Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction		Enable Conditions		Tin Requ		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 = 16	Fail Counts 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	°C					>= 5	Fail Time (Sec)	One Trip
			Fail Case 2 Substrate Temperature Ignition Voltage Note: either fail case can set the	>= >=	50 18	°C Volts					>= 2	Fail Time (Sec)	
			DTC				Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp Range for Time	>= <= >= <= >=	8.59961 31.99902 0 170 0.25	Volts Volts °C °C Sec			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Req	ime juired	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				
High Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	= TRUE Boolean			>=	4	Fail Counts	One Tr
							out of	6	Sample Counts	j.
					P0658 Status is not	Test Failed This Key = On or Fault Active				
					High Side Driver 1 On					
				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							Two Trips
			If TCM substrate temp to power up temp Δ	Refer to Table 20 in °C supporting documents						
			Both conditions above required to increment fail counter Note: table reference temp = to				>=	3000	Fail Counts (100ms loop)	-
			the median temp of trans oil temp, substrate temp and power up temp.				Out of	3750	Sample Counts (100ms loop)	
			Non-continuous (intermitteni) fail conditions will delay resetting fail counter until				>=	700	Pass Counts (100ms loop)	-
							Out of	875	Sample Counts (100ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mi
					Accelerator Position Signal	=	TRUE	Boolean		
					Valid					
					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	>=	5	Sec		
					allowable limits for		ENICE			
					Brake torque active Below describes the brake	=	FALSE			_
					torque entry criteria		00	A18		
					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 Cat Dayly, Tanana Asting	=	Not Active			
					Set Brake Torque Active		7			
					TRUE if above conditions are	>=	7	Sec		
					met for:					
					Below describes the brake					
					torque exit criteria					
					Brake torque entry criteria	=	Not Met			
							Clutch			
					Clutch hydraulic pressure	≠	Hydraulic			
					,		Air Purge			
							Event			
					Clutch used to exit brake		CeTFTD_e			
					torque active	=	_C3_RatlE			
							nbl			
					The above clutch pressure is					
					greater than this value for one	>=	600	kpa		
					loop					
					Set Brake Torque Active					
					FALSE if above conditions are	>=	20	Sec		
					met for:					
							Test Failed			
							This Key			
					P0667 Status is	≠	On or			
					1 0007 010103 13	,	Fault			
							Active			
							ACTIVE			
				1	1					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Require		Mil Illum.
System	Code	Description	Criteria	Disabl			Require	a	mum.
				Conditions	: DTC's:	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			
				CeTFTI e Vo					Two
Transmission Control Module	P0668	TCM internal temperature (substrate)	Type of Sensor Used						Trips
TCM)		thermistor failed at a low voltge	51	p					l '
			If TCM Substrate Temperature						
			Sensor = Direct Proportional and						
			Temp If TCM Substrate Temperature						
			Sensor = Indirect Proportional and	>= -249 °C					
			Temp						
			Either condition above will satisfy				>= 60 F	ail Timer (Sec)	
			the fail conditions				>= 00 T		
					Ignition Voltage Lo	>= 8.59961 Volts			
					Ignition Voltage Hi Engine Speed Lo	<= 31.99902 Volts >= 400 RPM			
					Engine Speed Hi	400 RFM			
					Engine Speed is within the				
					allowable limits for	>= 5 Sec			
						Test Failed			
						This Key			
					P0668 Status is	≠ On or			
						Fault			
						Active			
				Disabl		TCM: None			
				Conditions	: DTC's:				
						ECM: None			
				CeTFTI_e_Vo					Two
Transmission Control Module	P0669	TCM internal temperature (substrate)	Type of Sensor Used						Trips
TCM)		thermistor failed at a high voltage		p					· ·
			If TCM Substrate Temperature						
			Sensor = Direct Proportional and	>= 249 °C					
			Temp If TCM Substrate Temperature						
			Sensor = Indirect Proportional and	<= 249 °C					
			Temp						
			Either condition above will satisfy				>= 60 F	ail Timer (Sec)	1
			the fail conditions				~- 00 F	un Timer (Set)	
					Ignition Voltage Lo	>= 8.59961 Volts	1		
	I	1		1	Ignition Voltage Hi	<= 31.99902 Volts	1		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Inditions			Ti Req	ne Jired	Mil Illum.
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >=	400 7500 5	RPM RPM Sec				
					P0669 Status is	≠	est Failed This Key On or Fault Active					
					For Hybrids, below conditions must also be met		Active					
					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					
				Disabl Conditions		TCM: P0716, P07 ECM: None	17, P0722,	P0723				
				Refer to Table		LCM. NOTE						Two
Transmission Control Module (TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power-up temp to substrate temp Δ	20 in								Trips
			If transmission oil temp to power up temp Δ									
			Both conditions above required to increment fail counter						>=	3000	Fail Counts (100ms loop)	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.						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		TRUE TRUE	Boolean Boolean				
					Ignition Voltage Lo	>=	8.59961	Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
					Ignition Voltage Hi	<=	31.99902	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi	<=	7500	RPM		1
					Engine Speed is within the	>=	5	Sec		
					allowable limits for	/-		Jec		
					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 Cat Drake Terrus Active	=	Not Active			
					Set Brake Torque Active		7			
					TRUE if above conditions are	>=	7	Sec		
					met for: Below describes the brake					_
					torque exit criteria					
					Brake torque entry criteria	=	Not Met			
					brake torque entry citteria	=	Clutch			
							Hydraulic			
					Clutch hydraulic pressure	¥	Air Purge			
							Event			
							CeTFTD_e			
					Clutch used to exit brake	=	_C3_RatlE			
					torque active	=	_C3_Kaue nbl			
					The above clutch pressure is		TIDI			
					greater than this value for one	>=	600	kpa		
					loop	-	000	npu		
					Set Brake Torque Active					
					FALSE if above conditions are	>=	20	Sec		
					met for:					
					inot loss					
							Test Failed			
						,	This Key			
					P06AC Status is	≠	On or			
							Fault			
							Active			
				Disable	MIL not Illuminated for	TCM: P0658	, P0668, P0669,	P06AD,		
				Conditions:	DTC's:	P06AE, P07	16, P0712, P071	3, P0717,		
						P0722, P072	23, P0962, P096	3, P0966,		
						P0967, P09	70, P0971, P215	C, P2720,		
	1					P2721, P272				
	1									
						ECM: P010	1, P0102, P0103	, P0106,		1
	1						08, P0171, P017			
	1						01, P0202, P020			
	1						06, P0207, P020			
	1						02, P0303, P0304			
							07, P0308, P040			1
							,,			1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			reshold Value	Seconda Malfuncti	y on		Enable Conditions				ime juired	Mil Illum.
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<=	-59	°C						>=	60	Fail Time (Sec)	Two Trips
(())		ionago iou					Ignitior Engin Engire Engine Speed	Voltage Lo Noltage H e Speed Lo ne Speed H is within the ole limits fo	<= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
							P06 <i>F</i>	AD Status is	5 ≠	Test Failed This Key On or Fault Active					
							For Hybrids, below must	v conditions also be me							
							Estimated Motor			0	kW				
							Estimated Motor greater than I	imit for time	5 >=	0	Sec				
							Lost Commur Hybrid Proces		=	FALSE					
							Estimated Motor		s	FALSE					
						Disal Condition		ninated fo DTC's	r TCM: P0716, : ECM: None	P0717, P0722	2, P0723				
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>=	164	°C						>=	60	Fail Time (Sec)	Two Trips
							Ignitior Engin Engire Engine Speed	Voltage Lo Voltage H e Speed Lo e Speed H is within the ble limits fo	i <= 0 >= i <= 2 >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
							P06/	AE Status is	δ ≠	Test Failed This Key On or Fault Active					
						Disal Condition		ninated for DTC's	r TCM: None : ECM: None						
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ		Refer to Tal 19 in supporting document	°C									Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable onditions				me uired	Mil Illum.
			If transmission oil temp to power up temp Δ	Refer to Table > 18 in °C supporting documents								
			Both conditions above required to increment fail counter						>=	3000	Fail Counts (100ms loop)	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.						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	=	TRUE	Boolean Boolean				
					Valid Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo		8.59961 31.99902 400	Volts Volts RPM				
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >=	7500 5	RPM Sec				
					Brake torque active Below describes the brake torque entry criteria	=	FALSE					
					Engine Torque Throttle Transmission Input Speed	>= >= <=	90 30.0003 200	N*m Pct RPM				
					Vehicle Speed Transmission Range Transmission Range	<= ≠ ≠	8 Park Neutral	Kph				
					PTO Set Brake Torque Active TRUE if above conditions are met for:	= [Not Active 7	sec				
					Below describes the brake torque exit criteria Brake torque entry criteria	=	Not Met					
					Clutch hydraulic pressure	¥	Clutch Hydraulic Air Purge					
					Clutch used to exit brake torque active		Event CeTFTD_e _C3_RatIE					
					The above clutch pressure is greater than this value for one loop	>=	nbl 600	kpa				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			lime quired	Mil Illum.
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec			•	
					P0711 Status is	Test Failed This Key ≠ On or Fault Active				
				Disable Conditions		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 Fluid Temperature Sensor (TFT)	P0712	Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used If Transmission Fluid Temperature	CeTFTI_e_Vo = ItageDirectPro p						Two Trips
			Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and							
			Temp Either condition above will satisfy the fail conditions				>=	60	Fail Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec				
					P0712 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				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss	= FALSE = FALSE		
				Disable Conditions:	Fault MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0713	Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used If Transmission Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	р >= 174 °С				Two Trips
			Either condition above will satisfy the fail conditions		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed ii Engine Speed is within the allowable limits for P0713 Status is	>= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key ≠ On or Fault Active	>= 60 Fail Time (Se	
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0713, P0716, P0717, P0722, P0723 ECM: None		
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>= 900 RPM	Engine Torque is Engine Speed Engine Speed Engine Speed is within the allowable limits for Vehicle Speed is Throttle Position is Transmission Input Speed is The previous requirement has	>= 0 N*m <= 8191.88 N*m >= 400 RPM <= 7500 RPM >= 5 Sec >= 10 Kph >= 0 Pct >= 0 RPM >= 0 Sec	>= 0.8 Fail Time (Se	c) One Triș

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions		lime quired	Mil Illum.
						The change (loop to loop) in transmission input speed is The previous requirement has been satisfied for	< 8191.88 RPM/Loop >= 0 Sec			
						Throttle Position Signal Valid	= TRUE Boolean			
						Engine Torque Signal Valid Ignition Voltage Ignition Voltage	= TRUE Boolean >= 8.59961 Volts <= 31.99902 Volts			
						P0716 Status is not	Test Failed This Key = On or Fault Active			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0717, P0752, P0973, P0974 ECM: P0101, P0102, P0103, P0121, P0122, P0123			
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Case 1 Transmission Input Speed is	< 33	RPM			>= 4.5	Fail Time (Sec)	One Tr
			Fail Case 2 When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 653.	13 RPM	Controller uses a single power supply for the speed sensors	= 1 Boolean			
						Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= 80 N*m <= 8191.88 N*m >= 10 Kph = TRUE Boolean >= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec			-
						P0717 Status is not	Test Failed This Key = On or Fault Active			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: P0101, P0102, P0103			
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 35	RPM			>= 4.5	Fail Time (Sec)	One Tr

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0722 Status is not	Test Failed This Key = On or Fault Active		
					Transmission Input Speed Check Engine Torque Check Throttle Position Transmission Fluid Temperature Disable this DTC if the PTO is active Engine Torque Signal Valid Throttle Position Signal Valid Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	=TRUEBoolean=TRUEBoolean>=8.0002Pct>=-40°C=1Boolean=TRUEBoolean=TRUEBoolean>=8.59961Volts<=		
					Enable_Flags Defined Below The Engine Torque Check is TRUE, if either of the two following conditions are TRUE			
					Engine Torque Condition 1 Range Shift Status OR	Range ≠ shift ENUM completed Park or		
					Transmission Range is Engine Torque is Engine Torque is Engine Torque Condition 2 Engine Torque is Engine Torque is Engine Torque is	= Neutral >= 8191.75 N*m <= 8191.75 N*m >= 50 N*m <= 8191.75 N*m		
					The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE TIS Check Condition 1 Transmission Input Speed is Transmission Input Speed is	>= 653.13 RPM <= 5350 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue		Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
								TIS Check Condition 2 Engine Speed without the brake applied is Engine Speed with the brake applied is Engine Speed is Controller uses a single power supply for the speed sensors Powertrain Brake Pedal is Valid	>= >= = =	3200 3200 8191.88 1 TRUE	RPM RPM RPM Boolean Boolean				
						C Cond	isable tions:	MIL not Illuminated for DTC's:		1, P0102, P010					
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed	>=	105	RPM						>=	0	Enable Time (Sec)	One Trip
			Output Speed Delta	<=	8192	RPM						>=	0	Enable Time (Sec)	
			Output Speed Drop	>	650	RPM						>=	1.5	Output Speed Drop Recovery Fail Time (Sec)	
			AND Transmission Range is	= [Driven range (R,D)	9									
								Range_Disable OR	=	FALSE	See Below				
								Neutral_Range_Enable	=	TRUE	See Below				
								And Neutral_Speed_Enable are TRUE concurrently	=	TRUE	See Below				
								Transmission_Range_Enable	=	TRUE	See Below				
								Transmission_Input_Speed_E nable	=	TRUE	See Below				
								No Change in Transfer Case Range (High <-> Low) for	>=	5	Seconds				
								P0723 Status is not	=	Test Failed This Key On or Fault Active					
								Disable this DTC if the PTO is active	=	1	Boolean				
								Ignition Voltage is Ignition Voltage is		8.59961 31.99902	Volts Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
					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_E					-
					nable is TRUE when either TIS					
					Condition 1 or TIS Condition 2					
					is TRUE:					
					TIS Condition 1 is TRUE when			- 11 T		
					both of the following conditions	>=	0	Enable Time		
					are satsified for			(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	=	TRUE	Boolean		
					for all speed sensors					
					Neutral_Range_Enable is					
					TRUE when any of the next 3					
					conditions are TRUE					
					Transmission Range is	=	Neutral	ENUM		
							Reverse/N			
					Transmission Range is	=	eutral	ENUM		
							Transitonal			
							Neutral/Dri			
					Transmission Range is	=	Ve	ENUM		
							Transitiona			
					And when a drop occurs					
					Loop to Loop Drop of		/50			
					Transmission Output Speed is	>	650	RPM		
					Range_Disable is TRUE when					
	1				any of the next three					
					conditions are TRUE		Devi	ENUM		
					Transmission Range is	=	Park	ENUM		
	1						Park/Reve			
					Transmission Range is	=	rse	ENUM		
							Transitonal			
					Input Clutch is not	=	ON (Fully	ENUM		
					input olutor is hot	-	Applied)	LINDIN		
1	I	l		1						I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tin Requ	ne ired	Mil Illum.
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified	> 1.5 Seconds		•		
					for 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 Transmission Range is	= Neutral ENUM Reverse/N = eutral ENUM Transitiona I				
					Transmission Range is	Neutral/Dri = ve ENUM Transitiona I				
					Time since a driven range (R,D) has been selected	Table Based Time Please Refer to Table 21 in supporting documents				
					Transmission Output Speed Sensor Raw Speed Output Speed when a fault	>= 500 RPM >= 500 RPM				
				Disable Conditions:	was detected MIL not Illuminated for DTC's:	TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123				
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met				>=	2	Enable Time (Sec)	Two Trips
			(A) TCC Slip Error @ TCC On Mode	Refer to Table >= 1 in RPM Supporting Documents			>=	5	Fail Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	N IIIu
			(B) TCC Slip @ Lock On Mode >=	130 RPM			>= 5 Fail Time (S	Sec)
			If Above Conditions Have been					
			Met, and Fail Timer Expired,				>= 2 TCC Stuck	
			Increment Fail Counter				Fail Count	.er
					TCC Mode	= On or Lock		
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	>= 0.59901 VOIIS <= 31.99902 Volts	1	
					Engine Speed	>= 400 RPM	1	
					Engine Speed	<= 7500 RPM	1	
					Engine Speed is within the		1	
					allowable limits for	>= 5 Sec	1	
					Engine Torque Lo	>= 50 N*m	1	
					Engine Torque Hi	<= 8191.88 N*m	1	
					Throttle Position Lo	>= 8.0002 Pct	1	
					Throttle Position Hi	<= 99.9985 Pct	1	
					2nd Gear Ratio Lo	>= 2.19482 Ratio	1	
					2nd Gear Ratio High	<= 2.52515 Ratio	1	
					3rd Gear Ratio Lo	>= 1.42285 Ratio	1	
					3rd Gear Ratio High	<= 1.63708 Ratio	1	
					4th Gear Ratio Lo	>= 1.06946 Ratio	1	
					4th Gear Ratio High	<= 1.23047 Ratio	1	
					5th Gear Ratio Lo	>= 0.79053 Ratio	1	
					5th Gear Ratio Hi	<= 0.90955 Ratio	1	
					6th Gear Ratio Lo	>= 0.62305 Ratio	1	
					6th Gear Ratio High Transmission Fluid	<= 0.71692 Ratio	1	
					Temperature Lo	>= -6.6563 °C	1	
					Transmission Fluid		1	
					Temperature Hi	<= 130 °C	1	
					PTO Not Active	= TRUE Boolean	1	
					Engine Torque Signal Valid	= TRUE Boolean		
					Throttle Position Signal Valid	= TRUE Boolean		
					Dynamic Mode	= FALSE Boolean		
					B J Hanno Hiodo	Test Failed		
						This Key	1	
					P0741 Status is	≠ On or	1	
					1 0741 31010313	Fault	1	
						Active	1	
				Disable	MIL not Illuminated for	TCM: P0716, P0717, P0722, P0723,	1	
				Conditions:	DTC's:	P0742, P2763, P2764		
						ECM: P0101, P0102, P0103, P0106,	1	
						P0107, P0108, P0171, P0172, P0174,	1	
						P0175, P0201, P0202, P0203, P0204,	1	
						P0205, P0206, P0207, P0208, P0300,	1	
						P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	1	
a Camuartar Clut-t	+		ļ					-+
e Converter Clutch	P0742 T	CC System Stuck ON	TCC Slip Speed >=	-50 RPM			1	C

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime Juired	Mil Illum.
-,				<= 13 RPM								
									>=	1.5	Fail Time (Sec)	
									-		1 411 1 1110 (0000)	
			If Above Conditions Have been							,	Fail Counter	
			Met, and Fail Timer Expired, Increment Fail Counter						>=	6	Fail Counter	
					TCC Mode	=	Off					
					Enable test if Cmnd Gear =							
					1stFW and value true	=	1	Boolean				
					Enable test if Cmnd Gear =	=	0	Boolean				
					2nd and value true	=						
					Engine Speed Hi	<=	6000	RPM				
					Engine Speed Lo	>=	500	RPM				
					Vehicle Speed HI	<=	511	KPH				
					Vehicle Speed Lo Engine Torque Hi	>=	1 8191.88	KPH Nm				
		1			Engine Torque Lo	<= >=	8191.88	Nm				
		1			Current Range	>= ≠	Neutral	Range				
					Current Range	/- ≠	Reverse	Range				
					Transmission Sump							
		1			Temperature	<=	130	°C				
					Transmission Sump	>=	18	°C				
					Temperature							
					Throttle Position Hyst High	>=	5.0003	Pct				
					AND Max Vehicle Speed to Meet							
					Throttle Enable	<=	8	KPH				
					Once Hyst High has been met,							
					the enable will remain while	>=	2.0004	Pct				
					Throttle Position		210001	1.01				
					Disable for Throttle Position	>=	75	Pct				
					Disable if PTO active and	=	1	Boolean				
					value true	=	I	DUDIEdIT				
					Disable if in D1 and value true	=	1	Boolean				
					Disable if in D2 and value true	=	1	Boolean				
					Disable if in D3 and value true	=	1	Boolean				
					Dischle if in D4 and value true		1	Deeleen				
					Disable if in D4 and value true	=	1	Boolean				
					Disable if in D5 and value true	=	1	Boolean				
							1	Doolcan				
					Disable if in MUMD and value	=	1	Boolean				
					true							
					Disable if in TUTD and value true	=	1	Boolean				
					4 Wheel Drive Low Active	=	FALSE	Boolean				
					Disable if Air Purge active and							
					value false	=	0	Boolean				
					RVT Diagnostic Active	=	FALSE	Boolean				
					Ignition Voltage	>=	8.59961	V				
					Ignition Voltage	<=	31.99902	V				
					Vehicle Speed	<=	511	KPH				
		1			Engine Speed	>=	400	RPM				
I	I	I	I I		Engine Speed	<=	7500	RPM	I			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thre: Va	shold lue	Τ	Secondary Malfunction		Enable Conditions				ime luired	Mil Illum
-,							\neg	Engine Speed is within the	>=	5	Sec			•	
								allowable limits for Engine Torque Signal Valid	=	TRUE	Boolean				
1								Throttle Position Signal Valid	=	TRUE	Boolean				
											Dooloan				
										Test Failed This Key					
								P0742 Status is	¥	On or					
										Fault Active					
										Active					
						Disa Conditio		MIL not Illuminated for DTC's:	TCM: P0716 P0741, P276		, P0723,				
										1, P0102, P0103 08, P0171, P017					
									P0175, P020	01, P0202, P020	3, P0204,				
										06, P0207, P020 02, P0303, P030					
										07, P0308, P040					
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>=	400	RPM	+								Two
mode 2 manipiex vane	10/31		Commanded Gear			rpm									Trips
			Gear Ratio	<=	1.20959	ipin						>=	0.2	Fail Tmr	
			Gear Ratio If the above parameters are true	>=	1.09436							=	5	Fail Counts	
												≠	0	Neutral Timer	
														(Sec)	
												>=	0.3	Fail Timer (Sec)	
								Ignition Voltage Lo	>=	8.59961	Volts	>=	8	Counts	-
								Ignition Voltage Hi	<=	31.99902	Volts				
								Engine Speed Lo Engine Speed Hi	>= <=	400 7500	RPM RPM				
								Engine Speed is within the allowable limits for	>=	5	Sec				
								Transmission Fluid	>=	-6.6563	°C				
								Temperature	>=	-0.0303	C				
								Range Shift State	=	Range Shift	ENUM				
								Range Shint State	-	Completed	LINOW				
	1														
	1							TPS OR	>=	0.5005	%				
								Output Speed	>=	67	RPM				
								Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
								Engine Torque Signal Valid							
	1							from ECM, High side driver is enabled	=	TRUE	Boolean				
								High-Side Driver is Enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
							Input Speed Sensor fault Output Speed Sensor fault	=	FALSE FALSE	Boolean Boolean			-	
							Default Gear Option is not	=		Boolean				
							present	=	TRUE					
						Disable	MIL not Illuminated for	TCM: P0716	6, P0717, P0722	, P0723,				
						Conditions:	DTC's:	P182E						
									1, P0102, P0103					
									08, P0171, P017					
									01, P0202, P020 06, P0207, P020					
								P0301, P03	02, P0303, P030	04, P0305,				
								P0306, P03	07, P0308, P040	01, P042E				
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM								One Trip
			Commanded Gear	=	3rd	Gear								
			Commanded Gear has Achieved		ora	oodi								
			1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol.	= 1	TRUE	Boolean								
			Commanded On											
			If the above parameters are true									ease Refe		
											to		n Neutral Timer	
											>= 5	Supporting	(Sec)	
			Command 4th Gear once Output								D	ocuments		
			Shaft Speed	<=	400	RPM								
			If Gear Ratio And Gear Ratio		.82568 .22839									
			Aliu Geal Ralio	<= 4.	.22039							1 5	E - 11 Timer (C)	
											>=	1.5	Fail Timer (Sec)	
							Ignition Voltage Lo	>=	8.59961	Volts	>=	5	Counts	
							Ignition Voltage Hi	<=	31.99902	Volts				
							Engine Speed Lo Engine Speed Hi	>= <=	400 7500	RPM RPM				
							Engine Speed is within the		5					
							allowable limits for	>=		Sec				
							High-Side Driver is Enabled Throttle Position Signal Valid	=	TRUE	Boolean				
							from ECM	=	TRUE	Boolean				
							Output Speed OR	>=	67	RPM				
							TPS	>=	0.5005	%				
									Range					
							Range Shift State	=	Shift	ENUM				
									Completed					
							Transmission Fluid Temperature	>=	-6.6563	°C				
							Input Speed Sensor fault	=	FALSE	Boolean				
1			l				Output Speed Sensor fault	=	FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Conditions			Tim Requi		Mil Illum.
							Default Gear Option is not present	=	TRUE					
						Disable Conditions:	MIL not Illuminated for DTC's:		, P0717, P0722,	, P0723,				
								P0107, P010 P0175, P020 P0205, P020 P0301, P030	, P0102, P0103 8, P0171, P017 1, P0202, P020 6, P0207, P020 2, P0303, P030 7, P0308, P040	2, P0174, 3, P0204, 8, P0300, 4, P0305,				
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	Fail Case 1 Commanded Gear Gear Box Slip Intrusive Shift to 2nd Commanded Gear Previous	>=	400 t Locked	RPM Gear					>= to	lease Refer 5 Table 5 in Supporting Documents	Neutral Timer (Sec)	One Tri
			Gear Ratio Gear Ratio If the above parameters are true	>= 2.	.48218 .24585						>= >=	1 3	sec counts	
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <= >= <=	8.59961 31.99902 400 7500	Volts Volts RPM RPM				
							allowable limits for Output Speed	>= >=	5 67	Sec RPM				
							OR TPS	>=	0.5005 Range	%				
							Range Shift State	=	Shift Completed	ENUM				
							Transmission Fluid Temperature High-Side Driver is Enabled Throttle Position Signal Valid	>= =	-6.6563 TRUE	°C Boolean				
							from ECM Input Speed Sensor fault Output Speed Sensor fault	= =	TRUE FALSE FALSE	Boolean Boolean Boolean				
							Default Gear Option is not present	=	TRUE					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres		Secondary Malfunction	Enable Conditions			ime uired	Mil Illum.
						Disable	MIL not Illuminated for	TCM: P0716, P0717, P0722	, P0723,	1		
						Conditions:	DTC's:	P182E				
								ECM: P0101, P0102, P0103 P0107, P0108, P0171, P013				
								P0175, P0201, P0202, P020				
								P0205, P0206, P0207, P020				
								P0301, P0302, P0303, P030 P0306, P0307, P0308, P040				
		Pressure Control (PC) Solenoid B	Fail Case 1									One Tri
Variable Bleed Solenoid (VBS)	P0776	Stuck Off [C35R]	Case: Steady State 3rd Gear									One mp
			Commanded Gear Gearbox Slip		3rd 400	Gear RPM						
			Gearbox Silp	/-	400					Please Refe		
										>= to Table 16 Supporting	in Neutral Timer (Sec)	
										Documents		
			Command 4th Gear once Output Shaft Speed	<=	400	RPM						
			If Gear Ratio	>=	1.09436							
			And Gear Ratio	<=	1.20959							
										>= 3	Fail Timer (Sec)	
			It the above condiations are true,							>= 3	3rd Gear Fail	
			Increment 3rd gear fail counter							<i>></i> = J	Counts	
											or 3-5R Clutch Fai	
			and C35R Fail counter							>= 14	Counts	
			Fail Case 2 Case: Steady State 5th Gear Commanded Gear		5th	Gear						
			Commanded Gear	-	501	Geal						
										Please Refe to Table 5 i		
			Gearbox Slip	>=	400	Rpm				>= Supporting		
										Documents		
			Intrusive Test: Command 6th Gear									
					Please refer							
			If attained Gear=6th gear Time	>=	supporting	Shift Time (Sec)						
					documents							
			It the above condiations are true,							>= 3	5th Gear Fail	
			Increment 5th gear fail counter							ý- 0	Counts	
											or 3-5R Clutch Fai	
			and C35R Fail counter							>= 14	Counts	
							PRNDL State defaulted inhibit RVT	= FALSE = FALSE	Boolean Boolean			
							IMS fault pending indication	= FALSE	Boolean			
							TPS validity flag	= TRUE	Boolean			
							Hydraulic System Pressurized	= TRUE	Boolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions				me uired	Mil Illum.
					Minimum output speed for	>= 67	RPM				
					RVT 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 Engine Speed is within the	<= 7500	RPM				
					allowable limits for	>= 5	Sec				
					Throttle Position Signal valid	= TRUE	Boolean				
					HSD Enabled Transmission Fluid	= TRUE	Boolean				
					Temperature	>= -6.6563	°C				
					Input Speed Sensor fault	= FALSE	Boolean				
					Output Speed Sensor fault	= FALSE	Boolean				
					Default Gear Option is not	= TRUE					
					present						
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P072	2, P0723,				
				Conultions.	DICS.	P 102E					
						ECM: P0101, P0102, P010	3, P0106,				
						P0107, P0108, P0171, P01					
						P0175, P0201, P0202, P02					
						P0205, P0206, P0207, P02 P0301, P0302, P0303, P03					
						P0306, P0307, P0308, P04					
Verteble Divert Colore (14 A/DC)	00777	Pressure Control (PC) Solinoid B	Fail Case 1					<u> </u>			One Tri
Variable Bleed Solenoid (VBS)	P0777	Stuck On [C35R] (Steady State)	Case: Steady State 1st								
			Attained Gear slip	>= 400 RPM Table Based							
				Time Please							
			If the Above is True for Time	Defer to Table, Enable Time							
			IT THE ADOVE IS THE FOR THINE	4 in (Sec)							
				supporting							
			Intrusive test:	documents							
			(CBR1 clutch exhausted)								
			Gear Ratio								
			Gear Ratio	>= 1.45544							
			If the above parameters are true							5 " T (0)	
								>=	1.1	Fail Timer (Sec) Fail Count in	
								>=	2	1st Gear	
										or Total Fail	
								>=	3	Counts	
			Fail Case 2 Case: Steady State 2nd gear								1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Gritefia	Table Based	mananotion	Conditions	Required	interni.
				uslus Disess				
			Max Delta Output Speed	>= Refer to Table 22 in rpm/sec				
			Hysteresis					
				supporting documents				
				Table Based				
				value Please				
			Min Delta Output Speed Hysteresis	<pre>>= Refer to Table 23 in rpm/sec</pre>				
			nysteresis	supporting				
				documents				
				Table Based				
				Time Please				
			If the Above is True for Time	>= Refer to Table 17 in Sec				
				supporting				
				documents				
			Intrusive test: (CB26 clutch exhausted)					
			· · · · · · · · · · · · · · · · · · ·	<= 1.60864				
			Gear Ratio	>= 1.45544				
			If the above parameters are true					
							>= 1.1 Fail Timer (S	Sec)
							Fail Count	in
							>= 3 2nd Gear	
							Or	
							>= 3 Total Fail Counts	
			Fail Case 3 Case: Steady State 4th gear				Counts	
				Table Based				
			Max Delta Output Speed	value Please				
			Hysteresis	>= Refer to Table 22 in rpm/sec				
			11/01/01/00/0	supporting				
				documents				
				Table Based value Please				
			Min Delta Output Speed	>= Refer to Table 23 in rpm/sec				
			Hysteresis	>= 23 in rpm/sec				
				supporting				
				documents Table Based				
				Time Please				
			If the Above is True for Time	Refer to Table Sec				
				17 11				
				supporting documents				
			Intrusive test:	uocuments				
			(C1234 clutch exhausted)					
			Gear Ratio					
			Gear Ratio If the above parameters are true	>= 0.80945				
							. 11 5-11-75 (2)	(a a)
							>= 1.1 Fail Timer (S	ec)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime quired	Mil Illum.
									>=	3	Fail Count in 4th Gear	
											or Total Fail	
									>=	3	Counts	
			Fail Case 4 Case: Steady State 6th gear	Table Based								
			May Dalka Output Crossed	value Please								
			Max Delta Output Speed Hysteresis	>= Refer to Table 22 in rpm/sec								
				supporting documents								
				Table Based								
			Min Delta Output Speed	<pre>value Please >= Refer to Table 23 in rpm/sec</pre>								
			Hysteresis									
				supporting documents								
				Table Based								
			If the Above is True for Time	Time Please >= Refer to Table Sec								
			IT the Above is thue for time	1710								
				supporting documents								
			Intrusive test: (CB26 clutch exhausted)									
			Gear Ratio						>=	1.1	Fail Timer (Sec)	
			Gear Ratio	>= 0.80945					>=	3	counts	
			If the above parameters are true								F - '' T 'r (C)	
									>=	1.1	Fail Timer (Sec) Fail Count in	
									>=	3	6th Gear	
											or Total Fail	
									>=	3	Counts	
					PRNDL State defaulted inhibit RVT	=	FALSE FALSE	Boolean Boolean				
					IMS fault pending indication	=	FALSE 0	Boolean RPM				
					output speed TPS validity flag	>= =	TRUE	Boolean				
					HSD Enabled Hydraulic_System_Pressurize	=	TRUE	Boolean				
					d	=	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 Engine Speed Hi	>= <=	400 7500	RPM RPM				
					Engine Speed is within the	>=	5	Sec				
I.	1	I	1	I	allowable limits for		0	2.30	I			I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction	Enable Conditior	IS	Time Required	Mil Illum.
System	Code	Description	Criteria		Va	lue Disable Conditions:	Matunction if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault MIL not Illuminated for DTC's:	>= 5.0003 >= 5 <= 8191.8 >= -6.6563 = FALSE = FALSE TCM: P0716, P0717, P0 P182E ECM: P0101, P0102, P0 P0107, P0108, P0171, P P0175, P0201, P0202, P	Pct Nm °C Boolean Boolean 722, P0723, 103, P0106, 0172, P0174, 0203, P0204,	Kequired	iiium.
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B	Primary Offgoing Clutch is exhausted (See Table 12 in	=	TRUE	Boolean		P0205, P0206, P0207, P P0301, P0302, P0303, P P0306, P0307, P0308, P	0208, P0300, 0304, P0305,		One Trip
		StuckOn [C35R] (Dymanic)	Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status	=	Maximum pressurized Clutch exhaust command Initial Clutch						
			Attained Gear Slip If the above conditions are true run appropriate Fail 1 Timers Below:		Control 40	RPM					
			fail timer 1 (3-1 shifting with Closed Throttle) fail timer 1 (3-2 shifting with Throttle)	>=	0.5 0.2998	Fail Time (Sec) Fail Time (Sec)					
			fail timer 1 (3-2 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)					
			fail timer 1 (3-4 shifting with Throttle) fail timer 1 (3 4shifting with Cleard Throttle)	>=	0.2998 0.5	Fail Time (Sec) Fail Time (Sec)					
			(3-4shifting with Closed Throttle) fail timer 1 (3-5 shifting with Throttle)	>=	0.2998	Fail Time (Sec)					
			fail timer 1 (3-5 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions			Ti Req	me uired	Mil Illum
			fail timer 1 (5-3 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-3 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			fail timer 1 (5-4 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-4 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			fail timer 1 (5-6 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-6 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers								T + Er >= fc	Total Fail ime = (Fail Fail 2) See nable Time Trail Time 1, and Reference Supporting Table 15 for Fail Timer 2	e rs er sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter										-	
			3rd gear fail counter								>=	3	3rd gear fail counts	
			5th gear fail counter								>=	3	OR 5th gear fail counts OR	
			Total fail counter								>=	5	total fail counts	
							TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled Default Gear Option is not present	>= = * = > = = = =	-6.6563 FALSE FALSE TRUE 100 150 FALSE FALSE FALSE TRUE TRUE	°C Boolean Boolean Boolean RPM RPM Boolean Boolean Boolean Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Require		Mil Illum.
				Disabl Conditions	e MIL not Illuminated for	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)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	Fail Case 1 Case: Steady State 4th Gear						One Tr
			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	Supporting)				
			if the above conditions have been	Documents					
			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	Please Refer					
			If attained Gear ≠ 6th for time if the above conditions have been	<pre>to Table 3 in Supporting Documents</pre>)				
			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				Cai		

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				
			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 inhibit RVT IMS fault pending indication	= FALSE Boolean = FALSE Boolean = FALSE Boolean		
					TPS validity flag Hydraulic System Pressurized	= TRUE Boolean = TRUE Boolean		
					Minimum output speed for	>= 67 RPM		
					RVT A OR B			
					(A) Output speed enable(B) Accelerator Pedal enable	>= 67 RPM >= 0.5005 Pct		
					Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= 8.59961 Volts <= 31.99902 Volts >= 400 RPM		
					Engine Speed Hi Engine Speed is within the	<= 7500 RPM >= 5 Sec		
					allowable limits for Throttle Position Signal valid	= TRUE Boolean		
					HSD Enabled Transmission Fluid Temperature	= TRUE Boolean >= -6.6563 °C		
					Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present	= FALSE Boolean = FALSE Boolean = 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	Fail Case 1 Case: Steady State 1st					One Trip
		Stuck On [C456] (Steady State)	Attained Gear slip	>= 400 RPM				

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 Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	4 in (Sec) supporting documents				
							>= 1.1 Fail Timer (Se	c)
							>= 2 Fail Count in 1st Gear	
							>= 3 ^{or} Total Fail Counts	_
			Fail Case 2 Case Steady State 2nd Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis If the Above is True for Time Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	supporting documents				
							>= 1.1 Fail Timer (Se	
							>= 3 Fail Count ir 2nd Gear or	
							>= 3 Total fail coun	ts
			Fail Case 3 Case Steady State 3rd				1	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime quired	Mil Illum.
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to Table								
			Min Delta Output Speed Hysteresis									
			If the Above is True for Time	documents Table Based Time Please >= Refer to Table 17 in Sec								
			Intrusive test: (C35R clutch exhausted)									
			Gear Ratio Gear Ratio If the above parameters are true	>= 1.09436								
									>=	1.1	Fail Timer (Sec)	
									>=	3 OR	Fail Count in 3rd Gear	
									>=	3	Total Fail Counts	
					PRNDL State defaulted inhibit RVT	=	FALSE FALSE	Boolean Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed TPS validity flag	>= =	0 TRUE	RPM Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Pressurize	=	TRUE	Boolean				
					A OR B		47	Nm				1
					(A) Output speed enable(B) Accelerator Pedal enable	>=	67 0.5005	Nm Nm				
					Ignition Voltage Lo	>=	8.59961	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				1
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi Engine Speed is within the	<=	7500	RPM				1
					allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW	>=	5.0003	Pct				
					Engine Torque Enable	>=	5	Nm				
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.88	Nm				1
					Transmission Fluid Temperature	>=	-6.6563	°C				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold Ilue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= FALSE Boolean = FALSE Boolean = 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) Primary Oncoming Clutch	=	TRUE Maximum	Boolean				One Trip
			Pressure Command Status Pressure Command Status Primary Offgoing Clutch Pressure Command Status	=	pressurized Clutch exhaust command					
			Range Shift Status	≠	nitial Clutch Control					
			Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below:	<=	40	RPM				
			fail timer 1 (4-1 shifting with throttle)	>=	0.2998	Fail Time (Sec)				
			fail timer 1 (4-1 shifting without throttle) fail timer 1	>=	0.5	Fail Time (Sec)				
			(4-2 shifting with throttle) fail time 1	>=	0.2998 0.5	Fail Time (Sec) Fail Time (Sec)				
			(4-2 shifting without throttle) 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) fail timer 1	>=	0.5	Fail Time (Sec)				
			(6-2 shifting with throttle) fail timer 1	>=	0.2998 0.5	Fail Time (Sec) Fail Time (Sec)				
1			(6-2 shifting without throttle)	/-	0.5				l	I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions			Tin Requ		Mil Illum.
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers						Tin + F Ena >= for R S Ta	otal Fail Fail 2) See able Timer Fail Timer 1, and reference upporting able 15 for ail Timer 2	s r sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter						10	in Timer 2		
			4th gear fail counter						>=	3	Fail Counter From 4th Gear OR	
			5th gear fail counter						>=	3	Fail Counter From 5th Gear OR	
			6th gear fail counter						>=	3	Fail Counter From 6th Gear OR	
			Total fail counter						>=	5	Total Fail Counter	
						TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.6563 = FALSE ≠ 1st = TRUE >= 100 >= 150 = FALSE = FALSE = FALSE = TRUE	°C Boolean Boolean Boolean RPM RPM Boolean Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P182E	, P0723,				
							ECM: P0101, P0102, P0103 P0107, P0108, P0171, P017 P0175, P0201, P0202, P020 P0205, P0206, P0207, P020 P0301, P0302, P0303, P030 P0306, P0307, P0308, P040	2, P0174, 3, P0204, 8, P0300, 4, P0305,				
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Case 1 Tap Up Switch Stuck in the Up Position in Range 1 Enabled Tap Up Switch Stuck in the Up	= 0 = 0	Boolean Boolean							Special No MIL
			Position in Range 2 Enabled Tap Up Switch Stuck in the Up Position in Range 3 Enabled	- 0	Boolean							

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions			Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	0 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	0 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	0 Boolean						
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0 Boolean						
			Tap Up Switch ON	= TF	RUE Boolean				>=	1 Fail Time (Sec)	
			Fail Coos 2 Tan Un Cuitak Chuak in the Un								
			Fail Case 2 Tap Up Switch Stuck in the Up Position in Range 1 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1 Boolean						
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	0 Boolean						
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	0 Boolean						
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0 Boolean						
			Tap Up Switch ON NOTE: Both Failcase1 and	= TF	RUE Boolean				<u> </u>	600 Fail Time (Sec)	
			Failcase 2 Must Be Met						>=	000 Fail fille (Sec,	
						Time Since Last Range Change	>= 1	Enable Time (Sec)			
						Ignition Voltage Lo Ignition Voltage Hi	>= 8.59961 <= 31.99902	Volts Volts			
						Engine Speed Lo Engine Speed Hi	>= 400 <= 7500	RPM RPM			
						Engine Speed is within the allowable limits for	>= 5	Sec			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions		Time Required	Mil Illum
						P0815 Status is	Test Failed This Key ≠ On or Fault Active			
					Disable Conditions:		TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761			
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	Fail Case 1 Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 0	Boolean		ECM: None			Specia No MI
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 0	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 0	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 0	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 0	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 0	Boolean					
			Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range Park Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	= 0	Boolean					
			Tap Down Switch ON	= TRI	JE Boolean			>=	1 s	ec
			Fail Case 2 Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1	Boolean					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold /alue	Secondary Malfunction		Enable Conditions			Tin Requ		Mil Illum.
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	= 0	Boolean								
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0	Boolean								
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	= 0	Boolean								
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	= TRUE	Boolean					>=	600	sec	
						Time Since Last Range Change Ignition Voltage Lo	>= >=	1 8.59961	Enable Time (Sec) Volts				
						Ignition Voltage Hi Engine Speed Lo	<= >=	31.99902 400	Volts RPM				
						Engine Speed Hi Engine Speed is within the allowable limits for	<=	7500 5	RPM Sec				
								Test Failed This Key					
						P0816 Status is	≠	On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0815, P P1877, P1915,		P1876,				
Tap Up Tap Down Switch			TUTD Circuit Reads Invalid				ECM: None						Special
(TUTD)	P0826	Up and Down Shift Switch Circuit	Voltage	= TRUE	Boolean	Ignition Voltage Lo	>=	8.59961	Volts	>=	60	Fail Time (Sec)	No MIL
						Ignition Voltage Hi Engine Speed Lo	<= >=	31.99902 400	Volts RPM				
						Engine Speed Hi Engine Speed is within the	<=	7500 5	RPM Sec				
I.	I	I	I I		I	allowable limits for	-	0	000	I			ł

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
						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)	P0961	Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS)	The HWIO reports an invalid voltage (out of range) error flag	= TRI	JE Boolean					>=	4.4	Fail Time (Sec)	Two Trips
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec	out of	5	Sample Time (Sec)	
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0962	Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS)	The HWIO reports a low voltage (ground short) error flag		JE Boolean					>= out	1.5 1.875	Fail Time (Sec) Sample Time	One Tri
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec	of	1.073	(Sec)	
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0963	Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS)	The HWIO reports a high voltage (open or power short) error flag		JE Boolean	<u></u>				>= out	4.4	Fail Time (Sec) Sample Time	Two Trips
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed		8.59961 31.99902 400 7500	Volts Volts RPM RPM	of	5	(Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	reshold /alue	Secondary Malfunction		Enable Conditions				ime uired	Mil Illum.
					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)	P0966	Pressure Control (PC) Solenoid B Control Circuit Low Voltage (C35R VBS)	The HWIO reports a low voltage (ground short) error flag	Boolean					>=	0.3	Fail Time (Sec)	One Tri
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for P0966 Status is not	<= >=	8.59961 31.99902 400 7500 5 Test Failed This Key On or Fault	Volts Volts RPM RPM Sec	out of	0.375	Sample Time (Sec)	-
Variable Bleed Solenoid (VBS)	P0967	Pressure Control (PC) Solenoid B Control Circuit High Voltage (C35R VBS)	The HWIO reports a high vollage (open or power short) error flag	Disable Conditions: Boolean	MIL not Illuminated for DTC's:	TCM: None ECM: None	Active		>=	0.3	Fail Time (Sec)	One Tr
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <=	8.59961 31.99902 400 7500 5 Test Failed	Volts Volts RPM RPM Sec	out of	0.375	Sample Time (Sec)	-
				Disable Conditions:	P0967 Status is not MIL not Illuminated for DTC's:		This Key On or Fault Active					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold Ilue	Secondary Malfunction		Enable Conditions				ime juired	Mil Illum.
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	= T	TRUE	Boolean					>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
							P0970 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	= <= >= <= >=	Test Failed This Key On or Fault Active 8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec	01		(386)	
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= T	[RUE	Boolean					>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Tri
							P0971 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	= <= >= <= >=	Test Failed This Key On or Fault Active 8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= T	TRUE	Boolean					>=	1.2	Fail Time (Sec)	One Tri
											out of	1.5	Sample Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
					P0973 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	Boolean					>=	1.2	Fail Time (Sec)	Two Trips
									out of	1.5	Sample Time (Sec)	
					P0974 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <= >= <=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	Boolean					>=	1.2	Sec	One Trip
									out of	1.5	Sec	
					P0977 Status is not	=	Test Failed This Key On or Fault Active					
					Ignition Voltage Ignition Voltage	>= <=	8.59961 31.99902	Volts Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction		Enable Conditions			Tin Requ		Mil Illum.
						Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >=	400 7500 5	RPM RPM Sec				
				с	Disable onditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Tap Up Tap Down Switch (TUTD)	P1761	Tap Up and Down switch signal circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boole	an					>=	3	Fail Counter Sample Timer	Specia No MIL
						Tap Up Tap Down Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= >= <= >=	TRUE 400 7500 5	Boolean RPM RPM Sec	>	10	(Sec)	_
				с	Disable onditions:	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 Range 1110)	9								One Tri
			Previous range	RNDL_Driveo -									
			Previous range	RNDL_DIVe4 -									
			Throttle Position Available Throttle Position Output Speed	= Completed ENUM <= 50 rpm <= Sixth >= First = TRUE >= 8.0002 pct >= 200 rpm	1								
			Engine Torque Engine Torque If the above conditions are met then Increment Fail Timer If Fail Timer has Expired then Increment Fail Counter							>= >=	1 5	Fail Seconds Fail Counts	
			Fail Case 2 Output Speed The following PRNDL sequence events occur in this exact order: PRNDL state	<= 70 rpm									

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction		Enable Conditions		Γ	Tir Requ		Mil Illum.
			PRNDL state = Drive 6 for PRNDL state		1 Transition 8	Sec						·		
			PRNDL state		0111) Drive 6 (bit	Range								
			PRNDL state	=	state 0110) Transition 1 (bit state	Range								
			Above sequencing occurs in Neutral Idle Mode	<=	1110) 1 Inactive	Sec								
			If all conditions above are met Increment delay Timer											
			If the below two conditions are met Increment Fail Timer delay timer		1	Sec					>=	3	Fail Seconds	
			Input Speed If Fail Timer has Expired then Increment Fail Counter	>=	400	Sec					>=	2	Fail Counts	
			Fail Case 3 Current range	=	Transition 13 (bit state 0010)		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	r •			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							
			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 =							
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer	>= <=	100 8191.75	Nm Nm	1001 (park)				>=	0.225	Seconds	
			If the above Condtions have been met, Increment Fail Counter								>=	15	Fail Counts	
			Fail Case 5 Throttle Position Available	=	TRUE	Boolean								1
			The following PRNDL sequence events occur in this exact order:											

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions			Tim Requ		Mil Illum.
0,000	5040	Description	PRNDL State	Reverse (hit			2 2010110			qu		
				Transition 11								
			PRNDL State									
				0100) Neutral (bit Dongo								
			PRNDL State	state 0101)								
			PRNDL State	Transition 11 = (bit state Range								
				0100)								
			Above sequencing occurs in Then delay timer increments	<= 1 Sec								
			Delay timer									
			Range Shift State	= Range Shift Complete								
			Absolute Attained Gear Slip	<= 50 rpm								
			Attained Gear Attained Gear									
			Throttle Position	>= 8.0002 pct								
			Output Speed If the above conditions are met									
			Increment Fail Timer						>=	20	Seconds	
			Fail Case 6 Current range	Illegal (bit = state 0000 or	A Open Circuit Definition (flag set false if the following							
			Current range	1000 or 0001)	conditions are met):							
							Transition 11 (bit					
			and		Current Range	¥	state					
			A Open Circuit (See Definition)	= FALSE Boolean	or		0100)					
			A Open Circuit (See Delinition)		UI UI		Neutral (bit					
					Last positive state	¥	state 0101)					
					or							
					Previous transition state	¥	Transition 8 (bit state					
					FIEVIOUS ITAIISIIIOIT SIALE	+	0 (Dit State 0111)					
			If the above Condtions are met		Fail case 5 delay timer	=	0	Sec				
			then, Increment Fail timer						>=	6.25	Seconds	
			Fail Case 7 Current PRNDL State	= PRNDL circuit ABCP = 1101 Range								
			Current P MyBE State	ABCP = 1101 Range								
			and									
			Previous PRNDL state	= PRNDL circuit ABCP =1111 Range								
			Input Speed	, 1901 H H H								
			Reverse Trans Ratio	<= 2.84583 ratio								
			Reverse Trans Ratio If the above Condtions are met	>= 3.27417 ratio								
			then, Increment Fail timer						>=	6.25	Seconds	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
System		Description	Criteria P182E will report test fail when any of the above 7 fail cases are met		V	alue Disable Conditions:	Ignition Voltage Lo Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed is within the allowable limits for Engine Torque Signal Valid MIL not Illuminated for DTC's:	P07C0, P ECM: P0 P0107, P P0175, P P0205, P P0301, P	8.59961 31.99902 400 7500 5 TRUE 716, P0717, P072: 07BF, P077C, P0 101, P0102, P010 0108, P0171, P010 20201, P0202, P02 20206, P0207, P02 20302, P0303, P03	77D 3, P0106, 72, P0174, 03, P0204, 08, P0300, 04, P0305,		Req	uired	IIIum.
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	¥	Park or Neutral	Enumeration		P0306, P	0307, P0308, P04	01, P042E				One Trip
				<=	50	RPM					>=	0.25	Enable Time (Sec)	
			Then Engine Speed Between Following Cals Engine Speed Lo Hist Engine Speed Hi Hist		50 480	RPM RPM					>=	0.06875	Enable Time (Sec)	
			Then Final Engine Speed Final Transmission Input Speed		525 100	RPM RPM					>=	1.25	Fail Time (Sec)	
							DTC has Ran this Key Cycle? Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst High (enables above this value) Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed P1915 Status is	= >= <= <= <= ≠	FALSE 6 31.99902 5 2 90 Test Failed This Key On or Fault Active	Boolean V V V v				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold /alue	Secondary Malfunction		Enable Conditions			Tim Requi		Mil Illum.
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, ECM: None	P0723					
Transmission Control Module (TCM)	P2534	Ignition Switch Run/Start Position Circuit Low	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this value) Ignition Voltage Low Hyst (run crank goes false when below this value)	= FALSE 5 2	Boolean Volts Volts					>= Out of	280 280	Fail Counts (25ms loop) Sample Counts (25ms loop)	One Trip
			vaue)			ECM run/crank active status available ECM run/crank active status	=	TRUE TRUE	Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this value)		Boolean Volts					>=	280	Fail Counts (25ms loop)	One Trip
			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 ECM run/crank active status	=	TRUE FALSE	Boolean 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 Gear slip	>= 400	RPM					1	Please See Table 5 For Neutral Time		One Trip
			Intrusive test: commanded 3rd gear	Table Base Time Pleas	<u>^</u>						Cal		
			If attained Gear = 3rd for Time If Above Conditions have been met	Supporting Document	^{In} (Sec)								
			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			Tim Requi		Mil Illum.
			and CB26 Fail Count					>=	14	or CB26 Fail Count	
			Fail Case 2 Case: Steady State 6th Gear Gear slip	>= 400 RPM				Ta	lease See able 5 For eutral Time	Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear If attained Gear = 5th For Time	Table Based Time Please See Table 2 in Enable Time					Cal		
			If Above Conditions have been met, Increment 5th gear fail counter	Supporting Documents				>=	3	5th Gear Fail Count	
			and CB26 Fail Count					>=	14	or CB26 Fail Count	
					PRNDL State defaulted inhibit RVT IMS fault pending indication TPS validity flag	= FALSE = FALSE = FALSE = TRUE	Boolean Boolean Boolean 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 Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= 8.59961 <= 31.99902 >= 400 <= 7500 >= 5	Volts Volts RPM RPM Sec				
					allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid	= TRUE = TRUE	Boolean Boolean				
					Temperature Input Speed Sensor fault Output Speed Sensor fault	>= -6.6563 = FALSE = FALSE	°C Boolean Boolean				
					Default Gear Option is not present	= TRUE					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable		TCM: P0716, P0717, P0722, P0723,		
					Conditions:	DTC's:	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		
			Primary Offgoing Clutch is						One Trip
ariable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	exhausted (See Table 13 in Supporting Documents for	= TRUE	Boolean				
		Sluck OII [CB20] (Dynamic)	Exhaust Delay Timers)						
			Primary Oncoming Clutch						
			Pressure Command Status	Clutch					
			Primary Offgoing Clutch Pressure	- exhaust					
			Command Status	command					
			Range Shift Status	≠ Initial Clutch Control	1				
			Attained Gear Slip		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	>= 0.5	Fail Time (Sec)				
			(2-1 shifting without throttle)	>= 0.0	Fair Fille (Sec)				
			fail timer 1 (2-3 shifting with throttle)	>= 0.2998	Fail Time (Sec)				
			fail timer 1	>= 0.5	Fail Time (Sec)				
			(2-3 shifting without throttle) fail timer 1	>= 0.5					
			(2-4 shifting with throttle)	>= 0.2998	Fail Time (Sec)				
			fail timer 1	>= 0.5	Fail Time (Sec)				
			(2-4 shifting without throttle) fail timer 1	0.0					
			(6-4 shifting with throttle)	>= 0.2998	Fail Time (Sec)				
			fail timer 1	>= 0.5	Fail Time (Sec)				
			(6-4 shifting without throttle) fail timer 1						
			(6-5 shifting with throttle)	>= 0.2998	Fail Time (Sec)				
			fail timer 1	>= 0.5	Fail Time (Sec)				
			(6-5 shifting without throttle)		,				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Require	
			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					Fail Counter From 2nd Gear
			6th gear fail counter				>= 3	OR Fail Counter From 6th Gear OR
			total fail counter				>= 5	Total Fail Counter
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.6563 °C = FALSE Boolean ≠ FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = 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	6) 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
				Table Based Time Please Pofer to Table Enable Time				
			If the Above is True for Time	>= 4 in (Sec) supporting documents				

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

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 Intrusive test: (C1234 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	Table Based Time Please Refer to Table 17 in supporting documents <= 0.70032					
							>=	1.1 Fail Timer (Se 3 Fail Count in 4th Gear or	
							>=	5 Total Fail Counts	
			Fail Case 4 Case: Steady State 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis If the Above is True for Time	22 in Tprivec supporting documents Table Based value Please 23 in pm/sec 23 in supporting documents Table Based Time Please Perfor to Table					
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<pre><= 0.70032 >= 0.63367</pre>					
							>=	1.1 Fail Timer (Se	
							>=	3 Fail Count in 5th Gear or Total Fail	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= FALSE Boo = FALSE Boo >= 0 RF = TRUE Boo = TRUE Boo	lean lean PM lean	5 Counts	-

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	shold Ilue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
					Hydraulic_System_Pressurize		TDUE	Deeleen	1			
					d	=	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	>=	5	Sec				
					allowable limits for 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		0101 00					
					Engine Torque Enable	<=	8191.88	Nm				
					Transmission Fluid	>=	-6.6563	°C				
					Temperature	>=	-0.0003	·C				
					Input Speed Sensor fault	=	FALSE	Boolean				
					Output Speed Sensor fault	=	FALSE	Boolean				
					Default Gear Option is not	=	TRUE					
					present							
				Dischla	MIL or at Illion in the difference	TO14 0074/	D0747 D0700	D0700				
				Disable Conditions:	MIL not Illuminated for		o, P0717, P0722	2, P0/23,				
				Conditions:	DTC's:	P182E						
						ECM: P0101	, P0102, P0103	3. P0106.				
							08, P0171, P017					
							01, P0202, P020					
						P0205, P020	06, P0207, P020	08, P0300,				
							02, P0303, P030					
						P0306, P030	07, P0308, P040	01, P042E				
		Pressure Control (PC) Solenoid D	The HWIO reports a low voltage									One Trip
Variable Bleed Solenoid (VBS)	P2720	Control Circuit Low (CB26 VBS)	(ground short) error flag	Boolean					>=	0.3	Fail Time (Sec)	
		(CD20 VD3)							out	0.075	Sample Time	
									of	0.375	(Sec)	
							Test Failed					
							This Key					
					P2770 Status is not	=	On or					
							Fault					
							Active					1
					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				1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction		Enable Conditions		Tim Requ		Mil Illum.
					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 out 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
						P2721 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <=	Test Failed This Key On or Fault Active 8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	Fail Case 1 Case: Steady State 1st Gear Gear slip Intrusive test: commanded 2nd gear	Please refe	RPM					Please See Table 5 For Neutral Time Cal		One Trip
			If attained Gear ≠ 2nd for Time If Above Conditions have been met, Increment 1st gear fail counter and C1234 fail counter	>= Supporting Documents	Shint Time (Sec)					>= 3 >= 14	1st Gear Fail Count or C1234 Clutch Fail Count	
			Fail Case 2 Case: Steady State 2nd Gear Gear slip Intrusive test: commanded 3rd gear		RPM					Please See Table 5 For Neutral Time Cal		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Condition	s	Tim Requi		Mil Illum
		·	If attained Gear ≠ 3rd for Time	Supporting						
			If Above Conditions have been met, Increment 2nd gear fail counter					>= 3	2nd Gear Fail Count	
			and C1234 fail counter					>= 14	or C1234 Clutch Fail Count	
			Fail Case 3 Case: Steady State 3rd Gear Gear slip	- >= 400 RPM				Please See Table 5 For	Neutral Timer	
			Intrusive test: commanded 4th gear					Neutral Time Cal	(Sec)	
			If attained Gear ≠ 4th for time	Please refer)					
			If Above Conditions have been met, Increment 3rd gear fail	Documents				>= 3	3rd Gear Fail Count	
			counter and C1234 fail counter					>= 14	or C1234 Clutch Fail Count	
			Fail Case 4 Case: Steady State 4th Gear Gear slip	>= 400 RPM				Please See Table 5 For	Neutral Timer	
			Intrusive test:					Cal	(Sec)	
			commanded 5th gear If attained Gear = 5th For Time	Please refer)					
			If Above Conditions have been met, Increment 4th gear fail	Documents				>= 3	4th Gear Fail Count	
			counter and C1234 fail counter					>= 14	or C1234 Clutch Fail Count	
					PRNDL State defaulted inhibit RVT	= FALSE = FALSE	Boolean Boolean		FairCount	
					IMS fault pending indication TPS validity flag Hydraulic System Pressurized	= FALSE = TRUE = TRUE	Boolean Boolean Boolean			
					Minimum output speed for RVT	>= 0	RPM			
					A OR B (A) Output speed enable	>= 67 >= 0.5005	RPM Pct			
			I	l	(B) Accelerator Pedal enable	>= 0.5005	Pct			1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	(Enable Conditions		Time Required	Mil Illum.
						Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed is within the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= <= >= = = =	8.59961 31.99902 400 7500 5 TRUE TRUE -6.6563 FALSE FALSE TRUE	Volts Volts RPM RPM Sec Boolean Boolean C Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's:		0102, P0103 P0171, P017 P0202, P020 P0207, P020 P0303, P030	5, P0106, 72, P0174, 03, P0204, 08, P0300, 04, P0305,		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status Range Shift Status Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below: fail timer 1 (2-6 shifting with htrottle) fail timer 1 (3-5 shifting with throttle) fail timer 1 (3-5 shifting with utrottle) fail timer 1	<pre> Control </pre> <pre> 40 2000 - 0.2998 2000 - 0.5 2000 - 0.5 2000 - 0.5 2000 - 0.2998 200</pre>			FUSUO, FUSU7, .	0303, F040	1, r042L		One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			(4-5 shifting without throttle) fail timer 1 (4-6 shifting with throttle)	>= 0.5 sec >= 0.2998 sec				
			fail timer 1	>= 0.5 sec			Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter 2nd gear fail counter				Table 15 for Fail Timer 2 >= 3 Fail Counter From 2nd Gear	
			3rd gear fail counter				>= 3 Fail Counter From 3rd Gear	
			4th gear fail counter				>= 3 Fail Counter From 4th Gear	
			total fail counter		TUT Enable temperature	>= -6.6563 °C	>= 5 Total Fail Counter	-
					Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.6563 °C = FALSE Boolean ≠ FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = TRUE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime Juired	Mil Illum.
-,				Disable	MIL not Illuminated for	TCM: P0716, P0717, P0722, P0723,			•	
				Conditions:	DTC's:	P182E				
						ECM. 00101 00102 00102 00104				
						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)	P2724	Pressure Control (PC) Solenoid E	Fail Case 1 Case: 5th Gear							One Trip
	1 2724	Stuck On (Steady State)	Case. Sin Gear	Table Deced						
				Table Based value Please						
			Max Delta Output Speed							
			Hysteresis	>= Refer to Table 22 in rpm/sec						
				supporting						
				documents Table Based						
				value Blease						
			Min Delta Output Speed	>= Refer to Table 23 in rpm/sec						
			Hysteresis	>= 23 in rpm/sec						
				supporting						
				documents Table Based						
				Time Please						
				Refer to Table						
			If the Above is True for Time	>= 17 in Sec						
				supporting						
			Intrusive test:	documents						
			(C35R clutch exhausted)							
			Gear Ratio	<= 1.20959						
				>= 1.09436						
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	
								3	Fail Count in	
							>=	3	5th Gear	
									OR Total Fail	
							>=	3	Counts	
			Fail Case 2 Case: 6th Gear				1		counto	
				Table Based						
			May Dalta Output Second	value Please						
			Max Delta Output Speed Hysteresis	>= Refer to Table 22 in rpm/sec						
			i iystetesis	supporting						
				documents						
				Table Based						
			Min Delta Output Speed	value Please Refer to Table						
			Hysteresis	$ = \frac{\text{Refer to Table}}{23 \text{ in}} \text{ rpm/sec} $						
			- Hystolesis	supporting						
				documents						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions				ime Juired	Mil Illum.	
		L .	If the Above is True for Time Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio	Table Based Time Please Refer to Table Sec 17 in supporting documents <= 1.20959 >= 1.09436								
			If the above parameters are true									
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear OR	
									>=	3	Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurize d (A) Output speed enable (B) Accelerator Pedal enable (B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Lo Ignition Voltage Hi Engine Speed s within the allowable limits for if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= = = >= >= >= >= >= >= >= >= >= >= = = =	FALSE FALSE FALSE 0 TRUE TRUE 7 0.5005 8.59961 31.99902 400 7500 5 5.0003 5 8191.88 -6.6563 FALSE FALSE TRUE	Boolean Boolean RPM Boolean Boolean Boolean Nm Volts Volts Volts RPM RPM Sec Pct Nm Nm Nm Sec Pct Sec Pct Nm Nm				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723,		·		
Variable Bleed Solenoid (VBS)	P2729	Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS)	The HWIO reports a low voltage (ground short) error flag	UE Boolean			>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Tri
				Disable	P2729 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for MIL not Illuminated for	Test Failed This Key = On or Fault Active >= 8.59961 Volt <=			(
				Conditions:	DTC's:	ECM: None				
Variable Bleed Solenoid (VBS)	P2730	Pressure Control (PC) Solenoid E Control Circuit High (C1234 VBS)	The HWIO reports a high voltage (open or power short) error flag	UE Boolean			>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Tr
					P2730 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	Test Failed This Key = On or Fault Active >= 8.59961 Volt <=				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction	Enable Conditions			ime juired	Mil Illum.
					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			>= out	4.4	Fail Time (Sec) Sample Time	Two Trips
						P2763 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled		of	5	(Sec)	
					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			>= out of	4.4 5	Fail Time (Sec) Sample Time (Sec)	One Tr
						P2764 Status is not Ignition Voltage Ignition Voltage Engine Speed	Test Failed This Key = On or Fault Active >= 8.59961 Volt <= 31.99902 Volt >= 400 RPM <= 7500 RPM			(000)	
					Disable Conditions:	Engine Speed is within the allowable limits for High Side Driver Enabled MIL not Illuminated for DTC's:	= TRUE Boolean				
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	= TRUE	Boolean			>=	62	Fail counts (≈ 10 seconds)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value		Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
			Delay timer	>= 0.1	1125 sec						Out of	70	Sample Counts (≈ 11 seconds)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= <= =	3 8.59961 31.99902 Run	sec Volt Volt				
						Disable litions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Communication	U0100	Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM		RUE Boolean						>=	12	Sec	One Trip
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= <= =	3 8.59961 31.99902 Run	sec Volt Volt				
						Disable litions:	MIL not Illuminated for DTC's:	TCM: U0073 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 [°] C						
	Curve	409.59	2.00	2.00 Sec						
Table 3	Curve	409.59	2.00	2.00 Sec	į					
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	4.00	4.00 Sec						
Table 4		400.00	7.00	4.00	,					
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	2.00	2.00 Sec	:					
Table 5										
	Axis	-6.67	-6.66	40.00 °C						
Table 6	Curve	409.59	3.00	3.00 Sec	;					
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C				
	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 °C				
	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 °C
	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 °C
	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 °C
	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 °C
	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 °C
	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 °C
	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 °C
	Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 Sec
Table 16	A i a	0.07	0.00	40.00						
	Axis	-6.67	-6.66	40.00 ℃						
	Curve	409.59	2.50	2.50 Sec						
Table 17										
	Axis	-6.67	-6.66	40.00 °C						
	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	<mark>149.10</mark> ⁰C
	Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00 °C
Table 10										
Table 19	Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10 °C
	Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00 °C
		200.00	00.00	40.00	40.00	04.00	20.00	20.00	20.00	200.00
Table 20										
	Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10 °C
	Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00 °C
Table 21	A	40.00	00.00	10.00						
	Axis	-40.00	-20.00	40.00 °C						
	Curve	5.00	3.00	1.00 Sec						

Table 22

Axis	-6.67	-6.66	40.00	°C
Curve	8191.75	8191.75	8191.75	RPM/Sec

<u>Table 23</u>

Axis	-6.67	-6.66	40.00	°C
Curve	8191.75	8191.75	8191.75	RPM/Sec