# 1999  4.8L (LR4)   C/K-truck
## 4L60-E   TRANSMISSION  DIAGNOSTIC  PARAMETERS

**99t48V_CK_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<br><br> - Low input | P0502 | 0 RPM to 6000 RPM<br>This DTC detects a low vehicle speed when the vehicle has a large engine speed in a drive gear range. | Output Speed <<br>150 rpm | - Gear Range is not Park/Neutral<br>- No TPS high or low DTC's set<br>- No Map Sensor DTC's set<br>- No PSA DTC set<br>- Vacuum: 0 to 105 KPA<br>- Engine Torque: 40 to 400 ft-lbs<br>- Throttle Position > 20%<br>- Engine Speed > 3000 RPM | 2.5 seconds<br><br>Continuous | DTC Type B |
| Vehicle Speed Sensor<br><br> - Intermittent | P0503 | 0 RPM to 6000 RPM<br>This DTC detects an unrealistic large drop in vehicle speed. | In **P/N**:<br>Output Speed drop > 8000 RPM<br><br>**Not P/N**:<br>Output Speed drop >1300 RPM | - Time since last Gear Range Change > 6 Seconds<br>- Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff<br>- No Output Speed rise > 600 rpm within 6 seconds<br>- No PSA DTC set | In park or neutral 409 seconds<br><br><br>Not in park or neutral 3 seconds | DTC Type B |
| TCC Enable Solenoid Electrical | P0740 | 0V  to 12V<br>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: 8 to 18 volts<br>- Engine Speed > 300 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:<br>-20 to +20 RPM<br><br>Fail Counter >= 2 | - Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff<br>- No Range change within 5 sec.<br>- No MAP low and high DTC set<br>- No TP high or low sensor DTC's<br>- No VSS  DTC's<br>- No TCC Enable Sol. DTC's<br>- No TCC Control Sol. DTC's<br> -No PSA DTC set<br>- Eng Torque:  50 to  400 ft-lbs<br>- Vacuum: 0 to 105 kPa<br>- Commanded Gear is not 1st<br>- Gear Range is D4<br>- Throttle Position: 17% to **45%**<br>- TCC is commanded off<br>- Engine Speed: 1000 to 3000 rpm<br>- Speed Ratio: 0.64 to 1.35<br>- Vehicle Speed: 15 to 50 mph | 5 seconds<br><br><br><br><br><br>Continuous | DTC Type B |

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| Shift Solenoid A Performance | P0751 | This DTC detects abnormal shift patterns:<br><br>**Stuck OFF:**<br>  **2-2-3-3 pattern**<br><br>**Stuck ON:**<br>  **1-1-4-4 pattern** | Fail Counter >=3 .<br>The fail counter is incremented when the following fail cases are true:<br><br>**Stuck OFF:**<br>  **1,2,3,& 4**<br><br><br>**Stuck ON:**<br>  **1,2,3, & 5** | **General**<br>-Eng. Speed > 450 rpm for 5 seconds and not in fuel cutoff<br>-Gear range is D4<br>-No TP high or low DTC's<br>-No VSS low or intermittent DTC's<br>-No Solenoid electrical DTC's<br>-No DTC 742<br>-No PSA DTC set<br>-Time since last shift is >0 sec<br>-Vehicle speed >5 mph<br>-Trans Temp.:  20 C to 130 C<br>**Fail Case 1**<br>- Commanded 1-2 shift<br>- TPS:  10%  to  45%<br>- TPS constant within +/- 7%<br>-  Vehicle Speed:  5 to 35 mph<br>-  After 2 seconds, engine speed in 2nd gear  must be 80 rpm > last speed in 1st gear<br>**Fail Case 2**<br>- Commanded 2-3 shift<br>- TPS:  10%  to  45%<br>- TPS constant within +/- 7%<br>-  Vehicle Speed:  20  to  50 mph<br>-  After 2 sec, engine speed in 3rd gear must be 100 rpm < last speed in 2nd gear<br>**Fail Case 3**<br>- Commanded 3-4 shift<br>-  TPS:  10%  to  45%<br>-  TPS constant within +/- 7%<br>-  Vehicle speed:  30 to 65 mph<br>-  After 2 seconds, engine speed in 4th gear must be 10 rpm > last speed in 3rd gear<br>**Fail Case 4**<br>- Commanded 4th gear<br>- TCC commanded ON<br>- TPS:  8%  to  35%<br>- Speed Ratio:  0.85  to  1.2<br>- TCC Slip:  200 to 1000 rpm for > 4 sec<br>**Fail Case 5**<br>- Commanded 4th gear<br>- TCC commanded ON<br>- TPS:  8% to 35%<br>- Speed Ratio:  0.60  to  0.80<br>- TCC Slip:  -20 to +50 rpm for > 4 sec | Continuous | DTC Type A |
| Shift Solenoid A Electrical | P0753 | 0V  to 12V<br>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<br><br>*To set the fault:* | - System Voltage: 10  to 16 volts<br>- 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:<br><br>**Stuck OFF:**<br>  4-3-3-4 pattern<br><br><br>**Stuck ON:**<br>  1-2-2-1 pattern | Fail Counter >=3 .<br>The fail counter is incremented when the following fail cases are true:<br><br>**Stuck OFF:**<br>  1 and 3, or<br>  2 and 3<br><br><br>**Stuck ON:**<br>  3 and 4 | - Engine Speed > 450 rpm for 5 seconds and not in fuel cutoff<br>- Gear Range is D4<br>- No TPS DTC's<br>- No VSS DTC's<br>- No solenoid electrical DTC's<br>- No TCC Stuck On DTC.<br>- No PSA DTC set<br>- No Trans Temp DTC's set.<br>- Vacuum: 0 to 105 kpa<br>- Engine Torque: 5 to 450 ft lbs<br>- Trans Temp:  20 C to 130 C<br>- Vehicle Speed > 5 MPH<br>**Fail Case 1**<br>- 1st gear commanded > 2.0 sec.<br>- Output Speed: 400 to 1500 rpm<br>- Speed Ratio:  0.5 to 3.0<br>- Throttle Position > 15%<br>- TCC Slip: -3000 to -100 rpm for > 1.0 seconds<br>**Fail Case 2**<br>- 2nd gear command > 409.5 sec<br>- Engine Torque: 40 to 400 ft lbs<br>- Vacuum: 0 to 105 kpa<br>- TCC Slip: 8191 to  8191 rpm<br>- Output speed: 8191 to 8191 rpm<br>- Speed Ratio: 8 to 8<br>- Throttle Position > 99.9%<br>- Fail Timer > 409.5 sec<br>**Fail Case 3**<br>- Time with 3rd gear commanded:  2.0  to  5 seconds<br>- TPS: 13%  to   50%<br>- TPS constant within +/- 7%<br>- Speed Ratio in Third gear does not drop more than 0.3 from the last Speed Ratio in Second gear<br>- TCC Slip in Third gear remains > 300 rpm higher than the last TCC Slip in Second gear<br>- Fail Timer > 1.5 sec<br>**Fail Case 4**<br>- 4th Gear commanded for > 1 sec<br>- Output Speed: 1400 to 2500 rpm<br>- Speed Ratio:  2.05 to  8.0<br>- Throttle Position > 13%<br>- TCC Slip:  1000 to  4000 rpm  for  > 1 seconds. | Continuous | DTC Type A |
| Shift Solenoid B Electrical | P0758 | 0V  to 12V<br>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<br><br>. | - System Voltage: 8  to 18 volts<br>- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff | Continuous | DTC Type A |

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|---|---|---|---|---|---|---|
| 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: 8 to 18 volts<br>- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff | Continuous | DTC Type A |
| 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**<br> Illegal Trans Pressure Switch State (111) or (101)<br><br>**Fail Case 2**<br> Gear range is D2, D4, or Reverse during engine startup.<br><br><br>**Fail Case 3**<br>Gear range is Park or Neutral when operating in D4. | **Fail Case 1**<br>- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff<br>- System Voltage: 8 to 18 volts<br><br>**Fail Case 2**<br>- System Voltage: 8 to 18 volts<br>- No VSS DTC's<br>- Vehicle Speed <2 mph<br><br>1. Engine Speed < 80 rpm for > 0.1 seconds, then,<br>2. Engine Speed: 80 to 550 rpm for > 0.1 seconds, then,<br>3. Engine Speed > 550 rpm<br><br>**Fail Case 3**<br>- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff<br>- System Voltage: 8 to 18 volts<br>- 4th gear commanded<br>- Engine Torque: 40 to 400 ft-lbs<br>- Vacuum: 0 to 105 kPa<br>- TCC Locked On<br>- No VSS DTC's<br>- Speed Ratio: 0.60 to 0.75`<br>- TPS: 10% to 50% | **Fail Case 1**<br> 60 seconds<br><br>**Fail Case 2**<br> 5 Seconds<br><br>**Fail Case 3**<br> 10 seconds<br><br><br>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: 8 to 18 volts<br>- Engine Speed > 300 rpm for 5 seconds and not in fuel cutoff<br>- Commanded Gear is 1st<br>- TCC Duty Cycle < 10% or > 90% | Continuous | DTC Type B |

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|---|---|---|---|---|---|---|
| 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 > 300 rpm for 5 seconds and not in fuel cutoff<br>- Gear is not 1st<br>- Gear Range is D4<br>- No PSA DTC's set<br>- No Trans Temp DTC's set<br>- No TPS High or Low DTC's<br>- No VSS DTC's<br>- No solenoid electrical DTC's<br>- Shift Solenoid Performance Diagnostic counters are all zero<br>- TPS: 9.0% to 35%<br>- Trans temp.: 20 C to 130C<br>- Engine Torque: 50 to 400 ft-lbs<br>- Vac: 0 to 105 kpa<br>- Speed ratio: 0.69 to 0.88<br>- Engine Speed: 1500 to 3000 rpm<br>- Vehicle Speed: 30 to 70 mph<br><br>**Fail Case 1**<br>- TCC commanded on for > 5 sec | 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 > 300 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 |