

2002 3.0L (L81) Saturn L-series cars
4T45-E TRANSMISSION DIAGNOSTIC PARAMETERS

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Sensed Parameter	Fault Code	Acceptable Operating Range and Rationality	Primary MALF Detection Parameters	Secondary Parameters and Conditions	Monitoring Time Length and DTC Type	Default Actions	Primary MALF Pass Condition	Sec. Pass Condition
Transmission Fluid Overtemperature	P0218	Detects high Trans Fluid Temp over long period of time	TTS > 130° C.	No P0711, P0712, P0713 DTCs -39° C < Trans Temp < 149° C. > 10 sec.	10 min Type C	Freeze Adapts FA	Trans Temp ≤ 129° C 5 sec	Same as Fail
Output Speed Sensor Circuit: Low Voltage	P0502	0 - 8000 RPM Detects low vehicle speed with a large engine speed in a Drive range	Output Speed < 100 RPM	No TPS DTCs (see below) No Engine Torque default No P0503, P0716, P0717, P1810 DTCs Gear Selector ≠ Park/Neutral TPS > 15% 1000 < Input Speed < 5000 RPM 100 < Engine Torque < 150 N-m 8 < Ignition Voltage < 18 V	6 sec Type B	Freeze Adapts Maximum Line pressure VSS calculated from ISS, Engine speed, commanded gear FATKO	Output Speed > 101 RPM 2 sec	None
Output Speed Sensor Circuit: Intermittent	P0503	0 - 8000 RPM Detects loss of vehicle speed with moving vehicle	ΔVSS > 600 RPM in Drive ranges VSS > 300 RPM	No P0716, P0717, P1810 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 6 sec since last manual range change PSA ≠ P/N Positive ΔVSS, loop-to-loop, < 300 RPM for > 2 sec 100 < Engine Torque < 150 N-m Positive ΔISS, loop-to-loop, < 500 RPM for > 2 sec	3 sec for Drive PRNDL ranges Type B	Freeze Adapts Maximum Line pressure VSS calculated from ISS, Engine Speed, commanded gear FATKO	ΔVSS < 200 RPM in Drive ranges 2 sec VSS > 500 RPM	None
System Voltage: LOW	P0562	0 – 24 V Detects LOW voltage with operating vehicle	Ignition Voltage < 8.0 V	Engine Speed > 1200 RPM	20 sec Type A	Freeze Adapts Maximum Line pressure No TCC Command HSD1 Off Command HSD2 Off Immediate landing to 2nd FATKO	Ignition Voltage > 8.0 V	Engine Running
System Voltage: HIGH	P0563	0 – 24 V Detects HIGH voltage with operating vehicle	Ignition Voltage > 18.0 V	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff	10 sec Type A	Freeze Adapts Maximum Line pressure No TCC Command HSD1 Off Command HSD2 Off Immediate landing to 2nd FATKO	Ignition Voltage < 18.0 V	Engine Running

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Transmission Control Module Read Only Memory	P0601	Detects EPROM/Flash memory corruption (Incorrect program/calibrations checksum)	(SoftwareChecksumBypass = FALSE) OR (CalModuleChecksumBypass = FALSE)	None	Immediate Type A	Freeze Adapts Maximum Line pressure FATKO	(SoftwareChecksumBypass = TRUE) OR (CalModuleChecksumBypass = TRUE)	(removed)
Transmission Control Module Not Programmed	P0602	Detects non-programmed ITCM (calibrations)	KbCOND_NoStartCal[FALSE] = TRUE	None	Immediate Type A	Freeze Adapts Maximum Line pressure FATKO	KbCOND_NoStartCal[FALSE] = FALSE	(removed)
Transmission Control Module Long-Term Memory Reset	P0603	Detects wrong copy of Non-volatile Memory to RAM	Non-volatile memory checksum failure	None	Immediate Type A	Freeze Adapts Maximum Line pressure FATKO	Non-volatile memory checksum pass	
Transmission Control Module Random Access Memory	P0604	Detects RAM failure	RAM read/write failure (single word)	None	Immediate Type A	Freeze Adapts Maximum Line pressure FATKO	RAM read/write pass (all words)	
Transmission Range Switch Circuit	P0705	TCM detects invalid PRNDL (NSBU) range	PRNDL range = Illegal	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff	5 sec Type C	Freeze Adapts Assume D4 shift pattern FATKO	PRNDL range = Legal	Engine Running
Transmission Fluid Temperature Sensor Performance	P0711	0.24 - 5.0 V Detects unrealistically large change in transmission temperature or value which remains constant when measurable change is expected	<u>Fail Cases 1 & 2</u> ΔTrans Temp < 2.0° C. <u>Fail Case 3</u> ΔTrans Temp > 20° C. in 200 msec	No P0502, P0503, P0716, P0717 DTCs Engine Running > 100 sec 8 < Ignition Voltage < 18 V Vehicle Speed > 8 kph for 900 sec cumulative -38° C. < Startup Trans Temp < 21° C. -38° C. < Trans Temp < 149° C. TCC Slip > 120 RPM for > 900 sec cumulative ECT > 70° C. ΔECT > 50° C. since start-up	<u>Fail Cases 1 & 2</u> 100 sec <u>Fail Case 3</u> Fail Counter > 14 within 7 sec Type C	Freeze Adapts Default Trans Temperature calculated from ECT, MAT, Engine Run time FA	<u>Pass Cases 1 & 2</u> ΔTrans Temp ≥ 2.0° C for ≥ 10 sec <u>Pass Case 3</u> Fail Counter = 0	Same as Fail
Transmission Fluid Temperature Sensor Circuit: LOW Voltage	P0712	0.24 - 5.0 V Detects continuous short-to-GND in Transmission Temperature Sensor or TTS circuit	Raw TTS > 150° C	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff	5 sec Type C	Freeze Adapts Default Trans Temp calculated from ECT, MAT, Engine Run time FA	Raw TTS < 149° C 2 sec	None

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Transmission Fluid Temperature Sensor Circuit: HIGH Voltage	P0713	0.24 - 5.0 V Detects continuous open or short-to-high in Transmission Temperature Sensor or TTS circuit	Raw TTS < -35° C	No P0502, P0503, P0716, P0717 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff TCC Slip Speed > 120 RPM > 200 sec VSS > 50 RPM for 200 sec	25.5 sec Type C	Freeze Adapts Default Trans Temp calculated from ECT, MAT, Engine Run time FA	Raw TTS > -35° C 25.5 sec	None
Input Speed Sensor Circuit Performance	P0716	0 - 6000 RPM Detects unrealistically large change in Input Speed in very short period of time	Input Speed change > 700 RPM	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P0751, P0752, P1845, P1847 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff ΔISS < 500 RPM for 0.5 sec ISS > 2000 for 6.0 sec 100 < Engine Torque < 150 N-m TPS > 12% Vehicle Speed > 15 kph	0.8 sec Type B	Freeze Adapts Maximum Line pressure Inhibit Shift Energy Mgt FATKO	Input Speed > 500 RPM Input Speed Change < 500 RPM 2.0 sec	No ISS "No Signal" code
Input Speed Sensor Circuit LOW Voltage	P0717	0 - 6000 RPM Detects Low Input Speed with large vehicle speed	Input Speed < 200 RPM	No P0502, P0503, P1810 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 100 < Engine Torque < 150 N-m PSA ≠ P/N Vehicle Speed > 15 kph	10 sec Type B	Freeze Adapts Maximum Line pressure Inhibit Shift Energy Mgt FATKO	Input Speed > 200 RPM 10 sec	None
Brake Switch Circuit LOW Voltage (Stuck OFF)	P0719	0 – 12 V Detects OPEN brake switch during decelerations	Decel count = 8	<u>Increment Decel counter when:</u> Brake Switch OFF AND Vehicle Speed > 32 kph for 4 sec THEN 8 < Vehicle Speed < 32 kph for 3 < Time < 7 sec THEN Vehicle Speed < 8 kph Brake Switch OFF for 900 sec	Reset counter if Brake Switch state changes during test Type C	Freeze Adapts FA	Brake Switch has been ON for 2.0 sec	None
Brake Switch Circuit HIGH (Stuck ON)	P0724	0 – 12 V Detects CLOSED brake switch during accelerations	Accel count = 8	<u>Increment Accel counter when:</u> Brake Switch ON AND Vehicle Speed < 8 kph THEN 8 < Vehicle Speed < 32 kph for 3 < Time < 7 sec THEN Vehicle Spd > 32 kph for 4 sec	Reset counter if Brake Switch state changes during test Type C	Freeze Adapts FA	Brake Switch has been OFF for 2.0 sec	None
Engine Speed: No Signal	P0727	0 - 8000 RPM Detects no response from CAN Bus signal for engine speed	CAN Bus Engine Speed Incorrect flag = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff	2 sec Type A	Freeze Adapts Maximum Line pressure Engine Speed Default FATKO	CAN Bus Engine Speed Incorrect flag = 0 2 sec	Same as Fail

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Incorrect Gear 1 Ratio	P0731	Detects unknown gear ratio with 1st commanded	Ratio > 3.50 OR 2.23 < Ratio < 2.87 OR 1.71 < Ratio < 2.02 OR 1.07 < Ratio < 1.54 OR 0.72 < Ratio < 0.91 OR Ratio < 0.60	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Commanded Gear = 1st TPS > 15% Vehicle speed > 5 kph PSA ≠ PARK or NEUTRAL 50° C < Trans Temp < 130° C. 6 sec since last manual range change 2 < Engine Torque < 350 N-m	4 sec Type C	Freeze Adapts Maximum Line pressure FATKO	2.87 < Ratio < 3.13 2 sec	Same as Fail
Incorrect Gear 2 Ratio	P0732	Detects unknown gear ratio with 2 nd commanded	Ratio > 3.50 OR 2.23 < Ratio < 2.87 OR 1.71 < Ratio < 2.02 OR 1.07 < Ratio < 1.54 OR 0.72 < Ratio < 0.91 OR Ratio < 0.60	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Commanded Gear = 2nd TPS > 15% Vehicle speed > 5 kph PSA ≠ PARK or NEUTRAL 50° C < Trans Temp < 130° C. 6 sec since last manual range change 2 < Engine Torque < 350 N-m	4 sec Type C	Freeze Adapts Maximum Line pressure FATKO	1.54 < Ratio < 1.71 2 sec	Same as Fail
Incorrect Gear 3 Ratio	P0733	Detects unknown gear ratio with 3 rd commanded	Ratio > 3.50 OR 2.23 < Ratio < 2.87 OR 1.71 < Ratio < 2.02 OR 1.07 < Ratio < 1.54 OR 0.72 < Ratio < 0.91 OR Ratio < 0.60	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Commanded Gear = 3rd TPS > 15% Vehicle speed > 5 kph PSA ≠ PARK or NEUTRAL 50° C < Trans Temp < 130° C. 6 sec since last manual range change 2 < Engine Torque < 350 N-m	4 Sec Type C	Freeze Adapts Maximum Line pressure FATKO	0.91 < Ratio < 1.07 2 sec	Same as Fail

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Incorrect Gear 4 Ratio	P0734	Detects unknown gear ratio with 4th commanded	Ratio > 3.50 OR 2.23 < Ratio < 2.87 OR 1.71 < Ratio < 2.02 OR 1.07 < Ratio < 1.54 OR 0.72 < Ratio < 0.91 OR Ratio < 0.60	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Commanded Gear = 4th TPS > 15% Vehicle speed > 5 kph PSA ≠ PARK or NEUTRAL 50° C < Trans Temp < 130° C. 6 sec since last manual range change	4 sec Type C	Freeze Adapts Maximum Line pressure FATKO	0.61 < Ratio < 0.71 2 sec	Same as Fail
Torque Converter Clutch System Stuck OFF	P0741	Detects high TCC Slip speed with TCC commanded ON	TCC Slip speed > 150 RPM Count = 1	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P0741, P0742, P1810, P1887 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff TPS > 8% 21° C. < Trans Temp < 130° C. TCC commanded locked on > 3 sec Commanded Gear > 1 PSA = D4, D3, or D2 6 sec since last manual range change Clutch Capacity > 60 % for 5 sec 0.61 < Trans Ratio < 1.71 30 < Engine Torque < 300 N-m	8 sec Type B	Inhibit TCC Freeze Adapts FATKO	-20 < TCC slip < 40 RPM 3 sec	Same as Fail except "Clutch Capacity condition"
Torque Converter Clutch System Stuck ON	P0742	Detects lack of Torque Converter release oil pressure (Switch is closed) with TCC commanded OFF	TCC Release Switch is closed Count = 2	No TPS DTCs (see below) No P0502, P0503, P1810, P1860, P1887 DTCs No Engine Torque Default 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff TCC commanded OFF 15 < Vehicle Speed < 255 kph 8 < TPS < 90% 0.61 < Trans Ratio < 1.09 6 sec since last manual range change 21° C. < Trans Temp < 130° C. 30 < Engine Torque < 300 N-m	8 sec Type A	Freeze Adapts TCC Cmd On 1-2-3-4 (not hydraulically possible in 1st) FATKO	TCC Release Switch indicates TCC release oil is present (Switch is OPEN) 5 sec	Same as Fail

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Pressure Control Solenoid Control Circuit	P0748	0 – 12 V Detects continuous open or short-to-GND in Pressure Control Solenoid or PCS circuit	Pressure Control Solenoid Short bit = 1	Ignition Voltage Low timer = 0 10.5 < Ignition Voltage < 11.0 V at – 40° C. 12.5 < Ignition Voltage < 13.0 V at 152° C.	Type C	Freeze Adapts Maximum Line pressure FATKO	Pressure Control Solenoid Short bit = 0	System Voltage Low timer ≠ 0 System Voltage malf is clear
1-2 Shift Solenoid Valve Performance: Stuck OFF	P0751	Detects 2-2-3-3 shift pattern	<u>Fail Case 1</u> Command Gear = 1 1.54 < Ratio < 1.71 <u>Fail Case 2</u> Command Gear = 4 0.91 < Ratio < 1.07 Count = 2	No Engine Torque Default No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810, P1842, P1843, P1845, P1847 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Gear Range = D4, D3, D2, or D1 TPS > 8% Vehicle Speed > 8 kph 20° C. < Trans Temp < 130° C. 35 < Engine Torque < 300 N-m	<u>Fail Case 1</u> 2 sec <u>Fail Case 2</u> 5 sec Type B	Freeze Adapts Inhibit TCC Maximum Line pressure 3-2 downshift not permitted > 32 mph FATKO	<u>Pass Case 1</u> Command Gear = 1 2.87 < Ratio < 3.13 Time = 0.8 sec <u>Pass Case 4</u> Command Gear = 4 0.61 < Ratio < 0.71 Time = 0.8 sec	Same as Fail
1-2 Shift Solenoid Valve Performance: Stuck ON	P0752	Detects 1-1-4-4 shift pattern	<u>Fail Case 3</u> Command Gear = 2 2.87 < Ratio < 3.13 <u>Fail Case 4</u> Command Gear = 3 0.61 < Ratio < 0.71 Count = 2	No Engine Torque Default No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810, P1842, P1843, P1845, P1847 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Gear Range = D4, D3, D2, or D1 TPS > 8% Vehicle Speed > 8 kph 20° C. < Trans Temp < 130° C. 35 < Engine Torque < 300 N-m	<u>Fail Case 3</u> 3 sec <u>Fail Case 4</u> 5 sec Type B	Freeze Adapts Inhibit TCC Maximum Line pressure 3-2 downshift not permitted > 32 mph FATKO	<u>Pass Case 2</u> Command Gear = 2 1.54 < Ratio < 1.71 Time = 0.8 sec <u>Pass Case 3</u> Command Gear = 3 0.91 < Ratio < 1.07 Time = 0.8 sec	Same as Fail
2-3 Shift Solenoid Valve Performance: Stuck ON	P0756	Detects 4-3-3-4 shift pattern	<u>Fail Case 5</u> Command Gear = 1 0.61 < Ratio < 0.71 <u>Fail Case 6</u> Command Gear = 2 0.91 < Ratio < 1.07 Count = 2	No Engine Torque Default No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810, P1842, P1843, P1845, P1847 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Gear Range = D4, D3, D2, or D1 8 < TPS < 100% Vehicle Speed > 8 kph 20° C. < Trans Temp < 130° C. 35 < Engine Torque < 300 N-m	<u>Fail Case 5</u> 2 sec <u>Fail Case 6</u> 3 sec Type A	Freeze Adapts Inhibit TCC Maximum Line pressure Immediate 2nd Gear Command HSD1 Off Command HSD2 Off FATKO	<u>Pass Case 1</u> Command Gear = 1 2.87 < Ratio < 3.13 Time = 0.8 sec <u>Pass Case 2</u> Command Gear = 2 1.54 < Ratio < 1.71 Time = 0.8 sec	Same as Fail

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2-3 Shift Solenoid Valve Performance: Stuck OFF	P0757	Detects 1-2-2-1 shift pattern	<u>Fail Case 7</u> 35 < Engine Torque < 300 N-m Vehicle Speed > 8 kph Command Gear = 3 1.54 < Ratio < 1.71 <u>Fail Case 8</u> 0 < Engine Torque < 300 N-m Vehicle Spd > 20 kph Command Gear = 4 2.87 < Ratio < 3.13 Count = 1	No Engine Torque Default No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P1810, P1842, P1843, P1845, P1847 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Gear Range = D4, D3, D2, or D1 8 < TPS < 100% 20° C. < Trans Temp < 130° C.	<u>Fail Case 7</u> 3 sec <u>Fail Case 8</u> 2 sec Type A	Freeze Adapts Inhibit TCC Maximum Line pressure Immediate 2nd Gear Command HSD1 Off Command HSD2 Off FATKO	<u>Pass Case 3</u> Command Gear = 3 0.91 < Ratio < 1.07 Time = 0.8 sec <u>Pass Case 4</u> Command Gear = 4 0.61 < Ratio < 0.71 Time = 0.8 sec	Same as Fail
TCM Long-Term Memory Performance	P1621	Detects NVM write error at key-down	TCM Non-Volatile Memory Incorrect flag = 1	8 < Ignition Voltage < 18 V Ignition ON	2 sec Type A	Freeze Adapts Maximum Line pressure FATKO	TCM Non-Volatile Memory Incorrect flag = 0 for 2 sec	Same as Fail
Engine Torque Signal	P1779	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	CAN Bus Engine Torque Incorrect flag = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff CAN BUS ECU Failure ≠ 0 sec NOTE: When Fail time = 0, code has failed	2 sec Type A	Freeze Adapts Maximum Line pressure FATKO	Engine Torque Incorrect flag in CAN Bus = 0 for 2 sec	Same as Fail
Torque Reduction Signal	P1780	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	CAN Bus Torque Reduction Signal Incorrect flag = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff CAN BUS ECU Failure ≠ 0 sec NOTE: When Fail time = 0, DTC has failed	2 sec Type C	Freeze Adapts Maximum Line pressure FATKO	Torque Reduction Signal Incorrect flag in CAN Bus = 0 for 2 sec	Same as Fail
Throttle/Pedal Position Signal	P1791	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	Throttle Position Invalid Flag = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff CAN BUS ECU Failure ≠ 0 sec NOTE: When Fail time = 0, DTC has failed	2 sec Type A	Freeze Adapts Maximum Line pressure FATKO	Throttle Position Invalid flag = 0 for 2 sec	Same as Fail
Engine Coolant Signal	P1792	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	Engine Coolant Incorrect flag in CAN Bus = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff CAN BUS ECU Failure ≠ 0 sec NOTE: When Fail time = 0, DTC has failed	2 sec Type C <i>without lamp illumination</i>	No Default Actions FA	Engine Coolant Incorrect Flag in CAN Bus is inactive for 2 sec.	Same as Fail

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TAC System Signal	P1795	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	TAC System Incorrect flag in CAN Bus = 1	8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff CAN BUS ECU Failure ≠ 0 sec NOTE: When Fail time = 0, DTC has failed	2 sec Type A	No Default Actions FA	TAC System Incorrect Flag in CAN Bus is inactive for 2 sec.	Same as Fail
Transmission Fluid Pressure Position Switch - Illegal Range	P1810	0 – 12 V Detects invalid PSA state or PSA circuit	Range = ILLEGAL	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff	60 sec Type B	Freeze adapts Assume D4 shift pattern D2 Braking Pressure Inhibit TCC FATKO	Range = LEGAL 5 sec	Same as Fail
Maximum Adapt and Long Shift	P1811	Detects long shifts which cannot be shortened by adapts	Adaptable Shift time > 0.60 sec	Test run after each adaptable shift Adapts at maximum value	2 counts Type C	Freeze Adapts Maximum Line pressure FATKO	Considered passed every ignition cycle	None
Transmission Fluid Pressure Valve Position Switch: Start in Wrong Range	P1815	0 – 12 V Detects invalid PSA state or PSA circuit malfunction	PSA ≠ Park/Neutral after Start-up	Run once per ignition cycle No P0502, P0503 DTCs From 0 - 500 RPM Vehicle Speed < 3 kph Engine Speed < 200 RPM for 0.1 sec, THEN 200 < Engine Speed < 600 RPM for 0.3 sec; after Engine Speed > 600 RPM PSA state is reported	2 sec Only at Engine Start-up Type B	Freeze adapts Assume D4 shift pattern D2 Braking Pressure Inhibit TCC FATKO	PSA = P/N 3 sec	No Ignition Voltage, VSS DTCs Vehicle Speed < 3 kph
Transmission Fluid Pressure Valve Position Switch: Park/Neutral with Drive Ratio	P1816	0 – 12 V Detects invalid PSA state or PSA circuit malfunction	PSA indicates P/N when Ratio indicates 4th Gear < 0.72	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P0751, P0752, P0756, P0757 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Vehicle Speed ≥ 8 kph TPS ≥ 10 % 40 < Engine Torque < 200 N-m	5 sec Type B	Freeze Adapts Assume D4 Shift Pattern D2 Braking Pressure Inhibit TCC FATKO	PSA = PARK or NEUTRAL AND RATIO > 0.72 for 5 sec	Same as Fail
Transmission Fluid Pressure Valve Position Switch: Reverse with Drive Ratio	P1817	0 – 12 V Detects invalid PSA state or PSA circuit malfunction	PSA = Reverse when Ratio indicates Drive	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P0751, P0752, P0756, P0757 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Vehicle Speed ≥ 8 kph TPS ≥ 10 % 40 < Engine Torque < 200 N-m	5 sec Type B	Freeze Adapts Assume D4 Shift Pattern D2 Braking Pressure Inhibit TCC FATKO	PSA = REVERSE AND 2.02 ≤ RATIO ≤ 2.23 for 5 sec	Same as Fail

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Transmission Fluid Pressure Valve Position Switch: Drive without Drive Ratio	P1818	0 – 12 V Detects invalid PSA state or PSA circuit malfunction	PSA = D4, D3, D2, or D1 when Ratio indicates Reverse	No TPS DTCs (see below) No P0502, P0503, P0716, P0717, P0751, P0752, P0756, P0757 DTCs 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff Vehicle Speed ≥ 8 kph TPS ≥ 10 % 40 < Engine Torque < 200 N-m	5 sec Type B	Freeze Adapts Assume D4 Shift Pattern D2 Braking Pressure Inhibit TCC FATKO	PSA = D4, D3, D2, or LO AND Ratio < 2.02 OR > 2.23 for 5 sec	Same as Fail
Shift Lock Solenoid Control Circuit: Low Voltage	P1831	0 – 12 V Detects continuous open, short-to-GND in High Side Driver 1 circuit	High Side Driver 1 feedback circuit state ≠ PCM commanded state	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V High Side Driver 1 commanded ON	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC Immediate Landing to 2nd Command HSD1 OFF FATKO	Pass count = 43 out of 50 total	Same as Fail
Shift Solenoid Control Circuit: Low Voltage	P1833	0 – 12 V Detects continuous open, short to GND in High Side Driver 2 circuit	High Side Driver 2 feedback circuit state ≠ PCM commanded state	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V High Side Driver 2 commanded ON	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC Immediate Landing to 2nd Command HSD2 OFF FATKO	Pass count = 43 out of 50 total	Same as Fail
1-2 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid A)	P1842	0 – 12 V Detects continuous open, short to GND in SSA circuit (ODM) or SSA solenoid	Short to GND bit = 1 OR Shift Solenoid 1-2 Commanded ON & Open bit = 1	No P1833 DTC 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V	Fail count = 43 out of 50 (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC FATKO	Pass count = 43 out of 50 total	Same as Fail
1-2 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid A)	P1843	0 – 12 V Detects short to voltage in SSA circuit (ODM) or SSA solenoid	SS 1-2 feedback circuit state ≠ PCM commanded state	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V Shift Solenoid 1-2 commanded ON	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC FATKO	Pass count = 43 out of 50 total	Same as Fail

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Sensed Parameter	Fault Code	Acceptable Operating Range and Rationality	Primary MALF Detection Parameters	Secondary Parameters and Conditions	Monitoring Time Length and DTC Type	Default Actions	Primary MALF Pass Condition	Sec. Pass Condition
2-3 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid B)	P1845	0 – 12 V Detects continuous open, short to GND in SSB circuit (ODM) or solenoid	Short to GND bit = 1 OR Shift Solenoid 2-3 Commanded ON & Open bit = 1	No P1833 DTC 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC Immediate Landing to 2nd Command HSD1 Off Command HSD2 Off FATKO	ODM = PCM commanded state Pass count = 43 out of 50 total	None
2-3 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid B)	P1847	0 - 12 V Detects short to voltage in SSB circuit (ODM) or solenoid	SS 2-3 feedback circuit state ≠ PCM commanded state	200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff 8 < Ignition Voltage < 18 V Shift Solenoid 2-3 commanded ON	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Maximum Line pressure Inhibit TCC Immediate Landing to 2 nd Command HSD1 Off Command HSD2 Off FATKO	ODM = PCM commanded state Pass count = 43 out of 50 total	None
Torque Converter Clutch Pulse Width Modulated Solenoid Control Circuit	P1860	Detects continuous open or short to GND in TCC PWM circuit or TCC PWM solenoid	Every 100 msec, fail counter incremented if open or short detected	No P1833 DTC 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff TCC Duty Cycle < 10% or > 93%	Fail count = 43 out of 50 total (Total time ≈ 4 sec) Type A	Freeze Adapts Inhibit TCC FATKO	<u>Pass Case 1</u> Pass Count = 43 of 50 total DTC must pass for both solenoid states OR <u>Pass Case 2</u> Both P0741 & P0742 pass	<u>Pass Case 1</u> Same as Fail <u>Pass Case 2</u> None
Torque Converter Clutch Release Switch Circuit	P1887	Detects OPEN Release Switch (TCC not applied) when PCM & TCC slip speed indicate TCC is locked	Count = 1	No P0716, P0717, P0741, P0742 DTCs 8 < Ignition Voltage < 18 V 200 < Engine Speed < 7500 RPM for 5 sec, not at fuel cutoff TCC commanded ON 20° C. < Trans Temp < 130° C. -20 < TCC Slip < 40 RPM PSA = D4 30 < Engine Torque < 130 N-m 65 < TCC Pressure < 240 kPa	8 sec Type B	Freeze Adapts Inhibit TCC FATKO	Release Switch status = closed 3 sec	Same as Fail

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Sensed Parameter	Fault Code	Acceptable Operating Range and Rationality	Primary MALF Detection Parameters	Secondary Parameters and Conditions	Monitoring Time Length and DTC Type	Default Actions	Primary MALF Pass Condition	Sec. Pass Condition
CAN Bus Reset Counter Overrun	U2104	CAN is a protocol for TCM to receive vital engine control inputs from a stand-alone engine controller. It confirms CAN messages are being received by checking BUS failure timer. CAN bits are then checked for Pass or Fail.	CAN Bus Reset Counter flag = 1	8 < Ignition Voltage < 18 V Ignition ON	2 sec Type A	Freeze Adapts Maximum Line pressure FATKO	CAN Bus Reset Counter flag = 0 for 2 sec	Same as Fail
CAN Bus Error ECM	U2105	Checks for communication between TCM & Engine Control Unit (ECU)	CAN Bus ECU Error flag = 1	8 < Ignition Voltage < 18 V Ignition ON	2 sec Type A	Freeze Adapts Maximum Line pressure FATKO	CAN Bus ECU Error flag = 0 for 2 sec	Same as Fail