Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Transmission Fluid Temperature								
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.	All 5 Cases		Not Test Failed This Key On	P0711 P0716 P0717 P0721 P0722 P0742		B
					No Fault Pending DTCs for this drive cycle	P0716 P0717 P0721 P0722		
					No Pass DTCs for this drive cycle	P0711		
					No Fault Active DTC	P0711		
					Components powered AND			
					Battery Voltage between	9 V and 18 V		
					Engine Speed between	200 RPM and 7500 RPM		
					for	5 seconds		
					Start-up transmission fluid temperature is available			
					Transmission fluid temperature between	-39 deg. C and 149 deg. C		
					ECT is not defaulted			
			Case 1 (Stuck sensor after cold start-up)				300 seconds	
			Start-up temperature change for a time	<= 2 deg. C >= 100 seconds	Start-up transmission fluid temperature between	-40 deg. C and 21 deg. C		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			AND		TCC Slip	>= 120 RPM		
					for a time	>= 300 seconds		
			Vehicle speed	>= 8 KPH				
			for a time	>= 300 seconds.	engine coolant temperature	>= 70 deg. C		
					AND			
					engine coolant temperature			
					change from start-up	>= 15 deg. C		
			Case 2 (Stuck sensor after warm start-up)				300 seconds	
			Start-up temperature change	<= 3 deg. C	Start-up transmission fluid	115 deg. C and		
			for a time	>= 100 seconds	temperature between	150 deg. C.		
			AND		TCC Slip	>= 120 RPM		
					for a time	>= 300 seconds		
					engine coolant temperature	>= 70 deg. C		
					AND			
			Vehicle speed	>= 8 KPH	engine coolant temperature			
			for a time	>= 300 seconds.	change from start-up	>= 55 deg. C		
			Case 3 (Noisy sensor)				7 seconds	
			Change from previous	>= 20 deg. C				
			for	14 events				
			in a time	< 7 seconds.				
			Case 4 (Doesn't warm up to at least 20 deg. C)				2200 seconds	
					net engine torque	>= 150 Nm		
			Time Enabled Criteria met AND		and	<= 1492 Nm		
			AND		vehicle speed	>= 22 KPH		
			Transmission Fluid Temperature	< 20 deg. C.	and	<= 512 KPH		
					%throttle	>= 10.5%		
			Time Enabled Criteria is	250 seconds when start-up temperature is >= 20	and	<= 100%		
					engine speed	>= 500 RPM		
			to	2200 seconds when start-up temperature is <= -40 deg. C.	and	<= 6500 RPM		
					engine coolant temperature	>= -39 deg. C		
					and	<= 149 deg. C		
			Case 5 (Reasonableness at start-up):				2 seconds	
					Intake Air Temperature is not			
			Engine Speed	> 500 RPM	defaulted			
			AND					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Engine Coolant Temperature AND for AND ((ABS(IAT-ECT) AND (TFT-ECT)) OR (ABS(IAT-ECT) AND (TFT-ECT)))	> -39 deg. C < 50 deg. C >= 2 seconds <= 6 deg. C > 40 deg. C > 6 deg. C > 60 deg. C.				
Transmission Fluid Temperature Sensor Circuit Low Input	P0712	Out of range low.	transmission fluid temperature for a time	>=150 deg. C > 2.5 seconds.	Not Test Failed This Key On Components powered AND Battery Voltage between Engine Speed between for	P0711 P0712 P0713 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	2.5 seconds	B
Transmission Fluid Temperature Sensor Circuit High Input	P0713	Out of range high.	transmission fluid temperature for a time	<= -45 deg. C > 2.5 seconds	Not Test Failed This Key On Components powered AND Battery Voltage between Engine Speed between for IF Engine run time THEN Engine Coolant Temperature	P0711 P0712 P0713 9 V and 18 V 200 RPM and 7500 RPM 5 seconds <= 600 seconds must be > 20	2.5 seconds	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
						deg. C		
					AND			
					not defaulted for a time	>= 20 seconds.		
Speed Sensors								
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.	All cases		Not Test Failed This Key On	P0716 P0717 P0721 P0722		A
					No Fault Pending DTCs for this drive cycle.	P0721 P0722		
					Shifting complete			
			Case 1: (Unrealistically large changes in input speed)		Input Speed	> 200 RPM	0.15 seconds	
			Change of Input Speed between samples	>= 800 RPM	for	>= 0.5 seconds		
			for	>= 0.15 seconds				
			Case 2: (Noisy Input Speed)		Input Speed	> 200 RPM	2 seconds	
			For sample size	80	for	>= 0.5 seconds		
			IF the change in Input Speed	<= -800 RPM				
			THEN the Low Counter is incremented					
			IF the change in Input Speed	>= 800 RPM				
			THEN the High Counter is incremented					
			This test fails if both the Low Counter and the High Counter	>= 5				
			OR					
			Low Counter	>= 5				
			OR					
			High Counter	>= 5				
			For Case 3: (Wires to speed		Input speed	> 100 RPM	4 seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			sensors swapped)		AND			
			Increment counter when range attained and range commanded are neutral for a time	<= 3.5 seconds	Engine speed for a time	> 100 RPM >= 0.2 seconds		
			AND		Hydraulic system pressurized			
			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					
			input speed	> 100 RPM				
			AND					
			engine speed	< 100 RPM				
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.	Failure pending if transmission input speed	< 61 RPM	Not Test Failed This Key On	P0717 P0729 P0731 P0732 P0733 P0734 P0735 P0736 P0721 P0722	1 second	A
			This test fails if input speed	< 61 RPM				
			AND					
			output speed	> 500 RPM				
			for a time	> 1 second.				
					No Fault Pending DTCs	P0721 P0722		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Reverse-to-Neutral shift not in process			
					Shifting complete			
					Range attained is not neutral			
					Transmission fluid temperature	> -25 deg. C		
					Engine speed	>= 400 RPM		
					Transmission output speed	>= 150 RPM		
Output Speed Sensor Circuit Range/Performance	P0721	This test detects a noisy output speed sensor or circuit by detecting large changes in output speed.	Case 1: (Unrealistically large change in output speed)		All Cases		Case 1:	A
			Change in output speed	>= 500 RPM	Not Test Failed This Key On	P0716	0.65 seconds	
			for a time	>= 0.15 seconds		P0717		
						P0721		
						P0722		
			Case 2: (Noisy output speed)				Case 2:	
			For sample size	80	No Fault Pending DTCs for this drive cycle	P0716	2 seconds	
			IF the change in output speed	<= -500 RPM				
			THEN the Low Counter is incremented.		Output Speed	> 200 RPM		
			IF the change in output speed	>= 500 RPM	for a time	>= 0.5 seconds		
			THEN the High Counter is incremented.		Shift complete			
			Test fails if both the Low Counter		AND			
			and the High Counter	>= 5	range attained NOT neutral			
			OR					
			the Low Counter	>= 5				
			OR					
			the High Counter	>= 5				
Output Speed Sensor Circuit No Signal	P0722	This test detects unrealistically low value of output speed or unrealistically large change in output speed.	All Cases		All Cases			A
					Not Test Failed This Key On	P0721		
			Case 1: (Unrealistically large change in output speed)		Test enabled when output speed		1 second	
			Failure pending if			>= 600 RPM		
			change in output speed	>= 600 RPM	for a time	>= 1 seconds		
			Failure sets if range attained is Neutral		Test disabled when output speed			
						<= 600 RPM		
					for a time	> 1 seconds		
			Case 2: (Unrealistically low value				4 seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			of output speed)					
			Failure pending if output speed	< 61 RPM	Not Test Failed This Key On	P0731		
			Failure sets if not monitoring for low speed neutral and output speed			P0732 P0733		
				< 61 RPM		P0734		
			AND			P0735		
			range is 3rd, 4th, 5th, or 6th			P0736		
			for a time	> 1 second		P0716		
						P0717		
			Failure sets if not monitoring for low speed neutral and output speed		No Fault Pending DTCs for this	P0716 P0717		
			AND	< 61 RPM				
			((net engine torque	< -100 Nm	Engine is running			
			OR		Shift not in process			
			net engine torque)	> 100 Nm	Range attained is not Neutral			
			OR		Reverse to Neutral shift not in process			
			(turbine speed	> 1500 RPM				
			AND		Transmission fluid temperature	> -25 deg. C		
			range is 2nd))		Transmission input speed	>= 1050 RPM		
			for a time	>= 4 seconds.	Not waiting for Manual Selector Valve to attain forward range			
					PRNDL State is NOT D4, NOT Transitional D4			
Range Verification								
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 second	Not Test Failed This Key On	P0877	2.25 seconds	A
			Timer accumulates when transmission is in forward or reverse range			P0878 P0721 P0722		
			AND			P0716		
			output speed	>= 100 RPM		P0717		
			AND					
			gear slip	> 100 RPM	No Fault Pending DTC for this drive cycle.	P0717		
			In response to pending failure, a diagnostic response range is		No range switch response active			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			commanded. During this command, this test fails if Abs(Converter Slip) for	 >= 230 RPM > 10 samples.	Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition Normal powertrain shutdown not Normal powertrain initialization is	 >= 200 RPM		
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 Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for	>= 2 second >= 100 RPM > 100 RPM >= 230 RPM > 10 samples.	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	P0877 P0878 P0721 P0722 P0716 P0717 P0717 >= 200 RPM	2.25 seconds	A
Gear 3 Incorrect Ratio	P0733	This test verifies transmission	Pending failure occurs when accumulated event timer	>= 2 second	Not Test Failed This Key On	P0877	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		operating ratio while 3rd range is commanded by comparing computed ratio to the commanded ratio.	Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for	>= 100 RPM > 100 RPM >= 230 RPM > 10 samples.	No Fault Pending DTC for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	P0878 P0721 P0722 P0716 P0717 P0717 >= 200 RPM		
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 Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails	>= 2 second >= 100 RPM > 100 RPM 	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active Hydraulic System Pressurized	P0877 P0878 P0721 P0722 P0716 P0717 P0717	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			if Abs(Converter Slip) for	>= 230 RPM > 10 samples.	Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	 >= 200 RPM		
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 Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for	>= 2 second >= 100 RPM > 100 RPM >= 230 RPM > 10 samples.	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	P0877 P0878 P0721 P0722 P0716 P0717 P0717 >= 200 RPM	2.25 seconds	A
Reverse Incorrect	P0736	This test verifies					2 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Ratio		transmission range while reverse range is commanded by comparing computed ratio to the commanded ratio.	Accumulated event timer Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip	>= 2 seconds >= 100 RPM > 100 RPM	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	P0877 P0878 P0721 P0722 P0716 P0717 P0717 >= 200 RPM		
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 Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is	>= 2 second >= 100 RPM > 100 RPM	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active	P0877 P0878 P0721 P0722 P0716 P0717 P0717	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			commanded. During this command, this test fails if Abs(Converter Slip) for	 >= 230 RPM > 10 samples.	 Hydraulic System Pressurized Shift complete Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	 >= 200 RPM		
Torque Converter								
Torque Converter Clutch Circuit Performance or Stuck Off	P0741	This test detects the torque converter being stuck off (unlocked).	TCC Slip for a time	>= 80 RPM >= 15 seconds.	Not Test Failed This Key On No Fault Pending DTCs for this drive cycle. Components powered AND Battery Voltage between Engine Speed between	P2761 P2763 P2764 P0721 P0722 P0716 P0717 P2761 P2763 P2764 P0721 P0722 P0716 P0717 9 V and 18 V 200 RPM and 7500 RPM	15 seconds	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					for	5 seconds		
					Must be in forward range			
					% Throttle	> 10 % and <= 90 %		
					Transmission fluid temperature	> 5 deg. C and < 130 deg. C		
					Time Since Range Change	>= 6 seconds		
					AND TCC apply is complete			
					AND TCC pressure	>= 1000 kPa		
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%	Not Test Failed This Key On	P2761 P2763 P2764 P0721 P0722 P0716 P0717 U0100	Case 1: 2 Seconds	B
			AND net engine torque	>= 275 Nm.				
			Report malfunction when fault pending exists continuously for a time	>= 2 seconds.				
			Case 2: (High Acceleration condition) Set fault pending when output shaft acceleration	>= 100 RPM/second	No Fault Pending DTCs for this drive cycle.	P2761 P2763 P2764 P0721 P0722 P0716 P0717 U0100	Case 2: 5 Seconds	
			Report malfunction when fault pending exists continuously for a time	>= 5 seconds.				
			Case 3: (Accel/Decel/Accel condition) Report malfunction when output		Components powered AND Battery Voltage between	 9 V and 18 V	Case 3: 4 Seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			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	Engine Speed between	200 RPM and 7500 RPM		
			for a time	>= 4 seconds	for Must be in forward range TCC is commanded off	5 seconds		
			An output deceleration event occurs when output shaft acceleration is	<=-40 RPM/second	TCC Slip	>=-20 RPM and <= 20 RPM		
			for a time	>= 2.5 seconds.	% Throttle Net Engine Torque Engine speed Input speed Output speed	>= 25% >= 175 Nm <= 3500 RPM <= 3500 RPM >= 100 RPM		
Pressure Switches								
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 a time	> 0.08 seconds	S1 valve is destroked NOT Cold initialization unless transmission fluid temperature Shutdown is NOT in process	> -25 deg. C	100 ms	A
			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 reports failure,	P0793				

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			also. For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck On reports failure, also. For Case 3 (intermittent malfunction), SS1 valve retry attempted AND PS1 pressure switch continues to indicate stroked.	 P0752 15 times				
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 a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 5 seconds >= 0 deg. C 12 seconds <= -40 deg. C	S1 valve commanded from destroked to stroked.		5 seconds	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 a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time	> 6.2 seconds >= 0 deg. C. 10 seconds	S1 valve changes from stroked to destroked		6.6 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			at transmission fluid temperature)	<= -40 deg. C				
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 a time IF a main pressure dropout is suspected then time limit increases to 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 reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck Off reports failure, also. For Case 3 (intermittent malfunction), S1 valve retry attempted AND PS1 pressure switch continues to indicate destroked.	> 0.07 seconds 5 seconds P0793 P0751 15 times	S1 valve is stroked NOT Cold initialization unless transmission fluid temperature Shutdown NOT in process	> -25 deg. C	70 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
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 a time	> 0.04004 seconds	S2 valve is destroked		40 ms	A
			IF a main pressure dropout is suspected then time limit increases to	0.2998 seconds	NOT Cold initialization unless transmission fluid temperature	> -25 deg. C		
			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.		Shutdown is NOT in process			
			For Case 1 (electrical malfunction), SS2 Control Circuit Low reports failure, also.	P0976				
			For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck On reports failure, also.	P0757				
			For Case 3 (intermittent malfunction), S2 valve retry attempted AND PS2 pressure switch continues to indicate stroked.	2 times				
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 press re	If the S2 valve is commanded from destroked to stroked and the PS2 pressure switch indication remains destroked for a time	>= 5 seconds	S2 valve commanded from destroked to stroked.		5 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		of the PS2 pressure switch feedback (part of the S2 valve timeout test).	WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 0 deg. C. 12 seconds <= -40 deg. C.				
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 a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 6.5 seconds >= 0 deg. C. 22 seconds <= -40 deg. C.	S2 valve changes from stroked to destroked		6.4 seconds	A
Pressure Switch Solenoid 2 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 a time IF a main pressure dropout is suspected, THEN time limit increases to 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),	> 0.30 seconds 5 seconds	S2 valve is stroked NOT Cold initialization unless transmission fluid temperature Shutdown NOT in process	> -25 deg. C	300 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			SS2 Control Circuit Low reports failure, also.	P0976				
			For Case 2 (mechanical malfunction),					
			Shift Solenoid 2 Valve Performance – Stuck Off reports failure, also.	P0756				
			For Case 3 (intermittent malfunction),					
			S2 valve retry attempted AND PS2 pressure switch continues to indicate destroked.	2 times				
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 a time	> 0.0195 seconds	S3 valve is destroked NOT Cold initialization unless transmission fluid temperature	> -25 deg. C	20 ms	A
			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.		Shutdown is NOT in process			
			For Case 1 (electrical malfunction),					
			SS3 Control Circuit Low reports failure, also.	P0979				
			For Case 2 (mechanical					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			malfunction), Shift Solenoid 3 Valve Performance – Stuck On reports failure, also. For Case 3 (intermittent malfunction), S3 valve retry attempted AND PS3 pressure switch continues to indicate stroked.	P0762 2 times				
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 a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 5 seconds >= 0 deg. C. 12 seconds <= -40 deg. C.	S3 valve commanded from destroked to stroked.		5 seconds	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 a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	> 6.5 seconds >= 0 deg. C. 22 seconds >= -40 deg. C.	S3 valve changes from stroked to destroked		6.6 seconds	A
Pressure Switch Solenoid 3 Circuit High	P0873	This test compares the commanded	Pending failure occurs when PS3 pressure switch indicates destroked		S3 valve is stroked		300 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)	for a time	> 0.30 seconds	NOT Cold initialization unless transmission fluid temperature	> -25 deg. C		
			IF a main pressure dropout is suspected THEN time limit increases to	5 seconds	Shutdown NOT in process			
			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 reports failure, also.	P0979				
			For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve Performance – Stuck Off reports failure, also.	P0761				
			For Case 3 (intermittent malfunction), S3 valve retry attempted AND PS3 pressure switch continues to indicate destroked.	2 times				
Pressure Switch Reverse Circuit Low	P0877	This test detects Reverse Pressure Switch closed indication by comparing the Reverse Pressure	Case 1: (Forward range) For a sample size (if dropout suspected, NLT or N02 cmded, use sample size)	100 samples 255 samples	All Cases Not Test Failed This Key On	P0877 P0878 P0708	5 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		Reverse Pressure Switch state to the PRNDL switch state.	PRNDL is P, D1, D2, D3, D4, D5, D6, T8, or T4 AND RPS indicates Reverse for a time (if dropout suspected, NLT or N02 cmded, use time)	 >= 1 seconds 30 seconds	No Fault Pending DTCs for this drive cycle Engine is Running Components powered AND Battery Voltage between Engine Speed between for	P0708 9 V and 18 V 200 RPM and 7500 RPM 5 seconds		
			Case 2: (Range indefinite) For a sample size, net engine torque AND PRNDL is indefinitely D3 or another forward range for a time	 20 samples >= 100 Nm > 1 second	Transmission Fluid Temperature Hydraulic System Pressurized Reverse Pressure Switch State indicates REVERSE	>= 0 deg. C		
Pressure Switch Reverse Circuit High	P0878	This test detects the Reverse Pressure switch being stuck in the open position by comparing to the PRNDL switch state and detects the Reverse Pressure switch stuck open at shutdown.	All Cases		Transmission Fluid Temperature	>= 0 deg. C		A
			Case 1: (RPS State and PRNDL State do not agree) For sample size PRNDL is REVERSE AND RPS indicates NOT REVERSE after a time	 40 samples >= 1 second	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Battery Voltage between No range switch response active	P0877 P0878 P0708 P0708 9 V and 18 V	3 seconds	
			For Case 2: (RPS Shutdown Test) If RPS indicates for a time	 not Reverse > 40 seconds	Ignition Key State is NOT RUN Engine Stopped or Stalled		60 seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			at transmission fluid temperature during engine shutdown	0 deg. C.	End of Trip timer	>= 5 seconds		
			This time varies with transmission at transmission fluid temperature to time at transmission fluid temperature	25 seconds > 35 deg. C 60 seconds < -20 deg. C.	Engine had been cranking or running this drive cycle Engine speed Turbine speed Output speed	 < 50 RPM < 50 RPM < 50 RPM		
On-coming/Off-going								
Pressure Control Solenoid 1 Controlled Clutch Stuck Off	P2723	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 (For rough road conditions, use) Timer accumulates when transmission is shifting, output speed AND commanded gear slip speed (For rough road conditions, use) In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if ABS(Converter slip) for sample size	>= 2 seconds 2 seconds >= 60 RPM > 75 RPM 150 RPM. >= 230 RPM > 10 samples	Not Test Failed This Key On Output Speed Turbine Speed Hydraulic System Pressurized 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	P0721 P0722 P0716 P0717 P0877 P0878 >= 125 RPM >= 60 RPM	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					On-coming clutch control enabled			
					Power downshift abort to previous range NOT active			
Pressure Control Solenoid 2 Controlled 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	Not Test Failed This Key On	P0721 P0722 P0716 P0717 P0877 P0878	2.25 seconds	A
			(For rough road conditions, use)	2 seconds				
			Timer accumulates when transmission is shifting, output speed	>= 60 RPM				
			AND commanded gear slip speed	> 75 RPM	Output Speed	>= 125 RPM		
			(For rough road conditions, use)	150 RPM.	Turbine Speed	>= 60 RPM		
			In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if ABS(Converter slip)	>= 230 RPM	Hydraulic System Pressurized			
					Normal powertrain shutdown not in process			
			for sample size	> 10 samples	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			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Control Solenoid 1 Controlled Clutch Stuck On	P2724	This test determines if the off-going clutch energized by Pressure Control solenoid 1 remains engaged during a forward range shift.	Accumulated fail timer for forward range upshift; OR accumulated fail timer for direction change shifts; OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed throttle. Fail timer accumulates during range to range shifts when attained gear slip speed	>= 0.2998 seconds >= 3.0 seconds >= 0.500 seconds >= 1.0 second <= 25 RPM	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Output Speed Turbine Speed 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	P0721 P0722 P0716 P0717 P0877 P0878 P0717 >= 200 RPM >= 200 RPM	3 seconds	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 for forward range upshift; OR accumulated fail timer for direction change shifts; OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed	>= 0.2998 seconds >= 3.0 seconds >= 0.500 seconds >= 1.0 second	Not Test Failed This Key On No Fault Pending DTC for this drive cycle.	P0721 P0722 P0716 P0717 P0877 P0878 P0717	3 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			throttle. Fail timer accumulates during range to range shifts when attained gear slip speed	<= 25 RPM	Output Speed Turbine Speed 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	>= 200 RPM >= 200 RPM		
PRNDL/IMS								
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 a time 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	>= 1 second >= 15 counts	Components powered AND Battery Voltage between Engine Speed between for	 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	Case 1: 1 second Case 2: 5th occurrence	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			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, 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, 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 a time; Motion Detected is defined as output speed for a time;	>= 5 counts >= 5 counts >= 30 seconds; >= 200 RPM >= 10 seconds				

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Valid Drive Detected is defined as the 4-bit DL indicates Valid Drive for a time;	>= 3 seconds				
			Valid Park Detected is defined as the 4-bit PRNDL indicates Valid Park for a time	>= 0.2 seconds				
			and output speed;	<= 20 RPM				
			Valid Reverse Detected is defined as the 4-bit PRNDL indicates Valid Reverse					
			for a time;	>= 15 seconds;				
			Valid Neutral Detected is defined as the 4-bit PRNDL indicates Valid Neutral					
			for a time	>= 0.2 seconds				
			and output speed	<= 20 RPM				
			OR for a time.	>= 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 a valid starting position (Park or Neutral).	For sample size, PRNDL C input is closed OR PRNDL P is NOT closed.	> 7 samples	Not Test Failed This Key On	P0706	200 ms	B
					Battery voltage between	9V and 18V		
					Powertrain State is READY or CRANKING			
					Engine speed	> 100 RPM and < 350 RPM.		
Solenoid Electrical								
Main Modulation/Line Pressure Control	P0960	This test detects solenoid electrical	Fault pending is set at single hardware fault occurrence		Not Test Failed This Key On	P0657	1050 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Solenoid Control Circuit Open		open circuit malfunctions.	IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver IF intrusive test indicates no short to ground exists for a sample size, THEN report malfunction	>= 40 samples >= 15 RPM >= 2 samples	Components powered AND Battery voltage between If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 1 Enabled	P0658 P0659 9V and 18V < 4 seconds > 10 V		
Main Modulation/Line Pressure Control Solenoid Control Circuit Performance	P0961	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	Case 1: Desired current AND Actual Duty Cycle For a sample size, THEN report malfunction Case 2: Desired current AND Actual Duty Cycle For a sample size, THEN report malfunction	 <= 0 mA >= 40% >= 40 samples >= 500 mA <= 10% >= 40 samples	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Components powered AND Battery voltage between If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 1 Enabled Shift Complete	P0657 P0658 P0659 P0960 P0961 P0962 P0960 P0962 9V and 18V < 4 seconds > 10 V	1000 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Lockup Apply Complete OR Lockup Release Complete			
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates short to ground exists for a sample size THEN report malfunction	 >= 40 samples >= 15 RPM >= 2 samples	Not Test Failed This Key On Components powered AND Battery voltage between If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 1 Enabled	P0657 P0658 P0659 9V and 18V < 4 seconds > 10 V	1050 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 AND Engine speed	3 consecutive samples >=15 RPM	Not Test Failed This Key On Components powered AND Battery voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	P0657 P0658 P0659 9V and 18V < 4 seconds > 10 V	75 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 a sample size	 >= 6 samples	Not Test Failed This Key On	P2669 P2670 P2671	225 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			AND		Components powered			
			Engine speed	>= 15 RPM	AND			
					Battery voltage between	9V and 18V		
			THEN initiate intrusive test by opening low side driver.		If Engine Cranking, then			
			IF intrusive test indicates no short to ground exists for a sample size,		Crank Time	< 4 seconds		
					AND			
				>= 3 samples	Battery Voltage	> 10 V		
			THEN report malfunction					
					High Side Driver 2 Enabled			
Pressure Control Solenoid 2 Control Circuit Performance	P0965	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	Case 1:				250ms	A
			Desired current	<= 50 mA	Not Test Failed This Key On	P2669		
			AND			P2670		
			Actual Duty Cycle	>= 40%		P2671		
			For a sample size,	>= 10 samples		P0964		
						P0965		
			THEN report malfunction			P0966		
			Case 2:		No Fault Pending DTC for this drive cycle.	P0964		
			Desired current	>= 500 mA		P0966		
			AND					
			Actual Duty Cycle	<= 15%	Components powered			
			For a sample size,	>= 10 samples	AND			
					Battery voltage between	9V and 18V		
			THEN report malfunction					
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					High Side Driver 2 Enabled			
					Shift Complete			
					Lockup Apply Complete			
					OR			
					Lockup Release Complete			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Control Solenoid 2 Control Circuit Low	P0966	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates short to ground exists for a sample size THEN report malfunction.	 >= 6 samples >= 15 RPM >= 2 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 2 Enabled	P2669 P2670 P2671 9 V and 18 V < 4 seconds > 10 V	200 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 AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 2 Enabled	P2669 P2670 P2671 P0967 9 V and 18 V < 4 seconds > 10 V	75 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 a sample size AND Engine speed	 >= 5 samples >= 15 RPM	Not Test Failed This Key On Components powered	P0657 P0658 P0659	200 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND			
			THEN initiate intrusive test by opening low side driver.		Battery Voltage between	9 V and 18 V		
			IF intrusive test indicates no short to ground exists for a sample size,		If Engine Cranking, then Crank Time	< 4 seconds		
				>= 3 samples	AND			
			THEN report malfunction		Battery Voltage	> 10 V		
					High side driver 1 enabled			
Pressure Control Solenoid 1 Control Circuit Performance	P2728	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	Case 1:				250ms	A
			Desired current	<= 50 mA	Not Test Failed This Key On	P0657		
			AND			P0658		
			Actual Duty Cycle	>= 40%		P0659		
			For a sample size,	>= 10 samples		P2727		
						P2728		
			THEN report malfunction			P2729		
			Case 2:		No Fault Pending DTC for this drive cycle.	P2727		
			Desired current	>= 500 mA		P2729		
			AND					
			Actual Duty Cycle	<= 15%	Components powered			
			For a sample size,	>= 10 samples	AND			
					Battery voltage between	9V and 18V		
			THEN report malfunction					
					If Engine Cranking, then Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					High Side Driver 1 Enabled			
					Shift Complete			
					Lockup Apply Complete			
					OR			
					Lockup Release Complete			
Pressure Control	P2729	This test detects	Fault pending is set at single				175 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Solenoid 1 Control Circuit Low		solenoid electrical ground circuit malfunctions.	hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates short to ground exists for a sample size THEN report malfunction	 >= 5 samples >= 15 RPM >= 2 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	P0657 P0658 P0659 9 V and 18 V < 4 seconds > 10 V		
Pressure Control Solenoid 1 Control Circuit High	P2730	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	P0657 P0658 P0659 P2730 9 V and 18 V < 4 seconds > 10 V	75 ms	A
Shift Solenoid 1 Control Circuit Open	P0972	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed	 >= 10 samples >= 15 RPM	Not Test Failed This Key On Components powered AND	P2669 P2670 P2671	325 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN initiate intrusive test by opening low side driver. IF intrusive test indicates no short to ground exists for a sample size, THEN report malfunction	 >= 3 samples	Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled	9 V and 18 V < 4 seconds > 10 V		
Shift Solenoid 1 Control Circuit Low	P0973	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates short to ground exists for a sample size THEN report malfunction	 >= 10 samples >= 15 RPM >= 2 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled	P2669 P2670 P2671 9 V and 18 V < 4 seconds > 10 V	300 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 AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage	P2669 P2670 P2671 P0974 9 V and 18 V < 4 seconds > 10 V	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					High side driver 2 enabled			
Shift Solenoid 2 Control Circuit Open	P0975	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates no short to ground exists for a sample size, THEN report malfunction	 >= 10 samples >= 15 RPM >= 3 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled	P2669 P2670 P2671 9 V and 18 V < 4 seconds > 10 V	325 ms	A
Shift Solenoid 2 Control Circuit Low	P0976	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates short to ground exists for a sample size THEN report malfunction	 >= 10 samples >= 15 RPM >= 2 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled	P2669 P2670 P2671 9 V and 18 V < 4 seconds > 10 V	300 ms	A
Shift Solenoid 2 Control Circuit High	P0977	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On	P2669 P2670 P2671 P0977	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled	 9 V and 18 V < 4 seconds > 10 V		
Shift Solenoid 3 Control Circuit Low	P0979	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN report malfunction	 >= 6 samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled Commanded gear NOT Reverse Trim, NOT 5th, NOT 6th	P2669 P2670 P2671 P0979 9 V and 18 V < 4 seconds > 10 V	150 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 AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On	P2669 P2670 P2671 P0980	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 2 enabled Commanded gear NOT Reverse Trim, NOT 5th, NOT 6th	9 V and 18 V < 4 seconds > 10 V		
Actuator Supply 1 (HSD1) Voltage Open	P0657	This test detects if the voltage measured at the HSD1 detection circuit shows that multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	Report malfunction when the number of failure events AND Engine speed A failure event occurs when the number of failed solenoids connected to HSD1 AND HSD1 voltage	>= 3 >= 15 RPM >= 2 >= 6V	Not Test Failed This Key On HSD1 is commanded ON Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage	P0657 9 V and 18 V < 4 seconds > 10 V	75 ms	A
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 short to ground is detected for a number of events AND Engine speed	>= 3 times >= 15 RPM	Not Test Failed This Key On HSD1 is commanded ON Components powered AND Battery Voltage between If Engine Cranking, then	P0658 9 V and 18 V	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Crank Time AND Battery Voltage	< 4 seconds > 10 V		
Actuator Supply 1 (HSD1) Voltage High	P0659	This test detects if the voltage measured at the HSD 1 detection circuit indicates high during initialization (when the circuit is off)	During initialization, report malfunction when the number of failure events A failure event occurs when HSD1 voltage	>= 3 times >= 6V	During initialization		18.75 ms	A
Actuator Supply2 (HSD2) Voltage Open	P2669	This test detects if the voltage measured at the HSD2 detection circuit shows that multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	Report malfunction when the number of failure events AND Engine speed A failure event occurs when the number of failed solenoids connected to HSD2 AND HSD2 voltage	>= 3 >= 15 RPM >= 2 >= 6V	Not Test Failed This Key On HSD2 is commanded ON Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage	P2669 9 V and 18 V < 4 seconds > 10 V	75 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 short to ground is detected for a number of events AND Engine speed	>= 3 times >= 15 RPM	Not Test Failed This Key On HSD2 is commanded ON Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage	P2670 9 V and 18 V < 4 seconds > 10 V	50 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
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)	During initialization, report malfunction when the number of failure events A failure event occurs when HSD1 voltage	>= 3 times >= 6V	During initialization		18.75 ms	A
TCC Pressure Control Solenoid Control Circuit Open	P2761	This test detects torque converter solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver. IF intrusive test indicates no short to ground exists for a sample size, THEN report malfunction	>= 120 samples >= 15 RPM >= 3 samples	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	P0657 P0658 P0659 9 V and 18 V < 4 seconds > 10 V	3075 ms	B
TCC Pressure Control Solenoid Control Circuit Performance	P2762	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	Case 1: Desired current AND Actual Duty Cycle For a sample size, THEN report malfunction Case 2: Desired current AND Actual Duty Cycle For a sample size,	<= 0 mA >= 40% >= 40 samples >= 500 mA <= 10% >= 40 samples	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Components powered AND Battery voltage between	P0657 P0658 P0659 P2761 P2762 P2763 P2761 P2763 9V and 18V	1000 ms	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN report malfunction		If Engine Cranking, then Crank Time AND Battery Voltage High Side Driver 1 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	< 4 seconds > 10 V		
TCC Pressure Control Solenoid Control Circuit High	P2763	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for AND Engine speed	3 consecutive samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	P0657 P0658 P0659 P2763 9 V and 18 V < 4 seconds > 10 V	75 ms	B
TCC Pressure Control Solenoid Control Circuit Low	P2764	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single hardware fault occurrence IF hardware fault is present for a sample size AND Engine speed THEN initiate intrusive test by opening low side driver	 >= 120 samples >= 15 RPM	Not Test Failed This Key On Components powered AND Battery Voltage between	P0657 P0658 P0659 9 V and 18 V	3050 ms	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			IF intrusive test indicates short to ground exists for a sample size THEN report malfunction	>= 2 samples	If Engine Cranking, then Crank Time AND Battery Voltage High side driver 1 enabled	< 4 seconds > 10 V		
Miscellaneous								
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.	Case 1 (Stuck Off) This test fails when, for number of occurrences, the transfer case 4WD switch indicates High range and the calculated transfer case range is Low range for a time Case 2 (Stuck On) This test fails when, for number of occurrences, the transfer case 4WD switch indicates Low range and the calculated transfer case range is High range for a time	 >= 200 >= 5 seconds >= 200 >= 5 seconds.	All Cases Not Test Failed This Key On No Fault Active DTCs for this drive cycle No Fault Pending DTCs for this drive cycle Output Speed Transfer Case is NOT Neutral Transmission fluid temperature Engine Speed between Shift complete AND range attained NOT Neutral	 P2771 P0721 P0722 P2771 P0721 P0722 P0721 P0722 > 60 RPM > 20 deg. C and < 130 deg. C 200 RPM and 7500 RPM	5 seconds	B
Transmission Component Slipping	P0894	This test detects the number of turbine slip events during the Neutral Locked Turbine (NLT) request from engine	For this ignition cycle, when the number of Neutral Locked Turbine (NLT) Slip events, then report fail Where number of NLT Slip events	>= 3	Components powered AND Battery Voltage between	 9 V and 18 V	8075 ms	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		request from engine controller.	for this ignition cycle = Number of accumulated NLT Slip events – Number of NLT Slip events from previous ignition cycles. And, where number of accumulated NLT Slip events is incremented when commanded gear or attained gear is NLT AND turbine speed for a time	 > 50 RPM > 3 seconds.	Engine Speed between for	200 RPM and 7500 RPM 5 seconds		
Ignition Switch Run/Start Circuit	P2534	Out of range low.	Ignition voltage for a time	< 5 volts >= 30 seconds	Not Test Failed This Key On Components powered AND Battery Voltage between Engine Speed between for	P2534 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	35 seconds	A
GMLAN Bus Reset Counter Overrun	U0073	This test detects if the GMLAN bus is off for a calibration duration.	CANB_bus is off for a time	>= 3 seconds	Components powered AND Battery Voltage between Engine Speed between for	 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	8 seconds	B
GMLAN ECM Controller State of Health Failure	U0100	This test detects CAN (GMLAN) bus failures by detecting State of Health failures in GMLAN message $191 from	Case 1 (x out of y): The failure counter increments when a State of Health (SOH) failure is detected. A SOH failure		All Cases Components powered AND Battery Voltage between Engine Speed between	 9 V and 18 V 200 RPM and	8 seconds	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		message $191 from ECM.	occurs when message is missing. When the failure counter is a number of samples	>= 5 samples		7500 RPM for 5 seconds		
			out of a number of samples, report fail.	7 samples	Ignition Key State is RUN GMLAN message $191 is received from ECM			
			Case 2 (intermittent): Report fail, when the failure counter	> 0 counts				
			for a number of sample windows	< 5 samples	Enable criteria met for a time	> 3 seconds		
Brake Switch Circuit	P0571	This test counts how many vehicle acceleration events occur while the brake switch indicates "ON" or the number of vehicle deceleration events while the brake switch indicates "OFF"	Case 1: The number of vehicle accelerations with the brake switch "on"	>= 10	All Cases Not Test Failed This Key On No Fault Pending DTCs	P0571 P0721 P0722 P0721 P0722	10 Acceleration Events	C
			Case 2: The number of vehicle decelerations with the brake switch "off"	>= 10	Not Fault Active Components powered AND Battery Voltage between Engine Speed between for	P0703 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	10 Deceleration Events	
Brake Pedal Possition Switch Signal Rolling Count	P0703	This test detects rolling count failures for the Brake Switch GMLAN Message	The failure count increments when the GMLAN message is not received or the rolling counter does not agree with the expected value		Components powered AND Battery Voltage between Engine Speed between	9 V and 18 V 200 RPM and 7500 RPM	15 seconds	C
			When the failure counter is for a time of Report Failure	> 5 > 10 seconds	for	5 seconds		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Upshift Switch Circuit	P0815	This test detects the upshift switch ON	When PRNDL state is N, P or R and has been unchanged for a time AND upshift switch state is ON for a time AND When PRNDL state is a forward range and has been unchanged for a time AND upshift switch state is ON for a time	>= 2.5 seconds >= 3 seconds. >= 2.5 seconds >= 600 seconds.	Not Test Failed This Key On Components powered AND Battery Voltage between Engine Speed between for	P0826 P0708 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	603 seconds	C
Downshift Switch Circuit	P0816	This test detects the downshift switch ON.	When PRNDL state is N, P or R and has been unchanged for a time AND downshift switch state is ON for a time. AND When PRNDL state is a forward range and has been unchanged for a time AND downshift switch state is ON for a time	>= 2.5 seconds >= 3 seconds. >= 2.5 seconds >= 600 seconds.	Not Test Failed This Key On Components powered AND Battery Voltage between Engine Speed between for	P0826 P0708 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	603 Seconds	C
Up and Down Shift Switch Circuit	P0826	This test detects upshift/downshift switch circuit at an illegal state.	Switch state is ILLEGAL for a time	>= 10 seconds.	Not Test Failed This Key On Components powered AND	P0826	10 seconds	C

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage between Engine Speed between for	9 V and 18 V 200 RPM and 7500 RPM 5 seconds		
Upshift and Downshift Switch Signal Rolling Count	P1761	This test detects rolling count failures for the Upshift and Downshift GMLAN Message	The failure count increments when the GMLAN message is not received or the rolling counter does not agree with the expected value When the failure counter is for a time of Report Failure	 > 5 > 10 seconds	Components powered AND Battery Voltage between Engine Speed between for	 9 V and 18 V 200 RPM and 7500 RPM 5 seconds	15 seconds	C