Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions		Tir Requ		Mil Illum.
Transmission Control Module (TCM)	P0601	Transmission Electro-Hydraulic Control Module Read Only Memory	Incorrect program/calibrations checksum	=	TRUE	Boolean	manunction	Conditions	>=	5	Fail Counts	One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0601 ECM: None				
Transmission Control Module (TCM)		Transmission Electro-Hydraulic Control Module Long-Term Memory Reset	Non-volatile memory (static or dynamic) checksum failure at Powerup	=	TRUE	Boolean			C	Runs		One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None				
Transmission Control Module (TCM)		Transmission Electro-Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	=	TRUE	Boolean			>=	5	Fail Counts	One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None	=	16	Sample Counts	
Transmission Control Module (TCM)		Transmission Electro-Hydraulic Control Module Long Term Memory Performance	TCM Non-Volatile Memory bit Incorrect flag at Powerdown	=	TRUE	Boolean			C	Runs		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	>=	144	°C			>=	5	Fail Time (Sec)	One Trip

Component/	Fault	Monitor Strategy	Malfunction			eshold	Secondary		Enable				ime	Mil
System	Code	Description	Criteria	┢	V	alue	Malfunction		Conditions		<u> </u>	Rec	uired	Illum.
			Fail Case 2 Substrate Temperature	>=	50	°C					>=	2	Fail Time (Sec)	
			Ignition Voltage		18	Volts]
			Note: either fail case can set the											
			DTC				Ignition Voltage Lo	>=	9	Volts				1
							Ignition Voltage Hi	<=	31.990234	Volts				
							Substrate Temp Lo	>=	0	°C				
							Substrate Temp Hi	<=	240	°C				
							Substrate Temp Between Temp Range for Time		0.25	Sec				
							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 Trip
											out of	6	Sample Counts	
							P0658 Status is not	=	Test Failed This Key On or Fault Active					
							High Side Driver 1 On	=	True	Boolean				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions			Tir Requ	me uired	Mil Illum.
Transmission Control Module (TCM)	D0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ If TCM substrate temp to power up temp Δ	Refer to Table 19 in °C supporting documents Refer to Table 20 in °C								Two Trips
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.						>= Out of	3000 3750	Fail Counts (100ms loop) Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until						>= Out	700	Pass Counts (100ms loop) Sample Counts	
									of	875	(100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid	=	TRUE TRUE	Boolean Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for Brake torque active Below describes the brake	>=	5 FALSE	Sec				
					torque entry criteria Engine Torque Throttle Transmission Input Speed Vehicle Speed	>= >= <= <=	90 30.000305 200 8	N*m Pct RPM Kph				
					Transmission Range Transmission Range	≠ ≠	Park Neutral	тұш				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
					PTO	=	Not Active			
					Set Brake Torque Active TRUE		_			
					if above conditions are met for:	>=	7	sec		
					Below describes the brake					
					torque exit criteria		Not Mat			
					Brake torque entry criteria	=	Not Met Clutch			
							Hydraulic			
					Clutch hydraulic pressure	≠	Air Purge			
							Event			
					Clutch used to exit brake torque		CeTFTD_e			
					active	=	_C3_RatlE			
							nbl			
					The above clutch pressure is		000	lan a		
					greater than this value for one loop	>=	600	kpa		
					Set Brake Torque Active					
					FALSE if above conditions are	>=	20	Sec		
					met for:					
							Test Failed			
					P0667 Status is	≠	This Key			
							On or Fault Active			
							Active			
				Disable	MIL not Illuminated for DTC's:	TCM: P0658	B, P0668, P0669, F	P06AD,		
				Conditions:			16, P0712, P0713			
							23, P0962, P0963,			
							70, P0971, P215C	, P2720,		
						P2721, P27	29, P2730			
						FCM: P010	1, P0102, P0103,	P0106		
							08, P0171, P0172,			
							01, P0202, P0203,			
							06, P0207, P0208,			
							02, P0303, P0304,			
						P0306, P03	07, P0308, P0401,	P042E		
				1						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value		Secondary Malfunction		Enable Conditions				ime quired	Mil Illum.
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate Temperature Sensor = Indirect Proportional and	= <=	op : 254 °C									Two Trips
			Temp Either condition above will satisfy the fail conditions			1					>=	60	Fail Timer (Sec)	
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
							P0668 Status is	≠	Test Failed This Key On or Fault Active					
					Disal Condition		MIL not Illuminated for DTC's:	TCM: None ECM: None						
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	= >=	op : -254 °C									Two Trips
			Either condition above will satisfy the fail conditions				Ignition Voltage Lo	>= <=	9 31.990234	Volts Volts	>=	60	Fail Timer (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Tim	e	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions		Requi		Illum.
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >=	400 7500 5	RPM RPM Sec			
					P0669 Status is	≠	Test Failed This Key On or Fault Active				
					For Hybrids, below conditions must also be met						
					Estimated Motor Power Loss	>=	0	kW			
					Estimated Motor Power Loss greater than limit for time	>=	0	Sec			
					Lost Communication with Hybrid Processor Control Module	=	FALSE				
					Estimated Motor Power Loss Fault	=	FALSE				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716 ECM: None	P0717, P0722, I	P0723			
Transmission Control Module (TCM)		TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power-up temp to substrate temp Δ								Two Trips
			If transmission oil temp to power up temp Δ								
			Both conditions above required to increment fail counter						>= 3000	Fail Counts (100ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
System	Code	Description	Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.		wanunction		Conditions		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 TRUE	Boolean Boolean				
					Valid Ignition Voltage Lo Ignition Voltage Hi	>= <=	9 31.990234	Volts Volts				
					Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <=	400 7500	RPM RPM				
					allowable limits for Brake torque active	>=	5 FALSE	Sec				
					Below describes the brake torque entry criteria Engine Torque Throttle	>= >=	90 30.000305	N*m Pct				
					Transmission Input Speed Vehicle Speed Transmission Range	<= <= ≠	200 8 Park	RPM Kph				
					Transmission Range PTO	<i>≠</i>	Neutral Not Active					
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec				
					Below describes the brake torque exit criteria Brake torque entry criteria	=	Not Met Clutch					
					Clutch hydraulic pressure	≠	Hydraulic Air Purge Event					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Clutch used to exit brake torque active	CeTFTD_e = _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 met for:	>= 20 Sec		
					P06AC 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 Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= 254 °C			>= 60 Fail Time (Sec	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
5,					P06AD Status is	<i>≠</i>	Test Failed This Key On or Fault Active					
					For Hybrids, below conditions must also be met							
					Estimated Motor Power Loss	>=	0	kW				
					Estimated Motor Power Loss greater than limit for time		0	Sec				
					Lost Communication with Hybrid Processor Control Module	=	FALSE					
					Estimated Motor Power Loss Fault	_	FALSE					
				Disable Conditions		TCM: P0716 ECM: None	P0717, P0722,	P0723				
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= -254 °C					>=	60	Fail Time (Sec)	Two Trips
(TOM)		voltage ingil			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P06AE Status is	<= >= <= >=	9 31.990234 400 7500 5 Test Failed This Key On or Fault Active	Volts Volts RPM RPM Sec				Πμο

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable				me	Mil
System	Code	Description	Criteria	Value	Malfunction		nditions		-	Req	uired	Illum.
				Disa Conditio	ble MIL not Illuminated for DTC's:	TCM: None						
				Conditio		ECM: None						
						LOW. NOTE						
				Refer to Table								Two
Transmission Fluid	P0711	Trans Fluid Temp Sensor Circuit	If transmission oil temp to substrate	> 19 in °C								Trips
Temperature Sensor (TFT)	FUTTI	Range/Performance	temp Δ	supporting								
				documents								
				Refer to Table								
			If transmission oil temp to power up	10 in								
			temp Δ									
			tomp 2	documents								
			Both conditions above required to						>=	3000	Fail Counts	
			increment fail counter								(100ms loop)	
			Note: table reference temp = to the						Out		Sample Counts	
			median temp of trans oil temp,						of	3750	(100ms loop)	
			substrate temp and power up temp.						0.		(10011101000)	
			Non-continuous (intermittent) fail								Pass Counts	
			conditions will delay resetting fail						>=	700	(100ms loop)	
			counter until								(1001113 100p)	
									Out	875	Sample Counts	
									of	8/5	(100ms loop)	
					Engine Torque Signal Valid	=	TRUE	Boolean				
					Accelerator Position Signal	=	TRUE	Boolean				
					Valid	_						
					Ignition Voltage Lo	>=	9	Volts				
					Ignition Voltage Hi	<= 3°	1.990234 400	Volts RPM				
					Engine Speed Lo Engine Speed Hi	>= <=	400 7500	RPM RPM				
					Engine Speed is within the							
					allowable limits for	>=	5	Sec				
					Brake torque active	=	FALSE					
					Below describes the brake			<u></u>				
					torque entry criteria							
					Engine Torque		90	N*m				
	I	I		I	Throttle	>= 30	0.000305	Pct	I			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illum.
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed	<=	8	Kph		
					Transmission Range	≠	Park			
					Transmission Range	≠	Neutral			
					PTO	=	Not Active			
					Set Brake Torque Active TRUE		-			
					if above conditions are met for:	>=	7	sec		
					Below describes the brake					
					torque exit criteria		N-t M-t			
					Brake torque entry criteria	=	Not Met Clutch			
					Clutch hydraulic pressure	≠	Hydraulic			
							Air Purge			
							Event CeTFTD_e			
					Clutch used to exit brake torque	=				
					active	=	_C3_RatlE nbl			
					The above clutch pressure is		TIDI			
					greater than this value for one	>=	600	kpa		
						/-	000	кра		
					loop Set Brake Torque Active					
					FALSE if above conditions are	>=	20	Sec		
					met for:	-	20	060		
					metion.					
	1						Test Failed			
							This Key			
					P0711 Status is	≠	On or Fault			
	1						Active			
	1						Active			
	1									
	I	I	_	I					I	1

System Code	Description	Criteria	Value Disabl Conditions		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,	R	equired	Illum.
					P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730			
					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 thermistor failed at a low voltage	Type of Sensor Used If Transmission Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp Either condition above will satisfy the fail conditions	op <= 254 °C	Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0712 Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active >= 0 kW	>= 60	Fail Time (Sec)	Two Trips

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Estimated Motor Power Loss greater than limit for time) Sec		
					Lost Communication with Hybrid Processor Control	= FALSE		
					Module Estimated Motor Power Loss Fault			
				Disable Conditions	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	op >= -254 °C				Two Trips
			Either condition above will satisfy the fail conditions				>= 60 Fail Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed is within the Engine Speed is within the allowable limits for P0713 Status is	<= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key		

Component/	Fault	Monitor Strategy	Malfunction		Thresho		Secondary		Enable			Tim		Mil
System	Code	Description	Criteria		Value		Malfunction		Conditions			Requi	ired	Illum.
							MIL not Illuminated for DTC's:		P0716, P0717,	P0722,				
						Conditions:		P0723						
								= 0.1.						
Transmission Input Speed			Transmission Input Speed Sensor	-				ECM: None			-			One Trip
Sensor (TISS)	P0716	Input Speed Sensor Performance	Drops		1350 RI	PM					>=	0.8	Fail Time (Sec)	One mp
							Engine Torque is	>=	0	N*m				
							Engine Torque is	<=	8191.875	N*m				
							Engine Speed	>=	400	RPM				
							Engine Speed	<=	7500	RPM				
							Engine Speed is within the	>=	5	Sec				
							allowable limits for							
							Vehicle Speed is	>=	10	Kph				
							Throttle Position is	>=	0	Pct				
							Transmission Input Speed is	>=	0	RPM				
							The previous requirement has been satisfied for	>=	0	Sec				
							The change (loop to loop) in transmission input speed is	<	8191.75	RPM/Loop				
							The previous requirement has been satisfied for	>=	0	Sec				
							Throttle Position Signal Valid	=	TRUE	Boolean				
							Engine Torque Signal Valid	=	TRUE	Boolean				
							Ignition Voltage	>=	9	Volts				
							Ignition Voltage	<=	31.990234	Volts				
							P0716 Status is not	=	Test Failed This Key On or Fault Active					

Component/	Fault	Monitor Strategy		Malfunction			eshold		Secondary		Enable				me	Mil
System	Code	Description		Criteria		V	alue Co	Disable nditions:	Malfunction MIL not Illuminated for DTC's:	TCM: P0717	Conditions , P0752, P0973,	P0974		Req	uired	Illum.
										ECM: P0101 P0122, P012	, P0102, P0103, 23	P0121,				
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 Trip
			Fail Case 2	When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	<	1000	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 Engine Speed is within the allowable limits for	\" \" \" \" \" \" \" \" \" \" \" \" \" \	50 8191.875 16 TRUE 9 31.990234 400 7500 5 Test Failed This Key On or Fault	N*m N*m Kph Boolean Volts Volts RPM RPM				
Transmission Output Speed		Output Speed Sensor Circuit Low		Transmission Output Speed Sensor				Disable nditions:	MIL not Illuminated for DTC's:		Active , P0723 , P0102, P0103					One Tri
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage		Transmission Output Speed Sensor Raw Speed	<=	35	RPM		P0722 Status is not	=	Test Failed This Key On or Fault Active		>=	4.5	Fail Time (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
System	Code	Description	Criteria	value	Transmission Input Speed				Required	mum.
					Check	=	TRUE	Boolean		
					Engine Torque Check	=	TRUE	Boolean		
					Throttle Position Transmission Fluid	>=	8.0001831	Pct		
					Temperature	>=	-40	°C		
					Disable this DTC if the PTO is			Б		
					active	=	1	Boolean		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					Ignition Voltage is	>=	9	Volts		
					Ignition Voltage is	<=	31.990234	Volts		
					Engine Speed is	>=	400	RPM		
					Engine Speed is	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					allowable littlits for					
					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	≠	Range shift completed	ENUM		
					OR					
						_	Park or			
					Transmission Range is	=	Neutral			
					Engine Torque is	>=	8191.75	N*m		
					Engine Torque is	<=	8191.75	N*m		
					Engine Torque Condition 2					
					Engine Torque is	>=	30	N*m		
					Engine Torque is	<=	8191.75	N*m		

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary		Enable			Tir		Mil
System	Code	Description	Criteria		Va	lue	Malfunction The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE		Conditions			Requ	iired	Illum.
							TIS Check Condition 1 Transmission Input Speed is	>=	1000	RPM				
							Transmission Input Speed is	<=	8191.75	RPM				
								ζ-	0191.75	Krivi				
							TIS Check Condition 2 Engine Speed without the brake applied is	>=	3200	RPM				
							Engine Speed with the brake applied is	>=	3200	RPM				
							Engine Speed is Controller uses a single power	<=	8191.75	RPM				
							supply for the speed sensors	=	1	Boolean				
							Powertrain Brake Pedal is Valid	=	TRUE	Boolean				
						Disable Conditions:		TCM: P0716, ECM: P0101, P0122, P0123	P0102, P0103					
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	<= 8	3191.75	RPM					>=	0	Enable Time (Sec)	
			Output Speed Drop		1000	RPM					>=	3	Output Speed Drop Recovery Fail Time (Sec)	
			AND Transmission Range is	_ Driv	ven range (R,D)									

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illum.
					Range_Disable	=	FALSE	See Below		
					OR					
					Neutral Bases Facility		TDUE	O D - I		
					Neutral_Range_Enable	=	TRUE	See Below		
					And Neutral_Speed_Enable	=	TRUE	See Below		
						-	IKUE	See Delow		
					are TRUE concurrently					
										1
					Transmission_Range_Enable	=	TRUE	See Below		
					Transmission_Input_Speed_En					
					able	=	TRUE	See Below		
					No Change in Transfer Case		-	0 1		
					Range (High <-> Low) for	>=	5	Seconds		
					, ,					
							Test Failed			
					P0723 Status is not	=	This Key			
					PU723 Status is flot	-	On or Fault			
							Active			
					Disable this DTC if the PTO is	=	1	Boolean		
					active		•			
					Ignition Voltage is	>=	9	Volts		
					Ignition Voltage is	<=	31.990234	Volts		
					Engine Speed is	>=	400	RPM		
					Engine Speed is	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
										-
					Enable_Flags Defined Below					
					Transmission_Input_Speed_En					1
					able is TRUE when either TIS					
					Condition 1 or TIS Condition 2					
					is TRUE:					
					.5 11(02.					
					TIS Condition 1 is TRUE when			Facility Th		
					both of the following conditions	>=	0	Enable Time		
					are satsified for		-	(Sec)		
					Input Speed Delta	<=	4095	RPM		
					Raw Input Speed	>=	500	RPM		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illum.
					TIO Occasion O in TDUE colore					
					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		
					Transmission range is		Transitonal	LIVOW		
							Transitorial			
							Neutral/Dri			
					Transmission Range is	=	ve	ENUM		
					Transmission Range is	-	Transitional	LINUIVI		
							Hansilional			
					And when a drop occurs					
					Loop to Loop Drop of					
					Transmission Output Speed is	>	650	RPM		
					Transmission Output Speed is					
					Range_Disable is TRUE when					
					any of the next three conditions					
					are TRUE					
					Transmission Range is	=	Park	ENUM		
							Park/Rever			
					Transmission Range is	=		ENUM		
					Transmission Range is	_	se	ENUM		
							Transitonal			
					land Chitch in a	_	ON (Fully	ENLIM		
					Input Clutch is not	=	Applied)	ENUM		
					Noutral Cased Eachtain					
					Neutral_Speed_Enable is		4.5	Casande		
					TRUE when All of the next three	>	1.5	Seconds		
					conditions are satsified for					
					Transmission Output Speed	>	130	RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enal Condi		Time Required	Mil Illum.
					The loop to loop change of the Transmission Output Speed is	< 12	5 RPM		
					The loop to loop change of the Transmission Output Speed is	> -1	0 RPM		
					Transmission_Range_Enable is TRUE when one of the next six conditions is TRUE Transmission Range is	= Neu	tral ENUM		
					Transmission Range is	Reve	rse/N ral ENUM		
					Transmission Range is	Neutr = v Transi	e ENUM		
					Time since a driven range (R,D) has been selected	Tal Bas Tir Plea Refe Table suppo docur	sed ne ase Sec or to 21 in orting		
					Transmission Output Speed Sensor Raw Speed Output Speed when a fault was	>= 50			
				Disable Conditions:	detected MIL not Illuminated for DTC's:	TCM: P0973, P0974, F ECM: P0101, P0102, F P0122, P0123	P0976, P0977		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable				me	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions			Req	uired	Illum.
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be						>=	2	Enable Time (Sec)	Two Trips
			Met (A) TCC Slip Error @ TCC On Mode	Refer to Table					>=	5	Fail Time (Sec)	
			(B) TCC Slip @ Lock On Mode	de >= 130 RPM					>=	5	Fail Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter	nt					>=	2	TCC Stuck Off Fail Counter	
					TCC Mode	=	On or Lock					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Engine Speed is within the allowable limits for Engine Torque Lo Engine Torque Hi Throttle Position Hi 2nd Gear Ratio Lo 2nd Gear Ratio Lo 3rd Gear Ratio Lo 3rd Gear Ratio Lo 4th Gear Ratio Lo 4th Gear Ratio Lo 6th Gear Ratio Lo 5th Gear Ratio Lo	>=	9 31.990234 400 7500 5 5 8191.875 8.0001831 99.98474 2.7528076 3.1672363 1.7762451 2.0437012 1.3485107 1.5515137 0.9300537 1.0699463 0.6975098 0.8024902	Volts Volts RPM RPM Sec N*m N*m Pct Pct Ratio				
					Transmission Fluid Temperature Lo Transmission Fluid Temperature Hi	>= <=	-6.65625 130	°C				
					PTO Not Active Engine Torque Signal Valid	= =	TRUE TRUE	Boolean Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
System	Code	Description	Criteria		v	aiue						Req	uirea	ilium.
							Throttle Position Signal Valid	=	TRUE	Boolean				
							Dynamic Mode	=	FALSE	Boolean				
							P0741 Status is	≠	Test Failed This Key On or Fault Active					
						Disable Conditions		P0742, P27	763, P2764					
								P0107, P01 P0175, P02 P0205, P02 P0301, P03	01, P0102, P0103 108, P0171, P017 201, P0202, P020 206, P0207, P020 302, P0303, P030 307, P0308, P040	2, P0174, 3, P0204, 8, P0300, 4, P0305,				
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>=	-50	RPM								One Trip
Torque convertor orator (100)	1 0/ 12	100 Cyclom Cluck Oil	TCC Slip Speed		13	RPM								
			100 Slip Speed	\-	13	KLINI							F 11. (0.)	
											>=	1	Fail Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter								>=	5	Fail Counter	
							TCC Mode Enable test if Cmnd Gear =	=	Off					
							1stFW and value true	=	1	Boolean				
							Enable test if Cmnd Gear = 2nd	=	0	Boolean				
							and value true	<=	6000	RPM				
							Engine Speed Hi Engine Speed Lo	>=	500	RPM				
							Vehicle Speed HI	<=	511	KPH				
							Vehicle Speed Lo	>=	1	KPH				
							Engine Torque Hi	<=	8191.875	Nm				
							Engine Torque Lo Current Range	>= ≠	60 Neutral	Nm Range				
							Current Range		Reverse	Range				

Component/	Fault	Monitor Strategy	Malfunction Criteria	Threshold	Secondary Malfunction		Enable		Time	Mil Illum.
System	Code	Description	Criteria	Value			Conditions		Required	illum.
					Transmission Sump	<=	130	°C		
					Temperature					
					Transmission Sump	>=	15	°C		
					Temperature					
					Throttle Position Hyst High	>=	10.00061	Pct		
					AND					
					Max Vehicle Speed to Meet	<=	8	KPH		
					Throttle Enable					
					Once Hyst High has been met,					
					the enable will remain while	>=	2.0004272	Pct		
					Throttle Position					
					Disable for Throttle Position	>=	75	Pct		
					Disable if PTO active and value	=	1	Boolean		
					true			Doolouii		
					Disable if in D1 and value true	=	1	Boolean		
					Disable ii iii Dir ana valae ii ae			Doolcan		
					Disable if in D2 and value true	=	1	Boolean		
					Disable ii iii Dz and valde tide	_	'	Doolean		
					Disable if in D3 and value true	=	1	Boolean		
					Disable ii iii D3 and value tide	_	'	Doolean		
					Disable if in D4 and value true	=	1	Boolean		
					Disable ii iii D4 and value tide	_	'	Doolean		
					Disable if in D5 and value true	=	1	Boolean		
					Disable ii iii D5 and value tiue	_	1	Doolean		
					Disable if in MUMD and value	=	1	Daalaaa		
					true	=	1	Boolean		
					Disable if in TUTD and value	=	1	Daalaaa		
					true	=	1	Boolean		
					4 Wheel Drive Low Active	=	FALSE	Boolean		
					Disable if Air Purge active and	=	0	Deelees		
					value false	=	0	Boolean		
					RVT Diagnostic Active	=	FALSE	Boolean		
					Ignition Voltage	>=	9	V		
					Ignition Voltage	<=	31.990234	V		1
					Vehicle Speed	<=	511	KPH		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 Signal Valid	=	TRUE	Boolean		1
										1
	1				Throttle Position Signal Valid	=	TRUE	Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime quired	Mil Illum.
					P0742 Status is	Test Failed This Key ≠ On or Fault Active				
				Disab Condition	s:	TCM: P0716, P0717, P0722, P0723, P0741, P2763, P2764 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				
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>= 400 RPM						Two Trips
			Gear Ratio	<= 1.518310547 >= 1.373657227			>= =	0.3 5	Fail Tmr Fail Counts	Прэ
			If the above parameters are true				≠	0	Neutral Timer (Sec)	
							>=	0.3	Fail Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Transmission Fluid Temperature	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= -6.65625 °C Range = Shift ENUM Completed	>=	8	Counts	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Required	Illum.
					TPS OF		%		
					Output Speed		RPM		
					Throttle Position Signal Valid		Boolean		
					from ECN Engine Torque Signal Valid				
					from ECM, High side driver is		Boolean		
					enabled				
					High-Side Driver is Enabled Input Speed Sensor faul		Boolean Boolean		
					Output Speed Sensor faul		Boolean		
					Default Gear Option is no	= TRUE	500.00.1		
					presen	t - IRUE			
				Di	able MIL not Illuminated for DTC's	TCM: P0716, P0717, P0722, P0	723,		
				Condit		P182E	,		
						ECM: P0101, P0102, P0103, P0	106		
						P0107, P0108, P0171, P0172, P			
						P0175, P0201, P0202, P0203, P			
						P0205, P0206, P0207, P0208, P			
						P0301, P0302, P0303, P0304, P P0306, P0307, P0308, P0401, P			
						1 0000,1 0007,1 0000,1 0401,1	0+ZL		
Variable Bleed Solenoid (VBS)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	Fail Case 1 Case: Steady State 3rd Ge	ar					One Trip
		Stuck Oil [C33R]	Commanded Ge	ar = 3rd Gear					
			Gearbox Si						
								Please Refer	
								>= to Table 16 in Neutral	Timer
								Supporting (Sec	:)
								Documents	
			Command 4th Gear once Outp	ut <= 1000 RPM					
			Shaft Spee	ed io >= 1.373657227					
				io <= 1.518310547					
								>= 3 Fail Time	(Sec)
1		l	1	I	I	1	I		` '/

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue		Secondary Malfunction		Enable Conditions			Tin Requ		Mi Illur
			It the above condiations are true, Increment 3rd gear fail counter									>=	2	3rd Gear Fail Counts	
			and C35R Fail counter									>=	14	or 3-5R Clutch Fail Counts	I
			Fail Case 2 Case: Steady State 5th Gear Commanded Gear		5th	Gear									
			Gearbox Slip	>=	400	Rpm						>= to	lease Refer Table 5 in Supporting Documents		
			Intrusive Test: Command 6th Gear		DI .										
			If attained Gear=6th gear Time		Please refer Table 3 in supporting documents	Shift Time	(Sec)								
			It the above condiations are true, Increment 5th gear fail counter									>=	3	5th Gear Fail Counts	
			and C35R Fail counter									>=	14	or 3-5R Clutch Fail Counts	I
								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				
								Minimum output speed for RVT	>=	100	RPM				

Component/ System	Fault Code			Threshold Value	Secondary Malfunction	Enable Conditions		Time Required	Mil Illum.
System	Code	Description	Ontena	Value	Walturiction	Conditions		Required	- muni.
					A OR B				
					(A) Output speed enable	>= 100	RPM		
					(B) Accelerator Pedal enable	>= 0.5004883	Pct		
					l ` '	0.0004000	1 01		
					Common Enable Criteria Ignition Voltage Lo	>= 9	Volts		
					Ignition Voltage Lo	<= 31.990234	Volts		
					Engine Speed Lo	>= 400	RPM		
					Engine Speed Hi	<= 7500	RPM		
					Engine Speed is within the allowable limits for	>= 5	Sec		
					Throttle Position Signal valid	= TRUE	Boolean		
					HSD Enabled	= TRUE	Boolean		
					Transmission Fluid	>= -6.65625	°C		
					Temperature				
					Input Speed Sensor fault Output Speed Sensor fault	= FALSE = FALSE	Boolean Boolean		
					Default Gear Option is not		Doolean		
					present	= TRUE			
				Disable	MIL mot Illuminated for DTCla	TOM: D0746 D0747 D0700	D0702		
				Conditions:	MIL not Illuminated for DTC's:	P182E	, P0723,		
				Conditions.		1022			
						ECM: P0101, P0102, P0103			
						P0107, P0108, P0171, P017			
						P0175, P0201, P0202, P020			
						P0205, P0206, P0207, P020 P0301, P0302, P0303, P030			
						P0306, P0307, P0308, P040			
						,,,.	,		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction	Enable Conditions		Time		Mil Illum.
Transmission Output Speed		·		Value	Wairunction	Conditions	-	Required		One Trip
Sensor (TOSS)	P077C	Output Speed Sensor Circuit Low	TOSS Analog Signal Voltage P077C Status is not	Test Failed			>=	0.05	sec	One mp
				or Fault Active						
			If the above conditons have been							
			met, increment the P077C Fail Counter							
			DTC P077C Sets when the Fail Counter	>= 75 Counts						
			333.1.6.		P077C Enable Calibration	= 1 Boolean				
					Ignition Voltage Lo Ignition Voltage Hi	>= 9 Volts <= 31.990234 Volts				
				Disable	MIL not Illuminated for DTC's:	TCM: P077D				
				Conditions:						
Transmission Output Speed Sensor (TOSS)	P077D	Output Speed Sensor Circuit High	TOSS Analog Signal Voltage	>= 4.75 Volts			>=	0.05	sec	One Trip
			P077D Status is not	Test Failed = This Key On or Fault Active						
			If the above conditons have been							
			met, increment the P077D Fail Counter							
			DTC P077D Sets when the Fail Counter	>= 75 Counts						
			Counter		P077D Enable Calibration	= 1 Boolean				
					Ignition Voltage Lo Ignition Voltage Hi	>= 9 Volts <= 31.990234 Volts				
					.gg	*******				
					MIL not Illuminated for DTC's:	TCM: P077C				
				Conditions						
Veriable Blood Colonaid (VDC)	D0700	Pressure Control (PC) Solenoid C	Fail Case 1							One Trip
Variable Bleed Solenoid (VBS)	P0796	Stuck Off [C456] (Steady State)	Case: Steady State 4th Gear							[

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
							Please See	
			Gear slip	>= 400 RPM			>= Table 5 For Neutral Timer	
							Neutral Time (Sec)	
							Cal	
			Intrusive test:					
			commanded 5th gear	Discouration				
				Please refer to				
			If attained Gear ≠5th for time	>= Table 3 in Shift Time (Sec)				
			if the above conditions have been	Documents				
			in the above conditions have been met					
							4th Gear Fail	
			Increment 4th Gear Fail Counter				>= 2 4(1) Geal Pall Count	
							OR	
							C456 Fail	
			and C456 Fail Counters				>= 14 Counts	
			Fail Case 2 Case: Steady State 5th Gear				Country	1
			<u>- an sace 2</u>				Please See	
							Table C.Com. Mandad Times	.
			Gear slip	>= 400 RPM			>= Neutral Time (Sec)	
							Cal	
			Intrusive test:					
			commanded 6th gear					
				Please Refer				
			If all all the and Comment City for the comment	to Table 3 in Object Time (Oct.)				
			If attained Gear ≠ 6th for time	>= to Table 3 in Shift Time (Sec)				
				Documents				
			if the above conditions have been					
			met					
			Increment 5th Gear Fail Counter				>= 2 5th Gear Fail	
			increment oth Gear Fail Counter				Z Count	
							OR	
			and C456 Fail Counters				>= 14 C456 Fail	
							Counts	
			Fail Case 3 Case: Steady State 6th Gear					1
							Please See	1
			Gear slip	>= 400 RPM			>= Table 5 For Neutral Timer	1
			Geal Slip	700 11111			Neutral Time (Sec)	
							Cal	
			Intrusive test:					1
			commanded 5th gear					1

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable				ime	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions			Rec	uired	Illum.
			If attained Gear ≠ 5th for time	Please refer to Table 3 in Supporting Documents Shift Time (Sec)								
			met Increment 6th Gear Fail Counter and C456 Fail Counter						>=	2	6th Gear Fail Count OR C456 Fail	
			and C456 Fail Counter						>=	14	Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication TPS validity flag Hydraulic System Pressurized	= = = =	FALSE FALSE FALSE TRUE TRUE	Boolean Boolean Boolean Boolean			SSUM	
					Minimum output speed for RVT	>=	100	RPM				
					A OR B (A) Output speed enable	>=	100	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present	>= <= >= <= = = = = = =	9 31.990234 400 7500 5 TRUE TRUE -6.65625 FALSE FALSE TRUE	Volts Volts RPM RPM Sec Boolean Boolean °C Boolean Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Condition	able MIL not Illuminated for DTC's: ons:	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		
Transmission Input Speed Sensor (TISS)	P07BF	Input/Turbine Speed Sensor A Circuit Low	TISS Analog Signal Voltage	e <= 0.25 Volts			>= 0.05 sec	One Trip
			P07BF Status is not	Test Failed t = This Key On or Fault Active				
			If the above conditons have been met, increment the P07BF Fail Counter	1				
			DTC P07BF Sets when the Fail Counter	75 Counts				
					P07BF Enable Calibration Ignition Voltage Lo Ignition Voltage H) >= 9 Volts		
				Dis Conditie	able MIL not Illuminated for DTC's: ons:	TCM: P07C0		
Transmission Input Speed Sensor (TISS)	P07C0	Input/Turbine Speed Sensor A Circuit High	TISS Analog Signal Voltage	e >= 4.75 Volts			>= 0.05 sec	One Trip
			P07C0 Status is not	Test Failed t = This Key On or Fault Active				
			If the above conditons have been met, increment the P07C0 Fail Counter	I				
			DTC P07C0 Sets when the Fail Counter)= 75 Counts				

Component/	Fault	Monitor Strategy	Malfunction		reshold	Secondary		Enable				me	Mil
System	Code	Description	Criteria	١	/alue	Malfunction		Conditions			Req	uired	Illum.
						P07C0 Enable Calibration Ignition Voltage Lo Ignition Voltage Hi MIL not Illuminated for DTC's:	= >= <= TCM: P07BF	1 9 31.990234	Boolean Volts Volts				
Tap Up Tap Down Switch	Dogge	Lineard Davis Chift Cuitab Circuit	TITO Cincii Deede la selid Vellene	- TDUE	Conditions:						60	Fail Time (Cae)	Special
(ΤὐΤΟ)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE	Boolean	Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5 Test Failed This Key On or Fault Active	Volts Volts RPM RPM Sec	>=	60	Fail Time (Sec)	No MIL
					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		Boolean					>= out of	4.4 5	Fail Time (Sec) Sample Time (Sec)	Two Trips
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				

Component/	Fault	Monitor Strategy	Malfunction		eshold	Secondary		Enable			Tir		Mil
System	Code	Description	Criteria	V	alue Disable	Malfunction MIL not Illuminated for DTC's:	TCM: None	Conditions			Requ	ured	Illum.
					Conditions:								
							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		Boolean					>=	1.5	Fail Time (Sec)	One Trip
										out of	1.875	Sample Time (Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec			(GGG)	
					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	= TRUE	Boolean					>=	4.4	Fail Time (Sec)	Two Trips
										out of	5	Sample Time (Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary		Enable			Tir		Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Conditions			Requ	uired	Illum.
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	= T	RUE	Boolean					>=	0.3	Fail Time (Sec)	One Trip
		(out of	0.375	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed	>= <= >=	9 31.990234 400	Volts Volts RPM				
							Engine Speed Engine Speed is within the	<= >=	7500 5	RPM Sec				
							allowable limits for	>=		Sec				
							P0966 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0967	Pressure Control (PC) Solenoid B Control Circuit High Voltage (C35R VBS)	The HWIO reports a high voltage (open or power short) error flag	= T	RUE	Boolean					>=	0.3	Fail Time (Sec)	One Trip
											out of	0.375	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= >= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0967 Status is not	=	Test Failed This Key On or Fault Active					

Component/	Fault	Monitor Strategy	Malfunction		eshold	Secondary		Enable			Tir		Mil
System	Code	Description	Criteria	V	alue	Malfunction	TOM: No.	Conditions		\vdash	Requ	uired	Illum.
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
							ECIVI: None						
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag		Boolean					>=	0.3	Fail Time (Sec)	One Trip
										out of	0.375	Sample Time (Sec)	
						P0970 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	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>=	0.3	Fail Time (Sec)	One Trip
		(0-50/0BIX1 VB0)								out of	0.375	Sample Time (Sec)	
						P0971 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= <= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				

Component/	Fault	Monitor Strategy	Malfunction			eshold	Secondary		Enable				me	Mil
System	Code	Description	Criteria		V	alue	Malfunction		Conditions			Req	uired	Illum.
							Engine Speed is within the allowable limits for	>=	5	Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:							
								ECM: None						
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	=	TRUE	Boolean					>=	1.2	Fail Time (Sec)	One Trip
											out of	1.5	Sample Time (Sec)	
							P0973 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	<= >= <=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:							
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	=	TRUE	Boolean					>=	1.2	Fail Time (Sec)	Two Trips
											out of	1.5	Sample Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction Criteria		reshold	Secondary Malfunction		Enable			Tir		Mil Illum.
System	Code	Description	Criteria	\	/alue	Mairunction		Conditions			Requ	ııred	ilium.
						P0974 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	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	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	Boolean					>=	3	Fail Counter	Special No MIL
										>	10	Sample Timer (Sec)	
						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			(SSS)	
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
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	≠ Park or Neutral	Enumeration								One Trip
			Sequentially Initial Engine speed	<= 50	RPM					>=	0.1	Enable Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
3,			Then Engine Speed Between Following Cals Engine Speed Lo Hist	>=	50	RPM								
			Engine Speed Hi Hist	<=	480	RPM					>=	0.06875	Enable Time (Sec)	
			Then Final Engine Speed		500	RPM						4.05	F-11 Time (O)	
			Final Transmission Input Speed	>=	100	RPM					>=	1.25	Fail Time (Sec)	
							DTC has Ran this Key Cycle?	=	FALSE	Boolean				
							Ignition Voltage Lo Ignition Voltage Hi	>= <=	6 31.990234	V V				
							Ignition Voltage Hyst High (enables above this value)	>=	5	V				
							Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed	<= <=	2 90	V rpm				
							P1915 Status is	≠	Test Failed This Key On or Fault Active					
						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)	=	FALSE	Boolean								One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)		5	Volts					>=	280	Fail Counts (25ms loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)		2	Volts					Out of	280	Sample Counts (25ms loop)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time		Mil
System	Code	Description	Criteria	Value	Malfunction	Co	nditions		Requi	red	Illum.
					ECM run/crank active status available ECM run/crank active status			olean			
				Disable Conditions		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						Please See		One Trip
			Gear slip	>= 400 RPM				:	>= Table 5 For Neutral Time Cal	Neutral Timer (Sec)	
			Intrusive test: commanded 3rd gear								
			If attained Gear = 3rd for Time	Table Based Time Please >= see Table 2 in Supporting Documents Table Time (Sec)							
			If Above Conditions have been met								
			Increment 2nd gear fail count					:	>= 3	2nd Gear Fail Count or	
			and CB26 Fail Count					:	>= 14	CB26 Fail Count	
			Fail Case 2 Case: Steady State 6th Gear Gear slip Intrusive test:	>= 400 RPM				:	>= Please See Table 5 For Neutral Time Cal	Neutral Timer (Sec)	
			· ·						>= Neutral Time	(Sec	<i>2</i>)

Table Based If attained Gear = 5th For Time = see Stape 2 ((see) Documents	Component/		Monitor Strategy	Malfunction	Threshold	Secondary		Enable				ime	Mil Illum.
Increment 5th gear fail counter	System	Code	Description	Criteria If attained Gear = 5th For Time	Time Please >= see Table 2 in (Sec) Supporting	Malfunction		Conditions			Rec	quired	illum.
And CB26 Fail Count PRNDL State defaulted inhibit RVT										>=	3	Count	
Inhibit RVT				and CB26 Fail Count						>=	14	or CB26 Fail Count	
Input Speed Sensor fault = FALSE Boolean Output Speed Sensor fault = FALSE Boolean Default Gear Option is not						inhibit RVT IMS fault pending indication TPS validity flag Hydraulic System Pressurized Minimum output speed for RVT A OR B (A) Output speed enable (B) Accelerator Pedal enable Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Lo Engine Speed Ii Engine Speed limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Tramperature Input Speed Sensor fault Output Speed Sensor fault	= = = = = = = = = = = = = = = = = = =	FALSE FALSE TRUE 0 100 0.5004883 9 31.990234 400 7500 5 TRUE TRUE -6.65625 FALSE	Boolean Boolean Boolean RPM RPM Pct Volts Volts RPM RPM Sec Boolean Boolean ©C Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Thr	eshold	Secondary	Enable		I	Tir	me	Mil
System	Code	Description	Criteria	v	'alue	Malfunction	Conditions			Requ	uired	Illum.
					Disable Conditions:		TCM: P0716, P0717, P0722 P182E ECM: P0101, P0102, P0103 P0107, P0108, P0171, P017 P0175, P0201, P0202, P020 P0205, P0206, P0207, P020 P0301, P0302, P0303, P030 P0306, P0307, P0308, P040	, P0106, 2, P0174, 3, P0204, 8, P0300, 4, P0305,				
Variable Bleed Solenoid (VBS)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag		Boolean				>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
					Disable Conditions:	P2770 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for MIL not Illuminated for DTC's:	<= 31.990234 >= 400 <= 7500 >= 5	Volts Volts RPM RPM Sec			1/	
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		Boolean				>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					P2721 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	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 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 If attained Gear ≠ 2nd for Time	>= 400 RPM Please refer to			Please See Table 5 For Neutral Timer Neutral Time (Sec) Cal	One Trip
			If Above Conditions have been met, Increment 1st gear fail counter				>= 2 1st Gear Fail Count	
			and C1234 fail counter				or >= 14 C1234 Clutch Fail Count	
			Fail Case 2 Case: Steady State 2nd Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec) Cal	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	Intrusive test:	value	Wallullelloll	Conditions	Kequirea	illuli
			commanded 3rd gear					
				Please refer to				
			If attained Gear ≠ 3rd for Time	>= Table 3 in Shift Time (Sec)				
				Supporting Snift Time (Sec) Documents				
				Documents				
			If Above Conditions have been met, Increment 2nd gear fail counter				>= 2 2nd Gear Fai	'
			increment zhu gear ian counter					
							or C1234 Clutch	
			and C1234 fail counter				>= 14 C1234 Cluter	' I
			Fail Case 3 Case: Steady State 3rd Gear				T dii Godin	
			,				Please See	
			Gear slip	>= 400 RPM			>= Table 5 For Neutral Time	r
							Neutral Time (Sec) Cal	
			Intrusive test:				Cal	
			commanded 4th gear					
				Please refer to				
			If attained Gear ≠ 4th for time	>= Table 3 in Shift Time (Sec)				
				Supporting Documents				
			[[] [] [] [] [] [] [] [] [] [Documents			0.10	
			If Above Conditions have been met, Increment 3rd gear fail counter				>= 2 3rd Gear Fail	1
			increment ord gear fair counter					
							or C1234 Clutch	
			and C1234 fail counter				>= 14 Fail Count	'
			Fail Case 4 Case: Steady State 4th Gear				i un oount	
							Please See	
			Gear slip	>= 400 RPM			>= Table 5 For Neutral Times	ſ
							Neutral Time (Sec) Cal	
			Intrusive test:				Gai	
			commanded 5th gear					
				Please refer to				
			If attained Gear = 5th For Time	>= Table 3 in Shift Time (Sec)				
				Supporting Documents				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions			Tin Requ		Mil Illum.
5,515		2000-	If Above Conditions have been met, Increment 4th gear fail counter						>=	3	4th Gear Fail Count	
			and C1234 fail counter						>=	14	or C1234 Clutch Fail Count	
					PRNDL State defaulted inhibit RVT IMS fault pending indication	= = =	FALSE FALSE FALSE	Boolean Boolean Boolean				
					TPS validity flag Hydraulic System Pressurized	=	TRUE TRUE	Boolean Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B (A) Output speed enable	>=	100	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	9 31.990234 400 7500 5	Volts Volts RPM RPM Sec				
					Throttle Position Signal valid HSD Enabled Transmission Fluid	= = >=	TRUE TRUE -6.65625	Boolean Boolean °C				
					Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= =	FALSE FALSE TRUE	Boolean Boolean				
					, i							

Component/	Fault	Monitor Strategy	Malfunction		eshold	Secondary	Enable				me	Mil
System	Code	Description	Criteria	V	alue	Malfunction	Condition		-	Req	uired	Illum.
					Disable Conditions:		TCM: P0716, P0717, P07 P182E ECM: P0101, P0102, P01 P0107, P0108, P0171, P0 P0175, P0201, P0202, P0 P0205, P0206, P0207, P0 P0301, P0302, P0303, P0 P0306, P0307, P0308, P0	03, P0106, 172, P0174, 203, P0204, 208, P0300, 304, P0305,				
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		Boolean				>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
						P2729 Status is not	Test Fail This Ke On or Fa Active	/				
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= 31.9902 >= 400 <= 7500	Volt Volt RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None 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		Boolean				>=	0.3	Fail Time (Sec)	One Trip
		,							out of	0.375	Sample Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					P2730 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	<= 31.990234 Volt >= 400 RPM <= 7500 RPM		
				Disable Conditions		TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE Boolean			>= 4.4 Fail Time (Sec) out 5 Sample Time of (Sec)	Two Trips
					P2763 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 High Side Driver Enabled	<= 31.990234 Volt >= 400 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditions		TCM: P0658, P0659 ECM: None		

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				ime	Mil Illum.
System Variable Bleed Solenoid (VBS)	D2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	=	TRUE	Boolean	mairunction		Conditions		>=	4.4	Fail Time (Sec)	One Trip
											out of	5	Sample Time (Sec)	
							P2764 Status is not	=	Test Failed This Key On or Fault Active					
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the	>= <= >= <= >=	9 31.990234 400 7500	Volt Volt RPM RPM Sec				
							allowable limits for High Side Driver Enabled	=	TRUE	Boolean				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658	, P0659					
Communication		Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	=	TRUE	Boolean					>=	62	Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>=	0.1125	sec					Out of	70	Sample Counts (≈ 11 seconds)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= <= =	3 9 31.990234 Run	sec Volt Volt				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Communication		Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM	=	TRUE	Boolean					>=	12	sec	One Trip
l		l					Stabilization delay	>=	3	sec				l

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
System	Coue	Description	Griteria	value	Ignition Voltage Ignition Voltage		9 31.990234	Volt Volt	Required	mann.
					Power Mode	=	Run			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: U0073	}			
						ECM: None				

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Conditions		Required	Illum.
Transmission Control Module (TCM)	C1251	The lateral accleration signal is stuck at a high magnitude in range	Lateral accleration magnitude	<= 3	3.85	g's						Special No MIL
,			Lateral accleration magnitude		0.53	g's						
			Lateral accleration magnitude is within the range above for	>= 1	120	Sec						
							Lateral applacetion magnitude	<=	3.85	-1-		
							Lateral accleration magnitude	<=	3.00	g's		
							Lateral accleration magnitude	>=	0.53	g's		
							Lateral accleration magnitude is within the range above for	>=	90	Sec		
							Diagnostic shifting override command	=	FALSE	Boolean		
							Attained Gear State	=	1st through 6th			
							Attained Gear Slip	<=	100 Clutch to	RPM		
							Transmission Type	=	Clutch Transmissi			
							Historia District		on TRUE	Deeless		
							High Side Driver 1 On Vehicle Speed	= >=	15 15	Boolean kph		
							Lateral acceleration stuck in	/-				
							range diagnostic enable	=	TRUE	Boolean		
							Battery Voltage	<=	31.999023	Volts		
							Battery Voltage	>=	9	Volts		
							Battery voltage is within the	>=	0.1	Sec		
							allowable limits for		24 000002	17-16-		
							Ignition Voltage	<=	31.999023	Volts Volts		
							Ignition Voltage	>=	9			
							Service Fast Learn (SFL) Mode	=	FALSE	Boolean		
							Ignition voltage and SFL conditions met for	>=	0.1	Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction		Enable Conditions			Tin Requ		Mil Illum.
7,2						MIL not Illuminated for DTC's:	(P0716, P07	rated to illuminat 17, P0721, P072 C0, P077B, P077	2, P0723,				
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip Commanded Gear Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded On If the above parameters are true Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	= 3rd = TRUE <= 1000 >= 4.3548583						>= to	ease Refer Table 16 in Supporting Occuments 1.5	Neutral Timer (Sec) Fail Timer (Sec) Counts	One Trip
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for High-Side Driver is Enabled Throttle Position Signal Valid from ECM Output Speed OR TPS Range Shift State	\= \- \- \- \- \- \- \- \- \- \- \- \- \-	9 31.990234 400 7500 5 TRUE TRUE 100 0.5004883 Range Shift Completed	Volts Volts Volts RPM RPM Sec Boolean Boolean RPM %				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Required	Mil Illum.
System	Code		Cinera		Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= -6.65625 °C		Required	, muni.
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)		>= 400 RPM Table Based Time Please Refer to Table Enable Time 4 in (Sec) supporting documents <= 2.007324219 >= 1.744628906			>= >= >=	1.1 Fail Timer (2 Fail Count i Gear or Total Fa	n 1st

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	M
System	Code	Description	Criteria	Value	Malfunction	Conditions		Required	Illu
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents					
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D Table 2 in supporting					
			If the Above is True for Time	documents Table Based Time Please >= Refer to Table 17 in supporting					
				documents					
			If the above parameters are true						
							>=	1.1 Fail Timer	(Sec)
							>=	Fail Cour 2nd Ge or	
							>=	3 Total Fa	
			Fail Case 3 Case: Steady State 4th gear	Table Based value Please					
			Max Delta Output Speed Hysteresis	>= Table 1 in supporting documents					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based				
			If the Above is True for Time	Time Please Refer to Table 17 in Supporting				
				<= 1.069946289 >= 0.930053711				
			ii tile above parameters are tide				>= 1.1 Fail Times (Cas)	
							>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or	
							>= 3 Total Fail Counts	
			Fail Case 4 Case: Steady State 6th gear Max Delta Output Speed Hysteresis	Table Based value Please				
			Min Delta Output Speed Hysteresis	documents Table Based value Please				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime uired	Mil Illum
		·	If the Above is True for Time	Table Based Time Please								
			(CB26 clutch exhausted)									
			Gear Ratio	<= 1.069946289					>=	1.1	Fail Timer (Sec)	
			Gear Ratio If the above parameters are true	>= 0.930053711					>=	3	counts	
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
									>=	3	or Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= = = >= = =	FALSE FALSE FALSE 0 TRUE TRUE	Boolean Boolean Boolean RPM Boolean Boolean				
					Hydraulic_System_Pressurized	=	TRUE	Boolean				
					A OR B (A) Output speed enable	>=	100	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				
					allowable limits for if Attained Gear=1st FW Accelerator Pedal enable	>=	5 10.00061	Sec Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	45	Nm				

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Valu		Secondary Malfunction		Enable Conditions		Time	Mil Illum.
System	Code	Description	Criteria	Valu	ue	if Attained Gear=1st FW Engine				Required	IIIum.
						Torque Enable		8191.875	Nm		
						Transmission Fluid	\	-6.65625	°C		
						Temperature					
						Input Speed Sensor fault Output Speed Sensor fault		FALSE FALSE	Boolean Boolean		
						Output opeed delisor laun	_	IALOL	Doolean		
						MIL not Illuminated for DTC's:		P0717, P0722,	P0723,		
					Conditions:		P182E				
							ECM: P0101, F				
							P0107, P0108				
							P0175, P0201, P0205, P0206,				
							P0301, P0302				
							P0306, P0307				
	1		Primary Offgoing Clutch is								One Trip
		Pressure Control (PC) Solenoid B	exhausted (See Table 12 in								One mp
Variable Bleed Solenoid (VBS)	P0777	StuckOn [C35R] (Dymanic)	Supporting Documents for Exhaust	= TRUE	Boolean						
			Delay Timers)								
			Primary Oncoming Clutch Pressure Command Status								
				· '							
			Primary Offgoing Clutch Pressure Command Status								
			Command Status								
			Range Shift Status	≠ Initial Clutch Control							
			Attained Gear Slip		RPM						
			If the above conditions are true run								
			appropriate Fail 1 Timers Below:								
			Entl Marian								
			fail timer 1 (3-1 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)						
			, ,								
			fail timer 1 (3-2 shifting with Throttle)	>= 0.400390625	Fail Time (Sec)						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-4 shifting with Throttle)	>= 0.400390625 Fail Time (Sec)				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)	>= 0.400390625 Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Throttle)	>= 0.400390625 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)	>= 0.400390625 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)	>= 0.400390625 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				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tir Requ		Mil Illum.
			3rd gear fail counter				>=	3	3rd gear fail counts OR	
			5th gear fail counter				>=	3	5th gear fail counts	
			Total fail counter				>=	3	OR total fail counts	İ
				Disable Conditions:		= FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean = TRUE Boolean				
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	Fail Case 1 Case: Steady State 1st Attained Gear slip	>= 400 RPM Table Based						One Trip
			If the Above is True for Time	Time Please Refer to Table Enable Time 4 in (Sec) supporting documents						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime Juired	M
-,			Intrusive test:				1			T
			(CBR1 clutch exhausted)							
				<= 1.529052734						
			If the above parameters are true	>= 1.328979492						
			ii tile above parameters are tide							
							>=	1.1	Fail Timer (Sec)	
							>=	2	Fail Count in 1st Gear	1
									or	
							>=	3	Total Fail Counts	
			Fail Case 2 Case Steady State 2nd						0000	1
				Table Based						
				value Please						ı
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec						
				supporting						
				documents						
				Table Based						
				value Please						
			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 2 in						
				supporting						
				documents						ı
				Table Based						ı
				Time Pleace						
			If the Above is True for Time	>= Refer to Table Sec						
			ii tile Above is True for Tillie	17 111						
				supporting						
			Industrial to de	documents						
			Intrusive test: (CB26 clutch exhausted)							
				<= 1.529052734						
				>= 1.328979492						
			If the above parameters are true							
			·				>=	1.1	Fail Timer (Sec)	,
									Fail Count in	l
							>=	3	2nd Gear	ı
									or	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime uired	Mil Illum
									>=	3	Total fail counts	
			Fail Case 3 Case Steady State 3rd									-
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents								
			Min Delta Output Speed Hysteresis	supporting documents								
			If the Above is True for Time	17 in supporting								
			Gear Ratio	documents <= 1.529052734 >= 1.328979492								
			If the above parameters are true						>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 3rd Gear	
									>=	OR 3	Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed	= = = >=	FALSE FALSE FALSE 0	Boolean Boolean Boolean RPM			Counts	
					TPS validity flag HSD Enabled	= =	TRUE TRUE	Boolean Boolean				
					Hydraulic_System_Pressurized	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
Oystelli	Code	Description	Ontena	Va	iiue	A OR B		Conditions		Required	illum:
						(A) Output speed enable	>=	100	Nm		
						(B) Accelerator Pedal enable	>=	0.5004883	Nm		
						Ignition Voltage Lo	>=	9	Volts		
						Ignition Voltage Hi	<=	31.990234	Volts		
						Engine Speed Lo	>=	400	RPM		
						Engine Speed Hi	<=	7500	RPM		
						Engine Speed is within the	>=	5	Sec		
						allowable limits for	/-	5	360		
						if Attained Gear=1st FW	>=	10.00061	Pct		
						Accelerator Pedal enable	/-	10.00001	1 60		
						if Attained Gear=1st FW Engine	>=	45	Nm		
						Torque Enable	-	10			
						if Attained Gear=1st FW Engine	<=	8191.875	Nm		
						Torque Enable					
						Transmission Fluid	>=	-6.65625	°C		
						Temperature					
						Input Speed Sensor fault	=	FALSE FALSE	Boolean Boolean		
						Output Speed Sensor fault	=	FALSE	Boolean		
						Default Gear Option is not	=	TRUE			
						present					
					Dicable	MIL not Illuminated for DTC's:	TCM: D0716	D0717 D0722	D0723		
					Conditions:		P182E), PUT IT, PUTZZ,	P0123,		
					Conditions.		F 102E				
								1, P0102, P0103,			
								08, P0171, P0172			
								01, P0202, P0203			
								06, P0207, P0208			
								02, P0303, P0304 07, P0308, P040			
							P0306, P030	07, 20306, 2040	I, P042E		
			Primary Offgoing Clutch is								One Trip
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C	exhausted (See Table 11 in	= TRUE	Boolean						
Variable Dieed Goleriold (VDG)	10131	Stuck On [C456] (Dynamic)	Supporting Documents for Exhaust	- 1100	Doolean						
			Delay Timers)								
			Primary Oncoming Clutch Pressure	= Maximum							
l	I	1	Command Status	pressurized							I

Component/ Fault System Code	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Reguired	Mil Illum
	Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below: fail timer 1 (4-1 shifting with throttle) fail timer 1 (4-2 shifting without throttle) fail timer 1 (4-2 shifting without throttle) fail timer 1 (4-2 shifting without throttle) fail timer 1 (4-3 shifting without throttle) fail timer 1 (4-3 shifting with throttle) fail timer 1 (4-3 shifting without throttle) fail timer 1 (5-3 shifting without throttle)	Value	Secondary Malfunction		Time Required	
	fail timer 1 (5-3 shifting without throttle) fail timer 1 (6-2 shifting with throttle) fail timer 1 (6-2 shifting without throttle) If Attained Gear Slip is Less than Above Cal Increment Fail Timers	>= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec)			Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and Reference Supporting Table 15 for	ec

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 From 4	ounter th Gear R
			5th gear fail counter				>= 3 Fail C	ounter th Gear
			6th gear fail counter				>= 3 Fail C From 6	ounter
			Total fail counter				3 Tota	l Fail Inter
					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	= FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174,		
						P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Case 1 Tap Up Switch Stuck in the Up Position in Range 1 Enabled					Special No MIL

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction	Enable Conditions		Time Required	IIIu
System	Code	Description	Tap Up Switch Stuck in the Up			Manufiction	Conditions	-	required	+
			Position in Range 2 Enabled	= 0	Boolean					
			Tap Up Switch Stuck in the Up							
			Position in Range 3 Enabled	= 0	Boolean					
			Top the Could be Charlet in the the							
			Tap Up Switch Stuck in the Up	= 0	Boolean					
			Position in Range 4 Enabled							
			Tap Up Switch Stuck in the Up	= 0	Boolean					
			Position in Range 5 Enabled							
			Tap Up Switch Stuck in the Up	= 0	Boolean					
			Position in Range 6 Enabled							
			Tap Up Switch Stuck in the Up	: 1	Boolean					
			Position in Neutral Enabled							
			Tap Up Switch Stuck in the Up	: 1	Boolean					
			Position in Park Enabled	•	20010411					
			Tap Up Switch Stuck in the Up	: 0	Boolean					
			Position in Reverse Enabled	· ·	20010411					
			Tap Up Switch ON =	TRUE	Boolean			>= 1	Fail Time (Sec	aL
			Tup of omis.		20010411				(555)	1
			Fail Case 2 Tap Up Switch Stuck in the Up	. 4	Boolean					1
			Position in Range 1 Enabled		Boolean					
			Tap Up Switch Stuck in the Up	4	Dealess					
			Position in Range 2 Enabled	: 1	Boolean					
			Tap Up Switch Stuck in the Up	4	Dealess					
			Position in Range 3 Enabled	: 1	Boolean					
			Tap Up Switch Stuck in the Up	4	Dealess					
			Position in Range 4 Enabled	: 1	Boolean					
			Tan Un Switch Stuck in the Un	4	D 1					
			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	_		1				
			Position in Park Enabled	: 0	Boolean	1				
			Tap Up Switch Stuck in the Up			1				
			Position in Reverse Enabled	: 0	Boolean	1				1
			Tap Up Switch ON	: TRUE	Boolean	1				
			NOTE: Both Failcase1 and Failcase	INUL	טטוכמוז	1				
			2 Must Be Met			1		>= 600	Fail Time (Sec)
			2 Ividst De Iviet							1
						1				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold /alue	Secondary Malfunction	Enable Condition	s	Time Required	Mil Illum.
						Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 9 <= 31.9902 >= 400 <= 7500 >= 5	RPM RPM Sec		
					Disable Conditions:		TCM: P0816, P0826, P18 P1877, P1915, P1761 ECM: None	2E, P1876,		
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					Special No MIL
			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					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions		Time Required		Mil Illum.
- Oystoni	Code	Societies	Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	0	Boolean		COMMISSION		roquifeu		
			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	= T	ΓRUE	Boolean			>=	1	sec	
			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						
			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						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold 'alue	Secondary Malfunction		Enable Conditions			Time Requi		Mil Illum.
		·	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	>=	1	Enable Time (Sec)				_
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	<=	9 31.990234 400	Volts Volts RPM				
						Engine Speed Hi Engine Speed is within the allowable limits for	<=	7500 5	RPM Sec				
						P0816 Status is	≠	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0815 P1877, P191		P1876,				
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case 1 Current range	= Transition 1 (bit state 111	I Range		ECM: None						One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		lime quired	Mil Illum.
oystem	Code	Description	Previous range	CaTDOD a D	manuficion	Conditions	Ne	quireu	illum.
			Previous range	≠ CeTRGR_e_P RNDL_Drive5 Range					
			Range Shift State	Completed					
			Absolute Attained Gear Slip Attained Gear Attained Gear Throttle Position Available	<= Sixth >= First = TRUE					
			Throttle Position Output Speed Engine Torque Engine Torque	>= 50 Nm					
			If the above conditions are met then Increment Fail Timer	C- 0191./5 NIII			>= 1	Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter Fail Case 2 Output Speed	<= 70 rpm			>= 5	Fail Counts	-
			The following PRNDL sequence events occur in this exact order:						
			PRNDL state PRNDL state = Drive 6 for	state 0110)					
			PRNDL state	Townsides 0					
			PRNDL state	= Drive 6 (bit state 0110) Range					
			PRNDL state	(bit state 1110)					
			Above sequencing occurs in Neutral Idle Mode 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	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tin Requ		IIIu
-			Input Speed If Fail Timer has Expired then Increment Fail Counter	>= 400 Sec			>=	2	Fail Counts	
			Fail Case 3 Current range	= Transition 13 Range (bit state 0010)	Previous range	CeTRGR_ ≠ e_PRNDL_ Drive5 CeTRGR				
			Engine Torque	>= -8192 Nm	Previous range					
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration	= 0 Boolean				
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>=	0.225	Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>=	15	Fail Counts	
			Fail Case 4 Current range	= Transition 8 (bit state 0111) Range	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8					
			Inhibit bit (see definition)	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)					
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer	<= 8191.75 Nm	του (μαικ)		>=	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:							
			PRNDL State	= Reverse (bit state 1100)						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions			Tim Requ		Mi Illur
			PRNDL State	= Transition 11 Range (bit state 0100)								
			PRNDL State	= Neutral (bit state 0101)								
			PRNDL State	= Transition 11 (bit state 0100) Range								
			Above sequencing occurs in Then delay timer increments									
			Delay timer Range Shift State	Dango Shift								
			Absolute Attained Gear Slip Attained Gear	<= 50 rpm <= Sixth								
			Attained Gear Throttle Position Output Speed	>= 8.000183105 pct								
			If the above conditions are met Increment Fail Timer	200 15111					>=	20	Seconds	
			Fail Case 6 Current range	Illegal (bit = state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):							
			and		Current Range		Transition 11 (bit state 0100)					
			A Open Circuit (See Definition)	= FALSE Boolean	or Last positive state		Neutral (bit state 0101)					
					or Previous transition state	≠	Transition 8 (bit state					
			If the above Condtions are met then, Increment Fail timer		Fail case 5 delay timer	=	0111) 0	sec	>=	6.25	Seconds	
			Fail Case 7 Current PRNDL State	= PRNDL circuit Range								1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold	Secondary Malfunction		Enable Conditions			Tim Requi		Mil Illum.
			and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Condtions are met then, Increment Fail timer	= PRNDL circui ABCP =1111 >= 150 <= 2.736938477 >= 3.149047852	RPM ratio					>=	6.25	Seconds	
			P182E will report test fail when any of the above 7 fail cases are met			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	>= <= >= <= >= =	9 31.990234 400 7500 5 TRUE	Volts Volts RPM RPM Sec Boolean				-
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P P07C0, P07BF, ECM: P0101, F P0107, P0108, P0175, P0201, P0205, P0206, P0301, P0302, P0306, P0307,	0717, P0722, I , P077C, P077 P0102, P0103, P0171, P0172 P0202, P0203 P0207, P0208 P0303, P0304	P0723, D P0106, , P0174, , P0204, , P0300, , P0305,				
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status	= TRUE	Boolean								One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip If above coditons are true, increment appropriate Fail 1 Timers Below: fail timer 1 (2-1 shifting with throttle) fail timer 1 (2-3 shifting without throttle) fail timer 1 (2-3 shifting with out throttle) fail timer 1 (2-4 shifting without throttle) fail timer 1 (2-4 shifting with throttle) fail timer 1 (2-4 shifting with throttle) fail timer 1 (6-4 shifting with throttle) fail timer 1 (6-5 shifting without throttle) fail timer 1 (6-5 shifting with throttle) fail timer 1 (6-5 shifting with throttle) fail timer 1	command ≠ Initial Clutch Control				
			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 sec Reference Supporting Table 15 for Fail Timer 2	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					- 1		
			2nd gear fail counter				>=	3	Fail Counter From 2nd Gear	
			6th gear fail counter				>=	3	OR Fail Counter From 6th Gear OR	
			total fail counter				>=	3	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	= FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 200 RPM >= 200 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)		Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	Fail Case 1 Case: Steady State 1st							One Trip
		Oldon On [ODZO] (Oldady Oldle)	Attained Gear slip	>= 400 RPM						1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time quired	Mi Illun
System	Code	Description	Criteria	Table Based	wanunction	Conditions	Re	quirea	illun
				Time Please					İ
				Pofor to Table Enable Time					ĺ
			If the Above is True for Time	>= 4 in (Sec)					ĺ
				supporting					1
				documents					1
			Intrusive test:	documents					ĺ
			(CBR1 clutch exhausted)						1
				<= 3.112670898					ĺ
				>= 2.705322266					1
			If the above parameters are true	2.700022200					1
			ii tilo abovo paramotoro aro tido						1
							>= 1.1	Fail Timer (Sec)	1
								Fail Count in 1st	1
							>= 5	Gear	1
								or	1
								Total Fail	1
							>= 5	Counts	1
			Fail Case 2 Case: Steady State 3rd Gear						1
			,	Table Based					1
				value Please					1
				Refer to 3D					1
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec					1
				supporting					1
				documents					1
				Table Based					1
				value Please					1
			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec					1
			Willi Della Output Speed Hysteresis	Table 2 in					1
				supporting					1
				documents					1
				Table Based					1
				Time Please					1
			If the Above is True for Time	>= Refer to Table Sec					1
			ii tile Above is True for Tillie	17 111					1
				supporting					1
				documents					1
			Intrusive test:						
			(C35R clutch exhausted)						1
				<= 3.112670898					1
				>= 2.705322266					1
			If the above parameters are true						1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime Juired	IIIu
							>=	1.1	Fail Timer (Sec))
							>=	3	Fail Count in 3rd Gear	
							>=	5	or Total Fail Counts	
			Fail Case 3 Case: Steady State 4rd Gear	Table Based						
				value Please						
			Max Delta Output Speed Hysteresis	Table 1 in						
				supporting documents						
				Table Based						
				value Please						
			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 2 in						
				supporting						ı
				documents Table Based						ı
				Time Please						
			If the Above is True for Time	>= Refer to Table Sec						ı
				supporting						ı
				documents						
			Intrusive test: (C1234 clutch exhausted)							
			Gear Ratio	<= 0.798217773						
				>= 0.693725586						
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	1
							>=	3	Fail Count in 4th Gear	1
								5	or Total Fail	
			Fail Case 4 Case: Steady State 5th Gear				>=	5	Counts	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime uired	Mil Illum.
System	Code	Description	Max Delta Output Speed Hysteresis	Table Based value Please	manufolion		Conditions			Rec	штеч	mann
			Min Delta Output Speed Hysteresis	documents Table Based value Please Refer to 3D Table 2 in supporting documents								
			If the Above is True for Time Intrusive test:	Table Based Time Please Refer to Table 17 in supporting documents								
				<= 0.798217773 >= 0.693725586					>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 5th Gear	
									>=	5	or Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= = = >= = =	FALSE FALSE FALSE 0 TRUE TRUE	Boolean Boolean Boolean RPM Boolean Boolean				
					Hydraulic_System_Pressurized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	100	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Valu		Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
System	Code	Description	Criteria	vait	ie	Ignition Voltage Lo	>=	9	Volts	Required	mum.
						Ignition Voltage Lo	<=	31.990234	Volts		
						Engine Speed Lo	>=	400	RPM		
						Engine Speed Lo Engine Speed Hi	<=	7500	RPM		
						Engine Speed is within the	\ <u>-</u>	7300			
						allowable limits for	>=	5	Sec		
						if Attained Gear=1st FW					
						Accelerator Pedal enable	>=	10.00061	Pct		
						if Attained Gear=1st FW Engine					
							>=	45	Nm		
						Torque Enable					
						if Attained Gear=1st FW Engine Torque Enable	<=	8191.875	Nm		
						Transmission Fluid					
							>=	-6.65625	°C		
						Temperature	_	EALCE	Daalaaa		
						Input Speed Sensor fault	=	FALSE	Boolean		
						Output Speed Sensor fault	=	FALSE	Boolean		
						Default Gear Option is not	=	TRUE			
						present					
					B: 11						
						MIL not Illuminated for DTC's:	TCM: P0/16,	P0/1/, P0/22,	, P0/23,		
					Conditions:		P182E				
								P0102, P0103,			
								8, P0171, P017			
							P0175, P020 ⁻	1, P0202, P020	3, P0204,		
							P0205, P0206	6, P0207, P020	8, P0300,		
							P0301, P0302	2, P0303, P030	4, P0305,		
							P0306, P0307	7, P0308, P040	1, P042E		
			Primary Offgoing Clutch is								One Trip
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E	exhausted (See Table 10 in	= TRUE	Boolean						
variable block coloriola (VBG)	1 2124	Stuck On (Dynamic)	Supporting Documents for Exhaust	IIIOL	Doorouii						
			Delay Timers)								
			Primary Oncoming Clutch Pressure	_ Maximum							
			Command Status	pressurized							
1			Primary Offgoing Clutch Pressure	Clutch exhaust							
1			Command Status	command							
1		l	Command Status	Command							

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time	M Illu
System	Code	Description		Initial Clutch	waitunction	Conditions	Required	IIIu
			Range Shift Status	≠ Control				
			Attained Gear Slip					
			If the above conditions are true					
			increment appropriate Fail 1 Timers					
			Below:					
			fail timer 1	>= 0.400390625 sec				
			(2-6 shifting with throttle)	0.400030020 360				
			fail timer 1	>= 0.5 sec				
			(2-6 shifting without throttle)					
			fail timer 1 (3-5 shifting with throttle)	>= 0.400390625 sec				
			(3-3 stilling with throttle)					
			(3-5 shifting without throttle)	>= 0.5 sec				
			fail timer 1					
			(4-5 shifting with throttle)	>= 0.400390625 sec				
			fail timer 1	>= 0.5 sec				
			(4-5 shifting without throttle)	2- 0.3 Sec				
			fail timer 1	>= 0.400390625 sec				
			(4-6 Shirting with throttle)					
			fail timer 1 (4-6 shifting without throttle)	>= 0.5 sec				
			(4-6 Sillurig Without throttle)					
							Total Fail Time	
							= (Fail 1 + Fail	
							2) See Enable	
			If Attained Gear Slip is Less than				Timers for Fail	
			Above Cal Increment Fail Timers				>= Timer 1, and sec	
			Above oai increment i all rimers				Reference	
							Supporting	
							Table 15 for	
							Fail Timer 2	
			If fail timer is greater than threshold					
			increment corresponding gear fail					
			counter and total fail counter					
							Fail Cour	nter
			2nd gear fail counter				>= 3 From 2nd	
							1 IOIII ZIIG	Jour

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Required		Mil Illum.
.,,			3rd gear fail counter				>=	3 F	Fail Counter rom 3rd Gear	
			4th gear fail counter				>=		Fail Counter rom 4th Gear	
			total fail counter				>=	3	Total Fail Counter	
				Disable Conditions:		>= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean TRUE Boolean 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,				
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E	Fail Case 1 Case: 5th Gear			P0306, P0307, P0308, P0401, P042E				One Trip
vanaule вівец Зоівіной (VBS)	F2124	Stuck On (Steady State)	Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in Sec				
				supporting documents <= 1.529052734 >= 1.328979492				
			If the above parameters are true				>= 1.1 Fail Timer (Sec))
							>= 3 Fail Count in 5th Gear OR	h
							>= 3 Total Fail Counts	
			Fail Case 2 Case: 6th Gear Max Delta Output Speed Hysteresis	Table Based value Please				
				supporting documents Table Based value Please				
			Min Delta Output Speed Hysteresis	Defer to 2D				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime Juired	Mi Illur
System	Code	Description	Griteria	Table Based	Mairunction		Conditions			Ked	quirea	ınur
			If the Above is True for Time	Time Please >= Refer to Table Sec 17 in								
				supporting documents								
			Intrusive test:									
			(CB26 clutch exhausted)	4 =000=0=04								
				<= 1.529052734 >= 1.328979492								
			If the above parameters are true	>= 1.320979492								
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear OR	
									>=	3	Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				1
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication output speed	= >=	FALSE 0	Boolean RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Pressurized	=	TRUE	Boolean				
					A OR B							
					(A) Output speed enable	>=	100	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo	>=	9	Volts				
					Ignition Voltage Hi	<=	31.990234	Volts				
					Engine Speed Lo	>= <=	400 7500	RPM RPM				
					Engine Speed Hi Engine Speed is within the							1
					allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW	>=	10.00061	Pct				
					Accelerator Pedal enable		10.00001	1 01				l
					if Attained Gear=1st FW Engine	>=	45	Nm				
					Torque Enable if Attained Gear=1st FW Engine							
					Torque Enable	<=	8191.875	Nm				1

Component/	Fault	Monitor Strategy	Malfunction			eshold	Secondary		Enable			Tin		Mil
System	Code	Description	Criteria		Va	alue	Malfunction		Conditions			Requ	iired	Illum.
							Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= = =	-6.65625 FALSE FALSE TRUE	°C Boolean Boolean				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P07 ⁻ P182E	16, P0717, P0722	, P0723,				
								P0107, P0 P0175, P0 P0205, P0	01, P0102, P0103 108, P0171, P017 201, P0202, P020 206, P0207, P020 302, P0303, P030	2, P0174, 3, P0204, 8, P0300,				
									307, P0308, P040					
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error		TRUE	Boolean					>=	62	Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>=	0.1125	sec					Out of	70	Sample Counts (≈ 11 seconds)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= <= =	3 9 31.990234 Run	sec Volt Volt				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: Non						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
Mode 2 Multiplex Valve		Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM	Wallulicuoli		Conditions			Keq	uned	One Trip
Wood 2 Wallpiox Valve	1 0/32	offin odichold valve A older off	Ocal Box onp	-	400	TXI IVI								One mp
			Commanded Gear	=	3rd	Gear								
			Commanded Gear has Achieved											
			1st Locked OR 1st Free-Wheel OR	=	TRUE	Boolean								
			2nd with Mode 2 Sol. Commanded	-	IIIOL	Doolean								
			On											
			If the above parameters are true									D . (-		
												ease Refe		
												Supporting	n Neutral Timer (Sec)	
												ocuments		
			Command 4th Gear once Output								۱ ۲	ocuments		
			Shaft Speed	<=	1000	RPM								
			If Gear Ratio	>= 4	4.2265625									
			And Gear Ratio	<= 4.	.67150878	9								
											>=	1.5	Fail Timer (Sec)	
													, ,	
											>=	5	Counts	
							Ignition Voltage Lo	>=	9	Volts				
							Ignition Voltage Hi Engine Speed Lo	<=	31.990234	Volts				
							Engine Speed Lo Engine Speed Hi	>= <=	400 7500	RPM RPM				
							Engine Speed is within the	\ <u>-</u>						
							allowable limits for	>=	5	Sec				
							High-Side Driver is Enabled	=	TRUE	Boolean				
							Throttle Position Signal Valid							
							from ECM	=	TRUE	Boolean				
							Output Speed	>=	110	RPM				
							OR							
							TPS	>=	0.5004883	%				
									Range					
							Range Shift State	=	Shift	ENUM				
									Completed					
							Transmission Fluid							
							Temperature	>=	-6.65625	°C				
							Input Speed Sensor fault	=	FALSE	Boolean				
							Output Speed Sensor fault	=	FALSE	Boolean				
							Default Gear Option is not	=	TRUE					
							present	=	IRUE					
											l			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tir		Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requ	iired	Illum.
					MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723,				
				Conditions:		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)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)	Fail Case 1 Case: Steady State 1st							One Trip
		Stuck Off [033K] (Steady State)	Attained Gear slip							
				Table Based Time Please						
			1511 AL . T. C. T.	Defer to Table Enable Time						
			If the Above is True for Time	4 in (Sec)						
				supporting documents						
			Intrusive test:							
			(CBR1 clutch exhausted)	<= 2.025024414						
				>= 1.760131836						
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	
							>=	2	Fail Count in 1st	
								_	Gear or	
							>=	3	Total Fail	
			Fail Case 2 Case: Steady State 2nd gear					J	Counts	
			Fail Case 2 Case: Steady State 2nd gear	Table Based						
				value Please						
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 1 in						
				supporting						
	l	l	l	documents			l			1

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based				
			If the Above is True for Time	Time Please				
				<= 2.025024414 >= 1.760131836				
			ii the above parameters are true				>= 1.1 Fail Timer (Sec)	
							>= 3 Fail Count in 2nd Gear or	
							>= 3 Total Fail Counts	
			Fail Case 3 Case: Steady State 4th gear Max Delta Output Speed Hysteresis	Table Based value Please				
			Min Delta Output Speed Hysteresis	Table Based value Please				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		ime	Mil
System	Code	Description	Criteria	Value Table Based	Malfunction	Conditions	Red	uired	Illum.
				Time Please					
				Defer to Table					
			If the Above is True for Time	>= 17 in Sec					
				supporting					
				documents					
			Intrusive test:						
			(C1234 clutch exhausted)						
				<= 1.069946289 >= 0.930053711					
			If the above parameters are true	>= 0.930053711					
			ii tile above parameters are tide						
							>= 1.1	Fail Timer (Sec)	
							,	Fail Count in 4th	
							>= 3	Gear	
								or	
							>= 3	Total Fail	
			Fail Case 4 Case: Steady State 6th gear					Counts	-
			Case. Steady State of gear	Table Based					
				value Please					
			M B # 0 / 10 / 11 /						
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 1 in					
				supporting					
				documents					
				Table Based value Please					
			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 2 in					
				supporting					
				documents					
				Table Based					
				Time Please					
			If the Above is True for Time	>= Refer to Table Sec 17 in					
				supporting documents					
			Intrusive test:	documents					
			(CB26 clutch exhausted)						
			` ` '	<= 1.069946289			>= 1.1	Foil Times (Cas)	
								Fail Timer (Sec)	
	l	l	Gear Ratio	>= 0.930053711			>= 3	counts	

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold	Secondary Malfunction		Enable Conditions				Γime	Mil Illum.
System	Code	Description	If the above parameters are true	Value	Waitunction		Conditions		-	Ke	quired	illum.
			ii the above parameters are true									ĺ
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
											or Total Fail	
									>=	3	Counts	
					PRNDL State defaulted	=	FALSE	Boolean				.
					inhibit RVT	=	FALSE	Boolean				1
					IMS fault pending indication	=	FALSE	Boolean				ĺ
					output speed	>=	0	RPM				ĺ
					TPS validity flag HSD Enabled	=	TRUE TRUE	Boolean Boolean				ĺ
					Hydraulic_System_Pressurized	=	TRUE	Boolean				ı
					A OR B							
					(A) Output speed enable	>=	110	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo	>=	9	Volts				1
					Ignition Voltage Hi	<=	31.990234	Volts				ĺ
					Engine Speed Lo	>=	400	RPM				ĺ
					Engine Speed Hi	<=	7500	RPM				ĺ
					Engine Speed is within the	>=	5	Sec				
					allowable limits for		ŭ	000				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	10.00061	Pct				
					if Attained Gear=1st FW Engine							1
					Torque Enable	>=	45	Nm				1
					if Attained Gear=1st FW Engine	<=	8191.875	Nm				
					Torque Enable	•-	0131.073	14111				
					Transmission Fluid Temperature	>=	-6.65625	°C				1
					Input Speed Sensor fault	=	FALSE	Boolean				1
					Output Speed Sensor fault	=	FALSE	Boolean				1
					- Tr F							1
												1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value	Disable	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723,	Kequirea	mun.
					Conditions:		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
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid B	exhausted (See Table 12 in	= TRUE Boole	ean				
		StuckOn [C35R] (Dymanic)	Supporting Documents for Exhaust Delay Timers)						
			Primary Oncoming Clutch Pressure	Maximum					
			Command Status						
			Primary Offgoing Clutch Pressure	Clutch exhaust					
			Command Status						
			Danna Chiff Clatus	_ Initial Clutch					
			Range Shift Status	Control					
			Attained Gear Slip	<= 40 RPM					
			If the above conditions are true run appropriate Fail 1 Timers Below:						
			арргорнате ган т тіпіеть ветом.						
			fail timer 1	>= 0.5 Fail 1	Γime (Sec)				
			(3-1 shifting with Closed Throttle)	/- 0.5 Tall I	Tillie (Geo)				
			fail timer 1	>= 0.400390625 Fail 1	Time (Sec)				
			(3-2 shifting with Throttle)	2 0.400330023 Tall I	Tillie (Geo)				
			fail timer 1	>= 0.5 Fail 1	Γime (Sec)				
			(3-2 shifting with Closed Throttle)	0.0 1 411 1	1 11110 (000)				
			fail timer 1	>= 0.400390625 Fail 1	Time (Sec)				
			(3-4 shifting with Throttle)	0.100000020 Tall I	11110 (000)				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5 Fail 1	Γime (Sec)				
			fail timer 1	>= 0.400390625 Fail 1	Timo (Soo)				
			(3-5 shifting with Throttle)	/- 0.400390625 Fall I	illie (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tim Requi	
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				•	
			fail timer 1 (5-3 shifting with Throttle)	>= 0.400390625 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)	>= 0.400390625 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)	>= 0.400390625 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				>	Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail = Timer 1, and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter	l e					
			3rd gear fail counter				>	= 3	3rd gear fail counts OR
			5th gear fail counter	,			>	= 3	5th gear fail counts
			Total fail counter		TUT Enable temperature	>= -6.65625	°C >	= 3	OR total fail counts

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	1	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	F	Required	Illum.
System	Code	Description	Criteria		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	= FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean = TRUE Boolean = TRUE 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,		Required	ilium.
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)		>= 400 RPM Table Based Time Please		P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	>= 1.1 >= 2	Fail Timer (Sec) Fail Count in 1st Gear	

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold	Secondary Malfunction	Enable			ime	Mil Illum.
System	Code	Description	Criteria	Value	waitunction	Conditions		Keq	uired or	illum.
							>=	3	Total Fail Counts	
			Fail Case 2 Case Steady State 2nd						000.110	1
			, , , , , , , , , , , , , , , , , , ,	Table Based						
				value Please						
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec						
				supporting						
				documents						
				Table Based						
				value Please Refer to 3D						
			Min Delta Output Speed Hysteresis	>= Table 2 in rpm/sec						
				supporting						
				documents						
				Table Based Time Please						
				Pofor to Table						
			If the Above is True for Time	>= Sec						
				supporting						
			Intrusive test:	documents						
			(CB26 clutch exhausted)							
				<= 1.547485352						
			Gear Ratio	>= 1.345092773						
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	
									Fail Count in	
							>=	3	2nd Gear	
									or	
							>=	3	Total fail counts	
I			Fail Case 3 Case Steady State 3rd							1
			ĺ	Table Based						
				value Please						
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 1 in						
				supporting						
				documents						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime quired	Mil Illum
oystem	ooue	Базоприон	Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting	man directori		Conditions			i c	_д чи х ч	maill
			If the Above is True for Time	1/ in								
				supporting documents <= 1.547485352 >= 1.345092773								
			ii alo abovo paramotoro are trae						>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 3rd Gear	
									>=	OR 3	Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= = = >= =	FALSE FALSE FALSE 0 TRUE TRUE	Boolean Boolean Boolean RPM Boolean Boolean			Sound	
					Hydraulic_System_Pressurized	=	TRUE	Boolean				
					A OR B (A) Output speed enable	>=	110	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Required	Illum.
.,					if Attained Gear=1st FW Accelerator Pedal enable	>= 10.00061	Pct		
					if Attained Gear=1st FW Engine Torque Enable	>= 45	Nm		
					if Attained Gear=1st FW Engine Torque Enable	<= 8191.875	Nm		
					Transmission Fluid Temperature	>= -6.65625	°C		
					Input Speed Sensor fault	= FALSE	Boolean		
					Output Speed Sensor fault	= FALSE	Boolean		
					Default Gear Option is not present	= TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, 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,		
Variable Bleed Solenoid (VBS)		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 Pressure Command Status	= TRUE Boolean = Maximum pressurized					One Trip
			Primary Offgoing Clutch Pressure Command Status	command					
			Range Shift Status Attained Gear Slip	Control					
			If the above conditions are true increment appropriate Fail 1 Timers Below:						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			fail timer 1 (4-1 shifting with throttle) fail timer 1	>= 0.400390625 Fail Time (Sec)				
			(4-1 shifting without throttle) fail timer 1	>= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec)				
			(4-2 shifting with throttle) fail timer 1	>= 0.5 Fail Time (Sec)				
			(4-2 shifting without throttle) fail timer 1 (4-3 shifting with throttle)	>= 0.400390625 Fail Time (Sec)				
			fail timer 1 (4-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with throttle) fail timer 1	>= 0.400390625 Fail Time (Sec)				
			(5-3 shifting without throttle) fail timer 1	>= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec)				
			(6-2 shifting with throttle) fail timer 1 (6-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 Fail Counter From 4th Gea OR	
			5th gear fail counter				>= 3 Fail Counter From 5th Gea OR	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Re	equired	Illum.
			6th gear fail counter				>= 3	Fail Counter From 6th Gear OR	
			Total fail counter				>= 3	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	>= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean			
				Disab Condition:	HSD Enabled Building the HSD Enabled HSD	TCM: P0716, P0717, P0722, P0723, P182E			
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E			
Tap Up Tap Down Switch (TUTD)	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 Position in Range 2 Enabled	- 1 Paglaga					Special No MIL
			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 Tap Up Switch Stuck in the Up	= 1 Boolean					
			Position in Range 6 Enabled						

Component/	Fault	Monitor Strategy	Malfunction			eshold	Secondary	Enable		Tir		Mil
System	Code	Description	Criteria		V	alue	Malfunction	Conditions		Requ	iired	Illum.
			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	=	1	Boolean						
			Tap Up Switch ON	=	TRUE	Boolean			>=	1	Fail Time (Sec)	
			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 Tap Up Switch Stuck in the Up	-	1	Boolean						
			Position in Range 5 Enabled Tap Up Switch Stuck in the Up	=	1	Boolean						
			Position in Range 6 Enabled Tap Up Switch Stuck in the Up	-	1	Boolean						
			Position in Neutral Enabled Tap Up Switch Stuck in the Up	-	1	Boolean						
			Position in Park Enabled Tap Up Switch Stuck in the Up	=	1	Boolean						
			Position in Reverse Enabled Tap Up Switch ON	-	TRUE	Boolean Boolean						
			NOTE: Both Failcase1 and Failcase 2 Must Be Met	t					>=	600	Fail Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	T T	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Value	Malfunction	С	conditions		Required	Illum.
						Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= (; >= <= >=	1 9 31.990234 400 7500 5	Enable Time (Sec) Volts Volts RPM RPM Sec		
						P0815 Status is	4	Test Failed This Key On or Fault Active			
					Disable Conditions:		TCM: P0816, P08 P1877, P1915, P ECM: None		21876,		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	Fail Case 1 Tap Down Switch Stuck in th Down Position in Range 1 Enable		1 Boolean						Special No MIL
			Tap Down Switch Stuck in th Down Position in Range 2 Enable	e d	1 Boolean						
			Tap Down Switch Stuck in th Down Position in Range 3 Enable	e d	1 Boolean						
			Tap Down Switch Stuck in th Down Position in Range 4 Enable	e d	1 Boolean						
			Tap Down Switch Stuck in th Down Position in Range 5 Enable	e d	1 Boolean						
			Tap Down Switch Stuck in th Down Position in Range 6 Enable	d _	1 Boolean						
			Tap Down Switch Stuck in th Down Position in Range Neutra Enable	al =	1 Boolean						

Component/	Fault	Monitor Strategy	Malfunction			eshold	Secondary	Enable		Time		Mil
System	Code	Description	Criteria	_	V	alue	Malfunction	Conditions	-	Required		Illum.
			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	=	1	Boolean						
			Enabled Tap Down Switch ON		TRUE	Boolean			>=	1	sec	
			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						
			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	=	1	Boolean						
			Tap Down Switch Stuck in the Down Position in Park Enabled		1	Boolean						
			Tap Down Switch Stuck in the Down Position in Reverse Enabled		1	Boolean						
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	=	TRUE	Boolean			>=	600	sec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Cineria		Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= 1 Enable Time (Sec) >= 9 Volts <= 31.990234 Volts >= 400 RPM	Required	-
					Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is	<= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active		
				Disable Conditions:		TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case 1 Current range	(Dit State 1110)				One Trip
			Previous range Previous range	CaTDOD a D				
			Range Shift State Absolute Attained Gear Slip Attained Gear Attained Gear Throttle Position Available	Range Shift Completed C= 50 rpm Sixth First				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction		Enable Conditions			Tii Reqi		Mil Illum.
oyotom	Code	Doddipton	Output Speed Engine Torque Engine Torque	>= 200 >= 50	rpm Nm Nm			Conditions			Roqi	un val	
			If the above conditions are met then Increment Fail Timer							>=	1	Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter							>=	5	Fail Counts	
			Fail Case 2 Output Speed The following PRNDL sequence events occur in this exact order:		rpm								
			PRNDL state PRNDL state = Drive 6 for	state 0110)	Range Sec								
			PRNDL state	Transition 8	Danas								
			PRNDL state	= Drive 6 (bit state 0110)	Range								
			PRNDL state	= Transition 1 (bit state 111	0) Range								
			Above sequencing occurs in Neutral Idle Mode If all conditions above are met Increment delay Timer		Sec								
			If the below two conditions are met Increment Fail Timer delay timer Input Speed		Sec Sec					>=	3	Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter	>= 400	Sec					>=	2	Fail Counts	
			Fail Case 3 Current range	= Transition 1 (bit state 001	Range	Previous range	≠	CeTRGR_ e_PRNDL_ Drive5 CeTRGR_					
			Engine Torque	>= -8192	Nm	Previous range	≠	e_PRNDL_ Drive5					
			Engine Torque	<= 8191.75	Nm	IMS is 7 position configuration	=	0	Boolean				

Fault Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
Code Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
	If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
	Increment Fail Counter				>= 15 Fail Counts	
		= 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	1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL =			
	Steady State Engine Torque If the above conditions are met then	<= 8191.75 Nm	TOO T (paint)		>= 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:					
	PRNDL State	= Reverse (bit state 1100)				
	PRNDL State	= Transition 11 Range (bit state 0100)				
	PRNDL State	Moutral /hit				
	PRNDL State	= Transition 11 (bit state 0100) Range				
	Then delay timer increments	<= 1 Sec				
<u>C</u>	Code Description	If the above conditions are met then, Increment Fail Timer If Fail Timer has Expired then Increment Fail Counter Fail Case 4 Current range Inhibit bit (see definition) Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer If the above Conditions have been met, Increment Fail Counter Fail Case 5 Throttle Position Available The following PRNDL sequence events occur in this exact order: PRNDL State If the above conditions are met then, Increment Fail Timer If Fail Timer has Expired then Increment Fail Counter Fail Case 4 Current range Inhibit bit (see definition) Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer If the above Conditions have been met, Increment Fail Timer If the above Conditions have been met, Increment Fail Counter Fail Case 5 Throttle Position Available The following PRNDL state PRNDL State	If the above conditions are met then, Increment Fail Timer If Fail Timer has Expired then Increment Fail Counter Fail Case 4 Current range Inhibit bit (see definition) Steady State Engine Torque Stady State Engine Torque Increment Fail Timer If the above conditions are met then Increment Fail Timer If the above Conditions have been met, Increment Fail Timer If the above Conditions have been met, Increment Fail Timer Fail Case 5 Throttle Position Available PRNDL State PR	If the above conditions are met then, increment Fall Timer Fail Case 4 Current range Inhibit bit (see definition) Steady State Engine Torque Stady State Engine Torque of If the above Conditions have been met, increment Fall Counter The following PRNDL state The following PRNDL state The following PRNDL state The following PRNDL state Transition 11 Range Transition 12 If the here 'previous range' or then the previous range' or the previous range' or then the previous range' or the previous range' or the previous range' or the previous range' or then trange' or then the previous range' or then trange' or the previous range' or the previous range' or the previous range' or then trange' or transition 13 Inhibit bit (see definition) Set inhibit bit tale 1 positive range was Drive 6 and current range' or transition 13 Set inhibit bit tale 1 positive range was Drive 6 and current range' or transition 13 Set inhibit bit tale 1 positive range was Drive faunt range' or transition 13 Set inhibit bit tale 1 positive range was Drive faunt range' or transition 13 Set inhibit bit tale 1 positive range was Drive faunt range' or transition 13 Set inhibit bit tale 1 positive range or transition 13 Set inhibit bit rate 1 positive range or transition 1	If the "MS 7 Position config" = 1 then, increment Fall Timer If Fall Timer has Expired then increment Fall Counter Fall Case 4 Current range = Transition 8 (bit state 0111) Steady State Engine Torque > Steady State	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time		Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	+	Requir	red	Illun
			Range Shift State	= Range Shift Complete						
			Absolute Attained Gear Slip							
			Absolute Attained Gear Slip Attained Gear							
			Attained Gear							
				>= 8.000183105 pct						
			Output Speed							
			If the above conditions are met	200 15111						
			Increment Fail Timer				>=	20	Seconds	
			Fail Case 6	III 1713						1
				Illegal (bit	A Open Circuit Definition (flag					
			Current range		set false if the following					
				1000 or 0001)	conditions are met):					
						Transition				
			and		Current Range	≠ 11 (bit state				
			and		Current Range	0100)				
						0100)				
			A Open Circuit (See Definition)	= FALSE Boolean	or					
						, Neutral (bit				
					Last positive state	≠ state 0101)				
					or	Torrestina				
						Transition				
					Previous transition state	≠ 8 (bit state				
					Fail case 5 delay timer	0111) = 0 sec				
			If the above Condtions are met		rail case 5 delay liftler	= 0 sec				
			then, Increment Fail timer				>=	6.25	Seconds	
			Fail Case 7				+			1
			Current PRNDL State	= PRNDL circuit ABCP = 1101 Range						
			Our one Transle State	ABCP = 1101 Talligo						
			and							
				DDMDI : "						
			Previous PRNDL state	= PRNDL circuit ABCP =1111 Range						
				= ABCP =1111 Range						1
			Input Speed	>= 150 RPM						1
				<= 2.670166016 ratio						1
				>= 3.072021484 ratio						1
			If the above Condtions are met				>=	6.25	Seconds	1
			then, Increment Fail timer					0.20	Seconds	
										1
										1

Component/	Fault	Monitor Strategy	Malfunction	Thre	shold	Secondary		Enable			Ti	me	Mil
System	Code	Description	Criteria	Va	lue	Malfunction		Conditions			Req	uired	Illum.
System	Code	Description	P182E will report test fail when any of the above 7 fail cases are met			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	>= <= >= <= = =	9 31.990234 400 7500 5 TRUE	Volts Volts RPM RPM Sec Boolean		Req	uired	illum.
					Disable Conditions:		P07C0, P07B ECM: P0101 P0107, P0108 P0175, P0207 P0205, P0206 P0301, P0302	P0717, P0722, IF, P077C, P077 , P0102, P0103, B, P0171, P0172 1, P0202, P0203 6, P0207, P0208 2, P0303, P0304 7, P0308, P0401	7D , P0106, 2, P0174, 3, P0204, 3, P0300, 4, P0305,				
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range TUTD Enable Switch is Active	Neutral	Range State Boolean					>= >=	3 5	Fail Time (Sec) Fail Counts	Special No MIL
						Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>=	9 31.990234 511 400 7500 5	Volts Volts KPH RPM RPM Sec				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					P1876 Status is	Test Failed This Key Øn or Fault Active		
				Disable Conditions:		TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status	= TRUE Boolean				One Trip
			Primary Offgoing Clutch Pressure Command Status	_ Clutch exhaust				
			Range Shift Status Attained Gear Slip	Control				
			If above coditons are true, increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-1 shifting with throttle) fail timer 1 (2-1 shifting without throttle)	>= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec)				
			fail timer 1 (2-3 shifting with throttle) fail timer 1	>= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec)				
			(2-3 shifting without throttle) fail timer 1 (2-4 shifting with throttle)	>= 0.400390625 Fail Time (Sec)				
			fail timer 1 (2-4 shifting without throttle)	>= 0.5 Fail Time (Sec)				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria fail timer 1	Value	Malfunction	Conditions	Required	Illum.
			(6-4 shifting with throttle)	>= 0.400390625 Fail Time (Sec)				
			fail timer 1	>= 0.5 Fail Time (Sec)				
			(6-4 shifting without throttle)	>= 0.5 Fall Tille (Sec)				
			fail timer 1	>= 0.400390625 Fail Time (Sec)				
			(6-5 shifting with throttle) fail timer 1					
			(6-5 shifting without throttle)	>= 0.5 Fail Time (Sec)				
İ								
İ							Total Fail Time	
							= (Fail 1 + Fail	
							2) See Enable	
			If Attained Gear Slip is Less than				Timers for Fail	
			Above Cal Increment Fail Timers				>= Timer 1, and sec	
							Reference Supporting	
							Table 15 for	
							Fail Timer 2	
I			If fail timer is greater than threshold					
			increment corresponding gear fail					
			counter and total fail counter					
							Fail Counter	
			2nd gear fail counter				>= 3 From 2nd Gear	
							OR	
			6th good fall accounts				Fail Counter	
			6th gear fail counter				From 6th Gear	
							OR Total Fail	
			total fail counter				>= 3 Total Fail Counter	
					TUT Enable temperature	>= -6.65625 °C	Counter	1
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Command / Attained Gear High Side Driver ON	≠ 1st Boolean = TRUE Boolean		
					output speed limit for TUT	>= 200 RPM		
					input speed limit for TUT	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolean		
		l	l		IMS Fault Pending	= FALSE Boolean		I

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tir		Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requ	iired	Illum.
				Disable Conditions:		= FALSE Boolean = TRUE Boolean TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305,				
						P0306, P0307, P0308, P0401, P042E				
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)		>= 400 RPM Table Based Time Please >= Refer to Table Enable Time 4 in (Sec) supporting documents <= 3.111816406 >= 2.704589844						One Trip
			ii alo abovo paramotoro aro ado				>=	1.1	Fail Timer (Sec)	
							>=	5	Fail Count in 1st Gear or	
			5.100 00 01 01 01 01 01				>=	5	Total Fail Counts	
			Fail Case 2 Case: Steady State 3rd Gear Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based				
			If the Above is True for Time	Time Please				
				<= 3.111816406 >= 2.704589844				
			ii the above parameters are true					
							>= 1.1 Fail Timer (Sec))
							>= 3 Fail Count in 3rd Gear or	d
							>= 5 Total Fail Counts	
			Fail Case 3 Case: Steady State 4rd Gear Max Delta Output Speed Hysteresis	Table Based value Please			Counts	-
			Min Delta Output Speed Hysteresis	Table Based value Please				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		ime	Mil
System	Code	Description	Criteria	Value Table Based	Malfunction	Conditions	Red	quired	Illum.
				Time Please					
1				Pofor to Table					
1			If the Above is True for Time	>= Refer to Table Sec					
1				supporting					
1				documents					
1			Intrusive test:	documents					
1			(C1234 clutch exhausted)						
1			Gear Ratio	<= 0.798339844					
1			Gear Ratio	>= 0.693847656					
1			If the above parameters are true						
1							>= 1.1	Fail Timer (Sec)	
1							-	, ,	
1							>= 3	Fail Count in 4th	
1								Gear	
1								or	
1							>= 5	Total Fail	
1			Fail Case 4 Case: Steady State 5th Gear					Counts	-
1			Case. Steady State Still Gear	Table Based					
1				value Please					
1									
1			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 1 in					
1				supporting					
1				documents					
1				Table Based					
1				value Please					
1			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec					
1			Milli Della Output Speed Hysteresis	Table 2 In .					
1				supporting					
1				documents					
1				Table Based					
1				Time Please					
1			If the Above is True for Time	>= Refer to Table Sec 17 in					
				supporting					
			Intrusive test:	documents					
			(C35R clutch exhausted)						
				<= 0.798339844					
				>= 0.693847656					
1			If the above parameters are true						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 5th Gear	
									>=	5	or Total Fail	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized A OR B (A) Output speed enable (B) Accelerator Pedal enable Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Tarque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	=	FALSE FALSE FALSE 0 TRUE TRUE 110 0.5004883 9 31.990234 400 7500 5 10.00061 45 8191.875 -6.65625 FALSE FALSE TRUE	Boolean Boolean RPM Boolean Boolean Boolean Boolean Boolean Nm Nm Volts Volts RPM RPM Sec Pct Nm Nm Nm OC Boolean Boolean		-	Counts	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	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	= TRUE Boolean				One Trip
			Primary Offgoing Clutch Pressure Command Status					
			Range Shift Status Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below:	control <= 40 RPM				
			fail timer 1 (2-6 shifting with throttle) fail timer 1 (2-6 shifting without throttle)	>= 0.400390625 sec >= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle) fail timer 1	>= 0.400390625 sec >= 0.5 sec				
			(3-5 shifting without throttle) fail timer 1 (4-5 shifting with throttle) fail timer 1	>= 0.400390625 sec				
			(4-5 shifting without throttle) fail timer 1 (4-6 shifting with throttle)	>= 0.5 sec >= 0.400390625 sec				
			fail timer 1 (4-6 shifting without throttle)	>= 0.5 sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Required		Mil Illum.
System	Code	Description	If Attained Gear Slip is Less than Above Cal Increment Fail Timers	value	Wandiction	Conditions	= (Fa 2) Se Time >= Tim Re Su Tab	I Fail Time ail 1 + Fail ee Enable ers for Fail	sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter							
			2nd gear fail counter				>=		ail Counter m 2nd Gear	
			3rd gear fail counter				>=		ail Counter m 3rd Gear	
			4th gear fail counter				>=		ail Counter m 4th Gear	
			total fail counter				>=		Γotal 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	>= -6.65625 °C = FALSE Boolear = FALSE Boolear ≠ 1st Boolear = TRUE Boolear >= 200 RPM >= 200 RPM = FALSE Boolear = FALSE Boolear = FALSE Boolear = TRUE Boolear				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Re	equired	Illum.
				Disable	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723,		•	
				Conditions:		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			
							Į		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E	Fail Case 1 Case: 5th Ge	ar					One Trip
Tunasio 21000 001011010 (120)		Stuck On (Steady State)	0000.001.001						
				Table Based					
				value Please					
			Max Delta Output Speed Hysteres	Refer to 3D rpm/sec					
			1 ' ' '	Table 1 in					
				supporting					
				documents Table Based					
				value Please					
				Defer to 2D					
			Min Delta Output Speed Hysteres	Table 2 in rpm/sec					
				supporting					
				documents					
				Table Based					
				Time Please					
				Defer to Table					
			If the Above is True for Time	e >= 17 in Sec					
				supporting					
				documents					
			Intrusive tes						
			(C35R clutch exhauste						
				o <= 1.547485352					
				0 >= 1.345092773					
			If the above parameters are tru						
			1				_ 44	Fail Times (0)	
							>= 1.1	Fail Timer (Sec)	
							>= 3	Fail Count in 5th Gear	
								OR	
							>= 3	Total Fail Counts	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable				ime	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions			Req	uired	Illum.
			Fail Case 2 Case: 6th Gear Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in rpm/sec								
			Min Delta Output Speed Hysteresis	supporting documents Table Based value Please Refer to 3D Table 2 in supporting documents								
			If the Above is True for Time	Table Based Time Please >= Refer to Table 17 in supporting documents								
			(CB26 clutch exhausted) Gear Ratio	<= 1.547485352 >= 1.345092773							5 I T (0)	
									>=	1.1	Fail Timer (Sec) 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	= = = >= = =	FALSE FALSE FALSE 0 TRUE TRUE	Boolean Boolean Boolean RPM Boolean Boolean				
					Hydraulic_System_Pressurized A OR B (A) Output speed enable	= >=	TRUE	Boolean Nm				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	1	hreshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
System	Code	Description	Cineria		value				Nee		Keqi	uirea	mum.
						(B) Accelerator Pedal enable	>=	0.5004883	Nm				
						Ignition Voltage Lo		9	Volts				
						Ignition Voltage Hi Engine Speed Lo	<= >=	31.990234 400	Volts RPM				
						Engine Speed Lo Engine Speed Hi	>= <=	7500	RPM				
						Engine Speed is within the							
						allowable limits for	>=	5	Sec				
						if Attained Gear=1st FW							
						Accelerator Pedal enable	>=	10.00061	Pct				
						if Attained Gear=1st FW Engine		45	Mari				
						Torque Enable	>=	45	Nm				
						if Attained Gear=1st FW Engine	<=	8191.875	Nm				
						Torque Enable	\-	0191.075	INIII				
						Transmission Fluid	>=	-6.65625	°C				
						Temperature							
						Input Speed Sensor fault	=	FALSE	Boolean				
						Output Speed Sensor fault	=	FALSE	Boolean				
						Default Gear Option is not	=	TRUE					
						present							
					Disable	MIL not Illuminated for DTC's:	TCM: P0716	P0717 P0722	P0723				
					Conditions:		P182E	, ,	. 0.20,				
							ECM: P0101,	P0102, P0103,	P0106,				
							P0107, P0108	8, P0171, P0172	2, P0174,				
							P0175, P0201	1, P0202, P0203	3, P0204,				
							P0205, P0206	6, P0207, P0208	8, P0300,				
								2, P0303, P0304					
							P0306, P0307	7, P0308, P040	1, P042E				
	-	Controller Area Network Bus	CAN Hardware Circuitry Detects a							-		Fail counts (≈	One Trin
Communication	U0073	Communication Error	Low Voltage Error	= TRUE	Boolean					>=	62	10 seconds)	One mp
		Sommanoadon Enoi	Low Voltage Lift									,	
			Delay timer	>= 0.112	5 sec					Out	70	Sample Counts	
			20.ay a							of		(≈ 11 seconds)	
						Stabilization delay	>=	3	sec				1
						Ignition Voltage	>=	9	Volt				
						Ignition Voltage		31.990234	Volt				
1		I				Power Mode	=	Run					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Т	hreshold Value	Secondary Malfunction		Enable Conditions			Tin Requ		Mil Illum.
					Disable Conditions:		TCM: None ECM: None						
Communication		Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM	= TRUE	Boolean					>=	12	sec	One Trip
						Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= <=	3 9 31.990234 Run	sec Volt Volt				
					Disable Conditions:		TCM: U0073 ECM: None						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
Mode 2 Multiplex Valve		Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM	manufaction .		Contactions			rtoq	uncu	One Trip
			Commanded Gear Commanded Gear has Achieved	=	3rd	Gear								
			1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded On	=	TRUE	Boolean								
			If the above parameters are true											
											>= to	ease Refe Table 16 i Supporting locuments	n Neutral Timer (Sec)	
			Command 4th Gear once Output Shaft Speed	<=	1000	RPM								
			If Gear Ratio	>= 4	4.2265625									
			And Gear Ratio	<= 4	.67150878	9								
											>=	1.5	Fail Timer (Sec)	
											>=	5	Counts	
							Ignition Voltage Lo Ignition Voltage Hi	>= <=	9 31.990234	Volts Volts				
							Engine Speed Lo	>=	400	RPM				
							Engine Speed Hi	<=	7500	RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							High-Side Driver is Enabled	=	TRUE	Boolean				
							Throttle Position Signal Valid	=	TRUE	Boolean				
							from ECM		110	RPM				
							Output Speed OR	>=	110	RPIVI				
							TPS	>=	0.5004883	%				
									Range					
							Range Shift State	=	Shift	ENUM				
									Completed					
							Transmission Fluid Temperature	>=	-6.65625	°C				
							Input Speed Sensor fault	=	FALSE	Boolean				
							Output Speed Sensor fault	=	FALSE	Boolean				
							Default Gear Option is not present	=	TRUE					
							prosent							

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tin Requ		Mil Illum.
Gystem	Code	Description	o nene			TCM: P0716, P0717, P0722, P0723, P182E		Requ	illed	
						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)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)	Fail Case 1 Case: Steady State 1st							One Trip
			Attained Gear slip	>= 400 RPM Table Based						
				Time Please Refer to Table Enable Time						
			If the Above is True for Time	>= 4 in (Sec) supporting						
			Intrusive test:	documents						
			(CBR1 clutch exhausted)							
				>= 1.760131836						
			ii the above parameters are true				>=	1.1	Fail Timer (Sec)	
							>=	2	Fail Count in 1st Gear or	
							>=	3	Total Fail Counts	
			Fail Case 2 Case: Steady State 2nd gear	Table Based value Please						
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec Table 1 in						
				supporting documents						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based				
			If the Above is True for Time	Time Please				
				<= 2.025024414 >= 1.760131836				
							>= 1.1 Fail Timer (Sec)	
							>= 3 Fail Count in 2nd Gear or Total Fail Counts	
			Fail Case 3 Case: Steady State 4th gear Max Delta Output Speed Hysteresis	Table Based value Please			Counts	-
			Min Delta Output Speed Hysteresis	documents Table Based value Please				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Required	M IIIu
System	Code	Description	Griteria	Table Based	Walluffction	Conditions		Required	IIIu
				Time Please					
			If the Above is True for Time	>= Refer to Table Sec					
				17 111					
				supporting documents					
			Intrusive test:	documents					
			(C1234 clutch exhausted)						
				<= 1.069946289					
			Gear Ratio If the above parameters are true	>= 0.930053711					
			ii tile above parameters are tide						
							>=	1.1 Fail Tin	ner (Sec)
							>=		unt in 4th
							'-	G	ear
									or al Fail
							>=		unts
			Fail Case 4 Case: Steady State 6th gear						
				Table Based					
				value Please Refer to 3D					
			Max Delta Output Speed Hysteresis	>= Table 1 in rpm/sec					
				supporting					
				documents					
				Table Based					
				value Please Refer to 3D					
			Min Delta Output Speed Hysteresis	>= Table 2 in rpm/sec					
				supporting					
				documents					
				Table Based Time Please					
				Defer to Toble					
			If the Above is True for Time	>= 17 in Sec					
				supporting					
			1	documents					
			Intrusive test: (CB26 clutch exhausted)						
			i i	4 0000 40000					(0.1
			Gear Ratio	<= 1.069946289			>=	1.1 Fail Tin	ner (Sec)
			Gear Ratio	>= 0.930053711			>=	3 co	unts

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				ime quired	Mil Illum.
			If the above parameters are true									
			·						>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
									>=	3	or Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= = = >= = =	FALSE FALSE FALSE 0 TRUE TRUE	Boolean Boolean Boolean RPM Boolean Boolean			Sound	
					Hydraulic_System_Pressurized	=	TRUE	Boolean				
					A OR B (A) Output speed enable	>=	110	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	9 31.990234 400 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	10.00061	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	45	Nm				
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.875	Nm				
					Transmission Fluid Temperature	>=	-6.65625	°C				
					Input Speed Sensor fault Output Speed Sensor fault	= =	FALSE FALSE	Boolean Boolean				
												l

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction Ible MIL not Illuminated for DTC's	Conditions TCM: P0716, P0717, P0722, P0723,	Required	Illum.
				Condition		P182E		
				Condition	113.	1 1022		
						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
\(\frac{1}{2} \cdot \cdo	P0777	Pressure Control (PC) Solenoid B	exhausted (See Table 12 in					One mp
Variable Bleed Solenoid (VBS)	P0///	StuckOn [C35R] (Dymanic)	Supporting Documents for Exhaust	THOE BOOKER				
			Delay Timers)	Mandanana				
			Primary Oncoming Clutch Pressure Command Status					
				I '				
			Primary Offgoing Clutch Pressure Command Status					
			Command Status					
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip					
			If the above conditions are true run					
			appropriate Fail 1 Timers Below:					
			fail timer 1 (3-1 shifting with Closed Throttle)	>= 0.5 Fail Time (Se	c)			
			fail timer 1 (3-2 shifting with Throttle)	>= 0.400390625 Fail Time (Se	c)			
			, , ,					
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5 Fail Time (Se	c)			
			· · · · · · · · · · · · · · · · · · ·					
			fail timer 1 (3-4 shifting with Throttle)	>= 0.400390625 Fail Time (Se	c)			
			(3-4 Shifting with Thiotile)	0.5 5-11-71 (0.				
			(3-4shifting with Closed Throttle)	>= 0.5 Fail Time (Se				
			fail timer 1	>= 0.400390625 Fail Time (Se	c)			
		I	(3-5 shifting with Throttle)	(00	' I			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tin Requ	
•		•	fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)					
			fail timer 1 (5-3 shifting with Throttle)	>= 0.400390625 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)	>= 0.400390625 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)	>= 0.400390625 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				>:	Total Fail Time = (Fail 1 + Fai 2) See Enable Timers for Fai = Timer 1, and Reference Supporting Table 15 for Fail Timer 2	l •
			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 OR
			5th gear fail counter				>:	= 3	5th gear fail counts OR
			Total fail counter				>:	= 3	total fail counts
					TUT Enable temperature Input Speed Sensor fault	>= -6.65625 = FALSE E	°C Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Gyston		Seconplicati			Output Speed Sensor fauli 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	= FALSE Boolean	Nogurou	
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)		Table Based Time Please		P0306, P0307, P0308, P0401, P042E	>= 1.1 Fail Timer (Sec >= 2 Fail Count in 1s Gear	´

Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime Juired	Mil Illum
	·					>=	3	or Total Fail Counts	
		Fail Case 2 Case Steady State 2nd Max Delta Output Speed Hysteresis	Table Based value Please						
		Min Delta Output Speed Hysteresis	value Please Refer to 3D Table 2 in supporting documents Table Based						
		If the Above is True for Time	17 in supporting						
			<= 1.547485352 >= 1.345092773						
						>=	1.1	Fail Timer (Sec)	,
						>=	3	Fail Count in 2nd Gear or	
						>=	3	Total fail counts	
		Fail Case 3 Case Steady State 3rd Max Delta Output Speed Hysteresis	Table Based value Please						

Component/	Fault	Monitor Strategy	Malfunction Criteria	Threshold	Secondary Malfunction	Enable Conditions				ime	Mil
System	Code	Description	Criteria Min Delta Output Speed Hysteresis If the Above is True for Time Intrusive test: (C35R clutch exhausted) Gear Ratio	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based Time Please	Malfunction	Conditions		>=	1.1	Fail Timer (Sec)	Illum.
					PRNDL State defaulted inhibit RVT IMS fault pending indication	= FALSE = FALSE = FALSE	Boolean Boolean Boolean	>= >=	3 OR 3	Gear Total Fail Counts	
					output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized	>= 0 = TRUE = TRUE = TRUE	RPM Boolean Boolean Boolean				
					A OR B (A) Output speed enable (B) Accelerator Pedal enable	>= 110 >= 0.5004883	Nm Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 9 <= 31.990234 >= 400 <= 7500 >= 5	Volts Volts RPM RPM Sec				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Required	Illum.
					if Attained Gear=1st FW Accelerator Pedal enable		Pct		
					if Attained Gear=1st FW Engine Torque Enable	>= 45	Nm		
					if Attained Gear=1st FW Engine Torque Enable	<= 8191.875	Nm		
					Transmission Fluid Temperature	5= -6.65675	°C		
					Input Speed Sensor fault		Boolean		
					Output Speed Sensor fault	= FALSE E	Boolean		
					Default Gear Option is not present	= TRUE			
				Disable Conditions	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0 P182E	723,		
						ECM: P0101, P0102, P0103, P0 P0107, P0108, P0171, P0172, P P0175, P0201, P0202, P0203, P P0205, P0206, P0207, P0208, P P0301, P0302, P0303, P0304, P P0306, P0307, P0308, P0401, P	0174, 0204, 0300, 0305,		
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 Pressure Command Status	= TRUE Boolean					One Trip
			Primary Offgoing Clutch Pressure Command Status	= Clutch exhaust command					
			Range Shift Status Attained Gear Slip	COILLOI					
			If the above conditions are true increment appropriate Fail 1 Timers Below:						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	fail times 1	>= 0.400390625 Fail Time (Sec)	Manufiction	Conditions	Required	mum.
			fail timer 1 (4-1 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			(4-2 Shirting with throttle)	>= 0.400390625 Fail Time (Sec)				
			(4-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			(4-3 shifting with throttle)	>= 0.400390625 Fail Time (Sec)				
			(4-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			(5-3 shifting with throttle) fail timer 1	>= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec)				
			(5-3 shifting without throttle) fail timer 1	>= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec)				
			(0-2 Stilling with throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 Fail Counter From 4th Gear OR	
			5th gear fail counter				>= 3 Fail Counter From 5th Gear OR	

Component/	Fault	Monitor Strategy	Malfunction		eshold	Secondary		Enable				me	Mil
System	Code	Description	Criteria	Va	alue	Malfunction		Conditions		-	Req	uired	Illum.
			6th gear fail counter							>=	3	Fail Counter From 6th Gear OR	
			Total fail counter							>=	3	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	>= = = # = >= >= = =	-6.65625 FALSE FALSE 1st TRUE 200 200 FALSE FALSE FALSE FALSE TRUE	°C Boolean Boolean Boolean Boolean RPM RPM Boolean Boolean Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, I P182E	P0717, P0722,	, P0723,				
							ECM: P0101,1 P0107, P0108 P0175, P0201 P0205, P0206 P0301, P0302 P0306, P0307	, P0171, P0172 , P0202, P0203 , P0207, P0203 , P0303, P0304	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	= 0	Boolean								Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 0	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 0	Boolean								
			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		Boolean								

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	\	reshold /alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Neutral Enabled		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	= TRUE	Boolean			>= 1 Fail Time	(Sec)
			Fail Case 2 Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1	Boolean				
			Position in Range 2 Enabled	= 1	Boolean				
			Position in Range 3 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled Tap Up Switch Stuck in the Up	= 1	Boolean				
			Position in Range 5 Enabled Tap Up Switch Stuck in the Up	= 1	Boolean				
			Position in Range 6 Enabled Tap Up Switch Stuck in the Up		Boolean				
			Position in Neutral Enabled	= 0	Boolean				
			Position in Park Enabled Tap Up Switch Stuck in the Up	= 0	Boolean Boolean				
			Position in Reverse Enabled Tap Up Switch ON		Boolean				
			NOTE: Both Failcase1 and Failcase 2 Must Be Met					>= 600 Fail Time	(Sec)

Component/ System	Fault Code	Monitor Strategy Description		Malfunction Criteria		Thres		Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
- Cystem	9945	Description				Yui	uc	Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>=	1 9 31.990234 400 7500 5	Enable Time (Sec) Volts Volts RPM RPM	кодиней	
								P0815 Status is	≠	Test Failed This Key On or Fault Active			
							Disable Conditions:		TCM: P0810 P1877, P19 ECM: None	15, P1761	, P1876,		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	Fail Case 1 Do	Tap Down Switch Stuck in the own Position in Range 1 Enabled	=	0	Boolean						Special No MIL
			Do	Tap Down Switch Stuck in the own Position in Range 2 Enabled	=	0	Boolean						
			Do	Tap Down Switch Stuck in the own Position in Range 3 Enabled	=	0	Boolean						
			Do	Tap Down Switch Stuck in the own Position in Range 4 Enabled	=	0	Boolean						
			Do	Tap Down Switch Stuck in the own Position in Range 5 Enabled	=	0	Boolean						
			Do	Tap Down Switch Stuck in the own Position in Range 6 Enabled		0	Boolean						
				Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	=	1	Boolean						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
- Oystem	Odde	Description	Tap Down Switch Stuck in the Down Position in Range Park Enabled		1	Boolean	individue.	Solidations		Requir	ou .	
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	=	0	Boolean						
			Tap Down Switch ON	=	TRUE	Boolean			>=	1	sec	
			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						
			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	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM		
					P0816 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions:		TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case 1 Current range	= Transition 1 (bit state 1110) Range				One Trip
			Previous range	≠ CeTRGR_e_P RNDL_Drive6 Range				
			Previous range	≠ CeTRGR_e_P RNDL_Drive5 Range				
			Range Shift State Absolute Attained Gear Slip Attained Gear Attained Gear Throttle Position Available Throttle Position	<= 50 rpm <= Sixth >= First				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			Time equired	M
System	Code	Description	Output Speed Engine Torque	>= 200 rpm >= 50 Nm	Wallunction	Conditions		K	equirea	IIIu
			Engine Torque If the above conditions are met then Increment Fail Timer				>=	1	Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>=	5	Fail Counts	
			Fail Case 2 Output Speed The following PRNDL sequence events occur in this exact order:	·						
			PRNDL state PRNDL state = Drive 6 for	state 0110)						
			PRNDL state	Transition 8						
			PRNDL state	= Drive 6 (bit state 0110) Range						
			PRNDL state	= Transition 1 (bit state 1110) Range						
			If all conditions above are met Increment delay Timer	= Inactive						
			If the below two conditions are met Increment Fail Timer delay timer Input Speed	>= 1 Sec			>=	3	Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>=	2	Fail Counts	
			Fail Case 3 Current range	= Transition 13 (bit state 0010) Range	Previous range	CeTRGR_ ≠ e_PRNDL_ Drive4 CeTRGR				
			Engine Torque	>= -8192 Nm	Previous range	CeTRGR_ ≠ e_PRNDL_ Drive4				
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration	= 0 B	oolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Coue	Description	If the above conditions are met then, Increment Fail Timer	value	If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"	Conditions	>= 0.225 Seconds	inum.
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			Fail Case 4 Current range	= Transition 8 Range (bit state 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8 Set inhibit bit true if PRNDL =			
			, ,	= FALSE	1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail Case 5 Throttle Position Available The following PRNDL sequence events occur in this exact order:					
			PRNDL State	= Reverse (bit state 1100) Range				
			PRNDL State	= Transition 11 (bit state 0100) Range				
			PRNDL State	= Neutral (bit state 0101)				
			PRNDL State	Transition 11				
			Above sequencing occurs in Then delay timer increments	<= 1 Sec				
			Above sequencing occurs in	= Transition 11 (bit state 0100) Range <= 1 Sec				

ode Description	Criteria	Value	Malfunction	Conditions	Required	Illu
	Range Shift State Absolute Attained Gear Slip Attained Gear	<pre>complete <= 50 rpm <= Sixth</pre>				
		>= 8.000183105 pct			>= 20 Seconds	
	Fail Case 6 Current range	Illegal (bit state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			
	and		Current Range	Transition ≠ 11 (bit state 0100)		
	A Open Circuit (See Definition)	= FALSE Boolean	or Last positive state	≠ Neutral (bit state 0101)		
			Previous transition state	Transition ≠ 8 (bit state 0111)		
	then, Increment Fail timer		Fall case 5 delay timer	= 0 sec	>= 6.25 Seconds	
	Current PRNDL State	ABCP = 1101				
	Previous PRNDL state	= PRNDL circuit Range				
	Reverse Trans Ratio Reverse Trans Ratio If the above Condtions are met	<= 2.670166016 ratio			>= 6.25 Seconds	
		Throttle Position Output Speed If the above conditions are met Increment Fail Timer Fail Case 6 Current range and A Open Circuit (See Definition) If the above Conditions are met then, Increment Fail timer Fail Case 7 Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio Reverse Trans Ratio	Throttle Position Output Speed >= 8.000183105 pct Output Speed >= 200 rpm If the above conditions are met Increment Fail Timer Fail Case 6 If the above Conditions are met then, Increment Fail timer Fail Case 7 Current PRNDL State and Previous PRNDL state	Throttle Position >= 8.000183105 pct Output Speed 200 rpm If the above conditions are met Increment Fail Timer Fail Case 6 Current range State 0000 or 1000 or 0001) and Current Range State 0000 or 1000 or 0001) A Open Circuit (See Definition) FALSE Boolean Or Current Range A Open Circuit (See Definition) FALSE Boolean Or Current Range If the above Conditions are met then, increment Fail timer Fail Case 7 Current PRNDL State PRNDL circuit ABCP = 1101 Previous PRNDL state PRNDL circuit ABCP = 1101 Input Speed Reverse Trans Ratio Reverse Trans Ratio Reverse Trans Ratio San Or2021484 ratio If the above Conditions are met If the above Conditions are met Input Speed PRNDL circuit Range ABCP = 1101	Throttle Position >= 2000 rpm	Transition Current Range A Open Circuit Definition (flag set fails et the following conditions are met increment Fail Timer Fail Case 6 Current range A Open Circuit Definition (flag set fails et the following conditions are met): Transition Current Range A Open Circuit (See Definition) A Open Circuit (See Definition) FALSE Boolean A Open Circuit State of the following conditions are met): Last positive state Transition Current Range Transition Current Range A Neutral (bit state Orito) Transition Previous transition state Fail Case 7 Current PRNDL State ABCP = 1101 Previous PRNDL State ABCP = 1101 Range ABCP = 1101 Reverse Trans Ratio Reverse Trans Ratio R

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	P182E will report test fail when any of the above 7 fail cases are met		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Is Engine Speed is within the allowable limits for Engine Torque Signal Valid MIL not Illuminated for DTC's:	>= 9 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean TCM: P0716, P0717, P0722, P0723, P07C0, P07BF, P077C, P077D	Required	
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Attained Gear Slip If above coditons are true, increment appropriate Fail 1 Timers Below: fail timer 1 (2-1 shifting with throttle)	pressurized = Clutch exhaust command Initial Clutch Control <= 40 RPM >= 0.400300625 Fail Time (Sec)				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	fail timer 1 (2-1 shifting without throttle) fail timer 1 (2-3 shifting with throttle) fail timer 1 (2-3 shifting without throttle) fail timer 1 (2-4 shifting with throttle) fail timer 1 (2-4 shifting without throttle) fail timer 1 (6-4 shifting with throttle) fail timer 1 (6-4 shifting without throttle) fail timer 1 (6-5 shifting without throttle) fail timer 1 (6-5 shifting without throttle)	>= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec) >= 0.5 Fail Time (Sec) >= 0.400390625 Fail Time (Sec) >= 0.5 Fail Time (Sec) >= 0.5 Fail Time (Sec) >= 0.5 Fail Time (Sec)	Malfunction	Conditions	Required	illum.
			fail timer 1 (6-5 shifting without throttle) If Attained Gear Slip is Less than Above Cal Increment Fail Timers	>= 0.5 Fail Time (Sec)			Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				>= 3 Fail Counter From 2nd Gear	,
			6th gear fail counter				OR >= 3 Fail Counter From 6th Gear OR	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			ime Juired	Mil Illum.
.,			total fail counter				>=	3	Total Fail Counter	
				Disable Conditions:		= FALSE Boolean = FALSE Boolean = TRUE Boolean >= 200 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = FALSE Boolean = FALSE Boolean			Counter	
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)		Table Based Time Please			>=	1.1	Fail Timer (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions			me uired	
Oystem	Oouc	Безоприон	0.10112	varue	a.i.d.i.d.i.d.i	Conditions	>=	5	Fail Count in 1st Gear	_
							>=	5	or Total Fail Counts	
			Fail Case 2 Case: Steady State 3rd Gear	T.I. D. I						1
				Table Based value Please						
			Max Delta Output Speed Hysteresis	Defer to 2D						
				supporting documents Table Based value Please						
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec						
				supporting documents Table Based						
			If the Above is True for Time	Time Please >= Refer to Table Sec 17 in						
				supporting documents						
			Intrusive test: (C35R clutch exhausted)							
			Gear Ratio	<= 3.111816406 >= 2.704589844						
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	,
							>=	3	Fail Count in 3rd Gear	J
							>=	5	or Total Fail Counts	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Required	Illum.
			Max Delta Output Speed Hysteresis	supporting documents					
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rable 2 in supporting documents					
			If the Above is True for Time	Table Based Time Please >= Refer to Table 17 in Supporting					
				<= 0.798339844 >= 0.693847656					
							>= 1	.1 Fail Timer (Sec	Δ.
							^- '	.1 Fail Timer (Sec Fail Count in 4th	·
							>= ;	3 Gear or	
							>=	5 Total Fail Counts	
			Fail Case 4 Case: Steady State 5th Gear Max Delta Output Speed Hysteresis	Table Based value Please					

Component/	Fault	Monitor Strategy	Malfunction Criteria	Threshold	Secondary Malfunction	Enable				ime	Mil
System	Code	Description	Criteria Min Delta Output Speed Hysteresis If the Above is True for Time Intrusive test: (C35R clutch exhausted) Gear Ratio	Table Based value Please Refer to 3D Table 2 in supporting documents Table Based Time Please	Malfunction	Conditions		>=		uired Fail Timer (Sec)	Illum.
								>=	3	Fail Count in 5th Gear or Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized	= FALSE = FALSE = FALSE >= 0 = TRUE = TRUE = TRUE	Boolean Boolean RPM Boolean Boolean			Sound	
					A OR B (A) Output speed enable	>= 110	Nm				
					(B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for	>= 0.5004883 >= 9 <= 31.990234 >= 400 <= 7500 >= 5	Nm Volts Volts RPM RPM Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Required	Mil Illum.
- Cystem	Couc	Description	5.16J.la	value	if Attained Gear=1st FW Accelerator Pedal enable	>= 10,00061	Pct	Required	
					if Attained Gear=1st FW Engine Torque Enable		Nm		
					if Attained Gear=1st FW Engine Torque Enable		Nm		
					Transmission Fluid Temperature	>- 6 65625	°C		
					Input Speed Sensor fault	= FALSE	Boolean		
					Output Speed Sensor fault Default Gear Option is not	= FALSE	Boolean		
					present	= TRUE			
					MIL not Illuminated for DTC's:		2, P0723,		
				Conditions		P182E			
						ECM: P0101, P0102, P010	3 P0106		
						P0107, P0108, P0171, P01	72, P0174,		
						P0175, P0201, P0202, P02 P0205, P0206, P0207, P02			
						P0301, P0302, P0303, P03	04, P0305,		
						P0306, P0307, P0308, P04	01, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E	Primary Offgoing Clutch is exhausted (See Table 10 in	= TRUE Boolean					One Trip
variable Bleed Solenoid (VBS)	P2124	Stuck On (Dynamic)	Supporting Documents for Exhaust						
			Delay Timers) Primary Oncoming Clutch Pressure Command Status	_ Maximum					
			Primary Offgoing Clutch Pressure	'					
			Command Status	command					
			Range Shift Status	Initial Clutch ≠ Control					
			Attained Gear Slip	<= 40 RPM					
			If the above conditions are true increment appropriate Fail 1 Timers						
			Below:						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	fail timer 1 (2-6 shifting with throttle) fail timer 1 (2-6 shifting without throttle) fail timer 1 (3-5 shifting without throttle) fail timer 1 (3-5 shifting without throttle) fail timer 1 (4-5 shifting with throttle) fail timer 1 (4-5 shifting without throttle) fail timer 1 (4-6 shifting without throttle) fail timer 1 (4-6 shifting with throttle) fail timer 1	>= 0.400390625 sec >= 0.5 sec >= 0.400390625 sec >= 0.5 sec >= 0.400390625 sec >= 0.5 sec >= 0.400390625 sec	манилскоп	Conditions	Required	illum.
			(4-6 shifting without throttle) If Attained Gear Slip is Less than Above Cal Increment Fail Timers	>= 0.5 sec			Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				>= 3 Fail Counter From 2nd Geal	r
			3rd gear fail counter				>= 3 Fail Counter From 3rd Gear	r
			4th gear fail counter				>= 3 Fail Counter From 4th Gear	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tir Requ		Mil Illum.
.,			total fail counter				>=	3	Total Fail Counter	
				Disable Conditions:		>= 200 RPM = FALSE Boolean = FALSE Boolean			Counter	
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	Fail Case 1 Case: 5th Gear							One Trip
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D rpm/sec Table 1 in supporting documents						
			Min Delta Output Speed Hysteresis	Table Based value Please						

System	Code	Description		Value	Malfunction	Conditions		D.	nuirod	Mil Illum.
			Criteria	Value Table Based	Malfunction	Conditions	_	Ked	quired	mun.
				Time Please						
			If the Above is True for Time	>= Refer to Table Sec						
			If the Above is True for Time	17 111						
				supporting						
			lateration to the	documents						
			Intrusive test: (C35R clutch exhausted)							ĺ
			(COOK clutch exhausted) Gear Ratio	<= 1.547485352						ĺ
				>= 1.345092773						ĺ
			If the above parameters are true							ĺ
							>=	1.1	Fail Timer (Sec)	ĺ
								1.1		
							>=	3	Fail Count in 5th	ĺ
									Gear OR	
									Total Fail	ĺ
							>=	3	Counts	ĺ
			Fail Case 2 Case: 6th Gear							ĺ
				Table Based						ĺ
				value Please						ĺ
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec						ĺ
				supporting						ĺ
				documents						ĺ
				Table Based						ĺ
				value Please						ĺ
			Min Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec						ĺ
			Will Bolta Output Opeca Hystoresis	Table 2 In						ĺ
				supporting						ĺ
				documents Table Based						ĺ
				Time Please						ĺ
				Defer to Table						ĺ
			If the Above is True for Time	>= 17 in Sec						ĺ
				supporting						1
				documents						1
			Intrusive test:							1
			(CB26 clutch exhausted)	4 5 4 7 4 0 5 0 5 0						1
				<= 1.547485352 >= 1.345092773						1
			If the above parameters are true							1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions				me uired	Mil Illum.
									>=	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_Pressurized A OR B (A) Output speed enable (B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed Hi Engine Speed Hi Engine Speed Imallowable limits for if Attained Gear=1st FW	= = = = = = = = = = = = = = = = = = =	FALSE FALSE FALSE 0 0 TRUE TRUE 110 0.5004883 9 31.990234 400 7500 5	Boolean Boolean RPM Boolean Boolean Boolean Nm Nm Volts Volts RPM RPM Sec				
					Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable	>=	45	Nm				
					if Attained Gear=1st FW Engine Torque Enable Transmission Fluid	<=	8191.875	Nm				
					Temperature	>=	-6.65625	°C				
					Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not	= =	FALSE FALSE TRUE	Boolean Boolean				
					present		11.02					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions			Tir Requ		Mil Illum.
System	Code	Description	Cineria		V		MIL not Illuminated for DTC's:	P182E ECM: P010 P0107, P01	1, P0102, P0103, 08, P0171, P0202, P0203	P0106, 2, P0174,		кеці	ined	mum.
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error Delay timer	=	TRUE 0.1125	Boolean		P0205, P02 P0301, P03	06, P0207, P0208 02, P0303, P0304 07, P0308, P0401	, P0300, , P0305,	>= Out	62	Fail counts (≈ 10 seconds) Sample Counts	
			Jody and		0.1120		Stabilization delay Ignition Voltage Ignition Voltage Power Mode MIL not Illuminated for DTC's:	<= =	3 9 31.990234 Run	sec Volt Volt	of		(≈ 11 seconds)	
						Conditions.		ECM: None						

15 OBDG02 TCM Diagnostic 2D Tables

Table 1

Axis	0.00	64.00	128.00	192.00	256.00	320.00	384.00	448.00	512.00 N*	m
Curve	100.00	120.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00 RF	PM

Table 2

Axis	-6.67	-6.66	40.00	°С
Curve	409.59	2.00	2.00	Sec

Table 3

Axis	-6.67	-6.66	40.00	٥С
Curve	409.59	3.50	3.50	Sec

Table 4

Axis	-6.67	-6.66	40.00	٥С
Curve	409.59	2.99	2.00	Sec

Table 5

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

Table 6

Axis	-6.67	-6.66	40.00	80.00	120.00	٥С
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	٥С
Curve	409.00	3.40	1.40	1.30	1.20	Sec

15 OBDG02 TCM Diagnostic 2D Tables

Table 8

Axis	-6.67	-6.66	40.00	80.00	120.00	٥С
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	٥С
Curve	409.00	3.30	1.30	1.20	1.10	Sec

Table 10

Axis	-30.00	-20.00	0.00	30.00	110.00	٥С
Curve	8.85	3.75	1.31	0.28	0.28	Sec

Table 11

Axis	-30.00	-20.00	0.00	30.00	110.00	٥С
Curve	5.00	1.70	0.40	0.25	0.25	Sec

Table 12

Axis	-30.00	-20.00	0.00	30.00	110.00	٥С
Curve	8.00	2.20	0.70	0.25	0.25	Sec

Table 13

Axis	-30.00	-20.00	0.00	30.00	110.00	٥С
Curve	5.20	1.60	0.50	0.27	0.23	Sec

Table 14

Axis	-30.00	-20.00	0.00	30.00	110.00 °C	;
Curve	5.00	1.50	0.70	0.25	0.25 Se	ЭС

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

15 OBDG02 TCM Diagnostic 2D Tables

<u>Table 16</u>

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

Table 17

Axis	-6.67	-6.66	40.00	٥С
Curve	0.40	0.35	0.30	Sec

Table 18

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	٥С
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00	٥С

<u>Table 19</u>

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	٥С
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00	٥С

Table 20

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	٥С
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00	٥С

Table 21

Axis	-40.00	-20.00	40.00 °C	;
Curve	5.00	3.00	1.00 Se	ЭС

15 OBDG02 TCM Diagnostic 3D Tables

3D_Table 1

X-Axis Calibration	%
Y-Axis Calibration	°C
Table Calibration	RPM/Sec

	0.00	2.00	5.00	25.00	100.00
-6.67	8191.75	8191.75	8191.75	8191.75	8191.75
-6.66	8191.75	8191.75	8191.75	8191.75	8191.75
40.00	8191.75	8191.75	8191.75	8191.75	8191.75

3D_Table 2

X-Axis Calibration	%		
Y-Axis Calibration	°C		
Table Calibration	RPM/Sec		

_	0.00	2.00	5.00	25.00	100.00
-6.67	8191.75	8191.75	8191.75	8191.75	8191.75
-6.66	500.00	500.00	300.00	300.00	300.00
40.00	500.00	500.00	300.00	300.00	300.00