

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Vehicle Speed Sensor - Low Input	P0502	0 RPM to 8192 RPM This DTC detects a low vehicle speed when the vehicle has a large Engine speed in a driving gear range with a high engine torque value.	Vehicle Speed <= 100 RPM	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No PSA DTC's No VSS Loss DTC Gear Range is not Park/Neutral 10%<Throttle Position <100% 65 Nm<Engine Torque<550 Nm 2850 < Engine Speed > 5000 RPM	2.00 seconds	DTC Type Federal & California B
Vehicle Speed Sensor - Loss	P0503	0 RPM to 8192 RPM This DTC detects an unrealistic large DROP in Vehicle/Output Speed.	Vehicle/Output Speed DROP / Loss => 500	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No PSA DTC's 4WD LO Switch state change must be > 2.0 seconds. No PSA state change > 0.009 seconds iF Positive OSS reading > 500 RPM, then diag is delayed from running for 2.0 seconds. OSS Was > 1000 RPM for > 2.0 sec	2.00 seconds	DTC Type Federal & California B
Trans Fluid Temp Sensor Circuit Range/ Performance (Test for TFT Stuck at a Low Temperature)	P0711 FC1	The DTC detects three failure modes of the TFT signal circuit or the TFT sensor: 1) A sensor that remains at a Low temperature value. (Stuck Sensor) FC1 OR 2) A sensor that remains at a High temperature value. (Stuck Sensor) FC2 OR 3) an unrealistically large change in Transmission Temperature. FC3	1) Stuck sensor: TFT Sensor is stuck at a low temperature value between -40 and +21 Deg. C	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No Engine Coolant DTC's No Vehicle Speed DTC's No Transmission Component Slipping DTC -39.5 C <TFT < +149 C Engine Coolant => 80.0 deg C Engine Coolant has changed => 50.0 deg C since startup Vehicle Speed since startup => 20 KPH => 750 seconds (cumulative timer) TCC Slip => 80 RPM => 500 seconds (cumulative timer)	Stuck sensor: => 80.0 seconds	DTC Type Federal & California C
Trans Fluid Temp Sensor Circuit Range/ Performance (Test for TFT Stuck at a High Temperature)	P0711 FC2	See Above	2) Stuck sensor: TFT Sensor is stuck at a high temperature value between +135 and +149.9 Deg. C	See Above	Stuck sensor: => 80.0 seconds	See Above
Trans Fluid Temp Sensor Circuit Range/ Performance (Test for TFT Noisy signal)	P0711 FC3	This portion of the diagnosis is calibrated not to function. This is due to the update rate of the TFT signal.				
Trans Fluid Temp Sensor Circuit - Low Input (High Temperature)	P0712	-40 to +150.5 degrees C The DTC detects a continuous short to ground in the TFT signal circuit or the TFT sensor	Raw TFT => 40.0 Ohms	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	12.75 seconds	DTC Type Federal & California C

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Trans Fluid Temp. Sensor Circuit - High Input (Low Temperature)	P0713	-40 to +150.5 degrees C The DTC detects a continuous open or short to voltage in the TFT signal circuit or the TFT sensor	Raw TFT <= 111605 Ohms	Engine Running > 475 RPM > 7 sec System voltage between 8.0 & 18.0 volts Vehicle Speed less than 200 KPH No Vehicle Speed DTC's Trans Speed since start up => 100 RPM for => 300 seconds (cumulative timer) TCC Slip => 100 RPM => 300 seconds (cumulative timer)	12.75 seconds Continuous	DTC Type Federal & California C
TCC System Stuck OFF	P0741	This DTC detects High torque converter slip when the TCC is commanded ON in 2nd and 3rd Gear. (Protects the transmission during trailer towing in D3 Range)	Slip => 140.0 RPM	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No TCC PWM Electrical DTC No TCC Stuck On DTC PSA = D3, or D2 +20C < TFT < +150.0 C 10.0% < TPS < 100% 55 Nm < Engine Torque > 525 Nm TCC On Time => 2.5 seconds TCC Capacity => 60% (Same as duty cycle) Ratio indicates between :1.50 & 1.45 OR1.05 & 0.95	4.0 seconds 4th occurrence	DTC Type Federal & California B
TCC System Stuck ON	P0742	This DTC detects low torque converter slip when the TCC is commanded off.	Slip is => -20.0 RPM and <= +25.0 RPM	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No TCC PWM Electrical DTC No TCC Stuck Off DTC TCC Mode = Off (0 % Duty Cycle) Commanded Gear not = to 1 st PSA = D4 +20C < TFT < +130.0 C 10.0% < TPS < 90% 70 Nm < Engine Torque > 525 Nm 750 < Engine RPM < 4500 25 KPH < Vehicle Speed < 140 KPH Ratio indicates between : 1.52 & 0.95	3.75 seconds 4 th occurrence Continuous	DTC Type Federal & California B
Shift Solenoid A Performance 2-2-3-3 (1-2 Shift Solenoid Stuck ON)	P0751	This DTC detects incorrect Gear Ratios with the Commanded Gear. For 2 Counts	Stuck ON: Commanded Gear = 1 with Ratio = 2nd for > 1.5 sec. FC-1 AND Commanded Gear = 4/ with TCC applied or locked with Ratio = 3rd > 2.0 seconds. FC-2 (Both of the above increment the fail counter by one. The order they occur doesn't matter)	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical DTC's PSA = D4, D3, D2 or D1 Vehicle Speed => 2.0 KPH TPS => 10% +20C < TFT < +130 C 55 Nm < Engine Torque > 550 Nm	Stuck ON: 1st gear => sec AND 4th gear => 3.5 sec 2nd Occurrence	DTC Type Federal & California B

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Shift Solenoid A Performance 1-1-4-4 (1-2 Shift Solenoid Stuck OFF)	P0752	This DTC detects incorrect Gear Ratios with the Commanded Gear. For 2 Counts	Stuck OFF: Commanded Gear = 2 with Ratio = 1st => 1.75 seconds. FC-3 AND Commanded Gear = 3 with Ratio = 4 th => 1.2 seconds. FC-4	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical DTC's PSA = D4, D3, D2 or D1 Vehicle Speed => 8.0 KPH TPS => 10% +20C < TFT < +130 C 55 Nm < Engine Torque > 550 Nm	Stuck OFF: 2nd gear => 2.0 sec AND 3 rd gear => xx.0 2 Occurrences	DTC Type Federal & California B
Shift Solenoid B Performance 4-3-3-4 2-3 Shift Solenoid Stuck OFF	P0756	This DTC detects incorrect Gear Ratios when a Gear is Commanded. For 2 Counts.	Stuck OFF: Commanded Gear = 1 Ratio = 4 th (3rd) = > 1 seconds. FC-5 AND Commanded Gear = 2 Ratio = 3 rd => 1 sec. FC-6	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical DTC's PSA = D4, D3, D2 or D1 Vehicle Speed => 2.0 MPH 10% < TPS < 100% +20C < TFT < +130 C Commanded Gear = 1 225 Nm < Engine Torque > 675 Nm Commanded Gear = 2 65 Nm < Engine Torque > 550 Nm	Stuck OFF: Commanded Gear = 1 Ratio = 4th (3rd) = > 2.8 seconds. AND Commanded Gear = 2 Ratio = 3rd => 2.8 sec. 2nd Occurrence	DTC Type Federal & California A
Shift Solenoid B Performance 1-2-2-1 2-3 Shift Solenoid Stuck ON	P0757	This DTC detects incorrect Gear Ratios when a Gear is Commanded. For 2 Counts.	Stuck ON: Commanded Gear = 3 Ratio = 2 nd => 2 sec. FC-7 AND Commanded Gear = 4 th with Ratio = 1 st => 1.25 seconds. FC-8	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical DTC's PSA = D4, D3, D2 or D1 Vehicle Speed => 8.0 MPH 10% < TPS < 100% +20C < TFT < +130 C 55 Nm < Engine Torque > 550 Nm	Stuck ON: Commanded Gear = 3 Ratio = 2nd => xx sec. And Commanded Gear = 4 th with Ratio = 1 st for xx sec. 2nd occurrence	DTC Type Federal & California A
3-2 Downshift Solenoid Circuit Low Voltage (Short to Ground or Open)	P0787	0V to 12V This DTC detects a continuous open or short to ground in the 3-2 DS circuit or the 3-2 DS solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California A
3-2 Downshift Solenoid Circuit High Voltage (Short to 12 Volts)	P0788	0V to 12V This DTC detects a continuous short to battery in the 3-2 DS circuit or the 3-2 DS solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California A
Shift Solenoid A (1-2 Sol) Circuit Low Voltage (Short to Ground or Open)	P0973	0V to 12V This DTC detects a continuous open or short to ground in the SSA circuit or the SSA solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B
Shift Solenoid A (1-2 Sol) Circuit High Voltage (Short to 12 Volts Sol with very low res)	P0974	0V to 12V This DTC detects a continuous short to battery in the SSA circuit or the SSA solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Shift Solenoid B (2-3 Sol) Circuit Low Voltage (Short to Ground or Open)	P0976	0V to 12V This DTC detects a continuous open, short to ground, or short to battery in the SSB circuit or the SSB solenoid.	Output State is invalid	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California A
Shift Solenoid B (2-3 Sol) Circuit High Voltage (Short to 12 Volts Sol with very low res)	P0977	0V to 12V This DTC detects a continuous short to battery in the SSB circuit or the SSB solenoid.	Output State is invalid	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California A
PSA Circuit Illegal Range	P1810	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	Illegal Range is true	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	60.0 seconds Continuous	DTC Type Federal & California B
PSA Start in Wrong Range	P1815	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	PSA indicates D2 (ONLY) before and after Engine Start-up (625 RPM)	System Voltage is between 8.0 & 18.0 No VSS DTC's Engine Speed Transition: Below 50 RPM for => 1.0 sec. then, between 50 and 610 RPM > 0.075 sec. then => 625 RPM. (RPM must remain above the 625 RPM cal) Output Speed <= 250 RPM	7.0seconds Continuous	DTC Type Federal & California B
PSA Indicates Park/Neutral with a Drive Ratio	P1816	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	A) PSA indicates P/N when Ratio indicates a Drive Ratio NOTE: Ratio is measured NE/NO with TCC Locked (Or referred to as Speed Ratio)	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Sol Electrical or Performance DTC's 1.58 > Speed Ratio > 0.599 Output Speed => 250 RPM 10.0% < TPS > 100.0% 65m < Engine Torque > 550	12.75 seconds	DTC Type Federal & California B
TCC Enable Solenoid Circuit Low Voltage Short to Ground or Open	NEW P1888 OLD P1862	0V to 12V This DTC detects a continuous open or short to ground in the TCC Enable Solenoid circuit or the TCC Enable Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B
TCC Enable Solenoid Circuit High Voltage Short to 12 Volts (Sol with very low res)	NEW P1889 OLD P1863	0V to 12V This DTC detects a continuous short to battery in the TCC Enable Solenoid circuit or the TCC Enable Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B
TCC PWM Solenoid Circuit Low Voltage Short to Ground or Open	P1866	0V to 12V This DTC detects a continuous open or short to ground in the TCC PWM Solenoid circuit or the TCC PWM Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B
TCC PWM Solenoid Circuit High Voltage Short to 12 Volts (Sol with very low res)	P1867	0V to 12V This DTC detects a continuous short to battery in the TCC PWM Solenoid circuit or the TCC PWM Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	DTC Type Federal & California B

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALT DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Transmission Component Slipping Fail Case 1	NEW: P0894 Old: P1870	This DTC detects Slip in the Torque Converter Clutch with TCC in EC3 or Locked mode.	+100 < SLIP RPM < 550	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical or Performance DTC's No TCC Stuck On or Off DTC's Shift Sol Perf counters are clear PRNDL = D4 100 Nm < Engine Torque > 525 Nm 10% < TPS > 100% +20C < TFT < +130C 60 KPH < Vehicle Speed < 200 KPH 0.70 < Speed Ratio < 2.00 TCC Commanded on => 3.0 sec. TCC Capacity => 60 % (D/C)	10.0 seconds 3rd occurrence	DTC Type Federal & California B
Transmission Component Slipping Fail Case 2	NEW: P0894 Old: P1870	This DTC detects Slip in the Torque Converter Clutch with TCC in EC3 or Locked mode.	Fail Case 2 can set the DTC before the 3 counts occur in FC1. The 3 sections of FC2 occur in sequence: A) +90 < TCC SLIP RPM < 550 ACTION 1: Freeze Adapts & Max Pressure. (actions cleared if gear/ PSA is not = to 4th or not in slip window) AND B) +90 < TCC SLIP RPM < 550 ACTION 2: Turn off TCC for 2.0 seconds (retains Max line) AND C) +90 < TCC SLIP RPM < 550	Same as Fail Case 1	A) 10.0 seconds AND B) 12.5 seconds AND C) 15.0 seconds	See Fail Case 1
Four Wheel Drive Low - Switch Input Malfunction Fail Case 1: Switch Stuck Off	P1875	This DTC detects the continuous open in the Four Wheel Drive Low Switch Circuit	4WD Lo Switch indicates OFF and Measured Transfer Case Ratio >2.65 and < 2.73 in two different gears. Measured Transfer case ratio = NI / NO / commanded gear ratio	Engine is running > 475 RPM > 7.0 seconds. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH No VSS DTC's No PSA DTC's No Shift Solenoid Electrical or Performance DTC's Shift Sol Perf counters are clear No Shift Solenoid or TCC PWM Electrical DTC's PRNDL = D4 Vehicle Speed => 2.0 KPH 95 Nm < Engine Torque > 675 Nm 5.0 % < TPS > 100% +20C < TFT < +130C	=> 5.0 seconds in two different commanded gears. (Fail counts = 2 for two different gears.) 1st Occurrence	DTC Type Federal & California B

2004 4L60-E transmission in Colorado & Canyon S/T truck
TRANSMISSION DIAGNOSTIC PARAMETERS

2004trans12.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETER	FAIL and PASS ENABLING CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DTC TYPE
Four Wheel Drive Low - Switch Input Malfunction Fail Case 2: Switch Stuck On.	P1875	This DTC detects the continuous short to ground in the Four Wheel Drive Low Switch Circuit	4WD Lo Switch indicates ON and Measured Transfer Case Ratio =>0.95 and <= 1.05 in any one gear. Measured Transfer case ratio = NI / NO / commanded gear ratio	Same as Fail Case 1	=> 5.0 seconds in any one gear. (Usually 4th gear) 2ND Occurrence	Same As Fail Case 1