Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction	Enable Conditions	Time Require	d	Mil Illum.
Transmission Control Module (TCM)	P0601	Transmission Electro- Hydraulic Control Module Read Only Memory	Incorrect	=	TRUE	Boolean			>= 5	Fail Counts	One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0601 ECM: None			
Transmission Control Module (TCM)	P0603	Transmission Electro- Hydraulic Control Module Long-Term Memory Reset	Non-volatile memory (static or dynamic) checksum failure at Powerup	=	TRUE	Boolean			Runs Continousl y		One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None			
Transmission Control Module (TCM)	P0604	Transmission Electro- Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	=	TRUE	Boolean			>= 5	Fail Counts	One Trip
									= 16	Sample Counts	
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None			
Transmission Control Module (TCM)	P062F	Transmission Electro- Hydraulic Control Module Long Term Memory Performance	TCM Non-Volatile Memory bit Incorrect flag at Powerdown	=	TRUE	Boolean			Runs Continousl y		One Trip

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary Malfunction		Enable			Tim		Mil Illum
System	Code	Description	Criteria		Vä	alue		TOM	Condition	15		Requi	rea	mum
						Disable Conditions:								
Transmission Control Module (TCM)	P0634	Transmission Electro- Hydraulic Control Module Internal Temperature Too High	Fail Case Substrate Temperature	>=	142.10156	3 ℃					>=	5	Fail Time (Sec)	One Trip
			Fail Case Substrate Temperature	>=	50	°C					>=	2	Fail Time (Sec)	
			Ignition Voltage	>=	18	Volts								
			Note: either fail case can set the DTC											
							Ignition Voltage Lo Ignition Voltage H Substrate Temp Lo Substrate Temp H Substrate Temp Betweel Temp Range for Time	i <= ) >= i <=	31.99902 0 170 0.25	Volts Volts °C °C Sec				
							P0634 Status is	\$ ≠	Failed This Key On or Fault Active					
						Disable Conditions:								
ligh Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	=	TRUE	Boolean					>=	3	Fail Counts	One Trip
											out of	5	Sample Counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Require	
- Cyclom			5.10.11		P0658 Status is not	Test Failed	·	
					High Side Driver 1 On			
				Disable Conditions:	MIL not Illuminated for DTC's:			
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	Refer to Table 19 in oC supporting documents				Two Trips
			If TCM substrate temp to power up temp $\Delta$	Refer to Table 20 in supporting documents				
			Both conditions above required to increment fail counter				>= 3000	Fail Counts (100ms loop)
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out 3750 of	Sample Counts (100ms loop)
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700	Pass Counts (100ms loop)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Require		Mil Illum
									Out of	875	Sample Counts (100ms loop)	
		-			Engine Torque Signal Valid	=	TRUE	Boolean				
					Accelerator Position Signal Valid	=	TRUE	Boolean				
					Ignition Voltage Lo	>=	8.599609	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
		_			Brake torque active	=	FALSE					
					Below describes the brake torque entry criteria							
					Engine Torque	>=	90	N*m				
					Throttle	>=	30.00031	Pct				
					Transmission Input Speed	<=	200	RPM				
					Vehicle Speed	<=	8	Kph				
					Transmission Range Transmission Range	≠ ≠	Park Neutral					
						+						
					PTO	=	Not Active					
					Set Brake Torque Active							
					TRUE if above conditions	>=	7	sec				
		_			are met for:							
					Below describes the brake							
					torque exit criteria							
					Brake torque entry criteria	=	Not Met					
					Clutch hydraulic pressure	≠	Clutch Hydraulic Air Purge Event					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Oystem	Ooue	Description	Onteria	Tuido	Clutch used to exit brake torque active	CeTFTD_	rtoquilou	
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:			
					P0667 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions:	DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold Ilue	Secondary Malfunction		Enable Condition	ns		Time Require		Mil Illum.
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used	=	CeTFTI_e_ VoltageDire ctProp	_	a.ra.ra.ra		Condition	15		require	<u>, u</u>	Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp	<=	-249	°C								
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	>=	-249	°C								
			Either condition above will satisfy the fail conditions								>=	60	Fail Timer (Sec)	
							lgnition Voltage Lo Ignition Voltage H Engine Speed Lo	i <= ) >=	31.99902 400	Volts Volts RPM				
							Engine Speed H Engine Speed is within the allowable limits fo		7500 5	RPM Sec				
							P0668 Status is	s ≠	Test Failed This Key On or Fault Active					
						Disabl Conditions								
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used	=	CeTFTI_e_ VoltageDire ctProp									Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction		Enable Conditions			Time Require		Mil Illum		
- Cyotom	0000	Boompalen	If TCM Substrate Temperature Sensor = Direct Proportional and Temp	>=	249	°C									
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	<=	249	°C									
			Either condition above will satisfy the fail conditions									>=	60	Fail Timer (Sec)	
								Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <= >= <= >=	8.599609 31.99902 400 7500	Volts Volts RPM RPM Sec				
								allowable limits for P0669 Status is	≠	Test Failed This Key On or Fault Active	000				
								For Hybrids, below conditions must also be met							
								Estimated Motor Power Loss	>=	0	kW				
								Estimated Motor Power Loss greater than limit for time	>=	0	Sec				
								Lost Communication with Hybrid Processor Control Module	=	FALSE					
								Estimated Motor Power Loss Fault	=	FALSE					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	Criteria	Disable Conditions:	MIL not Illuminated for	TCM: P0716, P0717, P0722,	Required	- IIII CIIII
						ECM: None		
Transmission Control Module TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power-up temp to substrate temp Δ	Refer to Table 20 in oc supporting documents				Two Trips
			If transmission oil temp to power up temp $\Delta$					
			Both conditions above required to increment fail counter				Fail >= 3000 Counts (100ms	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out 3750 Sample Counts of (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				Pass >= 700 Counts (100ms loop)	
							Out Sample Out Counts of (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid	= TRUE Boolean		
					Ignition Voltage Lo Ignition Voltage Hi	>= 8.599609 Volts <= 31.99902 Volts		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum
					Engine Speed Lo	>=	400	RPM		Т
					Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Brake torque active	=	FALSE			
					Below describes the brake torque entry criteria					
					Engine Torque	>=	90	N*m		
					Throttle	>=	30.00031	Pct		
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed	<=	8	Kph		
					Transmission Range	≠	Park			
					Transmission Range	≠	Neutral			
					РТО	=	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec		
					Below describes the brake torque exit criteria					
					Brake torque entry criteria	=	Not Met			
					Clutch hydraulic pressure	<b>≠</b>	Clutch Hydraulic Air Purge Event			
					Clutch used to exit brake torque active	=	CeTFTD_ e_C3_Rat IEnbl			
					The above clutch pressure is greater than this value for one loop	>=	600	kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>=	20	Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions	s		Time Requir		Mil Illum.
		·				P06AC Status is	Test Failed This Key ≠ On or Fault Active					
					Disable Conditions:	DTC's:	TCM: P0658, P0668, P06AD, P06AD, P06AE, P0711 P0712, P0713, P0717 P0723, P0962, P0963 P0967, P0970, P0971 P2720, P2721, P2729 ECM: P0101, P0102, P0106, P0107, P0108 P0172, P0174, P0175 P0202, P0203, P0204 P0206, P0207, P0208 P0301, P0302, P0303 P0305, P0306, P0307 P0401, P042E	6, , P0722, , P0966, , P215C, , P2730 P0103, , P0171, , P0201, , P0205, , P0300, , P0304,				
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59	°C				>=	60	Fail Time (Sec)	Two Trips
(. 3)						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.599609 <= 31.99902 >= 400 <= 7500 >= 5	Volts Volts RPM RPM Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold llue	Secondary Malfunction		Enable Condition	ıs		Time Requi		Mil Illum.
							P06AD Status is	<b>≠</b>	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:	DTC's:	P0723		, P0722,				
								ECM: N	None					
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>=	164	°C					>=	60	Fail Time (Sec)	Two Trips
							Ignition Voltage Lo	>=	8.599609	Volts				
							Ignition Voltage Hi		31.99902	Volts				
							Engine Speed Lo		400	RPM				
							Engine Speed Hi	<=	7500	RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
- Systom		2000	0.110114		P06AE Status is	Test Failed		
				Disable Conditions:	DTC's:	TCM: None ECM: None		
Transmission Fluid Temperature Sensor (TFT)		Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ					Two Trips
			If transmission oil temp to power up temp $\Delta$					
			Both conditions above required to increment fail counter					Fail Counts (100ms loop)
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out 3750	Sample Counts (100ms loop)
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until					Pass Counts (100ms loop)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Require		Mil Illum
									Out of	875	Sample Counts (100ms loop)	
		-			Engine Torque Signal Valid	=	TRUE	Boolean				
					Accelerator Position Signal Valid	=	TRUE	Boolean				
					Ignition Voltage Lo	>=	8.599609	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
		_			Brake torque active	=	FALSE					
					Below describes the brake torque entry criteria							
					Engine Torque	>=	90	N*m				
					Throttle	>=	30.00031	Pct				
					Transmission Input Speed	<=	200	RPM				
					Vehicle Speed	<=	8	Kph				
					Transmission Range Transmission Range	≠ ≠	Park Neutral					
						+						
					PTO	=	Not Active					
					Set Brake Torque Active							
					TRUE if above conditions	>=	7	sec				
		_			are met for:							
					Below describes the brake							
					torque exit criteria							
					Brake torque entry criteria	=	Not Met					
					Clutch hydraulic pressure	≠	Clutch Hydraulic Air Purge Event					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Безсприон	Onteria	Taluo	Clutch used to exit brake torque active	CeTFTD_	rioquilou	
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:			
					P0711 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions:	DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Fluid Temperature Sensor (TFT)	P0712	Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used	CeTFTI_e_ = VoltageDire ctProp				Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	74 00				
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp					
			Either condition above will satisfy the fail conditions				>= 60 Fail Time (Sec)	
					Ignition Voltage Lo	>= 8.599609 Volts		1
					Ignition Voltage Hi	<= 31.99902 Volts		l
					Engine Speed Lo	>= 400 RPM		l
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0712 Status is	Test Failed This Key ≠ On or Fault Active		
					For Hybrids, below conditions must also be met			
					Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Condition	ıs		Tim Requi		Mil Illum.
,							Estimated Motor Power Loss Fault	=	FALSE			-		
						Disable Conditions:	DTC's:	P0723		, P0722,				
								ECM: I	None					
Transmission Fluid Temperature Sensor (TFT)	P0713	Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used	=	CeTFTI_e_ VoltageDire ctProp									Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	>=	174	°C								
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	<=	174	°C								
			Either condition above will satisfy the fail conditions								>=	60	Fail Time (Sec)	
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >=	8.599609 31.99902 400 7500 5 Test Failed This Key On or Fault Active	Volts Volts RPM RPM Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold alue		Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum.
- Cyotom		2000р					sable tions:	MIL not Illuminated for DTC's:		0713, P0716			- 1		
									ECM: N	lone					
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>=	900	RPM						>=	0.8	Fail Time (Sec)	One Trip
								Engine Torque is Engine Torque is		0 8191.875	N*m N*m				
								Engine Speed Engine Speed	>= <=	400 7500	RPM RPM				
								Engine Speed is within the allowable limits for	>=	5	Sec				
								Vehicle Speed is Throttle Position is	>= >=	10 0	Kph 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	<	8191.875	RPM/Loop				
								The previous requirement has been satisfied for	>=	0	Sec				
								Throttle Position Signal Valid	=	TRUE	Boolean				
								Engine Torque Signal Valid Ignition Voltage Ignition Voltage	>=	TRUE 8.599609 31.99902	Boolean Volts Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0716 Status is not	Test Failed This Key On or Fault Active		
				Disabl Conditions	: DTC's:	TCM: P0717, P0752, P0973, P0974 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Case Transmission Input Speed 1	< 67 RPM			>= 4.5 Fail Time	One Trip
			Fail When P0722 DTC Status Case equal to Test Failed and Transmission Input Speed is	< 653.125 RPM	Controller uses a single power supply for the speed sensors			
					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	<pre>&lt;= 8191.875 N*m &gt;= 16 Kph = TRUE Boolean &gt;= 8.599609 Volts &lt;= 31.99902 Volts &gt;= 400 RPM &lt;= 7500 RPM &gt;= 5 Sec  Test Failed This Kay</pre>		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value		Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum.
		·			Cor	Disable nditions:	MIL not Illuminated for DTC's:		20722, P0723 20101, P0102					
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<=	35 RPM						>=	4.5	Fail Time (Sec)	One Trip
							P0722 Status is not	=	Test Failed This Key On or Fault Active					
							Transmission Input Speed Check	=	TRUE	Boolean				
							Engine Torque Check Throttle Position		TRUE 8.000183	Boolean Pct				
							Transmission Fluid Temperature	\	-40	°C				
							Disable this DTC if the PTO is active	=	1	Boolean				
							Engine Torque Signal Valid	=	TRUE	Boolean				
							Throttle Position Signal Valid	=	TRUE	Boolean				
							Ignition Voltage is		8.599609	Volts				
							Ignition Voltage is		31.99902	Volts				
							Engine Speed is Engine Speed is		400 7500	RPM RPM				
							Engine Speed is within the allowable limits for		5	Sec				
							Enable_Flags Defined Below							

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enab Condit		Time Required	Mi Illur
System	Code	Description	Criteria	value		Condit	UIIS	Requirea	illul
					The Engine Torque Check is				
					TRUE, if either of the two				
					following conditions are				1
					TRUE				
					Engine Torque Condition 1				
						Range			
					Range Shift Status	≠ shift	ENUM		
					J	complete			
					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	>= 54	N*m		
					Engine Torque is	<= 8191.75	N*m		1
					The Transmission Input				
					Speed (TIS) Check is TRUE,				
					if either of the two following				
					conditions are TRUE				
					CONDITIONS are TRUE				
					TIS Check Condition 1				
					Transmission Input Speed is	>= 653.125	RPM		
					Transmission Input Speed is	<= 5350	RPM		
					TIS Check Condition 2				
					Engine Speed without the	>= 3200	RPM		
					brake applied is	>= 3200	KPIVI		
					Engine Speed with the brake	>- 2200	DDM		
					applied is	>= 3200	RPM		
					Engine Speed is	<= 8191.87	5 RPM		

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Т	hreshold Value	Secondary Malfunction	Enable Condition			Time Requir		Mil Illum.
System	Code	Description	Citteria		Value	Controller uses a single power supply for the speed sensors	= 1	Boolean		rtoquii	Cu	
						Powertrain Brake Pedal is Valid		Boolean				
					Disable Conditions:	DTC's:	TCM: P0716, P071 ECM: P0101, P010 P0121, P0122, P01	)2, P0103,				
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed	>= 10	5 RPM				>=	0	Enable Time (Sec)	One Trip
			Output Speed Delta	<= 819	2 RPM				>=	0	Enable Time (Sec)	
			Output Speed Drop	> 650	) RPM				>=	1.5	Output Speed Drop Recovery Fail Time (Sec)	
			AND									
			Transmission Range is	= Drive range (								
						Range_Disable OR	= FALSE	See Below				
						Neutral_Range_Enable		See Below				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		nable nditio		Time Required	Mil Illum
	3000	200011611011			Neutral_Speed_Enable			See Below		
								000 20:0::		
					are TRUE concurrently					
					Transmission_Range_Enabl e	= T	RUE	See Below		
					Transmission_Input_Speed_ Enable	= T	RUE	See Below		
					No Change in Transfer Case Range (High <-> Low) for	>=	5	Seconds		
					P0723 Status is not	= Thi = C	Test ailed is Key on or ault ctive			
					Disable this DTC if the PTO is active	=	1	Boolean		
					Ignition Voltage is		99609	Volts		1
					Ignition Voltage is		99902	Volts		
					Engine Speed is		400	RPM		
					Engine Speed is Engine Speed is within the		500	RPM		
					allowable limits for	>=	5	Sec		
					Enable_Flags Defined Below					
					Transmission_Input_Speed_ Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:					
					TIS Condition 1 is TRUE when both of the following conditions are satsified for	>=	0	Enable Time (Sec)		
					Input Speed Delta Raw Input Speed		95.875 500	RPM RPM		

Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed A Single Power Supply is used for all speed sensors			
				Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE			
				Transmission Range is	= Neutral ENUM		
				Transmission Range is	Reverse/ = Neutral ENUM Transiton al		
				Transmission Range is	Neutral/Dr = ive ENUM Transition al		
				And when a drop occurs  Loop to Loop Drop of  Transmission Output Speed  is			
				Range_Disable is TRUE when any of the next three conditions are TRUE			
				Transmission Range is			
				Transmission Range is	0.00		
				Input Clutch is not	= ON (Fully ENUM Applied)		
					when ALL of the next two conditions are satisfied Input Speed A Single Power Supply is used for all speed sensors used for all speed sensors.  Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is  Transmission Range is  And when a drop occurs Loop to Loop Drop of Transmission Output Speed is Range_Disable is TRUE when any of the next three conditions are TRUE Transmission Range is	when ALL of the next two conditions are satisfied lingut Speed = 0 RPM A Single Power Supply is used for all speed sensors    Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Reverse! Neutral Transmission Range is = Neutral ENUM Transmission Range is = Neutral ENUM Reverse! Neutral Transmission Range is = Neutral ENUM Reverse! Neutral ENUM Transmission Range is = Neutral ENUM Reverse! Neutral ENUM Reverse! Neutral ENUM Transmission Range is = Neutral ENUM Reverse! Neutral ENUM all Neutral/Dr ive Transmission Range is = Neutral ENUM Reverse! N	when ALL of the next two conditions are satisfied Input Speed = 0 RPM A Single Power Supply is used for all speed sensors = TRUE Boolean  Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE  Transmission Range is = Neutral ENUM Reverse/ Transmission Range is = Park ENUM Park/Rev Transmission Range is = Park ENUM Park/Rev Transmission Range is = Park ENUM Park/Rev Transmission Range is = ON (Fully ENUM Ball Anum Ball Ball Anum Ball Ball Ball Ball Ball Ball Ball Bal

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	> 1.5 Seco	nds	
					Transmission Output Speed	> 130 RP	М	
					The loop to loop change of the Transmission Output Speed is	< 20 RP	М	
					The loop to loop change of the Transmission Output Speed is	> -10 RP	М	
					Transmission_Range_Enabl e is TRUE when one of the next six conditions is TRUE			
					Transmission Range is		IM	
					Transmission Range is	Reverse/ Neutral Transition ENU al	IM	
					Transmission Range is	Neutral/Dr ive ENU Transition al	IM	
					Time since a driven range (R,D) has been selected	Table Based Time Please Refer to >= Table 21 Se in supportin g document s	c	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum.
System	Code	Безеприон	Orneria				Transmission Output Speed Sensor Raw Speed Output Speed when a fault was detected	>=	500 500	RPM RPM				
						Disable Conditions:	DTC's:	P0977 ECM: F	20973, P0974 20101, P0102 P0122, P012	2, P0103,				
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure	>=	750	Кра					>=	2	Enable Time (Sec)	Two Trips
			Either Condition (A) or (B) Must be Met		Refer to									
			(A) TCC Slip Error @ TCC On Mode	>=	Table 1 in	RPM					>=	6	Fail Time (Sec)	
			(B) TCC Slip @ Lock On Mode	>=	130	RPM					>=	6	Fail Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter								>=	2	TCC Stuck Off Fail Counter	
							TCC Mode Ignition Voltage Lo Ignition Voltage Hi Engine Speed Engine Speed Engine Speed is within the allowable limits for Engine Torque Lo Engine Torque Hi	>= <= >= <= >= >= >= >= >= >= >= >= >= >= >= >= >=	On or Lock 8.599609 31.99902 400 7500 5 50 8191.875	Volts Volts RPM RPM Sec N*m				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum.
					Throttle Position Lo	>=	8.000183	Pct		
					Throttle Position Hi	<=	99.99847	Pct		
					2nd Gear Ratio Lo	>=	2.194824	Ratio		
					2nd Gear Ratio High	<=	2.525146	Ratio		
					3rd Gear Ratio Lo	>=	1.422852	Ratio		
					3rd Gear Ratio High	<=	1.637085	Ratio		
					4th Gear Ratio Lo	>=	1.069458	Ratio		
					4th Gear Ratio High	<=	1.230469	Ratio		
					5th Gear Ratio Lo	>=	0.790527	Ratio		
					5th Gear Ratio Hi	<=	0.909546	Ratio		
					6th Gear Ratio Lo	>=	0.623047	Ratio		
					6th Gear Ratio High	<=	0.716919	Ratio		
					Transmission Fluid Temperature Lo	>=	-6.65625	°C		
					Transmission Fluid Temperature Hi	<=	130	°C		
					PTO Not Active	=	TRUE	Boolean		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					Dynamic Mode	=	FALSE	Boolean		
					P0741 Status is	<b>≠</b>	Test Failed This Key On or Fault Active			

Component/	Fault Code	Monitor Strategy	Malfunction Criteria			shold alue	Secondary Malfunction		Enable Condition			Time Requi		Mil Illum.
System	Code	Description	Criteria		V	Disable	MIL not Illuminated for	TCM: F				Kequii	eu	mum.
						Conditions:			P0742, P27					
									P0101, P010					
									, P0107, P010 , P0174, P017					
									, P0203, P020					
									P0207, P020					
									, P0302, P030 , P0306, P030					
									, P0306, P030 , P042E	J1, F0306,				
								,	. • .==					
T				<u> </u>										One
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>=	-50	RPM								Trip
0.0.0 (1.00)			TCC Slip Speed	<=	13	RPM								Ė
			' '										- · · ·	
											>=	1.5	Fail Time (Sec)	
													(060)	
			If Above Conditions Have											
			been Met, and Fail Timer								>=	6	Fail	
			Expired, Increment Fail Counter										Counter	
			Oddittol				TCC Mode	=	Off					
							Enable test if Cmnd Gear =							
							1stFW and value true	=	1	Boolean				
							Enable test if Cmnd Gear =	=	0	Boolean				
							2nd and value true							
							Engine Speed Hi	<=	6000	RPM				
							Engine Speed Lo	>= <=	500 511	RPM KPH				
							Vehicle Speed HI Vehicle Speed Lo		511 1	KPH				
							Engine Torque Hi	<=	8191.875	Nm				
							Engine Torque Lo		80	Nm				
							Current Range		Neutral	Range				
							Current Range		Reverse	Range				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum.
		·			Transmission Sump Temperature	<=	130	°C		
					Transmission Sump Temperature	>=	18	°C		
					Throttle Position Hyst High	>=	5.000305	Pct		
					AND Max Vehicle Speed to Meet Throttle Enable	<=	8	KPH		
					Once Hyst High has been met, the enable will remain while Throttle Position	>=	2.000427	Pct		
					Disable for Throttle Position	>=	75	Pct		
					Disable if PTO active and value true	=	1	Boolean		
					Disable if in D1 and value true	=	1	Boolean		
					Disable if in D2 and value true	=	1	Boolean		
					Disable if in D3 and value true	=	1	Boolean		
					Disable if in D4 and value true	=	1	Boolean		
					Disable if in D5 and value true	=	1	Boolean		
					Disable if in MUMD and value true	=	1	Boolean		
					Disable if in TUTD and value true	=	1	Boolean		
					4 Wheel Drive Low Active	=	FALSE	Boolean		
					Disable if Air Purge active and value false	=	0	Boolean		
l					RVT Diagnostic Active		FALSE	Boolean		
l					Ignition Voltage		8.599609	V		
l					Ignition Voltage	<=	31.99902	V		
l					Vehicle Speed		511	KPH		
l					Engine Speed		400	RPM		
ļ					Engine Speed	<=	7500	RPM		1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Oystein	Couc	Везоприон	Ontona	1 31.00	Engine Speed is within the allowable limits for	>= 5 Sec		
					Engine Torque Signal Valid	= TRUE Boolean		
					Throttle Position Signal Valid	= TRUE Boolean		
					P0742 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions:		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		Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>= 400 RPM				Two Trips
			Commanded Gear Gear Ratio	= 1st Lock rpm <= 1.20959473			>= 0.2 Fail T	
			If the above parameters	>= 1.09436035			= 5 Fai Cour	
			are true				Neut ≠ 0 Time (Sec	er

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requir		Mil Illum.
									>=	0.3	Fail Timer (Sec)	
I									>=	8	Counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.599609 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
					Transmission Fluid Temperature	>=	-6.65625	°C				
					Range Shift State	=	Range Shift Complete d	ENUM				
					TPS OR	>=	0.500488	%				
					Output Speed	>=	67	RPM				
					Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
					Engine Torque Signal Valid from ECM, High side driver is enabled	=	TRUE	Boolean				
					High-Side Driver is Enabled	=	TRUE	Boolean				
					Input Speed Sensor fault Output Speed Sensor fault		FALSE FALSE	Boolean Boolean				
ı					Default Gear Option is not present	=	TRUE					

Component/	Fault	Monitor Strategy	Malfunction Critoria			shold	Secondary Malfunction	Enable Conditions	Time Required	Mil Illun
System	Code	Description	Criteria		Ve	Disable Conditions:	Malfunction  MIL not Illuminated for DTC's:	Conditions 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,	Required	Illun
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	=	400 3rd TRUE	RPM Gear Boolean		P0401, P042E		One Trip
			with Mode 2 Sol. Commanded On If the above parameters are true  Command 4th Gear once Output Shaft Speed		400	RPM			>= Table 16 in T	eutral imer Sec)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requir		Mil Illum
•			And Gear Ratio	<= 4.22839356					>=	1.5	Fail Timer (Sec)	
									>=	5	Counts	
					Ignition Voltage Lo Ignition Voltage Hi	>= <=	8.599609 31.99902	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				ı
					Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
					Output Speed OR	>=	67	RPM				
					TPS	>=	0.500488	%				
					Range Shift State	=	Range Shift Complete d	ENUM				
					Transmission Fluid Temperature	>=	-6.65625	°C				
					Input Speed Sensor fault		FALSE	Boolean				ı
					Output Speed Sensor fault	=	FALSE	Boolean				
					Default Gear Option is not present	=	TRUE					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	DTC's:	TCM: P0716, P0717, P0722, P0723, P182E  ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0203, P0204, P0205, P0203, P0204, P0205, P0205, P0204, P0205, P0205, P0204, P0205, P0204, P0205, P0204, P0205, P0204, P0205, P0205, P0204, P0205, P0205, P0205,		
						P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	Fail Case Commanded Gear	= 1st Locked				One Trip
			Gear Box Slip	>= 400 RPM			Please Refer to Neutral >= Table 5 in Timer Supporting (Sec) Documents	
			Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio Gear Ratio If the above parameters are true	= 1st Locked Gear <= 2.48217773 >= 2.24584961			>= 1 sec	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.99902 Volts >= 400 RPM <= 7500 RPM	>= 3 counts	

Component/	Fault	Monitor Strategy	Malfunction		eshold alue	Secondary Malfunction		Enable Conditio		Time	Mil Illum
System	Code	Description	Criteria	V	alue					Required	IIIum
						Output Speed	>=	67	RPM		
						OR TPS	>=	0.500488	%		
						142	/-		70		
								Range Shift			
						Range Shift State	=	Complete	ENUM		
								d			
						Transmission Fluid		0.05005	00		
						Temperature	>=	-6.65625	°C		
						High-Side Driver is Enabled	=	TRUE	Boolean		
								INOL	Doolean		
						Throttle Position Signal Valid	=	TRUE	Boolean		
						from ECM					
						Input Speed Sensor fault Output Speed Sensor fault		FALSE FALSE	Boolean Boolean		
						Default Gear Option is not	=	FALSE	boolean		
						present	=	TRUE			
						pi oddin.					
					Disable	MIL not Illuminated for			7, P0722,		
					Conditions:	DTC's:	P0723	, P182E			
							FCM: I	P0101, P0102	2. P0103.		
								, P0107, P01			
								, P0174, P01			
								, P0203, P02			
								, P0207, P02 , P0302, P03			
								, P0302, P03 , P0306, P03			
								, P042E	,,		
		Pressure Control (PC)	<u>Fail</u>								One
ariable Bleed Solenoid (VBS)	P0776	Solenoid B Stuck Off	Case Case: Steady State 3rd Gear								Trip
oleliola (ADS)		[C35R]	<del> -</del>								
			Commanded Gear		Gear						
			Gearbox Slip	>= 400	RPM						

Code	Describition	Criteria	Value	Malfunction	Conditions	Required	Mil Illum
	Description	Orneria	14.00			Troquir ou	+
						Diagon	
							ı
						Supporting (Sec)	
						Documents	
		Command 4th Gear once	<- 100 PDM				
		Output Shaft Speed					
		And Gear Ratio	<= 1.20959473				
							ır
		gear fail counter				Counts	
						or	
						3-5R	
		and C35R Fail counter					
	L F	ail				Ocumo	1
		Case: Steady State 5th					
	2	•					
		Commanded Gear	= 5th Gear				
						Disc	
		Gearbox Slip	>= 400 Rpm				
			r			Supporting (Sec)	
						Documents	
			Output Shaft Speed If Gear Ratio And Gear Ratio And Gear Ratio  It the above condiations are true, Increment 3rd gear fail counter  and C35R Fail counter  Fail Case 2 Case: Steady State 5th Gear Commanded Gear	Output Shaft Speed  If Gear Ratio >= 1.09436035  And Gear Ratio <= 1.20959473  It the above condiations are true, Increment 3rd gear fail counter  and C35R Fail counter  Fail Case 2 Case: Steady State 5th Gear	Output Shaft Speed If Gear Ratio And Gear Ratio And Gear Ratio  It the above condiations are true, Increment 3rd gear fail counter  and C35R Fail counter  Fail Case Case: Steady State 5th Gear  Commanded Gear  Commanded Gear  Steady State 5th Case Commanded Gear	Output Shaft Speed  If Gear Ratio >= 1.09436035  And Gear Ratio <= 1.20959473  It the above condiations are true, Increment 3rd gear fail counter  and C35R Fail counter  Fail Case 2 Case: Steady State 5th Gear  Commanded Gear = 5th Gear	Command 4th Gear once Output Shaft Speed If Gear Ratio >= 1.09436035 And Gear Ratio >= 1.20959473  Fail    >= 3 Timer (Sec)   It the above condiations are true, Increment 3rd gear fail counter   3-5R

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
System	Code	Description	Intrusive Test: Command	Value	mananonon		Conditio	113		rtoqui	ica	
			6th Gear									
			If attained Gear=6th gear Time	Please refer to Table 3 in supporting documents Shift Time (Sec)								
			It the above condiations are true, Increment 5th gear fail counter						>=	3	5th Gear Fail Counts or	
			and C35R Fail counter						>=	14	3-5R Clutch Fail Counts	
					PRNDL State defaulted inhibit RVT	=	FALSE FALSE	Boolean Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B							
					(A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.500488	Pct				
					Common Enable Criteria							
					Ignition Voltage Lo	>=	8.599609	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				
					Engine Speed Lo		400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					Throttle Position Signal valid		TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	DTC's:			
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)	Fail Case Case: Steady State 1st 1 Attained Gear slip	>= 400 RPM				One Trip
			If the Above is True for Time	Table Based Time Please				
				<= 1.60864258 >= 1.45544434				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time N Required Illu
•		·					Fail >= 1.1 Timer (Sec) Fail
							>= 2 Count in 1st Gear or
			<u>Fail</u>				>= 3 Total Fail Counts
			Case Case: Steady State 2nd gear				
			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 >= Refer to 3D rpm/sec Table 2 in supporting documents			
			If the Above is True for Time	Table Based Time Please  Refer to Table 17 in supporting documents			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
oystelli	Joue	Description	Intrusive test: (CB26 clutch exhausted)	- 3.00				
			Gear Ratio Gear Ratio If the above parameters	<= 1.60864258 >= 1.45544434				
			are true				Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 2nd Gear	
							or >= 3 Total Fail Counts	
			Fail Case: Steady State 4th 3 gear					
			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 >= Refer to 3D rpm/sec Table 2 in supporting documents				

Component/	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value	Manufiction	Conditions	Required	1110111
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (C1234 clutch exhausted)					
				<= 0.89465332 >= 0.80944824				
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 4th Gear or	
							>= 3 Total Fai Counts	
			Fail Case: Steady State 6th 4 gear					
			Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 1 in supporting documents				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Requir	
System	Code	Description	Criteria	value	wanunction	Conditions	Kequir	eu IIIU
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time					
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 0.89465332			>= 1.1	Fail Timer (Sec)
			Gear Ratio If the above parameters are true				>= 3	counts
							>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 6th Gear
								or
							>= 3	Total Fail Counts
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolear		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum
					IMS fault pending indication	=	FALSE	Boolean		
					output speed	>=	0	RPM		
					TPS validity flag	=	TRUE	Boolean		
					HSD Enabled	=	TRUE	Boolean		
					Hydraulic_System_Pressuriz ed	=	TRUE	Boolean		
					A OR B					
					(A) Output speed enable	>=	67	Nm		
					(B) Accelerator Pedal enable	>=	0.500488	Nm		
					Ignition Voltage Lo	>=	8.599609	Volts		
					Ignition Voltage Hi	<=	31.99902	Volts		1
					Engine Speed Lo	>=	400	RPM		1
					Engine Speed Hi	<=	7500	RPM		1
					Engine Speed is within the allowable limits for	>=	5	Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.000305	Pct		
					if Attained Gear=1st FW Engine Torque Enable	>=	5	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		

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria		Disable		TCM: P0716, P0717, P0722,	Required	mum.
					ditions:		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		
			Primary Offgoing Clutch is						One Trip
/ariable Bleed		Pressure Control (PC) Solenoid B StuckOn	exhausted (See Table 12	= TRUE Boolean					П
Solenoid (VBS)		[C35R] (Dymanic)	in Supporting Documents	- INOL Boolean					
			for Exhaust Delay Timers)						
			Primary Oncoming Clutch	Maximum					
			Pressure Command Status						
				Olytek					
			Primary Offgoing Clutch	Clutch = exhaust					
			Pressure Command Status	command					
				Initial Clutch					
			Range Shift Status	≠ Control					
			A 11 1 1 0 0 11						
			Attained Gear Slip	<= 40 RPM					
			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	(Sec)				
			fail timer 1						
			(3-2 shifting with Throttle)	>= 0.29980469 Fail Time	(Sec)				
			fail timer 1						
			(3-2 shifting with Closed	>= 0.5 Fail Time	(Sec)				
			Throttle)						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
•			fail timer 1 (3-4 shifting with Throttle)	>= 0.29980469 Fail Time (Sec)				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)	>= 0.29980469 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)	>= 0.29980469 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)	>= 0.29980469 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)	>= 0.29980469 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 sec 1, and Reference Supporting Table 15 for Fail Timer 2	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Requi		Mil Illum
			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						>=	5	total fail counts	
					TUT Enable temperature	>=	-6.65625	°C				
					Input Speed Sensor fault	=	FALSE	Boolean				
					Output Speed Sensor fault	=	FALSE	Boolean				
					Command / Attained Gear	<b>≠</b>	1st	Boolean				
					High Side Driver ON	=	TRUE	Boolean				
					output speed limit for TUT	>=	100	RPM				
					input speed limit for TUT	>=	150	RPM				
					PRNDL state defaulted	=	FALSE	Boolean				
					IMS Fault Pending	=	FALSE	Boolean				
					Service Fast Learn Mode	=	FALSE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
,					Default Gear Option is not present	= TRUE		
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0796		Fail Case: Steady State 4th Gear					One Trip
			Gear slip	>= 400 RPM			>= 5 For	Neutral Timer (Sec)
			Intrusive test: commanded 5th gear					
			lf attained Gear ≠5th for time	Please refer to Table 3 in Supporting Documents  Shift Time (Sec)				
			if the above conditions have been met				4	th Gear
			Increment 4th Gear Fail Counter				>= 3	Fail Count OR

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	Criteria	Value	Mananotion	Conditions		
			and C456 Fail Counters				>= 14 C456 Fai	
			Fail Case: Steady State 5th Gear					
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 6th gear					
			If attained Gear ≠ 6th for time					
			if the above conditions have been met					
			Increment 5th Gear Fail Counter				5th Gear >= 3 Fail Count OR	r
			and C456 Fail Counters				>= 14 C456 Fai	
			Fail Case 3 Case: Steady State 6th Gear					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction		Enable			Time		IIIu
System	Code	Description	Criteria	Value	Manufiction		Conditio	ii\$	_	Requir	ea	
			Gear slip	>= 400 RPM					>=	Please See Table 5 For Neutral Time Cal	Timer (Sec)	
			Intrusive test: commanded 5th gear									
			If attained Gear ≠ 5th for time									
			if the above conditions have been met									
			Increment 6th Gear Fail Counter and C456 Fail Counter						>=	3	6th Gear Fail Count OR	
			and C456 Fail Counter						>=	14	C456 Fail	Í
					PRNDL State defaulted	=	FALSE	Boolean				1
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B (A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.500488	Pct				
					Common Enable Criteria Ignition Voltage Lo		8.599609	Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable ondition	s	Time Required	Mil Illum.
					Ignition Voltage Hi	<= 3	1.99902	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Throttle Position Signal valid	=	TRUE	Boolean		
					HSD Enabled	=	TRUE	Boolean		
					Transmission Fluid Temperature	>= -(	6.65625	°C		
					Input Speed Sensor fault	= F	FALSE	Boolean		
					OutputSpeed Sensor fault	= F	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			
				Disable Conditions:		TCM: P071 P0723, P18		P0722,		
						ECM: P010 P0106, P01 P0172, P01 P0202, P02 P0206, P02 P0301, P03 P0305, P03 P0401, P04	107, P0108 174, P0175 203, P0204 207, P0208 302, P0303 306, P0307	8, P0171, 5, P0201, 4, P0205, 8, P0300, 3, P0304,		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	Fail Case: Steady State 1st							One Trip
			Attained Gear slip	>= 400 RPM						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable Conditions	Time Poguired	Mil
Component/ System	Fault	Monitor Strategy Description	Criteria  If the Above is True for Time  Intrusive test: (CBR1 clutch exhausted)  Gear Ratio	Table Based Time Please Refer to Enable Time Table 4 in (Sec) supporting documents  <= 1.20959473 >= 1.09436035	Secondary Malfunction	Enable Conditions	Time Required  Fail >= 1.1 Timer (Sec) Fail >= 2 Count in 1st Gear or	Illum
			<u>Fail</u> <u>Case</u> Case Steady State 2nd				>= 3 Total Fai Counts	
			2 Max Delta Output Speed Hysteresis	Table Based value Please >= 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	Time Required	Mil Illum
- Oysio		Dood., p.i.o.i	Min Delta Output Speed Hysteresis	Table Based value				
			If the Above is True for Time					
			Intrusive test: (CB26 clutch exhausted) Gear Ratio	<= 1.20959473				
			Gear Ratio If the above parameters are true	>= 1.09436035				
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count ir 2nd Gea	
							or >= 3 Total fai counts	
			Fail Case Case Steady State 3rd 3					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illun
			Max Delta Output Speed Hysteresis					
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time					
				<= 1.20959473 >= 1.09436035				
			are true				>= 1.1 T	Fail imer Sec)
							>= 3 Co	Fail ount in I Gear

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum
Í									>=	OR 3	Total Fail Counts	
					PRNDL State defaulted inhibit RVT	= =	FALSE FALSE	Boolean Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed TPS validity flag HSD Enabled Hydraulic_System_Pressuriz	>= = =	0 TRUE TRUE	RPM Boolean Boolean				
					ed A OR B (A) Output speed enable	>=	TRUE 67	Boolean Nm				
					(B) Accelerator Pedal enable	>=	0.500488	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= <= >=	8.599609 31.99902 400	Volts Volts RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.000305	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	5	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 Default Gear Option is not	=	FALSE FALSE	Boolean Boolean				
					present	=	TRUE					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable		TCM: P0716, P0717, P0722,		
				Conditions	DIC's:	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		
								One
		Pressure Control (PC)	Primary Offgoing Clutch is					Trip
ariable Bleed		Solenoid C Stuck On	exhausted (See Table 11	= TRUE Boolean				
olenoid (VBS)		[C456] (Dynamic)	in Supporting Documents					
		,	for Exhaust Delay Timers)					
			Primary Oncoming Clutch Pressure Command Status	_				
			Pressure Command Status	pressurized				
			Drive en l'Officier a Clutab	Clutch				
			Primary Offgoing Clutch Pressure Command Status	= exhaust				
			1 1035dre Odminana Otatus	command				
				, Initial Clutch				
			Range Shift Status	≠ Control				
			Attained Gear Slip	<= 40 RPM				
			If the above conditions are					
			true increment appropriate					
			Fail 1 Timers Below:					
			fail timer 1					
			(4-1 shifting with throttle)	>= 0.29980469 Fail Time (Sec)				
			fail timer 1					
			(4-1 shifting without	>= 0.5 Fail Time (Sec)				
			throttle)	5.5 (411 11110 (000)				
			fail timer 1					
			(4-2 shifting with throttle)	>= 0.29980469 Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
Jysteili	Code	Description	fail timer 1 (4-2 shifting without			Conditions	rtoquiiou	
			throttle) fail timer 1 (4-3 shifting with throttle)	>= 0.29980469 Fail Time (Sec)				
			fail timer 1 (4-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with throttle)	>= 0.29980469 Fail Time (Sec)				
			fail timer 1 (5-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (6-2 shifting with throttle)	>= 0.29980469 Fail Time (Sec)				
			fail timer 1 (6-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer sec 1, and Reference Supporting Table 15 for Fail Timer 2	

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					Fail Counter From 4th Gear
			5th gear fail counter					OR Fail Counter From 5th Gear OR
			6th gear fail counter					Fail Counter From 6th Gear OR
			Total fail counter					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  ≠ 1st Boolean  = TRUE Boolean  >= 100 RPM  >= 150 RPM  = FALSE Boolean  = FALSE Boolean		

Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary	Enal			Time		Mil
System	Code	Description	Criteria		Val		Malfunction	Condi			Requi	red	Illun
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0 P0723, P182E	717, P0722,				
								ECM: P0101, P0 P0106, P0107, F P0172, P0174, F P0202, P0203, F P0206, P0207, F P0301, P0302, F P0305, P0306, F P0401, P042E	20108, P0171, 20175, P0201, 20204, P0205, 20208, P0300, 20303, P0304,				
ariable Bleed olenoid (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	=	TRUE	Boolean				>=	4.4	Fail Time (Sec)	Two Trips
										out of	5	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= 31.999 >= 400	02 Volts RPM				
							Engine Speed is within the allowable limits for	\ <del>-</del> 5	Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
ariable Bleed olenoid (VBS)	P0962	Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS)	The HWIO reports a low voltage (ground short) error flag	=	TRUE	Boolean				>=	1.5	Fail Time (Sec)	On Tri
										out of	1.875	Sample Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Т	hreshold	Secondary		Enable			Time		Mil
System	Code	Description	Criteria		Value	Malfunction		ondition			Requi	red	Illun
						Ignition Voltage		1.99902	Volts				
						Engine Speed		400	RPM				
						Engine Speed		7500	RPM				
						Engine Speed is within the		5	Sec				
						allowable limits for		Ü	000				
					Disable	MIL not Illuminated for	TCM: None						
					Conditions:		I CIVI. INOTIE						
					conditions.		ECM: None	)					
/ · · · · · · ·		Pressure Control (PC)	The HWIO reports a high									E " T	Tw Trij
/ariable Bleed Solenoid (VBS)	P0963	Solenoid A Control Circuit High Voltage (Line Pressure VBS)	voltage (open or power short) error flag	= TRU	IE Boolean					>=	4.4	Fail Time (Sec)	'''
		(										Sample	
										out	5	Time	
										of		(Sec)	
						Ignition Voltage	>= 8.	599609	Volts				
						Ignition Voltage	<= 31	1.99902	Volts				
						Engine Speed	>=	400	RPM				
						Engine Speed	<=	7500	RPM				
						Engine Speed is within the		_	0				
						allowable limits for		5	Sec				
					Disable	MIL not Illuminated for	TOM: Nana						
					Conditions:	MIL not Illuminated for DTC's:	I Civi. INone						
					Conditions.		ECM: None	<b>:</b>					
		Proceure Control (BC)								_			Or
ariable Bleed olenoid (VBS)	P0966	Pressure Control (PC) Solenoid B Control Circuit Low Voltage (C35R VBS)	The HWIO reports a low voltage (ground short) error flag	= TRU	IE Boolean					>=	0.3	Fail Time (Sec)	_
		(00011 120)								out of	0.375	Sample Time (Sec)	
						Ignition Voltage	>= 8.	599609	Volts			(300)	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	ıs		Time Requir		Mil Illun
System	Code	Description	Criteria	Value	Ignition Voltage	<=	31.99902	Volts		rtoquii	Cu	
					Engine Speed		400	RPM				
					Engine Speed		7500	RPM				
					Engine Speed is within the							
					allowable limits for	>=	5	Sec				
					P0966 Status is not	=	Test Failed This Key On or Fault Active					
				Disable Conditions:	DTC's:	TCM: N ECM: N						
ariable Bleed olenoid (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	= TRUE Boolean					>=	0.3	Fail Time (Sec)	On Tri
									out of	0.375	Sample Time (Sec)	
					Ignition Voltage		8.599609	Volts				
					Ignition Voltage		31.99902	Volts				
					Engine Speed		400	RPM				
					Engine Speed		7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					P0967 Status is not	=	Test Failed This Key On or Fault Active					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag				>= 0.3 Fail Time (Sec)  out Sample of 0.375 Time (Sec)	One Trip
					P0970 Status is not	Test Failed This Key On or Fault Active	(Cont.)	
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the	<= 31.99902 Volts >= 400 RPM <= 7500 RPM		
				Disable Conditions:	DTC's:			
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
		(2.00,02 700)					out Sample out of 0.375 Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction		Enable Condition	ıs		Time Requi		Mil Illum.
						P0971 Status is not	=	Test Failed This Key On or Fault Active					
					Er	Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed Ingine Speed is within the allowable limits for	<= >=	8.599609 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
				Co	Disable anditions:	MIL not Illuminated for DTC's:	TCM: N ECM: N						
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag		an					>= out of	1.2	Fail Time (Sec) Sample Time (Sec)	One Trip
						P0973 Status is not	=	Test Failed This Key On or Fault Active					
					Er	Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= >=	8.599609 31.99902 400 7500 5	Volts Volts RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
Oystom	Jour	Description	Ontona			Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None				
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	=	TRUE	Boolean			>= out of	1.2	Fail Time (Sec) Sample Time (Sec)	Two Trips
							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	<= 31.99902 Volts >= 400 RPM <= 7500 RPM				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None				
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	=	TRUE	Boolean			>=	1.2	Sec	One Trip
									out of	1.5	Sec	

Component/	Fault Code		Malfunction Criteria			shold lue	Secondary Malfunction	(	Enable Condition	s		Time Require		Mil Illum.
System	Code	Description	Criteria		Va	iue	P0977 Status is not  Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed Engine Speed is within the	= >= <=	Test Failed This Key On or Fault Active 8.599609 31.99902 400 7500 5	Volts Volts RPM RPM Sec		Kequire	30	inuiii.
Internal Mode	P1915	Internal Mode Switch Does Not Indicate	PRNDL State is	<u></u>	Park or	Disable Conditions: Enumeration	allowable limits for MIL not Illuminated for DTC's:	TCM: Noi	ne					One Trip
Switch (IMS)	1 1010	Park/Neutral (P/N) During Start	The following events must occur Sequentially Initial Engine speed		Neutral	RPM					>=	0.25	Enable Time (Sec)	
			Then Engine Speed Between Following Cals Engine Speed Lo Hist Engine Speed Hi Hist	>=	50 480	RPM RPM					>=	0.06875	Enable Time (Sec)	
			Then Final Engine Speed	>=	525	RPM							(223)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction		Enable Condition	าร		Time Requir		Mil Illum.
			Final Transmission Input Speed	>=	200	RPM					>=	1.25	Fail Time (Sec)	
							DTC has Ran this Key Cycle?	=	FALSE	Boolean				
							Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst High	>= <=	6 31.99902	V V				
							(enables above this value)	>=	5	V				
							Ignition Voltage Hyst Low (disabled below this value)	<=	2	V				
							Transmission Output Speed	<=	90	rpm				
							P1915 Status is	≠	Test Failed This Key On or Fault Active					
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM:   ECM:						
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)	
							ECM run/crank active status available		TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold Ilue	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
						ECM run/crank active status	= TRUE Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:					
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below)	TRUE	Boolean						One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)	5	Volts			>=	280	Fail Counts (25ms loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts			Out of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available	■ = IRIIE BOOIEAN				
						ECM run/crank active status	= FALSE Boolean				
					Disable Conditions:	DTC's:					
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	Fail Case: Steady State 2nd 1 Gear								One Trip

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil Illun
System	Code	Description	Criteria	Value	wanunction	Conditions	Required	ıııu
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 3rd gear					
			If attained Gear = 3rd for Time					
			If Above Conditions have been met					
			Increment 2nd gear fail count				2nd Gear >= 3 Fail Count	
			and CB26 Fail Count				or CB26 >= 14 Fail Count	
			Fail Case Case: Steady State 6th Gear					
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 5th gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Requi		Mil Illum.
Oystem	Odde	Description	If attained Gear = 5th For Time	Table Based Time Please see Table 2 Enable Time								
			If Above Conditions have been met, Increment 5th gear fail counter						>=	3	5th Gear Fail Count	
			and CB26 Fail Count						>=	14	or CB26 Fail Count	
					PRNDL State defaulted 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	>=	0	RPM				
					A OR B (A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.500488	Pct				
					Common Enable Criteria Ignition Voltage Lo	>=	8.599609	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi		7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					Throttle Position Signal valid	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	Disable Conditions:	Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present  MIL not Illuminated for DTC's:	>= -6.65625 °C = FALSE Boolean	Required	illum.
Variable Bleed Solenoid (VBS)		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  = Maximum pressurized				One Trip
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status Attained Gear Slip	Control				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If above coditons are true, increment appropriate Fail 1 Timers Below:	il				
			fail timer 1 (2-1 shifting with throttle)					
			fail timer 1 (2-1 shifting without throttle)	ut >= 0.5 Fail Time (Sec)				
			fail timer 1 (2-3 shifting with throttle)					
			fail timer 1 (2-3 shifting without throttle)	ut >= 0.5 Fail Time (Sec)				
			fail timer 1 (2-4 shifting with throttle)					
			fail timer 1 (2-4 shifting without throttle)	ut >= 0.5 Fail Time (Sec)				
			fail timer 1 (6-4 shifting with throttle)					
			fail timer 1 (6-4 shifting without throttle)	ut >= 0.5 Fail Time (Sec)				
			fail timer 1 (6-5 shifting with throttle)					
			fail timer 1 (6-5 shifting without throttle)	ut >= 0.5 Fail Time (Sec)				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illur
			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 sec 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					
			2nd gear fail counter				Fail >= 3 Counter From 2nd Gear	
			6th gear fail counter				OR Fail >= 3 Counter From 6th Gear OR	
			total fail counter				>= 5 Total Fail Counter	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu		Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
System	Code	Description	Criteria	Valu		TUT Enable temperature	>=	-6.65625	°C	rtequirea	-
						Input Speed Sensor fault		FALSE	Boolean		
						Output Speed Sensor fault		FALSE	Boolean		
						Command / Attained Gear		1st	Boolean		
						High Side Driver ON		TRUE	Boolean		
						output speed limit for TUT	>=	100	RPM		
						input speed limit for TUT	>=	150	RPM		
						PRNDL state defaulted	=	FALSE	Boolean		
						IMS Fault Pending	=	FALSE	Boolean		
						Service Fast Learn Mode	=	FALSE	Boolean		
						HSD Enabled	=	TRUE	Boolean		
					Disable Conditions:	MIL not Illuminated for			7, P0722,		
					Conditions:	DTC's:	P0723,	P182E			
							ECM: P	0101, P010	2, P0103,		
								P0107, P01			
								P0174, P01			
								P0203, P02			1
								P0207, P02			1
								P0302, P03 P0306, P03			
							P0401,		07, F0300,		
Variable Bleed	D271E	Pressure Control (PC)	Fail Case Case: Steady State 1st								One Trip
Solenoid (VBS)	P2/15	Solenoid D Stuck On [CB26] (Steady State)	<u>Case</u>								1116
		[ODZ0] (Oteady Otate)	– Attained Gear slip	>= 400 F	RPM						
			Allaineu Gear Siip	/- 400 i	XFIVI						
				Table Based							
			If the Aberra is Turn for	Time Please	-nabla Tima						
			If the Above is True for Time	>= Refer to 1	Enable Time						
			Tille	supporting	(360)						
				documents							
			Intrusive test:								
			(CBR1 clutch exhausted)								

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description		<= 2.48217773	Manufiction	Conditions	Required	- IIIdiii
				>= 2.24584961				
			If the above parameters					
			are true					
							Fail	
							>= 1.1 Timer	
							(Sec)	
							Fail >= 3 Count i	n
							1st Gea	
							or	1
							Total Fa	ail
							>= 3 Counts	
			<u>Fail</u>					-
			Case Case: Steady State 3rd					
			<u>2</u> Gear					
				Table Based value				
				Please				1
			Max Delta Output Speed Hysteresis	>= Refer to 3D rpm/sec				
			Trystorosis	Table 1 in				
				supporting documents				
				Table Based				
				value				
			Min Delta Output Speed	Please				
			Hysteresis	>- Refer to 3D Tpm/sec				
			<b> </b>	Table 2 in supporting				
				documents				

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Griteria	value	Manufiction	Conditions	Nequired	mum
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in Supporting documents				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 2.48217773				
				>= 2.24584961				ı
			If the above parameters					ı
			are true					ı
							Fail >= 1.1 Timer	ı
							(Sec)	ı
							Fail	
							>= 3 Count in	ı
							3rd Gear	
							or	
							>= 3 Total Fail Counts	
			Fail Case Steady State 4rd Gear					
			Max Delta Output Speed Hysteresis	Table Based value Please >= 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 III
- Oystom	0000	Безеприон	Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
				<= 0.70031738 >= 0.63366699				
							>= 1.	Fail 1 Timer (Sec)
							>= 3	Fail Count in 4th Gear or
							>= 3	Total Fail
			Fail Case Case: Steady State 5th 4 Gear					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria	Value	Maitunction	Conditions	Required	Illun
			Max Delta Output Speed Hysteresis					
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time					
				<= 0.70031738 >= 0.63366699				
			are true				Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count 5th Ge: or	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requir		Mi Illur
									>=	3	Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Pressuriz ed	=	TRUE	Boolean				
					A OR B							
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.500488	Nm				
					Ignition Voltage Lo	>=	8.599609	Volts				
					Ignition Voltage Hi	<=	31.99902	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.000305	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	5	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					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Onteria	Disable Conditions:	MIL not Illuminated for	TCM: P0716, P0717, P0722, P0723, P182E	rtoquilou	
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag				>= 0.3 Fail Tin (Sec)	
							out 0.375 Time of (Sec)	
					P2770 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	<= 31.99902 Volts >= 400 RPM <= 7500 RPM		
				Disable Conditions:	DTC's:	TCM: None ECM: None		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec)	One Trip
							out Sample of 0.375 Time of (Sec)	
					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	<= 31.99902 Volts >= 400 RPM		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail</u> <u>Case</u> Case: Steady State 1st <u>1</u> Gear					One Trip
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 2nd gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
oystem	Code	Безсприон	If attained Gear ≠ 2nd for Time	Please refer		Conditions	rtoquilou	
			If Above Conditions have been met, Increment 1st gear fail counter				1st Gear >= 3 Fail Count	
			and C1234 fail counter				or C1234 >= 14 Clutch Fail Count	
			Fail Case Case: Steady State 2nd 2 Gear					
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 3rd gear					
			If attained Gear ≠ 3rd for Time					
			If Above Conditions have been met, Increment 2nd gear fail counter				2nd Gear >= 3 Fail Count	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Безсприон	and C1234 fail counter	Value	a.ia.ia.ia.i	Gondinons	>= 14 Clutch Fail Count	
			Fail Case: Steady State 3rd Gear					
			Gear slip	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 4th gear					
			If attained Gear ≠ 4th for time	Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
			If Above Conditions have been met, Increment 3rd gear fail counter				3rd Gear >= 3 Fail Count	
			and C1234 fail counter				or C1234 Clutch Fail Count	
			Fail Case: Steady State 4th 4 Gear					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enab			Time		Mil
System	Code	Description	Criteria	Value	Maitunction	Condit	ions		Require	ed	Illur
			Gear slip	>= 400 RPM				>=	Please See Table 5 For Neutral Time Cal	Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear								
			If attained Gear = 5th For Time	Please refer to Table 3 in Supporting Documents							
			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	= FALSE	Boolean				1
					inhibit RVT	= FALSE	Boolean				
					IMS fault pending indication	= FALSE	Boolean				
					TPS validity flag	= TRUE	Boolean				
					Hydraulic System Pressurized	= TRUE					
					Minimum output speed for RVT	>= 0	RPM				
					A OR B (A) Output speed enable	>= 67	RPM				
					(B) Accelerator Pedal enable	>= 0.50048	8 Pct				
					Common Enable Criteria Ignition Voltage Lo	>= 8.59960	9 Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= 31.99902 Volts >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Throttle Position Signal valid			
					HSD Enabled Transmission Fluid Temperature	>- 6.65625 °C		
					Input Speed Sensor fault			
					Output Speed Sensor fault Default Gear Option is not present	= FALSE Boolean = TRUE		
				Disable Conditions	: 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		One
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
2,000			Primary Offgoing Clutch Pressure Command Status				·	
			Range Shift Status	s ≠ Initial Clutch Control				
			Attained Gear Slip	p <= 40 RPM				
			If the above conditions are true increment appropriate Fail 1 Timers Below:	e				
			fail timer 1 (2-6 shifting with throttle)					
			fail timer 1 (2-6 shifting without throttle)	ut >= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle)					
			fail timer 1 (3-5 shifting without throttle)	ut >= 0.5 sec				
			fail timer 1 (4-5 shifting with throttle)					
			fail timer 1 (4-5 shifting without throttle)	ut >= 0.5 sec				
			fail timer 1 (4-6 shifting with throttle)					
			fail timer 1 (4-6 shifting without throttle)	ut >= 0.5 sec				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria  If Attained Gear Slip is Less than Above Cal Increment Fail Timers	value	Manufiction	Conditions	Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer sec 1, and Reference Supporting Table 15 for Fail Timer 2	mum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				Fail Counter From 2nd Gear	
			3rd gear fail counter				Fail Counter >= 3 From 3rd Gear	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			4th gear fail counter				>= 3 Fi	Fail counter rom 4th Gear
			total fail counter				\ <u> </u>	otal 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 >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = FALSE Boolean		
				Disable Conditions:	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 (Steady State)	<u>Fail</u> <u>Case</u> Case: 5th Gear 1					One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Tim Requi	
бублени	Oue	Description	Max Delta Output Speed Hysteresis	Table Based value Please				
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time					
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.20959473 >= 1.09436035				
			3.0 000				>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 5th Gear OR

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Oystem	Code	Безсприон	Ontena	Valuo		Containono	>= 3 Total Fail Counts	
			Fail Case: 6th Gear 2					
			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 >= Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time					
				<= 1.20959473 >= 1.09436035				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requi		Mi Illur
System	Code	Description	Citteria	Value	a.ra.roso.r		Condition	113	>=	1.1	Fail Timer	
									/-	1.1	(Sec)	
									>=	3	Fail Count in 6th Gear	
											OR Total Fail	
									>=	3	Counts	
					PRNDL State defaulted inhibit RVT	=	FALSE FALSE	Boolean Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag HSD Enabled	=	TRUE TRUE	Boolean Boolean				
					Hydraulic_System_Pressuriz	=	TRUE	Boolean				
					A OR B		07	Mari				
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.500488	Nm				
					Ignition Voltage Lo Ignition Voltage Hi	>=	8.599609 31.99902	Volts Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.000305	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	5	Nm				
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.875	Nm				
					Transmission Fluid Temperature	>=	-6.65625	°C				
					Input Speed Sensor fault	=	FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Output Speed Sensor fault Default Gear Option is not present			
				Disable Conditions:		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)	P2729	Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time	One Trip
							out 0.375 Time (Sec)	
					P2729 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the	<= 31.99902 Volt >= 400 RPM <= 7500 RPM		
					allowable limits for	>= 5 Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Va	shold lue	Secondary Malfunction	Enable Condition	s		Time Requir		Mil Illum.
					Disable Conditions:	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	= TRUE	Boolean				>= out of	0.3	Fail Time (Sec) Sample Time (Sec)	One Trip
						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	<= 31.99902 >= 400 <= 7500	Volt Volt RPM RPM				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE	Boolean				>=	4.4	Fail Time (Sec)	Two Trips
			9						out of	5	Sample Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Val		Secondary Malfunction		Enable Condition	าร		Time Require		Mil Illum.
9,0.0						P2763 Status is not	=	Test Failed This Key On or Fault Active			·		
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= >=	8.599609 31.99902 400 7500	Volt Volt RPM RPM				
						Engine Speed is within the allowable limits for High Side Driver Enabled	>=	5 TRUE	Sec Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: F						
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	TRUE	Boolean					>=	4.4	MPH	One Trip
										out of	5	MPH	
						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 allowable limits for High Side Driver Enabled	<= >= <= >=	8.599609 31.99902 400 7500 5 TRUE	Volt Volt RPM RPM Sec Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction	Enable Conditions		Tim Requi		Mil Illum.
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0659 ECM: None				
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	=	TRUE	Boolean			>=	62	Fail counts (≈ 10 seconds)	
			Delay timer	>=	0.1125	sec			Out of	70	Sample Counts (≈ 11 seconds)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	<= 31.99902 Volt				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None				
Communication	U0100	Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM	=	TRUE	Boolean			>=	12	sec	One Trip
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	<= 31.99902 Volt				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable	MIL not Illuminated for	TCM: U0073		
				Conditions:	DTC's:			
						ECM: None		

# **Supporting Documents**

#### Table 1

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

#### Table 2

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

#### Table 3

Axis	-6.67	-6.66	40.00	٥С
Curve	409.59	4.00	4.00	Sec

#### Table 4

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

#### Table 5

Axis	-6.67	-6.66	40.00	°C
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 °C
Curve	409.00	3.40	1.40	1.30	1.20 Sec

#### Table 8

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

#### Table 9

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

# **Supporting Documents**

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

#### **Table 11**

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

#### Table 12

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

#### Table 13

Axis	-40.00	-20.00	0.00	30.00	110.00	٥С
Curve	2.51	0.95	0.50	0.29	0.13	Sec

#### Table 14

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

#### Table 15

Axis	-40.00	-30.00	-20.00	-10.00	0.00	10.00	20.00	30.00	40.00	°C
Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sec

#### Table 16

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	2.50	2.50	Sec

#### Table 17

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

#### <u>Table 18</u>

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

# **Supporting Documents**

#### Table 19

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	°С
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00	°С

#### <u>Table 21</u>

Axis	-40.00	-20.00	40.00	°C
Curve	5.00	3.00	1.00	Sec

# **Supporting Documents - 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
					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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres		Secondary Malfunction		Enable Conditions	- <del></del>		Tir Requ		Mil Illum.
Mode Switch	P071A	Transmission Mode Switch A Circuit	Tow Haul Mode Switch state	<b>;</b> =	TRUE	Boolean			Conditions		>=	600	Fail Time (Sec)	Special No MIL
							Ignition Voltage Lo	>=	8.5996094	Volts			(===)	
							Ignition Voltage Hi	<=	31.999023	Volts				
							Engine Speed Lo	>=	400	RPM				
							Engine Speed Hi	<=	7500	RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							anowabic infints for							
						Disable	MIL not Illuminated for	TCM: F	1762					
						Conditions:	DTC's:							
								ECM: N	lone					
Tap Up Tap Down Switch			Fail Tap Up Switch Stuck in the											Special
(TUTD)	P0815	Upshift Switch Circuit	Case Up Position in Range 1 1 Enabled		0	Boolean								No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enablec	=	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 3 Enablec	8 =	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 4 Enablec	; 	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 5 Enablec	=	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 6 Enablec	=	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Neutra Enablec	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Park Enabled		1	Boolean								

Component/	Fault Code	Monitor Strategy	Malfunction Criteria		shold Ilue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	i	V	ilue	Walturiction	Conditions	Required	IIIuii
			Tap Up Switch Stuck in the Up Position in Reverse	= 0	Boolean				
			Enabled	- 0	Doolcan				
								Fail	l Time
			Tap Up Switch ON	= TRUE	Boolean				Sec)
			Fail Tap Up Switch Stuck in the						
			Case Up Position in Range 1	= 1	Boolean				
			2 Enabled						
			Tap Up Switch Stuck in the						
			Up Position in Range 2	= 1	Boolean				
			Enabled						
			Tap Up Switch Stuck in the						
			Up Position in Range 3	= 1	Boolean				
			Enabled						
			Tap Up Switch Stuck in the	1	Daalaaa				
			Up Position in Range 4 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5	= 1	Boolean				
			Enabled	- '	Doolean				
			Tap Up Switch Stuck in the						
			Up Position in Range 6	= 1	Boolean				
			Enabled						
			Tap Up Switch Stuck in the						
			Up Position in Neutral	= 0	Boolean				
			Enabled						
			Tap Up Switch Stuck in the						
			Up Position in Park Enabled	= 0	Boolean				
									1
			Tap Up Switch Stuck in the						1
			Up Position in Reverse	= 0	Boolean				1
			Enabled	TDUE	D 1				1
			Tap Up Switch ON	= TRUE	Boolean				
			NOTE: Both Failcase1 and					>= 600 Fail	I Time
			Failcase 2 Must Be Met					>= 600 (5	Sec)
									—

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold Ilue	Secondary Malfunction	Enable Conditions	•	Time Required	Mil Illum.
		2333.194011								
						Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= 8.5996094 <= 31.999023 >= 400 <= 7500	Enable Time (Sec) Volts Volts RPM RPM Sec		
						allowable limits for P0815 Status is	Test Failed	366		
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0816, P0826, P P1876, P1877, P1915, ECM: None			
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	$\begin{array}{ll} \underline{\text{Fail}} & \text{Tap Down Switch Stuck in} \\ \underline{\text{Case}} & \text{the Down Position in Range} \\ \underline{1} & \text{1 Enabled} \end{array}$	= 0	Boolean					Special No MIL
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 0	Boolean					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold /alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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		Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled		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		Boolean				
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	= 0	Boolean				
			Tap Down Switch ON	= TRUE	Boolean			>= 1 sec	
			Fail Tap Down Switch Stuck in Case the Down Position in Range 2	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled		Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Conditions	6	Time Require		Mil Illum.
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	1	Boolean							
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	=	0	Boolean							
			Tap Down Switch Stuck in the Down Position in Park Enabled		0	Boolean							
			Tap Down Switch Stuck in the Down Position in Reverse Enabled		0	Boolean							
			Tap Down Switch ON	=	TRUE	Boolean							
			NOTE: Both Failcase1 and Failcase 2 Must Be Met								>= 600	sec	
													1
													1
													1
													1
													1
													1
													1
							Time Since Last Range Change	>=	1	Enable Time (Sec)			
							Ignition Voltage Lo	>=	8.5996094	Volts			
	1						Ignition Voltage Hi	<=	31.999023	Volts			
	1						Engine Speed Lo	>=	400	RPM			
							Engine Speed Hi Engine Speed is within the	<=	7500	RPM			
	1						allowable limits for	>=	5	Sec			

Component/	Fault	Monitor Strategy	Malfunction	Thres	hold	Secondary	Ī	Enable			Tin	20	Mil
System	Code	Description	Manunction Criteria	Val		Malfunction		Enable Conditions	8		Requ		Illum.
						P0816 Status is	-	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:		1877, P1915,					
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE	Boolean					>=	60	Fail Time (Sec)	Special No MIL
(TOTD)		Switch Circuit	Vollage		Disable Conditions:	Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0826 Status is	<= >= <= >= ≠		Volts Volts RPM RPM Sec			(Sec)	NO WIL
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 Sample Timer (Sec)	Special No MIL
						Tap Up Tap Down Message Health	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 7500 RPM		
				Disable Conditions:	MIL not Illuminated for DTC's:			
Mode Switch	P1762	Transmission Mode Switch Signal Circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boolean			>= 3 Fail Counter	Special No MIL
							Sample > 10 Timer (Sec)	
					Pattern Switch Message Health			
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi			
					Engine Speed is within the allowable limits for			
				Disable Conditions:	MIL not Illuminated for DTC's:			
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case Current range	Transition 1 = (bit state Range 1110)				One Trip
			Previous range	CeTRGR_e_ ≠ PRNDL_Driv Range e6				
			Previous range	CeTRGR_e_ ≠ PRNDL_Driv Range e5				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresi Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Range Shift State	= Range Shift Completed	ENUM				
			Absolute Attained Gear Slip	<= 50	rpm				
			Attained Gear Attained Gear Throttle Position Available	>= First					
			Throttle Position Available Throttle Position Output Speed Engine Torque	>= 8.0001831 >= 200	pct rpm Nm				
			Engine Torque If the above conditions are	<= 8191.75	Nm			Fail	
			met then Increment Fail Timer					>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter					>= 5 Fail Counts	
			<u>Fail</u> <u>Case</u> Output Speed 2	<= 70	rpm				
			The following PRNDL sequence events occur in this exact order:						
			PRNDL state	State 0110)					
			PRNDL state = Drive 6 for PRNDL state	Transition 8	Sec Range				
			PRNDL state	Drivo / /bit	Range				
			PRNDL state	Transition 1 = (bit state 1110)	Range				
			Above sequencing occurs in	<= 1	Sec				
			Neutral Idle Mode	= Inactive					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If all conditions above are met Increment delay Timer 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 Current range 3	Transition 13 = (bit state Range 0010)	Previous range	CeTRGR_e ≠ _PRNDL_D rive2		
			Engine Torque	>= -8192 Nm	Previous range	CeTRGR_e ≠ _PRNDL_D rive1		
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration			
			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 Current range	Transition 8 = (bit state Range 0111)	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)			

Component/	Fault	Monitor Strategy	Malfunction		Thresho Value		Secondary Malfunction	Ena Condi			Time Required	Mil Illum.
System	Code	Description	Criteria	-			Walluffction	Cond	uons	<u> </u>	kequired	mum.
			Steady State Engine Torque	>=	100	Nm						
			Steady State Engine Torque	<=	8191.75	Nm						
			If the above conditions are									
			met then Increment Fail							>= 0	.225 Seconds	
			Timer									
			If the above Condtions have been met, Increment Fail							>=	15 Fail	
			Counter								Counts	
			<u>Fail</u>									
			<u>Case</u> Throttle Position Available <u>5</u>	=	TRUE	Boolean						
			The following PRNDL									
			sequence events occur in									
			this exact order:		Reverse (hit							
			PRNDL State	= (	Reverse (bit state 1100)	Range						
			DDMDI CL I		ransition 11	D						
			PRNDL State	=	(bit state 0100)	Range						
			PRNDL State	_	Neutral (bit	Range						
			1 KNDL State		State 0101)	range						
			PRNDL State		ransition 11 (bit state	Range						
					0100)	J						
			Above sequencing occurs in	<=	1 :	Sec						
			Then delay timer increments									
			Delay timer			sec						
			Range Shift State		Range Shift Complete							
			Absolute Attained Gear Slip			rpm						
			·			. h						
			Attained Gear Attained Gear		Sixth First							
			Throttle Position			pct						

	Time Require		Enable Conditions		Secondary Malfunction	Threshold Value	Malfunction Criteria		Fault Code	Component/
- IIIaili.	Require		Soliditions	+	a.ialiotioli		Output Speed	Description	Code	System
Seconds	>= 20 \$						If the above conditions are met Increment Fail Timer			
				e e	A Open Circuit Definition (flag set false if the following conditions are met):	Illegal (bit state 0000 or 1000 or 0001)	<u>ail</u> G <u>ase</u> Current range			
			Transition 11 (bit state 0100)	e :	Current Range	1	and			
				or	or		A Open Circuit (See Definition)			
			Neutral (bit state 0101)		Last positive state					
			Transition 8 (bit state 0111)		Previous transition state					
		sec	0	er :	Fail case 5 delay timer			1		
Seconds	>= 6.25 \$					ı	If the above Condtions are met then, Increment Fail timer			
						PRNDL e = circuit ABCP Range = 1101	<u>ail</u> <u>ase</u> Current PRNDL State	<u>Fa</u> <u>Ca</u> <u>7</u>		
						1	and	1		
						PRNDL e = circuit ABCP Range =1111	Previous PRNDL state			
						<pre>&gt; &lt;= 2.8458252 ratio &gt; = 3.27416992 ratio</pre>	Reverse Trans Ratio			
Seconds	>= 6.25 S					ı	If the above Condtions are met then, Increment Fail timer			
		sec	state 0101)  Transition 8 (bit state 0111)	or e :	or Previous transition state	PRNDL = circuit ABCP Range = 1101  PRNDL = circuit ABCP Range = 1111  >= 150 RPM <= 2.8458252 ratio >= 3.27416992 ratio	met then, Increment Fail timer  ail tase  Current PRNDL State  and  Previous PRNDL state  Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Condtions are met then, Increment Fail	<u>Fa</u> <u>Ca</u> <u>7</u>		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		2000	51110110					
			P182E will report test fail when any of the above 7 fail					
			cases are met					
					Ignition Voltage Lo	>= 8.5996094 Volts		
					Ignition Voltage Hi			
					Engine Speed Lo			
					Engine Speed Hi Engine Speed is within the			
					allowable limits for			
					Engine Torque Signal Valid	= TRUE Boolean		
					Engine Forque Signar valia	- INOL Boolean		
				Disable	MIL not Illuminated for	TCM: P0716, P0717, P0722,		
				Conditions:		P0723, P07C0, P07BF, P077C,		
						P077D		
						ECM: P0101, P0102, P0103,		
						P0106, P0107, P0108, P0171,		
						P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205,		
						P0206, P0207, P0208, P0300,		
						P0301, P0302, P0303, P0304,		
						P0305, P0306, P0307, P0308, P0401, P042E		
						1 0 10 1, 1 072		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail	Transition 1	mananotion	Conditions	Required	One Trip
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Case Current range		3			
			Previous range	CeTRGR_e e ≠ _PRNDL_Dr Range ive6				
			Previous range	CeTRGR_e e ≠ _PRNDL_Dr Range ive4				
			Range Shift State	Range Shift Completed ENUM	1			
			Absolute Attained Gear Slip					
			Attained Gear					
			Attained Gear					
			Throttle Position Available	= IRUE				
			Throttle Position	<b>I</b>				
			Output Speed Engine Torque					
			Engine Torque					
			If the above conditions are met then Incremen Fail Timer	5 t			>= 1 Fail Seconds	5
			If Fail Timer has Expired then Increment Fai Counter	I			>= 5 Fail Counts	
			Fail Case Output Speed 2	1 <= 70 rpm				
			The following PRNDL sequence events occur in this exact order	r				
			PRNDL state	e = Drive 6 (bit state 0110) Range	:			
			PRNDL state = Drive 6					

Component/ Fault System Code		Monitor Strategy Description			Secondary Malfunction	Enable Conditions			Time Required			Mil Illum.		
		ac Description	PRNDL state	=	Transition 8 (bit state 0111)		manansasn		Conditions	ヿ		requii	eu	uiii
			PRNDL state	=	Drivo ( /bit	Range								
			PRNDL state	=	Transition 1 (bit state 1110)	Range								
			Above sequencing occurs in	<=	1	Sec								
			Neutral Idle Mode If all conditions above are met Increment delay Timer		Inactive									
			If the below two conditions are met Increment Fail Timer		4	0					>=	3	Fail Seconds	
			delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	>=	1 400	Sec Sec					>=	2	Fail Counts	
			Fail Case Current range	=	Transition 13 (bit state 0010)	Range	Previous range	<b>≠</b>	CeTRGR_ e_PRNDL_ Drive2					
			Engine Torque	>=	-8192	Nm	Previous range	≠	CeTRGR_ e_PRNDL_ Drive1					
			Engine Torque	<=	8191.75	Nm	IMS is 7 position configuration	=	1 Boo	olean				
			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	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.										
													If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			Fail <u>Case</u> <u>4</u> Current range	Transition 8 = (bit state Range 0111)	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	>= 100 Nm														
			Steady State Engine Torque	<= 8191.75 Nm														
			If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds											
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts											
			Fail Case Throttle Position 5 Available	= TRUE Boolean														
			The following PRNDL sequence events occur in this exact order:															
			PRNDL State	= Reverse (bit state 1100) Range														
			PRNDL State	Transition = 11 (bit state Range 0100)														
			PRNDL State	Moutral (bit														

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable Conditions	Time Poguired	Mil Illum.
System	Code	Description	Criteria	Value	wanunction	Conditions	Required	mum.
			PRNDL State	Transition = 11 (bit state Range 0100)				
			Above sequencing occurs in	<= 1 Sec				
			Then delay timer increments					
			Delay timer	>= 5 sec				
			Range Shift State	= Range Shift Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear					
			Attained Gear					
			Throttle Position	· · · · · · · · · · · · · · · · · · ·				
			Output Speed If the above conditions					
			are met Increment Fail				>= 20 Seconds	
			Timer					
			Fail Case Current range	Illegal (bit state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			
				0001)	mety.			
			and		Current Range	Transition ≠ 11 (bit state 0100)		
			A Open Circuit (See Definition)	= FALSE Boolean	or			
					Last positive state	≠ Neutral (bit state 0101)		
					or			
						Transition		
					Previous transition state	≠ 8 (bit state 0111)		
					Fail case 5 delay timer	= 0 sec		

Component/ System	Fault Code		Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code		1	value		Conditions	Required	
		are met then, Increment	If the above Condtions			>= 6.25 Seconds		
			Fail timer				5 0.20 00001143	
			<u>Fail</u>	PRNDL				1
			Case	circuit				
			7 Current PRNDL State	= ABCP = Range				
				1101				
			and					
				PRNDL				
			Previous PRNDL state	= circuit ABCP Range				
				=1111				
			Input Speed					
			Reverse Trans Ratio					
				>= 3.2741699 ratio				
			If the above Condtions					
			are met then, Increment				>= 6.25 Seconds	
			Fail timer					
			P182E will report test fail					
			when any of the above 7					
			fail cases are met					
					Ignition Voltage Lo	>= 8.5996094	Volts	
					Ignition Voltage Hi	<= 31.999023	Volts	
					Engine Speed Lo Engine Speed Hi	>= 400 <= 7500	RPM RPM	
					Engine Speed is within the			
					allowable limits for	>= 5	Sec	
					Engine Torque Signal Valid	= TRUE I	Boolean	
					Engine rorque Signal Vallo	= TRUE I	DUUIEAN	

Component/	Fault	Monitor Strategy Description	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code		Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditio ns:	DTC's:	TCM: P0716, P0717, P0722, P0723, P07C0, P07BF, P077C, P077D  ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		