16 OBDG08 TCM Summary Tables (MW7 for Silverado/Sierra)

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 P077C P077D P07BF P07C0		B
					No Fault Pending DTCs for this drive cycle	P0716 P0717 P0721 P0722 P077C P077D P07BF P07C0		
					No Pass DTCs for this drive cycle	P0711		
					No Fault Active DTC	P0711		
					Components powered AND Battery Voltage	 >= 9 V		
					Engine Speed between	200 RPM and 7500 RPM		
					for	5 seconds		
					Start-up transmission fluid temperature is available Transmission fluid temperature between ECT is not defaulted	 -39 deg. C and 149 deg. C		
			Case 1 (Stuck sensor after cold start-up) Start-up temperature change for a time AND Vehicle speed for a time	 <= 2 deg. C >= 100 seconds >= 8 KPH >= 300 seconds.	 Start-up transmission fluid temperature between TCC Slip for a time engine coolant temperature AND engine coolant temperature change from start-up	 -40 deg. C and 21 deg. C >= 120 RPM >= 300 seconds >= 70 deg. C >= 15 deg. C	300 seconds	
			Case 2 (Stuck sensor after warm start-up) Start-up temperature change for a time AND Vehicle speed	 <= 3 deg. C >= 100 seconds >= 8 KPH	 Start-up transmission fluid temperature between TCC Slip for a time engine coolant temperature AND engine coolant temperature change	 115 deg. C and 150 deg. C. >= 120 RPM >= 300 seconds >= 70 deg. C	300 seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			for a time	>= 300 seconds.	from start-up	>= 55 deg. C		
			Case 3 (Noisy sensor) Change from previous temperature for in a time	 >= 20 deg. C >= 14 events < 7 seconds.			7 seconds	
			Case 4 (Doesn't warm up to at least 20 deg. C) Time Enabled Criteria met AND AND Transmission Fluid Temperature Time Enabled Criteria is determined by a lookup table ranging from to	 < 20 deg. C. 250 seconds when start-up temperature is >= 20 deg. C 2200 seconds when start-up temperature is <= -40 deg. C.	net engine torque and vehicle speed and %throttle and engine speed and engine coolant temperature and	>= 150 Nm <= 1492 Nm >= 22 KPH <= 511 KPH >= 10.0% <= 100% >= 500 RPM <= 6500 RPM >= -39 deg. C <= 149 deg. C	2200 seconds	
			Case 5 (Reasonableness at start-up): Engine Speed AND Engine Coolant Temperature AND for AND ((ABS(IAT-ECT) AND (TFT-ECT)) OR (ABS(IAT-ECT) AND (TFT-ECT)))	 > 500 RPM > -39 deg. C < 50 deg. C >= 2 seconds <= 6 deg. C > 40 deg. C > 6 deg. C > 60 deg. C.	Intake Air Temperature is not defaulted		2 seconds	
Transmission Fluid Temperature Sensor Circuit Low Input	P0712	Out of range low.	transmission fluid temperature for a time	>= 140 deg. C > 2.5 seconds.	Not Test Failed This Key On Components powered AND Battery Voltage Engine Speed between for	P0711 P0712 P0713 >= 9 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	<= - 40 deg. C > 2.5 seconds	Not Test Failed This Key On Components powered AND Battery Voltage Engine Speed between for IF Engine run time THEN Engine Coolant Temperature	P0711 P0712 P0713 >= 9 V 200 RPM and 7500 RPM 5 seconds <= 600 seconds must be > 20 deg. C	2.5 seconds	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					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 No Fault Pending DTCs for this drive cycle. Not Low Voltage Disable	P0716 P0717 P07BF P07C0		A
			Case 1: (Unrealistically large changes in input speed) Change of Input Speed between samples for AND NOT Low Voltage Response	 >= 800 RPM >= 0.15 seconds			0.15 seconds	
			Case 2: (Noisy Input Speed) For sample size IF the change in Input Speed THEN the Low Counter is incremented IF the change in Input Speed THEN the High Counter is incremented This test fails if both the Low Counter and the High Counter OR Low Counter OR High Counter	 80 <= -800 RPM >= 800 RPM >= 5 >= 5 >= 5			2 seconds	
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 This test fails if input speed AND output speed for a time AND NOT Low Voltage Response	< 61 RPM < 61 RPM > 500 RPM > 1 second.	Not Test Failed This Key On No Fault Pending DTCs	P0717 P0729 P0731 P0732 P0733 P0734 P0735 P0736 P0721 P0722 P0716 P07BF P07C0 P077C P077D P0721 P0722	1 second	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
						P07BF P07C0 P077C P077D		
					NOT Low Voltage Disable			
					Engine is running Reverse-to-Neutral shift not in process Shifting complete Range attained is not neutral Transmission fluid temperature Engine speed Transmission output speed	 > -25 deg. C >= 400 RPM >= 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) Change in output speed for a time AND NOT Low Voltage Response	 >= 500 RPM >= 0.15 seconds	All Cases Not Test Failed This Key On	 P0721 P0722	Case 1: 0.15 seconds	A
			Case 2: (Noisy output speed) For sample size IF the change in output speed THEN the Low Counter is incremented. IF the change in output speed THEN the High Counter is Test fails if both the Low Counter and OR the Low Counter OR the High Counter	 80 <= -500 RPM >= 500 RPM >= 5 >= 5 >= 5	 No Fault Pending DTCs for this drive cycle NOT Low Voltage Disable range attained NOT neutral	 P077C P077D	Case 2: 2 seconds	
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 Not Test Failed This Key On No Fault Pending DTCs for this drive NOT Low Voltage Disable	 P0721 P0722 P077C P077D P077C P077D		A
			Case 1: (Unrealistically large change in output speed) Failure pending if change in output speed Failure sets if range attained is Neutral	 >= 600 RPM	Test enabled when output speed for a time Test disabled when output speed for a time	 >= 600 RPM >= 1 seconds <= 600 RPM > 1 seconds	1 second	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Case 2: (Unrealistically low value of output speed)				4 seconds	
			Failure pending if output speed	< 61 RPM	Not Test Failed This Key On	P0729		
			Failure sets if not monitoring for low speed neutral and output speed			P0731		
						P0732		
				< 61 RPM		P0733		
			AND			P0734		
			range is 3rd, 4th, 5th, or 6th			P0735		
			for a time	> 1 second		P0736		
			AND			P0716		
			NOT Low Voltage Response			P0717		
						P07BF		
						P07C0		
			Failure sets if not monitoring for low speed neutral and output speed		No Fault Pending DTCs for this drive	P0716		
						P0717		
						P07BF		
						P07C0		
			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			
			AND					
			NOT Low Voltage Response		PRNDL State is NOT D4, NOT Transitional D4			
Input/Turbine Speed Sensor Ckt Voltage Low	P07BF	This test detects either open or short to ground circuit malfunctions.	IF voltage	<= 0.25 volts	Not Test Failed This Key On	P07BF	0.8 sec	A
					OR			
			for	0.2 second	No Fault Active DTC	P07BF		
			THEN increment fail timer		No Fault Active DTC	P07C0		
			IF fail timer	>= 4 counts				
			AND		NOT Low Voltage Disable			
			Engine Speed	>= 20 rpm				
			AND					
			NOT Low Voltage Response					
			THEN report malfunction					
Input/Turbine Speed Sensor Ckt Voltage High	P07C0	This test detects either open or short to ground circuit malfunctions.	IF voltage	>= 4.75	Not Test Failed This Key On	P07C0	0.8 sec	A
					OR			
					No Fault Active DTC	P07C0		
			for	0.2 second				
			THEN increment fail timer		No Fault Active DTC	P07BF		
			IF fail timer	>= 4 counts				
			AND		Components powered			
			Engine Speed	>= 20 rpm	AND			
			THEN report malfunction		Battery Voltage	>= 9 V		
Output Speed Sensor Ckt Voltage Low	P077C	This test detects either open or short to ground circuit malfunctions.	IF voltage	<= 0.25 volts	Not Test Failed This Key On	P077C	0.8 sec	A
					OR			
					No Fault Active DTC	P077C		
			for	0.2 second				
			THEN increment fail timer					
			IF fail timer	>= 4 counts	No Fault Active DTC	P077D		
			AND					
			Engine Speed	>= 20 rpm	NOT Low Voltage Disable			
			AND					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			NOT Low Voltage Response THEN report malfunction					
Output Speed Sensor Ckt Voltage High	P077D	This test detects either open or short to ground circuit malfunctions.	IF voltage for THEN increment fail timer IF fail timer AND Engine Speed THEN report malfunction	>= 4.75 0.2 second >= 4 counts >= 20 rpm	Not Test Failed This Key On OR No Fault Active DTC No Fault Active DTC Components powered AND Battery Voltage	P077D P077D P077C >= 9 V	0.8 sec	A
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 IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is 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 >= 1 second >= 0.75 second >= 100 RPM > 100 RPM >= 250 RPM > 10 samples.	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable 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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0 >= 200 RPM	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					complete			
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 IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is 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 >= 1 second >= 0.75 second >= 100 RPM > 100 RPM >= 250 RPM > 10 samples.	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable 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 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0 >= 200 RPM	2.25 seconds	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 IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is Timer accumulates when transmission is in forward or reverse range	>= 2 second >= 1 second >= 0.75 second	Not Test Failed This Key On (except if dropout suspect or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877 P0878 P0877 P0877	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			AND					
			output speed	>= 100 RPM				
			AND					
			gear slip	> 100 RPM	Not Test Failed This Key On	P0721 P0722		
			In response to pending failure, a diagnostic response range is commanded.			P0716 P0717 P07BF P07C0		
			During this command, this test fails if Abs(Converter Slip)	>= 250 RPM		P077C P077D		
			for	> 10 samples.				
					No Fault Pending DTC for this drive cycle.	P0717 P07BF P07C0		
					NOT Low Voltage Disable			
					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			
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 second	Not Test Failed This Key On (except if dropout suspect or detected.)	P0877 P0878	2.25 seconds	A
			IF main pressure dropout is suspected THEN accumulated event timer is	>= 1 second				
			IF main pressure dropout is detected THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			Timer accumulates when transmission is in forward or reverse range					
			AND		Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			output speed	>= 100 RPM				
			AND					
			gear slip	> 100 RPM				
					Not Test Failed This Key On	P0721 P0722		
			In response to pending failure, a diagnostic response range is commanded.			P0716 P0717 P07BF P07C0		
			During this command, this test fails if Abs(Converter Slip)	>= 250 RPM		P077C P077D		
			for	> 10 samples.				
					No Fault Pending DTC for this drive cycle.	P0717 P07BF P07C0		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					NOT Low Voltage Disable			
					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			
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 second	Not Test Failed This Key On (except if dropout suspect or detected.)	P0877 P0878	2.25 seconds	A
			IF main pressure dropout is suspected THEN accumulated event timer is	>= 1 second				
			IF main pressure dropout is detected THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			Timer accumulates when transmission is in forward or reverse range AND		Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			output speed	>= 100 RPM				
			gear slip	> 100 RPM				
			In response to pending failure, a diagnostic response range is commanded.		Not Test Failed This Key On	P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D		
			During this command, this test fails if Abs(Converter Slip)	>= 250 RPM				
			for	> 10 samples.	No Fault Pending DTC for this drive cycle.	P0717 P07BF P07C0		
					NOT Low Voltage Disable			
					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			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Normal powertrain initialization is complete			
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 IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip	>= 2 seconds >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	Not Test Failed This Key On (except if dropout suspect or detected.) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable 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 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0 >= 200 RPM	2 seconds	A
Gear 6 Incorrect Ratio	P0729	This test verifies transmission range while 6th range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is Timer accumulates when transmission is in forward or reverse range AND output speed AND	>= 2 second >= 1 second >= 0.75 second >= 100 RPM	Not Test Failed This Key On (except if dropout suspect or detect) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877 P0878 P0877 P0877	2.25 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			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 >= 250 RPM > 10 samples.	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable 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	P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0 >= 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	P2761 P2763 P2764 P0721 P0722 P0716 P0717 P077C P077D P07BF P07C0 P2761 P2763 P2764 P0721 P0722 P0716 P0717 P077C P077D P07BF P07C0 >= 9 V	15 seconds	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Engine Speed between for Must be in forward range % Throttle Transmission fluid temperature Time Since Range Change AND TCC apply is complete AND TCC pressure	200 RPM and 7500 RPM 5 seconds > 10 % and <= 90 % > 5 deg. C and < 130 deg. C >= 6 seconds >= 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 AND net engine torque Report malfunction when fault pending exists continuously for a time	 >= 70% >= 275 Nm. >= 2 seconds.	Not Test Failed This Key On	P2761 P2763 P2764 P0721 P0722 P0716 P0717 U0100 P077C P077D P07BF P07C0	Case 1: 2 Seconds	B
			Case 2: (High Acceleration condition) Set fault pending when output shaft acceleration Report malfunction when fault pending exists continuously for a time	 >= 100 RPM/second >= 5 seconds.	No Fault Pending DTCs for this drive cycle.	P2761 P2763 P2764 P0721 P0722 P0716 P0717 U0100 P077C P077D P07BF P07C0	Case 2: 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 for a time An output deceleration event occurs when output shaft acceleration is for a time	 >= 40 RPM/second >= 4 seconds <=-40 RPM/second >= 2.5 seconds.	Components powered AND Battery Voltage Engine Speed between for Engine speed not defaulted Must be in forward range TCC is commanded off TCC Slip % Throttle	 >= 9 V 200 RPM and 7500 RPM 5 seconds >=-20 RPM and <= 20 RPM >= 25%	Case 3: 4 Seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Net Engine Torque Engine speed Input speed Output speed	>= 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 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, 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.	> 0.08 seconds P0973 P0752 15 times	S1 valve is destroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	 > -25 deg. C	80 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 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 NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		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	> 6.2 seconds >= 0 deg. C.	S1 valve commanded from stroked to destroked NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized		6.6 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			decreases with maximum time at transmission fluid temperature)	10 seconds <= -40 deg. C	NOT Hydraulic Default Cmd			
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 P0973 P0751 15 times	S1 valve is stroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -25 deg. C	70 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 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 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 reports failure, also. For Case 2 (mechanical malfunction),	> 0.04004 seconds 0.2998 seconds P0976	S2 valve is destroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -25 deg. C	40 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Shift Solenoid 2 Valve Performance – Stuck On reports failure, also. For Case 3 (intermittent malfunction), S2 valve retry attempted AND PS2 pressure switch continues to indicate stroked.	P0757 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 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 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.	S2 valve commanded from destroked to stroked. NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		5 seconds	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 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 commanded from stroked to destroked NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		6.5 sec	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), SS2 Control Circuit Low reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck Off reports failure, also.	> 0.30 seconds 5 seconds P0976 P0756	S2 valve is stroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -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
			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 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 reports failure, also. For Case 2 (mechanical 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.	> 0.0195 seconds P0979 P0762 2 times	S3 valve is destroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -25 deg. C	20 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 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. NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		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	 > 6.5 seconds >= 0 deg. C. 22 seconds	S3 valve commanded from stroked to NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized		6.6 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			decreases with maximum time at transmission fluid temperature)	>= -40 deg. C.	NOT Hydraulic Default Cmd			
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 a time	> 0.30 seconds	S3 valve is stroked		300 ms	A
			IF a main pressure dropout is suspected THEN time limit increases to	5 seconds	NOT Cold initialization unless transmission fluid temperature	> -25 deg. C		
					NOT Low Voltage Disable			
			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.		NOT Shutdown with Active Diag			
					Hydraulic System Pressurized			
					NOT Hydraulic Default Cmd			
			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 Switch state to the PRNDL switch state.	Case 1: (Forward range)		All Cases		5 seconds	A
			For a sample size (if dropout suspected, NLT or N02 cmded, use sample size)	100 samples 255 samples	Not Test Failed This Key On	P0877 P0878 P0708		
			PRNDL is P, D1, D2, D3, D4, D5, D6, T8, or T4 AND		No Fault Pending DTCs for this drive cycle	P0708		
			RPS indicates Reverse for a time	>= 1 seconds	Engine had been cranking or running this drive cycle Components powered AND Ignition Voltage between	9 V and 18 V		
			(if dropout suspected, NLT or N02 cmded, use time)	30 seconds	Engine Speed between	200 RPM and 7500 RPM		
			Case 2: (Range indefinite)		for	5 seconds		
			For a sample size, net engine torque AND	20 samples >= 100 Nm	Transmission Fluid Temperature	>= 0 deg. C		
			PRNDL is indefinitely D3 or another forward range for a time	> 1 second	Hydraulic System Pressurized			
					Reverse Pressure Switch State			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					indicates REVERSE			
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		Not Test Failed This Key On No Fault Pending DTC for this drive cycle. No range switch response active	P0877 P0878 P0708 P0708		A
			Case 1: (RPS State and Gear Ratio do not agree) IF Rev Gear Ratio and RPS indicates for AND Engine Torque for report malfunction	 not Reverse >= 0.5 second >= 100 Nm >= 1 second	 NOT Fault Active Ignition Voltage between First Range Commanded Shift Complete Output Speed	 P0878 9 V and 18 V >= 100 rpm	1.5 seconds	
			For Case 2: (RPS Shutdown Test) If RPS indicates for a time at transmission fluid temperature during engine shutdown This time varies with transmission fluid at transmission fluid temperature to time at transmission fluid temperature report malfunction at Init	 not Reverse > 10 seconds 0 deg. C. 3 seconds > 35 deg. C 12 seconds < -20 deg. C.	 Power Mode is NOT Off Transmission Fluid Temperature Engine had been cranking or running this drive cycle Engine speed Turbine speed Output speed	 >= 0 deg. C < 50 RPM < 50 RPM < 50 RPM	10 seconds	
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. >= 250 RPM > 10 samples	Not Test Failed This Key On Output Speed Turbine Speed Hydraulic System Pressurized Normal powertrain shutdown not in process	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 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
					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			
					NOT Low Voltage Disable			
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 (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. >= 250 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 On-coming clutch control enabled Power downshift abort to previous range NOT active NOT Low Voltage Disable	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 125 RPM >= 60 RPM	2.25 seconds	A
Pressure Control Solenoid 1 Controlled Clutch Stuck On	P2724	This test determines if the off-going clutch energized by	Accumulated fail timer for forward range upshift;	>= 0.2998 seconds	Not Test Failed This Key On	P0721 P0722	3 seconds	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		Pressure Control solenoid 1 remains engaged during a forward range shift.	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	>= 3.0 seconds >= 0.500 seconds >= 1.0 second <= 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 NOT Low Voltage Disable	P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 200 RPM >= 200 RPM		
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 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 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 NOT Low Voltage Disable	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 200 RPM >= 200 RPM	3 seconds	A
PRNDL/IMS								
Transmission Range Sensor High Input	P0708	This test monitors the transmission range	For Case 1 (No Information):		Components powered		Case 1:	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		switch for invalid input conditions and parity errors occurring over consecutive ignition cycles.	Illegal electrical state for a time	>= 1 second	AND Battery Voltage	>= 9 V	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.		Engine Speed between for	200 RPM and 7500 RPM 5 seconds	Case 2: 5th occurrence	
			For Counter 1, increment counter IF Parity Error Detected; decrement counter IF No Parity Error Detected AND No Motion Detected.					
			IF Counter 1 THEN report failure.	>= 15 counts				
			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.	>= 5 counts				
			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.	>= 5 counts				
			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;	>= 30 seconds;				
			Motion Detected is defined as output speed for a time;	>= 200 RPM >= 10 seconds				
			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 and output speed;	>= 0.2 seconds <= 20 RPM				

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			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
					Ignition voltage between	9V and 18 V		
					Powertrain State is READY or CRANKING			
					Engine speed	> 100 RPM and < 350 RPM.		
Solenoid Electrical								
Main Modulation/Line Pressure Control Solenoid Control Circuit Open	P0960	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault.	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	A
					Not Test Failed This Key On	P2669		
						P2670		
			IF either hardware faults are present	>= 3 counts		P2671		
			THEN initiate intrusive test by opening low side driver					
					Components powered			
			IF intrusive test indicates open for	>= 2 counts	AND			
			THEN report malfunction		Battery Voltage	>= 9 V		
					If Engine Cranking, then Crank Time	< 4 seconds		
					AND			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
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	IF delta(desired current - actual current)	>= 0.5 amps	Not Test Failed This Key On	P2669	1000 ms	A
			FOR	>= 40 counts		P2670		
			For a sample size	< 80 samples		P2671		
						P0960		
			THEN report malfunction			P0961		
						P0962		
					No Fault Pending DTC for this drive cycle.	P0960		
						P0962		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					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
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault.		Not Test Failed This Key On	P2669 P2670 P2671		
			IF either hardware faults are present THEN initiate intrusive test by opening low side driver	>= 3 counts				
			IF intrusive test indicates grnd for THEN report malfunction	>= 2 counts	Components powered AND Battery Voltage	 >= 9 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	 < 4 seconds > 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
Main Modulation/Line Pressure Control Solenoid Control Circuit High	P0963	This test detects solenoid electrical short to power circuit malfunctions.		A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			75 ms	A
			Short to power fault present for	> = 3 counts	Not Test Failed This Key On	P2669 P2670 P2671		
					Components powered AND			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
Pressure Control Solenoid 2 Control Circuit Open	P0964	This test detects solenoid electrical open circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault.		Not Test Failed This Key On	P0657 P0658 P0659		
			IF either hardware faults are present	>= 3 counts				
			THEN initiate intrusive test by opening low side driver		Components powered			
					AND			
			IF intrusive test indicates open for	>= 2 counts	Battery Voltage	>= 9 V		
			THEN report malfunction		If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 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			Not Test Failed This Key On	P0657	250ms	A
			current)	>= 0.5 amps		P0658		
			FOR	>= 10 counts		P0659		
						P0964		
			For a sample size	< 20 samples		P0965		
						P0966		
			THEN report malfunction					
					No Fault Pending DTC for this drive cycle.	P0964 P0966		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 1 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	>= 9 V < 4 seconds > 10 V >= 20 RPM		
Pressure Control Solenoid 2 Control Circuit Low	P0966	This test detects solenoid electrical ground circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present THEN initiate intrusive test by opening low side driver IF intrusive test indicates grnd for THEN report malfunction	>= 3 counts >= 2 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed	P0657 P0658 P0659 >= 9 V < 4 seconds > 10 V >= 20 RPM		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					High Side Driver 1 Enabled			
Pressure Control Solenoid 2 Control Circuit High	P0967	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. > = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 1 Enabled High Side Driver 1 Enabled	P0657 P0658 P0659 P0967 >= 9 V < 4 seconds > 10 V >= 20 RPM	75 ms	A
Pressure Control Solenoid 1 Control Circuit Open	P2727	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present THEN initiate intrusive test by opening low side driver IF intrusive test indicates open for	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. >= 3 counts >= 2 counts	Not Test Failed This Key On Components powered AND Battery Voltage	P2669 P2670 P2671 >= 9 V	125 ms	A

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 Engine speed High Side Driver 2 Enabled	 < 4 seconds > 10 V >= 20 RPM 		
Pressure Control Solenoid 1 Control Circuit Performance	P2728	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	current) FOR For a sample size THEN report malfunction	>= 0.5 amps >= 10 counts < 20 samples	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 2 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	P2669 P2670 P2671 P2727 P2728 P2729 P2727 P2729 >= 9 V < 4 seconds > 10 V >= 20 RPM	250 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Control Solenoid 1 Control Circuit Low	P2729	This test detects solenoid electrical ground circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault.		Not Test Failed This Key On	P2669 P2670 P2671		
			IF either hardware faults are present THEN initiate intrusive test by opening low side driver	>= 3 counts	Components powered AND Battery Voltage	 >= 9 V		
			IF intrusive test indicates grnd for THEN report malfunction	>= 2 counts	If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 2 Enabled	 < 4 seconds > 10 V >= 20 RPM 		
Pressure Control Solenoid 1 Control Circuit High	P2730	This test detects solenoid electrical short to power circuit malfunctions.		A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application			75 ms	A
			Short to power fault present for	> = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time	P2669 P2670 P2671 P2730 >= 9 V < 4 seconds		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND Battery Voltage Engine speed High Side Driver 2 Enabled	 > 10 V >= 20 RPM 		
Shift Solenoid 1 Control Circuit Low/Open	P0973	This test detects solenoid electrical ground and open circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware fault is present for THEN report malfunction	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.42 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 200 kohms and shall not be detected if the circuit impedance is <= 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. >= 10 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 1 Enabled	P0657 P0658 P0659 >= 9 V < 4 seconds > 10 V >= 20 RPM 	250 ms	A
Shift Solenoid 1 Control Circuit High	P0974	This test detects solenoid electrical short to power circuit malfunctions.		A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240 usec.	Not Test Failed This Key On	P0657	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Short to power fault present for	> = 3 counts		P0658 P0659 P0974		
					Components powered AND Battery Voltage	 >= 9 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	 < 4 seconds > 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
Shift Solenoid 2 Control Circuit Low/Open	P0976	This test detects solenoid electrical ground or open circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.42 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 200 kohms and shall not be detected if the circuit impedance is <= 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.			250 ms	A
			Fault pending is set on a single occurrence of hardware ground		Not Test Failed This Key On	P0657 P0658 P0659		
			IF either hardware fault is present for THEN report malfunction	>= 10 counts				
					Components powered AND Battery Voltage	 >= 9 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	 < 4 seconds > 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Shift Solenoid 2 Control Circuit High	P0977	This test detects solenoid electrical short to power circuit malfunctions.		A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240 usec.			75 ms	A
			Short to power fault present for	> = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 1 Enabled	P0657 P0658 P0659 P0977 >= 9 V < 4 seconds > 10 V >= 20 RPM		
Shift Solenoid 3 Control Circuit Low/Open	P0979	This test detects solenoid electrical ground or open circuit malfunctions.		A **ground short** condition shall be detected if the circuit attached to the Controller external connection has an impedance <= **0.22 ohm** to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is **Off** . The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 200 kohms and shall not be detected if the circuit impedance is <= 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.			250 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware fault is present for THEN report malfunction	>= 10 counts	Not Test Failed This Key On Components powered AND	P0657 P0658 P0659 P0979		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
Shift Solenoid 3 Control Circuit High	P0980	This test detects solenoid electrical short to power circuit malfunctions.		A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240			75 ms	A
			Short to power fault present for	> = 3 counts	Not Test Failed This Key On	P0657 P0658 P0659 P0980		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
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.	IF HSD1 fault is indeterminate THEN initiate intrusive test Command intrusive gear.		Not Test Failed This Key On	P0657	75 ms	A
					HSD1 is commanded ON			
			Override pressure control solenoid 2	>= 0.075 sec				
			THEN exit intrusive test after	> 0.050 sec				
					Components powered			
					AND			
			Report malfunction when the number of failure events	>= 3	Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
			A failure event occurs when the number of failed solenoids connected to HSD1	>= 2	Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
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	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.43 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is On. Ground short is read every 10 us (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5 to flag a short. >= 3 times	Not Test Failed This Key On HSD1 is commanded ON	P0658	75 ms	A
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 power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.5 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is Off. Power short is read every 10 us after power up reset (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5. >= 3 times	During initialization Battery Voltage	 >= 9V	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 A failure event occurs when the number of failed solenoids connected to HSD1	>= 3 >= 2	Not Test Failed This Key On HSD2 is commanded ON Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine Speed	P2669 >= 9 V < 4 seconds > 10 V >= 20 rpm	75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
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	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.43 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is On. Ground short is read every 10 us (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5 to flag a short. >= 3 times	Not Test Failed This Key On HSD2 is commanded ON	P2670	75 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)	During initialization, report malfunction when the number of failure events	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.5 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is Off. Power short is read every 10 us after power up reset (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5. >= 3 times	During initialization Battery Voltage	>= 9	18.75 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
TCC Pressure Control Solenoid Control Circuit Open	P2761	This test detects torque converter solenoid electrical open circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	B
			Fault pending is set on a single occurrence of hardware ground or open fault.		Not Test Failed This Key On	P2669 P2670 P2671		
			IF either hardware faults are present THEN initiate intrusive test by opening low side driver	>= 3 counts	Components powered AND			
			IF intrusive test indicates open for THEN report malfunction	>= 2 counts	Battery Voltage	>= 9 V		
					If Engine Cranking, then Crank Time AND	< 4 seconds		
					Battery Voltage	> 10 V		
					Engine Speed	>= 20 rpm		
					High Side Driver 2 Enabled			
TCC Pressure Control Solenoid Control Circuit Performance	P2762	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	current) FOR For a sample size THEN report malfunction	>= 0.5 amps >= 40 counts < 80 samples	Not Test Failed This Key On	P2669 P2670 P2671 P2761 P2762 P2764	1000 ms	B
					No Fault Pending DTC for this drive cycle.	P2761 P2763		
					Components powered AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking, then Crank Time AND	< 4 seconds		
					Battery Voltage	> 10 V		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Engine Speed High Side Driver 2 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	>= 20 rpm		
TCC Pressure Control Solenoid Control Circuit High	P2763	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software > = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine Speed High Side Driver 2 Enabled	P2669 P2670 P2671 P2763 >= 9 V < 4 seconds > 10 V >= 20 rpm	75 ms	B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
TCC Pressure Control Solenoid Control Circuit Low	P2764	This test detects solenoid electrical ground circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	B
			Fault pending is set on a single occurrence of hardware ground or open fault.		Not Test Failed This Key On	P2669 P2670 P2671		
			IF either hardware faults are present THEN initiate intrusive test by opening low side driver	>= 3 counts	Components powered AND			
			IF intrusive test indicates grnd for THEN report malfunction	>= 2 counts	Battery Voltage	>= 9 V		
					If Engine Cranking, then Crank Time AND	< 4 seconds		
					Battery Voltage	> 10 V		
					Engine Speed	>= 20 rpm		
					High Side Driver 2 Enabled			
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	 >= 1 >= 0.5 second	All Cases Not Test Failed This Key On	 P2771 P0721 P0722 P077C P077D	0.5 second	B
					No Fault Active DTCs for this drive cycle	P2771 P0721 P0722 P077C P077D		
			Case 2 (Stuck On) This test fails when, for number of occurrences, the transfer case 4WD switch indicates Low range and the calculated transfer	 >= 1	No Fault Pending DTCs for this drive cycle NOT Tranfer Case failure suspect	P0721 P0722 P077C P077D		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			case range is High range for a time	>= 0.5 second	Transfer Case is NOT Neutral or defaulted Transmission fluid temperature Engine Speed between for Shift complete AND range attained NOT Neutral	> 20 deg. C and < 130 deg. C 200 RPM and 7500 RPM 5 seconds		
Transmission Component Slipping	P0894	This test detects the number of turbine slip events during the Neutral Locked Turbine (NLT) request from engine controller.	For this ignition cycle, when the number of Neutral Locked Turbine (NLT) Slip events, then report fail Where number of NLT Slip events 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	>= 3 > 50 RPM > 3 seconds.	Components powered AND Battery Voltage Engine Speed between for	>= 9 V 200 RPM and 7500 RPM 5 seconds	8075 ms	B
Ignition Switch Run/Start Circuit	P2534	Out of range low.	Ignition voltage THEN increment fail counter IF fail counter AND (BattChargeSysStable TRUE OR NOT P0882) THEN report malfunction	< 5 volts >= 1200 counts	Not Test Failed This Key On Components powered AND Battery Voltage Engine Speed between for	P2534 >= 9 V 200 RPM and 7500 RPM 5 seconds	5 seconds	A
GMLAN Bus Reset Counter Overrun	U0073	This test detects if the GMLAN bus is off for a calibration duration.	CAN Hardware Circuitry Detects a Bus Voltage Error (CAN bus off) Bus off delay time (use if Bus if Off from Bus Indeterminate State)	= TRUE (Boolean) >= 4 sec	>= 3 counts >= 5 counts all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode $04 active and end of trip pocessing active A) normal serial data communication enabled A) U0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage	 >= 3 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) = accessory >11 volts		B

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
GMLAN ECM Controller State of Health Failure	U0100	This test detects GMLANbus failures by detecting State of Health failures in GMLAN messages $191, $0BE, $0C9,$1A1, $287, $2C3, $3B9, $3D1,$3E9, $3F9, $4C1, and $4F1 from ECM.	TCM Rx message missed frame TCM Rx frame message missed frame	= TRUE (Boolean)	fail times are caculated based on Rx message enable calibration set to CeCANR e BusA ECM TCM Rx frame calibration enabled	Tx controller (see Table 1 in supporting document) enumeration	>= 10 seconds	B
					Frame recovery stabilization delay all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode $04 active and end of trip pocessing active A) normal serial data communication enabled A) U0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0100 fault status is not Not Test Failed This Key On	>= 0.4 seconds >= 3 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) =accessory >11 volts = fault active U0073		
Lost Communication with GMLAN ABS Control Module	U0121	This test detects CAN (GMLAN) bus failures by detecting State of Health (SOH) failures in the following GMLAN messages $0C1, $0C5, $0D0, $1E9, and $2F9 from Antilock Brake System (ABS) Control Module.	TCM Rx message missed frame TCM Rx frame message missed frame	= TRUE (Boolean)	fail times are caculated based on Rx message enable calibration set to CeCANR_e_BusA_ABS TCM Rx frame calibration enabled	Tx controller (see Table 1 in supporting document) enumeration	>= 10 seconds	C
					Frame recovery stabilization delay all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode $04 active and end of trip pocessing active A) normal serial data communication enabled A) P0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0121 fault status is not Not Test Failed This Key On	>= 0.4 seconds >= 3 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) =accessory > 11 volts = fault active U0073		
Lost Communication With Body Control Module	U0140	This test detects CAN (GMLAN) bus failures by detecting State of Health (SOH) failures in the following GMLAN messages $0F1,	TCM Rx message missed frame TCM Rx frame message missed frame	= TRUE (Boolean)	fail times are caculated based on Rx message enable calibration set to CeCANR_e_BusA_BCM TCM Rx frame calibration enabled	Tx controller (see Table 1 in supporting document) enumeration	>= 10 seconds	C
					Frame recovery stabilization delay	>= 0.4 seconds		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		$1E1, $1F3, and $3F1 from the Truck Body Computer (TBC) Control			all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode $04 active and end of trip pocessing active A) normal serial data communication enabled A) P0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0140 fault status is not Not Test Failed This Key On	 >= 3 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) =accessory >11 volts = fault active U0073		
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"	Case1: The number of vehicle accelerations with the brake switch "on" Case 2: The number of vehicle decelerations with the brake switch "off"	 >= 10 >= 10	All Cases NOT Test Failed This Key On No Fault Pending DTCs Not Fault Active Components powered AND Battery Voltage Engine Speed between for	 P0571 P0716 P0717 P07BF P07C0 P0721 P0722 P077C P077D P0703 >= 9 V 200 RPM and 7500 RPM 5 seconds	10 Acceleration Events 10 Deceleration Events	C
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 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
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	 >= 2.5 seconds >= 3 seconds. 	Not Test Failed This Key On Components powered AND Battery Voltage Engine Speed between	P0826 P0708 >= 9 V 200 RPM and 7500 RPM	603 seconds	C

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			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 >= 600 seconds.	for	5 seconds		
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 Engine Speed between for	P0826 P0708 >= 9 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 Battery Voltage Engine Speed between for	P0826 >= 9 V 200 RPM and 7500 RPM 5 seconds	10 seconds	C
Controller Memory								
Control Module Read Only Memory (ROM)	P0601	This test performs a check for ECC fault at controller intiaization and a checksum test of all areas of ROM code using a CRC16 table driven method in background.	Incorrect program/calibrations checksum	= TRUE (Boolean)	Not Test Failed This Key On	P0601	= 1 Fail Counts first pass after reset (background task continuous) >= 5 Fail Counts after first pass (background task continuous)	A
			Errors in the software and calibration segments in the flash, detected by the micro's hardware based fault detection	= TRUE Boolean			>= 254 counts (Controller Initialization)	
Control Module Long Term Memory Reset	P0603	This function tests for error flags from the NVDP and logs a code if an error was detected.	fault condition exists that affects the validity of the copy of battery independent non-volatile data kept in RAM. latest copy of the battery independent non-volatile data may have been lost.	= TRUE (Boolean) = TRUE (Boolean)	Not Test Failed This Key On NVI_TestDiagEnbl	P0603 TRUE	every controller initialization >= 3 counts (controller initialization)	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Control Module Random Access Memory (RAM)	P0604	RAM diagnostic	Test fails for any of following.		Not Test Failed This Key On	P0604		A
			secondary micro processor RAM error	= TRUE (Boolean)			1000 ms cont.	
			OR					
			dual store RAM write time out error	= TRUE (Boolean)			> 175 ms ((interrupt driven based on calling functions)	
			OR					
			errors in the system RAM segment detected by the micro's hardware based fault detection	= TRUE (Boolean)			>= 254 counts (controller initialization)	
			OR					
			parity errors in cache memory detected by the micro's hardware based fault detection	= TRUE (Boolean)			>= 3 counts (controller initialization)	
			OR					
			signature faults detected in the TPU microcode by the micro's hardware based fault detection	= TRUE (Boolean)			>= 5 counts (controller initialization)	
			OR		Service mode $04 active or end of trip processing active	FALSE		
			write attempt occurred during RAM lock	= TRUE (Boolean)			> 655534 counts (background task continuous)	
Control Module Internal Performance	P0606	Processor integrity test.			Not Test Failed This Key On	P0606		A
			main processor RAM error detection circuit hardware failure	= TRUE (Boolean)	RAM diagnotic test enable	= 1 (Boolean)	>= 5 counts (controller initialization)	
					hardware reset source is controller power up reset	= TRUE (Boolean)		
			OR					
			main processor flash EPROM error detection circuit hardware failure	= TRUE (Boolean)	flash EPROM diagnotic test enable	= 1 (Boolean)	>= 5 counts (controller initialization)	
					hardware reset source is controller power up reset	= TRUE (Boolean)		
			OR					
			main processor memory stack failure	= TRUE (Boolean)	diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have completed their re-enable paths).	= TRUE (Boolean)	>= 5 counts (100 msec continuous)	
					main processor memory stack test enable	= 1 (Boolean)		
			OR					
			secondary processor memory stack failure	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	two consecutive counts continuously upon receival from secondary(every 12.5 ms)	
			OR					
			main processor ROM first test complete	= FALSE (Boolean)			>= 35 counts (controller power up 12.5 msec continuous)	
			OR					
			no new seed from secondary processor to main processor seed	= TRUE (Boolean)	main processor to secondary processor serial peripheral interface error (main or 2dry detected)	= FALSE (Boolean)	for more than 0.5 seconds	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					battery voltage ignition voltage	> 11 Volts >= 8 Volts		
			OR					
			seed sequence error	≠ FALSE (Boolean)	main processor to secondary processor serial peripheral interface error (main or 2dry detected)	= FALSE (Boolean)	3 counts out of 17 (on the 12.5 msec loop)	
					battery voltage ignition voltage	> 11 Volts >= 8 Volts		
			OR					
			seed key fault received from 2ndry	= TRUE (Boolean)	Post code clear diagnostic disabled	= FALSE (Boolean)	two consecutive counts (on the 12.5 ms loop)	
			OR					
			normalize 0-5 volt (absolute value (analog to digital test voltage commanded - actual analog to digital voltage feedback))	> 3 percent	diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have completed their re-enable paths)	= TRUE (Boolean)	3 out of 8 counts OR continuous for 0.2 sec (50 ms)	
					analog to digital voltage test enabled	= TRUE (Boolean)		
					ignition voltage	>= 7 Volts		
					analog to digital voltage channel enabled	TRUE (Boolean)		
					analog to digital test voltage command	5 Volts		
			OR					
			arithmatic logic unit test pass	= FALSE (Boolean)	arithmatic logic unit test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two consecutive counts continuously every 12.5 ms	
					diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	= TRUE (Boolean)		
					A and B and C must occur A: starter motor engaged B: ignition voltage C: starter motor engaged time	 = TRUE (Boolean) > 11 Volts > 15 sec		
			OR					
			secondary processor arithmatic logic unit fault	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	two consecutive counts continuously upon receival from secondary(every 12.5 ms)	
			OR					
			clock test fail	= TRUE (Boolean)	clock test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two consecutive counts continuously every 12.5 ms	
					diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	=TRUE (Boolean)		
					A and B and C must occur A: starter motor engaged B: ignition voltage C: starter motor engaged time	 = TRUE (Boolean) > 11 Volts > 15 sec		
			OR					
			configuration register test fail	= TRUE (Boolean)	configuration register test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two consecutive counts continuously every 12.5 ms	

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	= TRUE (Boolean)		
					A and B and C must occur A: starter motor engaged B: ignition voltage C: starter motor engaged time	= TRUE (Boolean) > 11 Volts > 15 sec		
			OR secondary processor configuration register fault	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	two consecutive counts continuously upon receival from secondary(every 12.5 ms)	
			OR main SOH discrete fault	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	two consecutive counts continuously upon receival from secondary(every 12.5 ms)	
			SPI bus fault(i)	= TRUE (Boolean)	diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	=TRUE (Boolean)	8 counts out of 16 (on the 6.25 msec loop)	
					A and B must occur A: run/crank voltage in range OR battery voltage in range B: Startup/Restart time	>= 11 Volts > 11 Volts >= 0.125 sec		
Control Module Long Term Memory Performance	P062F	Tests non volatile memory long term performance.			Not Test Failed This Key On	P062F		A
			TCM Non-Volatile Memory read or write error (every controller intialization).	= TRUE (Boolean)			every controller intialization	
			assembly calibration integrity (every controller initialization)	= TRUE (Boolean)			every controller intialization	
					NVM write error diagnotic enable	TRUE		
Control Module Serial Peripheral Interface Bus 2	P16E9	Serial peripheral hardware fault detected by secondary processor.	secondary micro processor hardware serial peripheral device fault active	= TRUE (Boolean)				A
			secondary micro processor hardware serial peripheral device fault active previous loop	= TRUE (Boolean)	Service mode $04 active and end of trip pocessing active	= FALSE(Boolean)		
Control Module Serial Peripheral Interface Bus 1	P16F0	Secondary processor message error detected by main processor.	secondary micro processor serial peripheral device message valid detected by primary micro processor since controller initialization	= FALSE (Boolean)		fail count out of sample count	>= 5 counts (12.5 ms) cont >= 8 counts (12.5 ms) cont	A
			OR secondary micro processor serial peripheral device message valid detected by primary micro processor after controller initialization	= FALSE (Boolean)		fail count out of sample count	>= 5 counts (12.5 ms) cont >= 8 counts (12.5 ms) cont	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			OR secondary micro processor serial peripheral device message valid detected by primary micro processor after controller initialization	= FALSE(Boolean)	NOT in low voltage engine crank condition defined by A or B below during, for low voltage mode time low voltage mode time >= 0.025 seconds A) low voltage mode hysteresis time <= 0.1 seconds B) ignition voltage, set low voltage mode <= 6.4092 volts	fail count out of sample count	>= 5 counts (12.5 ms) NON continuous >= 8 counts (12.5 ms) NON continuous	

Table 1

KaCANG_RxDeviceIndx	**Axis**	CeCANG_e_RcvMsg_0BE_BusA	CeCANG_e_RcvMsg_0C1_BusA	CeCANG_e_RcvMsg_0C5_BusA	CeCANG_e_RcvMsg_0C9_BusA	CeCANG_e_RcvMsg_0D0_BusA	frame
KaCANG_RxDeviceIndx	**Curve**	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ABS	enable or invalid
	Axis	CeCANG_e_RcvMsg_0F1_BusA	CeCANG_e_RcvMsg_191_BusA	CeCANG_e_RcvMsg_1A1_BusA	CeCANG_e_RcvMsg_1CF_BusA	CeCANG_e_RcvMsg_1E1_BusA	frame
	Curve	CeCANR_e_BusA_BCM	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_BCM	enable or invalid
	Axis	CeCANG_e_RcvMsg_1E9_BusA	CeCANG_e_RcvMsg_1F3_BusA	CeCANG_e_RcvMsg_1F9_BusA	CeCANG_e_RcvMsg_1FC_BusA	CeCANG_e_RcvMsg_287_BusA	frame
	Curve	CeCANR_e_BusA_ABS	CeCANR_e_BusA_BCM	CeCANR_e_BusA_PTO	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_2C3_BusA	CeCANG_e_RcvMsg_2D1_BusA	CeCANG_e_RcvMsg_2F9_BusA	CeCANG_e_RcvMsg_3B9_BusA	CeCANG_e_RcvMsg_3D1_BusA	frame
	Curve	CeCANR_e_BusA_ECM	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_3E9_BusA	CeCANG_e_RcvMsg_3F1_BusA	CeCANG_e_RcvMsg_3F9_BusA	CeCANG_e_RcvMsg_4C1_BusA	CeCANG_e_RcvMsg_4F1_BusA	frame
	Curve	CeCANR_e_BusA_ECM	CeCANR_e_BusA_BCM	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid

16 OBDG08 TCM Summary Tables (MYD for Express/Savanna)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0601	Transmission Electro-Hydraulic Control Module Read Only Memory	Incorrect program/calibrations checksum	= TRUE Boolean			>= 5 Fail Counts	One Trip
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0601 ECM: None		
Transmission Control Module (TCM)	P0603	Transmission Electro-Hydraulic Control Module Long-Term Memory Reset	Non-volatile memory (static or dynamic) checksum failure at Powerup	= TRUE Boolean			Runs Continously	One Trip
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None		
Transmission Control Module (TCM)	P0604	Transmission Electro-Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	= TRUE Boolean			>= 5 Fail Counts = 16 Sample Counts	One Trip
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None		
Transmission Control Module (TCM)	P062F	Transmission Electro-Hydraulic Control Module Long Term Memory Performance	TCM Non-Volatile Memory bit Incorrect flag at Powerdown	= TRUE Boolean			Runs Continously	One Trip
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P062F ECM: None		
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	Fail Case 1 Substrate Temperature	>= 142.1016 ºC			>= 5 Fail Time (Sec)	One Trip
			Fail Case 2 Substrate Temperature	>= 50 ºC			>= 2 Fail Time (Sec)	
			Ignition Voltage	>= 18 Volts				
			Note: either fail case can set the DTC					
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Substrate Temp Lo	>= 0 ºC		
					Substrate Temp Hi	<= 170 ºC		
					Substrate Temp Between Temp Range for Time	>= 0.25 Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0634 Status is	≠ Test Failed This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	> Refer to Table 19 in supporting documents ºC				Two Trips
			If TCM substrate temp to power up temp Δ	> Refer to Table 20 in supporting documents ºC				
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				>= 3000 Fail Counts (100ms loop) Out of 3750 Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700 Pass Counts (100ms loop) Out of 875 Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Brake torque active	= TRUE Boolean = TRUE Boolean >= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = FALSE		
					Below describes the brake torque entry criteria Engine Torque Throttle Transmission Input Speed Vehicle Speed Transmission Range Transmission Range PTO	>= 90 N*m >= 30.0003 Pct <= 200 RPM <= 8 Kph ≠ Park ≠ Neutral = Not Active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7 sec		
					Below describes the brake torque exit criteria			
					Brake torque entry criteria	= Not Met		
					Clutch hydraulic pressure	≠ Clutch Hydraulic Air Purge Event		
					Clutch used to exit brake torque active	= CeTFTD_e_C3_RatlEnbl		
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec		
					P0667 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used	= CeTFTI_e_VoltageDirectProp				Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp	<= -249 ºC				
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	>= -249 ºC				
			Either condition above will satisfy the fail conditions				>= 60 Fail Timer (Sec)	
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0668 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used	= CeTFTI_e_VoltageDirectProp				Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp	>= 249 ºC				
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	<= 249 ºC				
			Either condition above will satisfy the fail conditions				>= 60 Fail Timer (Sec)	
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0669 Status is	≠ Test Failed This Key On or Fault Active		
					For Hybrids, below conditions must also be met			
					Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power-up temp to substrate temp Δ	> Refer to Table 20 in supporting documents °C				Two Trips
			If transmission oil temp to power up temp Δ	> Refer to Table 18 in supporting documents °C				
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				>= 3000 Fail Counts (100ms loop) Out of 3750 Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700 Pass Counts (100ms loop) Out of 875 Sample Counts (100ms loop)	
					Engine Torque Signal Valid	= TRUE Boolean		
					Accelerator Position Signal Valid	= TRUE Boolean		
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Brake torque active	= FALSE		
					Below describes the brake torque entry criteria			
					Engine Torque	>= 90 N*m		
					Throttle	>= 30.0003 Pct		
					Transmission Input Speed	<= 200 RPM		
					Vehicle Speed	<= 8 Kph		
					Transmission Range	≠ Park		
					Transmission Range	≠ Neutral		
					PTO	= Not Active		
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7 sec		
					Below describes the brake torque exit criteria			
					Brake torque entry criteria	= Not Met		
					Clutch hydraulic pressure	≠ Clutch Hydraulic Air Purge Event		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Clutch used to exit brake torque active	= CeTFTD_e_C3_RatlEnbl		
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec		
					P06AC Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 ºC			>= 60 Fail Time (Sec)	Two Trips
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P06AD Status is	≠ Test Failed This Key On or Fault Active		
					For Hybrids, below conditions must also be met			
					Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= 164 ºC			>= 60 Fail Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P06AE Status is	>= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active	
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed Output Speed Delta Output Speed Drop AND Transmission Range is	>= 105 RPM <= 8192 RPM > 650 RPM = Driven range (R,D)			>= 0 Enable Time (Sec) >= 0 Enable Time (Sec) >= 1.5 Output Speed Drop Recovery Fail Time (Sec)	One Trip
					---------- Range_Disable OR ---------- Neutral_Range_Enable And Neutral_Speed_Enable are TRUE concurrently ----------	= FALSE See Below = TRUE See Below = TRUE See Below		
					Transmission_Range_Enable Transmission_Input_Speed_Enable No Change in Transfer Case Range (High <-> Low) for P0723 Status is not Disable this DTC if the PTO is active	= TRUE See Below = TRUE See Below >= 5 Seconds = Test Failed This Key On or Fault Active = 1 Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			Time Required	Mil Illum.
					Ignition Voltage is	>=	8.59961	Volts		
					Ignition Voltage is	<=	31.99902	Volts		
					Engine Speed is	>=	400	RPM		
					Engine Speed is	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Enable_Flags Defined Below					
					Transmission_Input_Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:					
					TIS Condition 1 is TRUE when both of the following conditions are satsified for	>=	0	Enable Time (Sec)		
					Input Speed Delta	<=	4095.88	RPM		
					Raw Input Speed	>=	500	RPM		
					TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied					
					Input Speed	=	0	RPM		
					A Single Power Supply is used for all speed sensors	=	TRUE	Boolean		

					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE					
					Transmission Range is	=	Neutral	ENUM		
					Transmission Range is	=	Reverse/Neutral Transitonal	ENUM		
					Transmission Range is	=	Neutral/Drive Transitional	ENUM		
					And when a drop occurs					
					Loop to Loop Drop of Transmission Output Speed is	>	650	RPM		

					Range_Disable is TRUE when any of the next three conditions are TRUE					
					Transmission Range is	=	Park	ENUM		
					Transmission Range is	=	Park/Reverse Transitonal	ENUM		
					Input Clutch is not	=	ON (Fully Applied)	ENUM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	> 1.5 Seconds		
					Transmission Output Speed	> 130 RPM		
					The loop to loop change of the Transmission Output Speed is	< 20 RPM		
					The loop to loop change of the Transmission Output Speed is	> -10 RPM		

					Transmission_Range_Enable is TRUE when one of the next six conditions is TRUE			
					Transmission Range is	= Neutral ENUM		
					Transmission Range is	= Reverse/Neutral Transitional ENUM		
					Transmission Range is	= Neutral/Drive Transitional ENUM		
					Time since a driven range (R,D) has been selected	>= Table Based Time Please Refer to Table 21 in supporting documents Sec		
					Transmission Output Speed Sensor Raw Speed	>= 500 RPM		
					Output Speed when a fault was detected	>= 500 RPM		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Variable Bleed Solenoid (VBS)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	Fail Case 1 Case: Steady State 4th Gear Gear slip Intrusive test: commanded 5th gear	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If attained Gear ≠5th for time	>= Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
			if the above conditions have been met					
			Increment 4th Gear Fail Counter				>= 3 4th Gear Fail Count OR	
			and C456 Fail Counters				>= 14 C456 Fail Counts	
			Fail Case 2 Case: Steady State 5th Gear					
			Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	
			Intrusive test: commanded 6th gear					
			If attained Gear ≠ 6th for time	>= Please Refer to Table 3 in Supporting Documents Shift Time (Sec)				
			if the above conditions have been met					
			Increment 5th Gear Fail Counter				>= 3 5th Gear Fail Count OR	
			and C456 Fail Counters				>= 14 C456 Fail Counts	
			Fail Case 3 Case: Steady State 6th Gear					
			Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear					
			If attained Gear ≠ 5th for time	>= Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
			if the above conditions have been met					
			Increment 6th Gear Fail Counter and C456 Fail Counter				>= 3 6th Gear Fail Count OR	
			and C456 Fail Counter				>= 14 C456 Fail Counts	
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		
					Minimum output speed for RVT	>= 67 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					A OR B			
					(A) Output speed enable	>= 67 RPM		
					(B) Accelerator Pedal enable	>= 0.5005 Pct		
					Common Enable Criteria			
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Throttle Position Signal valid	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Transmission Fluid Temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					OutputSpeed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	Fail Case 1 Case: Steady State 1st					One Trip
			Attained Gear slip	>= 400 RPM				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 4 in supporting documents Enable Time (Sec)				
			Intrusive test: (CBR1 clutch exhausted)					
			Gear Ratio	<= 1.20959				
			Gear Ratio	>= 1.09436				
			If the above parameters are true				>= 1.1 Fail Timer (Sec)	
							>= 2 Fail Count in 1st Gear or	
							>= 3 Total Fail Counts	
			Fail Case 2 Case Steady State 2nd					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 22 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 23 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.20959				
			Gear Ratio	>= 1.09436				
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 2nd Gear or >= 3 Total fail counts	
			Fail Case 3 Case Steady State 3rd					
			Max Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 22 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 23 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 1.20959				
			Gear Ratio	>= 1.09436				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear OR >= 3 Total Fail Counts	
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					output speed	>= 0 RPM		
					TPS validity flag	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized	= TRUE Boolean		
					A OR B			
					(A) Output speed enable	>= 67 Nm		
					(B) Accelerator Pedal enable	>= 0.5005 Nm		
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>= 5.0003 Pct		
					if Attained Gear=1st FW Engine Torque Enable	>= 5 Nm		
					if Attained Gear=1st FW Engine Torque Enable	<= 8191.88 Nm		
					Transmission Fluid Temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				
			Primary Offgoing Clutch Pressure Command Status	= Clutch exhaust command				
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip	<= 40 RPM				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (4-1 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (4-1 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (4-2 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (4-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (4-3 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (4-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (5-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (6-2 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (6-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				>= Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2 sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 Fail Counter From 4th Gear OR	
			5th gear fail counter				>= 3 Fail Counter From 5th Gear OR	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			6th gear fail counter				>= 3 Fail Counter From 6th Gear OR	
			Total fail counter				>= 5 Total Fail Counter	
					TUT Enable temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Command / Attained Gear	≠ 1st Boolean		
					High Side Driver ON	= TRUE Boolean		
					output speed limit for TUT	>= 100 RPM		
					input speed limit for TUT	>= 150 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			>= 60 Fail Time (Sec)	Special No MIL
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0826 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1761 ECM: None		
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0970 Status is not = Test Failed This Key On or Fault Active			
					Ignition Voltage >= 8.59961 Volts			
					Ignition Voltage <= 31.99902 Volts			
					Engine Speed >= 400 RPM			
					Engine Speed <= 7500 RPM			
					Engine Speed is within the allowable limits for >= 5 Sec			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
					P0971 Status is not = Test Failed This Key On or Fault Active			
					Ignition Voltage >= 8.59961 Volts			
					Ignition Voltage <= 31.99902 Volts			
					Engine Speed >= 400 RPM			
					Engine Speed <= 7500 RPM			
					Engine Speed is within the allowable limits for >= 5 Sec			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case 1 Current range	= Transition 1 (bit state 1110) Range				One Trip
			Previous range	≠ CeTRGR_e_PRNDL_Drive6 Range				
			Previous range	≠ CeTRGR_e_PRNDL_Drive4 Range				
			Range Shift State	= Range Shift Completed ENUM				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position Available	= TRUE				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Throttle Position	>= 8.0002 pct				
			Output Speed	>= 200 rpm				
			Engine Torque	>= 50 Nm				
			Engine Torque	<= 8191.75 Nm				
			If the above conditions are met then Increment Fail Timer				>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 5 Fail Counts	
			Fail Case 2 Output Speed	<= 70 rpm				
			The following PRNDL sequence events occur in this exact order:					
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state = Drive 6 for	>= 1 Sec				
			PRNDL state	= Transition 8 (bit state 0111) Range				
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state	= Transition 1 (bit state 1110) Range				
			Above sequencing occurs in	<= 1 Sec				
			Neutral Idle Mode	= Inactive				
			If all conditions above are met Increment delay Timer					
			If the below two conditions are met Increment Fail Timer				>= 3 Fail Seconds	
			delay timer	>= 1 Sec				
			Input Speed	>= 400 Sec				
			If Fail Timer has Expired then Increment Fail Counter				>= 2 Fail Counts	
			Fail Case 3 Current range	= Transition 13 (bit state 0010) Range	Previous range	≠ CeTRGR_e_PRNDL_Drive1		
			Engine Torque	>= -8192 Nm	Previous range	≠ CeTRGR_e_PRNDL_Drive2		
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration	= 1 Boolean		
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			Fail Case 4 Current range	= Transition 8 (bit state 0111) Range	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Inhibit bit (see definition) = FALSE		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque >= 100 Nm Steady State Engine Torque <= 8191.75 Nm If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail Case 5 Throttle Position Available = TRUE Boolean The following PRNDL sequence events occur in this exact order: PRNDL State = Reverse (bit state 1100) Range PRNDL State = Transition 11 (bit state 0100) Range PRNDL State = Neutral (bit state 0101) Range PRNDL State = Transition 11 (bit state 0100) Range Above sequencing occurs in <= 1 Sec Then delay timer increments Delay timer >= 5 sec Range Shift State = Range Shift Complete Absolute Attained Gear Slip <= 50 rpm Attained Gear <= Sixth Attained Gear >= First Throttle Position >= 8.0002 pct Output Speed >= 200 rpm If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			Fail Case 6 Current range = Illegal (bit state 0000 or 1000 or 0001) and A Open Circuit (See Definition) = FALSE Boolean		A Open Circuit Definition (flag set false if the following conditions are met): Current Range ≠ Transition 11 (bit state 0100) or Last positive state ≠ Neutral (bit state 0101) or Previous transition state ≠ Transition 8 (bit state 0111) Fail case 5 delay timer = 0 sec			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	
			Fail Case 7 Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Condtions are met then, Increment Fail timer	= PRNDL circuit ABCP = 1101 Range = PRNDL circuit ABCP =1111 Range >= 150 RPM <= 2.84583 ratio >= 3.27417 ratio			>= 6.25 Seconds	
			P182E will report test fail when any of the above 7 fail cases are met		Ignition Voltage Lo >= 8.59961 Volts Ignition Voltage Hi <= 31.99902 Volts Engine Speed Lo >= 400 RPM Engine Speed Hi <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec Engine Torque Signal Valid = TRUE Boolean			
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P07C0, P07BF, P077C, P077D ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is The following events must occur Sequentially Initial Engine speed	≠ Park or Neutral Enumeration <= 50 RPM			>= 0.25 Enable Time (Sec)	One Trip
			Then Engine Speed Between Following Cals Engine Speed Lo Hist Engine Speed Hi Hist	 >= 50 RPM <= 480 RPM			>= 0.06875 Enable Time (Sec)	
			Then Final Engine Speed Final Transmission Input Speed	 >= 525 RPM >= 100 RPM			>= 1.25 Fail Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					DTC has Ran this Key Cycle?	= FALSE Boolean		
					Ignition Voltage Lo	>= 6 V		
					Ignition Voltage Hi	<= 31.99902 V		
					Ignition Voltage Hyst High (enables above this value)	>= 5 V		
					Ignition Voltage Hyst Low (disabled below this value)	<= 2 V		
					Transmission Output Speed	<= 90 rpm		
					P1915 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below)	= TRUE Boolean				One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)	5 Volts			>= 280 Fail Counts (25ms loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2 Volts			Out of 280 Sample Counts (25ms loop)	
					ECM run/crank active status available	= TRUE Boolean		
					ECM run/crank active status	= FALSE Boolean		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	Fail Case 1 Case: Steady State 2nd Gear					One Trip
			Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	
			Intrusive test: commanded 3rd gear					
			If attained Gear = 3rd for Time	>= Table Based Time Please see Table 2 in Supporting Documents Enable Time (Sec)				
			If Above Conditions have been met					
			Increment 2nd gear fail count				>= 3 2nd Gear Fail Count	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and CB26 Fail Count				>= 14 or CB26 Fail Count	
			Fail Case 2 Case: Steady State 6th Gear					
			Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	>= Table Based Time Please see Table 2 in Supporting Documents Enable Time (Sec)				
			If Above Conditions have been met, Increment 5th gear fail counter				>= 3 5th Gear Fail Count	
			and CB26 Fail Count				>= 14 or CB26 Fail Count	
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		
					Minimum output speed for RVT A OR B	>= 0 RPM		
					(A) Output speed enable	>= 67 RPM		
					(B) Accelerator Pedal enable	>= 0.5005 Pct		
					Common Enable Criteria			
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Throttle Position Signal valid	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Transmission Fluid Temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized Clutch				
			Primary Offgoing Clutch Pressure Command Status	= exhaust command				
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip	<= 40 RPM				
			If above coditons are true, increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-1 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (2-1 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (2-3 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (2-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (2-4 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (2-4 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (6-4 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (6-4 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (6-5 shifting with throttle)	>= 0.2998 Fail Time (Sec)				
			fail timer 1 (6-5 shifting without throttle)	>= 0.5 Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				>= Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2 sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				>= 3 Fail Counter From 2nd Gear OR	
			6th gear fail counter				>= 3 Fail Counter From 6th Gear OR	
			total fail counter				>= 5 Total Fail Counter	
					TUT Enable temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Command / Attained Gear	≠ 1st Boolean		
					High Side Driver ON	= TRUE Boolean		
					output speed limit for TUT	>= 100 RPM		
					input speed limit for TUT	>= 150 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	Fail Case 1 Case: Steady State 1st Attained Gear slip	>= 400 RPM				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	>= Table Based Time Please Refer to Table 4 in supporting documents Enable Time (Sec)				
			Intrusive test: (CBR1 clutch exhausted)					
			Gear Ratio	<= 2.48218				
			Gear Ratio	>= 2.24585				
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 5 Fail Count in 1st Gear or >= 5 Total Fail Counts	
			Fail Case 2 Case: Steady State 3rd Gear					
			Max Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 22 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 23 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 2.48218				
			Gear Ratio	>= 2.24585				
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear or >= 5 Total Fail Counts	
			Fail Case 3 Case: Steady State 4rd Gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 22 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 23 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch exhausted)					
			Gear Ratio	<= 0.70032				
			Gear Ratio	>= 0.63367				
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 5 Total Fail Counts	
			Fail Case 4 Case: Steady State 5th Gear					
			Max Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 22 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to Table 23 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 0.70032				
			Gear Ratio	>= 0.63367				
			If the above parameters are true					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 5th Gear or >= 5 Total Fail Counts	
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					output speed	>= 0 RPM		
					TPS validity flag	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized	= TRUE Boolean		
					A OR B			
					(A) Output speed enable	>= 67 Nm		
					(B) Accelerator Pedal enable	>= 0.5005 Nm		
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.99902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>= 5.0003 Pct		
					if Attained Gear=1st FW Engine Torque Enable	>= 5 Nm		
					if Attained Gear=1st FW Engine Torque Enable	<= 8191.88 Nm		
					Transmission Fluid Temperature	>= -6.6563 ºC		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			Time Required			Mil Illum.
									out of	0.375	Sample Time (Sec)	
					P2770 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage	>=	8.59961	Volts				
					Ignition Voltage	<=	31.99902	Volts				
					Engine Speed	>=	400	RPM				
					Engine Speed	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean					>=	0.3	Fail Time (Sec)	One Trip
									out of	0.375	Sample Time (Sec)	
					P2721 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage	>=	8.59961	Volts				
					Ignition Voltage	<=	31.99902	Volts				
					Engine Speed	>=	400	RPM				
					Engine Speed	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE Boolean					>=	4.4	Fail Time (Sec)	Two Trips
									out of	5	Sample Time (Sec)	
					P2763 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage	>=	8.59961	Volt				
					Ignition Voltage	<=	31.99902	Volt				
					Engine Speed	>=	400	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			Time Required			Mil Illum.
					Engine Speed	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					High Side Driver Enabled	=	TRUE	Boolean				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0659 ECM: None						
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	= TRUE Boolean					>=	4.4	Fail Time (Sec)	One Trip
									out of	5	Sample Time (Sec)	
					P2764 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage	>=	8.59961	Volt				
					Ignition Voltage	<=	31.99902	Volt				
					Engine Speed	>=	400	RPM				
					Engine Speed	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					High Side Driver Enabled	=	TRUE	Boolean				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0659 ECM: None						

Table 1

Axis	0.00	64.00	128.00	192.00	256.00	320.00	384.00	448.00	512.00	N*m
Curve	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	RPM

Table 2

Axis	-6.67	-6.66	40.00	ºC
Curve	409.59	2.00	2.00	Sec

Table 3

Axis	-6.67	-6.66	40.00	ºC
Curve	409.59	4.00	4.00	Sec

Table 4

Axis	-6.67	-6.66	40.00	ºC
Curve	409.59	2.00	2.00	Sec

Table 5

Axis	-6.67	-6.66	40.00	ºC
Curve	409.59	3.00	3.00	Sec

Table 6

Axis	-6.67	-6.66	40.00	80.00	120.00	ºC
Curve	409.00	3.60	1.60	1.40	1.40	Sec

Table 7

Axis	-6.67	-6.66	40.00	80.00	120.00	ºC
Curve	409.00	3.40	1.40	1.30	1.20	Sec

Table 8

Axis	-6.67	-6.66	40.00	80.00	120.00	ºC
Curve	409.00	3.60	1.60	1.50	1.40	Sec

Table 9

Axis	-6.67	-6.66	40.00	80.00	120.00	ºC
Curve	409.00	3.30	1.30	1.20	1.10	Sec

Table 10

Axis	-40.00	-20.00	0.00	30.00	110.00	ºC
Curve	3.03	1.86	1.00	0.75	0.58	Sec

Table 11

Axis	-40.00	-20.00	0.00	30.00	110.00	ºC
Curve	1.72	1.11	0.60	0.36	0.22	Sec

Table 12

Axis	-40.00	-20.00	0.00	30.00	110.00	ºC
Curve	2.12	1.39	0.84	0.64	0.33	Sec

Table 13

Axis	-40.00	-20.00	0.00	30.00	110.00	ºC
Curve	2.51	0.95	0.50	0.29	0.13	Sec

Table 14

Axis	-40.00	-20.00	0.00	30.00	110.00	ºC
Curve	2.97	0.82	0.47	0.20	0.13	Sec

Table 15

Axis	-40.00	-30.00	-20.00	-10.00	0.00	10.00	20.00	30.00	40.00	ºC
Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sec

Table 16

Axis	-6.67	-6.66	40.00	ºC
Curve	409.59	2.50	2.50	Sec

Table 17

Axis	-6.67	-6.66	40.00	ºC
Curve	0.40	0.35	0.30	Sec

Table 18

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	ºC
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00	ºC

Table 19

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	ºC
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00	ºC

Table 20

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	ºC
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00	ºC

Table 21

Axis	-40.00	-20.00	40.00	ºC
Curve	5.00	3.00	1.00	Sec

Table 22

Axis	-6.67	-6.66	40.00	ºC
Curve	8191.75	8191.75	8191.75	RPM/Sec

Table 23

Axis	-6.67	-6.66	40.00	ºC
Curve	8191.75	8191.75	8191.75	RPM/Sec