DIAGNOSIS AND TESTING

Diagnostic Trouble Code Charts

Diagnostic Trouble Code Chart

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0102 P0103 P1100 P1101	MAF	MAF concerns	MAF system has a malfunction which may cause a transmission concern.	High or low EPC pressure, incorrect shift schedule. Incorrect torque converter clutch engagement scheduling. Symptoms similar to a throttle position (TP) failure.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0112	IAT	IAT indicates 125°C (257°F) (grounded)	Voltage drop across IAT exceeds scale set for temperature 125°C (257°F).	Incorrect EPC pressure, either high or low, results in harsh or soft shifts.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0113	IAT	IAT indicates -40°C (-40°F) (open circuit)	Voltage drop across IAT exceeds scale set for temperature -40°C (-40°F).	Incorrect EPC pressure, either high or low, results in harsh or soft shifts.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0114	IAT	IAT out of on-board diagnostic range	IAT temperature higher or lower than expected during KOEO and KOER.	Rerun on-board diagnostic at normal operating temperature.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0117	ECT	ECT indicates 125°C (257°F)	Voltage drop across ECT exceeds scale set for temperature 125°C (257°F) (grounded).	Torque converter clutch will always be off, resulting in reduced fuel economy.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0118	ECT	ECT indicates -40°C (-40°F)	Voltage drop across ECT exceeds scale set for temperature -40°C (-40°F) (open circuit).	Torque converter clutch will always be off, resulting in reduced fuel economy.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0122 P0123 P1120	TP	TP concern	PCM has detected an error that may cause a transmission concern.	Harsh engagements, firm shift feel, abnormal shift schedule, torque converter clutch does not engage, torque converter clutch cycling.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0300-P0308 P0320 P0340 P1351-P1364	Electronic Ignition (EI)	EI system concerns	EI system has a malfunction which may cause a transmission concern.	Harsh engagements and shifts, late WOT shifts, no torque converter clutch engagement.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1702	Digital TR	Intermittent DTC codes P0705 or P0708	Refer to DTC codes P0705 or P0708 condition.	Refer to DTC codes P0705 or P0708 symptom.	GO to Pinpoint Test C.
P1704	Digital TR	Digital TR circuit reading in between gear position during KOEO/KOER	Digital TR sensor or shift cable incorrectly adjusted; or digital TR circuit failure.	Wrong commanded EPC pressure. Digital TR reading the wrong gear position.	GO to Pinpoint Test C.
P0705	Digital TR	Digital TR circuit failure	Digital TR circuits, indicating an invalid pattern in TR__D. Condition caused by a short to ground or an open in TR4, TR3A, TR2 and or TR1 circuits. This DTC cannot be set by an incorrectly adjusted digital TR sensor.	Increase in EPC pressure (harsh shifts). Defaults to (D) or D for all gear positions. In (D) position trans, stuck in D or manual 2.	GO to Pinpoint Test C.
P0708	Digital TR	Digital TR sensor circuit TR3A open	Digital TR sensor circuit TR3A reading 2.6v - 5.0v (open circuit). This DTC cannot be set by an incorrectly adjusted digital TR sensor.	Increase in EPC pressure. Defaults to (D) or D for all gear ranges.	GO to Pinpoint Test C.
P1705	Digital TR	Digital TR self test was not carried out in PARK or NEUTRAL	Vehicle not in PARK or NEUTRAL during on-board diagnostic.	Rerun on-board diagnostic in PARK or NEUTRAL.	GO to Pinpoint Test C.
P0715	TSS	Insufficient input from turbine shaft speed sensor	PCM detected a loss of TSS signal during operation.	Harsh shifts, harsh torque converter clutch activation and harsh engagements.	GO to Pinpoint Test F.
P0717	TSS	Turbine shaft speed sensor signal intermittent	PCM has detected an intermittent TSS signal.	Harsh shifts, harsh torque converter clutch activation and harsh engagements.	GO to Pinpoint Test F.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0718	TSS	Turbine shaft speed sensor signal noisy	PCM has detected a noisy TSS signal.	Harsh shifts, harsh torque converter clutch activation and harsh engagements.	GO to Pinpoint Test F.
P0720	OSS	Insufficient input from output shaft speed sensor	PCM detected a loss of OSS signal during operation.	Harsh shifts, abnormal shift schedule, no torque converter clutch activation.	GO to Pinpoint Test E.
P0721	OSS	OSS sensor signal noisy	PCM has detected an erratic OSS signal.	Harsh shifts, abnormal shift schedule, no torque converter clutch engagement.	GO to Pinpoint Test E.
P0722	OSS wiring	Insufficient input from OSS	PCM has detected a loss of OSS signal.	Harsh shifts, abnormal shift schedule, no torque converter clutch engagement.	GO to Pinpoint Test E.
P0731	SSA, SSB or internal parts	1st gear error	No 1st gear.	Incorrect gear selection, depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material). Engine rpm could be higher or lower than expected.	Use the Solenoid Operation Chart, refer to Pinpoint Tests — OSC Equipped Vehicles. GO to Pinpoint Test A.
P0732	SSA, SSB or internal parts	2nd gear error	No 2nd gear.	Incorrect gear selection, depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material). Engine rpm could be higher or lower than expected.	Use the Solenoid Operation Chart, refer to Pinpoint Tests — OSC Equipped Vehicles. GO to Pinpoint Test A.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0733	SSA, SSB or internal parts	3rd gear error	No 3rd gear.	Incorrect gear selection, depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material). Engine rpm could be higher or lower than expected.	Use the Solenoid Operation Chart, refer to Pinpoint Tests — OSC Equipped Vehicles. GO to Pinpoint Test A.
P0734	SSA, SSB or internal parts	4th gear error	No 4th gear.	Incorrect gear selection, depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material). Engine rpm could be higher or lower than expected.	Use the Solenoid Operation Chart, refer to Pinpoint Tests — OSC Equipped Vehicles. GO to Pinpoint Test A.
P0741**	TCC, internal components	TCC slippage detected	The PCM picked up an excessive amount of slippage during normal vehicle operation.	TCC slippage/erratic or no torque converter clutch operation. Flashing Transmission Control Indicator Lamp (TCIL).	Refer to Diagnosis By Symptom in this section.
P0743*	TCC, wiring, PCM	TCC solenoid circuit failure during on-board diagnostic	TCC solenoid circuit fails to provide voltage drop across solenoid. Circuit open or shorted or PCM driver failure during on-board diagnostic.	Short circuit: engine stalls in second (OD, 2 range) at low idle speeds with brake applied. Open circuit: torque converter clutch never engages. May flash TCIL.	GO to Pinpoint Test A.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0750*	SSA, wiring, PCM	SSA solenoid circuit failure	SSA circuit failed to provide voltage drop across solenoid. Circuit open or shorted or PCM driver failure during on-board diagnostic.	Incorrect gear selection depending on condition mode and manual lever position. See Solenoid On/Off Chart.	GO to Pinpoint Test A.
P0753	SSA, wiring, PCM	SSA electrical failure	SSA circuit fails to provide voltage drop across solenoid. Circuit open or shorted or PCM driver failure during on-board diagnostic.	Incorrect gear depending on condition mode and manual lever position. See Solenoid On/Off Chart. May flash TCIL.	GO to Pinpoint Test A.
P0755*	SSB, wiring, PCM	SSB solenoid circuit failure	SSB circuit fails to provide voltage drop across solenoid. Circuit open or shorted or PCM driver failure during on-board diagnostic.	Incorrect gear selection depending on condition mode and manual lever position. See Solenoid On/Off Chart.	GO to Pinpoint Test A.
P0758*	SSB, wiring, PCM	SSB electrical circuit failure	SSB circuit fails to provide voltage drop across solenoid. Circuit open or shorted or PCM driver failure during on-board diagnostic.	Incorrect gear depending on condition mode and manual lever position. See Solenoid On/Off Chart. May flash TCIL.	GO to Pinpoint Test A.
P1714	SSA, internal components	SSA malfunction	Mechanical failure of the solenoid detected.	Incorrect gear selection depending on condition, mode and manual lever position. See Solenoid Operation Chart.	GO to Pinpoint Test G.
P1715	SSB	SSB malfunction	Mechanical failure of the solenoid detected.	Incorrect gear selection depending on condition, mode and manual lever position. See Solenoid Operation Chart.	GO to Pinpoint Test G.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0781**	SSA or internal parts	1-2 shift error	Engine rpm drop not detected when 1-2 shift was commanded by PCM.	Incorrect gear selection depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material).	Refer to Solenoid Operation Chart, then GO to Pinpoint Test A.
P0782**	SSA, SSB or internal parts	2-3 shift error	Engine rpm drop not detected when 2-3 shift was commanded by PCM.	Incorrect gear selection depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material).	Refer to Solenoid Operation Chart, then GO to Pinpoint Test A.
P0783**	SSA, SSB or internal parts	3-4 shift error	Engine rpm drop not detected when 3-4 shift was commanded by PCM.	Incorrect gear selection depending on failure or mode and manual lever position. Shift errors may also be due to other internal transmission concerns (stuck valves, damaged friction material).	Refer to Solenoid Operation Chart, then GO to Pinpoint Test A.
—	TCIL	TCIL circuit failure	TCIL circuit open or shorted.	Failed on, OD cancel mode on. No flashing TCIL for EPC failure or sensor. Failed off, OD cancel mode never indicated. No flashing TCIL for EPC sensor failure.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1116	ECT	ECT out of on-board diagnostic range	ECT temperature higher or lower than expected during KOEO and KOER.	Rerun on-board diagnostic at normal operating temperature.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P1124	TP	TP voltage high/low for on-board diagnostic	TP was not in the correct position for on-board diagnostic.	Rerun at appropriate throttle position per application.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1460	A/C	A/C clutch cycling pressure switch error	A/C or defrost on condition may result from A/C clutch being on during on-board diagnostic.	DTC set during on-board diagnostic, repeat with A/C off. Failed on, EPC pressure slightly low with A/C off.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1636	PCM	PCM detected internal error	—	—	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1703	BPP	BPP switch circuit failed	Brake ON/OFF circuit failure.	Failed on or not connected — torque converter clutch will not engage at less than 1/3 throttle. Failed off or not connected — torque converter clutch will not disengage when brake is applied.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1703	BPP	Brake not actuated during on-board diagnostic	Brake not cycled during KOER.	Failed off or not connected — torque converter clutch will not engage at less than 1/3 throttle. Failed off or not connected — torque converter clutch will not disengage when brake is applied.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0713	TFT, wiring, PCM	-40°C (-40°F) indicated TFT sensor circuit open	Voltage drop across TFT sensor exceeds scale set for temperature -40°C (-40°F).	Firm shift feel.	GO to Pinpoint Test B.
P1711	TFT	TFT out of on-board diagnostic range	Transmission not at operating temperature during on-board diagnostic.	Warm vehicle to normal operating temperature.	GO to Pinpoint Test B.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P0712	TFT, wiring, PCM	157°C (315°F) indicated TFT sensor circuit grounded	Voltage drop across TFT sensor exceeds scale set for temperature of 157°C (315°F).	Firm shift feel.	GO to Pinpoint Test B.
P1713	TFT wiring PCM	TFT continually reading cold	TFT sensor in range low failure.	Firm shift feel. Substitute ECT for TFT	GO to Pinpoint Test B.
P1783	TFT	Transmission over temperature condition indicated	Transmission fluid temperature exceeded 127°C (270°F).	Increase in EPC pressure.	GO to Pinpoint Test B.
P1718	TFT, wiring, PCM	TFT continually reading hot	TFT sensor in range high failure.	Firm shift feel. Substitute ECT for TFT.	GO to Pinpoint Test B.
P0740	TCC, wiring, PCM	TCC electrical failure	TCC circuit fails to provide voltage drop across solenoid. Circuit open, shorted or PCM driver failure during on-board diagnostics.	Short circuit, engine stalls in 2nd ((D), 2 range) at low speeds with brake applied. Open circuit, torque converter clutch never engages. May flash TCIL.	GO to Pinpoint Test A.
P1740	TCC	TCC malfunction	Mechanical failure of the solenoid detected.	Failed on — Engine stalls in 2nd (O/D, Manual 2 ranges) at low idle speeds with brake applied. Failed off — Torque converter never applies.	GO to Pinpoint Test G.
P1741**	TCC, internal components	Excessive torque converter clutch engagement error	Excessive variations in slip (engine speed surge) across the torque converter clutch.	Engine rpm oscillation is present in 3rd gear.	GO to Pinpoint Test A.
P1742	TCC, internal components	TCC solenoid failed on	TCC solenoid has failed on by electric, mechanical or hydraulic concern.	Harsh shifts.	GO to Pinpoint Test A.
P1743	TCC, internal components	TCC solenoid failed on	TCC solenoid has failed on by electric, mechanical or hydraulic concern.	Harsh shifts.	GO to Pinpoint Test A.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P1744	TCC	TCC	The PCM picked up an excessive amount of TCC slippage during normal vehicle operation.	TCC slippage/erratic or no torque converter clutch operation.	Refer to Diagnosis By Symptom in this section.
P1746* P0960	EPC, wiring, PCM	EPC solenoid open circuit	Voltage through EPC solenoid is checked. An error will be noted if tolerance is exceeded.	Open circuit causes maximum EPC pressure, harsh engagements and shifts.	GO to Pinpoint Test D.
P1747* P0962	EPC, wiring, PCM	EPC solenoid circuit failure, shorted circuit or output driver	Voltage through EPC solenoid is checked. An error will be noted if tolerance is exceeded.	Short circuit causes minimum EPC pressure (minimum capacity) and limits engine torque (alternate firm).	GO to Pinpoint Test D.
P1760	EPC, wiring, PCM	EPC solenoid circuit failure, shorted circuit or output driver	PCM detected a loss of EPC during operation.	Unexpected reduction in engine torque.	GO to Pinpoint Test D.
P1780	TC switch	TC switch not changing states	TC switch not cycled during self-test. TC switch circuit open or shorted.	Rerun on-board diagnostic and cycle switch. No OD cancel when switch is cycled.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1781[1]	4x4 Low switch	4x4 Low switch closed	4x4 Low switch closed or 4x4 Low indicator lamp circuit open.	Failed on — early shift schedules in 4x2 and 4x4 HI range. Failed off — shifts delayed in 4x4 Low.[1]	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P0963	EPC solenoid	EPC solenoid short to power (Vbat) circuit failure	Voltage through EPC solenoid is checked. An error will be noted if tolerance is exceeded.	Maximum EPC pressure, harsh engagements and shifts.	GO to Pinpoint Test D.
P0748**	EPC solenoid	EPC solenoid circuit failure	Voltage through EPC solenoid is checked. An error will be noted if tolerance is exceeded.	Short circuit results in minimum EPC pressure (minimum capacity) and limits engine torque (alternate firm). Not all gears present. Open circuit: maximum PC A pressure, harsh engagements and shifts.	GO to Pinpoint Test D.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code Chart (Continued)

Five Digit DTC	Component	Description	Condition	Symptom	Action
P1729	4x4 Low	4x4 Low switch failure	4x4 Low switch failure during normal vehicle operation.	Early shifts, harsh shifts, increase in electronic pressure control valve.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.
P1728	Trans	Transmission slip error	The PCM has detected an excessive amount of slippage during normal operation.	Transmission slippage erratic or no torque converter clutch operation.	Refer to Diagnosis By Symptom in this section.
P0500 P0503 P1502	ABS	Insufficient VSS input from ABS through SCP link	PCM detected a loss of VSS signal through SCP link from ABS.	No transmission symptom, I.P. speedometer may be affected.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.*
U1039	PCM	Data communication link error	Insufficient VSS input to instrument panel via SCP link.	No VSS input to instrument panel.	Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual.*

* Output circuit check, generated only by electrical symptoms.
** May also be generated by some other non-electric transmission hardware system.
1 If the 4x4 Low indicator light fuse is blown, the transmission will shift according to the 4x4 Low shift scheduling regardless of the transfer case position.

Rotunda Transmission Tester

The Rotunda Transmission Tester is used to diagnose the digital transmission range sensor and is used in conjunction with the pinpoint tests. The tests should be carried out in order. Installing the Rotunda Transmission Tester allows separation of the vehicle electronics from transmission electronics. For additional information, refer to the Rotunda Transmission Tester manual for these tests.

- Digital Transmission Range (TR) Sensor Testing
- Resistance/Continuity Test
- Voltage Test - PARK/NEUTRAL, REVERSE Lamp and Optional Circuits