1999 5.7L (L31) C/K-truck, G-van
4L60-E   TRANSMISSION DIAGNOSTIC PARAMETERS

99t57R_LD_aT.doc

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME LENGTH AND FREQUENCY	MIL ILLUMINATION TYPE
Vehicle Speed Sensor - Low input	P0502	0 RPM to 6000 RPM This DTC detects a low vehicle speed when the vehicle has a large engine speed in a drive gear range.	Output Speed < 150 rpm	- Gear Range is not Park/Neutral - No TPS high or low DTC's set - No Map Sensor DTC's set - No PSA DTC set - Vacuum: 0 to 105 KPA - Engine Torque: 40 to 400 ft-lbs - Throttle Position > 20% - Engine Speed > 3000 RPM	2.5 seconds Continuous	DTC Type B
Vehicle Speed Sensor - Intermittent	P0503	0 RPM to 6000 RPM This DTC detects an unrealistic large drop in vehicle speed.	In **P/N:** Output Speed drop > 8000 RPM **Not P/N:** Output Speed drop >1300 RPM	- Time since last Gear Range Change > 6 Seconds - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - No Output Speed rise > 600 rpm within 6 seconds - No PSA DTC set	In park or neutral 409 seconds Not in park or neutral 3 seconds	DTC Type B
TCC Enable Solenoid Electrical	P0740	0V to 12V This DTC detects a continuous open or short to ground in the TCC circuit or the TCC solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 10 to 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type B
TCC System Stuck ON	P0742	This DTC detects low torque converter slip when the TCC is commanded off.	TCC Slip: -20 to +20 RPM Fail Counter >= 2	- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - No Range change within 5 sec. - No MAP low and high DTC set - No TP high or low sensor DTC's - No VSS DTC's - No TCC Enable Sol. DTC's - No TCC Control Sol. DTC's -No PSA DTC set - Eng Torque: 50 to 400 ft-lbs - Vacuum: 0 to 105 kPa - Commanded Gear is not 1st - Gear Range is D4 - Throttle Position: 17% to **45%** - TCC is commanded off - Engine Speed: 1000 to 3000 rpm - Speed Ratio: 0.64 to 1.35 - Vehicle Speed: 15 to 50 mph	5 seconds Continuous	DTC Type B

99t57R_LD_aT.doc

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Shift Solenoid A Performance	P0751	This DTC detects abnormal shift patterns:
		
		Stuck OFF:
		  2-2-3-3 pattern
		
		Stuck ON:
		  1-1-4-4 pattern
			Fail Counter >=3 .
			The fail counter is incremented when the following fail cases are true:
			
			Stuck OFF:
			  1,2,3,& 4
			
			Stuck ON:
			  1,2,3, & 5
				General
				-Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff
				-Gear range is D4
				-No TP high or low DTC's
				-No VSS low or intermittent DTC's
				-No Solenoid electrical DTC's
				-No DTC 742
				-No PSA DTC set
				-Time since last shift is >0 sec
				-Vehicle speed >5 mph
				-Trans Temp.: 20 C to 130 C
				
				Fail Case 1
				- Commanded 1-2 shift
				- TPS: 10% to 45%
				- TPS constant within +/- 7%
				- Vehicle Speed: 5 to 35 mph
				- After 2 seconds, engine speed in 2nd gear must be 80 rpm > last speed in 1st gear
				Fail Case 2
				- Commanded 2-3 shift
				- TPS: 10% to 45%
				- TPS constant within +/- 7%
				- Vehicle Speed: 20 to 50 mph
				- After 2 sec, engine speed in 3rd gear must be 100 rpm < last speed in 2nd gear
				Fail Case 3
				- Commanded 3-4 shift
				- TPS: 10% to 45%
				- TPS constant within +/- 7%
				- Vehicle speed: 30 to 65 mph
				- After 2 seconds, engine speed in 4th gear must be 10 rpm > last speed in 3rd gear
				Fail Case 4
				- Commanded 4th gear
				- TCC commanded ON
				- TPS: 8% to 35%
				- Speed Ratio: 0.85 to 1.2
				- TCC Slip: 200 to 1000 rpm
				        for > 4 sec
				Fail Case 5
				- Commanded 4th gear
				- TCC commanded ON
				- TPS: 8% to 35%
				- Speed Ratio: 0.60 to 0.80
				- TCC Slip: -20 to +50 rpm
				        for > 4 sec
					Continuous	DTC Type A

Shift Solenoid A Electrical	P0753	0V to 12V This DTC detects a continuous open or short to ground in the SSA circuit or the SSA solenoid	Fail Counter >43 Counts out of 50 Total Counts *To set the fault:*	- System Voltage: 10 to 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type B

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Shift Solenoid B Performance	P0756	This DTC detects abnormal shift patterns:
		
		Stuck OFF:
		 4-3-3-4 pattern
		
		Stuck ON:
		 1-2-2-1 pattern
			Fail Counter >=3 .
			The fail counter is incremented when the following fail cases are true:
			
			Stuck OFF:
			 1 and 3, or
			 2 and 3
			
			Stuck ON:
			 3 and 4
				- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff
				- Gear Range is D4
				- No TPS DTC's
				- No VSS DTC's
				- No solenoid electrical DTC's
				- No TCC Stuck On DTC.
				- No PSA DTC set
				- No Trans Temp DTC's set.
				- Vacuum: 0 to 105 kpa
				- Engine Torque: 5 to 450 ft lbs
				- Trans Temp: 20 C to 130 C
				- Vehicle Speed > 5 MPH
				
				Fail Case 1
				- 1st gear commanded > 2.0 sec.
				- Output Speed: 400 to 1500 rpm
				- Speed Ratio: 0.5 to 3.0
				- Throttle Position > 15%
				- TCC Slip: -3000 to -100 rpm
				    for > 1.0 seconds
				Fail Case 2
				- 2nd gear command > 409.5 sec
				- Engine Torque: 40 to 400 ft lbs
				- Vacuum: 0 to 105 kpa
				- TCC Slip: 8191 to 8191 rpm
				- Output speed: 8191 to 8191 rpm
				- Speed Ratio: 8 to 8
				- Throttle Position > 99.9%
				- Fail Timer > 409.5 sec
				Fail Case 3
				- Time with 3rd gear commanded:
				    2.0 to 5 seconds
				- TPS: 13% to 50%
				- TPS constant within +/- 7%
				
				- Speed Ratio in Third gear does not drop more than 0.3 from the last Speed Ratio in Second gear
				- TCC Slip in Third gear remains > 300 rpm higher than the last TCC Slip in Second gear
				- Fail Timer > 1.5 sec
				Fail Case 4
				- 4th Gear commanded for > 1 sec
				- Output Speed: 1400 to 2500 rpm
				- Speed Ratio: 2.05 to 8.0
				- Throttle Position > 13%
				- TCC Slip: 1000 to 4000 rpm
				    for > 1 seconds.
					Continuous	DTC Type A

Shift Solenoid B Electrical	P0758	0V to 12V This DTC detects a continuous open or short to ground in the SSB circuit or the SSB solenoid	Fail Counter >43 Counts out of 50 Total Counts .	- System Voltage: 10 to 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A
3-2 Downshift Solenoid Electrical	P0785	0V to 12V This DTC detects a continuous open or short to ground in the SSB circuit or the SSB solenoid	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 10 to 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff	Continuous	DTC Type A

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PSA Circuit Malfunction	P1810	0V to 12V
		This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.
			Fail Case 1
			 Illegal Trans Pressure Switch State (111) or (101)
			
			Fail Case 2
			 Gear range is D2, D4, or Reverse during engine startup.
			
			Fail Case 3
			Gear range is Park or Neutral when operating in D4.
				Fail Case 1
				- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff
				- System Voltage: 10 to 16 volts
				
				Fail Case 2
				- System Voltage: 10 to 16 volts
				- No VSS DTC's
				- Vehicle Speed <2 mph
				
				1. Engine Speed < 80 rpm
				      for > 0.1 seconds, then,
				2. Engine Speed: 80 to 550 rpm
				      for > 0.1 seconds, then,
				3. Engine Speed > 550 rpm
				
				Fail Case 3
				- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff
				- System Voltage: 10 to 16 volts
				- 4th gear commanded
				- Engine Torque: 40 to 400 ft-lbs
				- Vacuum: 0 to 105 kPa
				- TCC Locked On
				- No VSS DTC's
				- Speed Ratio: 0.60 to 0.75`
				- TPS: 10% to 50%
					Fail Case 1
					 60 seconds
					
					Fail Case 2
					 5 Seconds
					
					Fail Case 3
					 10 seconds
					
					Continuous
						DTC Type B

TCC PWM Solenoid Electrical	P1860	0V to 12V This DTC detects a continuous open or short to ground in the TCC PWM circuit or the TCC PWM sensor	Fail Counter >43 Counts out of 50 Total Counts	- System Voltage: 10 to 16 volts - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - Commanded Gear is 1st - TCC Duty Cycle < 10% or > 90%	Continuous	DTC Type B
Transmission Component Slipping	P1870	This DTC detects excessive TCC slip when the torque converter clutch should be engaged.	If TCC slip is: **130 to 800 rpm** for 7 seconds, then increment the Trans Slip Counter by one. When the counter reaches 3, set the code.	- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff - Gear is not 1st - Gear Range is D4 - No PSA DTC's set - No Trans Temp DTC's set - No TPS High or Low DTC's - No VSS DTC's - No solenoid electrical DTC's - Shift Solenoid Performance Diagnostic counters are all zero - TPS: 9.0% to 35% - Trans temp.: 20 C to 130C - Engine Torque: 50 to 400 ft-lbs - Vac: 0 to 105 kpa - Speed ratio: 0.69 to 0.88 - Engine Speed: 1500 to 3000 rpm - Vehicle Speed: 30 to 70 mph **Fail Case 1** - TCC commanded on for > 5 sec and at max duty cycle (95%).	Continuous	DTC Type B

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Four Wheel Drive Low Circuit Performance	P1875	0V to 12V This DTC detects a continuous open or short to ground in the Four Wheel Drive low Circuit	**Stuck On** Engine Spd Divided by Transfer Case Output Spd Ratio: .8 to 1.2 **Stuck Off** Engine Spd Divided by Transfer Case Output Spd Ratio: 2.5 to 2.9	- Engine Speed > 450 rpm for 5 seconds and not at fuel cut off - No TPS DTC's set - No PSA DTC's set - Gear Range is D4 - Shift Solenoid Performance Counters are zero - No VSS Low DTC's set - No TCC Enable Sol. DTC's set - No TCC Control Sol. DTC's set - No SSA Sol. DTC's set - No SSB Sol. DTC's set - No TCC DTC's set - Eng Torque: 50 to 400 ftlbs - VAC: 0 to 105 kpa - Trans Temp: 20C to 130C - Vehicle Speed > 7 MPH - TPS: 17% to 50% **Stuck ON** - 4wd Low switch in 4wd Low - Transfer case not in 4wd Low - TCC Slip: -3000 to -50 rpm **Stuck OFF** - 4wd Low switch not in 4wd Low - Transfer case is in 4wd Low - TCC ON - TCC Slip: 100 to 3000 rpm	**Stuck ON:** 5 Seconds **Stuck OFF:** 10 Seconds 1 Occurance Continuous	DTC Type B