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

Component/	Fault	Monitor Strategy	Malfunction	Thre	shold	Secondary		Enable		Ι	Tir	me	Mil
System	Code	Description	Criteria	Va	ilue	Malfunction		Conditions			Rea	uired	Illum.
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P062F ECM: None	Conditions			requ	iii ed	
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	Fail Case 1 Substrate Temperature	>= 142.1016	°C					>=	5	Fail Time (Sec)	One Trip
			Fail Case 2 Substrate Temperature Ignition Voltage		°C Volts					>=	2	Fail Time (Sec)	
			Note: either fail case can set the DTC	10	VOILS								
						Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp Range for Time	>= <= >= <= >=	8.59961 31.99902 0 170 0.25	Volts Volts °C °C Sec				
						P0634 Status is	≠	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used	= CeTFTI_e_V tageDirectPro	ol op								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)	
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5 Test Failed This Key	Volts Volts RPM RPM Sec				
						P0668 Status is	≠	On or Fault Active					

Component/	Fault	Monitor Strategy	Malfunction	Threshold		Secondary		Enable			Tir	me	Mil
System	Code	Description	Criteria	Value		Malfunction		Conditions			Requ	uired	Illum.
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	= CeTFTI_e_Vol tageDirectProp >= 249 °C <= 249 °C									Two Trips
			Either condition above will satisfy the fail conditions			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec	>=	60	Fail Timer (Sec)	
						P0669 Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss	≠ >= >= =	This Key On or Fault Active 0 0 FALSE	kW Sec				
					Disable Conditions:	Fault MIL not Illuminated for DTC's:	TCM: P0716 ECM: None		P0723				
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 °C		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5 Test Failed This Key On or Fault	Volts Volts RPM RPM Sec	>=	60	Fail Time (Sec)	Two Trips

System				Threshold	Secondary		Time	Mil
	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					For Hybrids, below conditions must also be met			
					Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time			
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	- FALSE		
				Disable Conditions:	DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= 164 °C			>= 60 Fail Time (Sec)	Two Trips
(1 Сии)		voliage nigir			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 400 RPM <= 7500 RPM		
					P06AE Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0712	Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used	= CeTFTI_e_Vol tageDirectProp				Two Trips
		,	If Transmission Fluid Temperature Sensor = Direct Proportional and	ů .				
			Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	>= -74 °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	<= 31.9902 Volts >= 400 RPM <= 7500 RPM		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tin	ne	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requ	iired	Illum.
					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				1
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec				
					Lost Communication with Hybrid Processor Control	= FALSE				
					Module Estimated Motor Power Loss Fault	= FALSE				
				Disab Condition:		TCM: P0716, P0717, P0722, P0723 ECM: None				
Transmission Fluid		Transmission fluid temperature		CeTFTI_e_Vol						Two Trips
Temperature Sensor (TFT)	P0713	thermistor failed at a high voltage	Type of Sensor Used	= tageDirectProp						
			If Transmission Fluid Temperature Sensor = Direct Proportional and							1
			Temp If Transmission Fluid Temperature							
			Sensor = Indirect Proportional and Temp							
			Either condition above will satisfy				>=	60	Fail Time (Sec)	
			the fail conditions		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec			. ,	
					P0713 Status is	Test Failed This Key ≠ On or Fault Active				
				Disabl Condition:						
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>= 900 RPM		ECM: None	>=	0.8	Fail Time (Sec)	One Trip
					Engine Torque is Engine Torque is	>= 0 N*m <= 8191.88 N*m				

Component/	Fault	Monitor Strategy	Malfunction	Thres	shold	Secondary		Enable			Tin	ne	Mil
System	Code	Description	Criteria	Val	110	Malfunction		Conditions			Requ	ired	Illum.
				vai	ue	Engine Speed Engine Speed Engine Speed is within the allowable limits for Vehicle Speed is Throttle Position is	>= <= >= >= >=	400 7500 5 10 0	RPM RPM Sec Kph Pct		Kequ	neu	iliani.
						Transmission Input Speed is The previous requirement has been satisfied for	>= >=	0	RPM Sec				
						The change (loop to loop) in transmission input speed is	<	8191.88	RPM/Loop				
						The previous requirement has been satisfied for	>=	0	Sec				
						Throttle Position Signal Valid Engine Torque Signal Valid Ignition Voltage Ignition Voltage	= = >= <=	TRUE TRUE 8.59961 31.99902	Boolean Volts Volts				
						P0716 Status is not	=	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:		, P0102, P0103					
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Case 1 Transmission Input Speed is	< 33	RPM					>=	4.5	Fail Time (Sec)	One Trip
			Fail Case 2 When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 653.13	RPM	Controller uses a single power supply for the speed sensors	=	1	Boolean				
						Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= >= <= >= <= >=	80 8191.88 10 TRUE 8.59961 31.99902 400 7500 5 Test Failed This Key On or Fault Active	N°m N°m Kph Boolean Volts Volts RPM RPM Sec				

Component/	Fault	Monitor Strategy	Malfunction		Thresh	nold	Secondary		Enable			Ti	me	Mil
System	Code	Description	Criteria		Valu	ie.	Malfunction		Conditions			Regi	uired	Illum.
-					Valu	Disable Conditions:	MIL not Illuminated for DTC's:					Кец	uiieu	
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 3	85	RPM					>=	4.5	Fail Time (Sec)	One Trip
							P0722 Status is not Transmission Input Speed Check	=	Test Failed This Key On or Fault Active	Boolean				
							Engine Torque Check Throttle Position Transmission Fluid Temperature Disable this DTC if the PTO is active Engine Torque Signal Valid	= >= >= = =	TRUE 8.0002 -40 1 TRUE	Boolean Pct °C Boolean Boolean				
							Throttle Position Signal Valid Ignition Voltage is Ignition Voltage is Engine Speed is	= >= <= >=	TRUE 8.59961 31.99902 400	Boolean Volts Volts RPM				
							Engine Speed is Engine Speed is within the allowable limits for Enable_Flags Defined Below	<= >=	7500 5	RPM Sec				
							The Engine Torque Check is TRUE, if either of the two following conditions are TRUE							
							Engine Torque Condition 1 Range Shift Status OR	≠	Range shift completed	ENUM				
							Transmission Range is Engine Torque is Engine Torque is Engine Torque Condition 2	= >= <=	Park or Neutral 8191.75 8191.75	N*m N*m				
							Engine Torque is Engine Torque is	>= <=	50 8191.75	N*m N*m				
							The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE							

Component/	Fault	Monitor Strategy		Malfunction	Thre	eshold	Secondary		Enable		Т	ime	Mil
System	Code	Description		Criteria	Va	alue	Malfunction		Conditions		Rec	quired	Illum.
							TIS Check Condition 1						
							Transmission Input Speed is	>=	653.13	RPM			
							Transmission Input Speed is	<=	5350	RPM			
							TIS Check Condition 2 Engine Speed without the						
							brake applied is	>=	3200	RPM			
							Engine Speed with the brake	>=	3200	RPM			
							applied is		8191.88	RPM			
							Engine Speed is	<=	0191.00	KPIVI			
							Controller uses a single power supply for the speed sensors	=	1	Boolean			
							Powertrain Brake Pedal is						
							Valid	=	TRUE	Boolean			
						Disable	MIL not Illuminated for	TCM: P0716	6, P0717, P0723	1			
						Conditions:	DTC's:	ECM. DO101	1, P0102, P0103	D0121			
								P0122, P012		, PUIZI,			
Up Tap Down Switch FD)	P0815	Upshift Switch Circuit	Fail Case 1	Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 0	Boolean							Specia No MII
10)				Tap Up Switch Stuck in the Up		Dealess							INO IVII
				Position in Range 2 Enabled	= 0	Boolean							
				Tap Up Switch Stuck in the Up	= 0	Boolean							
				Position in Range 3 Enabled Tap Up Switch Stuck in the Up									
				Position in Range 4 Enabled	= 0	Boolean							
				Tap Up Switch Stuck in the Up	= 0	Boolean							
				Position in Range 5 Enabled Tap Up Switch Stuck in the Up									
				Position in Range 6 Enabled	= 0	Boolean							
				Tap Up Switch Stuck in the Up	= 1	Boolean							
				Position in Neutral Enabled Tap Up Switch Stuck in the Up									
				Position in Park Enabled	= 1	Boolean							
				Tap Up Switch Stuck in the Up	= 0	Boolean							
				Position in Reverse Enabled									
				Tap Up Switch ON	= TRUE	Boolean					>= 1	Fail Time (Sec)	
													Į
			Fail Case 2	Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1	Boolean							
				Tap Up Switch Stuck in the Up	_								
				Position in Range 2 Enabled	= 1	Boolean							
				Tap Up Switch Stuck in the Up	= 1	Boolean							
				Position in Range 3 Enabled Tap Up Switch Stuck in the Up									
				Position in Range 4 Enabled	= 1	Boolean							
				Tap Up Switch Stuck in the Up	= 1	Boolean							
				Position in Range 5 Enabled Tap Up Switch Stuck in the Up									
				Position in Range 6 Enabled	= 1	Boolean							1

System Code Description Criteria Value Matfunction Conditions Required	ime (Sec)
Position in Neutral Enabled Tap Up Switch No. Tap Up Switch	ime (Sec)
Tap Up Switch Stuck in the Up Position in Park Enable Position P	ime (Sec)
Position in Revierse Enabled Tap Up Switch Tolk	ime (Sec)
Position in Reverse Enabled Tay Up Switch on	ime (Sec)
NOTE: Both Falicase 1 and Failcase 2 Must Be Met	ime (Sec)
Time Since Last Range Change Change I Enable Time Change I Goech Change I Guilton Voltage Lin See See I Goech Change I Guilton Voltage Lin See See S	ime (Sec)
Charge Sec Sec Ignition Voltage Lo Sec Sec Ignition Voltage Hi Sec Sec Sec Ignition Voltage Hi Sec Sec Sec Ignition Voltage Hi Sec Sec	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Charge Ignition Voltage Lot Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed Hi Engine Speed is within the allowable limits for Test Failed This Key On or Fault	
Ignition Voltage Hi	
Engine Speed Lo	
Engine Speed is within the allowable limits for >= 5 Sec Test Failed P0815 Status is On or Fault	
allowable limits for 7 3 3ec 7 5 3ec 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
P0815 Status is ≠ This Key On or Fault	
P0815 Status is ≠ This Key On or Fault	
Tout the second of the second	
Disable MIL not Illuminated for TCM: P0816, P0826, P182E, P1876,	
Conditions: DTC's: P1877, P1915, P1761	
ECM: None	
Tap Up Tap Down Switch P0816 Downshift Switch Circuit Pown Switch Switch Circuit Pown Switch Switch Circuit Pown Switch Switch Circuit Pown Switch Switch Switch Switch Circuit	Specia No MIL
(TUTD) Down Position in Range 1 Enabled Downshift Switch Circuit Down Position in Range 1 Enabled	INO IVIIL
Tap Down Switch Stuck in the 0 Boolean	
Down Position in Range 2 Enabled = 0 Boolean	
Tap Down Switch Stuck in the 0 Realisan	
Down Position in Range 3 Enabled = 0 Boolean	
Tap Down Switch Stuck in the 0	ı
Down Position in Range 4 Enabled = 0 Boolean	
Tap Down Switch Stuck in the	
Down Position in Range 5 Enabled = 0 Boolean	
Tap Down Switch Stuck in the = 0 Boolean	

Component/	Fault	Monitor Strategy	Malfunction	Thre	shold	Secondary		Enable			Time		Mi
System	Code	Description	Criteria	Va	lue	Malfunction	c	onditions			Required	ı	Illur
			Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	= 1	Boolean								
			Entabled Tap Down Switch Stuck in the Down Position in Range Park Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	= 0	Boolean								
			Tap Down Switch ON	= TRUE	Boolean					>=	1	sec	
			Fail Case 2 Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1	Boolean								
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	= 0	Boolean								
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0	Boolean								
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	= 0	Boolean								
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	= TRUE	Boolean					>=	600	sec	
						Time Since Last Range			Enable Time				
						Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo		8.59961 31.99902	(Sec) Volts Volts				
						Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >=	400 7500 5	RPM RPM Sec				

Component/	Fault	Monitor Strategy	Malfunction	Thre	eshold	Secondary		Enable			Tir	ne	Mil
System	Code	Description	Criteria	V:	alue	Malfunction		Conditions			Requ	ired	Illum.
				v	nue	P0816 Status is	≠	Test Failed This Key On or Fault Active			Кең	illed	
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0815, P1877, P191! ECM: None	P0826, P182E, 5, P1761	P1876,				
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
(10.0)			· Unago			Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
						P0826 Status is	≠	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1761 ECM: None						
Variable Bleed Solenoid (VBS)		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 Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0962	Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS)	The HWIO reports a low voltage (ground short) error flag		Boolean					>=	1.5	Fail Time (Sec)	One Trip
										out of	1.875	Sample Time (Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= <= >= <=	8.59961 31.99902 400 7500	Volts Volts RPM RPM			<u> </u>	

Component/	Fault	Monitor Strategy	Malfunction	Thres	shold	Secondary		Enable			Time	е	Mil
System	Code	Description	Criteria	Val	lue	Malfunction		Conditions			Requir	red	Illum.
						Engine Speed is within the allowable limits for	>=	5	Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0963	Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>= out of	4.4	Fail Time (Sec) Sample Time (Sec)	Two Trip:
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec			()	
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0966	Pressure Control (PC) Solenoid B Control Circuit Low Voltage (C35R VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean					>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Tri
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec	Oi		(Set)	
						P0966 Status is not	=	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P0967	Pressure Control (PC) Solenoid B Control Circuit High Voltage (C35R VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500	Volts Volts RPM RPM Sec			3i.i/	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					P0967 Status is no	Test Failed		
				Dis Conditi				
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec)	One Trip
					P0970 Status is no	Test Failed This Key On or Fault Active	out 0.375 Sample Time of (Sec)	
					Ignition Voltag Ignition Voltag Engine Spee Engine Spee Engine Speed is within th allowable limits fo	e <= 31.99902 Volts d >= 400 RPM d <= 7500 RPM e >= 5 Soc		
				Dis Conditi				
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out 0.375 Sample Time (Sec)	One Trip
					P0971 Status is no	Test Failed This Key On or Fault Active		
					Ignition Voltag Ignition Voltag Engine Spee Engine Spee Engine Speed is within th allowable limits fo	e <= 31.99902 Volts d >= 400 RPM d <= 7500 RPM e >= 5 Soc		
				Dis Conditi				

Component/	Fault	Monitor Strategy	Malfunction	Thre	eshold	Secondary		Enable			Tir	ne	Mil
System	Code	Description	Criteria	Va	alue	Malfunction		Conditions			Requ	uired	Illum.
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag		Boolean					>= out of	1.2 1.5	Fail Time (Sec) Sample Time (Sec)	One Trip
						P0973 Status is not	=	Test Failed This Key On or Fault Active				(000)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>=	1.2	Fail Time (Sec)	Two Trips
										out of	1.5	Sample Time (Sec)	
						P0974 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Mode 3 Multiplex Valve	P0976	Shift Solenoid BControl Circuit Low (Mode 3 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean					>=	1.2	Sec	Two Trips
										out of	1.5	Sec]
						P0976 Status is not	=	Test Failed This Key On or Fault Active					

Component/	Fault	Monitor Strategy	Malfunction		Thres	shold	Secondary		Enable			Tin	ne	Mil
System	Code	Description	Criteria		Val	lue	Malfunction		Conditions			Requ	ired	Illum.
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.5996094 31.999023 400 7500 5	Volts Volts RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= 7	TRUE	Boolean					>=	1.2	Sec	One Trip
											out of	1.5	Sec	
							P0977 Status is not	=	Test Failed This Key On or Fault Active					
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
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	= 1	TRUE	Boolean					>=	3	Fail Counter	Special No MIL
							Tap Up Tap Down Message				>	10	Sample Timer (Sec)	1
							Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= >= <= >=	TRUE 400 7500 5	Boolean RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is The following events must occur		Park or Neutral	Enumeration								One Trip
			Sequentially Initial Engine speed	<=	50	RPM					>=	0.25	Enable Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Th	reshold	Secondary		Enable			Tin	ne	Mil
System	Code	Description	Criteria	١ ,	/alue	Malfunction	(Conditions			Requ	ired	Illum.
			Then Engine Speed Between Following Cals										
			Engine Speed Lo Hist	>= 50	RPM							Footble Theor	
			Engine Speed Hi Hist	<= 480	RPM					>=	0.06875	Enable Time (Sec)	
			Then Final Engine Speed	>= 525	RPM								
			Final Transmission Input Speed	>= 100	RPM		************************************			>=	1.25	Fail Time (Sec)	
						DTC has Ran this Key Cycle?	=	FALSE	Boolean				
						Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst High (enables above this value) Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed	>= <= >= <= <=	6 31.99902 5 2 90	V V V rpm				
						P1915 Status is	≠	Test Failed This Key On or Fault Active	тртт				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, P ECM: None	0723					
Transmission Control Module (TCM)	P2534	Ignition Switch Run/Start Position Circuit Low	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this	- TALSE	Boolean Volts					>=	280	Fail Counts	One Trip
			value) Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts					Out of	280	(25ms loop) Sample Counts (25ms loop)	
						ECM run/crank active status available ECM run/crank active status	=	TRUE TRUE	Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag		Boolean					>= out	0.3	Fail Time (Sec) Sample Time	One Trip
						P2770 Status is not		Test Failed This Key On or Fault Active		of	0.375	(Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Thres	hold	Secondary		Enable			Tir	ne	Mil
System	Code	Description	Criteria	Vali	ue	Malfunction		Conditions			Requ	uired	Illum.
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec		- 1		
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>= out	0.3	Fail Time (Sec) Sample Time	One Trip
						P2721 Status is not	=	Test Failed This Key On or Fault Active		of		(Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
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					>= out of	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
						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 allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volt Volt RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						

Component/	Fault	Monitor Strategy	Malfunction	Thre	eshold	Secondary		Enable			Tir	me	Mil
System	Code	Description	Criteria	Va	alue	Malfunction		Conditions			Requ	uired	Illum.
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		Oi		(366)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= <= >= <= >=	8.59961 31.99902 400 7500 5	Volt Volt RPM RPM Sec				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE	Boolean					>=	4.4	Fail Time (Sec)	Two Trips
										out of	5	Sample Time (Sec)	
						P2763 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the	>= <= >= <= >=	8.59961 31.99902 400 7500	Volt Volt RPM RPM Sec				
						allowable limits for High Side Driver Enabled	=	TRUE	Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, ECM: None	P0659					
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	= TRUE	Boolean					>=	4.4	Fail Time (Sec)	One Trip
										out of	5	Sample Time (Sec)	
						P2764 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage	>=	8.59961	Volt				

Component/	Fault	Monitor Strategy	Malfunction	Thr	eshold	Secondary		Enable			Tir	ne	Mil
System	Code	Description	Criteria	v	alue	Malfunction		Conditions			Requ	uired	Illum.
						Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled	>= <= >=	31.99902 400 7500 5 TRUE	Volt RPM RPM Sec Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, ECM: None	P0659					
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error		Boolean					>=	62	Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>= 0.1125	sec					Out of	70	Sample Counts (≈ 11 seconds)	
						Stabilization delay Ignition Voltage Ignition Voltage Power Mode		3 8.59961 31.99902 Run	sec Volt 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	>= <=	3 8.59961 31.99902 Run	sec Volt Volt				
					Disable Conditions:	MIL not Illuminated for DTC's:							

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tir	ne	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requ	iired	Illum.
High Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag				>=	4	Fail Counts	One Trip
							out of	6	Sample Counts	-
					P0658 Status is not	Test Failed This Key On or Fault Active				
					High Side Driver 1 On	= True Boolean				
				Disable Conditions:	DTC's:	TCM: None ECM: None				
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ							Two Trips
			If TCM substrate temp to power up temp Δ							
			Both conditions above required to increment fail counter				>=	3000	Fail Counts (100ms loop)	-
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out of	3750	Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>=	700	Pass Counts (100ms loop)	=
			300				Out of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid	= TRUE Boolean = TRUE Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	M
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illu
					Ignition Voltage Lo	>=	8.59961	Volts		
					Ignition Voltage Hi	<=	31.99902	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the	>=	5	Sec		
					allowable limits for	/-		366		
					Brake torque active	=	FALSE			
					Below describes the brake					
					torque entry criteria					
					Engine Torque	>=	90	N*m		
					Throttle	>=	30.0003	Pct		
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed	<=	8	Kph		
					Transmission Range	≠	Park			
					Transmission Range	≠	Neutral			
					PTO	=	Not Active			
					Set Brake Torque Active					
					TRUE if above conditions are	>=	7	sec		
					met for:					
					Below describes the brake					
					torque exit criteria					
					Brake torque entry criteria	=	Not Met			
							Clutch			
					Clutch budges die gegenne	_	Hydraulic			
					Clutch hydraulic pressure	≠	Air Purge			
							Event			
							CeTFTD_e			
					Clutch used to exit brake	=	_C3_RatlE			
					torque active		nbl			
					The above clutch pressure is					
					greater than this value for one	>=	600	kpa		
					loop			'		
					Set Brake Torque Active					
					FALSE if above conditions are	>=	20	Sec		
					met for:					
					et ion					
							Test Failed			
							This Key			
					P0667 Status is	≠	On or Fault			
							Active			
							Active			
	1									

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Tim	е	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Requi	red	Illum.
				Disable Conditions:		TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730			
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E			
Fransmission 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 °C supporting documents				Т	Two Trip
			If transmission oil temp to power up temp Δ	Refer to Table 18 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	Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700	Pass Counts (100ms loop)	
							Out 875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Brake torque active Below describes the brake torque entry criteria Engine Torque Throttle Transmission Input Speed Vehicle Speed Transmission Range Transmission Range	= TRUE Boolean = TRUE Boolean >= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = FALSE >= 90 N*m >= 30.0003 Pct <= 200 RPM <= 8 Kph ≠ Park ≠ Neutral			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					PTO Set Brake Torque Active TRUE if above conditions are	= Not Active >= 7 sec		
					met for: Below describes the brake torque exit criteria Brake torque entry criteria			
					Clutch hydraulic pressure	Clutch ≠ Hydraulic ≠ Air Purge Event		
					Clutch used to exit brake torque active The above clutch pressure is	CeTFTD_e = _C3_RatlE nbl		
					greater than this value for one loop Set Brake Torque Active	>= 600 kpa		
					FALSE if above conditions are met for:	>= 20 Sec Test Failed		
					P06AC Status is	≠ This Key ≠ On or Fault Active		
				Disabl 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		
Transmission Fluid Temperature Sensor (TFT)	P0711	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 Δ					
			Both conditions above required to increment fail counter				>= 3000 Fail Counts (100ms loop)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tir	me	Mi
System	Code	Description	Criteria	Value	Malfunction		Conditions			Requ	uired	Illur
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.						Out of	3750	Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until						>=	700	Pass Counts (100ms loop)	
			3501.0.						Out of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal	=	TRUE TRUE	Boolean Boolean				
					Valid Ignition Voltage Lo Ignition Voltage Hi	>= <=	8.59961 31.99902	Volts Volts				
					Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <= >=	400 7500 5	RPM RPM Sec				
					allowable limits for Brake torque active Below describes the brake	=	FALSE					-
					torque entry criteria Engine Torque Throttle	>= >=	90 30.0003	N*m Pct				
					Transmission Input Speed Vehicle Speed Transmission Range	<= <= ≠	200 8 Park	RPM Kph				
					Transmission Range PTO Set Brake Torque Active	≠ =	Neutral Not Active					
					TRUE if above conditions are met for: Below describes the brake	>=	7	sec				
					torque exit criteria Brake torque entry criteria	=	Not Met Clutch					
					Clutch hydraulic pressure	≠	Hydraulic Air Purge Event					
					Clutch used to exit brake torque active	=	CeTFTD_e _C3_RatIE nbl					
					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				
					P0711 Status is	≠	Test Failed This Key On or Fault Active					

Component/	Fault	Monitor Strategy	Malfunction	Th	reshold	Secondary	E	nable		Tir	ne	Mil
System	Code	Description	Criteria		Value	Malfunction	Cor	nditions		Requ	iired	Illum.
					Disable Conditions:		P06AE, P0716, P0 P0722, P0723, P09 P0967, P0970, P09 P2721, P2729, P27 ECM: P0101, P010 P0107, P0108, P01 P0175, P0201, P02 P0205, P0206, P02 P0301, P0302, P03	1712, P0713, P0717, 962, P0963, P0966, 971, P215C, P2720 730				
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed Output Speed Delta	>= 105	RPM RPM				>= >=	0	Enable Time (Sec) Enable Time (Sec)	One Trip
			Output Speed Drop	> 650	RPM				>=	1.5	Output Speed Drop Recovery Fail Time (Sec)	
			Transmission Range is	= Driven rar (R,D)								
						Range_Disable OR	= F	FALSE See Belo	N			
						Neutral_Range_Enable	= .	TRUE See Belo	N			
						And Neutral_Speed_Enable are TRUE concurrently	= .	TRUE See Beld	N			
						Transmission_Range_Enable	= .	TRUE See Belo	N			
						Transmission_Input_Speed_En able	= .	TRUE See Belo	N			
						No Change in Transfer Case Range (High <-> Low) for	>=	5 Second				
						P0723 Status is not	= Ti On	est Failed This Key In or Fault Active				
						Disable this DTC if the PTO is active	=	1 Boolean				
						Ignition Voltage is Ignition Voltage is		8.59961 Volts 1.99902 Volts				
						Engine Speed is Engine Speed is	>=	400 RPM 7500 RPM				
						Engine Speed is Engine Speed is Engine Speed is allowable limits for	>=	5 Sec				
						Enable_Flags Defined Below						

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mi
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illur
					Transmission_Input_Speed_En able 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 Input Speed Delta Raw Input Speed	>= <= >=	0 4095.88 500	Enable Time (Sec) RPM RPM		
					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	=	0 TRUE	RPM Boolean		
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is	=	Neutral	ENUM		
					Transmission Range is	=	Reverse/N eutral Transitonal	ENUM		
					Transmission Range is	=	Neutral/Dri ve Transitiona	ENUM		
					And when a drop occurs Loop to Loop Drop of Transmission Output Speed is	>	650	RPM		
					Range_Disable is TRUE when any of the next three conditions are TRUE Transmission Range is	=	Park	ENUM		
					Transmission Range is	=	Park/Rever se Transitonal	ENUM		
					Input Clutch is not	=	ON (Fully Applied)	ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	>	1.5	Seconds		
					Transmission Output Speed The loop to loop change of the	>	130 20	RPM RPM		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					The loop to loop change of the Transmission Output Speed is			
					Transmission_Range_Enable is TRUE when one of the nex six conditions is TRUE Transmission Range is	= Neutral ENUM		
					Transmission Range is	Reverse/N eutral ENUM Transitiona		
					Transmission Range is	Neutral/Dri ve ENUM Transitiona		
					Time since a driven range (R.D) has been selected			
					Transmission Output Speed Sensor Raw Speed Output Speed when a faull was detected	>= 500 RPM >= 500 RPM		
				Dis Conditi		TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met	>= 750 Kpa			>= 2 Enabl	e Time Two Trips
			(A) TCC Slip Error @ TCC On Mode				>= 5 Fail Tim	ne (Sec)
			(B) TCC Slip @ Lock On Mode				>= 5 Fail Tim	e (Sec)
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter				>= 2 TCC Si	
					TCC Mode	= On or Lock		
					Ignition Voltage Lo Ignition Voltage H			

Component/	Fault	Monitor Strategy	Malfunction		Thres	shold	Secondary		Enable			Time		Mil
System	Code	Description	Criteria		Val	lue	Malfunction		Conditions			Requir	ed	IIIum.
	1						Engine Speed	>=	400	RPM	1			
							Engine Speed	<=	7500	RPM				
							Engine Speed is within the	>=	5	Sec				
							allowable limits for		50	N*m				
							Engine Torque Lo Engine Torque Hi	>= <=	8191.88	N*m				
							Throttle Position Lo	>=	8.0002	Pct				
							Throttle Position Hi	<=	99.9985	Pct				
							2nd Gear Ratio Lo	>=	2.19482	Ratio				
							2nd Gear Ratio High	<=	2.52515	Ratio				
							3rd Gear Ratio Lo	>=	1.42285	Ratio				
							3rd Gear Ratio High		1.63708	Ratio				
							4th Gear Ratio Lo 4th Gear Ratio High	>= <=	1.06946 1.23047	Ratio Ratio				
							5th Gear Ratio Lo		0.79053	Ratio				
							5th Gear Ratio Hi		0.90955	Ratio				
							6th Gear Ratio Lo	>=	0.62305	Ratio				
							6th Gear Ratio High		0.71692	Ratio				
							Transmission Fluid	>=	-6.6563	°C				
							Temperature Lo		0.0000	Ü				
							Transmission Fluid	<=	130	°C				
							Temperature Hi PTO Not Active	=	TRUE	Boolean				
							Engine Torque Signal Valid		TRUE	Boolean				
							Throttle Position Signal Valid		TRUE	Boolean				
							Dynamic Mode		FALSE	Boolean				
									Test Failed					
							P0741 Status is	≠	This Key On or Fault					
									Active					
									Active					
						Disable	MIL not Illuminated for			, P0723,				
						Conditions:	DTC's:	P0742, P27	63, P2764					
								ECM. DO16	1 00102 00102	D010/				
									01, P0102, P0103 08, P0171, P017					
									201, P0202, P020					
									206, P0207, P020					
									02, P0303, P030					
								P0306, P03	07, P0308, P040	1, P042E				
	-													One Trip
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed		-50	RPM								one mp
			TCC Slip Speed	<=	13	RPM								
											>=	1.5	Fail Time (Sec)	
			If Above Conditions Have been										` '/	
			if Above Conditions Have been Met, and Fail Timer Expired,								>=	6	Fail Counter	
			Increment Fail Counter								l ⁻	U	i ali Couritei	
							TCC Mode	=	Off					
							Enable test if Cmnd Gear =	=	1	Boolean				
1	I	I					1stFW and value true	-		Doolcan	l			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions		Required	Illum.
					Enable test if Cmnd Gear = 2nd	=	0	Boolean		
					and value true					
					Engine Speed Hi	<=	6000	RPM		
					Engine Speed Lo	>=	500	RPM		
					Vehicle Speed HI	<=	511	KPH		
					Vehicle Speed Lo	>=	1	KPH		
					Engine Torque Hi Engine Torque Lo	<=	8191.88 80	Nm Nm		
					Current Range	>= ≠	Neutral	Range		
					Current Range	<i>+</i> ≠	Reverse	Range		
					Transmission Sump	7		-		
					Temperature	<=	130	°C		
					Transmission Sump					
					Temperature	>=	18	°C		
					Throttle Position Hyst High	>=	5.0003	Pct		
					AND	,-	0.0003	1 00		
					Max Vehicle Speed to Meet					
					Throttle Enable	<=	8	KPH		
					Once Hyst High has been met,					
					the enable will remain while	>=	2.0004	Pct		
					Throttle Position					
					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 ii iii D1 and value ii de	=	ı	Duolean		
					Disable if in D2 and value true	=	1	Boolean		
					Disable ii iii D2 and value ii de	-	'	Doolean		
					Disable if in D3 and value true	=	1	Boolean		
					Disable ii iii Do ana value ii de		•	Doolcan		
					Disable if in D4 and value true	=	1	Boolean		
					Disable ii iii Dirana valae ii ae			Dooroun		
					Disable if in D5 and value true	=	1	Boolean		
					Disable if in MUMD and value	=	1	Boolean		
					true					
					Disable if in TUTD and value	=	1	Boolean		
					true 4 Wheel Drive Low Active		FALSE	Dooloon		
						=	FALSE	Boolean		
					Disable if Air Purge active and value false	=	0	Boolean		
					RVT Diagnostic Active	=	FALSE	Boolean		
					Ignition Voltage	>=	8.59961	V		
					Ignition Voltage	<=	31.99902	V		
					Vehicle Speed	<=	511	KPH		
					Engine Speed	>=	400	RPM		
					Engine Speed	<=	7500	RPM		
					Engine Speed is within the					
					allowable limits for	>=	5	Sec		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					ETIUITIE FULUUE SIULIAI VAIIU	=	IKUE	Duulean		
					Throttle Position Signal Valid	=	TRUE	Boolean		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					P0742 Status is	Test Failed This Key ≠ On or Fault Active	·	
				Dis Conditi	able MIL not Illuminated for ons: DTC's	TCM: P0716, P0717, P0722, P0723, P0741, P2763, P2764 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip Commanded Gear Gear Ratio Gear Ratio If the above parameters are true	r = 1st Lock rpm c = 1.20959 c = 1.09436		7 5555,1 5557,1 5552	>= 0.2 Fail Tmr = 5 Fail Counts	Two Trips
							≠ 0 Neutral Timer (Sec) >= 0.3 Fail Timer (Sec) >= 8 Counts	
					Ignition Voltage Lo Ignition Voltage H Engine Speed Lo Engine Speed H Engine Speed is within the allowable limits fo Transmission Fluid Temperature	<pre><= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= -6.6563 °C Range</pre>		
					Range Shift State TPS OF Output Speec Throttle Position Signal Valic from ECK Engine Torque Signal Valic	Completed >= 0.5005 % >= 67 RPM = TRUE Boolean		
					from ECM, High side driver is enabled High-Side Driver is Enabled Input Speed Sensor faul Output Speed Sensor faul Default Gear Option is no presen	= TRUE Boolean = TRUE Boolean = FALSE Boolean = FALSE Boolean - TRUE		

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary		Enable			Tim	ie	Mi
System	Code	Description	Criteria		Va	ilue	Malfunction		Conditions			Requi	ired	Illur
						Disable Conditions	MIL not Illuminated for DTC's:		, P0717, P0722	, P0723,				
								P0107, P010 P0175, P020 P0205, P020 P0301, P030	, P0102, P0103 18, P0171, P017 11, P0202, P020 16, P0207, P020 12, P0303, P030 17, P0308, P040	72, P0174, 03, P0204, 08, P0300, 04, P0305,				
ode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM								One '
,			·											
			Commanded Gear Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded		3rd TRUE	Gear Boolean								
			On If the above parameters are true											
			Command 4th Gear once Output								>= to	lease Refer Table 16 in Supporting Documents	Neutral Timer (Sec)	
			Shaft Speed If Gear Ratio And Gear Ratio	>=	400 3.82568 4.22839	RPM								
											>=	1.5	Fail Timer (Sec))
							Low Ware Mallage at La		0.500/1	17-11-	>=	5	Counts	4
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.59961 31.99902 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							High-Side Driver is Enabled	=	TRUE	Boolean				
							Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
							Output Speed	>=	67	RPM				
							OR TPS	>=	0.5005	%				
							Range Shift State	=	Range Shift Completed	ENUM				
							Transmission Fluid Temperature	>=	-6.6563	°C				
							Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= =	FALSE FALSE TRUE	Boolean Boolean				

Component/	Fault	Monitor Strategy	Malfunction		Threshold	Secondary		Enable			Time	Mil
System	Code	Description	Criteria		Value	Malfunction		Conditions		F	equired	Illum.
					Disable Conditions		TCM: P0716 P182E	6, P0717, P0722,	P0723,			
							P0107, P01 P0175, P02 P0205, P02 P0301, P03	1, P0102, P0103, 08, P0171, P017 01, P0202, P020 06, P0207, P020 02, P0303, P030 07, P0308, P040	2, P0174, 3, P0204, 8, P0300, 4, P0305,			
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	Fail Case 1 Commanded Gear Gear Box Slip Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio Gear Ratio If the above parameters are true	= 1st Lo	0 RPM cked Gear 218					Please F to Table >= Suppor Docume	5 in Neutral Timer ting (Sec)	One Trip
			ii the above parameters are true							>= 1 >= 3	sec counts	
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the	>= <= >= <=	8.59961 31.99902 400 7500	Volts Volts RPM RPM Sec			
						allowable limits for Output Speed OR		67	RPM			
						TPS Range Shift State		0.5005 Range Shift Completed	% ENUM			
						Transmission Fluid Temperature High-Side Driver is Enabled Throttle Position Signal Valid from ECM Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= = = =	-6.6563 TRUE TRUE FALSE FALSE FALSE TRUE	°C Boolean Boolean Boolean			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
				Disab Condition		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		
riable Bleed Solenoid (VBS)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	Fail Case 1 Case: Steady State 3rd Gear					One T
			Commanded Gear Gearbox Slip				Please Refer to Table 16 in Neutral Timer >= Supporting (Sec) Documents	
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	>= 1.09436			>= 3 Fail Timer (Sec)	
			It the above condiations are true, Increment 3rd gear fail counter				>= 3 Fall Filler (Sec) >= 3 3rd Gear Fail Counts	
			and C35R Fail counter	1			or >= 14 3-5R Clutch Fail Counts	I
			Fall Case 2 Case: Steady State 5th Gear Commanded Gear Gearbox Slip				Please Refer to Table 5 in Neutral Timer >= Supporting (Sec)	
			Intrusive Test: Command 6th Gear	Please refer to			Documents	
			If attained Gear=6th gear Time	documents	:)			
			It the above condiations are true, Increment 5th gear fail counter				>= 3 5th Gear Fail Counts	
			and C35R Fail counter		PRNDL State defaulted	= FALSE Boolean	>= 14 3-5R Clutch Fail Counts	
					inhibit RVT IMS fault pending indication TPS validity flag	= FALSE Boolean = FALSE Boolean = TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		1

Component/ Fault Monitor Stra	egy Malfunction	Threshold	Secondary	Enable	Time	Mil
System Code Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Malfunction Minimum output speed for RVT A OR B (A) Output speed enable (B) Accelerator Pedal enable Common Enable Criteria Ignition Voltage Lo Ignition Voltage In Engine Speed Lo Engine Speed Is within the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present MIL not Illuminated for DTC's:	Conditions >= 67 RPM >= 67 RPM >= 0.5005 Pct >= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE TCM: P0716, P0717, P0722, P0723, P182E	Time Required	
Variable Bleed Solenoid (VBS) P0777 Pressure Control (PC) Stuck On [C35R] (Stea		p >= 400 RPM		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	>= 1.1 Fail Timer (So >= 2 Fail Count in Gear or >= 3 Total Total	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
				Table Based				
				value Please				
			Max Delta Output Speed Hysteresis					
			nysteresis	supporting				
				documents				
				Table Based				
				value Please				
			Min Delta Output Speed Hysteresis	Refer to Table rpm/sec				
				20111				
				supporting documents				
				Table Based				
				Timo Ploaso				
			If the Above is True for Time	Pofor to Tablo				
			If the Above is True for Time	17 111				
				supporting				
			Intrusive test	documents				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.60864				
			Gear Ratio					
			If the above parameters are true					
			in the above parameters are true					
							>= 1.1 Fail Timer (Sec	:)
							Fail Count in	
							>= 3 2nd Gear	
							or	
							>= 3 Total Fail	
			Fail Case 3 Case: Steady State 4th gear				Counts	1
			Case. Steady State 4th gear	Table Based				
				value Please				
			Max Delta Output Speed	Refer to Table rpm/sec				
			Hysteresis					
				supporting				
				documents Table Based				
				value Diesee				
			Min Delta Output Speed Hysteresis	Defer to Table				
			Min Della Output Speed Hysteresis	20111				
				supporting				
				documents Table Based				
				Timo Ploaso				
			1511 AL . T T.	Pofor to Tablo				
			If the Above is True for Time	>= 17 in Sec				
				supporting				
				documents				
			Intrusive test:					
			(C1234 clutch exhausted) Gear Ratio	<= 0.89465				
			Gear Ratio					
								1
			If the above parameters are true					1

Component/ Fau		Malfunction	Threshold	Secondary	Enable		Ti	me	N
System Cod	e Description	Criteria	Value	Malfunction	Conditions		Req	uired	IIIu
						>=	1.1	Fail Timer (Sec))
						>=	3	Fail Count in 4th Gear	1
						>=	3	or Total Fail Counts	
		Fail Case 4 Case: Steady State 6th gear	Table Based						1
			value Bloace						
		Max Delta Output Speed	Refer to Table rpm/sec						
		Hysteresis	supporting						
			documents						
			Table Based value Please						
		Min Delta Output Speed Hysteresis	Refer to Table						
		,	23 in supporting						
			documents						
			Table Based Time Please						
		If the Above is True for Time	Pofor to Table						
		If the Above is True for Time	17 111						
			supporting documents						
		Intrusive test:							ı
		(CB26 clutch exhausted)							
		Gear Ratio				>=	1.1	Fail Timer (Sec)	Į.
		Gear Ratio	>= 0.80945			>=	3	counts	
		If the above parameters are true							
						>=	1.1	Fail Timer (Sec))
							3	Fail Count in 6th	n
						>=	3	Gear	
							2	or Total Fail	
				DDNDI Ciril I C II I	ENICE 2	>=	3	Counts	1
				PRNDL State defaulted inhibit RVT	= FALSE Boolean = FALSE Boolean				
				IMS fault pending indication	= FALSE Boolean				
				output speed TPS validity flag	>= 0 RPM = TRUE Boolean				1
				HSD Enabled	= TRUE Boolean				1
				Hydraulic_System_Pressurized	= TRUE Boolean				
				A OR B					1
				(A) Output speed enable	>= 67 Nm				
				(B) Accelerator Pedal enable	>= 0.5005 Nm				
				Ignition Voltage Lo	>= 8.59961 Volts				
				Ignition Voltage Hi Engine Speed Lo	<= 31.99902 Volts >= 400 RPM				1
				Engine Speed Lo	<= 7500 RPM				1

Component/	Fault	Monitor Strategy	Malfunction	1	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Value	Malfunction	C	Conditions		Required	Illum.
						Engine Speed is within the allowable limits for if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault	>= >= >= <= >= = =	5 5.0003 5 8191.88 -6.6563 FALSE FALSE	Sec Pct Nm Nm °C Boolean Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's:		717, P0722,	P0723,		
							ECM: P0101, P0 P0107, P0108, F P0175, P0201, F P0205, P0206, F P0301, P0302, F P0306, P0307, F	P0171, P017 P0202, P020 P0207, P020 P0303, P030	2, P0174, 3, P0204, 8, P0300, 4, P0305,		
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B StuckOn [C35R] (Dymanic)	Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers)	_ TDII	E Boolean						One Trip
			Primary Oncoming Clutch Pressure Command Status								
			Primary Offgoing Clutch Pressure Command Status								
			Range Shift Status Attained Gear Slip	Contr	rol						
			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)	>= 0.299	98 Fail Time (Sec)						
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)						
			fail timer 1 (3-4 shifting with Throttle) fail timer 1	>= 0.299							
			(3-4shifting with Closed Throttle) fail timer 1 (3-5 shifting with Throttle)	>= 0.5							

Component/	Fault	Monitor Strategy	Malfunction		Thre	shold	Secondary		Enable			Time	9	Mil
System	Code	Description	Criteria		Va	llue	Malfunction		Conditions			Requir	ed	Illum.
			fail timer 1 (3-5 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			fail timer 1 (5-3 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-3 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			fail timer 1 (5-4 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-4 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			fail timer 1 (5-6 shifting with Throttle)	>=	0.2998	Fail Time (Sec)								
			fail timer 1 (5-6 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)								
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers								= (F 2) S Time >= Tim Re Su Tal	Il Fail Time ail 1 + Fail see Enable ers for Fail her 1, and eference apporting ble 15 for il Timer 2	sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter											
			3rd gear fail counter								>=	3	3rd gear fail counts OR	
			5th gear fail counter								>=	3	5th gear fail counts OR	
			Total fail counter				TUT 5				>=	5	total fail counts	
							TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled Default Gear Option is not present	>= = = = >= >= = = = =	-6.6563 FALSE FALSE 1st TRUE 100 150 FALSE FALSE FALSE TRUE TRUE	°C Boolean Boolean Boolean RPM RPM Boolean Boolean Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disabl 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)		Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	Fail Case 1 Case: Steady State 4th Gear					One Trip
			Gear slip Intrusive test:				Please See Table 5 For Neutral Timer Neutral Time (Sec) Cal	
			commanded 5th gear	Please refer to				
			If attained Gear ≠5th for time	>= Table 3 in Supporting Shift Time (Sec Documents)			
			if the above conditions have been met					
			Increment 4th Gear Fail Counter				>= 3 4th Gear Fail Count OR	
			and C456 Fail Counters				>= 14 C456 Fail Counts	
			Fail Case 2 Case: Steady State 5th Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec)	
			Intrusive test: commanded 6th gear	Please Refer			Cal	
			If attained Gear ≠ 6th for time	>= to Table 3 in Supporting Documents Shift Time (Sec				
			if the above conditions have been met				511.0	
			Increment 5th Gear Fail Counter				>= 3 5th Gear Fail Count OR	
			and C456 Fail Counters				>= 14 C456 Fail Counts	
			Fail Case 3 Case: Steady State 6th Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec)	
			Intrusive test: commanded 5th gear				Cal	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			If attained Gear ≠ 5th for time	Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
			In the above conditions have been met Increment 6th Gear Fail Counter and C456 Fail Counter				>= 3 6th Gear Fail Count	
			and C456 Fail Counter				OR C456 Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication TPS validity flag	= FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
					Hydraulic System Pressurized			
					Minimum output speed for RVT A OR B	>= 67 RPM		
					(A) Output speed enable (B) Accelerator Pedal enable	>= 67 RPM >= 0.5005 Pct		
					Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present	>= 8.59961 Volts <= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
riable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C	Fail Case 1 Case: Steady State 1st					One
asia bicca solchola (VDS)	1 0777	Stuck On [C456] (Steady State)	Attained Gear slip	>= 400 RPM	1			

Component/ Fa	ault Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	М
System Co	ode Description	Criteria	Value	Malfunction	Conditions	Required	Illu
		If the Above is True for Time	Table Based Time Please Refer to Table Enable Time >= 4 in (Sec) supporting documents				
		Intrusive test: (CBR1 clutch exhausted) Gear Ratio					
		Gear Ratio If the above parameters are true	>= 1.09436				
		·				>= 1.1 Fail Timer (Se	ec)
						>= 2 Fail Count in Gear	Ist
						or Total Fail >= 3 Counts	
		Fail Case 2 Case Steady State 2nd	Table Based				
		Max Delta Output Speed Hysteresis	value Please Refer to Table rpm/sec 22 in				
			supporting documents Table Based				
		Min Delta Output Speed Hysteresis	>= Refer to Table 23 in supporting documents Table Based				
		If the Above is True for Time	Time Please Refer to Table Sec 17 in supporting documents				
		Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio	<= 1.20959				
		If the above parameters are true					
						>= 1.1 Fail Timer (Se	c)
						>= 3 Fail Count in 2nd Gear or	n
						>= 3 Total fail cour	its
		Fail Case 3 Case Steady State 3rd					\dashv

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	IIIum.
			Max Delta Output Speed Hysteresis	22 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to Table 23 in supporting documents Table Based				
			If the Above is True for Time	Time Please Refer to Table Sec 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio	<= 1.20959				
			If the above parameters are true					
							>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear OR >= 3 Total Fail Counts	1
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean	Counts	-
					HSD Enabled Hydraulic_System_Pressurized	= TRUE Boolean = TRUE Boolean		
					A OR B (A) Output speed enable	>= 67 Nm		
					(B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi	>= 0.5005 Nm >= 8.59961 Volts <= 31.99902 Volts		
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 400 RPM <= 7500 RPM >= 5 Sec		
					if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW	>= 5.0003 Pct		
					Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable	>= 5 Nm <= 8191.88 Nm		

Component/	Fault	Monitor Strategy	Malfunction		Thres	shold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Val	lue	Malfunction	Conditions	Required	Illum.
							Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
								ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure	=	TRUE Maximum	Boolean				One Trip
			Command Status Primary Offgoing Clutch Pressure Command Status	_ (pressurized Clutch exhaus command					
			Range Shift Status Attained Gear Slip	≠	Initial Clutch Control 40	RPM				
			If the above conditions are true increment appropriate Fail 1 Timers Below: fail timer 1							
			(4-1 shifting with throttle) fail timer 1 (4-1 shifting without throttle)	>=	0.2998 0.5	Fail Time (Sec) Fail Time (Sec)				
			fail timer 1 (4-2 shifting with throttle)	>=	0.2998	Fail Time (Sec)				
			fail timer 1 (4-2 shifting without throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (4-3 shifting with throttle)	>=	0.2998	Fail Time (Sec)				
			fail timer 1 (4-3 shifting without throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (5-3 shifting with throttle)	>=	0.2998	Fail Time (Sec)				
			fail timer 1 (5-3 shifting without throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (6-2 shifting with throttle)	>=	0.2998	Fail Time (Sec)				
			fail timer 1 (6-2 shifting without throttle)	>=	0.5	Fail Time (Sec)				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and sec Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 Fail Counter From 4th Gear OR	
			5th gear fail counter				>= 3 Fail Counter From 5th Gear OR	
			6th gear fail counter				>= 3 Fail Counter From 6th Gear OR	
			Total fail counter				>= 5 Total Fail Counter	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	= FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean		
				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		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case 1 Current range	= Transition 1 (bit state 1110) Range				One Trip
			Previous range	≠ CeTRGR_e_P ≠ RNDL_Drive6 Range				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable			Tim	ne	
System	Code	Description	Criteria	Value	Malfunction	Conditions			Requi	ired	III
			Previous range	≠ CeTRGR_e_P RNDL_Drive4 Range							
			Range Shift State	e = Range Shift Completed ENUM							
			Absolute Attained Gear Slip								
			Attained Gear								
			Attained Gear Throttle Position Available								
			Throttle Position								
			Output Speed								
			Engine Torque								П
			Engine Torque								
			If the above conditions are met					>=	1	Fail Seconds	
			then Increment Fail Timer If Fail Timer has Expired then								
			Increment Fail Counter	r				>=	5	Fail Counts	П
			Fail Case 2 Output Speed	i <= 70 rpm							1
			The following PRNDL sequence								
			events occur in this exact order:								
			events occur in this exact order.								ı
			PRNDL state	e = Drive 6 (bit state 0110) Range							
			PRNDL state = Drive 6 for								
			PRNDL state	Transition 8							
			PRNDL state	Drive 6 (bit Pange							
				State 0110)							
			PRNDL state	(bit state 1110)							
			Above sequencing occurs in Neutral Idle Mode								1
			If all conditions above are met	•							1
			Increment delay Timer								1
			If the below two conditions are met					>=	3	Fail Seconds	
			Increment Fail Timer					/-	3	i ali Secolius	
			delay timer								
			Input Speed If Fail Timer has Expired then								
			Increment Fail Counter	r				>=	2	Fail Counts	
			Fail Case 3	Transition 12		CeTRGR_					1
			Current range	e = Transition 13 (bit state 0010) Range	Previous range	≠ e_PRNDL_					ı
				(2.1 31010 00 10)		Drive1					
			Engine Torque	e>= -8192 Nm	Previous range	CeTRGR_ ≠ e_PRNDL_					I
			Englile Torque	-017Z IVIII	Frevious range	Prive2					I
			Engine Torque	e <= 8191.75 Nm	IMS is 7 position configuration	= 1	Boolean				
					If the "IMS 7 Position config" =						
			If the above conditions are met	t	1 then the "previous range"			١.	0.225	Cocondo	
			then, Increment Fail Timer	r	criteria above must also be satsified when the "current			>=	0.225	Seconds	1

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tim	ie	I I
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requi	ired	III
			If Fail Timer has Expired then Increment Fail Counter				>=	15	Fail Counts	
			Fail Case 4 Current range	= Transition 8 = (bit state 0111) Range	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8					
			Inhibit bit (see definition)	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)					
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer	>= 100 Nm <= 8191.75 Nm	1001 (parx)		>=	0.225	Seconds	
			If the above Condtions have been met, Increment Fail Counter				>=	15	Fail Counts	
			Fail Case 5 Throttle Position Available The following PRNDL sequence	= TRUE Boolean						
			events occur in this exact order:							
			PRNDL State	= Reverse (bit state 1100) Range						
			PRNDL State	= Transition 11 Range (bit state 0100)						
			PRNDL State	= Neutral (bit state 0101) Range						
			PRNDL State	= Transition 11 (bit state 0100) Range						
			Above sequencing occurs in Then delay timer increments	<= 1 Sec						
			Delay timer Range Shift State	>= 5 sec Range Shift = Complete						
			Absolute Attained Gear Slip Attained Gear Attained Gear	<= 50 rpm <= Sixth						
			Throttle Position Output Speed	>= 8.0002 pct						
			If the above conditions are met Increment Fail Timer				>=	20	Seconds	
			Fail Case 6 Current range	Illegal (bit = state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):					
			and		Current Range	Transition ≠ 11 (bit state 0100)				
			A Open Circuit (See Definition)	= FALSE Boolean	or	, Neutral (bit				
					Last positive state	≠ state 0101)				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	IIIum.
			If the above Conditions are met		Previous transition state Fail case 5 delay timer	Transition ≠ 8 (bit state 0111) = 0 sec		
			then, Increment Fail timer Fail Case 7 Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Condtions are met then, Increment Fail timer	PRNDL circuit ABCP = 1101 PRNDL circuit ABCP = 1111 ABCP = 1111 >= 150 RPM <= 2.84583 ratio			>= 6.25 Seconds >= 6.25 Seconds	
			P182E will report test fail when any of the above 7 fail cases are met		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	<= 31.99902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean		
				Disable Conditions	: 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		
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this value)	= TRUE Boolean 5 Volts			>= 280 Fail Counts (25ms loop)	One Trip
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2 Volts	ECM run/crank active status available	= TRUE Boolean	Out 280 Sample Counts of (25ms loop)	-
					ECM run/crank active status	= FALSE Boolean		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Time	•	Mi
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requir	ed	Illur
				Disable	MIL not Illuminated for					
				Conditions:	DTC's:					
						ECM: None				
		Pressure Control (PC) Solenoid D	Foil Cose 1							One
iable Bleed Solenoid (VBS)	P2714	Stuck Off [CB26]	Fail Case 1 Case: Steady State 2nd Gear							One
		Stuck on [OB20]						Please See		
			Gear slip	>= 400 RPM				Table 5 For	Neutral Timer	
			Gear sup	>= 400 Ki W				Neutral Time	(Sec)	
			Intrusive test:					Cal		
			commanded 3rd gear							
			Sommanaea era gear	Table Based						
				Time Please Enable Time						
			If attained Gear = 3rd for Time	>						
				Documents						
			If Above Conditions have been met							
			Increment 2nd gear fail count					>= 3	2nd Gear Fail	
			morement and gear fair count						Count	
									or CB26 Fail	
			and CB26 Fail Count					>= 14	Count	
			Fail Case 2 Case: Steady State 6th Gear						ooun	1
			,					Please See		
			Gear slip	>= 400 RPM				>= Table 5 For	Neutral Timer	
			·					>= Neutral Time Cal	(Sec)	
			Intrusive test:					Cai		
			commanded 5th gear							
				Table Based						
			Kallabard Corn. Elli For Thor	Time Please Enable Time						
			If attained Gear = 5th For Time	>= see Table 2 in (Sec) Supporting						
				Documents						
			If Above Conditions have been						5th Gear Fail	
			met, Increment 5th gear fail					>= 3	Count	
			counter							
									or CB26 Fail	
			and CB26 Fail Count					>= 14	Count	
					PRNDL State defaulted	= FALSE	Boolean			1
					inhibit RVT	= FALSE	Boolean			
					IMS fault pending indication TPS validity flag	= FALSE = TRUE	Boolean Boolean			
					ĺ					
					Hydraulic System Pressurized	= TRUE	Boolean			1
					Minimum output speed for RVT	>= 0	RPM			
						<i>></i> - 0	IXFIVI			1
					A OR B		DDM			1
					(A) Output speed enable	>= 67	RPM			1
					(B) Accelerator Pedal enable	>= 0.5005	Pct			
					Common Enable Criteria					1
					Ignition Voltage Lo	>= 8.59961	Volts			1

Component/	Fault	Monitor Strategy	Malfunction		Threst	nold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Valu	ie	Malfunction		Conditions		Required	IIIum.
							Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	<= >= <= >= = = = =	31.99902 400 7500 5 TRUE TRUE -6.6563 FALSE FALSE	Volts RPM RPM Sec Boolean Boolean °C Boolean Boolean		
						Disable Conditions:	MIL not Illuminated for DTC's:		s, P0717, P0722	, P0723,		
								P0107, P010 P0175, P020 P0205, P020 P0301, P030	1, P0102, P0103 08, P0171, P017 01, P0202, P020 06, P0207, P020 02, P0303, P030 07, P0308, P040	72, P0174, 03, P0204, 08, P0300, 04, P0305,		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status	=)	TRUE Maximum pressurized	Boolean						One Trip
			Primary Offgoing Clutch Pressure Command Status	<u> </u>	Clutch exhaust command							
			Range Shift Status Attained Gear Slip		Initial Clutch Control 40	RPM						
			If above coditons are true, increment appropriate Fail 1 Timers Below: fail timer 1									
			(2-1 shifting with throttle) fail timer 1	>=		Fail Time (Sec) Fail Time (Sec)						
			(2-1 shifting without throttle) fail timer 1 (2-3 shifting with throttle)	>=		Fail Time (Sec)						
			fail timer 1 (2-3 shifting without throttle)	>=	0.5	Fail Time (Sec)						
			fail timer 1 (2-4 shifting with throttle) fail timer 1	>=		Fail Time (Sec) Fail Time (Sec)						
			(2-4 shifting without throttle) fail timer 1 (6-4 shifting with throttle)			Fail Time (Sec)						

Component/	Fault	Monitor Strategy	Malfunction	Inr	eshold	Secondary	Enable			Time		Mil
System	Code	Description	Criteria	V	alue	Malfunction	Conditions			Requir	ed	Illun
			fail timer 1 (6-4 shifting without throttle)	>= 0.5	Fail Time (Sec)							Г
			fail timer 1 (6-5 shifting with throttle)	>= 0.2998	Fail Time (Sec)							
			fail timer 1 (6-5 shifting without throttle)	>= 0.5	Fail Time (Sec)							
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers						= (F 2) S Tim >= Tir R SI	al Fail Time Fail 1 + Fail See Enable lers for Fail lers for Fail deference upporting lible 15 for lil Timer 2	sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter									
			2nd gear fail counter						>=	3	Fail Counter From 2nd Gear	
			6th gear fail counter						>=	3	OR Fail Counter From 6th Gear OR	
			total fail counter						>=	5	Total Fail Counter	
						TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.6563 = FALSE = FALSE ≠ 1st = TRUE >= 100 >= 150 = FALSE = FALSE = FALSE = TRUE	°C Boolean Boolean Boolean Boolean RPM RPM Boolean Boolean Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P182E	P0723,				
							ECM: P0101, P0102, P0103, P0107, P0108, P0171, P017 P0175, P0201, P0202, P020 P0205, P0206, P0207, P020 P0301, P0302, P0303, P030 P0306, P0307, P0308, P040	2, P0174, 3, P0204, 3, P0300, 4, P0305,				
ble Bleed Solenoid (VBS)	D0745	Pressure Control (PC) Solenoid D	Fail Case 1 Case: Steady State 1st									On

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			Attained Gear slip If the Above is True for Time Intrusive test:	Table Based Time Please Pefor to Table Enable Time				
			(CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 2.48218 >= 2.24585				
			ii tile above parameters are trae					
							>= 1.1 Fail Timer (Sec)	
							>= 5 Fail Count in 1s Gear or	it
							>= 5 Total Fail Counts	
			Case: Steady State 3rd Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	Table Based value Please Refer to Table 22 in supporting documents Table Based value Please Refer to Table 23 in rpm/sec				
			If the Above is True for Time	supporting documents Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 2.48218 >= 2.24585				
							>= 1.1 Fail Timer (Sec))
							>= 3 Fail Count in 3rd Gear	
							or Total Fail >= 5 Counts	
			Fail Case 3 Case: Steady State 4rd Gear				554.115	1

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			Max Delta Output Speed Hysteresis	22 in supporting				
			Min Delta Output Speed Hysteresis	documents Table Based value Please Refer to Table 23 in supporting documents Table Based				
			If the Above is True for Time	Time Please				
			Intrusive test: (C1234 clutch exhausted) Gear Ratio Gear Ratio	<= 0.70032				
			If the above parameters are true					
							>= 1.1 Fail Timer (Sec)	
							>= 3 Fail Count in 4th Gear or	n
							Total Fail	
			Fail Case 4 Case: Steady State 5th Gear				Counts	1
				Table Based value Please				
			Max Delta Output Speed Hysteresis	>= Refer to Table rpm/sec 22 in				
				supporting documents Table Based value Please				
			Min Delta Output Speed Hysteresis	>= Refer to Table 23 in supporting				
				documents Table Based Time Please Refer to Table				
			If the Above is True for Time	>= Refer to Table Sec 17 in Supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio	<= 0.70032				
			Gear Ratio					
			If the above parameters are true					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable			Tir	ne	Mi
System	Code	Description	Criteria	Value	Malfunction	Conditions			Requ	uired	Illu
								>= >=	1.1	Fail Timer (Sec) Fail Count in 5th Gear or	
								>=	5	Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized A OR B (A) Output speed enable (B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Lo Engine Speed Hi Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Itanied Speed Sensor fault Output Speed Sensor fault Output Speed Sensor fault Default Gear Option is not	= FALSE BC = FALSE BC = FALSE BC = O F = TRUE BC = TRUE BC = TRUE BC >= 0.5005 >= 0.5005 >= 8.59961 V <= 31.99902 V <= 7500 F >= 5 >= 5.0003 >= 5 <= 8191.88 >= -6.6563 = FALSE BC	oolean oolean oolean RPM oolean oolean oolean Nm Nm Volts Volts RPM Sec Pct Nm Nm Nm				
				Disable Conditions:	DTC's:	TCM: P0716, P0717, P0722, P07 P182E ECM: P0101, P0102, P0103, P01 P0107, P0108, P0171, P0172, PC P0175, P0201, P0202, P0203, PC P0205, P0206, P0207, P0208, PC P0301, P0302, P0303, P0304, PC P0306, P0307, P0308, P0401, PC	106, 0174, 0204, 0300, 0305,				
		Pressure Control (PC) Solenoid E	Fail Case 1 Case Steedy State 1st Case								One

Component/ Far	ult Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	М
System Co.	de Description	Criteria	Value	Malfunction	Conditions	Required	Illu
		Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec) Cal	
		Intrusive test: commanded 2nd gear	Please refer to				
		If attained Gear ≠ 2nd for Time	>= Table 3 in Supporting Documents Shift Time (Sec)				
		If Above Conditions have been met, Increment 1st gear fail counter				>= 3 1st Gear Fail Count	
		and C1234 fail counter				or C1234 Clutch >= 14 Fail Count	
		Fail Case 2 Case: Steady State 2nd Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer	
		Intrusive test:	- 400 REI¥I			>= Neutral Time (Sec) Cal	
		commanded 3rd gear	Please refer to Table 3 in Shift Time (Sec.)				
		If attained Gear ≠ 3rd for Time If Above Conditions have been	>= Supporting Documents Shift Time (Sec)				
		met, Increment 2nd gear fail counter				>= 3 2nd Gear Fail Count	
		and C1234 fail counter				or C1234 Clutch >= 14 Fail Count	
		Fail Case 3 Case: Steady State 3rd Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec) Cal	
		Intrusive test: commanded 4th gear	Please refer to			Cal	
		If attained Gear ≠ 4th for time	>= Table 3 in Supporting Documents Shift Time (Sec)				
		If Above Conditions have been met, Increment 3rd gear fail counter				>= 3 3rd Gear Fail Count	
		and C1234 fail counter				or C1234 Clutch >= 14 Fail Count	
		Fail Case 4 Case: Steady State 4th Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Neutral Time (Sec)	

System Code Description Criteria Value Malfunction Conditions Intrusive test: commanded 5th gear If attained Gear = 5th For Time Please refer to Table 3 in Supporting Documents Documents
commanded 5th gear Please refer to If attained Gear = 5th For Time >= Table 3 in Supporting Documents If Above Conditions have been met, Increment 4th gear fail
And C1234 fail counter

Component/	Fault	Monitor Strategy	Malfunction		Thres	shold	Secondary	Enable	Time)	Mil
System	Code	Description	Criteria		Val	lue	Malfunction	Conditions	Requir	ed	Illum.
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust	=	TRUE	Boolean					One Trip
			Delay Timers) Primary Oncoming Clutch Pressure Command Status	_	Maximum pressurized						
			Primary Offgoing Clutch Pressure Command Status		Clutch exhaus command	st					
			Range Shift Status	≠	Initial Clutch Control	DDM					
			Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below:		40	RPM					
			fail timer 1 (2-6 shifting with throttle) fail timer 1	>=	0.2998	sec					
			(2-6 shifting without throttle) fail timer 1 (3-5 shifting with throttle)	>=	0.5 0.2998	sec					
			fail timer 1 (3-5 shifting without throttle)	>=	0.5	sec					
			fail timer 1 (4-5 shifting with throttle) fail timer 1	>=	0.2998	sec					
			(4-5 shifting without throttle) fail timer 1	>=	0.5 0.2998	sec					
			(4-6 shifting with throttle) fail timer 1 (4-6 shifting without throttle)	>=	0.5	sec					
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers						Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer 1, and Reference Supporting Table 15 for Fail Timer 2	sec	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter								
			2nd gear fail counter						>= 3	Fail Counter From 2nd Gear	
			3rd gear fail counter						>= 3	Fail Counter From 3rd Gear	
			4th gear fail counter						>= 3	Fail Counter From 4th Gear	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable		Tin	ne	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions		Requ	ired	Illum.
			total fail counter				>=	5	Total Fail Counter	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted	>= -6.6563 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean				
					IMS Fault Pending Service Fast Learn Mode HSD Enabled	= FALSE Boolean = FALSE Boolean = TRUE Boolean				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E				
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E				
ariable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	Fail Case 1 Case: 5th Gear							One ⁻
		olden on Globaly dualoy	Max Delta Output Speed Hysteresis	Table Based value Please Refer to Table 22 in supporting documents Table Based value Please						
			Min Delta Output Speed Hysteresis	>= Refer to Table rpm/sec 23 in supporting documents Table Based Time Please						
			If the Above is True for Time	>= Refer to Table Sec 17 in supporting documents						
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio							
			If the above parameters are true				>=	1.1	Fail Timer (Sec)	
							>=	3	Fail Count in 5th Gear	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable			Ti	me	N
System	Code	Description	Criteria	Value	Malfunction	Conditions			Req		Illu
								>=	3	OR Total Fail Counts	
			Fail Case 2 Case: 6th Gear								
				Table Based value Please							
			Max Delta Output Speed	Refer to Table rpm/sec 22 in							
			Hysteresis								
				supporting documents							
				Table Based							
				value Please							
			Min Delta Output Speed Hysteresis	Refer to Table rpm/sec							
				supporting							
				documents Table Based							
				Time Please							
			If the Above is True for Time	Refer to Table							
			ii die Above is True loi Tillie	17 111							
				supporting documents							
			Intrusive test:								
			(CB26 clutch exhausted) Gear Ratio	<= 1.20959							
			Gear Ratio	>= 1.09436							
			If the above parameters are true								
			· ·								
								>=	1.1	Fail Timer (Sec)	1
								>=	3	Fail Count in 6th Gear	n
										OR	
								>=	3	Total Fail	
					PRNDL State defaulted	= FALSE	Boolean			Counts	1
					inhibit RVT	= FALSE	Boolean				
					IMS fault pending indication	= FALSE	Boolean				
					output speed TPS validity flag	>= 0 = TRUE	RPM Boolean				
					HSD Enabled	= TRUE	Boolean				
					Hydraulic_System_Pressurized	= TRUE	Boolean				
					A OR B						
					(A) Output speed enable	>= 67	Nm				
					(B) Accelerator Pedal enable	>= 0.5005	Nm				1
					Ignition Voltage Lo	>= 8.59961	Volts				1
					Ignition Voltage Hi	<= 31.99902	Volts				1
					Engine Speed Lo Engine Speed Hi	>= 400 <= 7500	RPM RPM				
					Engine Speed is within the	>= 5	Sec				1
					allowable limits for	>- 0	JCL				
					if Attained Gear=1st FW Accelerator Pedal enable	>= 5.0003	Pct	1			1

Component/	Fault	Monitor Strategy	Malfunction	Thre	eshold	Secondary	ı	Enable			Tin	ne	Mil
System	Code	Description	Criteria	v	alue	Malfunction	Co	onditions			Requ	ired	Illum.
						if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= =	5 8191.88 -6.6563 FALSE FALSE TRUE	Nm Nm °C Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:		717, P0722,	P0723,				
							ECM: P0101, P01 P0107, P0108, P0 P0175, P0201, P0 P0205, P0206, P0 P0301, P0302, P0 P0306, P0307, P0	0171, P0172 0202, P0203 0207, P0208 0303, P0304	2, P0174, 3, P0204, 3, P0300, 4, P0305,				
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error		Boolean					>=	62	Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>= 0.1125	sec					Out of	70	Sample Counts (≈ 11 seconds)	
						Stabilization delay Ignition Voltage Ignition Voltage Power Mode		3 8.59961 31.99902 Run	sec Volt Volt				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None						

15 OBDG10 TCM Diagnostic 2D Tables

Table 1

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

Table 2

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

Table 5

Axis	-6.67	-6.66	40.00	٥С
Curve	409.59	3.00	3.00	Sec

Table 6

Axis	-6.67	-6.66	40.00	80.00	120.00	٥С
Curve	409.00	3.60	1.60	1.40	1.40	Sec

Table 7

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

Table 8

Axis	-6.67	-6.66	40.00	80.00	120.00	٥С
Curve	409.00	3.60	1.60	1.50	1.40	Sec

15 OBDG10 TCM Diagnostic 2D Tables

Table 9

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

<u>Table 10</u>

Axis	-40.00	-20.00	0.00	30.00	110.00	٥С
Curve	3.03	1.86	1.00	0.75	0.58	Sec

<u>Table 11</u>

Axis	-40.00	-20.00	0.00	30.00	110.00	٥С
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	٥С
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

ı	Axis	-40.00	-20.00	0.00	30.00	110.00	٥С
	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	٥С
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	٥С
Curve	409.59	2.50	2.50	Sec

15 OBDG10 TCM Diagnostic 2D Tables

Ta	ıb	le	1	7

Axis	-6.67	-6.66	40.00	٥С
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 °C
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00 °C

Table 19

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

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

Table 21

Axis	-40.00	-20.00	40.00	٥С
Curve	5.00	3.00	1.00	Sec

Table 22

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

Table 23

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