2006trans16 .doc

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA AND THRESHOLD VALUE(S)	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME LENGTH AND FREQUENCY	MIL ILLUMINATION TYPE
Actuator Supply 1 (HSD1) Voltage Low	P0658	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when the engine is running or cranking AND the number of failure events >= 3. A failure event occurs when the number of failed solenoids connected to HSD1 >= 3 AND HSD1 voltage < 6V.	No (HSD1) Voltage Low DTC (P0658) this drive cycle. HSD1 Voltage High test (P0659) is running. HSD1 is commanded ON. Components powered and battery voltage between 9V and 18V.	75 ms 25 ms	A
Actuator Supply 1 (HSD1) Voltage High	P0659	This test detects if the voltage measured at the HSD 2 detection circuit indicates high during initialization (when the circuit is off) or multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	At initialization, report malfunction when the number of failure events >= 3. A failure event occurs when HSD1 voltage >= 6V. After initialization, report malfunction when the engine is running or cranking AND the number of failure events >= 3. A failure event occurs when the number of failed solenoids connected to HSD1 >= 3 AND HSD1 voltage >= 6V.	No (HSD1) Voltage Low DTC (P0658) this drive cycle. HSD1 Voltage Low test (P0658) is running. HSD1 is commanded ON. Components powered and battery voltage between 9V and 18V.	75 ms 25 ms	A
Actuator Supply2 (HSD2) Voltage Low	P2670	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when the engine is running or cranking AND the number of failure events >= 3. A failure event occurs when the number of failed solenoids connected to HSD2 >= 3 AND HSD2 voltage < 6V.	No (HSD2) Voltage Low DTC (P2670) this drive cycle. HSD2 Voltage High test (P2671) is running. HSD2 is commanded ON. Components powered and battery voltage between 9V and 18V.	75 ms 25 ms	A
Actuator Supply 2 (HSD2) Voltage High	P2671	This test detects if the voltage measured at the HSD 2 detection circuit indicates high during initialization (when the circuit is off) or multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	At initialization, report malfunction when the number of failure events >= 3. A failure event occurs when HSD2 voltage >= 6V. After initialization, report malfunction when the engine is running or cranking AND the number of failure events >= 3. A failure event occurs when the number of failed solenoids connected to HSD2 >= 3 AND HSD2 voltage >= 6V.	No (HSD2) Voltage Low DTC (P2671) this drive cycle. HSD2 Voltage Low test (P2670) is running. HSD2 is commanded ON. Components powered and battery voltage between 9V and 18V.	75 ms 25 ms	A
TCC Pressure Control Solenoid Control Circuit Open	P2761	This test detects torque converter solenoid electrical open circuit malfunctions.	Fault pending is set at single hardware fault occurrence. If hardware fault is present for >= 10 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	350 ms 25 ms	B
TCC Pressure Control Solenoid Control Circuit High	P2763	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for >=4 consecutive samples.	No TCC Control Circuit High (P2763)	100 ms 25 ms	B

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TCC Pressure Control Solenoid Control Circuit Low	P2764	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If the electrical open test is enabled and electrical hardware fault to ground is present of >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	B
Transmission Fluid Temperature Sensor Circuit Range/Performance	P0711	This test detects 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) Number of temperature data points is 6 and the time the detection has been enabled with the difference of minimum and maximum temperature > a target value. The target value is dependent on the start-up temperature: start-up <= -40 deg. C; target is 36 deg. C within 1200 seconds -40 deg. C < start-up <= -30 deg. C; target is 25 deg. C within 1000 seconds -30 deg. C < start-up <= -20 deg. C; target is 21 deg. C within 900 seconds -20 deg. C < start-up <= 0 deg. C; target is 16 deg. C within 800 seconds 0 deg. C < start-up <= 20 deg. C; target is 7 deg. C within 600 seconds 20 deg. C < start-up <= 30 deg. C; target is 3 deg. C within 600 seconds 30 deg. C < start-up <= 35 deg. C; target is 0.2 deg. C within 600 seconds start-up > 35 deg. C; target is 0 deg. C within 100 seconds For Case 2 (Noisy signal) Number of temperature data points is 6 and the number of occurrences of (T-Tprevious) > +/- 10 deg. C is <= 10. If Case 1 or Case 2 detected, the performance test fails. For Case 3 (Temperature decrease from start-up) This performance test fails if the temperature decrease from start-up is >= 40 deg. C within 6 seconds.	All Cases No TFT DTCs (P0711, P0712, P0713) for this drive cycle. Components powered and 9 V < Battery Voltage < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No Output Speed Sensor DTC (P0721, P0722) for this drive cycle. Engine is running For Case 1 and Case 2 , this DTC (P0711) has not passed. Enable/disable conditions must be met AND engine has been running for >= 2 seconds and engine speed is >= 450 RPM and output speed is >= 100 RPM.	1.5 seconds 250 ms	B

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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>=150 deg. C for > 2.5seconds.	No TFT DTCs (P0711, P0712, P0713) for this drive cycle. 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Battery Voltage < 18 V	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 >= -45 deg. C for > 2.5 seconds.	No TFT DTCs (P0711, P0712, P0713) for this drive cycle 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Battery Voltage < 18 V Engine running >= 20 seconds WITH Engine coolant temperature > 20 deg. C and not defaulted	2.5 seconds 250 ms	B
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.	For Case 1: (Unrealistically large changes in input Speed) Change of Input Speed between samples >= 800 RPM for >= 0.15 seconds For Case 2: (Noisy Input Speed) For 80 samples, if the change in Input Speed <= -800 RPM, then the Low Counter is incremented. If the change in Input Speed is >= 800 RPM, then the High Counter is incremented. This test fails if both the Low Counter and the High Counter are >= 5 OR High Counter >= 5 For Case 3: (Wires to speed sensors swapped) Increment counter when range attained and range commanded are neutral for <= 3.5 seconds AND when ratio of engine speed and input speed >= 3. Arm test when counter >=20 or when time > 3.5 seconds. Malfunction is reported when, for a time > 0.5 seconds, the range commanded is not neutral and the on-coming clutch control is complete and the input speed > 100 RPM and engine speed > 100 RPM	No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle Shift complete For Case 1 (Unrealistically large changes in input Speed) and Case 2 (Noisy Input Speed), Input Speed > 200 RPM for >= 0.5 seconds For Case 3 (Wires to speed sensors swapped), Input speed > 100 RPM Engine speed > 100 RPM Hydraulic system pressurized Enables met and no Input Speed Sensor DTCs for >= 0.2 seconds	For Case 1: 0.15 s For Case 2: 2 s For Case 3: 1 s 25 ms	A

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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.	For Case 1: (Unrealistically large change in input speed) Failure pending if change in transmission input speed >= 800 RPM. 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 AND output speed > 500 RPM for > 1 second.	All Cases No Input Speed Sensor No Activity DTC (P0717) for this drive cycle. Reverse-to-Neutral shift not in process Shifting complete Engine is running Range attained is not neutral Transmission fluid temperature > -25 deg. C For Case 2: (Unrealistically low input speed) No Incorrect Ratio DTCs (P0729, P0731 through P0736) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. Transmission output speed >= 150 RPM OR Transmission output speed >= 150 RPM AND Engine Speed >= 400 RPM	1 second 25 ms	A
Output Speed Sensor Circuit Range/Performance	P0721	This test detects a noisy output speed sensor or circuit by detecting large changes in output speed.	For Case 1: (Unrealistically large change in output speed) Change in output speed >= 500 RPM for >= 0.15 seconds For Case 2: (Noisy output speed) For 80 samples, if the change in output speed is <= -500 RPM, then the Low Counter is incremented. If the change in output speed is >= 500 RPM, then the High Counter is incremented. Test fails if both the Low Counter and the High Counter are >= 5 or the Low Counter or the High Counter is >= 5.	No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. Output Speed > 200 RPM for >= 0.5 seconds Shift complete and range attained NOT neutral	For Case 1: 0.15 s For Case 2: 2 seconds 25 ms	A

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Output Speed Sensor Circuit No Signal	P0722	This test detects unrealistically low value of output speed or unrealistically large change in output speed.	For Case 1: (Unrealistically large change in output speed) Failure pending if change in output speed >= 600 RPM Failure sets if range attained is Neutral. 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 and range is 3rd, 4th, 5th, or 6th for > 1 second. Failure sets if not monitoring for low speed neutral and output speed < 61 RPM and ((net engine torque < -100 Nm OR net engine torque > 100 Nm) OR (turbine speed > 1500 RPM and range is 2nd)) for >= 4 seconds.	All Cases No Output Speed Sensor Perf DTC (P0721) for this drive cycle. For Case 1: Unrealistically large change in output speed Test enabled when output speed >= 600 RPM for >= 1 seconds. Test disabled when output speed <= 600 RPM for > 1 seconds For Case 2: Unrealistically low value of output speed No Incorrect Ratio DTCs (P0729, P0731 through P0736) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. Engine is running Shift not in process Range attained is not Neutral Reverse to Neutral shift not in process Transmission fluid temperature > -25 deg. C Transmission input speed >= 1050 RPM Not waiting for Manual Selector Valve to attain forward range PRNDL State Not D4, nor Transitional D4, nor Transitional N	1 second 25 ms	A
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 >= 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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A

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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 >= 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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present 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 >= 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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A
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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 seconds 25 ms	A

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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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present 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 Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle.No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	2 seconds 25 ms	A
Gear 6 Incorrect Ratio	P0729	This test verifies transmission operating ratio while 6th 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) >= 230 RPM for > 10 samples.	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	2.25 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 >= 600 RPM for 0.15 Seconds For Case 2: (Noisy Engine Speed) For 80 samples, if the change in engine speed <= -650 RPM then the Low Counter is incremented. If the change in engine speed >= 650 RPM, then the High Counter in incremented. This test fails if both the Low Counter and the High Counter >= 5 or the Low Counter or the High Counter >= 5	No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No TCM Engine Speed Sensor DTCs (P0726, P0727) for this drive cycle. 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 >= 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) for this drive cycle. Case 2: (Unrealistically low value of engine speed) No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. Turbine speed >= 400 RPM Ignition Key in RUN position AND Ignition Key is not being cycled AND vehicle is not coasting with engine off	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 >= 80 RPM for >= 15 seconds.	No TCC Circuit Low DTC (P2764) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Battery Voltage < 18 V Must be in forward range 10 % < % Throttle <= 90 % Transmission fluid temperature between 5 deg. C and 130 deg. C Time Since Range Change >= 6 seconds AND (TCC apply is complete.	15 s 100 ms	B

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Torque Converter Clutch Circuit Stuck On	P0742	This test detects the torque converter being stuck on (locked).	Case 1: (High Torque condition) Set fault pending when throttle >= 70% AND net engine torque >= 275 Nm. Report malfunction when fault pending exists continuously for >= 2 seconds. Case 2: (High Acceleration condition) Set fault pending when output shaft acceleration >= 100 RPM/second. Report malfunction when fault pending exists continuously for >= 5 seconds. Case 3: (Accel/Decel/Accel condition) Report malfunction when output acceleration event is followed by output deceleration event and followed by another output acceleration event. An output acceleration event occurs when output shaft acceleration >= 40 RPM/second for >= 4 seconds. An output deceleration event occurs when output shaft acceleration is <=-40 RPM/second for >= 2.5 seconds. .	No TCC Control Circuit Low (P2764) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No TCM Engine Speed Sensor DTCs (P0726, P0727)for this drive cycle. 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Battery Voltage < 18 V Must be in forward range TCC is off -20 RPM <= TCC Slip <= 20 RPM Throttle >= 25% Net Engine Torque >= 175 Nm Engine speed <= 3500 RPM Input speed <= 3500 RPM Output speed >= 100 RPM	Case 1 2 s Case 2 5 s Case 3 10.5 s 100 ms	B
Shift Solenoid "D" Electrical	P0768	This test detects solenoid D electrical circuit malfunctions.	D Solenoid OFF and Hardware detected failure for > 0.09961 seconds D Solenoid ON and Hardware detected failure for > 0.09961 seconds	No Solenoid D Electric DTC (P0768) Initialization in process OR 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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Pressure Switch Solenoid 1 Circuit Low	P0842	This test compares the commanded valve position to the PS1 pressure switch feedback. (part of S1 valve integrity test)	Pending failure occurs when PS1 pressure switch indicates stroked for > 0.125 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 0.125 seconds and 30 seconds, respectively.) In response to the pending failure, S1 valve is retried by triggering S1 valve command to stroked and back to destroked. If PS1 pressure switch continues to indicate stroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS1 Circuit Low (P0793) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck On(P0752) reports failure, also. For Case 3 (intermittent malfunction), S1 valve retry attempted 15 times and PS1 pressure switch continues to indicate stroked.	S1 valve is destroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown is NOT in process	125 ms 25 ms	A
Shift Solenoid 1 (SS1) Valve Performance – Stuck Off	P0751	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test)	S1 valve is commanded from destroked to stroked and the PS1 pressure switch indication remains destroked for 5 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.)	S1 valve commanded from destroked to stroked.	5 seconds 25 ms	A
Shift Solenoid 1 (SS1) Valve Performance – Stuck On	P0752	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test).	S1 valve commanded from stroked to destroked and the PS1 pressure switch indication remains stroked 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 changes from stroked to destroked	2 seconds 25 ms	A

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Pressure Switch Solenoid 1 Circuit High	P0843	This test compares the commanded valve position to the PS1 pressure switch feedback. (part of S1 valve integrity test)	Pending failure occurs when PS1 pressure switch indicates destroked for > 0.09961 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 5 seconds and 30 seconds, respectively.) In response to the pending failure, S1 valve is retried by triggering S1 valve command to destroked and back to stroked. If the PS1 pressure switch continues to indicate destroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS1 Control Circuit Low (P0793) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck Off (P0751) reports failure, also. For Case 3 (intermittent malfunction), S1 valve retry attempted 15 times and PS1 pressure switch continues to indicate destroked.	S1 valve is stroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown NOT in process	100 ms 25 ms	A
Pressure Switch Solenoid 2 Circuit Low	P0847	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve integrity test).	Pending failure occurs when PS2 pressure switch indicates stroked for > 0.04004 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 5 seconds and 30 seconds, respectively. In response to the pending failure, S2 valve is retried by triggering S2 valve command to stroked and back to destroked. If PS2 pressure switch continues to indicate stroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS2 Control Circuit Low (P0976) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck On P0757) reports failure, also. For Case 3 (intermittent malfunction), S2 valve retry attempted 2 times and PS2 pressure switch continues to indicate stroked.	S2 valve is destroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown is NOT in process	40 ms 25 ms	A

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Shift Solenoid 2 Valve Performance – Stuck Off	P0756	This test compares the change of state of the valve command to the change of state of the PS2 pressure switch feedback (part of the S2 valve timeout test).	If the S2 valve is commanded from destroked to stroked and the PS2 pressure switch indication remains destroked for 5 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 destroked to stroked.	5 seconds 25 ms	A
Shift Solenoid 2 Valve Performance – Stuck On	P0757	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve timeout test).	S2 valve commanded from stroked to destroked and the PS2 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 4 seconds at transmission fluid temperature <= -40 deg. C.)	S2 valve changes from stroked to destroked	2 seconds 25 ms	A
Pressure Switch D Circuit High	P0848	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve integrity test).	Pending failure occurs when PS2 pressure switch indicates destroked for > 0.125 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 5 seconds and 30 seconds, respectively.) In response to the pending failure, S2 valve is retried by triggering S2 valve command to destroked and back to stroked. If PS2 pressure switch continues to indicate destroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS2 Control Circuit Low (P0976) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck Off(P0756) reports failure, also. For Case 3 (intermittent malfunction), S2 valve retry attempted 2 times and PS2 pressure switch continues to indicate destroked.	S2 valve is stroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown NOT in process	125 ms 25 ms	A

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Pressure Switch Solenoid 3 Circuit Low	P0872	This test compares the commanded valve position to the PS3 pressure switch feedback. (part of S3 valve integrity test)	Pending failure occurs when PS3 pressure switch indicates stroked for > 0.0195 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 5 seconds and 30 seconds, respectively.) In response to the pending failure, S3 valve is retried by triggering S3 valve command to stroked and back to destroked. If PS3 pressure switch continues to indicate stroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS3 Control Circuit Low(P0979) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve Performance – Stuck On (P0762) reports failure, also. For Case 3 (intermittent malfunction), S3 valve retry attempted 2 times and PS3 pressure switch continues to indicate stroked.	S3 valve is destroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown is NOT in process	20 ms 25 ms	A
Shift Solenoid 3 Valve Performance – Stuck Off	P0761	This test compares the change of state of the valve command to the change of state of the PS3 pressure switch feedback. (part of the S3 valve timeout test)	If the S3 valve is commanded from destroked to stroked and the PS3 pressure switch indication remains destroked for 5 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.)	S3 valve commanded from destroked to stroked.	5 seconds 25 ms	A
Shift Solenoid 3 Valve Performance – Stuck On	P0762	This test compares the commanded valve position to the PS3 pressure switch feedback (part of the S3 valve timeout test).	S3 valve commanded from stroked to destroked and the PS3 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 4 seconds at transmission fluid temperature >= -40 deg. C.)	S3 valve changes from stroked to destroked	2 seconds 25 ms	A

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Pressure Switch Solenoid 3 Circuit High	P0873	This test compares the commanded valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)	Pending failure occurs when PS3 pressure switch indicates destroked for > 0.125 seconds. (If a main pressure dropout is suspected or detected, then time limit increases to 5 seconds and 30 seconds, respectively.) In response to the pending failure, S3 valve is retried by triggering S3 valve command to destroked and back to stroked. If PS3 pressure switch continues to indicate destroked, then one of the three malfunction cases exists. For Case 1 (electrical malfunction), SS3 Control Circuit Low(P0979) reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve Performance – Stuck Off (P0761) reports failure, also. For Case 3 (intermittent malfunction), S3 valve retry attempted 2 times and PS3 pressure switch continues to indicate destroked.	S3 valve is stroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C Shutdown NOT in process	125 ms 25 ms	A
4 Wheel Drive Low Switch Circuit Malfunction	P2771	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 (P2771) for this drive cycle. No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. Output Speed > 60 RPM Transfer Case NOT neutral 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
GMLAN Bus Reset Counter Overrun	U0073	This test detects if the GMLAN bus is off for a calibration duration.	CANB_bus is off >= 3 seconds.	Components powered and 9 V < Battery Voltage < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds	3seconds 100 ms	B
GMLAN ECM Controller State of Health Failure	U0100	This test detects CAN (GMLAN) bus failures by detecting failures in engine torque messages or engine throttle messages.	Engine Actual Torque OR Pedal Position messages are not received.	No CAN2 Bus DTC (U0100) for this drive cycle. Components powered and 9 V < Battery Voltage < 18 V 200 RPM < Engine Speed < 7500 RPM for 5 seconds	200 ms 100 ms	B

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Pressure Control Solenoid 1 Controlled Clutch Stuck Off	P0796	This test determines if the on-coming clutch energized by Pressure Control Solenoid 1 engages during a forward range shift.	Pending failure occurs when accumulated event timer >= 2 seconds. (For rough road conditions, use 2 seconds.) Timer accumulates when transmission is shifting, output speed >= 60 RPM, and commanded gear slip speed > 75 RPM. (For rough road conditions, use 150 RPM.) In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if Converter slip >= ABS(230) RPM for > 10 samples.	No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed_Sensor DTCs (P0716, P0717) for this drive cycle. No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. Hydraulic System Pressurized Output Speed >= 125 RPM Turbine Speed >= 60 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active 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
Pressure Control Solenoid 2Controlled Clutch Stuck Off	P0776	This test determines if the on-coming clutch energized by Pressure Control Solenoid 2 engages during a forward range shift.	Pending failure occurs when accumulated event timer >= 2 seconds. (For rough road conditions, use 2 seconds.) Timer accumulates when transmission is shifting, output speed >= 60 RPM, and commanded gear slip speed > 75 RPM. (For rough road conditions, use 150 RPM.) In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if Converter slip >= ABS(230) RPM for > 10 samples.	No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed_Sensor DTCs (P0716, P0717) for this drive cycle. No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. Hydraulic System Pressurized Output Speed >= 125 RPM Turbine Speed >= 60 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active 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

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 Control Solenoid 1 Controlled Clutch Stuck On	P0797	This test determines if the off-going clutch energized by Pressure Control solenoid 1 remains engaged during a forward range shift.	Accumulated fail timer >= 0.2998 seconds for forward range upshift; >= 3.0 seconds for direction change shifts; >= 0.500 seconds for forward range closed throttle downshift; >= 1.0 second for forward downshifts above closed throttle. Fail timer accumulates during range to range shifts when attained gear slip speed <= 25 RPM	No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. Output Speed >= 200 RPM Turbine Speed >= 200 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active No Cold Mode operation No abusive garage shift to 1st range detected	3 s 25 ms	A
Pressure Control Solenoid 2 Controlled Clutch Stuck On	P0777	This test determines if the off-going clutch energized by Pressure Control solenoid 2 remains engaged during a forward range shift.	Accumulated fail timer >= 0.2998 seconds for forward range upshift; >= 3.0 seconds for direction change shifts; >= 0.500 seconds for forward range closed thottle downshift; >= 1.0 second for forward downshifts above closed throttle. Fail timer accumulates during range to range shifts when attained gear slip speed <= 25 RPM	No Output Speed Sensor DTCs (P0721, P0722) for this drive cycle. No Input Speed Sensor DTCs (P0716, P0717) for this drive cycle. No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. Output Speed >= 200 RPM Turbine Speed >= 200 RPM Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active No Cold Mode operation No abusive garage shift to 1st range detected	3 s 25 ms	A

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.	For Case 1 (No Information): Illegal electrical state for >= 1 second. For Case 2 (Long-term Parity): There are 3 counters for long-term parity. These counters are updated at the end of each drive cycle, immediately prior to TCM shutdown. For Counter 1, increment counter IF Parity Error Detected; decrement counter IF No Parity Error Detected AND No Motion Detected. IF Counter 1 >= 15 counts, THEN report failure. For Counter 2, increment counter IF Parity Error Detected AND (No Valid Drive Detected OR No Valid Park/Neutral Detected) AND Motion Detected; decrement counter IF No Parity Error Detected AND Valid Park/Neutral Detected AND Valid Drive Detected AND Motion Detected. IF Counter 2 >= 5 counts, THEN report failure. For Counter 3, increment Counter 3 IF Parity Error Detected while in Reverse AND No Valid Reverse Detected AND Motion Detected. Decrement Counter 3 IF No Parity Error Detected AND Valid Reverse Detected AND Motion Detected. IF Counter 3 >= 10 counts, THEN report failure. Where . . . . Parity Error Detected is defined as a failure of the 4-bit PRNDL input such that the sum of those bits yields an odd result for 30 seconds; Motion Detected is defined as output speed >= 200 RPM for 10 seconds;	200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Battery Voltage < 18 V	Case 1: 1 s Case 2: 5th occurrence 100 ms	A

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			Valid Drive Detected is defined as the 4-bit DL indicates Valid Drive for 3 seconds; Valid Park Detected is defined as the 4-bit PRNDL indicates Valid Park for 0.2 seconds and output speed <= 20 RPM; Valid Reverse Detected is defined as the 4-bit PRNDL indicates Valid Reverse for 15 seconds; Valid Neutral Detected is defined as the 4-bit PRNDL indicates Valid Neutral for 0.2 seconds and output speed <= 20 RPM OR for 3 seconds.			
Transmission Range Sensor Circuit Range/Performance	P0706	This test monitors the transmission range switch inputs at engine start to determine that it is indicating aa valid starting position (Park or Neutral).	For > 7 events, PRNDL C input is closed OR PRNDL P is NOT closed.	No Trans Range Ckt Range/Perf DTC (P0706) for this drive cycle. Battery voltage between 9V and 18V. Powertrain State is READY or CRANKING. Engine speed < 350 RPM.	225 ms 25 ms	B
Pressure Switch Reverse Circuit Low	P0877	This test detects Reverse Pressure Switch closed indication by comparing the Reverse Pressure Switch state to the PRNDL switch state.	Case 1: (Forward range) For 100 samples (if dropouts detected, use 200 samples), PRNDL is in P, D1, D2, D3, D4, D5, T1, T8, T4 or T13 AND RPS indicates Reverse for >= 1 seconds (if dropouts detected, use 30 seconds). Case 2: (Range indefinite) If for 20 samples, net engine torque >= 100 Nm when PRNDL is indefinitely D3 or another forward range for > 1 second	No Reverse Pressure Switch DTCs (P0877, P0878) for this drive cycle. Engine is Running 200 RPM < Engine Speed < 7500 RPM for 5 seconds 9 V < Battery Voltage < 18 V Transmission Fluid Temperature >= 0 deg. C Hydraulic System is Pressurized Reverse Pressure Switch State indicates REVERSE	3 s 50 ms	A
Pressure Switch Reverse Circuit High	P0878	This test detects the ReversePressure 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 samples, 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 > 10 seconds at 0 deg. C. This time varies with transmission fluid temperature, from 5 seconds at temperature > 35 deg. C to 30 seconds at temperature < -20 deg. C.	For All Cases: Transmission Fluid Temperature >= 0 deg. C For Case 1: (RPS State and PRNDL State do not agree) No Reverse Pressure Switch DTCs (P0877, P0878) 9 V < Battery Voltage < 18 V No range switch response active For Case 2: (RPS Shutdown Test) NOT (9 V < Battery Voltage < 18 V) Engine speed < 50 RPM Turbine speed < 50 RPM Output speed < 50 RPM	Case 1: 3 s Case 2: 30s 50 ms	B

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Main Modulation/Line Pressure Control Solenoid Control Circuit Open	P0960	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If hardware fault is present for 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence. If the electrical open test is enabled and an electrical hardware fault to ground is present fo >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Main Modulation/Line Pressure Control Solenoid Control Circuit High	P0963	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for 4 consecutive samples.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A
Pressure Control Solenoid 2 Control Circuit Open	P0964	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If hardware fault is present for 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. No extended cranking Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Pressure Control Solenoid 2 Control Circuit Low	P0966	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence. If the electrical open test is enabled and an electrical hardware fault to ground is present fo >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. No extended cranking Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Pressure Control Solenoid 2 Control Circuit High	P0967	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for 4 consecutive samples	No PCS2 Circuit High DTC (P0967) for this drive cycle. Components powered and battery voltage between 9V and 18V. No extended cranking Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A
Pressure Control Solenoid 1 Control Circuit Open	P2727	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If hardware fault is present for 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. No extended cranking Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A

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Pressure Control Solenoid 1 Control Circuit Low	P2729	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence. If the electrical open test is enabled and an electrical hardware fault to ground is present fo >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. No extended cranking Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Pressure Control Solenoid 1 Control Circuit High	P2730	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for 4 consecutive samples	No PCS1 Circuit High DTC (P2730) for this drive cycle. Components powered and battery voltage between 9V and 18V. No extended cranking. Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A
Shift Solenoid 1 Control Circuit Open	P0972	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set at single hardware fault occurrence. If hardware fault is present for >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Shift Solenoid 1 Control Circuit Low	P0973	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If the electrical open test is enabled and electrical hardware fault to ground is present of >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Shift Solenoid 1 Control Circuit High	P0974	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for >= 4 consecutive samples.	No SS1 Circuit High DTC (P0974) for this drive cycle. Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A
Shift Solenoid 2 Control Circuit Open	P0975	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set at single hardware fault occurrence. If hardware fault is present for >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and intrusive test indicates no short to ground exists for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Shift Solenoid 2 Control Circuit Low	P0976	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If the electrical open test is enabled and electrical hardware fault to ground is present of >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A

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Shift Solenoid 2 Control Circuit High	P0977	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for >= 4 consecutive samples.	No SS2 Circuit High DTC (P0977) for this drive cycle. Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A
Shift Solenoid 3 Control Circuit Low	P0979	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If the electrical open test is enabled and electrical hardware fault to ground is present of >= 3 samples, then initiate intrusive test by opening low side driver. If engine is cranking or running and hardware fault is present for >= 4 samples, then report malfunction.	Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	400 ms 25 ms	A
Shift Solenoid 3 Control Circuit High	P0980	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for >= 4 consecutive samples.	No SS3 Circuit High DTC (P0980) for this drive cycle. Components powered and battery voltage between 9V and 18V. Associated high side driver enabled and no associated high side driver DTCs.	100 ms 25 ms	A