high voltage O2S ground (BRD – braided shield) open circuit O2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0140	O2S sense circuit no activity – A bank, downstream (2)	Engine at normal operating temperature; drive > 13 mph (20 km/h); engine speed > 1500 rpm; > 1 minute	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank downstream O2S control	O2S disconnected O2S mechanical damage O2S to ECM wiring open circuit O2S sensing circuit short circuit to high voltage O2S short circuit to ground O2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature O2S failure
P0151	HO2S sense circuit low voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 40 mph (60 km/h); engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0152	HO2S sense circuit high voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 3 mph (4 km/h)	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0153	HO2S sense circuit slow response – B bank, upstream (1)	Engine at normal operating temperature; drive at 50 – 62 mph (80 – 100 km/h); engine speed 1500 – 2500 rpm >10 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring intermittent open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0155	HO2S heater circuit malfunction – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 20 mph (30 km/h)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream O2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0157	O2S sense circuit low voltage – B bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S disconnected O2S to ECM wiring open circuit O2S short circuit to ground
P0158	O2S sense circuit high voltage – B bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S sensing circuit short circuit to high voltage O2S ground (BRD – braided shield) open circuit O2S failure
P0160	O2S sense circuit no activity – B bank, downstream (2)	Engine at normal operating temperature; drive > 13 mph (20 km/h); engine speed > 1500 rpm; > 1 minute	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank downstream O2S control	O2S disconnected O2S mechanical damage O2S to ECM wiring open circuit O2S sensing circuit short circuit to high voltage O2S short circuit to ground O2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature O2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0171	A bank combustion too lean	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0174 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* – Inhibits EGR * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0172	A bank combustion too rich	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0175 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0174	B bank combustion too lean	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0171 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* – Inhibits EGR * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0175	B bank combustion too rich	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0172 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0201	Fuel injector circuit malfunction – cylinder A1 (1)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR If DTCs for all A bank injectors are flagged: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream O2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction – cylinder A2 (2)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0203	Fuel injector circuit malfunction – cylinder A3 (3)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0204	Fuel injector circuit malfunction – cylinder A4 (4)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0205	Fuel injector circuit malfunction – cylinder B1 (5)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR If DTCs for all B bank injectors are flagged: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream O2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0206	Fuel injector circuit malfunction – cylinder B2 (6)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0207	Fuel injector circuit malfunction – cylinder B3 (7)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0208	Fuel injector circuit malfunction – cylinder B4 (8)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0222	TPS circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	TPS to ECM sensing circuit "2" (TPS pin 2) open circuit or high resistance TPS failure
P0223	TPS circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0222 Default Action	TPS to ECM sensing circuit "2" (TPS pin 2) short circuit to high voltage TPS failure
P0300	Random misfire detected	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module to ignition coil primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) or P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0301	Misfire detected – cylinder A1 (1)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P0300 Possible Faults
P0302	Misfire detected – cylinder A2 (2)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0303	Misfire detected – cylinder A3 (3)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0304	Misfire detected – cylinder A4 (4)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0305	Misfire detected – cylinder B1 (5)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P0300 Possible Faults
P0306	Misfire detected – cylinder B2 (6)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0307	Misfire detected – cylinder B3 (7)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0308	Misfire detected – cylinder B4 (8)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) or P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0327	KS sense circuit out of range (low voltage) – A bank	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0328	KS sense circuit out of range (high voltage) – A bank	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0332	KS sense circuit out of range (low voltage) – B bank	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0333	KS sense circuit out of range (high voltage) – B bank	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0335	CKPS circuit malfunction	Crank engine > 5 seconds – engine will not start; or start engine, run steady > 1000 rpm; or engine stall, ignition ON	Y	2	N	None	CKPS disconnected CKPS gap incorrect / foreign matter on sensor face CKPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS failure
P0340	CMPS circuit malfunction	Crank engine > 5 seconds	Y	2	N	When fault is detected, ECM: – Guesses camshaft position (engine starts 50% of time – rough running)	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0351	Ignition coil (A1) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Inhibits individual cylinder fuel injection – Inhibits A bank closed loop fuel metering – Inhibits A bank downstream O2S control	ECM to ignition module primary circuit open circuit, short circuit to ground, high resistance Ignition module to ignition coil primary circuit open circuit, short circuit to ground, high resistance Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure
P0352	Ignition coil (A2) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0353	Ignition coil (A3) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0354	Ignition coil (A4) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0355	Ignition coil (B1) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Inhibits individual cylinder fuel injection – Inhibits B bank closed loop fuel metering – Inhibits B bank downstream O2S control	Refer to P0351 Possible Causes
P0356	Ignition coil (B2) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0357	Ignition coil (B3) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0358	Ignition coil (B4) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0400	EGR flow malfunction	Engine at normal operating temperature; normal, varied driving for 3 minutes; then decel. / accel. 50 – 60 mph (80 – 95 km/h), within 6 seconds between 1700 – 2050 rpm	Y	2	N	None	EGR valve connector pins high resistance EGR pipe / exhaust manifold leak EGR pipe blocked EGR valve stuck open / closed, blocked EGR valve failure
P0405	EGR drive circuits open circuit	Ignition ON > 5 seconds	Y	2	N	None	EGR valve power supply circuit open circuit EGR valve to ECM drive circuit pair – EGR pins 1/3, 4/6 open circuit, high resistance EGR valve failure (stepper motor open circuit)
P0406	EGR drive circuits short circuit	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Inhibits EGR	EGR valve to ECM drive circuit pair – EGR pins 1/3, 4/6 short circuit to ground or high voltage EGR valve failure (stepper motor short circuit)
P0420	Catalyst efficiency below threshold – A bank	Ambient (IATS) temperature > 20 °C (68 °F); engine at normal operating temperature; normal, varied driving for 3 minutes; then, constant steady throttle 50 – 60 mph (80 – 95 km/h), 1500 – 2300 rpm > 15 seconds; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1900 rpm > 15 seconds	Y	2	N	None	HO2S / O2S disconnected HO2S / O2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream O2S failure Catalyst failure
P0430	Catalyst efficiency below threshold – B bank	Ambient (IATS) temperature > 20 °C (68 °F); engine at normal operating temperature; normal, varied driving for 3 minutes; then, constant steady throttle 50 – 60 mph (80 – 95 km/h), 1500 – 2300 rpm > 15 seconds; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1900 rpm > 15 seconds	Y	2	N	None	HO2S / O2S disconnected HO2S / O2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream O2S failure Catalyst failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0441	EVAP system incorrect purge flow	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 minutes (from engine start); fuel tank > 1/4 full	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	EVAPP to ECM drive circuit open circuit, short circuit, high resistance EVAPP power supply circuit open circuit EVAPP to engine purge pipe damaged / blocked / leaking EVAPP operating vacuum hose leak / blockage EVAPP failure
P0444	EVAPP valve circuit open circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	Refer to P0441 Default Action	EVAPP to ECM drive circuit open circuit or high resistance EVAPP failure
P0445	EVAPP valve circuit short circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	Refer to P0441 Default Action	EVAPP to ECM drive circuit short circuit to ground EVAPP failure
P0460	Fuel level sense signal performance	Drive > 30 miles (48 km)	Y	2	N	None	Fuel level sensor to instrument pack circuits intermittent short or open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)
P0506	Idle rpm lower than expected	Engine at normal operating temperature; transmission at normal operating temperature; gear "N"; idle > 1 minute 40 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period)	Y	2	N	None	Air intake blockage Accessory drive overload (defective / seized component) Throttle valve stuck closed Throttle assembly failure
P0507	Idle rpm higher than expected	Engine at normal operating temperature; transmission at normal operating temperature; gear "N"; idle > 1 minute 40 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period)	Y	2	N	None	Intake air leak between MAFS and throttle Intake air leak between throttle and engine Engine breather leak Cruise control vacuum failure Throttle valve stuck open Throttle assembly failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0560	Vehicle voltage malfunction	Ignition ON > 35 seconds	Y	2	N	None	ECM battery power supply open circuit, high resistance ECM ignition power supply open circuit, high resistance
P0566	Cruise control CANCEL switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground CANCEL switch failure (stuck ON)
P0567	Cruise control RESUME switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground RESUME switch failure (stuck ON)
P0568	Cruise control switch ground malfunction	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel open circuit Steering wheel cassette reel open circuit or high resistance Cassette reel to ECM circuit (ACCEL / DECEL) open circuit or high resistance ACCEL / DECEL switch failure
P0569	Cruise control DECEL / SET (SET-) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground DECEL / set switch failure (stuck ON)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0570	Cruise control ACCEL / SET (SET+) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground ACCEL / set failure (stuck ON)
P0603	ECM data corrupted	Ignition ON > 5 seconds	Y	1	N	None	ECM failure
P1000	System checks not complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1104	MAFS ground malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	MAFS to ECM reference ground circuit open circuit, short circuit to high voltage, high resistance MAFS to ECM sensing circuit open circuit MAFS failure
P1111	System checks complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1121	Pedal position sensor circuit "A" range / performance	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1122	Pedal position sensor circuit "A" low voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1123	Pedal position sensor circuit "A" high voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) wire short circuit to high voltage Pedal position sensor failure
P1221	Pedal position sensor circuit "B" range / performance	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1222	Pedal position sensor circuit "B" low voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1223	Pedal position sensor circuit "B" high voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) wire short circuit to high voltage Pedal position sensor failure
P1224	Throttle control position error	Ignition ON > 3 minutes	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	Throttle adaptions not performed after battery disconnect TPS disconnected TPS to ECM sense circuits open circuit, high resistance Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay power supply open circuit ECM ground circuit fault (relay coil drive) Throttle motor to ECM drive circuits open circuit, short circuit, high resistance Throttle motor failure Throttle assembly failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1226	Mechanical guard sensor range / performance	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Mechanical guard sensor failure Mechanical guard actuator seized / spring broken
P1227	Mechanical guard sensor circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit open circuit or high resistance Sensor power supply fault Mechanical guard sensor failure
P1228	Mechanical guard sensor circuit high voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit short circuit to high voltage Mechanical guard sensor failure
P1229	Throttle motor control circuit malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure
P1230	Fuel pump relay malfunction	Ignition ON > 5 seconds	Y	2	N	None	Fuel pump relay failure Fuel pump relay to ECM circuit fault Fuel pump relay coil power supply open circuit ECM ground circuit fault (relay coil drive)
P1235	VSV 1 circuit range / performance (mechanical guard position)	Drive with cruise control engaged > 15 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Vacuum leak / blockage between the throttle elbow and the throttle vacuum actuator Vacuum actuator failure Mechanical guard actuator seized / spring broken

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1236	VSV 1 (vacuum) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1 disconnected VSV 1 to ECM drive circuit high resistance, open circuit or short circuit VSV 1 power supply open circuit VSV 1 failure
P1237	VSV 2 (atmosphere) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 2 disconnected VSV 2 to ECM drive circuit high resistance, open circuit or short circuit VSV 2 power supply open circuit VSV 2 failure
P1238	VSV 3 (release) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 3 disconnected VSV 3 to ECM drive circuit high resistance, open circuit or short circuit VSV 3 ground circuit fault VSV 3 failure
P1240	Sensor reference voltage malfunction (TPS, pedal position and mechanical guard sensors) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	ECM to throttle sensors reference voltage circuit short circuit to ground, short circuit to high voltage, open circuit, high resistance TPS, pedal position and mechanical guard sensor(s) failure(s)
P1241	Sensor power supply low voltage (TPS, pedal position and mechanical guard sensors) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to throttle sensors reference voltage circuit short circuit to ground TPS, pedal position and mechanical guard sensor(s) failure(s)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1242	Sensor power supply high voltage (TPS, pedal position and mechanical guard sensors) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to throttle sensors reference voltage circuit open circuit, high resistance, short circuit to high voltage TPS, pedal position and mechanical guard sensor(s) failure(s)
P1243	Sensor reference ground malfunction (throttle sensors, ECTS, IATS) (ECM pins EM10-20, EM11-12)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to sensors reference ground circuit open circuit, high resistance Throttle sensor(s), ECTS, IATS failure(s)
P1245	Engine crank signal low voltage	Start engine; idle	Y	2	N	None	Starter relay coil to ECM / BPM circuit open circuit
P1246	Engine crank signal high voltage	Start engine; drive / accelerate > 13 mph (20 km/h) 1200 – 3000 rpm decelerate to stop; repeat (5 times total)	Y	2	N	None	Starter relay coil to ECM / BPM circuit short circuit to B+ voltage BPM failure
P1250	Engine load malfunction	Engine at normal operating temperature; drive vehicle; accelerate from 3500 to 6000 rpm within 6 seconds; drive 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds	N	N	N	None	Air intake leak Engine breather leak TPS circuit fault (DTC P0121) Throttle valve spring failure
P1251	Throttle position malfunction (engine off)	Drive vehicle; decelerate to stop, ignition OFF > 5 seconds (foot off accelerator); ignition ON	N	N	N	None	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits (“1” or “2”) short circuit to high voltage TPS failure Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure Throttle assembly failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1252	Mechanical guard position malfunction (cruise control)	Drive vehicle; engage cruise control > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1,2,3 vacuum and/or electrical circuit fault(s) open circuit, short circuit or high resistance Mechanical guard sensor to ECM sense circuit Mechanical guard sensor failure Mechanical guard actuator seized / spring broken Throttle vacuum actuator fault
P1253	Mechanical guard position malfunction (engine off)	Engine at normal operating temperature; drive / accelerate from 3500 to 6000 rpm within 6 seconds; decelerate to stop, ignition OFF > 5 seconds (foot off accelerator); ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1,2,3 vacuum and/or electrical circuit fault(s) Mechanical guard sensor to ECM sense circuit open circuit, short circuit or high resistance Mechanical guard sensor failure Mechanical guard actuator seized / spring broken Throttle vacuum actuator fault
P1260	Security input (not used – NAS)	Ignition ON > 10 seconds	N	N	N	None	KTM to ECM circuit short circuit, high resistance or open circuit KTM failure
P1313	Misfire rate catalyst damage – A bank (1) Note: This DTC will flag only when accompanied by a random or individual cylinder misfire DTC: P0300; P0301 – P0304	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module to ignition coil primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1314	Misfire rate catalyst damage – B bank (2) Note: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P1313 Possible Causes
P1316	Misfire excess emission Note: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P1313 Possible Causes
P1336	CKPS / CMPS sensors synchronization malfunction	Run engine > 5 seconds	Y	2	N	None	CKPS / CMPS disconnected CKPS / CMPS gap incorrect / foreign matter on sensor face CKPS / CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS / CMPS failure
P1367	Ignition monitor (ignition module 1)	Run engine > 5 seconds < 3000 rpm	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition module 1 disconnected Ignition module 1 to ECM circuits open circuit, short circuit to ground or short circuit to B+ voltage Ignition module 1 ground circuit fault Ignition coil relay failure Ignition coil open / short circuit Ignition module 1 failure

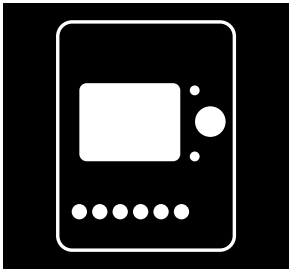
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1368	Ignition monitor (ignition module 2)	Run engine > 5 seconds < 3000 rpm	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition module 2 disconnected Ignition module 2 to ECM circuits open circuit, short circuit to ground or short circuit to B+ voltage Ignition module 2 ground circuit fault Ignition coil relay failure Ignition coil open / short circuit Ignition module 2 failure
P1392	VVT solenoid circuit open circuit – A bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve circuit open circuit, high resistance, short circuit to high voltage VVT solenoid valve failure
P1393	VVT solenoid circuit short circuit – A bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve short circuit to ground VVT solenoid valve failure
P1396	VVT solenoid malfunction – B bank	Engine at normal operating temperature; drive > 13 mph (20 km/h) > 1700 rpm > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve circuit fault (refer to P1392, P1393) VVT solenoid valve actuator sticking Oil supply fault VVT unit fault Camshaft drive fault CKPS / CMPS circuits fault(s) (refer to P0335, P0340)
P1397	VVT solenoid circuit open circuit – B bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve open circuit, high resistance, short circuit to high voltage VVT solenoid valve failure
P1398	VVT solenoid circuit short circuit – B bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve short circuit to ground VVT solenoid valve failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1475	Radiator fans slow (series) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "series" drive circuit (relay pin 9) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P1476	Radiator fans fast (parallel) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "parallel" drive circuit (relay pin 7) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P1516	Gear change PARK / NEUTRAL driving malfunction	Engine at normal operating temperature; drive 50 – 63 mph (80 – 100 km/h) 1800 – 2200 rpm > 30 seconds	Y	2	N	None	Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure D – 4 switch to TCM circuit open circuit or high resistance D – 4 switch fault
P1517	Engine cranking PARK / NEUTRAL malfunction	Start engine	N	N*	N	When fault is detected, ECM: – Inhibits fuel injection	Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure

* If engine will not start, CHECK ENGINE MIL will remain on.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1571	Brake switch malfunction	Drive vehicle; engage cruise control > 10 seconds disengage cruise control; repeat (5 total cycles)	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Brake switch to ECM circuit open circuit, short circuit to ground, high resistance Brake switch ignition switched ground circuit open circuit Brake switch failure Brake cancel switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch to cruise control switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch ignition switched power supply open circuit Brake cancel switch failure Cruise control switch failure
P1606	EMS control relay malfunction	Ignition ON; ignition OFF; ignition ON > 5 seconds	N	N	None	None	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)
P1609	ECM microprocessor-to-microprocessor communication failure	Ignition ON > 5 seconds	Y	2	N	None	ECM FCCP (programming) circuit (ECM pin EM11-3) short circuit to ground ECM failure
P1611	Throttle angle malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction / stability control – Inhibits power limiting	TPS circuit fault (refer to P0121) Pedal position sensor circuit fault (refer to P01121) Throttle assembly failure ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1612	Throttle offset malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1611 Default Action	TPS circuit fault (refer to P0121) Pedal position sensor circuit fault (refer to P01121) Throttle assembly failure ECM failure
P1637	CAN ABS/TCCM token missing	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Inhibits cruise control (Idle speed control quality deteriorates)	CAN open circuit fault – ABS/TCCM to ECM CAN short circuit fault ABS/TCCM failure ECM failure
P1638	CAN INST token missing	Ignition ON > 5 seconds	Y	1	N	None (Engine speed and coolant temperature data missing at instrument pack)	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure
P1642	CAN circuit malfunction	Ignition ON > 5 seconds	Y	1	N	When fault is detected, ECM: – Inhibits cruise control (All CAN data unavailable)	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source
P1643	CAN TCM token missing	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Limits throttle to 30% (Torque reduction request data missing results in harsh transmission shifts)	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure



DTC Summaries

V8 AJ26 Engine Management – 1998/99 MY (1999 SC only)

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure. PDU will report if any portion of the Systems Readiness Test has not been completed in the following manner:

The following less frequently performed tests are identified as incomplete:

- Module $51 (identifies EMS ECM)
  Catalyst
  Evaporative purge system
  O2 Sensor
  EGR system

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.
If DTC P1000 is logged in memory, the on-board diagnostic tests **have not** been completed.
If DTC P1111 is logged in memory, all on-board diagnostic tests **have** been completed.

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS		"SERVICE DRIVE CYCLE" For the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	1	1 "TRIP" to activate indicator(s).
	2	2 CONSECUTIVE "TRIPS" to activate indicator(s).
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE
	N/A	NORMALLY ASPIRATED
	SC	SUPERCHARGED
DEFAULT ACTION		ECM default action; Logged – DTC stored in memory buffer; Flagged – DTC stored in memory / CHECK ENGINE MIL activated.
POSSIBLE CAUSES		HIGH VOLTAGE – High voltage can be either EMS sensor supply voltage (5 volt) or B+ voltage.

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

PDU DATALOGGER ACRONYMS

ACCREQ	A/C compressor clutch request
ACHPS	A/C refrigerant high pressure switch
ACLPS	A/C refrigerant low pressure switch
ADV	Ignition timing advance (Cyl 1, A bank)
BARO	Barometric pressure sensor
BAT1+	Battery B+ supply to ECM
CCV	Canister close valve
CLV	Calculated load value
CRANKREQ	Crank request (from BPM)
CRUISEA	Cruise control accel / decel switch
CRUISEB	Cruise resume / cancel switch
CRUISEC	Cruise cancel switch
CRUISED	Cruise control set / inch / decel switch
CRUISEO	Cruise control ON / OFF switch
CRUISER	Cruise control resume switch
CRUISES	Cruise control set / inch / accel switch
CRUISEC1	Cruise control cancel switch
DTC1	Number of DTCs logged this trip
DTCS	Number of permanent DTCs logged
ECT	Engine coolant temperature
EGR	Exhaust gas recirculation
EVAP	Evaporative emission system monitor
FANF	Cooling fan fast
FANFRLY	Cooling fan relay fast
FANS	Cooling fan slow
FANSRLY	Cooling fan relay slow
FBRAKE2	Brake switch
FP1	Fuel pump 1
FPRLY1	Fuel pump relay 1
FP2	Fuel pump 2
FPRLY2	Fuel pump relay 2
FTP	Fuel tank pressure
GUARD1	Mechanical guard sensor
O2SB1D	Oxygen sensor (downstream) A bank
O2SB2D	Oxygen sensor (downstream) B bank
HO2SB1U	Heated oxygen sensor (upstream) A bank
HO2SB2U	Heated oxygen sensor (upstream) B bank
HTDSC	Heated windshield request
IAT	Intake air temperature
IAT2	Intake air temperature 2
KS1A	Knock sensor 1 A bank
KS1B	Knock sensor 1 B bank
KS4A	Knock sensor 4 A bank
KS4B	Knock sensor 4 B bank
KSFA	Knock sensor fail A bank
KSFB	Knock sensor fail B bank
LTFT1	Long term fuel trim A bank
LTFT2	Long term fuel trim B bank
MAF	Mass air flow
MAFGND1	MAFS ground
MAFS1	Mass air flow sensor
MPROBE	Measurement probe (RED)
PKBRAKE	Park brake switch
PNPS	Park / neutral position switch (rotary switch)
PPS1	Pedal position sensor track A
PPS2	Pedal position sensor track B
RPM	Engine speed
SPS	Sensor power supply monitor
STFT1	Short term fuel trim A bank
STFT2	Short term fuel trim B bank
STFTB1D	Short term fuel trim A bank downstream
STFTB1U	Short term fuel trim A bank upstream
STFTB2D	Short term fuel trim B bank downstream
STFTB2U	Short term fuel trim B bank upstream
TPS	Throttle position sensor
TPS1	Throttle position sensor track 1
TPS2	Throttle position sensor track 2
TTP	Target throttle position
VSS	Vehicle speed
VSVRM	Vacuum switching valve release monitor
VSVAM	Vacuum switching valve atmosphere monitor
VSVVM	Vacuum switching valve vacuum monitor
VVTBM	Variable valve timing (B bank) monitor

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0101	MAFS range / performance	Engine at normal operating temperature; drive 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction (TPS) MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit or short circuit to ground MAFS failure
P0103	MAFS sense circuit high voltage	Ignition ON > 5 seconds	Y	2	1	When AMBER MIL is activated [A, M] (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	MAFS to ECM reference ground circuit open circuit MAFS to ECM sensing circuit short circuit to high voltage MAFS failure
P0106	BARO circuit low voltage	Ignition ON > 5 seconds	Y	2	N	None	BARO failure (internal ECM fault)
P0107	BARO circuit high voltage	Ignition ON > 5 seconds	Y	2	N	None	BARO failure (internal ECM fault)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0111	IATS range / performance	Engine idle > 40 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	Blocked air cleaner Air intake leak Engine breather leak IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50 °C (122 °F)	IATS to ECM wiring short circuit to ground IATS failure
P0116	ECTS range / performance	Engine coolant temperature ambient; start engine; drive at normal operating temperature > 13 mph (20 km/h) > 3 minutes	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	ECTS disconnected ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage ECTS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0118	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	Refer to P0117 Default Action	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS failure
P0121	TPS circuit range / performance	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits ("1" or "2") short circuit to high voltage TPS failure
P0122	TPS circuit "1" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) open circuit or high resistance TPS failure
P0123	TPS circuit "1" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) short circuit to high voltage TPS failure
P0125	ECTS response (for closed loop fuel control)	Engine coolant temperature ambient; start engine; run engine to > 60 °C (140 °F) > 2 minutes	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR – Inhibits VVT	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage
P0131	HO2S sense circuit low voltage – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 40 mph (60 km/h); engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0132	HO2S sense circuit high voltage – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 3 mph (4 km/h)	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0133	HO2S sense circuit slow response – A bank, upstream (1)	Engine at normal operating temperature; drive at 50 – 62 mph (80 – 100 km/h); engine speed 1500 – 2500 rpm >10 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring intermittent open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0135	HO2S heater circuit malfunction – A bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 20 mph (30 km/h)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream O2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0137	O2S sense circuit low voltage – A bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S disconnected O2S to ECM wiring open circuit O2S short circuit to ground O2S failure
P0138	O2S sense circuit high voltage – A bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S sensing circuit short circuit to high voltage O2S ground (BRD – braided shield) open circuit O2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0140	O2S sense circuit no activity – A bank, downstream (2)	Engine at normal operating temperature; drive > 13 mph (20 km/h); engine speed > 1500 rpm; > 1 minute	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank downstream O2S control	O2S disconnected O2S mechanical damage O2S to ECM wiring open circuit O2S sensing circuit short circuit to high voltage O2S short circuit to ground O2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature O2S failure
P0151	HO2S sense circuit low voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 40 mph (60 km/h); engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0152	HO2S sense circuit high voltage – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 3 mph (4 km/h)	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0153	HO2S sense circuit slow response – B bank, upstream (1)	Engine at normal operating temperature; drive at 50 – 62 mph (80 – 100 km/h); engine speed 1500 – 2500 rpm >10 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring intermittent open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0155	HO2S heater circuit malfunction – B bank, upstream (1)	Engine at normal operating temperature; drive at steady speed > 20 mph (30 km/h)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream O2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0157	O2S sense circuit low voltage – B bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S disconnected O2S to ECM wiring open circuit O2S short circuit to ground
P0158	O2S sense circuit high voltage – B bank, downstream (2)	Ambient temperature < 70 °C (158 °F); engine at normal operating temperature; drive at steady speed > 13 mph (20 km/h) > 1 minute 10 seconds	Y	2	N	None	O2S sensing circuit short circuit to high voltage O2S ground (BRD – braided shield) open circuit O2S failure
P0160	O2S sense circuit no activity – B bank, downstream (2)	Engine at normal operating temperature; drive > 13 mph (20 km/h); engine speed > 1500 rpm; > 1 minute	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank downstream O2S control	O2S disconnected O2S mechanical damage O2S to ECM wiring open circuit O2S sensing circuit short circuit to high voltage O2S short circuit to ground O2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature O2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0171	A bank combustion too lean	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0174 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* – Inhibits EGR * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0172	A bank combustion too rich	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0175 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0174	B bank combustion too lean	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0171 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* – Inhibits EGR * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0175	B bank combustion too rich	Engine at normal operating temperature; drive at steady speed > 40 mph; engine speed 1300 – 4500 rpm > 1 minute 20 seconds	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream O2S control If DTC P0172 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0201	Fuel injector circuit malfunction – cylinder A1 (1)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR If DTCs for all A bank injectors are flagged: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream O2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction – cylinder A2 (2)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0203	Fuel injector circuit malfunction – cylinder A3 (3)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0204	Fuel injector circuit malfunction – cylinder A4 (4)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0205	Fuel injector circuit malfunction – cylinder B1 (5)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR If DTCs for all B bank injectors are flagged: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream O2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0206	Fuel injector circuit malfunction – cylinder B2 (6)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0207	Fuel injector circuit malfunction – cylinder B3 (7)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0208	Fuel injector circuit malfunction – cylinder B4 (8)	Engine at normal operating temperature; run engine > 30 seconds; engine speed 500 – 2500 rpm	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0222	TPS circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	TPS to ECM sensing circuit "2" (TPS pin 2) open circuit or high resistance TPS failure
P0223	TPS circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P0222 Default Action	TPS to ECM sensing circuit "2" (TPS pin 2) short circuit to high voltage TPS failure
P0300	Random misfire detected	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module to ignition coil primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) or P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0301	Misfire detected – cylinder A1 (1)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P0300 Possible Faults
P0302	Misfire detected – cylinder A2 (2)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0303	Misfire detected – cylinder A3 (3)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0304	Misfire detected – cylinder A4 (4)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0305	Misfire detected – cylinder B1 (5)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P0300 Possible Faults
P0306	Misfire detected – cylinder B2 (6)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0307	Misfire detected – cylinder B3 (7)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0308	Misfire detected – cylinder B4 (8)	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) or P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0327	KS sense circuit out of range (low voltage) – A bank	Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A,M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0328	KS sense circuit out of range (high voltage) – A bank	Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A,M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0332	KS sense circuit out of range (low voltage) – B bank	Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A,M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0333	KS sense circuit out of range (high voltage) – B bank	Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A,M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0335	CKPS circuit malfunction	Crank engine > 5 seconds – engine will not start; or start engine, run steady > 1000 rpm; or engine stall, ignition ON	Y	2	N	None	CKPS disconnected CKPS gap incorrect / foreign matter on sensor face CKPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0340	CMPS circuit malfunction	Crank engine > 5 seconds	Y	2	N	When fault is detected, ECM: – Guesses camshaft position (engine starts 50% of time – rough running)	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0351	Ignition coil (A1) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Inhibits individual cylinder fuel injection – Inhibits A bank closed loop fuel metering – Inhibits A bank downstream O2S control	ECM to ignition module primary circuit open circuit, short circuit to ground, high resistance Ignition module to ignition coil primary circuit open circuit, short circuit to ground, high resistance Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure
P0352	Ignition coil (A2) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0353	Ignition coil (A3) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0354	Ignition coil (A4) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0355	Ignition coil (B1) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Inhibits individual cylinder fuel injection – Inhibits B bank closed loop fuel metering – Inhibits B bank downstream O2S control	Refer to P0351 Possible Causes
P0356	Ignition coil (B2) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0357	Ignition coil (B3) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0358	Ignition coil (B4) primary / secondary circuit malfunction	Run engine steady < 3000 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0400	EGR flow malfunction	Engine at normal operating temperature; normal, varied driving for 3 minutes; then decel. / accel. 50 – 60 mph (80 – 95 km/h), within 6 seconds between 1700 – 2050 rpm	Y	2	N	None	EGR valve connector pins high resistance EGR pipe / exhaust manifold leak EGR pipe blocked EGR valve stuck open / closed, blocked EGR valve failure
P0405	EGR drive circuits open circuit	Ignition ON > 5 seconds	Y	2	N	None	EGR valve power supply circuit open circuit EGR valve to ECM drive circuit pair – EGR pins 1/3, 4/6 open circuit, high resistance EGR valve failure (stepper motor open circuit)
P0406	EGR drive circuits short circuit	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Inhibits EGR	EGR valve to ECM drive circuit pair – EGR pins 1/3, 4/6 short circuit to ground or high voltage EGR valve failure (stepper motor short circuit)
P0420	Catalyst efficiency below threshold – A bank	Ambient (IATS) temperature > 20 °C (68 °F); engine at normal operating temperature; normal, varied driving for 3 minutes; then, constant steady throttle 50 – 60 mph (80 – 95 km/h), 1500 – 2300 rpm > 15 seconds; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1900 rpm > 15 seconds	Y	2	N	None	HO2S / O2S disconnected HO2S / O2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream O2S failure Catalyst failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0430	Catalyst efficiency below threshold – B bank	Ambient (IATS) temperature > 20 °C (68 °F); engine at normal operating temperature; normal, varied driving for 3 minutes; then, constant steady throttle 50 – 60 mph (80 – 95 km/h), 1500 – 2300 rpm > 15 seconds; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1900 rpm > 15 seconds	Y	2	N	None	HO2S / O2S disconnected HO2S / O2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream O2S failure Catalyst failure
P0442	EVAP (system) leak detected	Fuel tank level between 15% - 85% full; after start-up, run engine 7 minutes. With engine at normal operating temperature, drive vehicle 39 - 50 mph (62 - 80 km/h) 6> minutes	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	Fuel cap off Fuel cap seal defective EVAP system leak (canister damage, pipework damage EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP operating vacuum hose leak / blockage EVAPP valve failure
P0444	EVAPP valve circuit open circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	Refer to P0442 Default Action	EVAPP to ECM drive circuit open circuit or high resistance EVAPP failure
P0445	EVAPP valve circuit short circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	Refer to P0442 Default Action	EVAPP to ECM drive circuit short circuit to ground EVAPP failure
P0447	CCV (canister close valve) circuit open circuit	Ignition ON > 5 seconds (ECM CCV drive inactive – valve open)	Y	2	N	When CHECK ENGINE MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV to ECM drive circuit open circuit, high resistance or short circuit to ground CCV failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0448	CCV (canister close valve) circuit short circuit	Ignition ON > 5 seconds (ECM CCV drive active – valve closed; evaporative leak check active – P0442)	Y	2	N	When CHECK ENGINE MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV to ECM drive circuit short circuit to high voltage CCV failure
P0452	FTP (fuel tank pressure) sensor circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When CHECK ENGINE MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	Inhibits EVAP leak check monitoring FTP sensor disconnected FTP sensor to ECM sense circuit open circuit or short circuit to ground FTP sensor to ECM power supply circuit open circuit or short circuit to ground FTP sensor failure
P0453	FTP (fuel tank pressure) sensor circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When CHECK ENGINE MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	FTP sensor to ECM signal ground circuit open circuit FTP sensor to ECM wiring (supply, sense, signal ground) short circuit to each other FTP sensor to ECM sense circuit short circuit to high voltage FTP sensor failure
P0460	Fuel level sense signal performance	Drive > 30 miles (48 km)	Y	2	N	None	Fuel level sensor to instrument pack circuits intermittent short or open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)
P0506	Idle rpm lower than expected	Engine at normal operating temperature; transmission at normal operating temperature; gear "N"; idle > 1 minute 40 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period)	Y	2	N	None	Air intake blockage Accessory drive overload (defective / seized component) Throttle valve stuck closed Throttle assembly failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0507	Idle rpm higher than expected	Engine at normal operating temperature; transmission at normal operating temperature; gear "N"; idle > 1 minute 40 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period)	Y	2	N	None	Intake air leak between MAFS and throttle Intake air leak between throttle and engine Engine breather leak Cruise control vacuum failure Throttle valve stuck open Throttle assembly failure
P0560	Vehicle voltage malfunction	Ignition ON > 35 seconds	Y	2	N	None	ECM battery power supply open circuit, high resistance ECM ignition power supply open circuit, high resistance
P0566	Cruise control CANCEL switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground CANCEL switch failure (stuck ON)
P0567	Cruise control RESUME switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground RESUME switch failure (stuck ON)
P0568	Cruise control switch ground malfunction	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel open circuit Steering wheel cassette reel open circuit or high resistance Cassette reel to ECM circuit (ACCEL / DECEL) open circuit or high resistance ACCEL / DECEL switch failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0569	Cruise control DECEL / SET (SET –) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground DECEL / set switch failure (stuck ON)
P0570	Cruise control ACCEL / SET (SET +) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground ACCEL / set failure (stuck ON)
P0603	ECM data corrupted	Ignition ON > 5 seconds	Y	1	N	None	ECM failure
P1000	System checks not complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1104	MAFS ground malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge – Inhibits EGR	MAFS to ECM reference ground circuit open circuit, short circuit to high voltage, high resistance MAFS to ECM sensing circuit open circuit MAFS failure
P1111	System checks complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1112	IATS 2 sense circuit high voltage (low charge air temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 120 °C (248 °F)	IATS 2 disconnected IATS 2 to ECM sensing circuit high resistance, open circuit or short circuit to high voltage IATS 2 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1113	IATS 2 sense circuit low voltage (high charge air temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 120 °C (248 °F)	Supercharger intercooler failure IATS 2 to ECM sensing circuit short circuit to ground IATS 2 failure
P1121	Pedal position sensor circuit "A" range / performance	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1122	Pedal position sensor circuit "A" low voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1123	Pedal position sensor circuit "A" high voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "A" (sensor pin 5) wire short circuit to high voltage Pedal position sensor failure
P1221	Pedal position sensor circuit "B" range / performance	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1222	Pedal position sensor circuit "B" low voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1223	Pedal position sensor circuit "B" high voltage	Ignition ON > 5 seconds	N	N	1 [A, M]	None	Pedal position sensor to ECM sense circuit "B" (sensor pin 3) wire short circuit to high voltage Pedal position sensor failure
P1224	Throttle control position error	Ignition ON > 3 minutes	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	Throttle adaptions not performed after battery disconnect TPS disconnected TPS to ECM sense circuits open circuit, high resistance Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay power supply open circuit ECM ground circuit fault (relay coil drive) Throttle motor to ECM drive circuits open circuit, short circuit, high resistance Throttle motor failure Throttle assembly failure
P1226	Mechanical guard sensor range / performance	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Mechanical guard sensor failure Mechanical guard actuator seized / spring broken
P1227	Mechanical guard sensor circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit open circuit or high resistance Sensor power supply fault Mechanical guard sensor failure
P1228	Mechanical guard sensor circuit high voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Inhibits cruise control	Mechanical guard sensor to ECM sense circuit short circuit to high voltage Mechanical guard sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1229	Throttle motor control circuit malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure
P1230	Fuel pump relay malfunction Note: This DTC covers the N/A system single fuel pump and the SC system fuel pump 1.	Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A,M]	N/A – None SC – When fault is detected, ECM: – Operates fuel pump 2	Fuel pump relay failure Fuel pump relay to ECM circuit fault Fuel pump relay coil power supply open circuit ECM ground circuit fault (relay coil drive)
P1235	VSV 1 circuit range / performance (mechanical guard position)	Drive with cruise control engaged > 15 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Vacuum leak / blockage between the throttle elbow and the throttle vacuum actuator Vacuum actuator failure Mechanical guard actuator seized / spring broken
P1236	VSV 1 (vacuum) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1 disconnected VSV 1 to ECM drive circuit high resistance, open circuit or short circuit VSV 1 power supply open circuit VSV 1 failure
P1237	VSV 2 (atmosphere) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 2 disconnected VSV 2 to ECM drive circuit high resistance, open circuit or short circuit VSV 2 power supply open circuit VSV 2 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1238	VSV 3 (release) circuit failure	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 3 disconnected VSV 3 to ECM drive circuit high resistance, open circuit or short circuit VSV 3 ground circuit fault VSV 3 failure
P1240	Sensor reference voltage malfunction (throttle sensors, fuel tank pressure sensor) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control – Inhibits power limiting	ECM to sensors reference voltage circuit short circuit to ground, short circuit to high voltage, open circuit, high resistance TPS, pedal position and mechanical guard sensor(s), fuel tank pressure sensor failure(s)
P1241	Sensor reference voltage low (throttle sensors, fuel tank pressure sensor) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit short circuit to ground TPS, pedal position and mechanical guard sensor(s), fuel tank pressure sensor failure(s)
P1242	Sensor reference voltage high (throttle sensors, fuel tank pressure sensor) (ECM pins EM10-21, EM11-8)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit open circuit, high resistance, short circuit to high voltage TPS, pedal position and mechanical guard sensor(s), fuel tank pressure sensor failure(s)
P1243	Sensor reference ground malfunction (throttle sensors, fuel tank pressure sensor, ECTS, IATS, IATS 2) (ECM pins EM10-20, EM11-12)	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1240 Default Action	ECM to sensors reference ground circuit open circuit, high resistance Throttle sensor(s), fuel tank pressure sensor, ECTS, IATS, IATS 2 failure(s)
P1245	Engine crank signal low voltage	Start engine; idle	Y	2	N	None	Starter relay coil to ECM / BPM circuit open circuit

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1246	Engine crank signal high voltage	Start engine; drive / accelerate > 13 mph (20 km/h) 1200 – 3000 rpm decelerate to stop; repeat (5 times total)	Y	2	N	None	Starter relay coil to ECM / BPM circuit short circuit to B+ voltage BPM failure
P1250	Engine load malfunction	Engine at normal operating temperature; drive vehicle; accelerate from 3500 to 6000 rpm within 6 seconds; drive 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds	N	N	N	None	Air intake leak Engine breather leak TPS circuit fault (DTC P0121) Throttle valve spring failure
P1251	Throttle position malfunction (engine off)	Drive vehicle; decelerate to stop, ignition OFF > 5 seconds (foot off accelerator); ignition ON	N	N	N	None	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits ("1" or "2") short circuit to high voltage TPS failure Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure Throttle assembly failure
P1252	Mechanical guard position malfunction (cruise control)	Drive vehicle; engage cruise control > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1,2,3 vacuum and/or electrical circuit fault(s) open circuit, short circuit or high resistance Mechanical guard sensor to ECM sense circuit Mechanical guard sensor failure Mechanical guard actuator seized / spring broken Throttle vacuum actuator fault
P1253	Mechanical guard position malfunction (engine off)	Engine at normal operating temperature; drive / accelerate from 3500 to 6000 rpm within 6 seconds; decelerate to stop, ignition OFF > 5 seconds (foot off accelerator); ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	VSV 1,2,3 vacuum and/or electrical circuit fault(s) Mechanical guard sensor to ECM sense circuit open circuit, short circuit or high resistance Mechanical guard sensor failure Mechanical guard actuator seized / spring broken Throttle vacuum actuator fault

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1260	Security input malfunction	Ignition ON > 10 seconds	N	N	N	None	KTM to ECM circuit short circuit, high resistance or open circuit KTM failure
P1313	Misfire rate catalyst damage – A bank (1) Note: This DTC will flag only when accompanied by a random or individual cylinder misfire DTC: P0300; P0301 – P0304	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module to ignition coil primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition coil failure Ignition module failure
P1314	Misfire rate catalyst damage – B bank (2) Note: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P1313 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1316	Misfire excess emission Note: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at idle, or steady between 500 – 2500 rpm; > 2 minutes 30 seconds	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge – Inhibits EGR	Refer to P1313 Possible Causes
P1336	CKPS / CMPS sensors synchronization malfunction	Run engine > 5 seconds	Y	2	N	None	CKPS / CMPS disconnected CKPS / CMPS gap incorrect / foreign matter on sensor face CKPS / CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS / CMPS failure
P1367	Ignition monitor (ignition module 1)	Run engine > 5 seconds < 3000 rpm	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition module 1 disconnected Ignition module 1 to ECM circuits open circuit, short circuit to ground or short circuit to B+ voltage Ignition module 1 ground circuit fault Ignition coil relay failure Ignition coil open / short circuit Ignition module 1 failure
P1368	Ignition monitor (ignition module 2)	Run engine > 5 seconds < 3000 rpm	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition module 2 disconnected Ignition module 2 to ECM circuits open circuit, short circuit to ground or short circuit to B+ voltage Ignition module 2 ground circuit fault Ignition coil relay failure Ignition coil open / short circuit Ignition module 2 failure

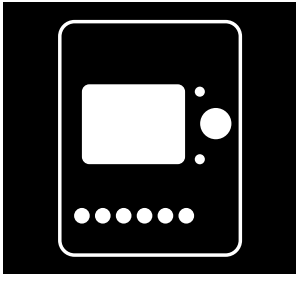
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1392	VVT solenoid circuit open circuit – A bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve circuit open circuit, high resistance, short circuit to high voltage VVT solenoid valve failure
P1393	VVT solenoid circuit short circuit – A bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve short circuit to ground VVT solenoid valve failure
P1396	VVT solenoid malfunction – B bank	Engine at normal operating temperature; drive > 13 mph (20 km/h) > 1700 rpm > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve circuit fault (refer to P1392, P1393) VVT solenoid valve actuator sticking Oil supply fault VVT unit fault Camshaft drive fault CKPS / CMPS circuits fault(s) (refer to P0335, P0340)
P1397	VVT solenoid circuit open circuit – B bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve open circuit, high resistance, short circuit to high voltage VVT solenoid valve failure
P1398	VVT solenoid circuit short circuit – B bank	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits VVT	ECM to VVT solenoid valve short circuit to ground VVT solenoid valve failure
P1474	Intercooler coolant pump relay malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits throttle opening to 30%	Intercooler pump relay failure Intercooler pump relay to ECM drive circuit fault Intercooler pump relay coil ground circuit fault ECM power supply fault
P1475	Radiator fans slow (series) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "series" drive circuit (relay pin 9) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1476	Radiator fans fast (parallel) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "parallel" drive circuit (relay pin 7) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P1516	Gear change PARK / NEUTRAL driving malfunction	Engine at normal operating temperature; drive 50 – 63 mph (80 – 100 km/h) 1800 – 2200 rpm > 30 seconds	Y	2	N	None	Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure D – 4 switch to TCM circuit open circuit or high resistance D – 4 switch fault
P1517	Engine cranking PARK / NEUTRAL malfunction	Start engine	N	N*	N	When fault is detected, ECM: – Inhibits fuel injection	Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure
P1571	Brake switch malfunction	Drive vehicle; engage cruise control > 10 seconds disengage cruise control; repeat (5 total cycles)	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Brake switch to ECM circuit open circuit, short circuit to ground, high resistance Brake switch ignition switched ground circuit open circuit Brake switch failure Brake cancel switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch to cruise control switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch ignition switched power supply open circuit Brake cancel switch failure Cruise control switch failure

* If engine will not start, CHECK ENGINE MIL will remain on.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1606	EMS control relay malfunction	Ignition ON; ignition OFF; ignition ON > 5 seconds	N	N	None	None	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)
P1609	ECM microprocessor-to-microprocessor communication failure	Ignition ON > 5 seconds	Y	2	N	None	ECM FCCP (programming) circuit (ECM pin EM11-3) short circuit to ground ECM failure
P1611	Throttle angle malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	When RED MIL is activated (first trip), ECM: – Defaults throttle to mechanical guard mode – Inhibits idle speed control – Inhibits cruise control – Inhibits traction / stability control – Inhibits power limiting	TPS circuit fault (refer to P0121) Pedal position sensor circuit fault (refer to P01121) Throttle assembly failure ECM failure
P1612	Throttle offset malfunction	Ignition ON > 5 seconds	Y	2	1 [R, M]	Refer to P1611 Default Action	TPS circuit fault (refer to P0121) Pedal position sensor circuit fault (refer to P01121) Throttle assembly failure ECM failure
P1637	CAN ABS/TCCM token missing	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Inhibits cruise control (Idle speed control quality deteriorates)	CAN open circuit fault – ABS/TCCM to ECM CAN short circuit fault ABS/TCCM failure ECM failure
P1638	CAN INST token missing	Ignition ON > 5 seconds	Y	1	N	None (Engine speed and coolant temperature data missing at instrument pack)	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure
P1642	CAN circuit malfunction	Ignition ON > 5 seconds	Y	1	N	When fault is detected, ECM: – Inhibits cruise control (All CAN data unavailable)	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1643	CAN TCM token missing	Ignition ON > 5 seconds	Y	2	N	When fault is detected, ECM: – Limits throttle to 30% (Torque reduction request data missing results in harsh transmission shifts)	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure
P1646	Fuel pump 2 (SC) relay malfunction Note: This DTC applies only to the SC system fuel pump 2.	Ignition ON > 5 seconds	Y	2	2 [A, M]	None	Fuel pump 2 relay failure Fuel pump 2 relay to ECM circuit fault Fuel pump 2 relay coil power supply open circuit ECM ground circuit fault (relay coil drive)



DTC Summaries

AJ27 Engine Management – 1999 MY

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure. PDU will report if any portion of the Systems Readiness Test has not been completed in the following manner:

The following less frequently performed tests are identified as incomplete:

Module $11 (identifies EMS ECM)
- Catalyst
- Evaporative purge system
- O2 sensor
- O2 sensor heaters

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.

– If DTC P1000 is logged in memory, the on-board diagnostic tests have not been completed.
– If DTC P1111 is logged in memory, all on-board diagnostic tests have been completed.

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS		"SERVICE DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	1	1 "TRIP" to activate indicator(s).
	2	2 CONSECUTIVE "TRIPS" to activate indicator(s).
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE
DEFAULT ACTION		ECM default action; Logged – DTC stored in memory buffer; Flagged – DTC stored in memory / CHECK ENGINE MIL activated.
POSSIBLE CAUSES		HIGH VOLTAGE – High voltage can be either EMS 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.

PDU DATALOGGER ACRONYMS

AACV	Air assist control valve
ACCREQ	A/C compressor clutch request
ACHPS	A/C refrigerant high pressure switch
ACLPS	A/C refrigerant low pressure switch
ADV	Ignition timing advance (Cyl 1, A bank)
BARO	Barometric pressure sensor
BAT1+	Battery B+ supply to ECM
CCV	Canister close valve
CLV	Calculated load value
CRANKREQ	Crank request (from BPM)
CRUISEA	Cruise control accel / decel switch
CRUISEB	Cruise resume / cancel switch
CRUISEC	Cruise cancel switch
CRUISED	Cruise control set / inch / decel switch
CRUISEO	Cruise control ON / OFF switch
CRUISER	Cruise control resume switch
CRUISES	Cruise control set / inch / accel switch
CRUISEC1	Cruise control cancel switch
DTC1	Number of DTCs logged this trip
DTCS	Number of permanent DTCs logged
ECT	Engine coolant temperature
EOT	Engine oil temperature
EVAP	Evaporative emission system monitor
FANF	Cooling fan fast
FANFRLY	Cooling fan relay fast
FANS	Cooling fan slow
FANSRLY	Cooling fan relay slow
FBRAKE2	Brake switch
FP	Fuel pump
FPRLY	Fuel pump relay
FTP	Fuel tank pressure
HO2SB1D	Heated oxygen sensor (downstream) A bank
HO2SB2D	Heated oxygen sensor (downstream) B bank
HO2SB1U	Heated oxygen sensor (upstream) A bank
HO2SB2U	Heated oxygen sensor (upstream) B bank
HTDSC	Heated windshield request
IAT	Intake air temperature
KS1A	Knock sensor 1 A bank
KS1B	Knock sensor 1 B bank
KS4A	Knock sensor 4 A bank
KS4B	Knock sensor 4 B bank
KSFA	Knock sensor fail A bank
KSFB	Knock sensor fail B bank
LTFT1	Long term fuel trim A bank
LTFT2	Long term fuel trim B bank
MAF	Mass air flow
MAFGND1	MAFS ground
MAFS1	Mass air flow sensor

PDU DATALOGGER ACRONYMS

MPROBE	Measurement probe (RED)
PKBRAKE	Park brake switch
PNPS	Park / neutral position switch (rotary switch)
PPS	Pedal position sensor
PPS1	Pedal position sensor track 1
PPS2	Pedal position sensor track 2
RPM	Engine speed
SPS	Sensor power supply monitor
STFT1	Short term fuel trim A bank
STFT2	Short term fuel trim B bank
STFTB1D	Short term fuel trim A bank downstream
STFTB1U	Short term fuel trim A bank upstream
STFTB2D	Short term fuel trim B bank downstream
STFTB2U	Short term fuel trim B bank upstream
TPS	Throttle position sensor
TPS1	Throttle position sensor track 1
TPS2	Throttle position sensor track 2
TTP	Target throttle position
VSS	Vehicle speed
VVTAM	Variable valve timing (A bank) monitor
VVTBM	Variable valve timing (B bank) monitor

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0010	VVT Circuit malfunction – A bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure
P0020	VVT Circuit malfunction – B bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure
P0101	MAFS range / performance	Engine at normal operating temperature; drive at steady speed on level surface 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds Fuel level > 10%; surface elevation < 8,000 ft (2,438 m)	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit or short circuit to ground MAFS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0103	MAFS sense circuit high voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	MAFS to ECM reference ground circuit open circuit MAFS to ECM sensing circuit short circuit to B+ voltage MAFS failure
P0107	BARO circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	BARO failure (internal ECM fault)
P0108	BARO circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	BARO failure (internal ECM fault)
P0111	IATS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 Drive above idle >1000 rpm; ECT < 104 °F (40 °C); > 20 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	Blocked air cleaner Air intake leak Engine breather leak IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to B+ voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	IATS to ECM wiring short circuit to ground IATS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0116	ECTS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature; drive > 1500 rpm; > 3 minutes	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	ECTS disconnected ECTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage ECTS failure
P0118	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	Refer to P0117 Default Action	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS failure
P0121	TPS circuit range / performance (TPS1 compared to TPS2)	Ignition ON; battery > 9v; slowly move accelerator pedal through full range; > 40 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode – engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits ("1" or "2") short circuit to B+ voltage TPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0122	TPS circuit "1" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) open circuit or high resistance TPS failure
P0123	TPS circuit "1" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) short circuit to high voltage TPS failure
P0125	ECTS response (for closed loop fuel control)	ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature; drive > 1500 rpm; > 3 minutes	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	Low coolant level Contaminated coolant Engine coolant thermostat failure ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage
P0131	HO2S sense circuit low current – A bank, upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0132	HO2S sense circuit high current – A bank, upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0133	HO2S sense circuit slow response – A bank, upstream (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at 37 – 59 mph (60 – 95 km/h); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0135	HO2S heater circuit malfunction – A bank, upstream (1)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0137	HO2S sense circuit low voltage – A bank, downstream (2)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0138	HO2S sense circuit high voltage – A bank, downstream (2)	Start and run engine; bring to normal operating temperature; IAT > 18 °F (-8 °C); run engine > 1 minute	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0140	HO2S sense circuit no activity – A bank, downstream (2)	Engine at normal operating temperature; drive > 40 mph (64 km/h); > 2 minute 30 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature HO2S failure
P0141	HO2S Heater circuit malfunction – A bank, downstream (2)	Ignition ON > 5 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure
P0151	HO2S sense circuit low current – B bank, upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0152	HO2S sense circuit high current – B bank, upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0153	HO2S sense circuit slow response – B bank, upstream (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at 37 – 59 mph (60 – 95 km/h); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0155	HO2S heater circuit malfunction – B bank, upstream (1)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0157	HO2S sense circuit low voltage – B bank, downstream (2)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0158	HO2S sense circuit high voltage – B bank, downstream (2)	Start and run engine; bring to normal operating temperature; IAT > 18 °F (-8 °C); run engine > 1 minute	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0160	HO2S sense circuit no activity – B bank, downstream (2)	Engine at normal operating temperature; drive > 40 mph (64 km/h); > 2 minute 30 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature HO2S failure
P0161	HO2S Heater circuit malfunction – B bank, downstream (2)	Ignition ON > 5 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure
P0171	A bank combustion too lean	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0174 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0172	A bank combustion too rich	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0175 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0174	B bank combustion too lean	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0171 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0175	B bank combustion too rich	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0172 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0196	EOTS range / performance	EOT and ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS to ECM sensing circuit high resistance when hot EOTS to ECM sensing circuit intermittent high resistance EOTS failure
P0197	EOTS sense circuit low voltage (high oil temperature)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS to ECM wiring short circuit to ground EOTS failure
P0198	EOTS sense circuit high voltage (low oil temperature)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS disconnected EOTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage EOTS failure
P0201	Fuel injector circuit malfunction cylinder A1 (1)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all A bank injectors are flagged: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction cylinder A2 (2)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0203	Fuel injector circuit malfunction cylinder A3 (3)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0204	Fuel injector circuit malfunction cylinder A4 (4)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0205	Fuel injector circuit malfunction cylinder B1 (5)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all B bank injectors are flagged: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0206	Fuel injector circuit malfunction cylinder B2 (6)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0207	Fuel injector circuit malfunction cylinder B3 (7)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0208	Fuel injector circuit malfunction cylinder B4 (8)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0222	TPS circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	TPS to ECM sensing circuit "2" (TPS pin 2) open circuit or high resistance TPS failure
P0223	TPS circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0222 Default Action	TPS to ECM sensing circuit "2" (TPS pin 2) short circuit to B+ voltage TPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0300	Random misfire detected	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition module / coil failure
P0301	Misfire detected – cylinder A1 (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge	Refer to P0300 Possible Faults
P0302	Misfire detected – cylinder A2 (2)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0303	Misfire detected – cylinder A3 (3)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0304	Misfire detected – cylinder A4 (4)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0305	Misfire detected – cylinder B1 (5)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge	Refer to P0300 Possible Faults
P0306	Misfire detected – cylinder B2 (6)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0307	Misfire detected – cylinder B3 (7)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0308	Misfire detected – cylinder B4 (8)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0327	KS sense circuit out of range (low voltage) A bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0328	KS sense circuit out of range (high voltage) A bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0332	KS sense circuit out of range (low voltage) B bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0333	KS sense circuit out of range (high voltage) B bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0335	CKPS circuit malfunction	Crank engine > 2 seconds – engine will not start; or start engine, run steady > 1000 rpm; or engine stall, ignition ON	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Limits engine speed to 3000 rpm	CKPS disconnected CKPS gap incorrect / foreign matter on sensor face CKPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS failure
P0336	CKPS range / performance	Start engine; idle > 5 seconds (If the CKPS signal is not present, the engine will not start. The engine will stop if the CKPS signal is lost while running.)	Y	2	1 [A, M]	None	CKPS reluctor (on drive plate) foreign matter / damaged teeth CKPS sensing circuit intermittent open circuit, short circuit to ground, short circuit to high voltage CKPS failure
P0340	CMPS circuit malfunction – A bank	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0341	CMPS range / performance – A bank (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0351	Ignition coil (A1) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits A bank closed loop fuel metering – Inhibits A bank downstream HO2S control	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
P0352	Ignition coil (A2) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0353	Ignition coil (A3) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0354	Ignition coil (A4) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0355	Ignition coil (B1) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits B bank closed loop fuel metering – Inhibits B bank downstream HO2S control	Refer to P0351 Possible Causes
P0356	Ignition coil (B2) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0357	Ignition coil (B3) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0358	Ignition coil (B4) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0420	Catalyst efficiency below threshold A bank	Engine at normal operating temperature; IAT > 18 °F (-8 °C); varied driving for 3 minutes; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure
P0430	Catalyst efficiency below threshold B bank	Engine at normal operating temperature; IAT > 18 °F (-8 °C); varied driving for 3 minutes; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure
P0442	EVAP (system) leak detected – small	Fuel tank level between 15 % – 85 % full; after start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0443	EVAP purge valve control malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EGR diagnostic monitoring	EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure
P0444	EVAPP valve circuit open circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	None	EVAPP to ECM drive circuit open circuit or high resistance EVAPP failure
P0445	EVAPP valve circuit short circuit	Engine at normal operating temperature; drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes	Y	2	N	None	EVAPP to ECM drive circuit short circuit to ground EVAPP failure
P0446	CCV (canister close valve) malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	None	CCV B+ power supply circuit fault CCV to ECM drive circuit open circuit, high resistance or short circuit to B+ voltage CCV failure
P0447	CCV (canister close valve) opened failure	Ignition ON > 5 seconds (ECM CCV drive inactive – valve open)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV B+ power supply circuit fault CCV to ECM drive circuit open circuit, high resistance or short circuit to B+ voltage CCV failure
P0448	CCV (canister close valve) closed failure	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV to ECM drive circuit short circuit to ground CCV failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0450	FTP (fuel tank pressure) sensor malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	None	FTP sensor disconnected FTP sensor to ECM sense circuit open circuit, short circuit to ground, short circuit to B+ voltage FTP sensor to ECM power supply circuit open circuit or short circuit to ground FTP sensor to ECM wiring (supply, sense, signal ground) short circuit to each other FTP sensor failure
P0452	FTP (fuel tank pressure) sensor circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	FTP sensor disconnected FTP sensor to ECM sense circuit open circuit or short circuit to ground FTP sensor to ECM power supply circuit open circuit or short circuit to ground FTP sensor failure
P0453	FTP (fuel tank pressure) sensor circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	FTP sensor to ECM signal ground circuit open circuit FTP sensor to ECM wiring (supply, sense, signal ground) short circuit to each other FTP sensor to ECM sense circuit short circuit to B+ voltage FTP sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0455	EVAP (system) leak detected – large	Fuel tank level between 15 % – 85 % full; after start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes. Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	Fuel cap off Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak
P0460	Fuel level sense signal performance	Drive > 30 miles (48 km)	Y	2	N	None	Fuel level sensor to instrument pack circuits intermittent short or open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)
P0480	Radiator fans slow (series) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "series" drive circuit (relay pin 9) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P0482	Radiator fans fast (parallel) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "parallel" drive circuit (relay pin 7) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0506	Idle rpm lower than expected	Engine and transmission at normal operating temperature; IAT > 18 °F (-8 °C); gear "N"; idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	Air intake blockage Accessory drive overload (defective / seized component) Throttle valve stuck closed Throttle assembly failure
P0507	Idle rpm higher than expected	Engine and transmission at normal operating temperature; IAT > 18 °F (-8 °C); gear "N"; idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	Intake air leak between MAFS and throttle Intake air leak between throttle and engine Engine breather leak Throttle valve stuck open Throttle assembly failure
P0560	Vehicle voltage malfunction	Ignition ON > 35 seconds	Y	2	N	None	ECM battery power supply open circuit, high resistance ECM ignition power supply open circuit, high resistance
P0566	Cruise control CANCEL switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground CANCEL switch failure (stuck ON)
P0567	Cruise control RESUME switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground RESUME switch failure (stuck ON)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0568	Cruise control switch ground malfunction	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel open circuit Steering wheel cassette reel open circuit or high resistance Cassette reel to ECM circuit (ACCEL / DECEL) open circuit or high resistance ACCEL / DECEL switch failure
P0569	Cruise control DECEL / SET (SET-) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground DECEL / set switch failure (stuck ON)
P0570	Cruise control ACCEL / SET (SET+) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground ACCEL / set failure (stuck ON)
P0603	ECM data corrupted	Ignition ON > 5 seconds	Y	1	N	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Inhibits all diagnostic monitoring except: • throttle control monitoring • upstream HO2S control monitoring • CPU 1 and 2 monitoring	ECM failure
P1000	System checks not complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1104	MAFS ground malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm – Substitutes throttle angle for engine load measurement – Inhibits canister purge	MAFS to ECM reference ground circuit open circuit, short circuit to high voltage, high resistance MAFS to ECM sensing circuit open circuit MAFS failure
P1111	System checks complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1121	PPS circuit range / performance (PPS1 compared to PPS2)	Ignition ON; battery > 9v; slowly move accelerator pedal through full range; > 40 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Pedal position sensor to ECM sense circuits 1 and 2 open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1122	Pedal position sensor circuit "1" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1121 Default Action	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1123	Pedal position sensor circuit "1" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1121 Default Action	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire short circuit to B+ voltage Pedal position sensor failure
P1136	"Cool box" fan malfunction	Ignition ON; fan operating	N	N	N	None	Cooling fan power supply (fuse) fault Cooling fan drive circuit fault Cooling fan motor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1143	AACV (air assist close valve) range / performance	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive and accelerate to 60 mph (100 km/h); release the accelerator and coast to 37 mph (60 km/h); engine rpm 1000 – 3000 during coast	Y	2	N	None	AAI piping blocked Throttle body air channel blocked AACV stuck
P1144	AACV (air assist close valve) circuit malfunction	ECT ambient; start engine and bring to normal operating temperature	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits AACV range / performance diagnostic monitoring	AACV B+ power supply circuit fault AACV ground circuit fault AACV to ECM PWM drive circuit open circuit, short circuit or high resistance AACV failure
P1222	Pedal position sensor circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1223	Pedal position sensor circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire short circuit to B+ voltage Pedal position sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1224	Throttle control position error	Ignition ON > 3 minutes	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Throttle adaptions not performed after battery disconnect TPS disconnected TPS to ECM sense circuits open circuit, high resistance Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay power supply open circuit ECM ground circuit fault (relay coil drive) Throttle motor to ECM drive circuits open circuit, short circuit, high resistance Throttle motor failure Throttle assembly failure
P1229	Throttle motor control circuit malfunction	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure
P1230	Fuel pump relay malfunction	Ignition OFF; Ignition ON > 5 seconds	Y	2	N	None	Fuel pump relay failure Fuel pump relay to ECM circuit fault Fuel pump relay coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1240	Sensor reference voltage malfunction (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM to sensors reference voltage circuit short circuit to ground, short circuit to high voltage, open circuit, high resistance TPS, PPS, FTP sensor failure(s)
P1241	Sensor reference voltage low (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit short circuit to ground TPS, PPS, FTP sensor failure(s)
P1242	Sensor reference voltage high (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit open circuit, high resistance, short circuit to high voltage TPS, PPS, FTP sensor failure(s)
P1243	Sensor reference ground malfunction (throttle sensors, fuel tank pressure sensor, ECTS, IATS) (ECM pins EM82-07, EM83-13)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference ground circuit open circuit, high resistance TPS, PPS, ECTS, IATS, FTP sensor failure(s)
P1245	Engine crank signal low voltage	Start engine; idle	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	Starter relay coil to ECM / BPM circuit open circuit
P1246	Engine crank signal high voltage	Start engine; drive / accelerate > 13 mph (20 km/h) 1200 – 3000 rpm; decelerate to stop; repeat (5 times total)	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	Starter relay coil to ECM / BPM circuit short circuit to B+ voltage BPM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1250	Throttle valve return spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle return spring failure (throttle failure)
P1251	Throttle motor power relay malfunction	Ignition ON > 10 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay coil power supply open circuit ECM ground circuit fault (relay coil drive)
P1254	Throttle "limp home" spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle limp home spring failure (throttle failure)
P1260	Security input malfunction	Ignition ON > 10 seconds	N	N	N	None	KTM to ECM circuit short circuit, high resistance or open circuit Loss of ignition switched power supply to the ECM PIN EM82-09 for greater than 16 milliseconds KTM failure Security system incorrectly configured (KTM / ECM)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1313	Misfire rate catalyst damage A bank (1) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition module / coil failure
P1314	Misfire rate catalyst damage B bank (2) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge	Refer to P1313 Possible Causes
P1316	Misfire excess emission NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	Refer to P1313 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1340	CMPS circuit malfunction – B bank	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P1341	CMPS range / performance – B bank (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P1367	Ignition monitor – Group One (1A, 2B, 3B, 4A)	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When ECM detects fault: – Limits engine speed to 3000 rpm	Ignition monitoring circuit between splice and ECM open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1368	Ignition monitor – Group Two (1B, 2A, 3A, 4B)	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When ECM detects fault: – Limits engine speed to 3000 rpm	Ignition monitoring circuit between splice and ECM open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1384	VVT solenoid malfunction – A bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1396	VVT solenoid malfunction – B bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure
P1516	Gear change PARK / NEUTRAL driving malfunction	Engine at normal operating temperature; drive 50 – 63 mph (80 – 100 km/h) 1800 – 2200 rpm > 35 seconds	Y	2	N	None	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure D – 4 switch to TCM circuit open circuit or high resistance D – 4 switch fault
P1517	Engine cranking PARK / NEUTRAL malfunction	Start engine	N	N*	N	When ECM detects fault: – Fuel injection inhibited	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure
P1571	Brake switch malfunction	Drive vehicle; engage cruise control > 10 seconds disengage cruise control; repeat (5 total cycles)	N	N	1 [A, M]	When ECM detects fault: – Inhibits cruise control	Brake switch to ECM circuit open circuit, short circuit to ground, high resistance Brake switch ignition switched ground circuit open circuit Brake switch failure Brake cancel switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch to cruise control switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch ignition switched power supply open circuit Brake cancel switch failure Cruise control switch failure

* If engine will not start, CHECK ENGINE MIL will remain on.

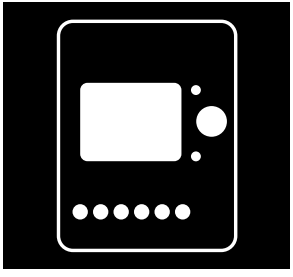
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1582	Throttle monitor data available or Inertia switch malfunction	Ignition ON	N	N	N	None	DTC indicates that the inertia switch has tripped (vehicle impact) If no vehicle impact: Inertia switch to ECM circuit, short circuit to ground Inertia switch failure
P1606	EMS control relay malfunction	Ignition ON; ignition OFF; ignition ON > 5 seconds	N	N	N	None	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)
P1609	ECM microprocessor-to-microprocessor communication failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM FCCP (programming) circuit (ECM pin EM80-19 or EM80-27) short circuit to ground ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1611	ECM CPU 2 failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM failure
P1631	Throttle motor power relay coil activation circuit failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Throttle motor relay coil to ECM circuit open circuit, short circuit to ground or short circuit to B+ voltage ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1633	ECM CPU 1 memory failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM failure
P1634	Throttle "watchdog" circuit malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	ECM failure
P1637	CAN ABS/TCCM token message missing	Ignition ON > 5 seconds	Y	2	1 [M]	When ECM detects fault: – Inhibits cruise control – (Idle speed control quality deteriorates)	CAN open circuit fault – ABS/TCCM to ECM CAN short circuit fault ABS/TCCM failure ECM failure
P1638	CAN INST token message missing	Ignition ON > 5 seconds	Y	1	N	None (Engine speed and coolant temperature data missing at instrument pack)	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1642	CAN circuit malfunction	Ignition ON > 5 seconds	Y	1	1 [M]	When ECM detects fault: – Limits throttle to approximately 30% – Inhibits cruise control (All CAN data unavailable)	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source
P1643	CAN TCM token message missing	Ignition ON > 5 seconds	Y	2	1 [M]	When ECM detects fault: – Limits throttle to approximately 30% – Inhibits cruise control (Torque reduction request data missing; results in harsh transmission shifts)	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure
P1646	ECM HO2S control malfunction – A bank, upstream	Ignition ON > 8 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank upstream HO2S operation	HO2S heater failure HO2S sensing circuit short circuit to ground or high voltage HO2S sensing circuit open circuit ECM failure
P1647	ECM HO2S control malfunction – B bank, upstream	Ignition ON > 8 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank upstream HO2S operation	HO2S heater failure HO2S sensing circuit short circuit to ground or high voltage HO2S sensing circuit open circuit ECM failure
P1648	ECM KS self test failure	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	ECM failure
P1649	ECM flash programming circuit malfunction	Ignition ON	N	N	N	None	ECM to DLC circuit, short circuit to ground or short circuit to B+ voltage
P1656	TPS amplifier circuit malfunction	Ignition ON > 5 seconds	N	N	1 [A]	None	ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1657	Throttle motor power relay coil circuit ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	ECM failure
P1658	Throttle motor power relay ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle motor power relay failure (contacts stuck on) Throttle motor power relay to ECM coil circuit, short circuit to ground Throttle motor power relay to ECM supply circuit, short circuit to B+ voltage



DTC Summaries

AJ27 Engine Management – 2000 MY

OBD II MONITORING CONDITIONS:

When testing for DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure. PDU will report if any portion of the Systems Readiness Test has not been completed in the following manner:

The following less frequently performed tests are identified as incomplete:

Module $11 (identifies EMS ECM)
- Catalyst
- Evaporative purge system
- O2 sensor
- O2 sensor heaters

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.

– If DTC P1000 is logged in memory, the on-board diagnostic tests have not been completed.
– If DTC P1111 is logged in memory, all on-board diagnostic tests have been completed.

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS		"SERVICE DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	1	1 "TRIP" to activate indicator(s).
	2	2 CONSECUTIVE "TRIPS" to activate indicator(s).
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE
DEFAULT ACTION		ECM default action; Logged – DTC stored in memory buffer; Flagged – DTC stored in memory / CHECK ENGINE MIL activated.
POSSIBLE CAUSES		HIGH VOLTAGE – High voltage can be either EMS 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.

PDU DATALOGGER ACRONYMS

AACV	Air assist control valve
ACCREQ	A/C compressor clutch request
ACHPS	A/C refrigerant high pressure switch
ACLPS	A/C refrigerant low pressure switch
ADV	Ignition timing advance (Cyl 1, A bank)
BARO	Barometric pressure sensor
BAT1+	Battery B+ supply to ECM
CCV	Canister close valve
CLV	Calculated load value
CRANKREQ	Crank request (from BPM)
CRUISEA	Cruise control accel / decel switch
CRUISEB	Cruise resume / cancel switch
CRUISEC	Cruise cancel switch
CRUISED	Cruise control set / inch / decel switch
CRUISEO	Cruise control ON / OFF switch
CRUISER	Cruise control resume switch
CRUISES	Cruise control set / inch / accel switch
CRUISEC1	Cruise control cancel switch
DTC1	Number of DTCs logged this trip
DTCS	Number of permanent DTCs logged
ECT	Engine coolant temperature
EGR	Exhaust gas recirculation
EOT	Engine oil temperature
EVAP	Evaporative emission system monitor
FANF	Cooling fan fast
FANFRLY	Cooling fan relay fast
FANS	Cooling fan slow
FANSRLY	Cooling fan relay slow
FBRAKE2	Brake switch
FP1	Fuel pump 1
FPRLY1	Fuel pump relay 1
FP2	Fuel pump 2
FPRLY2	Fuel pump relay 2
FTP	Fuel tank pressure
HO2SB1D	Heated oxygen sensor (downstream) A bank
HO2SB2D	Heated oxygen sensor (downstream) B bank
HO2SB1U	Heated oxygen sensor (upstream) A bank
HO2SB2U	Heated oxygen sensor (upstream) B bank
HTDSC	Heated windshield request
IAT	Intake air temperature
IAT2	Intake air temperature 2
KS1A	Knock sensor 1 A bank
KS1B	Knock sensor 1 B bank
KS4A	Knock sensor 4 A bank
KS4B	Knock sensor 4 B bank
KSFA	Knock sensor fail A bank
KSFB	Knock sensor fail B bank
LTFT1	Long term fuel trim A bank
LTFT2	Long term fuel trim B bank

PDU DATALOGGER ACRONYMS

MAF	Mass air flow
MAFGND1	MAFS ground
MAFS1	Mass air flow sensor
MAP	Manifold absolute pressure
MPROBE	Measurement probe (RED)
PKBRAKE	Park brake switch
PNPS	Park / neutral position switch (rotary switch)
PPS	Pedal position sensor
PPS1	Pedal position sensor track 1
PPS2	Pedal position sensor track 2
RPM	Engine speed
SPS	Sensor power supply monitor
STFT1	Short term fuel trim A bank
STFT2	Short term fuel trim B bank
STFTB1D	Short term fuel trim A bank downstream
STFTB1U	Short term fuel trim A bank upstream
STFTB2D	Short term fuel trim B bank downstream
STFTB2U	Short term fuel trim B bank upstream
TPS	Throttle position sensor
TPS1	Throttle position sensor track 1
TPS2	Throttle position sensor track 2
TTP	Target throttle position
VSS	Vehicle speed
VVTAM	Variable valve timing (A bank) monitor
VVTBM	Variable valve timing (B bank) monitor

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0010	VVT Circuit malfunction – A bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure
P0020	VVT Circuit malfunction – B bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure
P0101	MAFS range / performance	Engine at normal operating temperature; drive at steady speed on level surface 43 – 59 mph (70 – 95 km/h); 1500 – 2500 rpm; > 10 seconds Fuel level > 10%; surface elevation < 8,000 ft (2,438 m)	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction MAFS to ECM sensing circuit high resistance MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	MAFS sense circuit low voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter MAFS to ECM sensing circuit high resistance or open circuit MAFS to ECM sensing circuit intermittent short circuit to ground MAFS supply circuit open circuit or short circuit to ground MAFS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0103	MAFS sense circuit high voltage	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	MAFS to ECM reference ground circuit open circuit MAFS to ECM sensing circuit short circuit to B+ voltage MAFS failure
P0105	MAP sensor circuit malfunction	Ignition ON > 5 seconds	Y	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	MAP sensor to ECM circuit(s) fault MAP sensor failure
P0106	BARO circuit range / performance	Engine running at idle > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	BARO failure (internal ECM fault)
P0107	BARO circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	BARO failure (internal ECM fault)
P0108	BARO circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	BARO failure (internal ECM fault)
P0111	IATS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 Drive above idle >1000 rpm; ECT < 104 °F (40 °C); > 20 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	Blocked air cleaner Air intake leak Engine breather leak IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to high voltage IATS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0112	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	IATS to ECM wiring open circuit or high resistance IATS to ECM sensing circuit short circuit to B+ voltage IATS failure
P0113	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	Y	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	IATS to ECM wiring short circuit to ground IATS failure
P0116	ECTS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature; drive > 1500 rpm; > 3 minutes	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sensing circuit high resistance when hot ECTS to ECM sensing circuit intermittent high resistance ECTS failure
P0117	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	ECTS disconnected ECTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage ECTS failure
P0118	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	Refer to P0117 Default Action	Engine overheat condition ECTS to ECM wiring short circuit to ground ECTS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0121	TPS circuit range / performance (TPS1 compared to TPS2)	Ignition ON; battery > 9v; slowly move accelerator pedal through full range; > 40 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode – engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	TPS to ECM wiring open circuit or high resistance TPS to ECM sensing circuits ("1" or "2") short circuit to B+ voltage TPS failure
P0122	TPS circuit "1" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) open circuit or high resistance TPS failure
P0123	TPS circuit "1" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0121 Default Action	TPS to ECM sensing circuit "1" (TPS pin 3) short circuit to high voltage TPS failure
P0125	ECTS response (for closed loop fuel control)	ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature; drive > 1500 rpm; > 3 minutes	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	Low coolant level Contaminated coolant Engine coolant thermostat failure ECTS to ECM sensing circuit high resistance, open circuit or short circuit to high voltage
P0128	Coolant thermostat range / performance malfunction	ECT 18 °F (-8 °C) to 104 °F (40 °C), IAT >18 °F (-8 °C); engine running at idle	Y	2	N	None	Contaminated coolant Engine coolant thermostat failure ECT failure (ETC DTC(s) also flagged)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0131	HO2S sense circuit low current – A bank, upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0132	HO2S sense circuit high current – A bank, upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0133	HO2S sense circuit slow response – A bank, upstream (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at 37 – 59 mph (60 – 95 km/h); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0135	HO2S heater circuit malfunction – A bank, upstream (1)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0137	HO2S sense circuit low voltage – A bank, downstream (2)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0138	HO2S sense circuit high voltage – A bank, downstream (2)	Start and run engine; bring to normal operating temperature; IAT > 18 °F (-8 °C); run engine > 1 minute	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0140	HO2S sense circuit no activity – A bank, downstream (2)	Engine at normal operating temperature; drive > 40 mph (64 km/h); > 2 minute 30 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature HO2S failure
P0141	HO2S Heater circuit malfunction – A bank, downstream (2)	Ignition ON > 5 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0151	HO2S sense circuit low current – B bank, upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0152	HO2S sense circuit high current – B bank, upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0153	HO2S sense circuit slow response – B bank, upstream (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at 37 – 59 mph (60 – 95 km/h); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0155	HO2S heater circuit malfunction – B bank, upstream (1)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	HO2S disconnected HO2S heater power supply open circuit HO2S heater to ECM wiring short circuit or open circuit HO2S heater failure
P0157	HO2S sense circuit low voltage – B bank, downstream (2)	Start and run engine > 5 seconds	Y	2	N	None	HO2S disconnected HO2S to ECM wiring open circuit HO2S short circuit to ground HO2S failure
P0158	HO2S sense circuit high voltage – B bank, downstream (2)	Start and run engine; bring to normal operating temperature; IAT > 18 °F (-8 °C); run engine > 1 minute	Y	2	N	None	HO2S sensing circuit short circuit to high voltage HO2S ground (BRD – braided shield) open circuit HO2S failure
P0160	HO2S sense circuit no activity – B bank, downstream (2)	Engine at normal operating temperature; drive > 40 mph (64 km/h); > 2 minute 30 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring open circuit HO2S sensing circuit short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield) open circuit Exhaust leak Low exhaust temperature HO2S failure
P0161	HO2S Heater circuit malfunction – B bank, downstream (2)	Ignition ON > 5 seconds	Y	2	N	None	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0171	A bank combustion too lean	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0174 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0172	A bank combustion too rich	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0175 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0174	B bank combustion too lean	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0171 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0175	B bank combustion too rich	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed > 40 mph; > 1 minute	Y	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0172 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0196	EOTS range / performance	EOT and ECT ambient; IAT > 18 °F (-8 °C); start engine; bring to normal operating temperature	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS to ECM sensing circuit high resistance when hot EOTS to ECM sensing circuit intermittent high resistance EOTS failure
P0197	EOTS sense circuit low voltage (high oil temperature)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS to ECM wiring short circuit to ground EOTS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0198	EOTS sense circuit high voltage (low oil temperature)	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EOTS disconnected EOTS to ECM sensing circuit high resistance, open circuit or short circuit to B+ voltage EOTS failure
P0201	Fuel injector circuit malfunction cylinder A1 (1)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all A bank injectors are flagged: – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits A bank downstream HO2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0202	Fuel injector circuit malfunction cylinder A2 (2)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0203	Fuel injector circuit malfunction cylinder A3 (3)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0204	Fuel injector circuit malfunction cylinder A4 (4)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0201 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0205	Fuel injector circuit malfunction cylinder B1 (5)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all B bank injectors are flagged: – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits B bank downstream HO2S control	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0206	Fuel injector circuit malfunction cylinder B2 (6)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0207	Fuel injector circuit malfunction cylinder B3 (7)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure
P0208	Fuel injector circuit malfunction cylinder B4 (8)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	Y	2	1 [A, M]	Refer to P0205 Default Action	Injector disconnected Injector harness wiring open or short circuit Injector failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0222	TPS circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	TPS to ECM sensing circuit "2" (TPS pin 2) open circuit or high resistance TPS failure
P0223	TPS circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P0222 Default Action	TPS to ECM sensing circuit "2" (TPS pin 2) short circuit to B+ voltage TPS failure
P0300	Random misfire detected	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition module / coil failure

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0301	Misfire detected – cylinder A1 (1)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge	Refer to P0300 Possible Faults
P0302	Misfire detected – cylinder A2 (2)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0303	Misfire detected – cylinder A3 (3)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults
P0304	Misfire detected – cylinder A4 (4)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0301 Default Action	Refer to P0300 Possible Faults

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0305	Misfire detected – cylinder B1 (5)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge	Refer to P0300 Possible Faults
P0306	Misfire detected – cylinder B2 (6)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0307	Misfire detected – cylinder B3 (7)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0308	Misfire detected – cylinder B4 (8)	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1 or 2 **	1 [A, M]	Refer to P0305 Default Action	Refer to P0300 Possible Faults
P0327	KS sense circuit out of range (low voltage) A bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure

** If, on the first trip, the misfire is severe enough to cause excess exhaust emission, individual cylinder DTC plus DTC P1316 will be flagged; CHECK ENGINE MIL will flash.
If, on the first trip, the misfire is severe enough to cause catalyst damage, individual cylinder DTC plus DTC P1313 (A bank) P1314 (B bank) will be flagged; CHECK ENGINE MIL will flash.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0328	KS sense circuit out of range (high voltage) A bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0332	KS sense circuit out of range (low voltage) B bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit short circuit to ground KS failure
P0333	KS sense circuit out of range (high voltage) B bank	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	Poor sensor contact with the cylinder block KS to ECM sense circuit high resistance or open circuit KS to ECM sense circuit short circuit to high voltage KS failure
P0335	CKPS circuit malfunction	Crank engine > 2 seconds – engine will not start; or start engine, run steady > 1000 rpm; or engine stall, ignition ON	Y	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Limits engine speed to 3000 rpm	CKPS disconnected CKPS gap incorrect / foreign matter on sensor face CKPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CKPS failure
P0336	CKPS range / performance	Start engine; idle > 5 seconds (If the CKPS signal is not present, the engine will not start. The engine will stop if the CKPS signal is lost while running.)	Y	2	1 [A, M]	None	CKPS reluctor (on drive plate) foreign matter / damaged teeth CKPS sensing circuit intermittent open circuit, short circuit to ground, short circuit to high voltage CKPS failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0340	CMPS circuit malfunction – A bank	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0341	CMPS range / performance – A bank (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0351	Ignition coil (A1) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits A bank closed loop fuel metering – Inhibits A bank downstream HO2S control	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
P0352	Ignition coil (A2) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0353	Ignition coil (A3) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes
P0354	Ignition coil (A4) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0351 Default Action	Refer to P0351 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0355	Ignition coil (B1) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits B bank closed loop fuel metering – Inhibits B bank downstream HO2S control	Refer to P0351 Possible Causes
P0356	Ignition coil (B2) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0357	Ignition coil (B3) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0358	Ignition coil (B4) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	Refer to P0355 Default Action	Refer to P0351 Possible Causes
P0400	EGR flow malfunction	Engine at normal operating temperature; normal varied driving for 3 minutes; 37 – 75 mph (60 – 120 km/h); 1300 – 2500 rpm; then decelerate at fuel cut-off (foot off accelerator pedal) Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	EGR pipe blocked EGR valve stuck open / closed, blocked EGR valve failure
P0405	EGR valve drive circuits open circuit	Ignition ON > 5 seconds	Y	2	N	None	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 ERG valve failure (stepper motor open circuit)
P0406	EGR valve drive circuits short circuit	Ignition ON > 5 seconds	Y	2	N	None	EGR valve to ECM drive circuit pair (EGR valve pins 1/4, 6/3): short circuit to ground or high voltage ERG valve failure (stepper motor short circuit)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0420	Catalyst efficiency below threshold A bank	Engine at normal operating temperature; IAT > 18 °F (-8 °C); varied driving for 3 minutes; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure
P0430	Catalyst efficiency below threshold B bank	Engine at normal operating temperature; IAT > 18 °F (-8 °C); varied driving for 3 minutes; then, constant steady throttle 30 – 38 mph (50 – 60 km/h), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure
P0442	EVAP (system) leak detected – small	Fuel tank level between 15 % – 85 % full; after start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0443	EVAP purge valve control malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EGR diagnostic monitoring	EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure
P0444	EVAPP valve circuit open circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	Y	2	N	None	EVAPP to ECM drive circuit open circuit or high resistance EVAPP failure
P0445	EVAPP valve circuit short circuit	Engine at normal operating temperature; drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes	Y	2	N	None	EVAPP to ECM drive circuit short circuit to ground EVAPP failure
P0446	CCV (canister close valve) malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	None	CCV B+ power supply circuit fault CCV to ECM drive circuit open circuit, high resistance or short circuit to B+ voltage CCV failure
P0447	CCV (canister close valve) opened failure	Ignition ON > 5 seconds (ECM CCV drive inactive – valve open)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV B+ power supply circuit fault CCV to ECM drive circuit open circuit, high resistance or short circuit to B+ voltage CCV failure
P0448	CCV (canister close valve) closed failure	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	CCV to ECM drive circuit short circuit to ground CCV failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0450	FTP (fuel tank pressure) sensor malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	Y	2	N	None	FTP sensor disconnected FTP sensor to ECM sense circuit open circuit, short circuit to ground, short circuit to B+ voltage FTP sensor to ECM power supply circuit open circuit or short circuit to ground FTP sensor to ECM wiring (supply, sense, signal ground) short circuit to each other FTP sensor failure
P0452	FTP (fuel tank pressure) sensor circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	FTP sensor disconnected FTP sensor to ECM sense circuit open circuit or short circuit to ground FTP sensor to ECM power supply circuit open circuit or short circuit to ground FTP sensor failure
P0453	FTP (fuel tank pressure) sensor circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	FTP sensor to ECM signal ground circuit open circuit FTP sensor to ECM wiring (supply, sense, signal ground) short circuit to each other FTP sensor to ECM sense circuit short circuit to B+ voltage FTP sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0455	EVAP (system) leak detected – large	Fuel tank level between 15 % – 85 % full; after start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive vehicle 12 – 60 mph (20 – 100 km/h) > 6 minutes. Surface elevation < 8,000 ft (2,438 m)	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	Fuel cap off Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit open circuit, short circuit, high resistance EVAPP valve power supply circuit open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak
P0460	Fuel level sense signal performance	Drive > 30 miles (48 km)	Y	2	N	None	Fuel level sensor to instrument pack circuits intermittent short or open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)
P0480	Radiator fans slow (series) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "series" drive circuit (relay pin 9) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P0482	Radiator fans fast (parallel) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	N	None	Radiator fan control relay module to ECM "parallel" drive circuit (relay pin 7) fault Relay coil ignition power supply open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0506	Idle rpm lower than expected	Engine and transmission at normal operating temperature; IAT > 18 °F (-8 °C); gear "N"; idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	Air intake blockage Accessory drive overload (defective / seized component) Throttle valve stuck closed Throttle assembly failure
P0507	Idle rpm higher than expected	Engine and transmission at normal operating temperature; IAT > 18 °F (-8 °C); gear "N"; idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	2	N	None	Intake air leak between MAFS and throttle Intake air leak between throttle and engine Engine breather leak Throttle valve stuck open Throttle assembly failure
P0560	Vehicle voltage malfunction	Ignition ON > 35 seconds	Y	2	N	None	ECM battery power supply open circuit, high resistance ECM ignition power supply open circuit, high resistance
P0566	Cruise control CANCEL switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground CANCEL switch failure (stuck ON)
P0567	Cruise control RESUME switch ON fault	Ignition ON > 75 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground RESUME switch failure (stuck ON)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0568	Cruise control switch ground malfunction	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel open circuit Steering wheel cassette reel open circuit or high resistance Cassette reel to ECM circuit (ACCEL / DECEL) open circuit or high resistance ACCEL / DECEL switch failure
P0569	Cruise control DECEL / SET (SET-) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground DECEL / set switch failure (stuck ON)
P0570	Cruise control ACCEL / SET (SET+) switch ON fault	Ignition ON > 10 minutes	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Cruise control switches internal steering wheel short circuit to ground Steering wheel cassette reel short circuit to ground Cassette reel to ECM circuit short circuit to ground ACCEL / set failure (stuck ON)
P0603	ECM data corrupted	Ignition ON > 5 seconds	Y	1	N	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Inhibits all diagnostic monitoring except: • throttle control monitoring • upstream HO2S control monitoring • CPU 1 and 2 monitoring	ECM failure
P1000	System checks not complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1104	MAFS ground malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm – Substitutes throttle angle for engine load measurement – Inhibits canister purge	MAFS to ECM reference ground circuit open circuit, short circuit to high voltage, high resistance MAFS to ECM sensing circuit open circuit MAFS failure
P1107	MAP sensor sense circuit low voltage	Ignition ON > 5 seconds	Y	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	MAP sensor to ECM sense circuit open circuit or short circuit to ground MAP sensor to ECM reference voltage circuit open circuit or short circuit to ground MAP sensor failure
P1108	MAP sensor sense circuit high voltage	Ignition ON > 5 seconds	Y	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	MAP sensor to ECM reference ground circuit open circuit MAP sensor to ECM wiring short circuit to each other MAP sensor to ECM sense circuit short circuit to high voltage MAP sensor failure
P1111	System checks complete since last memory clear	"System Readiness Test"	N	N	N	None	See page 1
P1112	IATS 2 sense circuit high voltage (low charge air temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged, first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 118 °C (244 °F)	IATS 2 to ECM sense circuit: open circuit, high resistance, short circuit to high voltage IATS 2 failure
P1113	IATS 2 sense circuit low voltage (high charge air temperature)	Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged, first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 118 °C (244 °F)	Supercharger intercooler failure IATS 2 to ECM sense circuit: short circuit to ground IATS 2 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1121	PPS circuit range / performance (PPS1 compared to PPS2)	Ignition ON; battery > 9v; slowly move accelerator pedal through full range; > 40 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Accelerator pedal to pedal position sensor cable adjustment incorrect Pedal position sensor to ECM sense circuits 1 and 2 open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1122	Pedal position sensor circuit "1" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1121 Default Action	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1123	Pedal position sensor circuit "1" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1121 Default Action	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire short circuit to B+ voltage Pedal position sensor failure
P1136	"Cool box" fan malfunction	Ignition ON; fan operating	N	N	N	None	Cooling fan power supply (fuse) fault Cooling fan drive circuit fault Cooling fan motor failure
P1143	AACV (air assist close valve) range / performance	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive and accelerate to 60 mph (100 km/h); release the accelerator and coast to 37 mph (60 km/h); engine rpm 1000 – 3000 during coast	Y	2	N	None	AAI piping blocked Throttle body air channel blocked AACV stuck

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1144	AACV (air assist close valve) circuit malfunction	ECT ambient; start engine and bring to normal operating temperature	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits AACV range / performance diagnostic monitoring	AACV B+ power supply circuit fault AACV ground circuit fault AACV to ECM PWM drive circuit open circuit, short circuit or high resistance AACV failure
P1222	Pedal position sensor circuit "2" low voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1223	Pedal position sensor circuit "2" high voltage	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire short circuit to B+ voltage Pedal position sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1224	Throttle control position error	Ignition ON > 3 minutes	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Throttle adaptions not performed after battery disconnect TPS disconnected TPS to ECM sense circuits open circuit, high resistance Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay power supply open circuit ECM ground circuit fault (relay coil drive) Throttle motor to ECM drive circuits open circuit, short circuit, high resistance Throttle motor failure Throttle assembly failure
P1229	Throttle motor control circuit malfunction	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1222 Default Action	Throttle motor disconnected Throttle motor to ECM drive circuits short circuit or open circuit Throttle motor failure
P1230	Fuel pump relay malfunction Note: This DTC covers the N/A system single fuel pump and the SC system fuel pump 1.	Ignition OFF; Ignition ON > 5 seconds	Y	2	N/A: N SC: 2 [A, M]	N/A – None SC – When fault is detected, ECM: – Operates fuel pump 2	Fuel pump relay failure Fuel pump relay to ECM circuit fault Fuel pump relay coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1240	Sensor reference voltage malfunction (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM to sensors reference voltage circuit short circuit to ground, short circuit to high voltage, open circuit, high resistance TPS, PPS, FTP sensor failure(s)
P1241	Sensor reference voltage low (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit short circuit to ground TPS, PPS, FTP sensor failure(s)
P1242	Sensor reference voltage high (throttle sensors, fuel tank pressure sensor) (ECM pins EM82-01, EM83-05)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference voltage circuit open circuit, high resistance, short circuit to high voltage TPS, PPS, FTP sensor failure(s)
P1243	Sensor reference ground malfunction (throttle sensors, fuel tank pressure sensor, ECTS, IATS) (ECM pins EM82-07, EM83-13)	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	Refer to P1240 Default Action	ECM to sensors reference ground circuit open circuit, high resistance TPS, PPS, ECTS, IATS, FTP sensor failure(s)
P1245	Engine crank signal low voltage	Start engine; idle	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	Starter relay coil to ECM / BPM circuit open circuit
P1246	Engine crank signal high voltage	Start engine; drive / accelerate > 13 mph (20 km/h) 1200 – 3000 rpm; decelerate to stop; repeat (5 times total)	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	Starter relay coil to ECM / BPM circuit short circuit to B+ voltage BPM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1250	Throttle valve return spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle return spring failure (throttle failure)
P1251	Throttle motor power relay malfunction	Ignition ON > 10 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay coil power supply open circuit ECM ground circuit fault (relay coil drive)
P1254	Throttle "limp home" spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle limp home spring failure (throttle failure)
P1260	Security input malfunction	Ignition ON > 10 seconds	N	N	N	None	KTM to ECM circuit short circuit, high resistance or open circuit Loss of ignition switched power supply to the ECM PIN EM82-09 for greater than 16 milliseconds KTM failure Security system incorrectly configured (KTM / ECM)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1313	Misfire rate catalyst damage A bank (1) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank closed loop fuel metering – Inhibits A bank adaptive fuel metering – Inhibits canister purge	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit open circuit, high resistance Ignition module / coil failure
P1314	Misfire rate catalyst damage B bank (2) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank closed loop fuel metering – Inhibits B bank adaptive fuel metering – Inhibits canister purge	Refer to P1313 Possible Causes
P1316	Misfire excess emission NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > 18 °F (-8 °C); drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	Y	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	Refer to P1313 Possible Causes

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1340	CMPS circuit malfunction – B bank	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P1341	CMPS range / performance – B bank (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the A bank CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank CMPS signal is lost while running.)	Y	2	N	None	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sensing circuit open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P1367	Ignition monitor – Group One (1A, 2B, 3B, 4A)	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition monitoring circuit between splice and ECM open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1368	Ignition monitor – Group Two (1B, 2A, 3A, 4B)	Run engine steady < 2500 rpm > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	Ignition monitoring circuit between splice and ECM open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1384	VVT solenoid malfunction – A bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1396	VVT solenoid malfunction – B bank	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure
P1474	Intercooler coolant pump relay malfunction	Ignition OFF; Ignition ON > 5 seconds	Y	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits throttle opening to 30%	Intercooler coolant pump relay battery power supply open circuit Intercooler pump relay failure Intercooler pump ECM to relay drive circuit fault Intercooler pump relay coil ground circuit fault ECM power supply fault (relay drive)
P1516	Gear change PARK / NEUTRAL driving malfunction	Engine at normal operating temperature; drive 50 – 63 mph (80 – 100 km/h) 1800 – 2200 rpm > 35 seconds	Y	2	N	None	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure D – 4 switch to TCM circuit open circuit or high resistance D – 4 switch fault
P1517	Engine cranking PARK / NEUTRAL malfunction	Start engine	N	N*	N	When fault is detected, ECM: – Fuel injection inhibited	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit open circuit or high resistance Rotary switch failure

* If engine will not start, CHECK ENGINE MIL will remain on.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1571	Brake switch malfunction	Drive vehicle; engage cruise control > 10 seconds disengage cruise control; repeat (5 total cycles)	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Brake switch to ECM circuit open circuit, short circuit to ground, high resistance Brake switch ignition switched ground circuit open circuit Brake switch failure Brake cancel switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch to cruise control switch to ECM circuit open circuit, short circuit to ground, high resistance Brake cancel switch ignition switched power supply open circuit Brake cancel switch failure Cruise control switch failure
P1582	Throttle monitor data available or Inertia switch malfunction	Ignition ON	N	N	N	None	DTC indicates that the inertia switch has tripped (vehicle impact) If no vehicle impact: Inertia switch to ECM circuit, short circuit to ground Inertia switch failure
P1606	EMS control relay malfunction	Ignition ON; ignition OFF; ignition ON > 5 seconds	N	N	N	None	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)

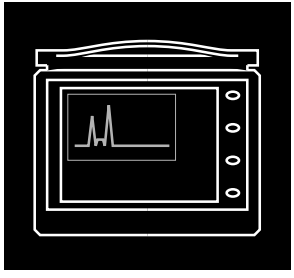
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1609	ECM microprocessor-to-microprocessor communication failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM FCCP (programming) circuit (ECM pin EM80-19 or EM80-27) short circuit to ground ECM failure
P1611	ECM CPU 2 failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1631	Throttle motor power relay coil activation circuit failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	Throttle motor relay coil to ECM circuit open circuit, short circuit to ground or short circuit to B+ voltage ECM failure
P1633	ECM CPU 1 memory failure	Ignition ON > 5 seconds	Y	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	ECM failure
P1634	Throttle "watchdog" circuit malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [R, A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1637	CAN ABS/TCCM token message missing	Ignition ON > 5 seconds	Y	2	1 [M]	When fault is detected, ECM: – Inhibits cruise control – (Idle speed control quality deteriorates)	CAN open circuit fault – ABS/TCCM to ECM CAN short circuit fault ABS/TCCM failure ECM failure
P1638	CAN INST token message missing	Ignition ON > 5 seconds	Y	1	N	None (Engine speed and coolant temperature data missing at instrument pack)	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure
P1642	CAN circuit malfunction	Ignition ON > 5 seconds	Y	1	1 [M]	When fault is detected, ECM: – Limits throttle to approximately 30% – Inhibits cruise control (All CAN data unavailable)	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source
P1643	CAN TCM token message missing	Ignition ON > 5 seconds	Y	2	1 [M]	When fault is detected, ECM: – Limits throttle to approximately 30% – Inhibits cruise control (Torque reduction request data missing; results in harsh transmission shifts)	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure
P1646	ECM HO2S control malfunction – A bank, upstream	Ignition ON > 8 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank upstream HO2S operation	HO2S heater failure HO2S sensing circuit short circuit to ground or high voltage HO2S sensing circuit open circuit ECM failure
P1647	ECM HO2S control malfunction – B bank, upstream	Ignition ON > 8 seconds	Y	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank upstream HO2S operation	HO2S heater failure HO2S sensing circuit short circuit to ground or high voltage HO2S sensing circuit open circuit ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1648	ECM KS self test failure	Start engine; run > 5 seconds	Y	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	ECM failure
P1649	ECM flash programming circuit malfunction	Ignition ON	N	N	N	None	ECM to DLC circuit, short circuit to ground or short circuit to B+ voltage
P1656	TPS amplifier circuit malfunction	Ignition ON > 5 seconds	N	N	1 [A]	None	ECM failure
P1657	Throttle motor power relay coil circuit ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	ECM failure
P1658	Throttle motor power relay ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 80 mph (129 km/h) – Inhibits cruise control	Throttle motor power relay failure (contacts stuck on) Throttle motor power relay to ECM coil circuit, short circuit to ground Throttle motor power relay to ECM supply circuit, short circuit to B+ voltage
P1671	Fuel pump 2 (SC) relay malfunction	Ignition ON > 5 seconds	Y	2	1 [A, M]	When fault is detected, ECM: Limits engine speed to 3000 rpm	Fuel pump relay 2 failure Fuel pump relay 2 to ECM circuit fault Fuel pump relay 2 coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1696	Adaptive speed control CAN malfunction	Ignition ON > 5 seconds	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	CAN open circuit fault – Adaptive Speed Control CM, Adaptive Speed Control Booster CM to ECM CAN short circuit fault Adaptive Speed Control CM or Adaptive Speed Control Booster CM failure
P1697	Adaptive speed control "Headway" switch(es) circuit(s) malfunction	Ignition ON > 1 minute	N	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	Adaptive speed control switch(es) failure



DTC Summaries – OBD II

AJ27 Engine Management 2001 Model Year ON

Revised January, 2002:

- DTC P0031 added
- DTC P0032 added
- DTC P0037 added
- DTC P0038 added
- DTC P0051 added
- DTC P0052 added
- DTC P0057 added
- DTC P0058 added
- DTC P0065 added
- DTC P0066 added

Refer to pages 2 and 3 for important information regarding the use of "AJ27 DTC Summaries".

KEY TO COLUMN HEADINGS

DTC	Diagnostic Trouble Code.
TOOL	OBD II – Indicates that the DTC is an OBD II code and can be accessed via a generic scan tool or WDS / PDU. JAG – indicates that the DTC is not an OBD II code and is accessed only via WDS / PDU.
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. 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 A AMBER MIL / Message M Message
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 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.

OBD SYSTEM READINESS

If DTC P1000 is flagged after DTCs have been cleared, all SIX (6) engine management OBD diagnostic monitor drive cycles HAVE NOT BEEN COMPLETED.

If DTC P1111 is flagged after DTCs have been cleared, all SIX (6) engine management OBD diagnostic monitor drive cycles HAVE BEEN COMPLETED.

OBD DIAGNOSTIC MONITORS

The Engine Management System is continuously checked during vehicle operation by the Engine Control Module (ECM) Powertrain on-board diagnostic (OBD) facility. 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
– Evaporative System Monitor
– Comprehensive Component Monitor (Engine Management / Transmission)

* Note: 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 (A bank [1]), DTC P1314 (B 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 (A bank [1]), DTC P1314 (B bank [2]) will be flagged. When the fault is no longer present the CHECK ENGINE MIL will be activated.

REFERENCE

Refer to the applicable "Electrical Guide" for circuit information and acronym descriptions when using the information contained in this document.

PDU DATALOGGER ACRONYMS

AACV	Air assist control valve
ACCREQ	A/C compressor clutch request
ACHPS	A/C refrigerant high pressure switch
ACLPS	A/C refrigerant low pressure switch
ADV	Ignition timing advance (Cyl 1, A bank)
BARO	Barometric pressure sensor
BAT1+	Battery B+ supply to ECM
CCV	Canister close valve
CLV	Calculated load value
CRANKREQ	Crank request (from BPM)
CRUISEA	Cruise control accel / decel switch
CRUISEB	Cruise resume / cancel switch
CRUISEC	Cruise cancel switch
CRUISED	Cruise control set / inch / decel switch
CRUISEO	Cruise control ON / OFF switch
CRUISER	Cruise control resume switch
CRUISES	Cruise control set / inch / accel switch
CRUISEC1	Cruise control cancel switch
DTC1	Number of DTCs logged this trip
DTCS	Number of permanent DTCs logged
ECT	Engine coolant temperature
EGR	Exhaust gas recirculation
EOT	Engine oil temperature
EVAP	Evaporative emission system monitor
FANF	Cooling fan fast
FANFRLY	Cooling fan relay fast
FANS	Cooling fan slow
FANSRLY	Cooling fan relay slow
FBRAKE2	Brake switch
FP1	Fuel pump 1
FPRLY1	Fuel pump relay 1
FP2	Fuel pump 2
FPRLY2	Fuel pump relay 2
FTP	Fuel tank pressure
HO2SB1D	Heated oxygen sensor (downstream) A bank (1)
HO2SB2D	Heated oxygen sensor (downstream) B bank (2)
HO2SB1U	Heated oxygen sensor (upstream) A bank (1)
HO2SB2U	Heated oxygen sensor (upstream) B bank (2)
HTDSC	Heated windshield request
IAT	Intake air temperature
IAT2	Intake air temperature 2
KS1A	Knock sensor 1 A bank (1)
KS1B	Knock sensor 1 B bank (2)
KS4A	Knock sensor 4 A bank (1)
KS4B	Knock sensor 4 B bank (2)
KSFA	Knock sensor fail A bank (1)
KSFB	Knock sensor fail B bank (2)
LTFT1	Long term fuel trim A bank (1)
LTFT2	Long term fuel trim B bank (2)

PDU DATALOGGER ACRONYMS

MAF	Mass air flow
MAFGND1	MAFS ground
MAFS1	Mass air flow sensor
MAP	Manifold absolute pressure
MPROBE	Measurement probe (RED)
PKBRAKE	Park brake switch
PNPS	Park / neutral position switch (rotary switch)
PPS	Pedal position sensor
PPS1	Pedal position sensor track 1
PPS2	Pedal position sensor track 2
RPM	Engine speed
SPS	Sensor power supply monitor
STFT1	Short term fuel trim A bank (1)
STFT2	Short term fuel trim B bank (2)
STFTB1D	Short term fuel trim A bank (1) downstream
STFTB1U	Short term fuel trim A bank (1) upstream
STFTB2D	Short term fuel trim B bank (2) downstream
STFTB2U	Short term fuel trim B bank (2) upstream
TPS	Throttle position sensor
TPS1	Throttle position sensor track 1
TPS2	Throttle position sensor track 2
TTP	Target throttle position
VSS	Vehicle speed
VVTAM	Variable valve timing monitor A bank (1)
VVTBM	Variable valve timing monitor B bank (2)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0031	OBD II	HO2 Sensor heater control circuit low current – bank 1, upstream (1/1) (Replaces P0135)	Engine at normal operating temperature Idle for 3 minutes	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	EM85 –01	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 failure
P0032	OBD II	HO2 Sensor heater control circuit high current – bank 1, upstream (1/1) (Replaces P0135)	Engine at normal operating temperature Idle for 3 minutes	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	EM85 –01	HO2 Sensor 1/1 heater control circuit: short circuit to ground HO2 Sensor 1/1 heater failure
P0037	OBD II	HO2 Sensor heater control circuit low resistance – bank 1, downstream (1/2) (Replaces P0141)	Engine at normal operating temperature Idle for 3 minutes	2	N	None	EM84 -07	HO2 Sensor 1/2 heater control circuit: short circuit to ground HO2 Sensor 1/2 heater failure
P0038	OBD II	HO2 Sensor heater control circuit high resistance – bank 1, downstream (1/2) (Replaces P0141)	Engine at normal operating temperature Idle for 3 minutes	2	N	None	EM84 -07	HO2 Sensor 1/2 heater control circuit: open circuit; high resistance HO2 Sensor 1/2 heater failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0051	OBD II	HO2 Sensor heater control circuit low current – bank 2, upstream (2/1) (Replaces P0155)	Engine at normal operating temperature Idle for 3 minutes	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	EM85 -02	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 failure
P0052	OBD II	HO2 Sensor heater control circuit high current – bank 2, upstream (2/1) (Replaces P0155)	Engine at normal operating temperature Idle for 3 minutes	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	EM85 -02	HO2 Sensor 2/1 heater control circuit: short circuit to ground HO2 Sensor 2/1 heater failure
P0057	OBD II	HO2 Sensor heater control circuit low resistance – bank 2, downstream (2/2) (Replaces P0161)	Engine at normal operating temperature Idle for 3 minutes	2	N	None	EM84 -15	HO2 Sensor 2/2 heater control circuit: short circuit to ground HO2 Sensor 2/2 heater failure
P0058	OBD II	HO2 Sensor heater control circuit high resistance – bank 2, downstream (2/2) (Replaces P0161)	Engine at normal operating temperature Idle for 3 minutes	2	N	None	EM84 -15	HO2 Sensor 2/2 heater control circuit: open circuit; high resistance HO2 Sensor 2/2 heater failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0065	OBD II	AACV (air assist close valve) range / performance (Replaces P1143)	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive and accelerate to 100 km/h (60 mph); release the accelerator and coast to 37 mph (60 km/h); engine rpm 1000 – 3000 during coast	2	N	None	—	AAI piping blocked Throttle body air channel blocked AACV stuck
P0066	OBD II	AACV (air assist close valve) circuit malfunction (Replaces P1144)	ECT ambient; start engine and bring to normal operating temperature	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits AACV range / performance diagnostic monitoring	EM83 -03	AACV B+ power supply circuit fault AACV ground circuit fault AACV to ECM PWM drive circuit: open circuit, short circuit or high resistance AACV failure
P0101	OBD II	MAFS range / performance	Engine at normal operating temperature Drive at steady speed on level surface 70 – 95 km/h (43 – 59 mph); 1500 – 2500 rpm; > 10 seconds Fuel level > 10%; surface elevation < 8,000 ft. (2,438 m)	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	EM83 -28	Blocked air cleaner Air intake leak Engine breather leak Throttle control malfunction MAFS to ECM sense circuit: high resistance or intermittent short circuit to ground MAFS supply circuit high resistance MAFS failure
P0102	OBD II	MAFS sense circuit low voltage	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	EM83 -28	Blocked air filter MAFS to ECM sense circuit: high resistance, open circuit or intermittent short circuit to ground MAFS supply circuit: open circuit or short circuit to ground MAFS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0103	OBD II	MAFS sense circuit high voltage	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes throttle angle for engine load measurement – Limits engine speed to 3000 rpm – Inhibits canister purge	EM83 -26 -27 -28	MAFS to ECM sensor ground circuit: open circuit MAFS to ECM sense circuit: short circuit to B+ voltage MAFS failure
P0105	OBD II	MAP sensor circuit malfunction	Ignition ON > 5 seconds	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	EM80 -28	MAP sensor to ECM circuit(s) fault MAP sensor failure
P0106	OBD II	BARO circuit range / performance	Engine running at idle > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	—	BARO failure (internal ECM fault)
P0107	OBD II	BARO circuit low voltage	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	—	BARO failure (internal ECM fault)
P0108	OBD II	BARO circuit high voltage	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	—	BARO failure (internal ECM fault)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0111	OBD II	IATS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 Drive above idle >1000 rpm; ECT < 40 °C (104 °F); > 20 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	EM82 -17 EM83 -13	Blocked air cleaner Air intake leak Engine breather leak IATS to ECM wiring: open circuit or high resistance IATS to ECM sense circuit: short circuit to high voltage IATS failure
P0112	OBD II	IATS sense circuit high voltage (low air temperature)	Ignition ON > 5 seconds	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	EM82 -17 EM83 -13	IATS to ECM wiring: open circuit or high resistance IATS to ECM sense circuit: short circuit to B+ voltage IATS failure
P0113	OBD II	IATS sense circuit low voltage (high air temperature)	Ignition ON > 5 seconds	2	N	When DTC is logged (first trip), ECM: – Substitutes fixed temperature of 50° C (122° F)	EM82 -17 EM83 -13	IATS to ECM wiring: short circuit to ground IATS failure
P0116	OBD II	ECTS range / performance (Two part monitoring)	1 Ignition ON > 5 seconds 2 ECT ambient; IAT > -8 °C (18 °F) start engine; bring to normal operating temperature Drive > 1500 rpm; > 3 minutes	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	EM82 -14	Low coolant level Contaminated coolant Engine thermostat failure ECTS to ECM sense circuit: high resistance when hot or intermittent high resistance ECTS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0117	OBD II	ECTS sense circuit high voltage (low coolant temperature)	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	EM82 -14	ECTS disconnected ECTS to ECM sense circuit: high resistance, open circuit or short circuit to B+ voltage ECTS failure
P0118	OBD II	ECTS sense circuit low voltage (high coolant temperature)	Ignition ON > 5 seconds	2	1 [A, M]	Refer to P0117 Default Action	EM82 -14 EM83 -13	Engine overheat condition ECTS to ECM wiring: short circuit to ground ECTS failure
P0121	OBD II	TPS circuit range / performance (TPS1 compared to TPS2)	Ignition ON; battery > 9v Slowly move accelerator pedal through full range; > 40 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode – engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM81 -10 -19	TPS to ECM wiring: open circuit or high resistance TPS to ECM sensing circuits ("1" or "2"): short circuit to B+ voltage TPS failure
P0122	OBD II	TPS circuit "1" low voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P0121 Default Action	EM81 -10	TPS to ECM sensing circuit "1" (TPS pin 3): open circuit or high resistance TPS failure
P0123	OBD II	TPS circuit "1" high voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P0121 Default Action	EM81 -10	TPS to ECM sensing circuit "1" (TPS pin 3): short circuit to high voltage TPS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0125	OBD II	ECTS response (for closed loop fuel control)	ECT ambient; IAT > -8 °C (18 °F) Start engine; bring to normal operating temperature; drive > 1500 rpm; > 3 minutes	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes transmission fluid temperature (via CAN) – Limits engine speed to 3000 rpm – Inhibits canister purge	EM82 -14	Low coolant level Contaminated coolant Engine coolant thermostat failure ECTS to ECM sense circuit: high resistance, open circuit or short circuit to high voltage
P0128	OBD II	Coolant thermostat range / performance malfunction	ECT -8 °C (18 °F) to 40 °C (104 °F); IAT > -8 °C (18 °F); engine running at idle	2	N	None	—	Contaminated coolant Engine coolant thermostat failure ECT failure (ECT DTC(s) also flagged)
P0131	OBD II	HO2S sense circuit low current – A bank (1), upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	2	N	None	EM82 -04 -10	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0132	OBD II	HO2S sense circuit high current – A bank (1), upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	2	N	None	EM82 -04 -10	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0133	OBD II	HO2S sense circuit slow response – A bank (1), upstream (1)	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at 60 – 95 km/h (37 – 59 mph); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft. (2,438 m)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) adaptive fuel metering – Inhibits A bank (1) downstream HO2S control	EM82 -04 -10 EM85 -01	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding: open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0135	OBD II	HO2S heater circuit malfunction – A bank (1), upstream (1)	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) adaptive fuel metering – Inhibits A bank (1) downstream HO2S control	EM85 -01	HO2S disconnected HO2S heater power supply: open circuit HO2S heater to ECM wiring: short circuit or open circuit HO2S heater failure
P0137	OBD II	HO2S sense circuit low voltage – A bank (1), downstream (2)	Start and run engine > 5 seconds	2	N	None	EM83 -21	HO2S disconnected HO2S to ECM wiring: open circuit HO2S short circuit to ground HO2S failure
P0138	OBD II	HO2S sense circuit high voltage – A bank (1), downstream (2)	Start and run engine; bring to normal operating temperature; IAT > -8 °C (18 °F); run engine > 1 minute	2	N	None	EM83 -12 -21	HO2S sense circuit: short circuit to high voltage HO2S ground (BRD – braided shield): open circuit HO2S failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0140	OBD II	HO2S sense circuit no activity – A bank (1), downstream (2)	Engine at normal operating temperature Drive > 64 km/h (40 mph); > 2 minute 30 seconds	2	N	None	EM83 -12 -21	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring: open circuit HO2S sense circuit: short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield): open circuit Exhaust leak Low exhaust temperature HO2S failure
P0141	OBD II	HO2S Heater circuit malfunction – A bank (1), downstream (2)	Ignition ON > 5 seconds	2	N	None	EM84 -07	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure
P0151	OBD II	HO2S sense circuit low current – B bank (2), upstream (1) (Universal oxygen sensor: lean condition at ECM – high current at sensor)	Start and run engine > 5 seconds	2	N	None	EM82 -05 -11	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure
P0152	OBD II	HO2S sense circuit high current – B bank (2), upstream (1) (Universal oxygen sensor: rich condition at ECM – low current at sensor)	Start and run engine > 5 seconds	2	N	None	EM82 -05 -11	HO2S disconnected HO2S to ECM variable current circuit fault (HO2S pin 3) ECM to HO2S constant current circuit fault (HO2S pin 4) HO2S failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0153	OBD II	HO2S sense circuit slow response – B bank (2), upstream (1)	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at 60 – 95 km/h (37 – 59 mph); engine speed 1500 – 2000 rpm >30 seconds Surface elevation < 8,000 ft. (2,438 m)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank (2) closed loop fuel metering – Inhibits B bank (2) adaptive fuel metering – Inhibits B bank (2) downstream HO2S control	EM82 -05 -11 EM85 -02	Engine misfire HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S short circuit to ground HO2S to ECM variable current circuit shielding: open circuit HO2S heater circuit fault Exhaust leak Low exhaust temperature Injector flow partially blocked Catalyst efficiency decrease HO2S failure
P0155	OBD II	HO2S heater circuit malfunction – B bank (2), upstream (1)	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank (2) closed loop fuel metering – Inhibits B bank (2) adaptive fuel metering – Inhibits B bank (2) downstream HO2S control	EM85 -02	HO2S disconnected HO2S heater power supply: open circuit HO2S heater to ECM wiring: short circuit or open circuit HO2S heater failure
P0157	OBD II	HO2S sense circuit low voltage – B bank (2), downstream (2)	Start and run engine > 5 seconds	2	N	None	EM83 -22	HO2S disconnected HO2S to ECM wiring: open circuit HO2S short circuit to ground HO2S failure
P0158	OBD II	HO2S sense circuit high voltage – B bank (2), downstream (2)	Start and run engine; bring to normal operating temperature; IAT > -8 °C (18 °F); run engine > 1 minute	2	N	None	EM83 -12 -22	HO2S sense circuit: short circuit to high voltage HO2S ground (BRD – braided shield): open circuit HO2S failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0160	OBD II	HO2S sense circuit no activity – B bank (2), downstream (2)	Engine at normal operating temperature; drive > 64 km/h (40 mph); > 2 minute 30 seconds	2	N	None	EM83 -12 -22	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring: open circuit HO2S sense circuit: short circuit to high voltage HO2S short circuit to ground HO2S ground (BRD – braided shield): open circuit Exhaust leak Low exhaust temperature HO2S failure
P0161	OBD II	HO2S heater circuit malfunction –B bank (2), downstream (2)	Ignition ON > 5 seconds	2	N	None	EM84 -15	HO2S disconnected HO2S mechanical damage HO2S to ECM wiring fault HO2S heater failure
P0171	OBD II	A bank (1) combustion too lean	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed > 64 km/h (40 mph); > 1 minute	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0174 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	—	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0172	OBD II	A bank (1) combustion too rich	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed > 64 km/h (40 mph); > 1 minute	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0175 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	—	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0174	OBD II	B bank (2) combustion too lean	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed > 64 km/h (40 mph); > 1 minute	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0171 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge* * Inhibited when "lean" fault is first detected	—	Engine misfire Air intake leak between MAFS and throttle Fuel filter, system blockage Fuel injector blockage Fuel pressure regulator failure (low fuel pressure) Low fuel pump output HO2S harness wiring condition fault Exhaust leak (before catalyst) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS
P0175	OBD II	B bank (2) combustion too rich	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed > 64 km/h (40 mph); > 1 minute	2	2 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits downstream HO2S control If DTC P0172 is also flagged, ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge	—	Blocked air filter Fuel system return blockage Leaking fuel injector(s) Fuel pressure regulator failure (high fuel pressure) ECM receiving incorrect signal from one or more of the following components: ECTS, MAFS, IATS, TPS

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0196	OBD II	EOTS range / performance	EOT and ECT ambient; IAT > -8 °C (18 °F) Start engine; bring to normal operating temperature	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EM80 -15	EOTS to ECM sense circuit: high resistance when hot, intermittent high resistance EOTS failure
P0197	OBD II	EOTS sense circuit low voltage (high oil temperature)	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EM80 -15	EOTS to ECM wiring: short circuit to ground EOTS failure
P0198	OBD II	EOTS sense circuit high voltage (low oil temperature)	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Substitutes engine coolant temperature	EM80 -15	EOTS disconnected EOTS to ECM sense circuit: high resistance, open circuit or short circuit to B+ voltage EOTS failure
P0201	OBD II	Fuel injector circuit malfunction cylinder A1 (1)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all A bank (1) injectors are flagged: – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) adaptive fuel metering – Inhibits A bank (1) downstream HO2S control	EM84 -02	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0202	OBD II	Fuel injector circuit malfunction cylinder A2 (2)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0201 Default Action	EM84 -21	Injector disconnected Injector harness wiring: open or short circuit Injector failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0203	OBD II	Fuel injector circuit malfunction cylinder A3 (3)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0201 Default Action	EM84 -14	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0204	OBD II	Fuel injector circuit malfunction cylinder A4 (4)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0201 Default Action	EM84 -05	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0205	OBD II	Fuel injector circuit malfunction cylinder B1 (5)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits canister purge If DTCs for all B bank (2) injectors are flagged: – Inhibits B bank (2) closed loop fuel metering – Inhibits B bank (2 adaptive fuel metering – Inhibits B bank (2) downstream HO2S control	EM84 -06	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0206	OBD II	Fuel injector circuit malfunction cylinder B2 (6)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0205 Default Action	EM84 -04	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0207	OBD II	Fuel injector circuit malfunction cylinder B3 (7)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0205 Default Action	EM84 -03	Injector disconnected Injector harness wiring: open or short circuit Injector failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0208	OBD II	Fuel injector circuit malfunction cylinder B4 (8)	Start engine, bring to normal operating temperature; vary engine speed between idle – 2500 rpm > 10 times	2	1 [A, M]	Refer to P0205 Default Action	EM84 -13	Injector disconnected Injector harness wiring: open or short circuit Injector failure
P0222	OBD II	TPS circuit "2" low voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM81 -19	TPS to ECM sensing circuit "2" (TPS pin 2): open circuit or high resistance TPS failure
P0223	OBD II	TPS circuit "2" high voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P0222 Default Action	EM81 -19	TPS to ECM sensing circuit "2" (TPS pin 2): short circuit to B+ voltage TPS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0300	OBD II	Random misfire detected *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault (Cylinder misfire detected DTC also flagged) Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure
P0301	OBD II	Misfire detected – cylinder A1 (1) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) adaptive fuel metering – Inhibits canister purge	EM84 -12	Refer to P0300 Possible Faults
P0302	OBD II	Misfire detected – cylinder A2 (2) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -11	Refer to P0300 Possible Faults

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0303	OBD II	Misfire detected – cylinder A3 (3) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -10	Refer to P0300 Possible Faults
P0304	OBD II	Misfire detected – cylinder A4 (4) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -09	Refer to P0300 Possible Faults
P0305	OBD II	Misfire detected – cylinder B1 (5) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -20	Refer to P0300 Possible Faults
P0306	OBD II	Misfire detected – cylinder B2 (6) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -19	Refer to P0300 Possible Faults

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0307	OBD II	Misfire detected – cylinder B3 (7) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -18	Refer to P0300 Possible Faults
P0308	OBD II	Misfire detected – cylinder B4 (8) *Refer to misfire note – page 4	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft. (2,438 m)	1 or 2*	1 [A, M]	Refer to P0301 Default Action	EM84 -17	Refer to P0300 Possible Faults
P0327	OBD II	KS sense circuit out of range (low voltage) A bank (1)	Start engine; run > 5 seconds	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	EM83 -14	Poor sensor contact with the cylinder block KS to ECM sense circuit: short circuit to ground KS failure
P0328	OBD II	KS sense circuit out of range (high voltage) A bank (1)	Start engine; run > 5 seconds	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	EM83 -14	Poor sensor contact with the cylinder block KS to ECM sense circuit: high resistance, open circuit or short circuit to high voltage KS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0332	OBD II	KS sense circuit out of range (low voltage) B bank (2)	Start engine; run > 5 seconds	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	EM83 -23	Poor sensor contact with the cylinder block KS to ECM sense circuit: short circuit to ground KS failure
P0333	OBD II	KS sense circuit out of range (high voltage) B bank (2)	Start engine; run > 5 seconds	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	EM83 -23	Poor sensor contact with the cylinder block KS to ECM sense circuit: high resistance, open circuit or short circuit to high voltage KS failure
P0335	OBD II	CKPS circuit malfunction	Crank engine > 2 seconds – engine will not start; or start engine, run steady > 1000 rpm; or engine stall, ignition ON	2	1 [A, M]	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Limits engine speed to 3000 rpm	EM83 -07 -08	CKPS disconnected CKPS gap incorrect / foreign matter on sensor face CKPS sense circuit: open circuit, short circuit to ground, short circuit to high voltage CKPS failure
P0336	OBD II	CKPS range / performance	Start engine; idle > 5 seconds (If the CKPS signal is not present, the engine will not start. The engine will stop if the CKPS signal is lost while running.)	2	1 [A, M]	None	EM83 -07 -08	CKPS reluctor (on drive plate) foreign matter / damaged teeth CKPS sense circuit: intermittent open circuit, short circuit to ground, short circuit to high voltage CKPS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0340	OBD II	CMPS circuit malfunction – A bank (1)	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank (1) CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank (1) CMPS signal is lost while running.)	2	N	None	EM83 -09 -19	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sense circuit: open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0341	OBD II	CMPS range / performance – A bank (1) (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the A bank (1) CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank (1) CMPS signal is lost while running.)	2	N	None	EM83 -09 -19	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sense circuit: open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P0351	OBD II	Ignition coil A1 (1) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) downstream HO2S control	EM84 -12	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
P0352	OBD II	Ignition coil A2 (2) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0351 Default Action	EM84 -11	Refer to P0351 Possible Causes
P0353	OBD II	Ignition coil A3 (3) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0351 Default Action	EM84 -10	Refer to P0351 Possible Causes

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0354	OBD II	Ignition coil A4 (4) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0351 Default Action	EM84 -09	Refer to P0351 Possible Causes
P0355	OBD II	Ignition coil B1 (5) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm – Inhibits individual cylinder fuel injection – Inhibits B bank (2) closed loop fuel metering – Inhibits B bank (2) downstream HO2S control	EM84 -20	Refer to P0351 Possible Causes
P0356	OBD II	Ignition coil B2 (6) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0355 Default Action	EM84 -19	Refer to P0351 Possible Causes
P0357	OBD II	Ignition coil B3 (7) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0355 Default Action	EM84 -18	Refer to P0351 Possible Causes
P0358	OBD II	Ignition coil B4 (8) primary / secondary circuit malfunction	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	Refer to P0355 Default Action	EM84 -17	Refer to P0351 Possible Causes
P0400	OBD II	EGR flow malfunction	Engine at normal operating temperature Normal varied driving for 3 minutes; 60 – 120 km/h (37 – 75 mph); 1300 – 2500 rpm; then decelerate at fuel cut-off (foot off accelerator pedal) Surface elevation < 8,000 ft (2,438 m)	2	N	None	—	EGR pipe blocked EGR valve stuck open / closed, blocked EGR valve failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0405	OBD II	EGR valve drive circuits open circuit	Ignition ON > 5 seconds	2	N	None	EM85 -03 -04 -09 -10	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 ERG valve failure (stepper motor open circuit)
P0406	OBD II	EGR valve drive circuits short circuit	Ignition ON > 5 seconds	2	N	None	EM85 -03 -04 -09 -10	EGR valve to ECM drive circuit pair (EGR valve pins 1/4, 6/3): short circuit to ground or high voltage ERG valve failure (stepper motor short circuit)
P0420	OBD II	Catalyst efficiency below threshold A bank (1)	Engine at normal operating temperature; IAT > -8 °C (18 °F) Varied driving for 3 minutes; then, constant steady throttle 50 – 60 km/h (30 – 38 mph), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	2	N	None	—	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure
P0430	OBD II	Catalyst efficiency below threshold B bank (2)	Engine at normal operating temperature; IAT > -8 °C (18 °F) Varied driving for 3 minutes; then, constant steady throttle 50 – 60 km/h (30 – 38 mph), 1100 – 1475 rpm > 25 seconds Surface elevation < 8,000 ft (2,438 m)	2	N	None	—	HO2S disconnected HO2S to ECM wiring fault HO2S heater to ECM wiring fault HO2S heater failure Upstream HO2S failure Downstream HO2S failure Catalyst failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0442	OBD II	EVAP (system) leak detected – small (0.040 in)	Fuel tank level between 15% – 85% full After start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive vehicle 20 – 100 km/h (12 – 60 mph) > 6 minutes Surface elevation < 8,000 ft. (2,438 m)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	—	Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit: open circuit, short circuit, high resistance EVAPP valve power supply circuit: open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak
P0443	OBD II	EVAP purge valve control malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EGR diagnostic monitoring	EM80 -01	EVAPP valve to ECM drive circuit: open circuit, short circuit, high resistance EVAPP valve power supply circuit: open circuit EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure
P0444	OBD II	EVAPP valve circuit open circuit	Engine at normal operating temperature; vehicle stationary; brakes applied; gear "D"; idle > 10 seconds	2	N	None	EM80 -01	EVAPP to ECM drive circuit: open circuit or high resistance EVAPP failure
P0445	OBD II	EVAPP valve circuit short circuit	Engine at normal operating temperature; drive vehicle 20 – 100 km/h (12 – 60 mph) > 6 minutes	2	N	None	EM80 -01	EVAPP to ECM drive circuit: short circuit to ground EVAPP failure
P0446	OBD II	CCV (canister close valve) malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	2	N	None	EM80 -02	CCV B+ power supply circuit fault CCV to ECM drive circuit: open circuit, high resistance or short circuit to B+ voltage CCV failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0447	OBD II	CCV (canister close valve) opened failure	Ignition ON > 5 seconds (ECM CCV drive inactive – valve open)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	EM80 -02	CCV B+ power supply circuit fault CCV to ECM drive circuit: open circuit, high resistance or short circuit to B+ voltage CCV failure
P0448	OBD II	CCV (canister close valve) closed failure	Occurs during "EVAP leak check". Refer to P0442, P0455	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring – Inhibits adaptive fuel metering – Inhibits canister purge	EM80 -02	CCV to ECM drive circuit: short circuit to ground CCV failure
P0450	OBD II	FTP (fuel tank pressure) sensor malfunction	Occurs during "EVAP leak check". Refer to P0442, P0455	2	N	None	EM81 -16 EM83 -05 -13	FTP sensor disconnected FTP sensor to ECM sense circuit: open circuit, short circuit to ground, short circuit to B+ voltage FTP sensor to ECM power supply circuit: open circuit or short circuit to ground FTP sensor to ECM wiring (supply, sense, signal ground): short circuit to each other FTP sensor failure
P0452	OBD II	FTP (fuel tank pressure) sensor circuit low voltage	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	EM81 -16 EM83 -13	FTP sensor disconnected FTP sensor to ECM sense circuit: open circuit or short circuit to ground FTP sensor to ECM power supply circuit: open circuit or short circuit to ground FTP sensor failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0453	OBD II	FTP (fuel tank pressure) sensor circuit high voltage	Ignition ON > 5 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits EVAP leak check monitoring	EM81 -16 EM83 -05 -13	FTP sensor to ECM signal ground circuit: open circuit FTP sensor to ECM wiring (supply, sense, signal ground): short circuit to each other FTP sensor to ECM sense circuit: short circuit to B+ voltage FTP sensor failure
P0455	OBD II	EVAP (system) leak detected – large	Fuel tank level between 15% – 85% full After start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive vehicle 20 – 100 km/h (12 – 60 mph) > 6 minutes Surface elevation < 8,000 ft (2,438 m)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	—	Fuel cap off Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit: open circuit, short circuit, high resistance EVAPP valve power supply circuit: open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0456	OBD II	EVAP (system) leak detected – very small (0.020 in)	Fuel tank level between 15% – 85% full After start-up, run engine 13 minutes. Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive vehicle 20 – 100 km/h (12 – 60 mph) > 6 minutes Surface elevation < 8,000 ft. (2,438 m)	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits adaptive fuel metering – Inhibits canister purge	—	Fuel cap seal defective EVAP system leak (canister damage, pipework damage) EVAPP valve to ECM drive circuit: open circuit, short circuit, high resistance EVAPP valve power supply circuit: open circuit EVAPP valve to engine purge pipe damaged / blocked / leaking EVAPP valve operating vacuum hose leak / blockage EVAPP valve failure Fuel tank leak
P0460	OBD II	Fuel level sense signal performance	Drive > 48 km (30 miles)	2	N	None	—	Fuel level sensor to instrument pack circuits: intermittent short or open circuit, high resistance Fuel level sensor failure Instrument pack fault (incorrect fuel level data)
P0480	JAG	Radiator fans slow (series) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	None	EM81 -05	Radiator fan control relay module to ECM "series" drive circuit (relay pin 9) fault Relay coil ignition power supply: open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)
P0482	JAG	Radiator fans fast (parallel) circuit malfunction	Engine at normal operating temperature; fans cycle ON / OFF	N	N	None	EM81 -04	Radiator fan control relay module to ECM "parallel" drive circuit (relay pin 7) fault Relay coil ignition power supply: open circuit ECM ground circuit fault (relay coil drive) ECTS circuit malfunction (refer to P0116)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0506	OBD II	Idle rpm lower than expected	Engine and transmission at normal operating temperature; IAT > -8 °C (18 °F); gear "N" Idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	N	None	—	Air intake blockage Accessory drive overload (defective / seized component) Throttle valve stuck closed Throttle assembly failure
P0507	OBD II	Idle rpm higher than expected	Engine and transmission at normal operating temperature; IAT > -8 °C (18 °F); gear "N" Idle > 30 seconds (no electrical load, A/C compressor, radiator fans, brake pedal switching during period) Surface elevation < 8,000 ft (2,438 m)	Y	N	None	—	Intake air leak between MAFS and throttle Intake air leak between throttle and engine Engine breather leak Throttle valve stuck open Throttle assembly failure
P0560	OBD II	Vehicle voltage malfunction	Ignition ON > 35 seconds	2	N	None	EM81 -17 EM82 -09 -13 EM83 -20	ECM battery power supply: open circuit, high resistance ECM ignition power supply: open circuit, high resistance

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0566	JAG	Cruise control CANCEL switch ON fault	Ignition ON > 75 seconds	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -15	Cruise control switches internal steering wheel circuit: short circuit to ground Steering wheel cassette reel: short circuit to ground Cassette reel to ECM circuit: short circuit to ground CANCEL switch failure (stuck ON)
P0567	JAG	Cruise control RESUME switch ON fault	Ignition ON > 75 seconds	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -15	Cruise control switches internal steering wheel circuit: short circuit to ground Steering wheel cassette reel: short circuit to ground Cassette reel to ECM circuit: short circuit to ground RESUME switch failure (stuck ON)
P0568	JAG	Cruise control switch ground malfunction	Ignition ON > 5 seconds	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -14 -15	Cruise control switches internal steering wheel circuit: open circuit Steering wheel cassette reel: open circuit or high resistance Cassette reel to ECM circuit (ACCEL / DECEL): open circuit or high resistance ACCEL / DECEL switch failure
P0569	JAG	Cruise control DECEL / SET (SET-) switch ON fault	Ignition ON > 10 minutes	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -14	Cruise control switches internal steering wheel circuit: short circuit to ground Steering wheel cassette reel: short circuit to ground Cassette reel to ECM circuit: short circuit to ground DECEL / set switch failure (stuck ON)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P0570	JAG	Cruise control ACCEL / SET (SET+) switch ON fault	Ignition ON > 10 minutes	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -14	Cruise control switches internal steering wheel circuit: short circuit to ground Steering wheel cassette reel: short circuit to ground Cassette reel to ECM circuit: short circuit to ground ACCEL / set failure (stuck ON)
P0603	OBD II	ECM data corrupted	Ignition ON > 5 seconds	1	N	When CK ENG MIL is activated (DTC flagged; first trip), ECM: – Inhibits all diagnostic monitoring except: • throttle control monitoring • upstream HO2S control monitoring • CPU 1 and 2 monitoring	—	ECM failure
P1000	JAG	System checks not complete since last memory clear	"System Readiness Test"	N	N	NONE	—	Refer to page3
P1104	OBD II	MAFS ground malfunction	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm – Substitutes throttle angle for engine load measurement – Inhibits canister purge	EM83 -26 -27	MAFS to ECM reference ground circuit: open circuit, short circuit to high voltage, high resistance MAFS to ECM sense circuit: open circuit MAFS failure
P1107	OBD II	MAP sensor sense circuit low voltage	Ignition ON > 5 seconds	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	EM80 -28	MAP sensor to ECM sense circuit: open circuit or short circuit to ground MAP sensor to ECM reference voltage circuit: open circuit or short circuit to ground MAP sensor failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1108	OBD II	MAP sensor sense circuit high voltage	Ignition ON > 5 seconds	2	N	When DTC logged (first trip), ECM: – Substitutes fixed value of 1013 mBar (29.92 in hg)	EM80 -28	MAP sensor to ECM reference ground circuit: open circuit MAP sensor to ECM wiring: short circuit to each other MAP sensor to ECM sense circuit: short circuit to high voltage MAP sensor failure
P1111	JAG	System checks complete since last memory clear	"System Readiness Test"	N	N	None	—	Refer to page 3
P1112	OBD II	IATS 2 sense circuit high voltage (low charge air temperature)	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged, first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 118 °C (244 °F)	EM81 -23	IATS 2 to ECM sense circuit: open circuit, high resistance, short circuit to high voltage IATS 2 failure
P1113	OBD II	IATS 2 sense circuit low voltage (high charge air temperature)	Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged, first trip), ECM: – Limits throttle opening to 30% – Substitutes fixed charge air temperature of 118 °C (244 °F)	EM81 -23	Supercharger intercooler failure IATS 2 to ECM sense circuit: short circuit to ground IATS 2 failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1121	OBD II	PPS circuit range / performance (PPS1 compared to PPS2)	Ignition ON; battery > 9v; Slowly move accelerator pedal through full range; > 40 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM81 -09 -18	Accelerator pedal to pedal position sensor cable adjustment incorrect Pedal position sensor to ECM sense circuits 1 and 2: open circuit, short circuit or high resistance Sensor power supply fault Sensor reference ground fault Pedal position sensor failure
P1122	OBD II	Pedal position sensor circuit "1" low voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1121 Default Action	EM81 -09	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire: open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1123	OBD II	Pedal position sensor circuit "1" high voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1121 Default Action	EM81 -09	Pedal position sensor to ECM sense circuit "1" (sensor pin 4) wire: short circuit to B+ voltage Pedal position sensor failure
P1136	JAG	"Cool box" fan malfunction	Ignition ON; fan operating	N	N	None	EM85 -05	Cooling fan power supply (fuse) fault Cooling fan drive circuit fault Cooling fan motor failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1143	OBD II	AACV (air assist close valve) range / performance	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive and accelerate to 100 km/h (60 mph); release the accelerator and coast to 37 mph (60 km/h); engine rpm 1000 – 3000 during coast	2	N	None	—	AAI piping blocked Throttle body air channel blocked AACV stuck
P1144	OBD II	AACV (air assist close valve) circuit malfunction	ECT ambient; start engine and bring to normal operating temperature	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits AACV range / performance diagnostic monitoring	EM83 -03	AACV B+ power supply circuit fault AACV ground circuit fault AACV to ECM PWM drive circuit: open circuit, short circuit or high resistance AACV failure
P1222	OBD II	Pedal position sensor circuit "2" low voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM81 -18	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire: open circuit or high resistance Sensor power supply fault Pedal position sensor failure
P1223	OBD II	Pedal position sensor circuit "2" high voltage	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1222 Default Action	EM81 -18	Pedal position sensor to ECM sense circuit "2" (sensor pin 2) wire: short circuit to B+ voltage Pedal position sensor failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1224	OBD II	Throttle control position error	Ignition ON > 3 minutes	2	1 [R, A, M]	Refer to P1222 Default Action	EM81 -10 -19 EM80 -08 -09 EM82 -06	Throttle adaptions not performed after battery disconnect TPS disconnected TPS to ECM sense circuits: open circuit, high resistance Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay power supply: open circuit ECM ground circuit fault (relay coil drive) Throttle motor to ECM drive circuit: open circuit, short circuit, high resistance Throttle motor failure Throttle assembly failure
P1229	OBD II	Throttle motor control circuit malfunction	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1222 Default Action	EM82 -06	Throttle motor disconnected Throttle motor to ECM drive circuit: short circuit or open circuit Throttle motor failure
P1230	OBD II	Fuel pump relay malfunction NOTE: This DTC covers the N/A system single fuel pump and the SC system fuel pump 1.	Ignition OFF; Ignition ON > 5 seconds	2	N/A: N SC: 2 [A, M]	N/A – None SC – When fault is detected, ECM: – Operates fuel pump 2	EM83 -04	Fuel pump relay failure Fuel pump relay to ECM circuit fault Fuel pump relay coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1240	OBD II	Sensor supply voltage malfunction	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM82 -01 EM83 -05	ECM to sensors supply voltage circuit: short circuit to ground, short circuit to high voltage, open circuit, high resistance TPS, PPS, FTP sensor failure(s)
P1241	OBD II	Sensor supply voltage low	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1240 Default Action	EM82 -01 EM83 -05	ECM to sensors supply voltage circuit: short circuit to ground TPS, PPS, FTP sensor failure(s)
P1242	OBD II	Sensor supply voltage high	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1240 Default Action	EM82 -01 EM83 -05	ECM to sensors supply voltage circuit: open circuit, high resistance, short circuit to high voltage TPS, PPS, FTP sensor failure(s)
P1243	OBD II	Sensor ground malfunction	Ignition ON > 5 seconds	2	1 [R, A, M]	Refer to P1240 Default Action	EM82 -07 EM83 -13	ECM to sensors ground circuit: open circuit, high resistance TPS, PPS, ECTS, IATS, FTP sensor failure(s)
P1245	OBD II	Engine crank signal low voltage	Start engine; idle	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	EM82 -02	Starter relay coil to ECM / BPM circuit: open circuit

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1246	OBD II	Engine crank signal high voltage	Start engine; drive / accelerate > 20 km/h (13 mph) 1200 – 3000 rpm; decelerate to stop; repeat (5 times total)	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits engine speed to 3000 rpm	EM82 -02	Starter relay coil to ECM / BPM circuit: short circuit to B+ voltage BPM failure
P1250	JAG	Throttle valve return spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 129 km/h (80 mph) – Inhibits cruise control	—	Throttle return spring failure (throttle failure)
P1251	OBD II	Throttle motor power relay malfunction	Ignition ON > 10 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM80 -08 -09 EM82 -06	Throttle motor power relay failure Throttle motor power relay to ECM circuit fault Throttle motor power relay coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1254	JAG	Throttle "limp home" spring malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	1 [R, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 129 km/h (80 mph) – Inhibits cruise control	—	Throttle limp home spring failure (throttle failure)
P1260	JAG	Security input malfunction	Ignition ON > 10 seconds	N	N	None	EM82 -15	KTM to ECM circuit: short circuit, high resistance or open circuit Loss of ignition switched power supply to the ECM PIN EM82-09 for greater than 16 milliseconds KTM failure Security system incorrectly configured (KTM / ECM)
P1313	OBD II	Misfire rate catalyst damage A bank (1) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits A bank (1) closed loop fuel metering – Inhibits A bank (1) adaptive fuel metering – Inhibits canister purge	—	Cylinder compression low Worn camshaft / broken valve spring(s) Fuel delivery pressure (low / high) Fuel injector(s) blocked / 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 module primary circuit fault(s) (Cylinder misfire detected DTC also flagged) Ignition module ground circuit: open circuit, high resistance Ignition module / coil failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1314	OBD II	Misfire rate catalyst damage B bank (2) NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits B bank (2) closed loop fuel metering – Inhibits B bank (2) adaptive fuel metering – Inhibits canister purge	—	Refer to P1313 Possible Causes
P1316	OBD II	Misfire excess emission NOTE: This DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300 – P0308.	Engine at normal operating temperature; IAT > -8 °C (18 °F) Drive at steady speed between idle – 2500 rpm; > 2 minutes 30 seconds Surface elevation < 8,000 ft (2,438 m)	1	1 [A, M]	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Limits engine speed to 3000 rpm – Inhibits closed loop fuel metering – Inhibits adaptive fuel metering – Inhibits canister purge	—	Refer to P1313 Possible Causes
P1340	OBD II	CMPS circuit malfunction – B bank (2)	Crank engine > 5 seconds (battery v 6 – 10.5 during cranking); or start engine, idle > 600 rpm (If the A bank (1) CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the A bank (1) CMPS signal is lost while running.)	2	N	None	EM83 -17 -18	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sense circuit: open circuit, short circuit to ground, short circuit to high voltage CMPS failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1341	OBD II	CMPS range / performance – B bank (2) (CMPS pulse not detected at CKPS missing tooth)	Start engine; idle > 5 seconds (If the B bank (2) CMPS signal is not present, the engine may start – 50% chance. The engine will run normally if the B bank (2) CMPS signal is lost while running.)	2	N	None	EM83 -17 -18	CMPS disconnected CMPS gap incorrect / foreign matter on sensor face CMPS sense circuit: open circuit, short circuit to ground, short circuit to high voltage CMPS failure
P1367	OBD II	Ignition monitor – Group One (1A, 2B, 3B, 4A)	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	EM83 -10	Ignition monitoring circuit between splice and ECM: open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1368	OBD II	Ignition monitor – Group Two (1B, 2A, 3A, 4B)	Run engine steady < 2500 rpm > 5 seconds	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	EM83 -11	Ignition monitoring circuit between splice and ECM: open circuit, short circuit to ground or short circuit to B+ voltage Ignition module / coil group ground circuit fault Ignition coil relay failure
P1384	OBD II	VVT solenoid malfunction – A bank (1)	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	EM81 -01 -02	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure
P1392	OBD II	VVT Circuit malfunction – A bank (1)	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	EM81 -01 -02	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1396	OBD II	VVT solenoid malfunction – B bank (2)	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	EM81 -06 -07	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure VVT oil flow fault VVT / camshaft mechanical failure
P1397	OBD II	VVT Circuit malfunction – B bank (2)	Drive vehicle; accelerate rapidly to cruise, decelerate to stop, repeat several times	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Sets VVT drive PWM duty cycle to 0 (intake camshaft fully retarded)	EM81 -06 -07	VVT solenoid valve to ECM PWM drive circuit fault VVT solenoid valve to ECM ground circuit fault VVT solenoid failure
P1474	OBD II	Intercooler coolant pump relay malfunction	Ignition OFF; Ignition ON > 5 seconds	2	1 [A, M]	When AMBER MIL is activated (DTC logged; first trip), ECM: – Limits throttle opening to 30%	EM80 -14	Intercooler coolant pump relay battery power supply open circuit Intercooler pump relay failure Intercooler pump ECM to relay drive circuit fault Intercooler pump relay coil ground circuit fault ECM power supply fault (relay drive)
P1516	OBD II	Gear change PARK / NEUTRAL driving malfunction	Engine at normal operating temperature Drive 80 – 100 km/h (50 – 62 mph) 1800 – 2200 rpm > 35 seconds	2	N	None	EM81 -12	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit: open circuit or high resistance Rotary switch failure D – 4 switch to TCM circuit: open circuit or high resistance D – 4 switch fault
P1517	JAG	Engine cranking PARK / NEUTRAL malfunction *If engine will not start, CHECK ENGINE MIL will remain on	Start engine	N*	N	When fault is detected, ECM: – Fuel injection inhibited	EM81 -12	Gear selector cable setting incorrect Transmission rotary switch to ECM circuit: open circuit or high resistance Rotary switch failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1571	JAG	Brake switch malfunction	Drive vehicle; engage cruise control > 10 seconds disengage cruise control; repeat (5 total cycles)	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM80 -20 EM82 -08	Brake switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake switch ignition switched ground circuit: open circuit Brake switch failure Brake cancel switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake cancel switch to cruise control switch to ECM circuit: open circuit, short circuit to ground, high resistance Brake cancel switch ignition switched power supply open circuit Brake cancel switch failure Cruise control switch failure
P1582	JAG	Throttle monitor data available or Inertia switch malfunction	Ignition ON	N	N	None	EM82 -12	DTC indicates that the inertia switch has tripped (vehicle impact) If no vehicle impact: Inertia switch to ECM circuit: short circuit to ground Inertia switch failure
P1606	JAG	EMS control relay malfunction	Ignition ON; ignition OFF; ignition ON > 5 seconds	N	N	None	EM81 -03	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)

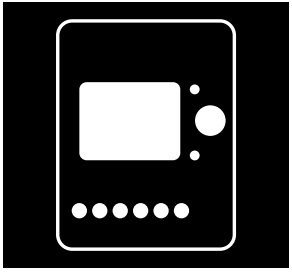
DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1609	OBD II	ECM microprocessor-to-microprocessor communication failure	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control/stability control	—	ECM FCCP (programming) circuit (ECM pin EM80-19 or EM80-27): short circuit to ground ECM failure
P1611	OBD II	ECM CPU 2 failure	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control/stability control	—	ECM failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1631	OBD II	Throttle motor power relay coil activation circuit failure	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	EM82 -06	Throttle motor relay coil to ECM circuit: open circuit, short circuit to ground or short circuit to B+ voltage ECM failure
P1633	OBD II	ECM CPU 1 memory failure	Ignition ON > 5 seconds	2	1 [R, A, M]	When RED MIL is activated (DTC logged; first trip), ECM: – Switches off throttle motor (via relay) – Initiates throttle "limp home" mode: engine speed controlled to between 1000-1250 rpm by fuel cutoff to cylinders – Inhibits idle speed control – Inhibits cruise control – Inhibits traction control / stability control	—	ECM failure
P1634	JAG	Throttle "watchdog" circuit malfunction	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	1 [R, A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 129 km/h (80 mph) – Inhibits cruise control	—	ECM failure

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1637	OBD II	CAN ABS/TCCM token message missing	Ignition ON > 5 seconds	2	1 [M]	When fault is detected, ECM: – Inhibits cruise control – (Idle speed control quality deteriorates)	EM83 -15 -16 -24 -25	CAN open circuit fault – ABS/TCCM to ECM CAN short circuit fault ABS/TCCM failure ECM failure
P1638	OBD II	CAN INST token message missing	Ignition ON > 5 seconds	1	N	None (Engine speed and coolant temperature data missing at instrument pack)	EM83 -15 -16 -24 -25	CAN open circuit fault – INST to ECM CAN short circuit fault INST failure ECM failure
P1642	OBD II	CAN circuit malfunction	Ignition ON > 5 seconds	1	1 [M]	When fault is detected, ECM: – Limits throttle to approximately 30% – Inhibits cruise control (All CAN data unavailable)	EM83 -15 -16 -24 -25	CAN short circuit fault Control module failure – check for additional flagged DTC(s) to locate control module source
P1643	OBD II	CAN TCM token message missing	Ignition ON > 5 seconds	2	1 [M]	When fault is detected, ECM: – Limits throttle to approximately 30% – Inhibits cruise control (Torque reduction request data missing; results in harsh transmission shifts)	EM83 -15 -16 -24 -25	CAN open circuit fault – TCM to ECM CAN short circuit fault TCM failure ECM failure
P1646	OBD II	Fuel pump 2 (SC) relay malfunction	Ignition ON > 5 seconds	2	1 [A, M]	When fault is detected, ECM: – Limits engine speed to 3000 rpm	EM82 -03	Fuel pump relay 2 failure Fuel pump relay 2 to ECM circuit fault Fuel pump relay 2 coil power supply open circuit ECM ground circuit fault (relay coil drive)

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1648	OBD II	ECM KS self test failure	Start engine; run > 5 seconds	2	1 [A, M]	When DTC is logged (first trip), ECM: – Sets ignition retard to maximum – Limits engine speed to 3000 rpm	—	ECM failure
P1649	JAG	ECM flash programming circuit malfunction	Ignition ON	N	N	None	EM80 -19 -27	ECM to DLC circuit: short circuit to ground or short circuit to B+ voltage
P1656	JAG	TPS amplifier circuit malfunction	Ignition ON > 5 seconds	N	1 [A]	None	—	ECM failure
P1657	JAG	Throttle motor power relay coil circuit ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 129 km/h (80 mph) – Inhibits cruise control	—	ECM failure
P1658	JAG	Throttle motor power relay ON failure	Ignition ON; Ignition OFF > 3 seconds; Ignition ON; Ignition OFF > 3 seconds; Ignition ON	N	1 [A, M]	When fault is detected, ECM: – Limited throttle valve movement in response to normal accelerator pedal movement – Limits vehicle speed to 129 km/h (80 mph) – Inhibits cruise control	EM80 -08 -09 EM82 -06	Throttle motor power relay failure (contacts stuck on) Throttle motor power relay to ECM coil circuit: short circuit to ground Throttle motor power relay to ECM supply circuit: short circuit to B+ voltage

DTC	TOOL	FAULT DESCRIPTION	MONITORING CONDITIONS	CK ENG	OTHER	DEFAULT ACTION	CM PIN	POSSIBLE CAUSES
P1696	JAG	Adaptive speed control CAN malfunction	Ignition ON > 5 seconds	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM83 -15 -16 -24 -25	CAN open circuit fault – Adaptive Speed Control CM, Adaptive Speed Control Booster CM to ECM CAN short circuit fault Adaptive Speed Control CM or Adaptive Speed Control Booster CM failure
P1697	JAG	Adaptive speed control "Headway" switch(es) circuit(s) malfunction	Ignition ON > 1 minute	N	1 [A, M]	When fault is detected, ECM: – Inhibits cruise control	EM81 -14 -15	Adaptive speed control switch(es) failure
P3007	OBD II	ECM HO2S control malfunction – A bank (1), upstream	Ignition ON > 8 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits A bank (1) upstream HO2S operation	—	HO2S heater failure HO2S sense circuit: short circuit to ground or high voltage HO2S sense circuit: open circuit ECM failure
P3008	OBD II	ECM HO2S control malfunction – B bank (2), upstream	Ignition ON > 8 seconds	2	N	When CK ENG MIL is activated (DTC flagged; second trip), ECM: – Inhibits B bank (2) upstream HO2S operation	—	HO2S heater failure HO2S sense circuit: short circuit to ground or high voltage HO2S sense circuit: open circuit ECM failure



DTC Summaries

PowerTrain 4L80-E Transmission Control System: XJ12 and XJR (AJ16 SC) – OBD II

OBD II MONITORING CONDITIONS

DTCs can be accessed only through the DLC (diagnostic link connector).
Using PDU, select ToolBox, DTC, and 4L80-E.

MIL Activation

CHECK ENGINE MIL: A number in the CHECK ENG. MIL column indicates the consecutive trips required to activate the MIL. The CHECK ENGINE MIL activates for OBD II related transmission faults. Activation will store engine management DTC P1775 in the ECM memory.

TRANSMISSION MIL: A number in the TRANS. MIL column indicates the consecutive trips required to activate the MIL.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0605	TCM data corrupted	Start engine	1	1	√	TCM failure
P0703	Brake switch input error	More than 10 accelerations to more than 20 mph (32 km/h), no brake during acceleration. More than 6 decelerations to less than 5 mph (8 km/h), brake applied. Each acceleration or deceleration within 25 seconds.	—	1	—	Brake switch incorrect adjustment Brake switch to TCM wire; open circuit, short circuit to ground or B+ voltage Brake switch ground circuit: open circuit Brake switch failure
P0706	Pressure switch manifold range / performance	Crank engine for 8 seconds. Start engine. Operate gear selector through all ranges. Drive vehicle above 10 mph (16 km/h) for more than 25 seconds.	2	1	—	Gear selector cable incorrect adjustment Pressure manifold switch to TCM harness open circuit, short circuit to ground or B+ voltage Linear switch to TCM signal circuit: open circuit, short circuit to ground or B+ voltage Linear switch failure Pressure switch manifold failure
P0712	Fluid temperature sensor circuit low voltage or fluid temperature above 307° F (153° C)	Switch ignition ON for more than 25 seconds.	2	—	—	Transmission internal harness temp. sensor circuit: short circuit to ground Transmission to TCM harness temp. sensor circuit: short circuit to ground Temperature sensor failure
P0713	Fluid temperature sensor circuit high voltage or fluid temperature below -54° F (-48° C)	Switch ignition ON for more than 10 seconds.	2	—	—	Transmission internal harness temp. sensor circuit: open circuit or short circuit to B+ voltage Transmission to TCM harness temp. sensor circuit: open circuit or short circuit to B+ voltage Temperature sensor failure
P0715	Transmission input speed, no signal	Drive vehicle above 15 mph (24 km/h).	2	1	—	Input speed sensor to TCM circuit: open circuit or short circuit to ground Speed sensor failure

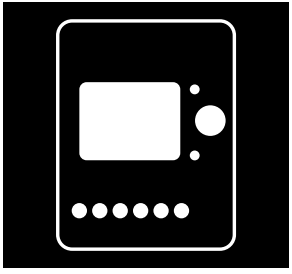
DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0716	Transmission input speed signal out of range	Drive vehicle above 15 mph (24 km/h).	2	1	—	Input speed sensor to TCM circuit: short circuit to B+ voltage Speed sensor failure
P0720	Transmission output speed signal low	Drive vehicle with engine speed above 3000 rpm, but not at full throttle, for more than 4 seconds.	2	1	√	Output speed sensor to TCM circuit: open circuit or short circuit to ground Speed sensor failure Transmission failure, no drive
P0721	Transmission output speed signal out of range	Drive vehicle.	2	1	√	Output speed sensor to TCM circuit: short circuit to B+ voltage Speed sensor failure
P0726	Engine speed signal out of range	Run engine above 1000 rpm.	2	1	—	ECM to TCM engine speed signal circuit: intermittent short circuit to ground or B+ voltage ECM engine speed signal error
P0727	Engine speed signal low	Drive vehicle. Accelerate up hill to more than 30 mph.	2	1	—	Engine stalled while driving ECM to TCM engine speed signal circuit: open circuit or short circuit to ground or B+ voltage ECM engine speed signal error
P0730	Transmission gear ratio incorrect	Drive vehicle above 7 mph (11 km/h) with TCC applied and throttle angle greater than 11%. Fluid temperature must be above 32° F (0° C).	2	1	—	Low transmission fluid level Refer to P0706 Transmission mechanical / hydraulic failure
P0741	TCC slipping / stuck OFF	Drive vehicle in fourth gear for 25 seconds with TCC applied and throttle angle between 15% and 50%. Fluid temperature must be between 68° F (20° C) and 285° F (141° C).	2	1	—	Transmission internal harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage TCC solenoid failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0742	TCC stuck ON	Drive vehicle longer than 5 seconds in 2nd, 3rd or 4th gear with TCC OFF, throttle angle greater than 15%.	2	1	—	Transmission internal harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage TCC solenoid failure
P0743	TCC circuit output state does not match command state	Drive vehicle in fourth gear with TCC applied.	2	1	—	Ignition switched power circuit to TCC solenoid open circuit or short circuit to ground Transmission internal harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness TCC solenoid circuit: open circuit, short circuit to ground or B+ voltage TCC solenoid failure
P0748	Force motor (pressure control regulator solenoid) current high	Run engine. Move gear selector through all ranges.	—	1	—	Force motor to TCM circuit high resistance or short circuit to ground Force motor failure
P0751	Shift solenoid A stuck ON or OFF	Drive vehicle. Accelerate up hill with gear selector in D.	2	1	√	Ignition switched power circuit to solenoid; open circuit or short circuit to ground Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0753	Shift solenoid A output state does not match command state	Drive vehicle through all forward gears with gear selector in D.	2	1	√	Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure
P0756	Shift solenoid B stuck ON or OFF	Drive vehicle above 10 mph (16 km/h) for more than 10 seconds.	2	1	√	Ignition switched power circuit to solenoid; open circuit or short circuit to ground Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure
P0758	Shift solenoid B output state does not match command state	Drive vehicle through all forward gears with gear selector in D.	2	1	√	Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure
P1739	Transmission slipping	Drive vehicle in fourth gear for 25 seconds with TCC applied and throttle angle between 15% and 50%. Fluid temperature must be between 68° F (20° C) and 285° F (141° C).	2	1	—	Low transmission fluid level Transmission mechanical / hydraulic failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P1780	Torque reduction signal error	Start engine. Allow to run more than 12 seconds.	2*	1	—	ECM internal torque signal error
P1781	Engine torque signal out of range	Start engine. Allow to run more than 12 seconds.	2*	1	—	ECM to TCM torque signal circuit: open circuit, short circuit to ground or B+ voltage ECM torque signal error
P1782	Traction control signal voltage low	Switch ignition ON. Operate traction control switch.	—	—	—	ABS / TC CM to TCM signal circuit: short circuit to ground ABS / TC CM signal error
P1783	Transmission hot mode, fluid temperature above 250° F (122° C)	Switch ignition ON.	—	—	—	High transmission fluid temperature; severe operating conditions Blocked transmission cooler Restricted fluid flow to cooler
P1785	TRANSMISSION MIL	Switch ignition ON.	—	—	—	TCM to instrument pack TRANSMISSION MIL circuit: open circuit, short circuit to ground or B+ voltage Instrument pack failure
P1791	TPS signal	Switch ignition ON.	2	1	—	ECM to TCM TPS signal circuit: open circuit, short circuit to ground or B+ voltage ECM TPS signal output error
P1794	TCM voltage supply out of range	Run engine above 1500 rpm for five seconds.	2	1	√	Ignition switched TCM power fuse defective LH heelboard fuse box to TCM ignition switched power circuit: open circuit, high resistance or short circuit to ground Charging circuit failure
P1796	Kickdown switch signal active	Switch ignition ON. Operate accelerator through full range of travel.	—	—	—	Kickdown switch adjustment Kickdown switch to TCM circuit: short circuit to ground Kickdown switch failure

* Depending on other fault parameters, CHECK ENGINE MIL may not activate.



DTC Summaries

ZF 4 HP 24 E9 / AJ16 Transmission Control System – OBD II

OBD II MONITORING

DTCs can be accessed only through the DLC (diagnostic link connector).
Using PDU, select ToolBox, Engine / Transmission DTC, and Bosch / ZF 4 HP 24 E9.

MIL Activation

CHECK ENGINE MIL: A number in the CHECK ENG. MIL column indicates the consecutive trips required to activate the MIL. The CHECK ENGINE MIL activates for OBD II related transmission faults. Activation will store engine management DTC P1775 in the ECM memory.

TRANSMISSION MIL: A check mark in the TRANS. MIL column indicates MIL activation. The number of trips required to activate the TRANSMISSION MIL may vary depending on other fault parameters.

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0603	TCM internal memory error	Start engine.	2	—	—	TCM failure
P0605	TCM data corrupted	Start engine.	2	√	√	TCM failure
P0702	TCM internal shift solenoid control relay malfunction	Switch ignition ON.	2	√	√	TCM failure
P0705	Rotary switch position signal invalid	Start engine. Operate gear selector through all ranges.	2	√	√	Rotary switch to TCM "position code XYZ" circuit: open circuit or short circuit to ground Rotary switch failure
P0706	Rotary switch "not in P or N" signal during starting	Start engine.	2	√	√	Rotary switch incorrect adjustment Gear selector / rotary switch not in P or N Rotary switch to TCM "position code Z" circuit: short circuit to ground Rotary switch failure
P0712	Fluid temperature sensor circuit low voltage or fluid temperature < -58° F (-50° C)	Run engine from cold to normal operating temperature.	—	—	—	Transmission internal harness temp. sensor signal circuit: short circuit to ground Transmission to TCM harness temp. sensor signal circuit: short circuit to ground Temperature sensor failure
P0713	Fluid temperature sensor circuit high voltage or fluid temperature > 365° F (185° C)	Run engine from cold to normal operating temperature.	—	—	—	High transmission operating temperature. (Look for burned transmission fluid) Transmission internal harness temp. sensor signal circuit: open circuit or short circuit to B+ voltage Transmission to TCM harness temp. sensor signal circuit: open circuit or short circuit to B+ voltage Temperature sensor failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0721	Output speed sensor signal out of range (high)	Drive vehicle and accelerate to force downshifting.	2	√	√	Transmission internal harness output speed sensor circuit: intermittent open circuit or short circuit to ground or B+ voltage Transmission to TCM harness output speed sensor circuit: intermittent open circuit or short circuit to ground or B+ voltage Intermittent speed sensor failure
P0722	Output speed sensor, no signal	Drive vehicle in a forward gear at an engine speed greater than 2000 rpm.	2	√	√	Transmission internal harness speed sensor circuit: open circuit or short circuit to ground or B+ voltage Transmission to TCM harness speed sensor circuit: open circuit or short circuit to ground or B+ voltage Output speed sensor failure Transmission mechanical failure (no drive)
P0726	Engine speed signal high, out of range	Start engine.	2	√	√	ECM to TCM engine speed signal circuit intermittent open circuit, intermittent short circuit to ground or B+ voltage ECM engine speed signal error
P0727	Engine speed, no signal	Drive vehicle above 10 mph (16 km/h).	2	√	√	Engine stalled at a road speed above 10 mph (16 km/h) ECM to TCM engine speed signal circuit open circuit or short circuit to ground ECM engine speed signal error (TCM failure)
P0731	Slip detected – First gear	Drive vehicle; accelerate rapidly	2	√	√	Transmission oil level low Output speed sensor problem (Refer to P0721 and P0722 Possible Causes) Engine speed signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Transmission mechanical failure

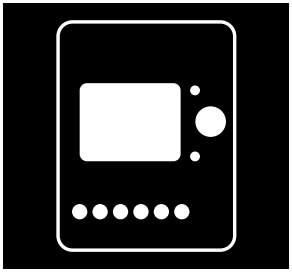
DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0732	Slip detected – Second gear	Drive vehicle so that transmission shifts through all forward gears; repeat several times	2	√	√	Transmission oil level low Output speed sensor problem (Refer to P0721 and P0722 Possible Causes) Engine speed signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Transmission mechanical failure
P0733	Slip detected – Third gear	Drive vehicle so that transmission shifts through all forward gears; repeat several times	2	√	√	Transmission oil level low Output speed sensor problem (Refer to P0721 and P0722 Possible Causes) Engine speed signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Transmission mechanical failure
P0734	Slip detected – Fourth gear	Drive vehicle so that transmission shifts through all forward gears; repeat several times	2	√	√	Transmission oil level low Output speed sensor problem (Refer to P0721 and P0722 Possible Causes) Engine speed signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Transmission mechanical failure
P0741	Torque converter clutch stuck OFF	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed	2	√	√	TCM to transmission shift solenoid MV3 (TCM pin 42 – YU wire) circuit: open circuit, short circuit or high resistance Transmission shift solenoid MV3 circuit open circuit, short circuit or high resistance Engine torque signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Shift solenoid MV3 failure Control valve (valve block) failure Torque converter failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0742	Torque converter clutch stuck ON	Drive vehicle so that transmission shifts through all forward gears; repeat several times	2	√	√	TCM to transmission shift solenoid MV3 (TCM pin 42 – YU wire) circuit: open circuit, short circuit or high resistance Transmission shift solenoid MV3 circuit open circuit, short circuit or high resistance Engine torque signal circuit between ECM and TCM: open circuit, short circuit, or high resistance Shift solenoid MV3 failure Control valve (valve block) failure Torque converter failure
P0743	Shift solenoid 3 (MV3) (TCC) voltage incorrect	Drive vehicle at a steady speed of 55 mph (88.5 km/h) or above.	2	√	√	Transmission internal harness torque converter clutch solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness torque converter clutch solenoid circuit: open circuit, short circuit to ground or B+ voltage Torque converter clutch solenoid failure
P0748	Pressure control regulator solenoid voltage incorrect	Drive vehicle through all gear ranges.	2	√	√	Transmission internal harness pressure control solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness pressure control solenoid circuit: open circuit, short circuit to ground or B+ voltage Pressure control solenoid failure
P0753	Shift solenoid 1 (MV1) voltage incorrect	Drive vehicle through all gear ranges.	2	√	√	Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P0758	Shift solenoid 2 (MV2) voltage incorrect	Drive vehicle through all gear ranges.	2	√	√	Transmission internal harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Transmission to TCM harness shift solenoid circuit: open circuit, short circuit to ground or B+ voltage Shift solenoid failure
P1608	TCM internal timing error	Switch ignition ON.	2	√	√	TCM failure
P1780	Torque reduction signal out of range	Run engine for more than 12 seconds.	2*	√	—	TCM to ECM torque reduction signal circuit: open circuit, short circuit to ground or B+ voltage ECM torque reduction signal error
P1781	Torque signal out of range (frequency or pulse width)	Run engine above 500 rpm.	2*	√	—	ECM to TCM torque signal circuit: open circuit, short circuit to ground or B+ voltage ECM torque signal error
P1782	Traction control signal voltage low	Switch ignition ON. Operate traction control switch.	—	—	—	ABS / TC CM to TCM signal circuit: short circuit to ground ABS / TC CM failure
P1785	TRANSMISSION MIL	Switch ignition ON.	—	—	—	TCM to instrument pack TRANSMISSION MIL circuit: open circuit, short circuit to ground or B+ voltage Instrument pack failure
P1790	TPS signal out of range	Run engine above 580 rpm.	2	√	—	ECM to TCM TPS signal circuit: open circuit, short circuit to ground or B+ voltage ECM TPS signal output error
P1791	TPS, no signal	Run engine above 580 rpm.	2	√	—	ECM to TCM TPS signal circuit: open circuit, short circuit to ground or B+ voltage ECM TPS signal output error

* Depending on other fault parameters, CHECK ENGINE MIL may not activate

DTC	FAULT DESCRIPTION	OBD II MONITORING CONDITIONS	CHECK ENG. MIL	TRANS. MIL	LIMP HOME	POSSIBLE CAUSES
P1792	Sport mode indicator circuit failure	Switch ignition ON. Operate mode switch.	—	—	—	Sport mode indicator bulb failure TCM to instrument pack sport mode indicator circuit: open circuit, short circuit to ground or B+ voltage Instrument pack failure
P1794	TCM voltage supply less than 10.5V (Ignition supply must be 8V for TCM to store DTC)	Start engine. Run above 1600 rpm.	2	√	√	Ignition switched TCM power fuse defective LH heelboard fuse box to TCM ignition switched power circuit: high resistance
P1796	Kickdown switch signal error	Drive vehicle, depress accelerator pedal fully	—	—	—	Kickdown switch adjustment Kickdown switch to TCM circuit: short circuit to ground Kickdown switch failure



DTC Summaries

5 HP 24 Transmission Control System – 1997 MY

OBD II MONITORING CONDITIONS:

When testing for OBD II DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test occurs automatically when DTC retrieval is initiated.

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.
If DTC P1000 is logged in memory, the on-board diagnostic tests **have not** been completed.
If DTC P1111 is logged in memory, all on-board diagnostic tests **have** been completed.

NON OBD II MONITORING CONDITIONS:

When testing for reoccurrence of non OBD II DTCs, ensure that the vehicle is operated as described in MONITORING CONDITIONS for the particular DTC. Retrieve non OBD II DTCs from the TCM via PDU through the Data Link Connector (DLC).

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS	"SERVICE DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y YES – indicates that the DTC is an OBD II DTC. N NO – indicates that the DTC is a non OBD II DTC.
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	N None @F Indicator is activated when fault is detected. 2 2 CONSECUTIVE "TRIPS" to activate indicator(s). R RED MIL A AMBER MIL M MESSAGE "GEARBOX FAULT"
DEFAULT ACTION	TCM default action
LOGGED / FLAGGED	Logged – DTC stored in memory buffer (TCM or ECM); Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.
LIMP HOME DEFAULTS	Except for DTC P0715, all limp home defaults will cancel on the next ignition ON cycle, provided the fault is no longer present. After P0715 is logged, the transmission will remain in mechanical limp home mode until the fault is corrected and the DTC erased from memory.

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

PDU DATALOGGER ACRONYMS

SSM1	Solenoid 1 output
SSM2	Solenoid 2 output
SSM3	Solenoid 3 output
TRSA	Transmission range switch A (CAN message)
TRSB	Transmission range switch B (CAN message)
TRSC	Transmission range switch C (CAN message)
CHKTRAN	Transmission fault indicator (AMBER MIL; MESSAGE)
CLV	Calculated load value
CRUISE1	Cruise control status 1
CRUISE2	Cruise control status 2
CRUISE3	Cruise control status 3
D4SW	D – 4 Switch
DTCS	Diagnostic trouble codes
ECT	Engine coolant temperature
HOT	Hot running mode
KDSW	Kickdown switch
MPROBE	Measurement probe
PMODEA	Performance mode switch A
PPS	Pedal position sensor
PR1C	Pressure regulator 1
PR2C	Pressure regulator 2
PR3C	Pressure regulator 3
PR4C	Pressure regulator 4
PR5C	Pressure regulator 5
SWL1	Rotary gear position switch L1
SWL2	Rotary gear position switch L2
SWL3	Rotary gear position switch L3
SWL4	Rotary gear position switch L4
TA1	Traction status 1
TA2	Traction status 2
TA3	Traction status 3
TACK	Torque reduction acknowledge
TCC	Torque converter clutch
TIS	Transmission input speed
TOS	Transmission output speed
TOT	Transmission fluid temperature
TPS	Throttle position sensor
TREQ	Torque reduction request

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0702	TCM internal power supply switching malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM harness (TCM pins 52, 53) open circuit, short circuit or high resistance TCM failure
P0706	Rotary switch and/or D – 4 switch malfunction	Engine running; operate gear selector through all positions	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Selector cable adjustment / installation incorrect D – 4 switch dislocated D – 4 switch to TCM circuit open circuit or short circuit to ground D – 4 switch failure Rotary switch to TCM circuit open circuit or short circuit to ground Rotary switch failure
P0710	Fluid temperature sensor circuit malfunction	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM temperature sensor circuit open circuit, short circuit or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit or high resistance Fluid temperature sensor failure
P0715	Input speed sensor circuit malfunction	Drive vehicle in forward gear (engine speed > 608 rpm)	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM input speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM input speed sensor circuit shielding defective Transmission internal input speed sensor circuit open circuit, short circuit or high resistance Input speed sensor failure
P0721	Output speed sensor circuit malfunction	Drive vehicle in forward gear > 10 mph (rear wheel speed > 100 rpm)	N	N	N	When fault is detected: – TCM substitutes rear wheel speed for transmission output speed (via CAN) Note: This fault is not detectable by driver.	Transmission to TCM output speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM output speed sensor circuit shielding defective Transmission internal output speed sensor circuit open circuit, short circuit or high resistance Output speed sensor failure

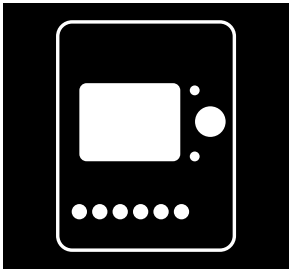
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0741	Torque converter clutch stuck OFF	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed	Y	2	N	When fault is detected: – TCM inhibits TCC control	Transmission to TCM pressure regulator (4) circuit open circuit, short circuit or high resistance Transmission internal pressure regulator (4) circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure
P0742	Torque converter clutch stuck ON	Drive vehicle; accelerate rapidly	Y	2	@F [A, M]	When fault is detected: – TCM inhibits TCC control Note: P to D, R shifts may be harsh.	Transmission to TCM pressure regulator (4) circuit open circuit, short circuit or high resistance Transmission internal pressure regulator (4) circuit open circuit, short circuit or high resistance Pressure regulator (4) failure Control valve (valve block) failure Torque converter failure
P0743	Torque converter clutch pressure regulator (4) circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator (4) circuit open circuit or short circuit Transmission internal pressure regulator (4) circuit open circuit or short circuit Pressure regulator (4) failure
P0753	Shift solenoid valve 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 1 circuit open circuit or short circuit Transmission internal shift solenoid valve 1 circuit open circuit or short circuit Shift solenoid valve 1 failure
P0758	Shift solenoid valve 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 2 circuit open circuit or short circuit Transmission internal shift solenoid valve 2 circuit open circuit or short circuit Shift solenoid valve 2 failure
P0763	Shift solenoid valve 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 3 circuit open circuit or short circuit Transmission internal shift solenoid valve 3 circuit open circuit or short circuit Shift solenoid valve 3 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0790	Mode switch circuit malfunction	Ignition ON	N	N	N	When fault is detected: – TCM adopts Normal Mode	Mode switch to TCM circuits open circuit, short circuit or high resistance Mode switch failure
P1603	TCM memory error	Switch ignition ON	Y	1	@F [A, M]	None	TCM failure
P1605	TCM data corrupted	Ignition ON for 2 minutes	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1608	TCM hardware failure	Ignition ON	Y	2	@F A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1720	TCM loss of output speed signal and loss of CAN wheel speed messages Note: DTC P0721 will be logged first	Drive vehicle; ABS/TC inactive	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem – DTC P0721 logged; In addition: ABS/TCCM – CAN wheel speed data corrupted Wheel speed sensor(s) failure ABS/TC fault
P1722	Transmission stall speed failure	Drive vehicle from stand still; accelerate hard	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Selector cable adjustment / installation incorrect Output speed sensor problem (Refer to P0721 Possible Causes) Transmission mechanical failure
P1726	Engine overspeed malfunction	Drive vehicle; accelerate at full throttle	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem (Refer to P0721 Possible Causes) ECM – CAN engine speed data corrupted Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1730	Gear control malfunction – 2nd, 3rd or 4th Note: DTC P1731 will be logged first	Drive vehicle so that transmission shifts through all gears; repeat at least twice	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1731	Inconsistent gear ratio	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	N	When fault is detected: – TCM changes out of problem gear and tries to shift again (double shift). If the problem is still present, the TCM logs P1730 or P1734.	Refer to P1730 Possible Causes
P1734	Gear control malfunction – 5th Note: DTC P1731 will be logged first	Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Refer to P1730 Possible Causes
P1745	Pressure regulator 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 1 circuit open circuit or short circuit Transmission internal pressure regulator 1 circuit open circuit or short circuit Pressure regulator 1 failure
P1746	Pressure regulator 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 2 circuit open circuit or short circuit Transmission internal pressure regulator 2 circuit open circuit or short circuit Pressure regulator 2 failure
P1747	Pressure regulator 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 3 circuit open circuit or short circuit Transmission internal pressure regulator 3 circuit open circuit or short circuit Pressure regulator 3 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1748	Pressure regulator 5 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 5 circuit open circuit or short circuit Transmission internal pressure regulator 5 circuit open circuit or short circuit Pressure regulator 5 failure
P1779	Gearshift load control malfunction	Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1789	Ignition switched power supply low voltage (>7 V, <9 V) Note: Voltage must be at least 7 V for the DTC to be flagged.	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1793	Ignition switched power supply very low or very high voltage (< 7 V, >16V) Note: Voltage must be at least 7 V for the DTC to be flagged	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1794	Battery power supply malfunction	Switch ignition ON	N	N	N	None Note: Transmission adaptions will be lost resulting in reduced shift quality.	Battery power supply circuit fuse blown Battery power supply circuit high resistance, short or open circuit
P1795	CAN token messages – inconsistent level	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	CAN control module(s) software error(s): ABS/TCCM, ECM, INST – check for additional DTC(s) to locate control module source Incorrect control module(s) installed – ABS/TCCM, TCM, ECM, INST

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1796	CAN circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN short circuit fault Control module failure – check for additional DTC(s) to locate control module source
P1797	CAN ECM token message missing	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault ECM failure TCM failure
P1798	CAN INST token message missing	Ignition ON	N	N	N	None	Other CAN control module CAN related fault(s) CAN open circuit fault – INST to TCM CAN short circuit fault INST failure TCM failure
P1799	CAN ABS/TCCM token message missing	Ignition ON	N	N	N	When fault is detected: – TCM substitutes output speed for rear wheel speed Note: This fault is not detectable by driver.	Other CAN control module CAN related fault(s) CAN open circuit fault – ABS/TCCM to TCM CAN short circuit fault ABS/TCCM failure TCM failure



DTC Summaries

5 HP 24 Transmission Control System – 1998 MY

OBD II MONITORING CONDITIONS:

When testing for OBD II DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure.

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.
If DTC P1000 is logged in memory, the on-board diagnostic tests **have not** been completed.
If DTC P1111 is logged in memory, all on-board diagnostic tests **have** been completed.

NON OBD II MONITORING CONDITIONS:

When testing for reoccurrence of non OBD II DTCs, ensure that the vehicle is operated as described in MONITORING CONDITIONS for the particular DTC. Retrieve non OBD II DTCs from the TCM via PDU through the Data Link Connector (DLC).

Refer to Page 2 for important information regarding the use of this Summary.

NOTES:

MONITORING CONDITIONS	"SERVICE DRIVE CYCLE" For the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.	
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	@F	Indicator is activated when fault is detected.
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE "GEARBOX FAULT"
DEFAULT ACTION	TCM default action	
LOGGED / FLAGGED	Logged – DTC stored in memory buffer (TCM or ECM); Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.	
LIMP HOME DEFAULTS	Except for DTC P0715, all limp home defaults will cancel on the next ignition ON cycle, provided the fault is no longer present. After P0715 is logged, the transmission will remain in mechanical limp home mode until the fault is corrected and the DTC erased from memory.	

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

PDU DATALOGGER ACRONYMS

SSM1	Solenoid 1 output
SSM2	Solenoid 2 output
SSM3	Solenoid 3 output
TRSA	Transmission range switch A (CAN message)
TRSB	Transmission range switch B (CAN message)
TRSC	Transmission range switch C (CAN message)
CHKTRAN	Transmission fault indicator (AMBER / MESSAGE)
CLV	Calculated load value
CRUISE1	Cruise control status 1
CRUISE2	Cruise control status 2
CRUISE3	Cruise control status 3
D4SW	D – 4 Switch
DTCS	Diagnostic trouble codes
ECT	Engine coolant temperature
HOT	Hot running mode
KDSW	Kickdown switch
MPROBE	Measurement probe
PMODEA	Performance mode switch A
PPS	Pedal position sensor
PR1C	Pressure regulator 1
PR2C	Pressure regulator 2
PR3C	Pressure regulator 3
PR4C	Pressure regulator 4
PR5C	Pressure regulator 5
SWL1	Rotary gear position switch L1
SWL2	Rotary gear position switch L2
SWL3	Rotary gear position switch L3
SWL4	Rotary gear position switch L4
TA1	Traction status 1
TA2	Traction status 2
TA3	Traction status 3
TACK	Torque reduction acknowledge
TCC	Torque converter clutch
TIS	Transmission input speed
TOS	Transmission output speed
TOT	Transmission fluid temperature
TPS	Throttle position sensor
TREQ	Torque reduction request

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0702	TCM internal power supply switching malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM harness (TCM pins 52, 53) open circuit, short circuit or high resistance TCM failure
P0706	Rotary switch and/or D–4 switch malfunction	Engine running; operate gear selector through all positions	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Selector cable adjustment / installation incorrect D – 4 switch dislocated D – 4 switch to TCM circuit open circuit or short circuit to ground D – 4 switch failure Rotary switch to TCM circuit open circuit or short circuit to ground Rotary switch failure
P0710	Fluid temperature sensor circuit malfunction	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM temperature sensor circuit open circuit, short circuit or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit or high resistance Fluid temperature sensor failure
P0715	Input speed sensor circuit malfunction	Drive vehicle in forward gear (engine speed > 608 rpm)	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM input speed sensor circuit open circuit,short circuit or high resistance Transmission to TCM input speed sensor circuit shielding defective Transmission internal input speed sensor circuit open circuit, short circuit or high resistance Input speed sensor failure
P0721	Output speed sensor circuit malfunction	Drive vehicle in forward gear >15 mph (25 km/h)	N	N	N	When fault is detected: – TCM substitutes rear wheel speed for transmission output speed (via CAN) Note: This fault is not detectable by driver.	Transmission to TCM output speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM output speed sensor circuit shielding defective Transmission internal output speed sensor circuit open circuit, short circuit or high resistance Output speed sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0731	Gear control malfunction – 1st	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0732	Gear control malfunction – 2nd	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0733	Gear control malfunction – 3rd	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0734	Gear control malfunction – 4th	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0735	Gear control malfunction – 5th	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure

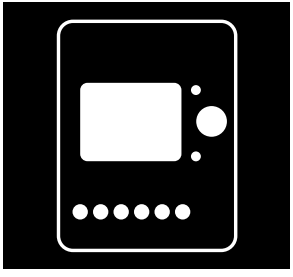
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0741	Torque converter clutch stuck OFF	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed	Y	2	N	When fault is detected: – TCM inhibits TCC control	Transmission to TCM pressure regulator (4) circuit open circuit, short circuit or high resistance Transmission internal pressure regulator (4) circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure
P0742	Torque converter clutch stuck ON	Drive vehicle; accelerate rapidly	Y	2	@F [A, M]	When fault is detected: – TCM inhibits TCC control Note: P to D, R shifts may be harsh.	Transmission to TCM pressure regulator 4 circuit open circuit, short circuit or high resistance Transmission internal pressure regulator 4 circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure
P0743	Torque converter clutch pressure regulator (4) circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 4 circuit open circuit or short circuit Transmission internal pressure regulator 4 circuit open circuit or short circuit Pressure regulator 4 failure
P0753	Shift solenoid valve 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 1 circuit open circuit or short circuit Transmission internal shift solenoid valve 1 circuit open circuit or short circuit Shift solenoid valve 1 failure
P0758	Shift solenoid valve 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 2 circuit open circuit or short circuit Transmission internal shift solenoid valve 2 circuit open circuit or short circuit Shift solenoid valve 2 failure
P0763	Shift solenoid valve 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 3 circuit open circuit or short circuit Transmission internal shift solenoid valve 3 circuit open circuit or short circuit Shift solenoid valve 3 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0790	Mode switch circuit malfunction	Ignition ON	N	N	N	When fault is detected: – TCM adopts Normal Mode	Mode switch to TCM circuits open circuit, short circuit or high resistance Mode switch failure
P1603	TCM memory error	Switch ignition ON	Y	1	@F [A, M]	None	TCM failure
P1605	TCM data corrupted	Ignition ON for 2 minutes	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1608	TCM hardware failure	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1720	TCM loss of output speed signal and loss of CAN wheel speed messages Note: DTC P0721 will be logged first	Drive vehicle; ABS/TC inactive	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem – DTC P0721 logged; in addition: ABS/TCCM – CAN wheel speed data corrupted Wheel speed sensor(s) failure ABS/TC fault
P1722	Transmission stall speed failure	Drive vehicle from stand still; accelerate hard	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Selector cable adjustment / installation incorrect Output speed sensor problem (Refer to P0721Possible Causes) Transmission mechanical failure
P1726	Engine overspeed malfunction	Drive vehicle; accelerate at full throttle	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem (Refer to P0721Possible Causes) ECM – CAN engine speed data corrupted Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1730	Gear control malfunction – 1st, 2nd, 3rd and/or 4th	Drive vehicle so that transmission shifts through all gears; **repeat at least twice**	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721Possible Causes) Input speed sensor problem (Refer to P0715Possible Causes) Transmission mechanical failure
P1732	Gearshift load control malfunction – 2nd to 3rd shift Note: DTC P1732 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; **repeat at least twice**	N	N	N	None	Transmission oil level low Output speed sensor problem (Refer to P0721Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1733	Gearshift load control malfunction – 3rd to 4th shift Note: DTC P1733 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; **repeat at least twice**	N	N	N	None	Transmission oil level low Output speed sensor problem (Refer to P0721Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1734	Gear control malfunction – 5th	Drive vehicle so that transmission shifts through all gears; **repeat at least twice**	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1745	Pressure regulator 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 1 circuit open circuit or short circuit Transmission internal pressure regulator 1 circuit open circuit or short circuit Pressure regulator 1 failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1746	Pressure regulator 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 2 circuit open circuit or short circuit Transmission internal pressure regulator 2 circuit open circuit or short circuit Pressure regulator 2 failure
P1747	Pressure regulator 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 3 circuit open circuit or short circuit Transmission internal pressure regulator 3 circuit open circuit or short circuit Pressure regulator 3 failure
P1748	Pressure regulator 5 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 5 circuit open circuit or short circuit Transmission internal pressure regulator 5 circuit open circuit or short circuit Pressure regulator 5 failure
P1779	Gearshift load control malfunction Note: DTC P1779 is substituted for P1732 and P1733 for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When CHECK ENGINE MIL is activated (DTC flagged; second trip): – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1789	Ignition switched power supply low voltage (>7 V, <9 V) Note: Voltage must be at least 7V for the DTC to be flagged.	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1793	Ignition switched power supply very low or very high voltage (< 7 V, >16V) Note: Voltage must be at least 7 V for the DTC to be flagged	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1794	Battery power supply malfunction	Switch ignition ON	N	N	N	None Note: Transmission adaptions will be lost resulting in reduced shift quality.	Battery power supply circuit fuse blown Battery power supply circuit high resistance, short or open circuit
P1795	CAN token messages – inconsistent level	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	CAN control module(s) software error(s): ABS/TCCM, ECM, INST – check for additional DTC(s) to locate control module source Incorrect control module(s) installed – ABS/TCCM, TCM, ECM, INST
P1796	CAN circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN short circuit fault Control module failure – check for additional DTC(s) to locate control module source
P1797	CAN ECM token message missing	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault ECM failure TCM failure
P1798	CAN INST token message missing	Ignition ON	N	N	N	None	Other CAN control module CAN related fault(s) CAN open circuit fault – INST to TCM CAN short circuit fault INST failure TCM failure
P1799	CAN ABS/TCCM token message missing	Ignition ON	N	N	N	When fault is detected: – TCM substitutes output speed for rear wheel speed Note: This fault is not detectable by driver.	Other CAN control module CAN related fault(s) CAN open circuit fault – ABS/TCCM to TCM CAN short circuit fault ABS/TCCM failure TCM failure



DTC Summaries

5 HP 24 Transmission Control System – 1999 MY

OBD II MONITORING CONDITIONS:

When testing for OBD II DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure.

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.

– If DTC P1000 is logged in memory, the on-board diagnostic tests have not been completed.
– If DTC P1111 is logged in memory, all on-board diagnostic tests have been completed.

NON OBD II MONITORING CONDITIONS:

When testing for reoccurrence of non OBD II DTCs, ensure that the vehicle is operated as described in MONITORING CONDITIONS for the particular DTC. Retrieve non OBD II DTCs from the TCM via PDU through the Data Link Connector (DLC).

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS	"SERVICE DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.	
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	@F	Indicator is activated when fault is detected.
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE "GEARBOX FAULT"
DEFAULT ACTION	TCM default action	
LOGGED / FLAGGED	Logged – DTC stored in memory buffer (TCM or ECM); Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.	
LIMP HOME DEFAULTS	Except for DTC P0715, all limp home defaults will cancel on the next ignition ON cycle, provided the fault is no longer present. After P0715 is logged, the transmission will remain in mechanical limp home mode until the fault is corrected and the DTC erased from memory.	

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

PDU DATALOGGER ACRONYMS

SSM1	Solenoid 1 output
SSM2	Solenoid 2 output
SSM3	Solenoid 3 output
TRSA	Transmission range switch A (CAN message)
TRSB	Transmission range switch B (CAN message)
TRSC	Transmission range switch C (CAN message)
CHKTRAN	Transmission fault indicator (AMBER / MESSAGE)
CLV	Calculated load value
CRUISE1	Cruise control status 1
CRUISE2	Cruise control status 2
CRUISE3	Cruise control status 3
D4SW	D – 4 Switch
DTCS	Diagnostic trouble codes
ECT	Engine coolant temperature
HOT	Hot running mode
KDSW	Kickdown switch
MPROBE	Measurement probe
PMODEA	Performance mode switch A
PPS	Pedal position sensor
PR1C	Pressure regulator 1
PR2C	Pressure regulator 2
PR3C	Pressure regulator 3
PR4C	Pressure regulator 4
PR5C	Pressure regulator 5
SWL1	Rotary gear position switch L1
SWL2	Rotary gear position switch L2
SWL3	Rotary gear position switch L3
SWL4	Rotary gear position switch L4
TA1	Traction status 1
TA2	Traction status 2
TA3	Traction status 3
TACK	Torque reduction acknowledge
TCC	Torque converter clutch
TIS	Transmission input speed
TOS	Transmission output speed
TOT	Transmission fluid temperature
TPS	Throttle position sensor
TREQ	Torque reduction request

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0702	TCM internal power supply switching malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM harness (TCM pins 52, 53) open circuit, short circuit or high resistance TCM failure
P0706	Rotary switch and/or D – 4 switch malfunction	Engine running; operate gear selector through all positions	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Selector cable adjustment / installation incorrect D – 4 switch dislocated D – 4 switch to TCM circuit open circuit or short circuit to ground D – 4 switch failure Rotary switch to TCM circuit open circuit or short circuit to ground Rotary switch failure
P0711	Transmission fluid temperature sensor range / performance	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit open circuit, short circuit or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit or high resistance Fluid temperature sensor failure
P0712	Transmission fluid temperature sensor circuit low voltage (high fluid temperature)	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit short circuit to ground Transmission internal temperature sensor circuit (internal harness) short circuit to ground Fluid temperature sensor failure
P0713	Transmission fluid temperature sensor circuit high voltage (low fluid temperature)	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit open circuit, short circuit to high voltage, or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit to high voltage, or high resistance Fluid temperature sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0715	Input speed sensor circuit malfunction	Drive vehicle in forward gear (engine speed > 608 rpm)	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM input speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM input speed sensor circuit shielding defective Transmission internal input speed sensor circuit open circuit, short circuit or high resistance Input speed sensor failure
P0721	Output speed sensor circuit malfunction	Drive vehicle in forward gear >15 mph (25 km/h)	N	N	N	When fault is detected: – TCM substitutes rear wheel speed for transmission output speed (via CAN) (This fault is not detectable by driver.)	Transmission to TCM output speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM output speed sensor circuit shielding defective Transmission internal output speed sensor circuit open circuit, short circuit or high resistance Output speed sensor failure
P0731	Gear control malfunction – 1st	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0732	Gear control malfunction – 2nd	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0733	Gear control malfunction – 3rd	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0734	Gear control malfunction – 4th	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0735	Gear control malfunction – 5th	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0741	Torque converter clutch stuck OFF	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed	Y	2	N	When fault is detected: – TCM inhibits TCC control	Transmission to TCM pressure regulator 4 circuit open circuit, short circuit or high resistance Transmission internal pressure regulator 4 circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0742	Torque converter clutch stuck ON	Drive vehicle; accelerate rapidly	Y	2	@F [A, M]	When fault is detected: – TCM inhibits TCC control NOTE: P to D, R shifts may be harsh.	Transmission to TCM pressure regulator 4 circuit open circuit, short circuit or high resistance Transmission internal pressure regulator 4 circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure
P0743	Torque converter clutch pressure regulator (4) circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 4 circuit open circuit or short circuit Transmission internal pressure regulator 4 circuit open circuit or short circuit Pressure regulator 4 failure
P0753	Shift solenoid valve 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 1 circuit open circuit or short circuit Transmission internal shift solenoid valve 1 circuit open circuit or short circuit Shift solenoid valve 1 failure
P0758	Shift solenoid valve 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 2 circuit open circuit or short circuit Transmission internal shift solenoid valve 2 circuit open circuit or short circuit Shift solenoid valve 2 failure
P0763	Shift solenoid valve 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 3 circuit open circuit or short circuit Transmission internal shift solenoid valve 3 circuit open circuit or short circuit Shift solenoid valve 3 failure
P0790	Mode switch circuit malfunction	Ignition ON	N	N	N	When fault is detected: – TCM adopts Normal Mode	Mode switch to TCM circuits open circuit, short circuit or high resistance Mode switch failure

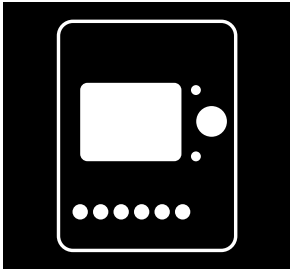
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1603	TCM memory error	Switch ignition ON	Y	1	@F [A, M]	None	TCM failure
P1605	TCM data corrupted	Ignition ON for 2 minutes	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1608	TCM hardware failure	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1632	CAN loss of throttle data	Engine running	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault Throttle failure ECM failure TCM failure
P1720	TCM loss of output speed signal and loss of CAN wheel speed messages NOTE: DTC P0721 will be logged first	Drive vehicle; ABS/TC inactive	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem – DTC P0721 logged; in addition: ABS/TCCM – CAN wheel speed data corrupted Wheel speed sensor(s) failure ABS/TC fault
P1722	Transmission stall speed failure	Drive vehicle from stand still; accelerate hard	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Selector cable adjustment / installation incorrect Output speed sensor problem (Refer to P0721 Possible Causes) Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1726	Engine overspeed malfunction	Drive vehicle; accelerate at full throttle	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem (Refer to P0721 Possible Causes) ECM – CAN engine speed data corrupted Transmission mechanical failure
P1732	Gearshift load control malfunction – 2nd to 3rd shift NOTE: DTC P1732 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	N	When fault is detected: – TCM defaults transmission to 1st and 2nd gear only	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1733	Gearshift load control malfunction – 3rd to 4th shift NOTE: DTC P1733 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	N	When fault is detected: – TCM defaults transmission to 1st and 2nd gear only	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1734	Gear ratio malfunction – 5th	Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1739	Gear ratio malfunction – 2nd, 3rd and/or 4th	Drive vehicle so that transmission shifts through all gears; repeat at least twice	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1745	Pressure regulator 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 1 circuit open circuit or short circuit Transmission internal pressure regulator 1 circuit open circuit or short circuit Pressure regulator 1 failure
P1746	Pressure regulator 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 2 circuit open circuit or short circuit Transmission internal pressure regulator 2 circuit open circuit or short circuit Pressure regulator 2 failure
P1747	Pressure regulator 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 3 circuit open circuit or short circuit Transmission internal pressure regulator 3 circuit open circuit or short circuit Pressure regulator 3 failure
P1748	Pressure regulator 5 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 5 circuit open circuit or short circuit Transmission internal pressure regulator 5 circuit open circuit or short circuit Pressure regulator 5 failure
P1779	Gearshift malfunction 2–3; 3–4	Transmission fluid temperature >20 °C (68 °F). Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When CHECK ENGINE MIL is activated (DTC flagged; second trip): – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Transmission mechanical failure
P1789	Ignition switched power supply low voltage (>7 V, <9 V) NOTE: Voltage must be at least 7 V for the DTC to be flagged.	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1793	Ignition switched power supply very low or very high voltage (< 7 V, >16V) NOTE: Voltage must be at least 7 V for the DTC to be flagged	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1794	Battery power supply malfunction	Switch ignition ON	N	N	N	None NOTE: Transmission adaptions will be lost resulting in reduced shift quality.	Battery power supply circuit fuse blown Battery power supply circuit high resistance, short or open circuit
P1795	CAN token messages – inconsistent level	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	CAN control module(s) software error(s): ABS/TCCM, ECM, INST – check for additional DTC(s) to locate control module source Incorrect control module(s) installed – ABS/TCCM, TCM, ECM, INST
P1796	CAN circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN short circuit fault Control module failure – check for additional DTC(s) to locate control module source
P1797	CAN ECM token message missing	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault ECM failure TCM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1798	CAN INST token message missing	Ignition ON	N	N	N	None	Other CAN control module CAN related fault(s) CAN open circuit fault – INST to TCM CAN short circuit fault INST failure TCM failure
P1799	CAN ABS/TCCM token message missing	Ignition ON	N	N	N	When fault is detected: – TCM substitutes output speed for rear wheel speed NOTE: This fault is not detectable by driver.	Other CAN control module CAN related fault(s) CAN open circuit fault – ABS/TCCM to TCM CAN short circuit fault ABS/TCCM failure TCM failure



DTC Summaries

5 HP 24 Transmission Control System – 2000 MY ON

OBD II MONITORING CONDITIONS:

When testing for OBD II DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure.

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.

– If DTC P1000 is logged in memory, the on-board diagnostic tests have not been completed.
– If DTC P1111 is logged in memory, all on-board diagnostic tests have been completed.

NON OBD II MONITORING CONDITIONS:

When testing for reoccurrence of non OBD II DTCs, ensure that the vehicle is operated as described in MONITORING CONDITIONS for the particular DTC. Retrieve non OBD II DTCs from the TCM via PDU through the Data Link Connector (DLC).

Refer to page 2 for important information regarding the use of this Summary.

NOTES

MONITORING CONDITIONS	"SERVICE DRIVE CYCLE" for the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.	
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	@F	Indicator is activated when fault is detected.
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE "GEARBOX FAULT"
DEFAULT ACTION	TCM default action	
LOGGED / FLAGGED	Logged – DTC stored in memory buffer (TCM or ECM); Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.	
LIMP HOME DEFAULTS	Except for DTC P0715, all limp home defaults will cancel on the next ignition ON cycle, provided the fault is no longer present. After P0715 is logged, the transmission will remain in mechanical limp home mode until the fault is corrected and the DTC erased from memory.	

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

PDU DATALOGGER ACRONYMS

SSM1	Solenoid 1 output
SSM2	Solenoid 2 output
SSM3	Solenoid 3 output
TRSA	Transmission range switch A (CAN message)
TRSB	Transmission range switch B (CAN message)
TRSC	Transmission range switch C (CAN message)
CHKTRAN	Transmission fault indicator (AMBER / MESSAGE)
CLV	Calculated load value
CRUISE1	Cruise control status 1
CRUISE2	Cruise control status 2
CRUISE3	Cruise control status 3
D4SW	D – 4 Switch
DTCS	Diagnostic trouble codes
ECT	Engine coolant temperature
HOT	Hot running mode
KDSW	Kickdown switch
MPROBE	Measurement probe
PMODEA	Performance mode switch A
PPS	Pedal position sensor
PR1C	Pressure regulator 1
PR2C	Pressure regulator 2
PR3C	Pressure regulator 3
PR4C	Pressure regulator 4
PR5C	Pressure regulator 5
SWL1	Rotary gear position switch L1
SWL2	Rotary gear position switch L2
SWL3	Rotary gear position switch L3
SWL4	Rotary gear position switch L4
TA1	Traction status 1
TA2	Traction status 2
TA3	Traction status 3
TACK	Torque reduction acknowledge
TCC	Torque converter clutch
TIS	Transmission input speed
TOS	Transmission output speed
TOT	Transmission fluid temperature
TPS	Throttle position sensor
TREQ	Torque reduction request

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0702	TCM internal power supply switching malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM harness (TCM pins 52, 53) open circuit, short circuit or high resistance TCM failure
P0706	Rotary switch and/or D – 4 switch malfunction	Engine running; operate gear selector through all positions	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Selector cable adjustment / installation incorrect D – 4 switch dislocated D – 4 switch to TCM circuit open circuit or short circuit to ground D – 4 switch failure Rotary switch to TCM circuit open circuit or short circuit to ground Rotary switch failure
P0711	Transmission fluid temperature sensor range / performance	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit open circuit, short circuit or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit or high resistance Fluid temperature sensor failure
P0712	Transmission fluid temperature sensor circuit low voltage (high fluid temperature)	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit short circuit to ground Transmission internal temperature sensor circuit (internal harness) short circuit to ground Fluid temperature sensor failure
P0713	Transmission fluid temperature sensor circuit high voltage (low fluid temperature)	Run transmission from cold to normal operating temperature	Y	2	@F [A, M]	When fault is detected: – TCM substitutes ECT (engine coolant temperature)	Transmission to TCM temperature sensor circuit open circuit, short circuit to high voltage, or high resistance Transmission internal temperature sensor circuit (internal harness) open circuit, short circuit to high voltage, or high resistance Fluid temperature sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0715	Input speed sensor circuit malfunction	Drive vehicle in forward gear (engine speed > 608 rpm)	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM input speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM input speed sensor circuit shielding defective Transmission internal input speed sensor circuit open circuit, short circuit or high resistance Input speed sensor failure
P0721	Output speed sensor circuit malfunction	Drive vehicle in forward gear >15 mph (25 km/h)	N	N	N	When fault is detected: – TCM substitutes rear wheel speed for transmission output speed (via CAN) (This fault is not detectable by driver.)	Transmission to TCM output speed sensor circuit open circuit, short circuit or high resistance Transmission to TCM output speed sensor circuit shielding defective Transmission internal output speed sensor circuit open circuit, short circuit or high resistance Output speed sensor failure
P0731	Gear control malfunction – 1st	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0732	Gear control malfunction – 2nd	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0733	Gear control malfunction – 3rd	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0734	Gear control malfunction – 4th	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0735	Gear control malfunction – 5th	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P0741	Torque converter clutch stuck OFF	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed	Y	2	N	When fault is detected: – TCM inhibits TCC control	Transmission to TCM pressure regulator 4 circuit open circuit, short circuit or high resistance Transmission internal pressure regulator 4 circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0742	Torque converter clutch stuck ON	Drive vehicle; accelerate rapidly	Y	2	@F [A, M]	When fault is detected: – TCM inhibits TCC control NOTE: P to D, R shifts may be harsh.	Transmission to TCM pressure regulator 4 circuit open circuit, short circuit or high resistance Transmission internal pressure regulator 4 circuit open circuit, short circuit or high resistance Pressure regulator 4 failure Control valve (valve block) failure Torque converter failure
P0743	Torque converter clutch pressure regulator (4) circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 4 circuit open circuit or short circuit Transmission internal pressure regulator 4 circuit open circuit or short circuit Pressure regulator 4 failure
P0753	Shift solenoid valve 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 1 circuit open circuit or short circuit Transmission internal shift solenoid valve 1 circuit open circuit or short circuit Shift solenoid valve 1 failure
P0758	Shift solenoid valve 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 2 circuit open circuit or short circuit Transmission internal shift solenoid valve 2 circuit open circuit or short circuit Shift solenoid valve 2 failure
P0763	Shift solenoid valve 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM shift solenoid valve 3 circuit open circuit or short circuit Transmission internal shift solenoid valve 3 circuit open circuit or short circuit Shift solenoid valve 3 failure
P0790	Mode switch circuit malfunction	Ignition ON	N	N	N	When fault is detected: – TCM adopts Normal Mode	Mode switch to TCM circuits open circuit, short circuit or high resistance Mode switch failure

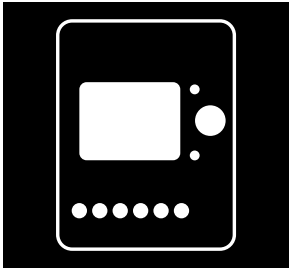
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1603	TCM memory error	Switch ignition ON	Y	1	@F [A, M]	None	TCM failure
P1605	TCM data corrupted	Ignition ON for 2 minutes	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1608	TCM hardware failure	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure
P1632	CAN loss of throttle data	Engine running	N	N	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault Throttle failure ECM failure TCM failure
P1700	Multiple transmission failures requiring conflicting TCM default actions	Drive vehicle	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) ECM limits engine power	Other DTCs flagged
P1720	TCM loss of output speed signal and loss of CAN wheel speed messages NOTE: DTC P0721 will be logged first	Drive vehicle; ABS/TC inactive	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem – DTC P0721 logged; in addition: ABS/TCCM – CAN wheel speed data corrupted Wheel speed sensor(s) failure ABS/TC fault

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1722	Transmission stall speed failure	Drive vehicle from stand still; accelerate hard	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Selector cable adjustment / installation incorrect Output speed sensor problem (Refer to P0721 Possible Causes) Transmission mechanical failure
P1726	Engine overspeed malfunction	Drive vehicle; accelerate at full throttle	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Output speed sensor problem (Refer to P0721 Possible Causes) ECM – CAN engine speed data corrupted Transmission mechanical failure
P1732	Gearshift load control malfunction – 2nd to 3rd shift NOTE: DTC P1732 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	N	When fault is detected: – TCM defaults transmission to 1st and 2nd gear only	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1733	Gearshift load control malfunction – 3rd to 4th shift NOTE: DTC P1733 can only be retrieved using PDU. DTC P1779 is substituted for retrieval by a generic scan tool.	Drive vehicle so that transmission shifts through all gears; repeat several times	N	N	N	When fault is detected: – TCM defaults transmission to 1st and 2nd gear only	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1734	Gear ratio malfunction – 5th	Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1739	Gear ratio malfunction – 2nd, 3rd and/or 4th	Drive vehicle so that transmission shifts through all gears; repeat at least twice	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission electronic limp home mode (5th gear) – ECM limits engine power	Transmission oil level low Output speed sensor problem (Refer to P0721 Possible Causes) Input speed sensor problem (Refer to P0715 Possible Causes) Transmission mechanical failure
P1745	Pressure regulator 1 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 1 circuit open circuit or short circuit Transmission internal pressure regulator 1 circuit open circuit or short circuit Pressure regulator 1 failure
P1746	Pressure regulator 2 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 2 circuit open circuit or short circuit Transmission internal pressure regulator 2 circuit open circuit or short circuit Pressure regulator 2 failure
P1747	Pressure regulator 3 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 3 circuit open circuit or short circuit Transmission internal pressure regulator 3 circuit open circuit or short circuit Pressure regulator 3 failure
P1748	Pressure regulator 5 circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission to TCM pressure regulator 5 circuit open circuit or short circuit Transmission internal pressure regulator 5 circuit open circuit or short circuit Pressure regulator 5 failure
P1758	Pressure regulator circuit (2,3 and 5 combined) – incorrect total current detected	Drive vehicle so that transmission shifts through all gears; repeat at least twice	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	TCM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1779	Gearshift malfunction 2–3; 3–4	Transmission fluid temperature >20 °C (68 °F). Drive vehicle so that transmission shifts through all gears; repeat several times	Y	2	@F [A, M]	When CHECK ENGINE MIL is activated (DTC flagged; second trip): – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Transmission oil level low Transmission mechanical failure
P1789	Ignition switched power supply low voltage (>7 V, <9 V) NOTE: Voltage must be at least 7 V for the DTC to be flagged.	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1793	Ignition switched power supply very low or very high voltage (< 7 V, >16V) NOTE: Voltage must be at least 7 V for the DTC to be flagged	Run engine >1600 rpm	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Ignition switched power supply circuit high resistance, intermittent short or open circuit Battery intermittent failure Generator intermittent failure
P1794	Battery power supply malfunction	Switch ignition ON	N	N	N	None NOTE: Transmission adaptions will be lost resulting in reduced shift quality.	Battery power supply circuit fuse blown Battery power supply circuit high resistance, short or open circuit
P1795	CAN token messages – inconsistent level	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	CAN control module(s) software error(s): ABS/TCCM, ECM, INST – check for additional DTC(s) to locate control module source Incorrect control module(s) installed – ABS/TCCM, TCM, ECM, INST
P1796	CAN circuit malfunction	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN short circuit fault Control module failure – check for additional DTC(s) to locate control module source

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1797	CAN ECM token message missing	Ignition ON	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode (4th gear) – ECM limits engine power	Other CAN control module CAN related fault(s) CAN open circuit fault – ECM to TCM CAN short circuit fault ECM failure TCM failure
P1798	CAN INST token message missing	Ignition ON	N	N	N	None	Other CAN control module CAN related fault(s) CAN open circuit fault – INST to TCM CAN short circuit fault INST failure TCM failure
P1799	CAN ABS/TCCM token message missing	Ignition ON	N	N	N	When fault is detected: – TCM substitutes output speed for rear wheel speed NOTE: This fault is not detectable by driver.	Other CAN control module CAN related fault(s) CAN open circuit fault – ABS/TCCM to TCM CAN short circuit fault ABS/TCCM failure TCM failure



DTC Summaries

W5A-580 Transmission Control System

OBD II MONITORING CONDITIONS:

When testing for OBD II DTC reoccurrence, it can be determined if the Service Drive Cycle was of sufficient length by performing a PDU "Systems Readiness Test".

The Systems Readiness Test is accessed via the PDU menu structure.

Further confirmation of the System Readiness Test status is available by retrieving the logged DTCs.
If DTC P1000 is logged in memory, the on-board diagnostic tests **have not** been completed;
If DTC P1111 is logged in memory, all on-board diagnostic tests **have** been completed.

NON OBD II MONITORING CONDITIONS:

When testing for reoccurrence of non OBD II DTCs, ensure that the vehicle is operated as described in MONITORING CONDITIONS for the particular DTC. Retrieve non OBD II DTCs from the TCM via PDU through the Data Link Connector (DLC).

Refer to Page 2 for important information regarding the use of this Summary.

NOTES:

MONITORING CONDITIONS		"SERVICE DRIVE CYCLE" For the particular DTC. Operate the vehicle as described to check for a reoccurrence of the DTC.
OBD II	Y	YES – indicates that the DTC is an OBD II DTC.
	N	NO – indicates that the DTC is a non OBD II DTC.
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	N	None
	@F	Indicator is activated when fault is detected.
	R	RED MIL
	A	AMBER MIL
	M	MESSAGE "GEARBOX FAULT"
DEFAULT ACTION		TCM default action
LOGGED / FLAGGED		Logged – DTC stored in memory buffer (TCM or ECM); Flagged – DTC stored in ECM memory / CHECK ENGINE MIL activated.
LIMP HOME DEFAULTS		Two types of limp home defaults may occur – electronic limp home and mechanical limp home.

Electronic limp home occurs when an electrical fault is detected. If the vehicle is being driven, electronic limp home maintains the selected gear until the ignition is switched OFF. When the vehicle is restarted (after a minimum 10 second wait), the transmission will operate in 2nd and REVERSE only. The default will remain in effect until the fault is corrected and the DTC erased from memory.

Mechanical limp home occurs when a mechanical / hydraulic fault is detected. When the fault is detected, the transmission shifts into 3rd gear and remains in this gear. The default will cancel on the next ignition cycle, provided the fault is no longer present.

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

PDU DATALOGGER ACRONYMS

CHKTRAN	Transmission fault indicator (Amber / Message)
DTCS	Diagnostic trouble codes
ECT	Engine coolant temperature
IGN1+	Ignition positive supply
KDSW	Kickdown switch
MPROBE	Measurement probe
PMODEA	Performance mode switch A
PPS	Pedal position sensor
PRMD	Modulation pressure regulator
PRSD	Shift pressure regulator
RPM	Revolutions per/minute
SOL1	Shift solenoid 1 (A)
SOL2	Shift solenoid 2 (B)
SOL3	Shift solenoid 3 (C)
SWL0	Gear position switch input L0
SWL1	Gear position switch input L1
SWL2	Gear position switch input L2
SWL3	Gear position switch input L3
TA3	Traction status 3
TACK	Torque reduction acknowledge
TCC	Torque converter clutch
TIS	Transmission input speed
TOS	Transmission output speed
TOT	Transmission oil temperature
TPS	Throttle position sensor
TREQ	Torque reduction request
TRSA	Transmission range switch A (CAN message)
TRSB	Transmission range switch B (CAN message)
TRSC	Transmission range switch C (CAN message)

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0702	TCM solenoid valves and speed sensors supply voltage(s) malfunction	Ignition ON 5 seconds	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	TCM to transmission speed sensors supply circuit: open circuit, high resistance, short circuit to ground or short circuit to B+ voltage TCM to transmission solenoid valves supply circuit: open circuit, high resistance or short circuit to ground TCM internal failure
P0705	Dual linear switch signal(s) malfunction	Ignition ON 5 seconds	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode – ECM limits engine power	TCM to dual linear switch circuits (4): high resistance, short circuit to ground or short circuit to B+ voltage Dual linear switch failure
P0706	Dual linear switch signals missing Note: The DTC will be cleared by the TCM if the fault condition is corrected while the vehicle is operating. The DTC can only be read if the fault is present during diagnostic testing.	Ignition ON 5 seconds Note: If the fault is present at start-up, the engine will not crank and the J-gate will not be illuminated.	N	N	N	If the fault is detected while driving: – TCM adopts transmission electronic limp home mode	Selector lever in intermediate position between P,R,N,D,4,3,2 TCM to dual linear switch circuits (4): open circuit (connector disconnected) Dual linear switch failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0710	Transmission fluid temperature sensor circuit malfunction	Ignition ON 5 seconds	N	N	@F [A,M*]	When the fault is detected: – TCM substitutes the engine coolant temperature for the transmission fluid temperature (via CAN) *MESSAGE: HIGH TEMP GEARBOX	Selector cable adjustment / installation incorrect Dual linear switch adjustment incorrect Transmission to TCM fluid temperature sensor sense circuit: open circuit, high resistance, short circuit to high voltage or short circuit to ground Transmission to TCM speed / temperature sensors ground circuit: open circuit or short circuit to high voltage (DTC P0715 will also be flagged) Transmission internal fluid temperature sensor sense circuit: open circuit, high resistance or short circuit to ground Transmission internal reed switch (not used) failure Transmission internal speed / temperature sensors ground circuit: open circuit voltage (DTC P0715 will also be flagged) Transmission fluid temperature sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0715	n2 and / or n3 Speed sensor circuits malfunction Note: This DTC will apply to the n3 speed sensor circuit only after the n2 speed sensor circuit is verified OK	Drive vehicle > 25 mph (41 km/h); 3rd or 4th gear; no shift in progress Note: If DTCs P1632 and P1720 are logged, the "service drive cycle" cannot be completed.	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM n2 speed sensor sense circuit: open circuit, high resistance, short circuit to high voltage or short circuit to ground Transmission to TCM speed / temperature sensors ground circuit: open circuit or short circuit to high voltage (DTC P0710 will also be flagged) Transmission internal n2 speed sensor sense circuit: open circuit, high resistance or short circuit to ground Transmission internal speed / temperature sensors ground circuit: open circuit voltage (DTC P0710 will also be flagged) n2 Speed sensor failure Transmission to TCM speed sensors supply circuit, high resistance, short circuit to ground or short circuit to B+ voltage Transmission to TCM n3 speed sensor sense circuit: open circuit, high resistance, short circuit to high voltage or short circuit to ground Transmission internal n3 speed sensor sense circuit: open circuit, high resistance or short circuit to ground n3 Speed sensor failure Transmission mechanical failure
P0730	Incorrect gear ratio	Drive vehicle so that transmission shifts through all gears; **repeat several times** Note: If any of the following DTCs are logged, the "service drive cycle" cannot be completed: P0705, P0706, P0715 (n2 sensor), P1720, P1796.	Y	2	@F [A, M]	When fault is detected: – TCM adopts transmission mechanical limp home mode – ECM limits engine power	Transmission oil level low Transmission mechanical / hydraulic failure

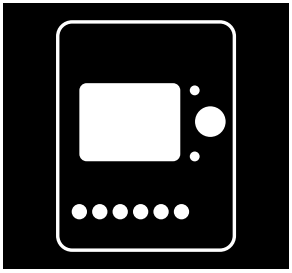
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0740	Torque converter clutch (TCC) solenoid valve circuit malfunction; TCC stuck on	Ignition ON; selector in P or N for 5 SEC. seconds; then, drive vehicle so that transmission shifts through all gears; repeat several times Note: If any of the following DTCs are logged, the "TCC stuck on service drive cycle" cannot be completed: P0715, P1632, P1796.	Y	2	@F [A, M]	When a TCC solenoid valve circuit fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM TCC solenoid valve drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal TCC solenoid valve drive circuit: open circuit, high resistance or short circuit to ground TCC solenoid valve failure Torque converter mechanical / hydraulic failure Transmission mechanical / hydraulic failure
P0748	Modulation pressure (MD) control solenoid valve circuit malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM MD solenoid valve drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal MD solenoid valve drive circuit: open circuit, high resistance or short circuit to ground MD solenoid valve failure
P0753	Shift solenoid valve A (1st – 2nd; 4th – 5th) circuit malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM shift solenoid valve A (1st – 2nd; 4th – 5th) drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal shift solenoid valve A (1st – 2nd; 4th – 5th) drive circuit: open circuit, high resistance or short circuit to ground Shift solenoid valve A (1st – 2nd; 4th – 5th) failure Control valve (valve body) hydraulic failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P0758	Shift solenoid valve B (2nd – 3rd) circuit malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM shift solenoid valve B (2nd – 3rd) drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal shift solenoid valve B (2nd – 3rd) drive circuit: open circuit, high resistance or short circuit to ground Shift solenoid valve B (2nd – 3rd) failure Control valve (valve body) hydraulic failure
P0763	Shift solenoid valve C (3rd – 4th) circuit malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM shift solenoid valve C (3rd – 4th) drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal shift solenoid valve C (3rd – 4th) drive circuit: open circuit, high resistance or short circuit to ground Shift solenoid valve C (3rd – 4th) failure Control valve (valve body) hydraulic failure
P0780	Gear shift malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times** Note: If any of the following DTCs are logged, the "service drive cycle" cannot be completed: P0705, P0706, P0715 (n2 sensor), P1720, P1796.	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode – ECM limits engine power	Transmission oil level low Transmission oil condition Transmission mechanical / hydraulic failure
P1601	TCM memory / computer fault	Ignition ON 5 seconds	Y	1	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	TCM – Dual linear switch – transmission wiring harness and/or connector(s) fault. (Short circuit; open circuit; high resistance) TCM failure
P1608	TCM software fault	Ignition ON 5 seconds	N	N	N	None	TCM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1632	ABS front wheel speed CAN messages corrupted or EMS CAN individual message corrupted – pedal position; engine speed; engine torque; engine coolant temperature	Engine at normal operating temperature; drive vehicle	N	N	N	When fault is detected: – Front wheel speed – TCM stops calculating vehicle lateral acceleration – Pedal position – TCM substitutes value of 25.6% – Engine speed – TCM substitutes value of 750 rpm; TCC remains released – Engine torque – TCM substitutes value of 600 Nm (443 lb ft) – Engine coolant temperature – TCM substitutes value of 80 °C (176 °F)	CAN circuit malfunction (other CAN nodes affected) ABS/TCCM – CAN front wheel speed data corrupted ABS/TC fault ECM – CAN data corrupted EMS fault
P1720	ABS rear wheel speed CAN messages corrupted or ABS token message corrupted	Drive vehicle; ABS/TC inactive; ABS/TC active	Y	2	N	When the fault is detected: – TCM adopts transmission electronic limp home mode	CAN circuit malfunction (other CAN nodes affected) ABS/TCCM – CAN rear wheel speed data corrupted ABS/TC fault
P1727	n3 Speed – overspeed detected	Drive vehicle so that transmission shifts through all gears; **repeat several times**	N	N	N	None	Transmission mechanical failure
P1744	Torque converter clutch (TCC) failure (stuck off)	Drive vehicle on level road at highway cruising speed; accelerate slowly; decelerate to highway cruising speed Note: If any of the following DTCs are logged, the "service drive cycle" cannot be completed: P0715, P1632, P1796.	Y	1	@F [A, M]	When the fault is detected: – TCM inhibits TCC control	Transmission to TCM TCC solenoid valve drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal TCC solenoid valve drive circuit: open circuit, high resistance or short circuit to ground TCC solenoid valve failure Torque converter mechanical / hydraulic failure Transmission mechanical / hydraulic failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1748	Shift pressure (SD) control solenoid valve circuit malfunction	Drive vehicle so that transmission shifts through all gears; **repeat several times**	Y	2	@F [A, M]	When the fault is detected: – TCM adopts transmission electronic limp home mode	Transmission to TCM SD solenoid valve drive circuit: open circuit, high resistance, short circuit to B+ voltage or short circuit to ground Transmission internal SD solenoid valve drive circuit: open circuit, high resistance or short circuit to ground SD solenoid valve failure
P1780	Torque reduction acknowledge (CAN message) incorrect	Drive vehicle so that transmission shifts through all gears; **repeat several times** Note: If any of the following DTCs are logged, the "service drive cycle" cannot be completed: P1632, P1796.	N	N	N	None	CAN circuit malfunction (other CAN nodes affected) ECM failure TCM failure
P1794	Battery power supply malfunction	Ignition ON 5 seconds	N	N	N	When the fault is detected: – TCM adopts transmission electronic limp home mode	Battery power supply circuit fuse blown Battery power supply circuit high resistance, open circuit or short circuit
P1796	CAN circuit malfunction	Ignition ON 5 seconds	Y	2	N	When the fault is detected: – TCM adopts transmission electronic limp home mode	Other CAN node(s) related faults CAN wiring circuit: high resistance or short circuit CAN control module(s) failure(s) – check for additional DTC(s) to locate control module source
P1797	CAN ECM messages (all) corrupted or CAN ECM token message missing	Ignition ON 5 seconds	Y	2	N	When fault is detected: – CAN ECM messages (all) corrupted – TCM substitutes high engine torque and speed values (to prevent transmission damage) – CAN ECM token message missing – TCM adopts transmission electronic limp home mode	Other CAN node(s) related faults CAN wiring circuit – TCM to ECM: open circuit CAN wiring circuit: high resistance or short circuit ECM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	OBD II	CK ENG	OTHER	DEFAULT ACTION	POSSIBLE CAUSES
P1798	CAN INST token message missing	Ignition ON 5 seconds	N	N	N	None	Other CAN node(s) related faults CAN wiring circuit – TCM to INST: open circuit CAN wiring circuit: high resistance or short circuit INST failure



DTC Summaries

Teves Mk IV ABS and ABS/TC Systems: Sedan Range 1995 – 1997 and XJS Range 1995 MY from VIN 198335 (ABS only)

DTCs are stored in the ABS/TC control module nonvolatile memory and can be accessed only through the DLC (Diagnostic Link Connector) using PDU.

Depending on the fault detected, the ABS or ABS/TC module will adopt one of the following default actions:

System switches off – the ABS or ABS/TC system will be switched off until the fault is corrected. The brake system will operate as a normal non-anti-lock system.

System inhibited – operation of the modulator assembly solenoid valves will be inhibited while the fault is present. The brake system will operate as a normal non-anti-lock system.

TC switches off – the traction control functions will be switched off until the fault is corrected. ABS functions will continue to operate normally.

TC inhibited – operation of the traction control function will be inhibited while the fault is present. ABS functions will continue to operate normally.

PDU DATALOGGER ACRONYMS

FBRAKE	Stop light switch
TCSW	Traction control switch
FLWS	Front left wheel speed sensor
FRWS	Front right wheel speed sensor
RLWS	Rear left wheel speed sensor
RRWS	Rear right wheel speed sensor
TFP	Traction control actuator position (TC actuator sensor)

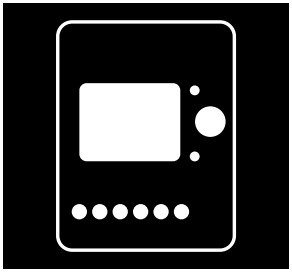
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1095	Pump motor failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Pump motor to CM circuit: high resistance, open circuit or short circuit to ground or B+ voltage Pump motor failure
C1145	Wheel speed sensor right front trigger signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1148	Wheel speed sensor right front speed continuity signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Incorrect wheel speed sensor air gap Wheel speed sensor failure
C1155	Wheel speed sensor left front trigger signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1158	Wheel speed sensor left front speed continuity signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Incorrect wheel speed sensor air gap Wheel speed sensor failure
C1165	Wheel speed sensor right rear trigger signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1168	Wheel speed sensor right rear speed continuity signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Incorrect wheel speed sensor air gap Wheel speed sensor failure
C1175	Wheel speed sensor left rear trigger signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1178	Wheel speed sensor left rear speed continuity signal failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Incorrect wheel speed sensor air gap Wheel speed sensor failure
C1194	Outlet valve left front failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1198	Inlet valve left front failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1210	Outlet valve right front failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1214	Inlet valve right front failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1233	Wheel speed sensor left front no signal long term	Drive vehicle > 12.5 mph (20 km/h) > 14 seconds	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1234	Wheel speed sensor right front no signal long term	Drive vehicle > 12.5 mph (20 km/h) > 14 seconds	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
C1235	Wheel speed sensor right rear no signal long term	Drive vehicle > 12.5 mph (20 km/h) > 14 seconds	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
C1236	Wheel speed sensor left rear no signal long term	Drive vehicle > 12.5 mph (20 km/h) > 14 seconds	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
C1242	Outlet valve left rear failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1246	Outlet valve right rear failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1250	Inlet valve left rear failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1254	Inlet valve right rear failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Low reference or supply voltage Traction control actuator failure CM failure
C1258	Wheel speed sensor left front wheel speed comparison failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1259	Wheel speed sensor right front wheel speed comparison failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
C1260	Wheel speed sensor right rear wheel speed comparison failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
C1261	Wheel speed sensor left rear wheel speed comparison failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure
B1317	Supply voltage high	Drive vehicle > 12.5 mph (20 km/h) > 1500 rpm	YES	System switches off	Charging system failure Battery failure, loose terminals
B1342	CM failure	Drive vehicle > 12.5 mph (20 km/h)	YES	System switches off	CM ground circuits: high resistance, open circuit or short circuit to B+ voltage CM power circuits: high resistance, open circuit or short circuit to ground CM failure
C1404	Isolating valve failure	Traction control switched ON. Accelerate vehicle on a road surface to activate traction control.	YES	System switches off	Low reference or supply voltage Traction control actuator failure ABS / TC CM failure
C1449	TC actuator position incorrect	Traction control switched ON. Accelerate vehicle on a road surface to activate traction control.	YES	TC inhibited	Accelerator / throttle cable: incorrect adjustment TC actuator position sensor to ABS / TC CM circuit: high resistance, open circuit or short circuit to ground TC actuator position sensor failure TC actuator failure ABS / TC CM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1450	TC actuator motor failure	Traction control switched ON. Accelerate vehicle on a road surface to activate traction control.	YES	TC switches off	TC actuator to ABS / CM circuit: open circuit, high resistance, short circuit to ground or B+ voltage TC actuator motor failure ABS / TC CM failure
C1495	TC actuator position sensor signal incorrect	Traction control switched ON. Accelerate vehicle on a road surface to activate traction control.	YES	TC inhibited	Accelerator / throttle cable: incorrect adjustment TC actuator position sensor to ABS / TC CM circuit: high resistance, open circuit or short circuit to ground TC actuator position sensor failure TC actuator failure ABS / TC CM failure



DTC Summaries

Teves Mk 20-I ABS and ABS/TC Systems

DTCs are stored in the ABS/TC control module nonvolatile memory and can be accessed only through the DLC (Diagnostic Link Connector) using PDU.

Depending on the fault detected, the ABS or ABS/TC module will adopt one of the following default actions:

System switches off – the ABS or ABS/TC system will be switched off until the fault is corrected. The brake system will operate as a normal non-anti-lock system.

System inhibited – operation of the modulator assembly solenoid valves will be inhibited while the fault is present. The brake system will operate as a normal non-anti-lock system.

TC/ASC switches off – the traction control and stability control systems will be switched off until the fault is corrected. ABS functions will continue to operate normally.

PDU DATALOGGER ACRONYMS

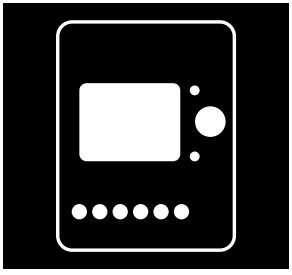
FBRAKE	Stop light switch
FLWS	Front left wheel speed sensor
FRWS	Front right wheel speed sensor
RLWS	Rear left wheel speed sensor
RRWS	Rear right wheel speed sensor

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1095	Pump motor failure	Drive vehicle to activate ABS / ASC or TC. Stop vehicle. Drive vehicle > 25 mph (40 km/h)	YES	System switches off	Pump motor to CM circuit: high resistance, open circuit or short circuit to ground or B+ voltage Pump motor failure
C1137	Control module internal circuit failure	Ignition ON > 8 minutes	YES*	System switches off	CM ground circuits: high resistance, open circuit or short circuit to B+ voltage CM power circuits: high resistance, open circuit or short circuit to ground CM failure
C1145	Wheel speed sensor circuit right front electrical failure	Drive vehicle > 12.5 mph (20 km/h) > 2 minutes	YES	System: – Switches off >3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1155	Wheel speed sensor circuit left front electrical failure	Drive vehicle > 12.5 mph (20 km/h) > 2 minutes	YES	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1165	Wheel speed sensor circuit right rear trigger electrical failure	Drive vehicle > 12.5 mph (20 km/h) > 2 minutes	YES*	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure
C1175	Wheel speed sensor circuit left rear electrical failure	Drive vehicle > 12.5 mph (20 km/h) > 2 minutes	YES*	System: – Switches off > 3 mph (5 km/h) – Inhibited < 3 mph (5 km/h)	Wheel speed sensor open or short circuit Wheel speed sensor to CM circuit: high resistance, open circuit or short circuit to ground Wheel speed sensor failure CM failure

* OBD II fault – If the fault occurs on two consecutive trips, the ECM will flag this DTC and the CHECK ENGINE MIL will be activated.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
C1233	Wheel speed sensor circuit left front signal failure	Drive vehicle > 25 mph (40 km/h) > 2 minutes	YES	System switches off > 12.5 mph (20 km/h) or > 2 min.	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure Solenoid valve failure
C1234	Wheel speed sensor circuit right front signal failure	Drive vehicle > 25 mph (40 km/h) > 2 minutes	YES	System switches off > 12.5 mph (20 km/h) or > 2 min.	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure Solenoid valve failure
C1235	Wheel speed sensor circuit right rear signal failure	Drive vehicle > 25 mph (40 km/h) > 2 minutes	YES	System switches off > 12.5 mph (20 km/h) or > 2 min.	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure Solenoid valve failure
C1236	Wheel speed sensor circuit left rear signal failure	Drive vehicle > 25 mph (40 km/h) > 2 minutes	YES	System switches off > 12.5 mph (20 km/h) or > 2 min.	Wheel speed sensor circuit to CM: open circuit or short circuit to ground Wheel speed sensor open circuit or short circuit Incorrect wheel speed sensor to reluctor air gap CM failure Solenoid valve failure
C1267	Modulator valve failure	Drive vehicle > 25 mph (40 km/h)	YES	System switches off	ABS system sensors, wiring or connectors: intermittent open circuit, short circuit or short circuit to ground or B+ voltage Electronic (RFI) interference Modulator valve failure CM failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	ABS MIL	DEFAULT ACTION	POSSIBLE CAUSES
B1342	CAN circuit malfunction	Drive vehicle > 12.5 mph (20 km/h)	YES	TC/ASC switches off	CAN open circuit fault CAN short circuit fault CM failure
B1676	Supply voltage out of range	Drive vehicle > 12.5 mph (20 km/h) > 1500 rpm	YES	System: – Switches off > 19 volts – Inhibited < 9 volts	Battery to CM B+ supply circuit; open circuit or high resistance Battery failure, loose terminals Charging system failure CM failure



DTC Summaries

Electromechanical Airbag SRS: Sedan Range 1995 – 97 MY

DTCs are stored in the instrument pack nonvolatile memory and can be accessed only through the DLC (Diagnostic Link Connector) using PDU.

PDU displays the DTCs as 2-digit numbers.

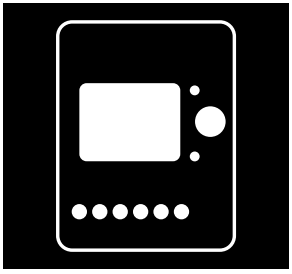
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
No DTC	No AIRBAG MIL	Switch ignition ON.	—	AIRBAG MIL bulb failure Ignition auxiliary switched circuit to diagnostic module; no voltage or open circuit Instrument pack to diagnostic module AIRBAG MIL circuit; open circuit Diagnostic module failure Instrument pack failure
No DTC	No AIRBAG MIL and Diagnostic module "beeps" 5 times every 30 minutes	Switch ignition ON.	—	Instrument pack power supply circuit; open circuit Instrument pack internal AIRBAG MIL power circuit; open circuit
No DTC	AIRBAG MIL stays ON constantly with ignition ON	Switch ignition ON for more than 8 seconds.	YES	Instrument pack to diagnostic module AIRBAG MIL circuit; open circuit or high resistance Diagnostic module failure
No DTC	AIRBAG MIL flashes continuously	Switch ignition ON for more than 8 seconds.	CONTINUOUS FLASHING	Both front impact sensors disconnected Both front impact sensors not grounded Main wiring harness disconnected
00	AIRBAG MIL circuit low voltage	Switch ignition ON.	YES	Diagnostic module to instrument pack airbag failure warning circuit; short circuit to ground
01	No diagnostic module self test "pass" signal	Switch ignition ON for more than 10 seconds.	YES	Ignition switched auxiliary power circuit to diagnostic module; open circuit, high resistance, short circuit to ground or short circuit to B+ voltage Instrument pack power supply circuit; open circuit Instrument pack internal AIRBAG MIL power circuit; open circuit Diagnostic module to chassis ground circuit; open circuit or high resistance Ignition auxiliary positive relay failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
12	B+ voltage supply low (below 9 V)	Switch ignition ON for more than 8 seconds.	YES	Low battery voltage B+ voltage to diagnostic module circuit; open circuit, high resistance or short circuit to ground Diagnostic module to safing sensor voltage supply circuit; short circuit to ground Safing sensor failure
13	Airbag circuit short circuit (DTC 13 will cause thermal fuse to open circuit, flagging DTC 51. Repair cause of DTC 13 first.)	Switch ignition ON for more than 8 seconds.	YES	Diagnostic module to safing sensor voltage supply circuit: short circuit to ground Safing sensor to airbag circuits; short circuit to ground Airbag to diagnostic module circuits; short circuit to ground Safing sensor failure
14	Front impact sensor circuit short circuit (DTC 14 will cause thermal fuse to open circuit, flagging DTC 51. Repair cause of DTC 14 first.)	Switch ignition ON for more than 8 seconds.	YES	Diagnostic module to front impact sensor voltage supply circuit; open circuit, short circuit to ground or B+ voltage Front impact sensor failure
21	Safing sensor poor ground	Switch ignition ON for more than 8 seconds.	YES	Safing sensor to vehicle ground; high resistance Diagnostic module to safing sensor ground circuit; open circuit or high resistance Safing sensor failure
22	Safing sensor output circuit short circuit to B+ voltage	Switch ignition ON for more than 8 seconds.	YES	Charging system voltage above 17 V Safing sensor to diagnostic module output circuit; short circuit to B+ voltage Cable reel cassette; short circuit to B+ voltage Diagnostic module to airbag harness; short circuit to B+ voltage Safing sensor failure
23	Safing sensor input voltage low	Switch ignition ON for 30 seconds.	YES	Diagnostic module to safing sensor harness; high resistance, open circuit or short circuit to ground or B+ voltage Safing sensor failure Diagnostic module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
24	Safing sensor output circuit incorrect voltage	Switch ignition ON. Run engine above 1500 rpm.	YES	Charging system / battery; intermittent low voltage B+ voltage supply circuit to diagnostic module; open circuit, high resistance or short circuit to ground Diagnostic module to safing sensor harness; open circuit, high resistance, short circuit to ground or B+ voltage Airbag and impact sensor harness circuits; open circuit, high resistance, short circuit to ground or B+ voltage Safing sensor failure Diagnostic module failure
32	Driver airbag circuit high resistance (above 4 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to driver side cable reel cassette harness; open circuit or high resistance Cable reel cassette; open circuit or high resistance Driver side airbag; open circuit or high resistance Diagnostic module failure
33	Passenger airbag circuit high resistance (above 4 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to passenger side airbag harness; open circuit or high resistance Passenger side airbag; open circuit or high resistance Diagnostic module failure
34	Driver airbag circuit low resistance (below 0.7 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to driver side cable reel cassette harness; short circuit Driver side cable reel cassette; short circuit Driver side airbag; short circuit Diagnostic module failure
35	Passenger airbag circuit low resistance (below 0.7 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to passenger side airbag harness; short circuit Passenger side airbag; short circuit Diagnostic module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
41	Front right impact sensor supply circuit high resistance	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to front right impact sensor harness voltage supply and return circuits; open circuit, high resistance or short circuit to ground Front right impact sensor failure Diagnostic module failure
42	Front left impact sensor supply circuit high resistance	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to front left impact sensor harness voltage supply and return circuits; open circuit, high resistance or short circuit to ground Front left impact sensor failure Diagnostic module failure
44	Front right impact sensor poor ground	Switch ignition ON for more than 30 seconds.	YES	Sensor to body grounds; loose or corroded Sensor to diagnostic module harness sensor ground circuit; high resistance or open circuit Sensor failure Diagnostic module failure
45	Front left impact sensor poor ground	Switch ignition ON for more than 30 seconds.	YES	Sensor to body grounds; loose or corroded Sensor to diagnostic module harness sensor ground circuit; high resistance or open circuit Sensor failure Diagnostic module failure
51	Thermal fuse open circuit	Switch ignition ON for more than 30 seconds.	YES	System short circuit or intermittent short circuit; refer to DTC 12 and DTC 14 Airbag deployed
52	Reserve power supply voltage low (less than 23 V)	Switch ignition ON for more than 45 seconds.	YES	Diagnostic module to safing sensor harness voltage supply and return circuits; short circuit to ground or B+ voltage Diagnostic module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
53	Front impact sensor supply circuits high resistance or diagnostic module self test failure	Switch ignition ON for more than 45 seconds.	YES	Diagnostic module to impact sensor harnesses sensor voltage supply or monitor circuits; high resistance Impact sensor failure Diagnostic module failure
99	Front impact sensors disconnected	Switch ignition ON.	YES	Both front impact sensors disconnected from diagnostic module Diagnostic module failure



DTC Summaries

Electromechanical Airbag SRS: XK8 1997 – 2000 MY

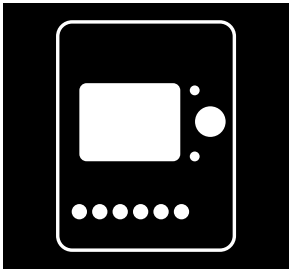
DTCs are stored in the diagnostic module nonvolatile memory and can be accessed only through the DLC (diagnostic link connector) using PDU.

⚠ CAUTION: Measuring the resistance of airbag circuits may cause airbag deployment. Refer to the service literature for safe testing procedures. Observe all safety precautions when diagnosing or repairing airbag SRS systems.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
B1342	Internal diagnostic module fault	Switch ignition ON for more than 10 seconds	YES	Diagnostic module failure
B1867	B+ voltage supply low (< 5 V) (Repair causes of any other logged DTCs before repairing B1867)	Switch ignition ON for more than 10 seconds	YES	B+ voltage to diagnostic module circuit: open circuit, high resistance or short circuit to ground
B1869	Diagnostic module "beeps" 5 times every 30 minutes (Repair causes of any other logged DTCs before repairing B1869)	Switch ignition ON	—	AIRBAG SRS MIL failure plus additional airbag SRS system faults; Refer to "No AIRBAG SRS MIL" near the end of this summary
B1913	Airbag circuit short circuit (DTC 1913 will cause airbag SRS system 10 A battery fuse to open circuit, flagging DTC B1867. Repair cause of DTC B1913 first.)	Switch ignition ON for more than 3 minutes.	YES	Passenger or driver airbag to diagnostic module: short circuit to ground Passenger or driver airbag: internal short circuit to ground Driver airbag cassette: short circuit to ground Diagnostic module to impact sensor voltage supply circuit: high resistance or short circuit to ground Impact sensor to airbag circuits: short circuit to ground Impact sensor to ground: high resistance
B1914	Impact sensor circuit short circuit to ground (DTC B1914 will cause airbag SRS system 10 A battery fuse to open circuit, flagging DTC B1867. Repair cause of DTC B1914 first.)	Switch ignition ON for more than 3 minutes.	YES	Diagnostic module to impact sensor voltage supply circuit: open circuit, high resistance or short circuit to ground Impact sensor failure
B1921	Diagnostic module poor ground (> 3.0 Ω)	Switch ignition ON for more than 10 seconds.	YES	Diagnostic module to vehicle ground: high resistance Diagnostic module failure
B1922	Safing sensor voltage high (> 5 V)	Switch ignition ON for more than 10 seconds.	YES	Charging system voltage above 17 V Diagnostic module to airbag harness: short circuit to B+ voltage Cable reel cassette: short circuit to B+ voltage Diagnostic module failure
B1923	Diagnostic module fault (memory clear circuit)	Switch ignition ON for 30 seconds	YES	Diagnostic module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
B1924	Diagnostic module "fuse blow" circuit fault	Switch ignition ON for more than 3 minutes.	YES	Diagnostic module B+ voltage supply circuit: open circuit or high resistance Diagnostic module to impact sensor circuits: open circuit or high resistance Impact sensor ground circuit: high resistance Impact sensor failure Diagnostic module failure
B1932	Driver airbag circuit high resistance (above 3.5 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to driver side cable reel cassette harness: open circuit or high resistance Cable reel cassette: open circuit or high resistance Driver side airbag: open circuit or high resistance Diagnostic module failure
B1933	Passenger airbag circuit high resistance (above 2.5 Ω)	Switch ignition ON for more than 30 seconds	YES	Diagnostic module to passenger side airbag harness: open circuit or high resistance Passenger side airbag: open circuit or high resistance Diagnostic module failure
B1934	Driver airbag circuit low resistance (below 1 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to driver side cable reel cassette harness: short circuit Driver side cable reel cassette: short circuit Driver side airbag: short circuit Diagnostic module failure
B1935	Passenger airbag circuit low resistance (below 0.7 Ω)	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to passenger side airbag harness: short circuit Passenger side airbag: short circuit Diagnostic module failure
B1941	Right side impact sensor supply circuit high resistance	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to impact sensor harness circuits: open circuit, high resistance or short circuit to B+ voltage Impact sensor failure Diagnostic module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVATED	POSSIBLE CAUSES
B1942	Left side impact sensor supply circuit high resistance	Switch ignition ON for more than 30 seconds.	YES	Diagnostic module to impact sensor harness circuits: open circuit, high resistance or short circuit to B+ voltage Left impact sensor failure Diagnostic module failure
B1944	Right impact sensor poor ground	Switch ignition ON for more than 30 seconds.	YES	Sensor to body grounds: loose or corroded Sensor to diagnostic module harness sensor ground circuit: high resistance or open circuit Sensor failure Diagnostic module failure
B1945	Left impact sensor poor ground	Switch ignition ON for more than 30 seconds.	YES	Sensor to body grounds: loose or corroded Sensor to diagnostic module harness sensor ground circuit: high resistance or open circuit Sensor failure Diagnostic module failure
No DTC	No AIRBAG SRS MIL	Switch ignition ON.	—	AIRBAG SRS MIL bulb failure Ignition auxiliary switched circuit to diagnostic module: no voltage or open circuit Instrument pack to diagnostic module AIRBAG SRS MIL circuit: open circuit Diagnostic module failure Instrument pack failure
No DTC	AIRBAG SRS MIL stays ON constantly with ignition ON	Switch ignition ON for more than 10 seconds.	YES	Instrument pack to diagnostic module AIRBAG SRS MIL circuit: open circuit or high resistance Ignition switched voltage to diagnostic module: open circuit, high resistance or short circuit to ground Diagnostic module failure
No DTC	AIRBAG SRS MIL flashes continuously (DTCs B1941, B1942, B1944 and B1945 logged)	Switch ignition ON for more than 10 seconds.	CONTINUOUS FLASHING	Both impact sensors disconnected Main wiring harness disconnected



DTC Summaries

Electronic Airbag SRS: Single Point Sensor – XJ8 1998 MY ON

DTCs are stored in the Single Point Sensor module nonvolatile memory and can be accessed only through the DLC (data link connector) using PDU.

⚠ CAUTION: Measuring the resistance of airbag circuits may cause airbag deployment. Refer to the service literature for safe testing procedures. Observe all safety precautions when diagnosing or repairing airbag SRS systems.

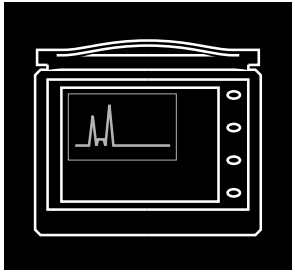
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVE	POSSIBLE CAUSES
B1414	Incorrect components	Switch ignition on for more than 20 seconds	YES	Incorrect components fitted Single Point Sensor module failure
B1342	Single Point Sensor module internal fault or module crash record full	Switch ignition ON for more than 10 seconds:	YES	Single Point Sensor module has logged three impact events Single Point Sensor module failure
B1865	SRS system voltage low (< 8.3 V)	Run engine for more than 30 seconds at greater than 1600 rpm	YES	Airbag SRS voltage supply fuse open circuit Single Point Sensor module voltage supply harness; open circuit, high resistance, short circuit to ground Charging system low voltage output
B1866	SRS system voltage high (> 18.3 V)	Run engine for more than 30 seconds at greater than 1600 rpm	YES	Charging system high voltage output
B1869	AIRBAG SRS MIL circuit open circuit Note: If another DTC is logged when the AIRBAG / SRS MIL is not functioning, a five beep audible warning will sound every 30 minutes during vehicle operation.	Switch ignition on for more than 20 seconds	YES	AIRBAG SRS MIL lamp open circuit Single Point Sensor to instrument pack harness; open circuit or high resistance Instrument pack failure
B1870	AIRBAG SRS MIL circuit short circuit Note: If another DTC is logged when the AIRBAG / SRS MIL is not functioning, a five beep audible warning will sound every 30 minutes during vehicle operation.	Switch ignition on for more than 30 seconds	YES	Single Point Sensor module to instrument pack harness; short circuit to B+ voltage Instrument pack failure
B1877	Driver seat belt pretensioner circuit open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver seat belt pretensioner harness; open circuit or high resistance Driver seat belt pretensioner failure
B1878	Driver seat belt pretensioner circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver seat belt pretensioner harness; short circuit to B+ voltage Driver seat belt pretensioner failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVE	POSSIBLE CAUSES
B1879	Driver seat belt pretensioner circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver seat belt pretensioner harness; short circuit to ground Driver seat belt pretensioner failure
B1881	Passenger seat belt pretensioner circuit open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger seat belt pretensioner harness; open circuit or high resistance Passenger seat belt pretensioner failure
B1882	Passenger seat belt pretensioner circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger seat belt pretensioner harness short circuit to B+ voltage Passenger seat belt pretensioner failure
B1883	Passenger seat belt pretensioner circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger seat belt pretensioner harness short circuit to ground Passenger seat belt pretensioner failure
B1885	Driver seat belt pretensioner low resistance	Switch ignition on for more than 20 seconds	YES	Single Point Sensor to driver seat belt pretensioner harness short circuit to ground Driver seat belt pretensioner failure
B1886	Passenger seat belt pretensioner low resistance	Switch ignition on for more than 20 seconds	YES	Single Point Sensor to passenger seat belt pretensioner harness short circuit to ground Passenger seat belt pretensioner failure
B1887	Driver airbag circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver airbag harness short circuit to ground Driver airbag cable reel cassette short circuit to ground Driver airbag failure
B1888	Passenger airbag circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger airbag harness short circuit to ground Passenger airbag failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVE	POSSIBLE CAUSES
B1916	Driver airbag circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver airbag harness short circuit to B+ voltage Driver airbag cable reel cassette short circuit to B+ voltage Driver airbag short circuit to B+ voltage
B1925	Passenger airbag circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger airbag harness short circuit to B+ voltage Passenger airbag short circuit to B+ voltage
B1932	Driver airbag circuit open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver airbag harness; open circuit or high resistance Driver airbag cable reel cassette; open circuit or high resistance Driver airbag failure
B1933	Passenger airbag circuit open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger airbag harness; open circuit or high resistance Passenger airbag failure
B1934	Driver airbag circuit low resistance	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to driver airbag harness short circuit to ground Driver airbag cable reel cassette short circuit between airbag power and ground supply Driver airbag failure
B1935	Passenger airbag circuit low resistance	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to passenger airbag harness short circuit to ground Passenger airbag failure
B1992	Side driver airbag circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag harness short circuit to B+ voltage Side driver airbag short circuit to B+ voltage
B1993	Side driver airbag circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag harness short circuit to ground Side driver airbag failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVE	POSSIBLE CAUSES
B1994	Side driver airbag open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag harness short circuit to ground Side driver airbag failure
B1995	Side driver airbag circuit short circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag harness short circuit between power and ground supply Side driver airbag failure
B1996	Side passenger bag circuit short circuit to B+ voltage	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag harness short circuit to B+ voltage Side passenger airbag failure
B1997	Side passenger airbag circuit short circuit to ground	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag harness short circuit to ground Side passenger airbag failure
B1998	Side passenger airbag circuit open circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag harness; open circuit or high resistance Side passenger airbag failure
B1999	Side passenger airbag circuit short circuit	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag harness short circuit between power and ground supply Side passenger airbag failure
B2444	Side driver airbag impact sensor fault	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag impact sensor harness; open circuit, high resistance, short circuit to ground or B+ voltage Impact sensor failure
B2445	Side passenger airbag impact sensor fault	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag impact sensor harness; open circuit, high resistance, short circuit to ground or B+ voltage Impact sensor failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	MIL ACTIVE	POSSIBLE CAUSES
U2017	Side driver airbag impact sensor communications fault	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side driver airbag impact sensor; open circuit, high resistance or short circuit to ground Side driver impact sensor failure
U2018	Side passenger airbag impact sensor communications fault	Switch ignition on for more than 20 seconds	YES	Single Point Sensor module to side passenger airbag impact sensor; open circuit, high resistance or short circuit to ground Side passenger impact sensor failure



DTC Summaries

Advanced Restraint System: XK8 2001 Model Year ON

⚠ WARNING: Measuring the resistance of airbag circuits may cause airbag deployment. Refer to JTIS for safe testing procedures. Observe all safety precautions when diagnosing or repairing airbag systems.

DTC RETREIVAL

DTCs are stored in the Restraints Control Module and are accessed through the DLC (Data Link Connector) using WDS.

Flash Codes

The Airbag Warning MIL flashes a coded sequence to alert the driver of certain critical ARS system faults and in some cases further defines the DTC.

If a DTC with an attached Flash Code is flagged, the Airbag Warning MIL flashes indicating the code. Each digit of the two digit code is represented by a series of flashes followed by a slight pause. A longer pause indicates the end of the code. Interpret the code by counting the MIL flashes and observing the pauses. The Flash code sequence repeats as long as the fault is present.

Example: DTC B2295 Side airbag status fault

Driver side fault – Flash code 22: flash flash (pause) flash flash (long pause) (repeats)

Passenger side fault: – Flash code 23: flash flash (pause) flash flash flash (long pause) (repeats)

Airbag MIL ON Continuously

If the Airbag MIL is ON continuously, the RCM is disconnected or inoperative.

REFERENCE

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

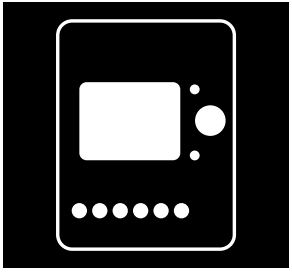
DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	AIRBAG MIL	CM PIN	POSSIBLE CAUSES
B1231	Airbag deploy threshold exceeded	Ignition ON	YES Flash code 13	—	Significant vehicle impact has been detected by RCM
B1342	RCM Malfunction	Ignition ON	YES	FC8-12	B+ Voltage < 10 V Battery or charging system fault Ignition switched power supply fault RCM failure
B1869	Airbag Warning MIL malfunction NOTE: Audible warning sounds if an additional DTC is present.	Ignition ON	YES	FC8-15	MIL OFF – Airbag Warning MIL circuit: open circuit – Airbag Warning MIL lamp failure MIL ON – Airbag Warning MIL circuit: short circuit to ground
B1870	Airbag Warning MIL malfunction CUSTOMER SYMPTOM: Airbag warning lamp inoperative.	Ignition ON	YES	FC8-15	Airbag Warning MIL circuit: short circuit to B+ voltage
B1884	Passenger airbag deactivated (PAD) warning lamp circuit malfunction	Ignition ON	YES Flash code 18	FC8-19	PAD Lamp OFF: – Defective lamp – PAD Lamp activation circuit: open circuit PAD Lamp ON: – PAD Lamp activation circuit: short circuit to ground
B1890	Passenger airbag deactivated (PAD) warning lamp circuit malfunction	Ignition ON	YES Flash code 18	FC8-19	PAD Lamp activation circuit: short circuit to B+ voltage
B1891	Airbag audible warning activate circuit malfunction NOTE: Airbag audible warning will only operate if there is an existing fault between the RCM and the Airbag Warning MIL.	Ignition ON	YES	FC8-22	Airbag audible warning activate circuit: short circuit to B+ voltage NOTE: Disconnect the harness at the BPM and RCM to check the wiring.

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	AIRBAG MIL	CM PIN	POSSIBLE CAUSES
B1892	Airbag audible warning activate circuit malfunction NOTE: Airbag audible warning will only operate if there is an existing fault between the RCM and the Airbag Warning MIL.	Ignition ON	YES Flash code 53	FC8-22	Airbag audible warning activate circuit: short circuit to ground, high resistance, open circuit NOTE: Disconnect the harness at the BPM and RCM to check the wiring.
B1921	RCM airbag diagnostic monitor ground fault	Ignition ON	YES Flash code 14	—	RCM mounting bolts loose RCM not aligned with weld studs
B2290	Occupant classification system fault (Passenger)	Ignition ON	YES Flash code 16	FC9-17 FC9-18 FC10-24 FC10-25 FC10-11 FC10-12 SP21-E SP21-F	Battery voltage < 8 V, or has been for considerable time Occupancy sensing module to passenger seat weight sensing module wiring fault Passenger seat weight sensing module to passenger seat weight sensor wiring fault CAN (local) hardwire communications failure CAN (local) data failure Passenger seat weight sensor failure Passenger seat weight sensing module failure Occupancy sensing module failure
B2291	Occupant position system fault (Passenger)	Ignition ON	YES Flash code 17	FC9-17 FC9-18 FC10-24 FC10-25 FC10-11 FC10-12 SP21-E SP21-F	B+ voltage < 8 V or has been < 8 V for considerable time CAN (local) hardwire fault CAN (local) data failure Occupancy sensor(s) blocked (object blocking sensing signal) Occupancy sensor(s) disconnected Occupancy sensor(s) circuit(s) fault(s) Occupancy sensor(s) failure Occupancy sensing module failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	AIRBAG MIL	CM PIN	POSSIBLE CAUSES
B2292	Seat belt pretensioner status fault WARNING: Refer to JTIS before attempting measurement or repair procedures. Observe all safety requirements.	Ignition ON	YES Driver side fault: Flash code 33	FC9-31 FC9-32	Driver seat belt pretensioner circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
			Pass. side fault: Flash code 34	FC9-33 FC9-34	Passenger seat belt pretensioner circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
B2293	Front airbag status fault WARNING: Refer to JTIS before attempting measurement or repair procedures. Observe all safety requirements.	Ignition ON	YES Driver side fault: Flash code 19	FC8-1 FC8-2	Driver airbag ignitor 1 circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
				FC8-5 FC8-6	Driver airbag ignitor 2 circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
			Pass. side fault: Flash code 21	FC8-3 FC8-4	Passenger airbag ignitor 1 circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
				FC8-13 FC8-14	Passenger airbag ignitor 2 circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
B2295	Side airbag status fault WARNING: Refer to JTIS before attempting measurement or repair procedures. Observe all safety requirements.	Ignition ON	YES Driver side fault: Flash code 22	FC9-1 FC9-2	Driver side airbag ignitor circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage
			Pass. side fault: Flash code 23	FC9-21 FC9-22	Passenger side airbag ignitor circuit: resistance out of tolerance, open circuit, short circuit to ground, short circuit to B+ voltage

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	AIRBAG MIL	CM PIN	POSSIBLE CAUSES
B2296	Crash sensors status	Ignition ON NOTE: Sensors must be powered up to monitor electrical characteristics	YES Front sensor fault: Flash code 42	FC9-19 FC9-20	Front crash sensor circuit: open circuit, high resistance Front crash sensor failure
			Driver side sensor fault: Flash code 43	FC9-27 FC9-28	Driver side impact sensor circuit: open circuit, high resistance Driver side impact sensor failure
			Pass. side sensor fault: Flash code 44	FC9-29 FC9-30	Passenger side impact sensor circuit: open circuit, high resistance Passenger side impact sensor failure
B2434	Driver seat belt switch circuit malfunction	Ignition ON	YES Flash code 51	FC9-25	Driver seat belt switch circuit: short circuit to ground NOTE: Disconnect the harness at both ends to test. Driver seat belt switch defective
B2435	Driver seat belt switch circuit malfunction	Ignition ON	YES Flash code 51	FC9-25	Driver seat belt switch circuit: open circuit, high resistance NOTE: Disconnect the harness at both ends to test. Driver seat belt switch ground circuit: open circuit, high resistance Driver seat belt switch defective
B2438	Passenger seat belt switch circuit malfunction	Ignition ON	YES Flash code 52	FC9-26	Passenger seat belt switch circuit: short circuit to ground NOTE: Disconnect the harness at both ends to test. Passenger seat belt switch failure
B2439	Passenger seat belt switch circuit malfunction	Ignition ON	YES Flash code 52	FC9-26	Passenger seat belt switch circuit: open circuit, high resistance NOTE: Disconnect the harness at both ends to test. Passenger seat belt switch ground circuit: open circuit, high resistance Passenger seat belt switch failure

DTC	FAULT DESCRIPTION	MONITORING CONDITIONS	AIRBAG MIL	CM PIN	POSSIBLE CAUSES
B2477	RCM Configuration failure	Ignition ON	YES Flash code 54	—	RCM not programmed or incorrectly programmed
B2691	Driver seat belt switch circuit malfunction	Ignition ON	YES Flash code 51	FC9-25	Driver seat belt switch circuit: open circuit, high resistance, short circuit to B+ voltage NOTE: Disconnect the harness at both ends to test. Driver seat belt switch failure
B2692	Passenger seat belt switch circuit malfunction	Ignition ON	YES Flash code 52	FC9-26	Passenger seat belt switch circuit: open circuit, high resistance, short circuit to B+ voltage NOTE: Disconnect the harness at both ends to test. Passenger seat belt switch failure
C1414	Incorrect RCM fitted	Ignition ON	YES Flash code 15	FC8-20 FC8-21	RCM module identification circuit: incorrectly connected, circuit fault – Convertible: FC8-20 = GND, FC8-21 = GND – Coupe: FC8-20 = B+ V, FC8-21 = O/C Incorrect RCM fitted
C1947	Driver seat track position switch circuit malfunction	Ignition ON	YES Flash code 49	FC9-23 FC9-24	Driver seat track switch circuit: open circuit, high resistance, short circuit to B+ voltage NOTE: Disconnect the harness at both ends to test. Driver seat track switch defective
C1948	Driver seat track position switch malfunction	Ignition ON	YES Flash code 49	FC9-23 FC9-24	Driver seat track switch circuit: open circuit, high resistance, short circuit NOTE: Disconnect the harness at both ends to test. Driver seat track switch defective
C1981	Driver seat track position switch circuit malfunction	Ignition ON	YES Flash code 49	FC9-23 FC9-24	Driver seat track switch circuit: open circuit, high resistance, short circuit to B+ voltage NOTE: Disconnect the harness at both ends to test. Driver seat track switch defective



DTC Summaries

NipponDenso Climate Control System

PDU DIAGNOSTIC TROUBLE CODES (DTCs)

Use Toolbox to access the 5-character PDU DTCs.

NOTES:
PDU DTCs are more definitive than Panel Fault Codes.
Use PDU when diagnosing System Faults.
Not all PDU DTCs have equivalent Panel Fault Codes.

DTC	PANEL	CIRCUIT	FAULT DESCRIPTION	POSSIBLE CAUSES
P0335	—	Engine speed input	Vehicle speed input > 50 mph; engine speed = 0	Vehicle speed input circuit between ECM and A/CCM open circuit, short circuit or high resistance
B1250	11	In-car temperature sensor	In-car temperature sensing circuit fault	In-car temperature sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1253	11	In-car temperature sensor	In-car temperature sensing circuit fault	In-car temperature sensing circuit short circuit to ground
B1254	12	Ambient temperature sensor	Ambient temperature sensing circuit fault	Ambient temperature sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1257	12	Ambient temperature sensor	Ambient temperature sensing circuit fault	Ambient temperature sensing circuit short circuit to ground
B1258	21	Solar sensor	Solar sensing circuit fault	Solar sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1260	21	Solar sensor	Solar sensing circuit fault	Solar sensing circuit short circuit to ground
B1262	44	Defrost servo	Defrost vent position not reached within 30 seconds	Defrost vent servo drive circuit open circuit, high resistance or short circuit Defrost vent servo failure
B1263	45	Center vent servo	Center vent position not reached within 30 seconds	Center vent servo drive circuit open circuit, high resistance or short circuit Center vent servo failure
B1264	46	Foot vent servo	Foot vent position not reached within 30 seconds	Foot vent servo drive circuit open circuit, high resistance or short circuit Foot vent servo failure
B1265	43	Cool air bypass servo	Cool air bypass position not reached within 30 seconds	Cool air bypass servo drive circuit open circuit, high resistance or short circuit Cool air bypass servo failure
B1266	41	Left fresh / recirc servo	Left fresh / recirc position not reached within 30 seconds	Left fresh / recirc servo drive circuit open circuit, high resistance or short circuit Left fresh / recirc servo failure

DTC	PANEL	CIRCUIT	FAULT DESCRIPTION	POSSIBLE CAUSES
B1267	42	Right fresh / recirc servo	Right fresh / recirc position not reached within 30 seconds	Right fresh / recirc servo drive circuit open circuit, high resistance or short circuit Right fresh / recirc servo failure
B1268	34	Defrost feedback potentiometer	Defrost feedback potentiometer sensing (wiper) circuit fault	Defrost feedback potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1271	34	Defrost feedback potentiometer	Defrost feedback potentiometer sensing (wiper) circuit fault	Defrost feedback potentiometer sensing circuit short circuit to ground
B1272	35	Center vent feedback potentiometer	Center vent potentiometer sensing (wiper) circuit fault	Center vent potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1275	35	Center vent feedback potentiometer	Center vent potentiometer sensing (wiper) circuit fault	Center vent feedback potentiometer sensing circuit short circuit to ground
B1276	36	Foot vent feedback potentiometer	Foot vent potentiometer sensing (wiper) circuit fault	Foot vent potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1279	36	Foot vent feedback potentiometer	Foot vent potentiometer sensing (wiper) circuit fault	Foot vent potentiometer sensing circuit short circuit to ground
B1280	33	Cool air bypass feedback potentiometer	Cool air bypass potentiometer sensing (wiper) circuit fault	Cool air bypass potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1283	33	Cool air bypass feedback potentiometer	Cool air bypass potentiometer sensing (wiper) circuit fault	Cool air bypass potentiometer sensing circuit short circuit to ground
B1284	31	Left fresh / recirc feedback potentiometer	Left fresh / recirc potentiometer sensing (wiper) circuit fault	Left fresh / recirc potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1287	31	Left fresh / recirc feedback potentiometer	Left fresh / recirc potentiometer sensing (wiper) circuit fault	Left fresh / recirc potentiometer sensing circuit short circuit to ground
B1288	32	Right fresh / recirc feedback potentiometer	Right fresh / recirc potentiometer sensing (wiper) circuit fault	Right fresh / recirc potentiometer sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1291	32	Right fresh / recirc feedback potentiometer	Right fresh / recirc potentiometer sensing (wiper) circuit fault	Right fresh / recirc potentiometer sensing circuit short circuit to ground

DTC	PANEL	CIRCUIT	FAULT DESCRIPTION	POSSIBLE CAUSES
B1292	—	B+ power supply (via A/C Isolate relay)	B+ power supply circuit fault between A/C Isolate relay and A/CCM	B+ circuit between A/C Isolate relay and A/CCM open circuit or high resistance
B1294	—	B+ power supply (via A/C Isolate relay)	B+ power supply circuit fault between A/C Isolate relay and A/CCM	B+ circuit between A/C Isolate relay and A/CCM short circuit to ground
B1297	—	Sensor 5 volt reference voltage	Sensor 5 volt reference voltage circuit fault	Sensor 5 volt reference voltage circuit open circuit or short circuit to B+ voltage
B1298	—	Sensor 5 volt reference voltage	Sensor 5 volt reference voltage circuit fault	Sensor 5 volt reference voltage circuit short circuit to ground
B1299	—	Sensor 5 volt reference voltage	Sensor 5 volt reference voltage circuit fault	Sensor 5 volt reference voltage circuit high resistance
B1355	—	B+ power supply	B+ power supply circuit fault	B+ power supply circuit open circuit or short circuit to ground
B1849	24	Face vent differential temperature control	Face vent differential temperature control potentiometer circuit fault	Face vent differential temperature potentiometer circuit open circuit, high resistance or short circuit to B+ voltage
B1852	24	Face vent differential temperature control	Face vent differential temperature control potentiometer circuit fault	Face vent differential temperature potentiometer circuit short circuit to ground
B1853	—	Aspirator motor	Aspirator motor circuit fault	Aspirator motor circuit open circuit or high resistance Aspirator motor failure
B1856	—	Aspirator motor	Aspirator motor circuit fault	Aspirator motor circuit short circuit to ground
B1857	—	Ignition switched (Pos I, Aux) ground signal	Ignition switched ground signal circuit fault	Ignition switched ground signal circuit open circuit or high resistance
B1858	23	Refrigerant dual pressure switch	Refrigerant dual pressure switch circuit fault	Refrigerant charge low Refrigerant dual pressure switch circuit open circuit, high resistance or short circuit to B+ voltage High engine temperature in high ambient temperature
B1861	23	Refrigerant dual pressure switch	Refrigerant dual pressure switch circuit fault	Refrigerant dual pressure switch circuit short circuit to ground

DTC	PANEL	CIRCUIT	FAULT DESCRIPTION	POSSIBLE CAUSES
B1862	22	Compressor lock sensor	Compressor lock; Compressor lock sensing circuit fault	Slipping compressor drive belt Compressor lock Compressor lock sensing circuit open circuit Compressor lock sensing circuit short circuit to ground or B+ voltage
B1863	—	Sensor signal ground	Sensor signal ground circuit fault	Sensor signal ground circuit open circuit
B1946	13	Evaporator temperature sensor	Evaporator temperature sensing circuit fault	Evaporator temperature sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1947	13	Evaporator temperature sensor	Evaporator temperature sensing circuit fault	Evaporator temperature sensing circuit short circuit to ground
B1948	14	Coolant temperature signal	Coolant temperature signal circuit fault between instrument pack and A/CCM	Signal circuit between instrument pack and A/CCM open circuit, high resistance or short circuit to B+ voltage
B1949	14	Coolant temperature signal	Coolant temperature signal circuit fault between instrument pack and A/CCM	Signal circuit between instrument pack and A/CCM short circuit to ground
B1966	15	Heater matrix air temperature sensor	Heater matrix air temperature sensing circuit fault	Heater matrix air temperature sensing circuit open circuit, high resistance or short circuit to B+ voltage
B1967	15	Heater matrix air temperature sensor	Heater matrix air temperature sensing circuit fault	Heater matrix air temperature sensing circuit short circuit to ground
B1968	—	Heater pump	Heater pump motor ground circuit fault	Heater pump motor ground circuit open circuit Heater pump motor locked

DTC	PANEL	CIRCUIT	FAULT DESCRIPTION	POSSIBLE CAUSES
B1969	—	Compressor clutch feedback	Compressor clutch circuit fault	Compressor clutch feedback circuit open circuit or short circuit to ground Compressor clutch request circuit between A/CCM and ECM open circuit or short circuit to ground Compressor clutch relay drive circuit between ECM and relay open circuit or short circuit to ground Compressor clutch activate circuit between relay and clutch open circuit or short circuit to ground Compressor clutch relay failure Compressor clutch failure
U1263	—	Control panel serial communication	Control panel serial communication circuit fault	Control panel to A/CCM circuit (data input CC30-7, clock, start) open circuit or short circuit Control panel failure A/CCM failure
U1264	—	Control panel serial communication	Control panel serial communication circuit fault	Control panel to A/CCM circuit (data output CC30-3) open circuit or short circuit Control panel failure A/CCM failure