2005 **4L80E** *when used with: 4.8L (LR4), 6.0L (LQ4), 8.1L (L18)*

in these vehicles: Express, Savanna, Suburban, Yukon XL, Silverado, Sierra, Avalanche, P30, W-series W-3500, Isuzu NPR

TRANSMISSION DIAGNOSTIC PARAMETERS

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY FAIL ENABLING CONDITIONS	SECONDARY FAIL ENABLING CONDITIONS	MONITORING TIME LENGTH & FREQUENCY OF CHECK	DTC TYPE
Vehicle Speed Sensor - Low Input	**P0502**	0 RPM to 8192 RPM This DTC detects a low output speed when the vehicle has a large engine/input speed in a driving gear range.	Output Speed < 50 RPM	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No PSA DTC No TPS DTC's No ISS DTC's No MAF DTC's No MAP DTC's No OSS Loss DTC Gear Range is not Park/Neutral Throttle Position => 10% Engine Torque > 80 and < 400/650 ft. lbs. No change in 4WD Lo for => 2.0 sec Input Speed > 1400 RPM Engine Vacuum > 0 & < 105.47 kPA	4.8L = 4.0 sec 6.0L = 3.5 sec All 8.1L with 3.73-4.10 axles = 3.0 sec All 8.1L with 4.56 – 5.13 axles 2.5 sec Continuous	DTC Type Federal C California B FED OBD-2 B
Vehicle Speed Sensor - Loss	**P0503**	0 RPM to 8192 RPM This DTC detects an unrealistic large change in Output Shaft speed.	Not in Park Neutral decrease > 1000 RPM In Park/Neutral decrease > 8192 RPM (P/N is caled out)	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No PSA DTC No PSA change for > 6.0 seconds Max VSS positive spike must be < 250 RPM for < 2.0 sec. (Loop to Loop reads) No change in 4WD Lo for => 2.0 sec	4.8L = 3.9 sec 6.0L = 3.4 sec All 8.1L with 3.73-4.10 axles = 2.9 sec All 8.1L with 4.56 – 5.13 axles 2.4 sec	DTC Type Federal C California B FED OBD-2 B

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Trans Fluid Temp Sensor Circuit Range/ Performance (Contains 2 tests)	**P0711**	The DTC detects two failure modes of the TFT: 1) A sensor that remains at a value. (Stuck Sensor) 2) an unrealistically large change in Transmission Temperature.	1) Stuck sensor: TFT has not changed > 2.25 deg C 2) Unrealistic change: TFT changes > 20 deg C	Sys Volts > 8.0 & < 18.0 for > 0.5 sec No Engine Coolant DTC 's No VSS DTC's No ISS DTC's No Trans Component Slipping DTC Engine run > 400 RPM for > 35.0 sec. (At this time, the TFT is captured for pass or fail comparison) TFT => 10 AD counts and <= 251 AD counts TFT between –40.5 deg C and +21 C at startup Engine Coolant => +84.75 deg C Engine Coolant has changed => +54.75 deg C since startup Vehicle Speed since startup => 5.0 MPH => 750.0 seconds (cumulative timer) TCC Slip => 60 RPM => 500.0 sec. (cumulative timer)	1) Stuck sensor: > 80 seconds OR 2) Unrealistic change: 14 times in 7 seconds Continuous	DTC Type Federal C California C
Trans Fluid Temp Sensor Circuit - Low Input (High Temperature indicated)	**P0712**	.0V to 5.0V The DTC detects a continuous short to ground in the TFT signal circuit or the TFT sensor	Raw TFT < 7 A/D counts	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec P0713 fault not active	17.0 seconds Continuous	DTC Type Federal C California C
Trans Fluid Temp. Sensor Circuit - High Input (Low Temperature)	**P0713**	.0V to 5.0V The DTC detects a continuous open or short to voltage in the TFT signal circuit or the TFT sensor	Raw TFT > 253 A/D counts	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec P0712 fault not active	407.0 seconds Continuous	DTC Type Federal C California C
Input Speed Sensor Circuit- Range/Perf	**P0716**	0 RPM TO 8192 RPM The DTC detects an unrealistically large change in Input Speed	Input Speed changes => 1300 RPM in a Drive or Reverse Range as indicated from the PSA.	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No ISS Low DTC No TPS DTC's No VSS DTC's No SSA Sol. DTC's 751, 752, 753 ISS Low has passed during Ign cycle TPS > 10% VSS > 7.0 MPH Test Passed ISS low	4.95 seconds	DTC Type Federal C California B FED OBD-2 B

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Input Speed Sensor Circuit- No Signal	**P0717**	0 RPM TO 8192 RPM The DTC detects a Low Input Speed when the vehicle has large Vehicle and Engine Speeds	Input Speed < 100 RPM	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No VSS DTC's No PSA DTC PSA indicating not in P/N VSS > 7.0 MPH	5.0 seconds Continuous	DTC Type Federal C California B FED OBD-2 B
TCC System Stuck OFF	**P0741**	This DTC detects excessive torque converter slip when the TCC is commanded ON in 2nd and/or 3rd Gear Only. (High TCC Slip in 4th gear is detected by P1870 Transmission Component Slipping)	TCC Slip => 125.0 RPM	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No TPS DTC's No VSS DTC's No TCC Stuck ON DTC No TCC PWM Electrical DTC's PSA = D4, D3, or D2 Ratio = 2nd or 3rd gear Trans Fluid Temp > +20C & < 150.0C TPS => 10% and < 100% TCC Locked On >0.1 seconds No PSA Change > 6 seconds TCC Capacity => 60%	3.0 seconds 4th occurrence	DTC Type Federal C California B FED OBD-2 B

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TCC System Stuck ON	**P0742**	This DTC detects low torque converter slip when the TCC is commanded off.	TCC Slip is between -15 RPM and +15 RPM	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No VSS DTC's No TCC Stuck OFF DTC No TCC PWM Electrical DTC No Transmission Component Slipping DTC No TPS DTC's No MAP DTC's Commanded Gear not = to 1st PSA indicates D4 Engine Speed between 800 & 4400 RPM Speed Ratio between 0.95 & 2.18 TPS > 12 & < 100% Engine Torque > 125 ft lbs and < 400-650 ft. lbs. VSS > 7 & < 75 MPH Trans Fluid Temp > +20C & < 130.0C No PSA Change < 6.0 seconds Engine Vacuum > 0 & < 105.47 kPA (Caled Out)	3.0 seconds 4h Occurrence	DTC Type Federal C California B FED OBD-2 B

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Shift Solenoid A Performance NORMAL PATTERN 1-2-3-4 Shift Pattern 2-2-3-3	**P0751**	This DTC detects a Stuck Shift Solenoid by using incorrect Gear Ratios with the Commanded Gear.	Commanded Gear = 1 and Ratio = 2nd > 2.0 sec AND Commanded Gear = 4/ with TCC Locked Ratio = 3rd > 3.75 seconds STUCK Shift Pattern = 2-2-3-3 Ratio Note: Ratio is calculated in 4th with TCC in Apply or Locked by NE/NO	Engine running > 400 RPM > 7.0 sec Sys Volts > 10.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No VSS DTC's No TCC Stuck ON DTC No TCC PWM Electrical DTC No SSA or SSB Electrical DTC's No TPS DTC's No MAP DTC's No Trans Component Slipping DTC No MAF DTC's No in 4WD Low PSA = D4 TPS > 10.0 & < 100% TFT => 20.25 & <= 130 Deg C Engine Torque > 80 ft lbs and < 400-650 ft. lbs. Output & Input Speeds => 7 RPM No PSA Change < 6.0 seconds Engine Vacuum > 0 & < 105.47 kPA (Caled Out) GEAR RATIO RANGES 1st gear = 2.52 to 2.42 2nd gear = 1.50 to 1.44 3rd gear = 1.03 to 0.98 4th gear With TCC On = FAIL = 1.03 to 0.98 PASS = 0.78 to 0.727	2nd Occurrence	DTC Type Federal C California B FED OBD-2 B

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Shift Solenoid A Performance NORMAL PATTERN 1-2-3-4 Shift Pattern 1-1-4-4	**P0752**	This DTC detects a Stuck Shift Solenoid by using incorrect Gear Ratios with the Commanded Gear.	Commanded Gear = 2 Ratio = 1st > 2.25 seconds. STUCK Shift Pattern = 1-1-4-4	Engine running > 400 RPM > 7.0 sec Sys Volts > 10.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No VSS DTC's No TCC Stuck ON DTC No TCC PWM Electrical DTC No SSA or SSB Electrical DTC's No TPS DTC's No MAP DTC's No Trans Component Slipping DTC No MAF DTC's No in 4WD Low PSA = D4 TPS > 10.0 & < 100% Engine Torque > 80 ft lbs and < 400-650 ft. lbs. Output & Input Speeds => 7 RPM TFT => 20. 25 & <= 130 Deg C No PSA Change < 6.0 seconds Engine Vacuum > 0 & < 105.47 kPA (Caled Out) GEAR RATIO RANGES 1st gear = 2.52 to 2.42 2nd gear = 1.52 to 1.44 3rd gear = 1.02 to 0.98 4th gear = 0.77 to 0.727	5th Occurrence Continuous	DTC Type Federal C California B FED OBD-2 B
Shift Solenoid A Electrical	**P0753**	0V to 12V This DTC detects a continuous open, short to ground, or short to battery in the SSA circuit or the SSA solenoid.	Output State is invalid	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec	43 counts out of 50 counts. Continuous	DTC Type Federal C California B FED OBD-2 B

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Shift Solenoid B Performance NORMAL PATTERN 1-2-3-4 Shift Pattern 4-3-3-4	**P0756**	This DTC detects a Stuck Shift Solenoid by using incorrect Gear Ratios with the Commanded Gear.	Commanded Gear = 1 Ratio = 4th > 2.5 sec AND Commanded Gear = 2 Ratio = 3rd > 2.7 sec STUCK Shift Pattern = 4-3-3-4	Engine running > 400 RPM > 7.0 sec Sys Volts > 10.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No VSS DTC's No TCC Stuck ON DTC No TCC PWM Electrical DTC No SSA or SSB Electrical DTC's No TPS DTC's No MAP DTC's No Trans Component Slipping DTC No MAF DTC's No in 4WD Low Output & Input Speeds => 7 RPM TPS > 10.0 & < 100% TFT => 20. 25 & <= 130 Deg C Engine Torque > 80 < 400-650 ft. lbs. Engine Vacuum > 0 & < 105.47 kPA (Caled Out) GEAR RATIO RANGES 1st gear = 2.52 to 2.42 2nd gear = 1.52 to 1.44 3rd gear = 1.02 to 0.98 4th gear = 0.77 to 0.727	2nd Occurrence Continuous	DTC Type Federal C California A FED OBD-2 A

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Shift Solenoid B Performance NORMAL PATTERN 1-2-3-4 Shift Pattern 1-2-2-1	**P0757**	This DTC detects a Stuck Shift Solenoid by using incorrect Gear Ratios with the Commanded Gear.	Commanded Gear = 3 Ratio = 2nd > = 2.25 seconds STUCK Shift Pattern = 1-2-2-1	Engine running > 400 RPM > 7.0 sec Sys Volts > 10.0 & < 18.0 for > 0.5 sec No ISS DTC's No PSA DTC No VSS DTC's No TCC Stuck ON DTC No TCC PWM Electrical DTC No SSA or SSB Electrical DTC's No TPS DTC's No MAP DTC's No Trans Component Slipping DTC No MAF DTC's No in 4WD Low Output & Input Speeds => 7 RPM TPS > 10.0 & < 100% TFT => 20. 25 & <= 130 Deg C Engine Torque > 80 < 400-650 ft. lbs. Engine Vacuum > 0 & < 105.47 kPA (Caled Out) GEAR RATIO RANGES 1st gear = 2.52 to 2.42 2nd gear = 1.52 to 1.44 3rd gear = 1.02 to 0.98 4th gear = 0.77 to 0.727	7th Occurrence (rolling counter)	DTC Type Federal C California A FED OBD-2 A
Shift Solenoid B Electrical	**P0758**	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 running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec	43 counts out of 50 counts. Continuous	DTC Type Federal C California A FED OBD-2 A
PSA Circuit Malfunction (Fail Case 1: Illegal Range Combination) see note below	**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 Or an Illegal PSA combination is true.	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec	60.0 seconds Continuous	DTC Type Federal C California B FED OBD-2 B

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PSA Circuit Malfunction (Fail Case 2: D2 start-up test) See Note below 25 ms loop	**P1810**	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 or D4 or Reverse before and after Engine Start-up	No VSS DTC's System Voltage > 6.5 and < 18.0 Volts > 30.0 sec (allows for voltage dips) Vehicle Speed < 5.0 MPH Engine Speed Transition: Below 50 RPM for > 0.3 sec. then, between 50 and 525 RPM > 0.00625 sec. then > 525 RPM. Input Speed > 200 RPM (ISS must stay > 200 RPM in order to increment fail timer) (NOTE: This will run ONLY ONCE per POWER ON Cycle. If test is passed, failed or invalid it will not run again until the PCM powers down.)	7.0 seconds Continuous	DTC Type Federal C California B FED OBD-2 B
PSA Circuit Malfunction (Fail Case 3: Incorrect range to ratio test) Note: A pass must occur on all 3 fail cases to set the pass for PSA; Case 1, Case 2 and One of the 3rd Cases.	**P1810**	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 < = 1.05 OR B) PSA indicates Reverse when Ratio indicates outside Reverse but within the drive range ratios. OR C) PSA indicates D4, D3, D2, or D1 when Ratio indicates Reverse. Drive Ratios = 2.63 to 0.95 Rev Rat = 2.05 to 2.11 NOTE: Ratio is formed from NI/NO	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No TPS DTC's No VSS DTC's No ISS DTC's No PSA DTC No MAP DTC's No Shift Solenoid Electrical or Performance DTC's No MAF DTC's Vehicle > 5 MPH TPS > 10 % < 100% Engine Torque: 80 to 400-650 ft. lbs. Engine Vacuum > 0 & < 105.47 kPA (Caled Out)	A) 15.0 seconds B) 15.0 seconds C) 7.0 seconds Continuous	DTC Type Federal C California B FED OBD-2 B
TCC PWM Solenoid Electrical	**P2761**	0V to 12V This DTC detects a continuous open, short to ground, or short to battery in the TCC PWM circuit or the TCC PWM solenoid.	Output State is invalid	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec	43 out of 50 counts. Continuous	DTC Type Federal C California B FED OBD-2 B

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Transmission Component Slipping Fail Case 1	**P0894**	This DTC detects Slip in the Torque Converter Clutch and/or the Forth gear Clutch with the TCC Locked in 4th Gear.	Slip between 100 and 550 RPM	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No ISS DTC's No VSS DTC's No TPS DTC's No PSA DTC No TCC Stuck On, Off or Electrical DTC's No Shift Solenoid Electrical or Performance DTC's Shift Sol Perf counters are clear. No MAP DTC's No MAF DTC's PRNDL = D4 Commanded Gear = 4th TPS > 10.0% & < 100% TCC Commanded on > 0.04375 sec. TCC at Full Locked Time > 0.1 sec. Trans Fluid Temp > +20 C < +130 C. Engine Torque between 80 & 400-650 ft. lbs. Engine Speed between 1250 & 5000 RPM Speed Ratio between: 2.25 and 0.70 Vehicle Speed between 35 & 110 MPH Engine Vacuum > 0 & < 105.47 kPA (Caled out)	10 seconds 3rd occurrence	DTC Type Federal C California B FED OBD-2 B

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Transmission Component Slipping Fail Case 2	**P0894**	This DTC detects Slip in the Torque Converter Clutch and/or the Forth gear Clutch Pack with the TCC in an apply or locked mode. Fail Case 2 is designed to set the diagnostic if the vehicle is on the highway and normally does not lift off the throttle. (ie Cruise Control operation)	Three Cycles to set the DTC ahead of the 3 counts from Fail Case 1. A) Slip => +100 and =< 550 RPM. ACTION 1: Freeze Adapts & Max Pressure. (actions cleared if gear is not = to 4th) AND B) Slip => +100 and =< 550 RPM. ACTION 2: Turn off TCC for 2.0 seconds AND (TCC apply is normal ramp rate) C) Slip => +100 and =< 550 RPM.	Same as Fail Case 1	A) 10.0 seconds AND B) 12.5 seconds AND C) 15.0 seconds	DTC Type Federal C California B FED OBD-2 B

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Four Wheel Drive Low - Switch Input Malfunction Fail Case 1: Switch Stuck Off	**P2771**	This DTC detects the continuous open in the Four Wheel Drive Low Switch Circuit	4WD Lo Switch is Clear and measured Transfer Case Ratio >2.65 and < 2.76 in two different gears. Measured Transfer case ratio = NI / NO / commanded gear ratio	Engine running > 400 RPM > 7.0 sec Sys Volts > 8.0 & < 18.0 for > 0.5 sec No TPS DTC's No Shift Solenoid Performance DTC's SSA & SSB Perf Counters are Clear. No PSA DTC No Shift Solenoid Electrical DTC's No TCC PWM Electrical DTC No ISS DTC's No VSS DTC's No MAP DTC's No MAF DTC's No TCC Stuck Off DTC PSA = D4 TPS > 5% and < 100% Trans Fluid Temp > +20.25C and < + 130.0 C Vehicle Speed > 0.5 MPH Engine Torque > 70 and < 400-650 ft. lbs. MAP > 0 kPA & < 106 kPA (Caled Out)	> 1.1 seconds in two different commanded gears. 2nd Occurrence Continuous	DTC Type Federal C California B FED OBD-2 B
Four Wheel Drive Low - Switch Input Malfunction Fail Case 2: Switch Stuck On	**P2771**	This DTC detects the continuous short to ground in the Four Wheel Drive Low Switch Circuit	4WD Lo Switch is Set and measured Transfer Case Ratio >0.95 and < 1.05 in any one gear.	Same as Stuck Off case	> 7.0 seconds in any one gear. (Usually 4th gear) 1st occurrence Continuous	DTC Type Federal C California B FED OBD-2 B