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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY PARAMETER S AND	TIME LENGTH AND FREQUENC	DTC TYPE	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECON DARY PASS CONDI	TEST SETUP PROCEDURE	DTC Status
Transmission Fluid Over Temperature	P0218	High transmission fluid temperature for long period of time	Trans Temp > 140° C.	8.0V ≤ Ignition Voltage ≤ 18.0V -39° C. ≤ Trans Temp ≤ 149° C. for 5 sec	120 sec Continuous	Type C	Freeze adapts FA	Trans Temp ≤ 135° C. for 5.0 sec	Same as fail	Key up and short a potentiometer between the TFT Signal and TFT GND on the TCM side. Adjust the temperature to 135°C and then key down. Start the engine. TFT: 35 (AP) TFT GND: 30 (AJ)	DTC Failed Y / N DTC Passed Y / N
System Voltage Low	P0562	Measured voltage at the TCM is a below an acceptable level	System Voltage ≤ 11V	Engine Speed ≥ 1200 rpm	10 seconds Continuous	Type C	None	System Voltage > 11V 10 sec	Same as fail		DTC Failed Y / N DTC Passed Y / N
System Voltage High	P0563	Measured voltage at the TCM is above an acceptable level	System Voltage ≥ 18V	None	10 seconds Continuous	Type C	None	System Voltage < 18V 10 sec	None		DTC Failed Y / N DTC Passed Y / N
Transmission Control Module Read Only Memory	P0601	EPROM/Flash memory corruption (Incorrect program/calibrations checksum)	ROM fail count ≥ 5	None	Immediate Continuous	Type A	Freeze adapts Max line pressure TCC forced off Inhibit TCC solenoid Soft landing Inhibit Hybrid Operation FATKO	ROM fail count < 5	None		DTC Failed Y / N DTC Passed Y / N

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Transmission Control Module Not Programmed	P0602	Non-programmed TCM (calibrations)	KbCOND_NoStartCal = TRUE	None	Immediate Continuous	Type A	Freeze adapts Max line pressure TCC forced off Inhibit TCC solenoid Immediate Landing Inhibit Hybrid Operation FATKO	KbCOND_NoStartCal = FALSE	None		DTC Failed Y / N DTC Passed Y / N
Transmission Control Module Long-Term Memory Reset	P0603	Wrong copy of Non-volatile Memory to RAM	Non-volatile memory (static or dynamic) checksum failure	None	Immediate Continuous	Type A	Freeze adapts Max line pressure TCC forced off Inhibit TCC solenoid Soft landing Inhibit Hybrid Operation FATKO	Non-volatile memory (static or dynamic) checksum pass			DTC Failed Y / N DTC Passed Y / N
Transmission Control Module Random Access Memory	P0604	RAM failure	RAM read/write failure (single word) RAM fail count \geq 5	None	Immediate Continuous	Type A	Freeze adapts Max line pressure TCC forced off Inhibit TCC solenoid Soft landing Inhibit Hybrid Operation FATKO	RAM read/write pass (all words) RAM fail count < 5			DTC Failed Y / N DTC Passed Y / N

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Transmission Control Module Long Term Memory Performance	P062F	NVM write error at key-down	TCM Non-Volatile Memory Incorrect flag = 1	8.0 ≤ Ignition Voltage ≤ 18.0 V Ignition ON	Immediate Continuous	Type A	Freeze adapts Max line pressure Force TCC OFF TCC Sol.Inhibit Soft Landing Inhibit Hybrid Operation FATKO	TCM Non-Volatile Memory Incorrect flag = 0	Same as Fail		DTC Failed Y / N DTC Passed Y / N
Transmission Range Switch Circuit	P0705	NSBU reports illegal value (A, B, C, and P)	NSBU = 14 or 15 (0001 or 0000)	500 ≤ Engine RPM ≤ 6500 for 2.0 sec 8.0V ≤ Ignition Voltage ≤ 18.0V	60.0 sec Continuous	Type B	Alternate Coast Shift pattern Inhibit Hybrid Operation FA	NSBU ≠ 14 or 15 5.0 sec	Same as fail	Open Signal A and Signal P in Park. Signal A: 29 (AH) Signal P: 39 (AU)	DTC Failed Y / N DTC Passed Y / N

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Transmission Fluid Temperature Sensor Performance	P0711	<p>The DTC detects the following failure modes of the TFT:</p> <p>1) A sensor that remains at a value. (Stuck Sensor)</p> <p>2) A sensor that remains at a value. (Stuck Sensor)</p> <p>4) Transmission Temperature remains below 20° C for a calibrated time dependant on startup transmission temperature.</p>	<p><u>Fail Case 1</u> $\Delta TFT < 2^{\circ} C$. TCC Slip \geq 120 RPM for 300 sec cumul. $-39^{\circ} C. \leq$ TFT at startup \leq 20° C.</p> <p><u>Fail Case 2</u> $\Delta TFT < 2^{\circ} C$. $129^{\circ} C \leq$ TFT at startup \leq 149° C.</p> <p><u>Fail Case 4</u> TFT \leq 20° C after a calibrated amount of time based on a 2D lookup table.</p>	<p><u>For fail case 1, 2, and 4:</u> Common ignition voltage enable, No Engine Coolant DTC's, No OSS P0722, P0723 DTCs, No ISS P0716, P0717 DTCs, P0711 has not passed this ignition cycle, -39 deg C \leq trans fluid temp \leq 149 deg C</p> <p><u>Fail case 1:</u> -39 deg C \leq trans fluid temp \leq 20 C at startup, Engine coolant \Rightarrow 70 deg C, Engine Coolant has changed \Rightarrow 55 deg C since startup, Vehicle speed \Rightarrow 8 KPH for > 300 seconds (cumulative timer)</p> <p><u>Fail case 2:</u> 129 deg C \leq trans fluid temp \leq 149 C at startup, Engine coolant \Rightarrow 70 deg C, Engine Coolant has changed \Rightarrow 55 deg C since startup,</p>	<p><u>Fail case 1:</u> 80.0 seconds</p> <p><u>Fail case 2:</u> 80.0 seconds</p> <p><u>Fail case 4:</u> See table at end of document</p>	Special Type C	<p>Freeze Adapts</p> <p><u>Calculate default transmission fluid temperature as follows:</u> If engine coolant temperature DTC is set, default transmsion fluid temperature = 140 DegC else If engine run time < 60 seconds, default transmission fluid temperature = 47.25 Deg C else If engine run time \geq 60 seconds AND engine coolant temnperture < 20.25 Deg C, default transmission fluid temperature = 47.25 Deg C else If engine run time \geq 60 seconds AND engine coolant temnperture \geq 20.25 Deg C, default transmission fluid temperature = engine coolant temperature</p> <p>FA</p>	<p><u>Pass Cases 1 & 2</u></p> <p>$\Delta TFT \geq 2.5^{\circ} C$. 5.0 sec</p> <p><u>Pass Case 4</u> TFT > 20° C</p> <p>Between 200 & 1900 seconds dependant on startup trans temperature.</p>	<p>500 \leq Engine RPM \leq 6500 for 5.0 sec $8V \leq$ Ignition Voltage for 5 sec $-39^{\circ} C. \leq$ TFT \leq 149° C.</p>	<p>Key up and short a potentiometer between the TFT Signal and TFT GND on the TCM side. Adjust the temperature for the appropriate fail case below and then key down. Start the engine.</p> <p>TFT: 35 (AP) TFT GND: 30 (AJ)</p> <p><u>Fail case 1:</u> 15°C</p> <p><u>Fail case 2:</u> 140°C</p> <p><u>Fail case 4:</u> 10°C Then, after startup adjust temperature up a minimum of 2.5°C Ensure final temperature does not exceed 20°C</p>	<p>DTC Failed Y / N</p> <p>DTC Passed Y / N</p>

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				Vehicle speed => 8 KPH for => 300 seconds (cumulative timer) , and Crank Signals. 50 ≤ Engine Torque ≤ 1492 8 ≤ Throttle Position ≤ 90 8 ≤ Vehicle Speed ≤ 511 500 ≤ Engine Speed ≤ 6500 -39 ≤ Coolant Temperature ≤ 149							
Transmission Fluid Temperature Sensor Circuit Low Voltage	P0712	Continuous Short-to-Ground in Trans Fluid Temperature sensor or TFT signal circuit	Trans Temp Sensor ≤ 43.19 ohm Trans Temp > 150C	8V ≤ Ignition Voltage ≤ 18V for 5 sec 500 ≤ Engine RPM ≤ 6500 for 2.0 sec	12.0 sec Continuous	Special Type C	Freeze adapts Default TFT = f(ECT, MAT, Run time) FA	Raw TTS ≥ 44.19 ohm 10.0 sec	8V ≤ Ignition Voltage ≤ 18V for 5 sec	Short a jumper wire between the TFT signal and TFT Gnd. TFT: 30 (AJ) TFT GND: 35 (AP)	DTC Failed Y / N DTC Passed Y / N
Transmission Fluid Temperature Sensor Circuit High Voltage	P0713	Continuous Open of Short to Voltage in Transmission Fluid Temperature sensor or TFT signal circuit	Trans Temp Sensor ≥ 171862 ohm Trans Temp < -40C (-40F)	No P0716, P0717, P0722, P0723 DTCs 500 ≤ Engine RPM ≥ 6500 for 2.0 sec 8.0 ≤ Ignition Voltage ≤ 18.0 V OSS ≥ 65.6* RPM for 200 sec cumul. TCC Slip ≥ 120 RPM for 200 sec cumul.	80.0 sec Continuous	Special Type C	Freeze adapts Default TFT = f(ECT, MAT, Run time) FA	Raw TTS < 171860 ohm 2.0 sec	8V ≤ Ignition Voltage ≤ 18V for 5 sec	Open the TFT Sensor Signal Circuit TFT: 30 (AJ)	DTC Failed Y / N DTC Passed Y / N

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Input Speed Sensor Performance	P0716	Unrealistically large drop in Input Speed Sensor circuit	Input Speed drop \geq 1000 RPM	No P0717, P0722, P0723, P0752, P0973, P0974 DTCs 8V \leq Ignition Voltage \leq 18V 500 \leq Engine RPM \leq 6500 for 2 sec No TP malfunction No Engine Torque malfunction 50 \leq Engine Torque \leq 1492 N-m TPS \geq 8.0% Vehicle Speed \geq 16.0 kph ISS \geq 1050 RPM for 2.0 sec Δ ISS \leq 500 RPM for 2.0 sec	3.25 sec Continuous	Type B	Freeze adapts Max line pressure Calculate ISS Inhibit Hybrid Operation FATKO	Input Speed \geq 500 RPM Input Speed Change \leq 500 RPM 3.0 sec	No loss of input speed signal	Open the switch Short the signal to GND Short the signal to IGN when the ISS is above cal value. HS: 3 (C) LS: 26 (AD) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
Input Speed Sensor Circuit Low Voltage	P0717	Low Input Speed with large vehicle speed	Input Speed $<$ 100.0 RPM	No P0717, P0722, P0723 DTCs No Engine Torque malfunction 500 \leq Engine RPM \leq 6500 for 2 sec 8V \leq Ignition Voltage \leq 18V Vehicle Speed \geq 16.0 kph 50 \leq Engine Torque \leq 1492 N-m	4.5 sec Continuous	Type B	Freeze adapts Max line pressure Calculate ISS Inhibit Hybrid Operation FATKO	Input Speed $>$ 500 RPM 3.0 sec	None	Open the switch Short the signal to GND Short the signal to IGN <u>before starting the vehicle</u> HS: 3 (C) LS: 26 (AD) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Brake Switch Circuit Low Voltage	P0719	TCM brake switch input senses low voltage while decelerating	TCM indicates the Brake State is continuously OFF/Not Applied while the vehicle decelerates several times	The code has not passed this ignition cycle. 8V ≤ Ignition Voltage ≤ 18V P0719 has not passed this key on No vehicle speed faults The vehicle decelerates in the following manner: Vehicle Speed > 32 kph for 6.0 sec Then 32 kph ≥ Vehicle Speed ≥ 8 kph for 6 sec Then Vehicle Speed < 8 kph for 2 sec	8 deceleration sequences are performed while the brake is sensed as being continuously OFF/Not Applied.	Type C	None	TCM indicates Brake State = ON/Applied 5.0 sec	8V ≤ Igniti on Voltage ≤ 18V for 5 sec	OPEN THE SWITCH FIRST TO PREVENT BCM DAMAGE! Short the Brake Switch signal wire to GND before starting the vehicle BRK: 42 (AX) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Output Speed Sensor Circuit Low Voltage	P0722	Low output speed when the vehicle has a large Input speed in a driving gear range with a high Engine Torque value.	<p><u>Drive</u> $50 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$ $\text{Output Speed} \leq 65.6^* \text{ RPM}$</p> <p><u>Park/Neutral</u> $1492 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$</p>	No, P0716, P0717, P0723 No TPS malfunction No Engine Torque malfunction $8V \leq \text{Ignition Voltage} \leq 18V$ $500 \leq \text{Engine RPM} \leq 6500$ for 2.0 sec Range \neq P/N $\text{TCC Slip} \geq -20 \text{ RPM}$ $\text{Trans Temp} \geq -40^\circ \text{ C.}$ $1500 \text{ RPM} \leq \text{Input Speed} \leq 5000 \text{ RPM}$ $\text{TPS} \geq 8.0\%$	4.5 sec Continuous	Type B	Freeze adapts Max line pressure OSS = f(ISS, RPM, gear) Inhibit Hybrid Operation FATKO	Output speed > 164* RPM 3.0 sec	None	Open the switch Short the signal to GND Short the signal to IGN <u>before starting the vehicle</u> HS: 41 (AW) LS: 16 (T) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Output Speed Sensor Circuit Intermittent	P0723	Unrealistically large DROP in Output Shaft speed.	Drop in Output Speed > 393.5* RPM in any Drive range	No P0716, P0717, P0974 DTC 8V ≤ Ignition Voltage ≤ 18V 500 ≤ Engine RPM ≤ 6500 for 2 sec Range ≠ P/N 50 Nm ≤ Engine Torque ≤ 1492 Nm Time since last range change ≥ 6.0 sec +ΔVSS, loop-to-loop, ≤ 164* RPM for 2.0 sec ΔISS ≤ 500 RPM for 2.0 sec Output Speed ≥ 327.9* RPM for 2.0 sec	3.25 sec Continuous	Type B	Freeze adapts Max line pressure OSS = f(ISS, RPM, gear) Inhibit Hybrid Operation FATKO	ΔOSS ≤ 164* RPM in Drive ranges 3.0 sec OSS ≥ 164* RPM	None	Open the switch Short the signal to GND Short the signal to IGN when the OSS signal is above cal value. HS: 41 (AW) LS: 16 (T) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Brake Switch Circuit High Voltage	P0724	TCM brake switch input senses high voltage since start-up while accelerating	TCM indicates the Brake State is continuously ON/Applied since start-up while the vehicle accelerates several times	The code has not passed this ignition cycle. 8V ≤ Ignition Voltage ≤ 18V for 5 sec DTC has not ran this key ON. No vehicle speed faults The vehicle accelerates in the following manner: Vehicle Speed < 8 kph for 1.0 sec Then 8 kph ≤ Vehicle Speed ≤ 32 kph for 6 sec Then Vehicle Speed > 32 kph for 6 sec	The Brake is continuously on for 900 seconds 8 acceleration sequences are performed while the brake is sensed as being continuously ON/Applied.	Type C	None	TCM indicates Brake State = OFF/Not Applied	8V ≤ Ignition Voltage ≤ 18V for 5 sec	Open the Brake Switch signal circuit before starting the vehicle. BRK: 42 (AX)	DTC Failed Y / N DTC Passed Y / N

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Torque Converter Clutch System - Stuck Off	P0741	High TCC slip with TCC commanded on	TCC slip \geq 150 RPM	No P0716, P0717, P0722, P0723, P0742, P0842, P0843 No TPS malfunction No Engine Torque and Speed malfunctions 8V \leq Ignition Voltage \leq 18V 500 \leq Engine RPM \leq 6500 for 2.0 sec 50 \leq Engine Torque \leq 1492 N-m 8.0% \leq TPS \leq 90% 20° C. \leq Trans Temp \leq 130° C. TCC Capacity \geq 65% for 5.0 sec Commanded Gear > 1 TCC Mode = On or Locked On	8 sec Count = 2 Continuous	Type B	Force TCC off Inhibit TCC Solenoid Freeze adapts Inhibit Max Gear if in Hot Mode Inhibit Hybrid Operation FATKO	-30 \leq TCC Slip \leq 55 RPM 4 sec	Same as Fail Except no TCC capacity check	Connect a solenoid from the TCM side of the TCC PWM to IGN. Open the swich TCC: 1 (A) IGN: 31 (AK)	DTC Failed Y / N DTC Passed Y / N

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Torque Converter Clutch System - Stuck On	P0742	Low TCC slip with TCC commanded off	-20 rpm ≤ TCC Slip Speed ≤ 40 rpm	No P0716, P0717, P0722, P0723, P0741 No TPS malfunction No Engine Torque and Speed malfunctions 8V ≤ Ignition Voltage ≤ 18V 500 ≤ Engine RPM ≤ 6500 for 2.0 sec TCC commanded OFF 50 ≤ Engine Torque ≤ 1492 N-m 20° C. ≤ Trans Temp ≤ 130° C. 8% ≤ TPS ≤ 90% 16 kph ≤ VSS ≤ 511 kph 1.739 ≤ Ratio ≤ .6333	5 sec Count = 3 Continuous	Type B	Max Line Pressure Freeze adapts TCC Cmd On 1-2-3-4 (not hydraulically possible in 1st) Inhibit Hybrid Operation FATKO	150 rpm ≤ TCC Slip Speed ≤ 1500 rpm 5 sec	Same as Fail	TCM Side: Solenoid from TCC Sol to IGN Open the swich Trans Side: Jumper from TCC Sol to GND TCC: 1 (A) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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1-2 Shift Solenoid Valve Performance - No First or Fourth Gear	P0751	2-2-3-3 shift pattern	<p><u>Fail Case 1</u> Commanded 1st 1.5446 < Ratio < 1.7072 1.0 sec. after gear change</p> <p>And</p> <p><u>Fail Case 2</u> Commanded 4th 0.95 < Ratio < 1.05 1.0 sec. after gear change</p>	No P0716, P0717, P0722, P0723, P0742, P0973, P0974, P0976, P0977, or TPS DTCs (see below) No Engine Torque malfunction 500 ≤ Engine RPM ≤ 6500 for 2.0 sec 8V ≤ Ignition Voltage ≤ 18V TPS ≥ 8.0% 20° C. < Trans Temp < 130° C. 150 ≤ Input Speed ≤ 6000 RPM 50 ≤ Engine Torque ≤ 1492 N-m Output Speed ≥ 65.6* RPM	<p><u>Fail Case 1</u> 2.0 sec</p> <p><u>Fail Case 2</u> 4.0 sec</p> <p>Count = 2</p> <p>Continuous</p>	Type B	Freeze adapts Max line pressure Inhibit Hybrid Operation	<p><u>Pass Case 1</u> 1st gear commanded 2.7528 < ratio < 3.1672</p> <p>0.9 sec</p> <p><u>Pass Case 4</u> 4th gear commanded 0.6333 < ratio < 0.7287</p> <p>0.9 sec</p>	50 ≤ Engin e Torqu e ≤ 1492 N-m	Open the Switch and short a solenoid from the TCM side of the switch to IGN	DTC Failed Y / N DTC Passed Y / N
1-2 Shift Solenoid Valve Performance - No Second or Third Gear	P0752	1-1-4-4 shift pattern	<p><u>Fail Case 3</u> Commanded 2nd 2.8120 < Ratio < 3.1080 1.0 sec. after gear change</p> <p>And</p> <p><u>Fail Case 4</u> Commanded 3rd 0.6469 < Ratio < 0.7150 1.0 sec. after gear change</p>	See P0751	<p><u>Fail Case 3</u> 2.0 sec</p> <p><u>Fail Case 4</u> 3.0 sec</p> <p>Count = 2</p> <p>Continuous</p>	Type B	Freeze adapts Max line pressure 3-2 downshift not allowed > 52 kph Inhibit Hybrid Operation	<p><u>Pass Case 2</u> 2nd gear commanded 1.5122 < ratio < 1.7398</p> <p>0.9 sec</p> <p><u>Pass Case 3</u> 3rd gear commanded 0.93 < ratio < 1.07</p> <p>0.9 sec</p>	50 ≤ Engin e Torqu e ≤ 1492 N-m	TCM Side: Solenoid from Shift Sol A to IGN Trans Side: Jumper from Shift Sol A to GND	DTC Failed Y / N DTC Passed Y / N

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2-3 Shift Solenoid Valve Performance - No First or Second Gear	P0756	4-3-3-4 shift pattern	<p><u>Fail Case 5</u> $-20 \leq \text{TCC Slip} \leq 8191 \text{ RPM}$ $\text{VSS} \geq 65.6^* \text{ RPM}$ Commanded 1st $0.65 \leq \text{Ratio} \leq 1.87$ 1.0 sec. after gear change</p> <p>And</p> <p><u>Fail Case 6</u> Commanded 2nd $0.95 \leq \text{Ratio} \leq 1.05$ 1.0 sec. after gear change</p>	See P0751	<p><u>Fail Case 5</u> 2.0 sec</p> <p><u>Fail Case 6</u> 3.0 sec</p> <p>Count = 2</p> <p>Continuous</p>	Type A	Freeze adapts Inhibit 1 st Gear Max line pressure Force TCC off Inhibit TCC Solenoid Inhibit Hybrid Operation FATKO	<p><u>Pass Case 1</u> 1st gear commd $2.7528 < \text{Ratio} < 3.1672$</p> <p>0.9 sec</p> <p><u>Pass Case 2</u> 2nd gear commd $1.5122 < \text{Ratio} < 1.7397$</p> <p>0.9 sec</p>	$50 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$	TCM Side: Solenoid from Shift Sol B to IGN Trans Side: Jumper from Shift Sol B to GND SSB: 20 (X) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y/N DTC Passed Y/N
2-3 Shift Solenoid Valve Performance - No Third or Fourth Gear	P0757	1-2-2-1 shift pattern	<p><u>Fail Case 7</u> $40 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$ Commanded 3rd $1.5446 < \text{Ratio} < 1.7073$ 1.0 sec. after gear change</p> <p>And</p> <p><u>Fail Case 8</u> $0 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$ Commanded 4th $1.5446 < \text{Ratio} < 3.1080$ 1.0 sec. after gear change 1.2 sec after range change Range \neq Neutral</p>	See P0751	<p><u>Fail Case 7</u> 2.0 sec</p> <p><u>Fail Case 8</u> 2.0 sec</p> <p>Count = 2</p> <p>Continuous</p>	Type A	Freeze adapts Max line pressure Inhibit 4th Gear Inhibit Hybrid Operation FATKO	<p><u>Pass Case 3</u> 3rd gear commd $0.93 < \text{Ratio} < 1.07$</p> <p>0.9 sec</p> <p><u>Pass Case 4</u> 4th gear commd $0.6333 < \text{Ratio} < 0.7286$</p> <p>0.9 sec</p>	$50 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$	Open the Switch and short a solenoid from the TCM side of the switch to IGN SSB: 20 (X) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y/N DTC Passed Y/N

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Shift Timing Solenoid Control Circuit Low Voltage	P0787	Continuous Short-to-Ground OR Open in Shift Timing Solenoid or Shift Timing Solenoid circuit (ODM)	Shift Timing Solenoid ODM feedback circuit state \neq TCM commanded state	Ignition ON $8.0 \leq$ Ignition Voltage \leq 18.0 V $500 \leq$ Engine RPM \leq 6500 for 5.0 sec	Fail count = 44 out of 50 (Time \approx 4.4 sec) Continuous	Type C	Freeze adapts Max line pressure FATKO	ODM = TCM commd state Pass count = 43 out of 50	None	Open the Shift Timing Solenoid Switch Short to GND Shift Timing Solenoid Circuit Solenoid: 14 (R) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
Shift Timing Solenoid Control Circuit Hi Voltage	P0788	Continuous Short-to-Power in Shift Timing Solenoid or Shift Timing Solenoid circuit (ODM)	Shift Timing Solenoid ODM feedback circuit state \neq TCM commanded state	Ignition ON $8.0 \leq$ Ignition Voltage \leq 18.0 V $500 \leq$ Engine RPM \leq 6500 for 2.0 sec	Fail count = 6 out of 8 (Time \approx 150m sec) Continuous	Type C	Freeze adapts FATKO	ODM = TCM commd state Pass count = 5 out of 8	None	Short Shift Timing Solenoid to IGN Perform 4-3 downshifts (can be coast down or power on) Solenoid: 14 (R) IGN: 31 (AK)	DTC Failed Y / N DTC Passed Y / N

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY PARAMETER S AND	TIME LENGTH AND FREQUENC	DTC TYPE	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECON DARY PASS CONDI	TEST SETUP PROCEDURE	DTC Status
Torque Converter Clutch Release Switch Circuit Low Voltage	P0842	Closed Release Switch, indicating TCC is applied when TCM is commanding TCC off and TCC slip shows TCC is OFF.	Release switch closed (grounded).	No P0716, P0717, P0741, P0742 P2764, P2763 DTCs No Engine Speed or Torque Malfunctions 500 ≤ Engine RPM ≤ 6500 for 2.0 sec TCC commanded OFF 100 RPM < Slip Speed 50 < Engine Torque < 1492 N-m 20° C. < Trans Temp < 130° C. 16 kph < VSS < 512 kph	5.5 sec Count = 2 Continuous	Type B	Max Line Pressure Freeze adapts TCC Cmd On 1-2-3-4 (not hydraulically possible in 1st) Inhibit Max Gear in Hot Mode Inhibit Hybrid Operation FATKO	Release switch is open 5.0 sec	500 ≤ Engine RPM ≤ 6500 for 5.0 sec	Short the TCC Release Switch circuit to GND. TCC Release Switch: 9 K GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY PARAMETER S AND	TIME LENGTH AND FREQUENC	DTC TYPE	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECON DARY PASS CONDI	TEST SETUP PROCEDURE	DTC Status
Torque Converter Clutch Release Switch Circuit High Voltage	P0843	Open Release Switch, indicating TCC not applied when TCM is commanding TCC ON and TCC slip shows TCC is locked	Release switch open for 6.0 sec	No P0716, P0717, P0741, P0742 P2764, P2763 DTCs No Engine Speed Malfunction 500 ≤ Engine RPM ≤ 6500 for 2.0 sec TCC commanded ON, or LockON -20 < Slip < 60 RPM 50 < Engine Torque < 1492 N-m 20° C. < Trans Temp < 130° C. 90 < TCC Pressure < 830 kPa	6.0 sec Count = 2 Continuous	Type B	Force TCC off Inhibit TCC Solenoid Freeze adapts Inhibit Max Gear in Hot Mode Inhibit Hybrid Operation FATKO	Release switch is closed 5.0 sec	Same as Fail	Open the TCC Release Switch: 9 (K)	DTC Failed Y / N DTC Passed Y / N
Line Pressure Control Solenoid System Performance	P0961	Continuous Open, Short-to-Voltage, or Short-to-Ground in PCS or PCS circuit	Pressure Control Solenoid Short Bit = 1	System Voltage Low timer = 0 (No Calibrations for DTC P0961) Engine is running	2.0 sec Continuous	Type C	Freeze adapts Max line pressure FATKO	Pressure Control Solenoid Short bit = 0	System Voltage Low timer > 0 System Voltage Malf is clear	Open PCS Hi or Lo Short PCS Hi or Lo to GND Short PCS Hi or Lo to IGN PCS Hi: 40 (AV) PCS Lo: 17 (U) GND: 49 (BE) IGN: 31 (AK)	DTC Failed Y / N DTC Passed Y / N
1-2 Shift Solenoid Control Circuit Low Voltage	P0973	Continuous Short-to-Ground OR Open in Shift Solenoid A or SSA circuit (ODM)	SSA ODM feedback circuit state ≠ TCM commanded state	Ignition ON 8.0 ≤ Ignition Voltage ≤ 18.0 V 500 ≤ Engine RPM ≤ 6500 for 2.0 sec	Fail count = 44 out of 50 (Time ≈ 4.4 sec) Continuous	Type B	Freeze adapts Max line pressure No 3-2 shift > 52 kph Inhibit Hybrid Operation FATKO	ODM = TCM commd state Pass count = 43 out of 50	None	Open the SSA Switch Short to GND SSA Circuit SSA: 2 (B) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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1-2 Shift Solenoid Control Circuit High Voltage	P0974	Continuous Short-to-Power in Shift Solenoid A or SSA circuit (ODM)	SSA ODM feedback circuit state \neq TCM commanded state	Ignition ON $8.0 \leq$ Ignition Voltage \leq 18.0 V $500 \leq$ Engine RPM \leq 6500 for 2.0 sec	Fail count = 44 out of 50 (Time \approx 4.4 sec) Continuous	Type B	Freeze adapts Max line pressure Inhibit Hybrid Operation FATKO	ODM = TCM commd state Pass count = 43 out of 50	None	Short Shift Sol A to IGN SSA: 2 (B) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
2-3 Shift Solenoid Control Circuit Low Voltage	P0976	Continuous Short-to-Ground OR Open in Shift Solenoid B or SSB circuit (ODM)	SSB ODM feedback circuit state \neq TCM commanded state	Ignition ON $8.0 \leq$ Ignition Voltage \leq 18.0 V $500 \leq$ Engine RPM \leq 6500 for 2.0 sec	Fail count = 44 out of 50 (Time \approx 4.4 sec) Continuous	Type A	Freeze adapts Max line pressure Inhibit 1 st Gear Inhibit 4th Gear Soft landing Force TCC off Inhibit TCC Solenoid Inhibit Hybrid Operation FATKO	ODM state = TCM commanded state Pass count = 43 out of 50	None	Open the SSB Switch Short to GND SSB Circuit SSB: 20 (X) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
2-3 Shift Solenoid Control Circuit High Voltage	P0977	Continuous Short-to-Power in Shift Solenoid B or SSB circuit (ODM)	SSB ODM feedback circuit state \neq TCM commanded state	Ignition ON $8.0 \leq$ Ignition Voltage \leq 18.0 V $500 \leq$ Engine RPM \leq 6500 for 2.0 sec	Fail count = 44 out of 50 (Time \approx 4.4 sec) Continuous	Type A	Freeze adapts Inhibit 4 th Gear Max line pressure Inhibit Hybrid Operation FATKO	ODM state = TCM commanded state Pass count = 43 out of 50	None	Short Shift Sol B to IGN SSB: 20 (X) IGN: 31 (AK) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
Transmission Fluid Pressure Position Switch Circuit	P1810	Invalid state of Pressure Switch Assembly circuit	Illegal PSA range (Pressure switch B & C low voltage)	$500 \leq$ Engine RPM \leq 6500 for 2.0 sec	60.0 sec Continuous	Type B	Freeze adapts Max line pressure Inhibit Hybrid Operation FATKO	PSA not illegal 5.0 sec	Same as Fail	TFP: Invalid Range in Park Short Switch B & C to GND Switch B: 44 (AZ) Switch C: 33 (AM) Ground: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Maximum Adapt and Long Shift	P1811	Long shifts with upshift adapts at maximum	Shift time > 0.65 sec	Shift is adaptable Adapts at maximum value	2 counts Continuous	Type C	Freeze adapts Max line pressure FATKO	Considered passed every ignition cycle	None	Increased Slew Pressure to negatively until -200 kPa Modified was reached.	DTC Failed Y / N DTC Passed Y / N
Transmission Fluid Pressure Valve Position Switch Indicates Park/Neutral with Drive Ratio	P1816	Drive Ratio with P/N Range	PSA = P/N $2.7528 \leq \text{Ratio} \leq 3.1672$ $1.5122 \leq \text{Ratio} \leq 1.7397$ $0.93 \leq \text{Ratio} \leq 1.07$ $0.6333 \leq \text{Ratio} \leq 0.7296$	No P0716, P0717, P0722, P0723, P0751, P0752, P0756, P0757 P0973, P0974, P0976, P0977, or TPS DTCs (see below) $500 \leq \text{Engine RPM} \leq 6500$ for 2.0 sec Output Speed $\geq 82^* \text{ RPM}$ $8\% \leq \text{TPS} \leq 90.0\%$ $50 \leq \text{Engine Torque} \leq 1492 \text{ N-m}$	6.0 sec Continuous	Type B	Freeze adapts Max Line Pressure Inhibit Hybrid Operation FATKO	PSA = Drive $2.7528 \leq \text{Ratio} \leq 3.1672$ $1.5122 \leq \text{Ratio} \leq 1.7397$ $0.93 \leq \text{Ratio} \leq 1.07$ $0.6333 \leq \text{Ratio} \leq 0.7296$ 4.0 sec	Same as Fail	TFP: P/N with Drive Ratio Switch B Open Switch C Normal Switch B: 44 (AZ) Switch C: 33 (AM)	DTC Failed Y / N DTC Passed Y / N

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY PARAMETER S AND	TIME LENGTH AND FREQUENC	DTC TYPE	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECON DARY PASS CONDI	TEST SETUP PROCEDURE	DTC Status
Transmission Fluid Pressure Valve Position Switch Indicates Drive without Drive Ratio	P1818	Reverse Ratio with Park/Neutral OR Drive Range	PSA = P/N, or Drive And 1.9930 ≤ Ratio ≤ 2.2928	No P0716, P0717, P0722, P0723, P0751, P0752, P0756, P0757, P0973, P0974, P0976, P0977 No TPS Malfunction No Engine Torque Malfunction 8V ≤ Ignition Voltage ≤ 18V 500 ≤ Engine RPM ≤ 6500 for 2.0 sec Output Speed ≥ 50* RPM TPS ≥ 5% 20 ≤ Engine Torque ≤ 1492 N-m Trans Temp > 0° C	3.0 sec Continuous	Type B	Freeze adapts Max Line Pressure Inhibit Hybrid Operation FATKO	PSA = Reverse And 1.993 ≤ Ratio ≤ 2.2928 1.5 sec	Same as Fail	TFP: Drive with Reverse Ratio Switch B Short to GND Switch C Open Switch B: 44 (AZ) Switch C: 33 (AM) Ground: 49 (BE)	DTC Failed Y / N DTC Passed Y / N
Ignition 1 Switch Circuit Low Voltage	P2534	Continuous Open/Short-to-Ground in TCM Ignition 1 Switch circuit	Every 25 msec, the FAIL counter is incremented if an open or a short to ground is detected	Engine running	Fail Count ≥ 200 out of 220 samples (Time ≈ 5 sec) Continuous	Type A	Freeze adapts Max line pressure Immediate landing Inhibit Hybrid Operation Force TCC off Inhibit TCC Solenoid FATKO Force TCC off Inhibit TCC Solenoid	Fail Counts < 200 out of 220 Samples	None	Open the ignition input circuit. IGN: 31 (AK)	DTC Failed Y / N DTC Passed Y / N

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Torque Converter Clutch Pressure Control Solenoid Control Circuit High Voltage	P2763	Continuous Short-to-Voltage in TCC PWM circuit	Every 100 msec, the FAIL counter is incremented if a short to voltage is detected	Ignition ON 8V ≤ Ignition Voltage ≤ 18V 500 ≤ Engine RPM ≤ 6500 for 2.0 sec TCC Commanded ON	Fail Count = 44 out of 50 (Time ≈ 4.4 sec) Continuous	Type B	Force TCC off Max Line Pressure Freeze adapts Inhibit TCC solenoid Inhibit 4 th in Hot Mode Inhibit Hybrid Operation FATKO	Pass Count = 43 out of 50	Same as Fail	Short the TCC PWM solenoid circuit to voltage TCC: 1 (A) IGN: 31 (AK)	DTC Failed Y / N DTC Passed Y / N
Torque Converter Clutch Pressure Control Solenoid Control Circuit Low Voltage	P2764	Continuous Open/Short-to-Ground in TCC PWM circuit or TCC PWM solenoid	Every 100 msec, the FAIL counter is incremented if an open or a short to ground is detected	Ignition ON 8V ≤ Ignition Voltage ≤ 18V 500 ≤ Engine RPM ≤ 6500 for 2.0 sec	Fail Count = 44 out of 50 (Time ≈ 4.4 sec) Continuous	Type B	Force TCC off Inhibit TCC solenoid Inhibit 4 th in Hot Mode Max Line Pressure Freeze adapts Inhibit Hybrid Operation FATKO	Pass Count = 43 out of 50	Same as Fail	TCC PWM Solenoid Open TCC PWM Sol. To GND TCC: 1 (A) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Controller Area Network Bus Communication Error	U0073	TCM cannot communicate on the CAN Bus	CAN Bus Off State = TRUE	Ignition ON 8V ≤ Ignition Voltage ≤ 18V for 5 seconds	Fail Count = 5 out of 5 (Time ≈ 5 sec) Continuous	Type B	Eng Spd Fault Action TCC Cmd On 1-2-3-4 (not hydraulically possible in 1st) Freeze adapts Max line pressure Throttle Position Fault Action Inhibit Hybrid Operation FATKO Eng Coolant Fault Action Intake Air Fault Action Torque Management Inhibit	GetCNDD_b_BusOffSt() = FALSE Sample Count = 5 (Time ≈ 5 sec)	Same as Fail	STG CAN HI(1): 7 (H) GND: 49 (BE)	DTC Failed Y / N DTC Passed Y / N

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Lost Communications with Engine Control System	U0100	Communication between TCM & Engine Control System Lost	CAN Bus ECM Error flag = 1	Ignition ON 8V ≤ Ignition Voltage ≤ 18V for 5 seconds	Fail Count = 12 out of 12 (Time ≈ 12 sec) Continuous	Type B	Eng Spd Fault Action TCC Cmd On 1-2-3-4 (not possible in 1st) Freeze adapts Max line pressure Throttle Position Fault Action Inhibit Hybrid Operation FATKO Eng Coolant Fault Action Intake Air Fault Action Torque Managemen t Inhibit	CAN Bus ECM Error flag = 0 Sample Count = 12 (Time ≈ 12 sec)	Same as Fail	Open the CAN HI(1): 7 (H) Switch CAN HI (1): 7 (H)	DTC Failed Y / N DTC Passed Y / N
Lost Communication with Traction Control System / Anti-Lock BrakeSystem	U0121	Communication between TCM & TCS/ABS System Lost	CAN Bus ABS Error Flag = 1	Ignition ON 8V ≤ Ignition Voltage ≤ 18V for 5 seconds	Fail Count = 12 out of 12 (Time ≈ 12 sec) Continuous	Type C	None	CAN Bus ABS Error flag = 0 Sample Count = 12 (Time ≈ 12 sec)	Same as Fail	Open the CAN HI(1) and CAN LO(1) signal switches at exactly the same time. CAN HI(1): 7 (H) CAN LO(1): 6 (F)	DTC Failed Y / N DTC Passed Y / N

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY PARAMETER S AND	TIME LENGTH AND FREQUENC	DTC TYPE	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECON DARY PASS CONDI	TEST SETUP PROCEDURE	DTC Status
Lost Communication with BodyControl System	U0140	Communication between TCM & Body Control System Lost	CAN Bus BCM Error Flag = 1	Ignition ON 8V ≤ Ignition Voltage ≤ 18V for 5 seconds	Fail Count = 12 out of 12 (Time ≈ 12 sec) Continuous	Type C	None	CAN Bus BCM Error flag = 0 Sample Count = 12 (Time ≈ 12 sec)	Same as Fail	Open the CAN HI(1) and CAN LO(1) signal switches at exactly the same time. CAN HI(1): 7 (H) CAN LO(1): 6 (F)	DTC Failed Y / N DTC Passed Y / N

P0711 Fail Case 4 Table	
Start-Up Transmission Temperature (DegC)	Time for Transmission Temp to reach 20 DegC (sec)
-40	1900
-25	1000
-10	800
-5	520
20	200