

2001 8.1L (L18) C/K-truck
ALLISON 1000 series TRANSMISSION DIAGNOSTIC PARAMETERS

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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
Transmission Fluid Temperature Sensor Circuit Range/Performance	P0711	This test detects sensor or circuit performance of the transmission fluid temperature sensor by comparing changes in temperature from start up and between samples to calibration values.	For Case 1 (Temperature change from start up) Trans Fluid Temp absolute delta since start <= 1.5 deg. C for >= 100 seconds For Case 2 (Temperature change from start up) Trans Fluid Temp absolute delta since start > 1.5 deg. C for >= 100 seconds For Case 3 (Temperature change between samples) Trans FluidTemp absolute Change (between samples) >= 1.5 deg. C;	All Cases No TFT Perf DTC (P0711) Components powered and 9 V < Ignition Voltage < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds Engine Running time > 5 seconds -35 deg. C <= Trans Fluid Temp <= 149 deg. C Cases 1 and 2 (Temperature change from start up) No Input Speed Sensor DTCs (P0716, P0717) No Output Speed Sensor DTC (P0721, P0722) For Case 1 (Temperature change from start up): Output speed > 100 RPM for >= 900 seconds; TCC Slip >= 0 RPM for >= 0 seconds; -35 deg. C < Trans Fluid Temp @ Start <= 27 deg. C Engine Coolant Temp >= 70 deg. C Engine Coolant Temp Delta since start >= 39 deg. C For Case 2 (Temperature change from start up): Output speed > 100 RPM for >= 900 seconds; TCC Slip >= 0 RPM for >= 0 seconds; -35 deg. C < Trans Fluid Temp @ Start <= 27 deg. C Engine Coolant Temp >= 70 deg. C; Engine Coolant Temp Delta since start >= 39 deg.C	100 seconds 1000 ms	B
Transmission Fluid Temperature Sensor Circuit Low Input	P0712	This test detects low voltage on transmission fluid temperature sensor by comparing to a calibration value. Low voltage signal occurs at high temperature.	Trans Fluid Temp raw counts >= 16 for > 2.5 seconds	No TFT DTCs (P0711, P0712, P0713) 200 RPM < Engine Speed < 7500 RPM for 5 Components powered and 9 V < Ignition Voltage < 18 V Engine running >= 20 seconds WITH Engine coolant temperature > 20 deg. C and not defaulted	2.5 seconds 250 ms	B
Transmission Fluid Temperature Sensor Circuit High Input	P0713	This test detects high voltage on transmission fluid temperature sensor by comparing to a calibration value. High voltage signal occurs at low temperature.	Trans Fluid Temp raw counts <= 247 for > 2.5 seconds.	No TFT DTCs (P0711, P0712, P0713) 200 RPM < Engine Speed < 7500 RPM for 5 Components powered and 9 V < Ignition Voltage < 18 V Engine running >= 20 seconds WITH Engine coolant temperature > 20 deg. C and not defaulted	2.5 seconds 250 ms	B

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Input/Turbine Speed Sensor Circuit Range/Performance	P0716	This test detects large changes in Input Speed and noisy Input Speed by comparing to calibration values.	<p>For Case 1: (Unrealistically large changes in input Speed) Change of Input Speed between samples \geq 800 RPM for \geq 0.15 seconds</p> <p>For Case 2: (Noisy Input Speed) For 80 samples, if the change in Input Speed \leq -800 RPM, then the Low Counter is incremented. If the change in Input Speed is \geq 800 RPM, then the High Counter is incremented. This test fails if both the Low Counter and the High Counter are \geq 5 OR High Counter \geq 5</p>	<p>No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Input Speed > 200 RPM for \geq 0.5 seconds Shift complete and range attained NOT neutral</p>	<p>For Case 1: 0.15 s</p> <p>For Case 2: 2 s</p> <p>25 ms</p>	A
Input/Turbine Speed Sensor Circuit No Signal	P0717	This test detects unrealistically low value of input/turbine speed or unrealistically large changes in input/turbine speed.	<p>For Case 1: (Unrealistically large change in input speed) Failure pending if change in transmission input speed \geq 800 RPM.</p> <p>For Case 2: (Unrealistically low value of input Speed) Failure pending if transmission input speed < 61 RPM. This test fails if input speed < 61 RPM for > 1 seconds.</p>	<p>All Cases No Input Speed Sensor NoActivity DTC (P0717)</p> <p>For Case 1: (Unrealistically large change in input speed) Engine is running AND Shift not in process AND Range attained is NOT Neutral AND Transmission fluid temperature > -25 deg. C</p> <p>For Case 2: (Unrealistically low input speed) No Incorrect Ratio DTCs (P0731 through P0736) No Output Speed Sensor DTCs (P0721, P0722) Engine is running AND Shift not in process AND Range attained is not Neutral AND Transmission fluid temperature > -25 deg. C AND Transmission output speed \geq 150 RPM OR Transmission output speed \geq 150 RPM AND Engine Speed \geq 400 RPM</p>	<p>1 second</p> <p>25 ms</p>	A

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Output Speed Sensor Circuit Range/Performance	P0721	This test detects a noisy output speed sensor or circuit by detecting large changes in output speed.	<p>For Case 1: (Unrealistically large change in output speed) Change in output speed \geq 500 RPM for \geq 0.15 seconds</p> <p>For Case 2: (Noisy output speed) For 80 samples, if the change in output speed is \leq -500 RPM, then the Low Counter is incremented. If the change in output speed is \geq 500 RPM, then the High Counter is incremented. Test fails if both the Low Counter and the High Counter are \geq 5 or the Low Counter or the High Counter is \geq 5.</p>	No Input Speed Sensor DTCs (P0716, P0717) No Output Speed Sensor DTCs (P0721, P0722) Output Speed > 200 RPM for \geq 0.5 seconds Shift complete and range attained NOT neutral	<p>For Case 1: 0.15 s</p> <p>For Case 2: 2 seconds</p> <p>25 ms</p>	A
Output Speed Sensor Circuit No Signal	P0722	This test detects unrealistically low value of output speed or unrealistically large change in output speed.	<p>For Case 1: (Unrealistically large change in output speed) Failure pending if change in output speed \geq 600 RPM Failure sets if range attained is Neutral.</p> <p>For Case 2: (Unrealistically low value of output Speed) Failure pending if output speed < 61 RPM. Failure sets if not monitoring for low speed neutral and output speed < 61 RPM for > 1 seconds</p>	<p>All Cases No Output Speed Sensor Perf DTC (P0721)</p> <p>For Case 1: Unrealistically large change in output speed Test enabled when output speed \geq 600 RPM for \geq 1 seconds or for 1 seconds. Test disabled when output speed \leq 600 RPM for > 1 seconds</p> <p>For Case 2: Unrealistically low value of output speed No Incorrect Ratio DTCs (P0731 through P0736) No Input Speed Sensor DTCs (P0716, P0717) Engine is running AND Shift not in process AND Range attained is not Neutral AND Transmission fluid temperature > -25 deg. C Transmission input speed \geq 1050 RPM Not waiting for Manual Selector Valve to attain forward range PRNDL State Not D4, nor Transitional D4, nor Transitional N</p>	<p>1 second</p> <p>25 ms</p>	A

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Gear 1 Incorrect Ratio	P0731	This test verifies transmission operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer \geq 2 seconds. Timer accumulates when transmission is in forward or reverse range, output speed \geq 100 RPM, and gear slip $>$ 100 RPM. In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) \geq 200 RPM for $>$ 10 samples.	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed \geq 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A
Gear 2 Incorrect Ratio	P0732	This test verifies transmission operating ratio while 2nd range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer \geq 2 seconds. Timer accumulates when transmission is in forward or reverse range, output speed \geq 100 RPM, and gear slip $>$ 100 RPM. In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) \geq 200 RPM for $>$ 10 samples.	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed \geq 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A
Gear 3 Incorrect Ratio	P0733	This test verifies transmission operating ratio while 3rd range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer \geq 2 seconds. Timer accumulates when transmission is in forward or reverse range, output speed \geq 100 RPM, and gear slip $>$ 100 RPM. In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) \geq 200 RPM for $>$ 10 samples.	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed \geq 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A

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Gear 4 Incorrect Ratio	P0734	This test verifies transmission operating ratio while 4th range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer ≥ 2 seconds. Timer accumulates when transmission is in forward or reverse range, output speed ≥ 100 RPM, and gear slip > 100 RPM. In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) ≥ 200 RPM for > 10 samples.	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed ≥ 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A
Gear 5 Incorrect Ratio	P0735	This test verifies transmission operating ratio while 5th range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer ≥ 2 seconds. Timer accumulates when transmission is in forward or reverse range, output speed ≥ 100 RPM, and gear slip > 100 RPM. In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) ≥ 200 RPM for > 10 samples.	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed ≥ 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A
Reverse Incorrect Ratio	P0736	This test verifies transmission range while reverse range is commanded by comparing computed ratio to the commanded ratio.	Accumulated event timer ≥ 2 seconds. Timer accumulates when transmission in forward or reverse range, output speed ≥ 100 RPM, and gear slip > 100 RPM	No Range Switch DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) Hydraulic System Pressurized Shift complete Output speed ≥ 200 RPM Normal powertrain shutdown not in process Normal powertrain initialization is complete	2 seconds 25 ms	A

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Engine Speed Input Circuit Range/Performance	P0726	This test detects large changes in Engine Speed and noisy Engine Speed by comparing to calibration values.	For Case 1: (Large change in Engine Speed) Change in engine speed \geq 600 RPM for 0.15 Seconds For Case 2: (Noisy Engine Speed) For 80 samples, if the change in engine speed \leq -650 RPM then the Low Counter is incremented. If the change in engine speed \geq 650 RPM, then the High Counter in incremented. This test fails if both the Low Counter and the High Counter \geq 5 or the Low Counter or the High Counter \geq 5	No Input Speed Sensor DTCs (P0716, P0717) No TCM Engine Speed Sensor DTCs (P0726, P0727) Engine speed $>$ 600 RPM for 1 seconds Shifts complete and range attained not neutral	For Case 1: 0.15 s For Case 2: 2 seconds 25 ms	B
Engine Speed Input Circuit No Signal	P0727	This test detects unrealistically low value of engine speed or unrealistically large change in engine speed.	Case 1: (Unrealistically large change in engine speed) Failure pending if change in engine speed \geq 1140 RPM Case 2: (Unrealistically low value for engine Speed) Engine speed $<$ 61 RPM for 4 seconds	All Cases: No TCM Engine Speed Sensor Perf DTC (P0726) Case 2: (Unrealistically low value of engine speed) No Input Speed Sensor DTCs (P0716, P0717) Turbine speed \geq 400 RPM Ignition Key in RUN position	4 seconds 25 ms	B
Torque Converter Clutch Circuit Performance or Stuck Off	P0741	This test detects the torque converter being stuck off (unlocked).	TCC Slip \geq 80 RPM for \geq 15 seconds.	No TCC PWM Solenoid Circuit DTC (P1860) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) 200 RPM $<$ Engine Speed $<$ 7500 RPM for 5 seconds Components powered and 9 V $<$ Ignition Voltage $<$ 18 V Must be in forward range 10 % $<$ % Throttle \leq 90 % Time Since Range Change \geq 6 seconds AND (TCC is OnMode or LockOnMode)	15 s 100 ms	B

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Torque Converter Clutch Circuit Stuck On	P0742	This test detects the torque convert being stuck on (locked).	Transmission output speed ≤ 0 RPM AND % throttle ≤ 0 % AND (brake is on OR engine speed < 0 RPM) AND (-40 RPM \leq TCC Slip ≤ -5 RPM) for > 5 seconds. Transmission output speed ≥ 100 RPM AND % throttle ≥ 15 % AND (-40 RPM \leq TCC Slip ≤ -5 RPM) for > 2.5 seconds.	No TCC PWM Solenoid Circuit DTC (P1860) No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) 200 RPM $<$ Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V $<$ Ignition Voltage < 18 V Must be in forward range TCC is off	2.5 s or 5 s 50 ms	B
Pressure Control Solenoid "A" Electrical	P0748	This test detects solenoid A electrical circuit malfunctions.	A Solenoid Hardware detected failure for 5 samples. -- OR -- For 5 samples, if A Solenoid Duty Cycle > 31.25 % AND (31.25 % $<$ A Solenoid Duty Cycle ≤ 86.99951 % AND A Solenoid Current < 0.09998 A OR (A Solenoid Duty Cycle > 86.99951 % AND A Solenoid Current < 0.59998 A) OR (A Solenoid Duty Cycle ≤ 14.99939 % and A Solenoid Current > 0.32501 A)	No Solenoid A Electric DTC (P0748) Components powered and 9 V $<$ Ignition Voltage < 18 V A Solenoid low-side driver closed (circuit complete)	125 ms 25 ms	A
Pressure Control Solenoid "B" Electrical	P0778	This test detects solenoid B electrical circuit malfunctions.	B Solenoid Hardware detected failure for 5 samples. -- OR -- For 5 samples, if B Solenoid Duty Cycle > 31.25 % AND (31.25 % $<$ B Solenoid Duty Cycle ≤ 86.99951 % AND B Solenoid Current < 0.09998 A) OR (B Solenoid Duty Cycle > 86.99951 % AND B Solenoid Current < 0.59998 A) OR (B Solenoid Duty Cycle ≤ 14.99939 % AND B Solenoid Current > 0.25 A)	No Solenoid B Electric DTC (P0778) Components powered and 9 V $<$ Ignition Voltage < 18 V B Solenoid low-side driver closed (circuit complete)	125 ms 25 ms	A
Shift Solenoid "C" Electrical	P0763	This test detects solenoid C electrical circuit malfunctions.	C Solenoid Off AND Hardware detected failure for > 0.0498 seconds C Solenoid ON and Hardware detected failure for > 0.0498 seconds	No Solenoid C Electric DTC (P0763) 200 RPM $<$ Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V $<$ Ignition Voltage < 18 V SystemState not ControllerReady	50 ms 25 ms	A

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Shift Solenoid "D" Electrical	P0768	This test detects solenoid D electrical circuit malfunctions.	D Solenoid OFF and Hardware detected failure for > 0.0498 seconds D Solenoid ON and Hardware detected failure for > 0.0498 seconds	No Solenoid D Electric DTC (P0768) 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Ignition Voltage < 18 V SystemState not ControllerReady	50 ms 25 ms	A
Shift Solenoid "E" Electrical	P0773	This test detects Solenoid E electrical circuit malfunctions.	E Solenoid OFF and Hardware detected failure for > 0.0498 seconds E Solenoid ON and Hardware detected failure for > 0.0498 seconds	No Solenoid E Electric DTC (P0773) 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Ignition Voltage < 18 V SystemState not ControllerReady	50 ms 25 ms	A
Pressure Switch C Circuit Malfunction	P0840	This test compares the commanded valve position to the pressure switch C feedback. (part of S1 valve integrity test)	S1 valve is commanded destroyed and C pressure switch does not indicate destroyed for > 0.09961 seconds then S1 valve commanded from stroked to destroyed and C pressure switch indicates destroyed.	S1 valve is destroyed Normal or Cold initialization is NOT in process Shutdown is NOT in process	100 ms 25 ms	A
Pressure Switch C Stuck Open/Performance	P0841	This test compares the change of state of the valve command to the change of state of the C pressure switch feedback. (part of the S1 valve timeout test)	S1 valve is commanded from destroyed to stroked and the C pressure switch indication remains destroyed for 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 4 seconds at transmission fluid temperature <= -40 deg. C.)	S1 valve commanded from destroyed to stroked.	2 seconds 25 ms	A
Pressure Switch C Circuit Low/Stuck Closed	P0842	This test compares the commanded valve position to the C pressure switch feedback (part of the S1 valvetimeout test).	S1 valve commanded from stroked to destroyed and the C pressure switch indication remains stroked for > 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 6 seconds at transmission fluid temperature >= -40 deg. C.)	S1 valve changes from stroked to destroyed	2 seconds 25 ms	A
Pressure Switch C Circuit High	P0843	This test compares the commanded valve position to the pressure switch C feedback. (part of S1 valve integrity test)	S1 valve is stroked and C pressure switch indicates not stroked for > 0.09961 seconds then the S1 valve changes from destroyed to stroked and the C pressure switch indicates stroked.	S1 valve is stroked Normal or Cold initialization is NOT in process Shutdown NOT in process	100 ms 25 ms	A

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Pressure Switch D Circuit Malfunction	P0845	This test compares the commanded valve position to the D pressure switch feedback (part of the S2 valve integrity test).	S2 valve is commanded destroyed and D pressure switch does not indicate destroyed for > 0.09961 seconds then S2 valve commanded from stroked to destroyed and D pressure switch indicates destroyed.	S2 valve is destroyed Normal or Cold initialization is NOT in process Shutdown is NOT in process	100 ms 25 ms	A
Pressure Switch D Stuck Open/Performance	P0846	This test compares the change of state of the valve command to the change of state of the D pressure switch feedback (part of the S2 valve timeout test).	If the S2 valve is commanded from destroyed to stroked and the D pressure switch indication remains destroyed for 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 5 seconds at transmission fluid temperature <= -40 deg. C.)	S2 valve commanded from destroyed to stroked.	2 seconds 25 ms	A
Pressure Switch D Circuit Low/Stuck Closed	P0847	This test compares the commanded valve position to the D pressure switch feedback (part of the S2 valve timeout test).	S2 valve commanded from stroked to destroyed and the D pressure switch does not indicate destroyed for > 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 16 seconds at transmission fluid temperature <= -40 deg. C.)	S2 valve changes from stroked to destroyed	2 seconds 25 ms	A
Pressure Switch D Circuit High	P0848	This test detects the D pressure switch open in normal operations.	S2 valve is stroked and D pressure switch indicates not stroked for > 0.09961 seconds then S2 valve changes from destroyed to stroked and D pressure switch changes to indicate stroked.	S2 valve is stroked Normal or Cold initialization is NOT in process Shutdown NOT in process	100 ms 25 ms	A
Pressure Switch "E" Circuit Malfunction	P1709	This test compares the commanded valve position to the pressure switch E feedback. (part of S3 valve integrity test)	S3 valve is commanded destroyed and E pressure switch does not indicate destroyed for > 0.09961 seconds then S3 valve commanded from stroked to destroyed and E pressure switch indicates destroyed.	S3 valve is destroyed Normal or Cold initialization is NOT in process Shutdown is NOT in process	100 ms 25 ms	A
Pressure Switch "E" Stuck Open / Performance	P1710	This test compares the change of state of the valve command to the change of state of the E pressure switch feedback. (part of the S3 valve timeout test)	If the S3 valve is commanded from destroyed to stroked and the E pressure switch indication remains destroyed for 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 3.5 seconds at transmission fluid temperature <= -40 deg. C.)	S3 valve commanded from destroyed to stroked.	2 seconds 25 ms	A

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Pressure Switch "E" Circuit Low / Stuck Closed	P1711	This test compares the commanded valve position to the E pressure switch feedback (part of the S3 valve timeout test).	S3 valve commanded from stroked to destroked and the E pressure switch does not indicate destroked for > 2 seconds at transmission fluid temperature >= 0 deg. C. (Time increases as temperature decreases with maximum time of 10.5 seconds at transmission fluid temperature >= -40 deg. C.)	S3 valve changes from stroked to destroked	2 seconds 25 ms	A
Pressure Switch "E" Circuit High	P1712	This test compares the commanded valve position to the pressure switch E feedback. (part of S3 valve integrity test)	S3 valve is stroked and E pressure switch indicates not stroked for > 0.09961 seconds then S3 valve changes from destroked to stroked and E pressure switch changes to indicate stroked.	S3 valve is stroked Normal or Cold initialization is NOT in process Shutdown NOT in process	100 ms 25 ms	A
Torque Converter Clutch PWM Solenoid Circuit	P1860	This test detects torque converter solenoid electrical circuit malfunctions.	Hardware Detected Failure for > 6 seconds	No TCC PWM Solenoid Circuit DTC (P1860) Components powered and 9 V < Ignition < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds Powertrain State NOT ControllerReady TCC Solenoid commanded ON	6 seconds 25 ms	B
4 Wheel Drive Low Switch Circuit Malfunction	P1875	This test detects abnormal conditions for the four-wheel drive indication switch input by comparing switch state range to calculated range.	For Case 1: (Stuck Off) This test fails when, for >= 200 occurrences, the transfer case 4WD switch indicates High range and the calculated transfer case range is Low range for >= 5 seconds. For Case 2: (Stuck On) This test fails when, for >= 200 occurrences, the transfer case 4WD switch indicates Low range and the calculated transfer case range is High range for >= 5 seconds.	No Four Wheel Drive Circuit Perf DTC (P1875) No Output Speed Sensor DTCs (P0721, P0722) Output Speed > 0 RPM 20 deg. C < Transmission fluid temperature < 130 deg. C 200 RPM < Engine Speed < 7500 RPM Shift complete and range attained not neutral	9 sec 25 ms	B
Unmanaged Engine Torque Delivered to TCM Signal	P1688	The test detects whether PWM Net Engine Torque is within a calibration range for a calibration duration.	% PWM Net Engine Torque <= 1.5 % or >= 98.5 % for >= 2 seconds.	No PWM NetEngTorq DTC (P1688) Components powered and 9 V < Ignition Voltage < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds PWM Net Engine Torque Option selected	2 seconds 100 ms	B
Engine Torque Delivered to TCM Signal	P1779	The test detects whether PWM Driver Demand Torque is within a calibration range for a calibration duration.	% PWM Driver Demand Torque <= 1.5 % or >= 98.5 % for 2 seconds	No PWM_DDEngTorq DTC (P1779) Components powered and 9 V < Ignition < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds PWM Driver Demand Torque Option selected	2 seconds 100 ms	B

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Solenoid "A" Controlled Clutch Not Engaged	P1720	This test determines if the on-coming clutch energized by Solenoid A engages during a forward range shift.	Pending failure occurs when accumulated event timer \geq 2 seconds. Timer accumulates when transmission is shifting, output speed \geq 60 RPM, and commanded gear slip speed $>$ 75 RPM. In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if Converter slip \geq ABS(200) RPM for $>$ 10 samples.	No Output Speed Sensor DTCs (P0721, P0722) No Input Speed_Sensor DTCs (P0716, P0717) No Reverse Pressure Switch DTCs (P1713, P1714) No Range Switch Illegal Range DTC (P0708) Hydraulic System Pressurized Output Speed \geq 125 RPM Turbine Speed \geq 60 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No Cold Mode operation No abusive garage shift to 1st range detected On-coming clutch control enabled Power downshift abort to previous range NOT active	2.25 s 25 ms	A
Solenoid "B" Controlled Clutch Not Engaged	P1721	This test determines if the on-coming clutch energized by Solenoid B engages during a forward range shift.	Pending failure occurs when accumulated event timer \geq 2 seconds. Timer accumulates when transmission is shifting, output speed \geq 60 RPM, and commanded gear slip speed $>$ 75 RPM. In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if Converter slip \geq ABS(200) RPM for $>$ 10 samples.	No Output Speed Sensor DTCs (P0721, P0722) No Input Speed_Sensor DTCs (P0716, P0717) No Reverse Pressure Switch DTCs (P1713, P1714) No Range Switch Illegal Range DTC (P0708) Hydraulic System Pressurized Output Speed \geq 125 RPM Turbine Speed \geq 60 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No Cold Mode operation No abusive garage shift to 1st range detected On-coming clutch control enabled Power downshift abort to previous range NOT active	2.25 s 25 ms	A
Solenoid "A" Controlled Clutch Engaged	P1723	This test determines if the off-going clutch energized by A solenoid remains engaged during a forward range shift.	Accumulated fail timer \geq 0.15039 seconds for forward range upshift; \geq 3.0 seconds for direction change shifts; \geq 0.15039 seconds for forward range closed throttle downshift; \geq 1.0 second for forward downshifts above closed throttle. Fail timer accumulates during range to range shifts when attained gear slip speed \leq 25 RPM	No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) No Reverse Pressure Switch DTCs (P1713, P1714) No Range Switch Illegal Range DTC (P0708) Output Speed \geq 200 RPM Turbine Speed \geq 200 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No Cold Mode operation No abusive garage shift to 1st range detected	3 s 25 ms	A

2001 8.1L (L18) C/K-truck
ALLISON 1000 series TRANSMISSION DIAGNOSTIC PARAMETERS

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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
Solenoid "B" Controlled Clutch Engaged	P1724	This test determines if the off-going clutch energized by B solenoid remains engaged during a forward range shift.	Accumulated fail timer \geq 0.15039 seconds for forward range upshift; \geq 3.0 seconds for direction change shifts; \geq 0.15039 seconds for forward range closed throttle downshift; \geq 1.0 second for forward downshifts above closed throttle. Fail timer accumulates during range to range shifts when attained gear slip speed \leq 25 RPM	No Output Speed Sensor DTCs (P0721, P0722) No Input Speed Sensor DTCs (P0716, P0717) No Reverse Pressure Switch DTCs (P1713, P1714) No Range Switch Illegal Range DTC (P0708) Output Speed \geq 200 RPM Turbine Speed \geq 200 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No Cold Mode operation No abusive garage shift to 1st range detected	3 s 25 ms	A

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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
Transmission Range Sensor High Input	P0708	This test monitors the transmission range switch for invalid input conditions and parity errors occurring over consecutive ignition cycles.	<p>For Case 1 (No Information):</p> <p>All four inputs read high for >= 1 second.</p> <p>For Case 2 (Long-term Parity):</p> <p>Number of invalid drive cycles with parity error detected >= 15 counts OR number of invalid drive cycles with parity error detected AND (Valid Park or valid Neutral and NOT valid Drive and motion detected) OR (Valid Park and NOT valid Neutral and NOT valid Drive and motion detected) for >= 5 counts.</p> <p>The number of invalid drive cycles with parity errors detected is computed at power down.</p> <p>An invalid drive cycle with parity errors is determined when a parity error was detected AND a valid Park OR valid Neutral was detected AND No valid Drive was detected AND no motion was detected OR No valid Park detected AND No valid Neutral detected AND No valid Drive detected AND motion detected.</p> <p>THEN counter is incremented up to 5. ELSE decrement counter down to zero.</p> <p>A valid Park occurs when NSBU inputs indicate Park AND Output speed <= 20 RPM for 0.2 seconds. A valid Neutral occurs when NSBU inputs indicate Neutral AND Output speed <= 20 RPM for 0.2 seconds OR NSBU inputs indicate Neutral for 3 seconds. A valid Drive occurs when NSBU inputs indicate Drive for 3 seconds. Motion detected occurs when output speed >= 200 RPM for 10 seconds.</p>	200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Ignition Voltage < 18 V	<p>Case 1:</p> <p>1 s</p> <p>Case 2:</p> <p>5th occurrence</p> <p>100 ms</p>	A

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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
Pressure Switch Reverse Circuit Malfunction	P1713	This test detects Reverse Pressure Switch closed indication by comparing the Reverse Pressure Switch state to the PRNDL switch state.	For 40 times, PRNDL is in P, D1, D2, D3, D4, D5, T1, T8, T4 or T13 AND RPS indicates Reverse after >= 1 seconds	No Range Switch Illegal Range DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) Engine is Running 200 RPM < Engine Speed < 7500 RPM for 5 seconds 9 V < Ignition Voltage < 18 V Transmission Fluid Temperature >= 0 deg. C Hydraulic System is Pressurized	3 s 50 ms	A
Pressure Switch Reverse Stuck Open / Performance	P1714	This test detects the Reverse Pressure switch being stuck in the open position by comparing to the PRNDL switch state and detects the Reverse Pressure switch stuck open at shutdown.	For Case 1: (RPS State and PRNDL State do not agree) For 40 times, PRNDL is in R AND RPS indicates not Reverse after >= 1 seconds For Case 2: (RPS Shutdown Test) If RPS State is not Reverse for > 5 seconds	For All Cases: Transmission Fluid Temperature >= 0 deg. C For Case 1: (RPS State and PRNDL State do not agree) No Range Switch Illegal Range DTC (P0708) No Reverse Pressure Switch DTCs (P1713, P1714) 9 V < Ignition Voltage < 18 V For Case 2: (RPS Shutdown Test) NOT (9 V < Ignition Voltage < 18 V) Engine speed < 50 RPM Turbine speed < 50 RPM Output speed < 50 RPM	Case 1: 3 s Case 2: 5 s 50 ms	B