Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary	Enable	Time		Mil
System	Code	Description	Criteria		Val	ue	Malfunction	Conditions	Required	l	Illum.
Transmission Control Module (TCM)		Transmission Electro- Hydraulic Control Module Read Only Memory	Incorrect program/calibrations checksum	=	TRUE	Boolean			>= 5	Fail Counts	One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0601 ECM: None			
Transmission Control Module (TCM)	P0603	Transmission Electro- Hydraulic Control Module Long-Term Memory Reset	Non-volatile memory (static or dynamic) checksum failure at Powerup	=	TRUE	Boolean			Runs Continously		One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None			
Transmission Control Module (TCM)	P0604	Transmission Electro- Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	=	TRUE	Boolean			>= 5	Fail Counts Sample	One Trip
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None	- 10	Counts	
Transmission Control Module (TCM)	P062F	Transmission Electro- Hydraulic Control Module Long Term Memory Performance	TCM Non-Volatile Memory bit Incorrect flag at Powerdown	=	TRUE	Boolean			Runs Continously		One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Va	shold lue	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
,,,,,						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P062F				
Transmission Control Module (TCM)	P0634	Transmission Electro- Hydraulic Control Module Internal Temperature Too High	Fail Substrate 1 Temperature		142.1015	6 °C			>=	5	Fail Time (Sec)	One Trip
			Fail Substrate Case Substrate Temperature Ignition Voltage	>=	50 18	°C Volts			>=	2	Fail Time (Sec)	
			Note: either fail case can set the DTC		10	VOICO						
							Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between	<= 31.999023 Volts >= 0 °C <= 170 °C				
							Temp Range for Time P0634 Status is	Test Failed				
						Disable Conditions:	DTC's:					
High Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	=	TRUE	Boolean			>=	3	Fail Counts	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		·					out 5 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:			
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	Refer to Table 19 in °C supporting documents				Two Trips
			If TCM substrate temp to power up temp Δ					
			Both conditions above required to increment fail counter				>= 3000 Fail Counts (100ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Require		Mil Illum
- Cyclom	0000	Восоправон	Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.						Out of	3750	Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until						>=	700	Pass Counts (100ms loop)	
									Out of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid	_	TRUE TRUE	Boolean Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= <= >=	8.5996094 31.999023 400	Volts Volts RPM				
					Engine Speed Hi Engine Speed is within the	<=	7500 5	RPM Sec				
					allowable limits for Brake torque active Below describes the brake	=	FALSE					
					torque entry criteria Engine Torque Throttle Transmission Input Speed	>= >=	90 30.000305 200	N*m Pct RPM				
					Vehicle Speed Transmission Range Transmission Range PTO	<= ≠ ≠	8 Park Neutral Not Active	Kph				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7 sec		
					Below describes the brake torque exit criteria			
					Brake torque entry criteria	= Not Met		
					Clutch hydraulic pressure	Clutch Hydraulic ≠ Air Purge Event		
					Clutch used to exit brake torque active			
					The above clutch pressure is greater than this value for one loop			
					Set Brake Torque Active FALSE if above conditions are met for:			
					P0667 Status is	Test Failed This Key ≠ On or Fault Active		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code		Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate	ectProp <= -249 °C				Two Trips
			Temperature Sensor = Indirect Proportional and Temp Either condition				Fail	
			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	<= 31.999023 Volts >= 400 RPM <= 7500 RPM	>= 60 Timer (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value	P0668 Status is	Test Failed	Required	mum.
				Disable Conditions:	DTC's:			
Transmission Control Module (TCM)		TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used	CeTFTI_e_ = VoltageDir ectProp				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				Fail >= 60 Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 400 RPM <= 7500 RPM		
					P0669 Status is	Test Failed This Key On or Fault Active		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					For Hybrids, below conditions must also be met			1 1
					Estimated Motor Power Loss			1 1
					Estimated Motor Power Loss greater than limit for time	\- 0		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FΔI QF		
				Disabl Conditions		TCM: P0716, P0717, P0722, P0723 ECM: None		
						LOW. HONO		1 1
Transmission Control Module (TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power-up temp to substrate temp Δ					Two Trips
			If transmission oil temp to power up temp Δ	Refer to Table 18 in °C supporting documents				
			Both conditions above required to increment fail counter				Fail Count (100m loop)	s s

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
бузіені	Joue	Безоприон	Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.	7 31 40		33.000	Out of	3750	Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>=	700	Pass Counts (100ms loop)	
							Out of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid	= TRUE Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM				
					Engline Speed File Engline Speed File Engline Speed is within the allowable limits for Brake torque active	>= 5 Sec				
					Below describes the brake torque entry criteria Engine Torque Throttle Transmission Input Speed Vehicle Speed Transmission Range Transmission Range	>= 90 N*m >= 30.000305 Pct <= 200 RPM <= 8 Kph ≠ Park				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum
•		·			РТО	=	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:		7	sec		
					Below describes the brake torque exit criteria					
					Brake torque entry criteria	=	Not Met			
					Clutch hydraulic pressure	≠	Clutch 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		
					P06AC Status is	≠	Test Failed This Key On or Fault Active			

Component/	Fault		Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
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	>= 400 RPM <= 7500 RPM	Fail >= 60 Time (Sec)	Two Trips
					P06AD Status is	Test Failed		
					For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module	>= 0 Sec = FALSE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
,		·			Estimated Motor Power Loss Fault	= FALSE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723		
						ECM: None		
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= 164 °C			Fail >= 60 Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM		
					Engine Speed Hi			
					Engine Speed is within the allowable limits for			
					P06AE Status is	Test Failed		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ					Two Trips

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			If transmission oil temp to power up temp Δ	Refer to Table 18 in °C supporting documents				
			Both conditions above required to increment fail counter				>= 3000 (Fail Counts 100ms loop)
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out 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 Hi	<= 7500 RPM	ın	
					Engine Speed is within the allowable limits for	\- 5 Coo		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	ıs	Time Required	Mi Illun
System	Code	Description	Criteria	Value	Brake torque active	=	FALSE	15	Required	- III GII
					Below describes the brake		TALOL			
					torque entry criteria					1
					Engine Torque		90	N*m		
					Throttle		30.000305	Pct		
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed	<=	8	Kph		1
					Transmission Range		Park			1
					Transmission Range		Neutral			1
					PTO		Not Active			1
					Set Brake Torque Active					1
					TRUE if above conditions are	>=	7	sec		1
					met for:					4
					Below describes the brake					1
					torque exit criteria					
					Brake torque entry criteria	=	Not Met			1
							Clutch			
					Clutch hydraulic pressure	¥	Hydraulic Air Purge			
							Event			
										1
					Clutch used to exit brake		CeTFTD_e _C3_RatlE			
					torque active	_	_05_Ratic			
					The above clutch pressure is					1
					greater than this value for one		600	kpa		1
					loop		000	пра		1
					Set Brake Torque Active					1
					FALSE if above conditions are		20	Sec		1
					met for:					
							Test Failed			
					P0711 Status is	¥	This Key			
							On or Fault Active			
							Active			

Component/ System	Fault Code		Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	кеципеи	
Transmission Fluid Temperature Sensor (TFT)		Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used	CeTFTI_e_ = VoltageDir ectProp				Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	<= -74 °C				
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	>= -74 °C				
			Either condition above will satisfy the fail conditions				Fail >= 60 Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	\-		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Val		Secondary Malfunction		Enable Conditions		Time Require		Mil Illum.
						P0712 Status is	≠	Test Failed This Key On or Fault Active				
						For Hybrids, below conditions must also be met						
						Estimated Motor Power Loss 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 None				
Transmission Fluid Temperature Sensor (TFT)		Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used	CeTFTI_e_ VoltageDir ectProp								Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	174	°C							
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	174	°C							
			Either condition above will satisfy the fail conditions			Ignition Voltage Lo	>=	8.5996094 Volts	>=	60	Fail Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 7500 RPM		
					P0713 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions	: DTC's:	TCM: P0713, P0716, P0717, P0722, P0723 ECM: None		
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>= 900 RPM			Fail >= 0.8 Time (Sec)	One Trip
					Engine Torque is Engine Torque is Engine Speed Engine Speed Engine Speed is within the allowable limits for Vehicle Speed is Throttle Position is Transmission Input Speed is The previous requirement has been satisfied for The change (loop to loop) in transmission input speed is The previous requirement has	<pre><= 8191.875 N*m >= 400 RPM <= 7500 RPM >= 5 Sec >= 10 Kph >= 0 Pct >= 0 RPM >= 0 Sec </pre> <pre>< 8191.875 RPM/Loop</pre>		

Component/ System	Fault Code	Monitor Strategy Description		Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Conditio			Time Require		Mil Illum.
								Throttle Position Signal Valid	=	TRUE	Boolean				
								Engine Torque Signal Valid	=	TRUE	Boolean				
								Ignition Voltage		8.5996094	Volts				
								Ignition Voltage	<=	31.999023	Volts				
								P0716 Status is not	=	Test Failed This Key On or Fault Active					
							Disable Conditions:		ECM: F	P0717, P0752, F P0101, P0102, I P0122, P0123	P0103,				
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Case 1	Transmission Input Speed is	<	67	RPM					>=	4.5	Fail Time (Sec)	One Trip
			Fail Case 2	When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	<	653.125	RPM	Controller uses a single power supply for the speed sensors		1	Boolean				
								Engine Torque is	>=	50	N*m				
								Engine Torque is		8191.875	N*m				
								Vehicle Speed		16	Kph				
								Engine Torque Signal Valid		TRUE	Boolean				
								Ignition Voltage		8.5996094	Volts				
								Ignition Voltage Engine Speed		31.999023 400	Volts RPM				
								Engine Speed Engine Speed		400 7500	RPM RPM				
								Engine Speed is within the allowable limits for	\	5	Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions	Tim Requi		Mil Illum.
Oystem	Oode	Description	Ontena			P0717 Status is not	Test Failed	rtoqu		
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: P0101, P0102, P0103			
Mode Switch	P071A	Transmission Mode Switch A Circuit	Tow Haul Mode Switch state		E Boolean			>= 600	Fail Time (Sec)	Special No MIL
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 400 RPM <= 7500 RPM			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1762 ECM: None			
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 35	RPM			>= 4.5	Fail Time (Sec)	One Tri
						P0722 Status is not	Test Failed = This Key On or Fault Active			
						Transmission Input Speed Check Engine Torque Check Throttle Position	= TRUE Boolean			

MYD SECTION Page 19 of 158

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum.
					Transmission Fluid Temperature	>=	-40	°C		
					Disable this DTC if the PTO is active	=	1	Boolean		
	1 1				Engine Torque Signal Valid	=	TRUE	Boolean		
	1 1				Throttle Position Signal Valid	=	TRUE	Boolean		
	1 1				Ignition Voltage is	>=	8.5996094	Volts		
	1 1				Ignition Voltage is	<=	31.999023	Volts		
	1 1				Engine Speed is		400	RPM		
	1 1				Engine Speed is	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Enable_Flags Defined Below					_
					The Engine Torque Check is TRUE, if either of the two following conditions are TRUE					
					Engine Torque Condition 1					
					Range Shift Status	≠	Range shift completed	ENUM		
	1 1				OR					
					Transmission Range is	=	Park or Neutral			
					Engine Torque is	>=	8191.75	N*m		
					Engine Torque is	<=	8191.75	N*m		
					Engine Torque Condition 2		5 4	NI*		
					Engine Torque is Engine Torque is	>=	54 8191.75	N*m N*m		1
1						\-	0131.73	IN III		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	-	Thres Val		Secondary Malfunction		Enable Conditio			Time Require		Mil Illum.
							The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE							
							TIS Check Condition 1 Transmission Input Speed is Transmission Input Speed is	>= <=	653.125 5350	RPM RPM				
							TIS Check Condition 2 Engine Speed without the brake applied is	>=	3200	RPM				
							Engine Speed with the brake applied is Engine Speed is		3200 8191.875	RPM RPM				
							Controller uses a single power supply for the speed sensors		1	Boolean				
							Powertrain Brake Pedal is Valid	=	TRUE	Boolean				
						Disable Conditions:		ECM: F	P0716, P0717, P0101, P0102, P0122, P0123	P0103,				
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed	>=	105	RPM					>=	0	Enable Time (Sec)	One Trip
			Output Speed Delta	<= 8	3192	RPM					>=	0	Enable Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	E Co	nable nditions		Time Require		Mil Illum.
System	Code	Description	Output Speed Drop AND Transmission Range	> 650 RPM Driven range	mananenen		iditions	>=	1.5	Output Speed Drop Recove ry Fail Time (Sec)	
				(R,D)	Range_Disable OR Neutral_Range_Enable		SE See Below UE See Below				
					And Neutral_Speed_Enable are TRUE concurrently	= TR	UE See Below				
					Transmission_Range_Enable Transmission_Input_Speed_En able No Change in Transfer Case	= TR	UE See Below UE See Below Seconds				
					Range (High <-> Low) for P0723 Status is not	Test = This On o	Failed Key Fault ive				
					Disable this DTC if the PTO is active Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is	>= 8.599 <= 31.99 >= 4	Boolean Volts 9023 Volts 00 RPM 00 RPM				

Engine Speed is within the allowable limits for Enable. Plags Defined Below Transmission .Input_Speed_En able is TRUE when either TIS Condition 1 is TRUE when both of the following conditions are satisfied for language and speed and sp	Mil Illum	Time Required		Enable Conditio		Secondary Malfunction	Threshold Value	Malfunction Criteria	Monitor Strategy Description	Fault Code	Component/ System
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: Is a satisfied for Input Speed Delta <= 4095.875 RPM Raw Input Speed >= 500 RPM TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed = 0 RPM A Single Power Supply is used for all speed sensors = TRUE Boolean Neutral Range Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM ReverseNe Transmission Range is = utral ENUM ReverseNe Transmission Range is = ENUM Neutral ENUM Transmission Range is = ENUM			Sec	5	>=				·		
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 satisfied for Input Speed Detta Raw Input Speed Petta Raw Inpu						Enable_Flags Defined Below					
both of the following conditions are satisfied for Input Speed Delta Raw Input Speed Delta Raw Input Speed >= 500 RPM TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed Input Speed = 0 RPM A Single Power Supply is used for all speed sensors = TRUE Boolean Neutral Range Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Reverse/Ne = utral ENUM Transitional Transmission Range is = e ENUM Neutral/Driv Transmission Range is = e ENUM						able is TRUE when either TIS Condition 1 or TIS Condition 2					
Raw Input Speed >= 500 RPM TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed = 0 RPM A Single Power Supply is used for all speed sensors Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Reverse/Ne Transmission Range is = Utral ENUM Transitonal Neutral/Driv Transmission Range is = ENUM			(Sec)	0	>=	both of the following conditions are satsified for					
ALL of the next two conditions are satisfied Input Speed											
A Single Power Supply is used for all speed sensors Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Reverse/Ne Transmission Range is = utral ENUM Transitonal Neutral/Driv Transmission Range is = e ENUM						ALL of the next two conditions					
TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Reverse/Ne Transmission Range is = utral ENUM Transitonal Neutral/Driv Transmission Range is = e ENUM						A Single Power Supply is used					
Reverse/Ne Transmission Range is = utral ENUM Transitonal Neutral/Driv Transmission Range is = e ENUM						TRUE when any of the next 3					
Transitonal Neutral/Driv Transmission Range is = e ENUM			ENUM		=	Transmission Range is					
Transmission Range is = e ENUM			ENUM		=	Transmission Range is					
			ENUM	е	=	Transmission Range is					
And when a drop occurs Loop to Loop Drop of > 650 RPM Transmission Output Speed is			RPM	650	>	Loop to Loop Drop of					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum.
					Range_Disable is TRUE when any of the next three conditions are TRUE					
					Transmission Range is	= _	Park	ENUM		
					Transmission Range is	=	ark/Rever se ransitonal	ENUM		
					Input Clutch is not		ON (Fully Applied)	ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified	>	1.5	Seconds		_
					Transmission Output Speed	>	130	RPM		
					The loop to loop change of the Transmission Output Speed is	<	20	RPM		
					The loop to loop change of the Transmission Output Speed is	>	-10	RPM		
					Transmission_Range_Enable is TRUE when one of the next six conditions is TRUE					_
					Transmission Range is	=	Neutral	ENUM		
					Transmission Range is	=	everse/Ne utral ransitional	ENUM		
					Transmission Range is	=	eutral/Driv e ransitional	ENUM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Require	d	Mil Illum.
,					Time since a driven range (R,D) has been selected				
					Transmission Output Speed Sensor Raw Speed Output Speed when a fault was detected				
				Disable Conditions:	DTC's:	TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123			
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met	·			>= 2	Enable Time (Sec)	Two Trips
			(A) TCC Slip Error @ TCC On Mode	Refer to Table 1 in RPM Supporting Documents			>= 6	Fail Time (Sec)	
			(B) TCC Slip @ Lock On Mode				>= 6	Fail Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requir		Mil Illum
System	Code	Description	If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter	Value	a.rearear		Contains		>=	2	TCC Stuck Off Fail Counter	
					TCC Mode	=	On or Lock					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Engine Speed Engine Speed is within the	>= <= >= <=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM Sec				
					allowable limits for Engine Torque Lo Engine Torque Hi Throttle Position Lo	>= <= >=	50 8191.875 8.0001831	N*m N*m Pct				
					Throttle Position Hi 2nd Gear Ratio Lo	<= >=	99.998474 2.1948242	Pct Ratio				
					2nd Gear Ratio High 3rd Gear Ratio Lo	<= >=	2.5251465 1.4228516	Ratio Ratio				
					3rd Gear Ratio High 4th Gear Ratio Lo	<= >=	1.637085 1.069458	Ratio Ratio				
					4th Gear Ratio High 5th Gear Ratio Lo	<= >=	1.2304688 0.7905273	Ratio Ratio				
					5th Gear Ratio Hi 6th Gear Ratio Lo	<= >=	0.9095459 0.6230469 0.7169189	Ratio Ratio				
					6th Gear Ratio High Transmission Fluid Temperature Lo	<= >=	-6.65625	Ratio °C				
					Transmission Fluid Temperature Hi	<=	130	°C				
					PTO Not Active Engine Torque Signal Valid		TRUE TRUE	Boolean Boolean				
					Throttle Position Signal Valid Dynamic Mode		TRUE FALSE	Boolean Boolean				

Component/	Fault	Monitor Strategy	Malfunction		reshold	Secondary	Enak			Time		Mil
System	Code	Description	Criteria		Value	Malfunction	Condit	ions		Require	ed	Illum.
						P0741 Status is	Test Faile This Key ≠ On or Fau Active					
					Disable Conditions:	DTC's:	P0723, P0742, P2	763, P2764				
							ECM: P0101, P010 P0106, P0107, P01 P0172, P0174, P01 P0202, P0203, P02 P0206, P0207, P02 P0301, P0302, P03 P0305, P0306, P03	08, P0171, 75, P0201, 04, P0205, 08, P0300, 03, P0304,				
Torque Converter							P0401, P042E					One Trip
Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>= -5() RPM							One mp
			TCC Slip Speed	<= 13	RPM							
									>=	1.5	Fail Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter						>=	6	Fail Counter	
						TCC Mode	= Off					
						Enable test if Cmnd Gear = 1stFW and value true		Boolean				
						Enable test if Cmnd Gear = 2nd and value true	= 0	Boolean				
						Engine Speed Hi		RPM				
						Engine Speed Lo		RPM				
						Vehicle Speed HI	<= 511	KPH				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction		Enable		Time	Mi Illun
System	Code	Description	Criteria	Value		>-	Conditio	ns KPH	Required	illun
					Vehicle Speed Lo Engine Torque Hi	>= <=	1 8191.875	KPH Nm		
					Engine Torque Lo	>=	80	Nm		
					Current Range	≠	Neutral	Range		
					Current Range		Reverse	Range		
					Transmission Sump Temperature	<=	130	°C		
					Transmission Sump Temperature	>=	18	°C		
					Throttle Position Hyst High AND	>=	5.0003052	Pct		
					Max Vehicle Speed to Meet Throttle Enable	<=	8	KPH		
					Once Hyst High has been met, the enable will remain while Throttle Position	>=	2.0004272	Pct		
					Disable for Throttle Position	>=	75	Pct		
					Disable if PTO active and value true	=	1	Boolean		
					Disable if in D1 and value true	=	1	Boolean		
					Disable if in D2 and value true	=	1	Boolean		
					Disable if in D3 and value true	=	1	Boolean		
					Disable if in D4 and value true	=	1	Boolean		
					Disable if in D5 and value true	=	1	Boolean		
					Disable if in MUMD and value true	=	1	Boolean		
					Disable if in TUTD and value true	=	1	Boolean		
					4 Wheel Drive Low Active	=	FALSE	Boolean		
					Disable if Air Purge active and value false	=	0	Boolean		
					RVT Diagnostic Active		FALSE	Boolean		
					Ignition Voltage	>=	8.5996094	V		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value	Ignition Voltage Vehicle Speed Engine Speed Engine Speed Engine Speed is within the allowable limits for Engine Torque Signal Valid Throttle Position Signal Valid	<pre><= 31.999023</pre>	Required	
				Dis Conditi		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	= 1st Lock rpm <= 1.2095947 >= 1.0943604			>= 0.2 Fail Tmr = 5 Fail Counts	Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Time Requir		Mil Illum.
,,,,,									≠	0	Neutral Timer (Sec)	
									>=	0.3	Fail Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Transmission Fluid Temperature Range Shift State	>=	8.5996094 31.999023 400 7500 5 -6.65625 Range Shift Completed	Volts Volts RPM RPM Sec °C	>=	8	Counts	
					TPS OR Output Speed Throttle Position Signal Valid from ECM Engine Torque Signal Valid from ECM, High side driver is enabled High-Side Driver is Enabled Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present		0.5004883 67 TRUE TRUE TRUE FALSE FALSE TRUE	% RPM Boolean Boolean Boolean Boolean Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria		Val	Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103,	rrequired	
								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	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM				One Trip
			Commanded Gear	=	3rd	Gear				
			Commanded Gear has Achieved 1st Locked OR 1st Free- Wheel OR 2nd with Mode 2 Sol. Commanded On	_	TRUE	Boolean				
			If the above parameters are true							
			parameters are true						Please Refer to Table 16 Neutr >= in Time Supporting (Sec	r
			Command 4th Gear once Output Shaft Speed	<=	400	RPM				
			If Gear Ratio And Gear Ratio							
									Fail >= 1.5 Time (Sec	r
									>= 5 Coun	ts

MYD SECTION Page 31 of 158

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
Oystein	Oode	Description	Ontena	Value	Ignition Voltage Lo	>=	8.5996094	Volts	. toqui ou	
					Ignition Voltage Hi		31.999023	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi		7500	RPM		
					Engine Speed is within the allowable limits for		5	Sec		
					High-Side Driver is Enabled	=	TRUE	Boolean		
					Throttle Position Signal Valid from ECM		TRUE	Boolean		
					Output Speed	>=	67	RPM		
					OR					
					TPS	>=	0.5004883	%		
					Range Shift State	=	Range Shift Completed	ENUM		
					Transmission Fluid Temperature		-6.65625	°C		
					Input Speed Sensor fault		FALSE	Boolean		
					Output Speed Sensor fault		FALSE	Boolean		
					Default Gear Option is not present		TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:		P0716, P0717, F , P182E	P0722,		
						P0106 P0172 P0202 P0206 P0301 P0305	P0101, P0102, I , P0107, P0108 , P0174, P0175 , P0203, P0204 , P0207, P0208 , P0302, P0303 , P0306, P0307 , P042E	, P0171, , P0201, , P0205, , P0300, , P0304,		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction		Enable			Time	.1	Mil
System	Code	Description	Criteria	Value	waitunction		Conditio	15		Require	a	Illum.
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail</u> <u>Case</u> Commanded Gear <u>1</u>	= 1st Locked								One Trip
			Gear Box Slip	>= 400 RPM					>= to S	ease Refer Table 5 in upporting ocuments	Neutral Timer (Sec)	
			Intrusive Shift to 2nd									
			Commanded Gear Previous	= 1st Locked Gear								
	1		Gear Ratio									
	1		Gear Ratio									
			If the above									
	1		parameters are true						>=	1	sec	
									>=	3	counts	
					Ignition Voltage Lo	>=	8.5996094	Volts				
	1				Ignition Voltage Hi	<=	31.999023	Volts				
	1				Engine Speed Lo	>=	400	RPM				
	1				Engine Speed Hi		7500	RPM				
					Engine Speed is within the allowable limits for		5	Sec				
					Output Speed	>=	67	RPM				
					OR TPS	>=	0.5004883	%				
					Range Shift State	=	Range Shift Completed	ENUM				
					Transmission Fluid Temperature	>=	-6.65625	°C				
					High-Side Driver is Enabled		TRUE	Boolean				
					Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
					Input Speed Sensor fault	=	FALSE	Boolean				
					Output Speed Sensor fault	=	FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Default Gear Option is not present	I IRUF		
				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)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	Fail Case Case: Steady State 1 3rd Gear					One Trip
Soletiola (VDS)		JOHNION D STRICK OIL [C33K]	1 Commanded Gear Gearbox Slip				Please Refer to Table 16 Neutral >= in Timer Supporting (Sec) Documents	
							Fail >= 3 Timer (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			It the above condiations are true, Increment 3rd gear fail counter				3rd >= 3 Gear Fail Counts	
			and C35R Fail counter				or 3-5R >= 14 Clutch Fail Counts	
			FailCaseCase: Steady State25th Gear					
			Commanded Gear	= 5th Gear				
			Gearbox Slip	>= 400 Rpm			Please Refer to Table 5 in Supporting Documents Neutral (Sec)	
			Intrusive Test: Command 6th Gear					
			If attained Gear=6th gear Time					
			It the above condiations are true, Increment 5th gear fail counter				5th >= 3 Gear Fail Counts	
			and C35R Fail counter				or 3-5R >= 14 Clutch Fail Counts	
					PRNDL State defaulted inhibit RVT			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
- Cystolii	5546	Bootiption	Ontona	- 3.144	IMS fault pending indication	=	FALSE	Boolean		
					TPS validity flag		TRUE	Boolean		
					Hydraulic System Pressurized	=	TRUE	Boolean		
					Minimum output speed for RVT	>=	0	RPM		
					A OR B					
					(A) Output speed enable		67	RPM		
					(B) Accelerator Pedal enable Common Enable Criteria		0.5004883	Pct		
					Ignition Voltage Lo		8.5996094	Volts		
					Ignition Voltage Hi		31.999023	Volts		
					Engine Speed Lo		400	RPM		
					Engine Speed Hi		7500	RPM		
					Engine Speed is within the allowable limits for	/-	5	Sec		
					Throttle Position Signal valid		TRUE	Boolean		
					HSD Enabled		TRUE	Boolean		
					Transmission Fluid Temperature		-6.65625	°C		
					Input Speed Sensor fault		FALSE	Boolean		
					Output Speed Sensor fault		FALSE	Boolean		
					Default Gear Option is not present	_	TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:			P0722,		
						P0106,	P0101, P0102, P0107, P0108 P0174, P0175	, P0171,		
						P0202, P0206,	P0203, P0204 P0207, P0208 P0302, P0303	, P0205, , P0300,		
						P0305,	P0306, P0307 P042E			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solinoid B Stuck On [C35R]	Fail Case: Steady Stat	е	Wallallelloll	Conditions	Required	One Trip
		(Steady State)	⊥ Attained Gear sli	p >= 400 RPM				
			If the Above is Tru for Tim	Table Based Time Please Enable Time Refer to (Sec) Table 4 in supporting documents				
			Intrusive tes (CBR1 clutc exhausted Gear Rati	h				
			Gear Rati If the abov	o >= 1.4554443 e				
			parameters are tru				Fail >= 1.1 Timer (Sec)	
							Fail >= 2 Count in 1st Gear	
							or Total >= 3 Fail Counts	
			Fail Case Case: Steady Stat 2nd gea					

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	Criteria	value	Manufiction	Conditions	Required	illum.
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time					
				<= 1.6086426 >= 1.4554443				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
-,	- 340						>= 1.1 7	Fail Timer Sec)
							>= 3 (i	Fail Count n 2nd Gear
			Fail Case: Steady State				>= 3	or Total Fail ounts
			Case Case: Steady State 4th gear					
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			If the Above is True for Time					
				<= 0.8946533 >= 0.8094482			Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 4th Gear	
			<u>Fail</u> <u>Case</u> Case: Steady State <u>4</u> 6th gear				or Total >= 3 Fail Counts	_

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Max Delta Output Speed Hysteresis	Table Based value Please		Conditions	Roquirou	
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (CB26 clutch exhausted)				Fail	
			Gear Ratio	<= 0.8946533			>= 1.1 Time (Sec	er
			Gear Ratio	>= 0.8094482			>= 3 coun	

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Requir		Mil Illum.
System	Code	Description	If the above	value	Manufiction		Conditio	115	<u> </u>	Requii	eu	IIIU
			parameters are true									
			·								Fail	
									>=	1.1	Timer	
											(Sec)	
											Fail	
									>=	3	Count	
											in 6th Gear	
											or Total	
									>=	3	Fail	
											Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag		TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Pressurized	=	TRUE	Boolean				
					A OR B							
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo	>=	8.5996094	Volts				
					Ignition Voltage Hi	<=	31.999023	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	5	Nm				
					if Attained Gear=1st FW	<=	8191.875	Nm				
					Engine Torque Enable Transmission Fluid	>=		°C				
					Temperature	>=	-6.65625	-0				1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Input Speed Sensor fault Output Speed Sensor fault			
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B StuckOn [C35R] (Dymanic)	Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers)					One Trip
			Primary Oncoming Clutch Pressure Command Status	= pressurize				
			Primary Offgoing Clutch Pressure Command Status	= exhaust				
			Range Shift Status Attained Gear Slip	Control				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu	nold e	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above conditions are true run appropriate Fail 1 Timers Below:						
			fail timer 1 (3-1 shifting with Closed Throttle)		Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Throttle)		Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Closed Throttle)		Fail Time (Sec)				
			fail timer 1 (3-4 shifting with Throttle)		Fail Time (Sec)				
			fail timer 1 (3-4shifting with Closed Throttle)		Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)		Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Closed Throttle)		Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Throttle)		Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Closed Throttle)		Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Throttle)		Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	5 11 11	>= 0.2998047 Fail Time (Sec)	a.ra.ra.ra	Conditions	Required	
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer 1, sec and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			3rd gear fail counter				3rd >= 3 gear fail counts	
			5th gear fail counter				OR 5th gear >= 3 fail counts	
			Total fail counter				OR >= 5 total fail counts	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault	= FALSE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Cinteria	Disable Conditions:	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 MIL not Illuminated for DTC's:	≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean = TRUE	rioquii cu	
Variable Bleed Solenoid (VBS)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	Fail Case Case: Steady State 1 4th Gear					One Trip
			Gear slip Intrusive test: commanded 5th gear				Please See Table 5 For Timer Neutral Time Cal (Sec)	

							. 0. 2 020 110110		
Component/	Fault		Malfunction	Threshold	Secondary	Enable	Time	Mil	
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.	
			If attained Gear ≠5th for time	Please refer to Shift Time Supporting Documents					
			if the above conditions have been met						
			Increment 4th Gear Fail Counter				>= 3 Gear Fail Count		
			and C456 Fail Counters				OR C456 >= 14 Fail Counts		
			Fail Case: Steady State 2 5th Gear						
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Time Cal Neutral Time (Sec)		
			Intrusive test: commanded 6th gear						
			If attained Gear ≠ 6th for time						
			if the above conditions have been met						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
- Cyclom		2000	Increment 5th Gear Fail Counter				5th >= 3 Gear Fail Count	
			and C456 Fail Counters				OR C456 >= 14 Fail Counts	
			Fail Case Steady State 3 6th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Time Cal Neutral Time (Sec)	
			Intrusive test: commanded 5th gear					
			If attained Gear ≠ 5th for time	Please refer to Shift Time Supporting Documents				
			if the above conditions have been met					
			Increment 6th Gear Fail Counter and C456 Fail Counter				6th >= 3 Gear Fail Count OR	
			and C456 Fail Counter				C456 >= 14 Fail Counts	
					PRNDL State defaulted inhibit RVT			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
2,555					IMS fault pending indication	=	FALSE	Boolean		
					TPS validity flag	=	TRUE	Boolean		
					Hydraulic System Pressurized	=	TRUE	Boolean		
					Minimum output speed for RVT	>=	0	RPM		
					A OR B					
					(A) Output speed enable		67	RPM		
					(B) Accelerator Pedal enable		0.5004883	Pct		
					Common Enable Criteria Ignition Voltage Lo	>=	8.5996094	Volts		
					Ignition Voltage Hi		31.999023	Volts		
					Engine Speed Lo		400	RPM		
					Engine Speed Hi		7500	RPM		
					Engine Speed is within the allowable limits for		5	Sec		
					Throttle Position Signal valid HSD Enabled		TRUE TRUE	Boolean Boolean		
					Transmission Fluid Temperature	>=	-6.65625	°C		
					Input Speed Sensor fault		FALSE	Boolean		
					OutputSpeed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:			P0722,		
						P0106, P0172, P0202, P0206, P0301, P0305,	P0101, P0102, P0107, P0108 P0174, P0175 P0203, P0204 P0207, P0208 P0302, P0303 P0306, P0307 P042E	, P0171, , P0201, , P0205, , P0300, , P0304,		
						ı ∪ 1 ∪1,	I VHZL			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria	Value	IVIAIIUNCTION	Conditions	Required	Illum.
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	Fail Case Case: Steady State 1 1st					One Trip
			Attained Gear slip	>= 400 RPM				
			If the Above is True for Time					
			Intrusive test: (CBR1 clutch exhausted) Gear Ratio					
				>= 1.0943604				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 2 Count in 1st Gear	
							or Total >= 3 Fail Counts	
			Fail Case Steady State 2 2nd					

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria Max Delta Output Speed Hysteresis	Table Based value Please	Manufiction	Conditions	Required	
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.2095947 >= 1.0943604				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Require	d	Mil Illum.
							>=	1.1	Fail Timer (Sec)	
							>=	3	Fail Count in 2nd Gear	
							>=	3	or Total fail counts	
			Fail Case Steady State 3 3rd							
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents						
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents						

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	Criteria	value	Manufiction	Conditions	Required	mui
			If the Above is True for Time					
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio					
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 3rd Gear	
							OR Total >= 3 Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication	= FALSE Boolean = FALSE Boolean		
					output speed TPS validity flag HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized A OR B			
					(A) Output speed enable			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
					(B) Accelerator Pedal enable	>=	0.5004883	Nm		
	1 1				Ignition Voltage Lo	>=	8.5996094	Volts		
					Ignition Voltage Hi	<=	31.999023	Volts		
					Engine Speed Lo	>=	400	RPM		
	1 1				Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct		
					if Attained Gear=1st FW Engine Torque Enable		5	Nm		
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.875	Nm		
					Transmission Fluid Temperature	>=	-6.65625	°C		
					Input Speed Sensor fault	=	FALSE	Boolean		
					Output Speed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:			P0722,		
						P0106, P0172, P0202, P0206, P0301, P0305,	P0101, P0102, P0107, P0108 P0174, P0175 P0203, P0204 P0207, P0208 P0302, P0303 P0306, P0307 P042E	s, P0171, s, P0201, s, P0205, s, P0300, s, P0304,		
						,				

Component/	Fault		Malfunction	Threshold	d Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria	Value	waitunction	Conditions	Required	Illum. One Trip
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boo	plean			One mp
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d				
			Primary Offgoing Clutch Pressure Command Status					
			Range Shift Status	Initial ≠ Clutch Control				
			Attained Gear Slip	<= 40 RPN	М			
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (4-1 shifting with throttle)	>= 0.2998047 Fail (Sec	I Time ec)			
			fail timer 1 (4-1 shifting without throttle)	>= 0.5 Fail (Sec	l Time ec)			
			fail timer 1 (4-2 shifting with throttle)	>= 0.2998047 Fail (Sec	l Time ec)			
			fail timer 1 (4-2 shifting without throttle)	>= 0.5 Fail (Sec	I Time ec)			
			fail timer 1 (4-3 shifting with throttle)	>= 0.2998047 Fail (Sec	I Time ec)			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
		•	fail timer 1 (4-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with throttle)	>= 0.2998047 Fail Time (Sec)				
			fail timer 1 (5-3 shifting without throttle)					
			fail timer 1 (6-2 shifting with throttle)	>= 0.2998047 (Sec)				
			fail timer 1 (6-2 shifting without throttle)					
			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, sec and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				Fail Counter >= 3 From 4th Gear OR	r

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	e ons		Time Requir		Mil Illum.
•		·	5th gear fail counter						>=	3	Fail Counter From 5th Gear	
			6th gear fail counter						>=	3	OR Fail Counter From 6th Gear OR	
			Total fail counter						>=	5	Total Fail Counter	
					TUT Enable temperature	>=	-6.65625	°C				
					Input Speed Sensor fault	=	FALSE	Boolean				
					Output Speed Sensor fault	=	FALSE	Boolean				
					Command / Attained Gear		1st	Boolean				
					High Side Driver ON	=	TRUE	Boolean				
					output speed limit for TUT	>=	100	RPM				
					input speed limit for TUT	>=	150	RPM				
					PRNDL state defaulted	=	FALSE	Boolean				
					IMS Fault Pending	=	FALSE	Boolean				
					Service Fast Learn Mode	=	FALSE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria		Val		Malfunction	Conditions	Required	Illum.
						Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
								FOM BOADA BOADO BOADO		
								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		
			E-11						<u> </u>	Constitut
Tap Up Tap Down			<u>Fail</u> <u>Case</u> Tap Up Switch Stuck							Special No MIL
Switch (TUTD)	P0815	Upshift Switch Circuit	1 in the Up Position in	=	0	Boolean				
,			Range 1 Enabled							
			T 11 0 11 1 01 1							
			Tap Up Switch Stuck in the Up Position in		0	Boolean				
			Range 2 Enabled		Ü	Dooloan				
			Tap Up Switch Stuck							
			in the Up Position in		0	Boolean				
			Range 3 Enabled							
			Tap Up Switch Stuck		•	5 .				
			in the Up Position in Range 4 Enabled	=	0	Boolean				
			Range 4 Enabled							
			Tap Up Switch Stuck							
			in the Up Position in	=	0	Boolean				
			Range 5 Enabled							
			Tap Up Switch Stuck							
			in the Up Position in		0	Boolean				
			Range 6 Enabled							

Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary Malfunction	Enable		Time	al	Mil
System	Code	Description	Criteria		Val	ue	Manunction	Conditions	_	Require	α	Illum
			Tap Up Switch Stuck in the Up Position in Neutral Enabled		1	Boolean						
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Reverse Enabled		0	Boolean						
			Tap Up Switch ON	=	TRUE	Boolean			>=	1	Fail Time (Sec)	
			Fail Case Tap Up Switch Stuck in the Up Position in Range 1 Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled		1	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean						

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Condition			Time Require		Mil Illum
System	Code	Description			vai	uG	mananonon		Oonaide	7113		require	,u	aiii
			Tap Up Switch Stuck in the Up Position in	=	1	Boolean								
			Range 6 Enabled		•									
			Tap Up Switch Stuck		0	D 1								
			in the Up Position in Neutral Enabled	=	0	Boolean								
			Tap Up Switch Stuck											
			in the Up Position in	=	0	Boolean								
			Park Enabled											
			Tap Up Switch Stuck											
			in the Up Position in		0	Boolean								
			Reverse Enabled											
			Tap Up Switch ON	=	TRUE	Boolean								
			NOTE: Both										Fail	
			Failcase1 and Failcase 2 Must Be								>=	600	Time	
			Met										(Sec)	
				_			Time Since Last Range	>=	1	Enable Time				
							Change Ignition Voltage Lo	>=	8.5996094	(Sec) Volts				
							Ignition Voltage Lo	>= <=	31.999023	Volts				
							Engine Speed Lo	>=	400	RPM				
							Engine Speed Hi	<=	7500	RPM				

Component/ System	Fault Code		Malfunction Criteria		Thres Val	shold lue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Ontena		•		Engine Speed is within the allowable limits for	\- 5 Coo	rtoquilou	
							P0815 Status is	Test Failed This Key ≠ On or Fault Active		
						Disable Conditions:	DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	Fail Tap Down Switch Case Stuck in the Down Position in Range 1 Enabled	=	0	Boolean				Special No MIL
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled		0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled		0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	0	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Conditions		Time equired	Mil Illum.
		·	Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	=	1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range Park Enabled	=	1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	=	0	Boolean					
			Tap Down Switch ON	=	TRUE	Boolean			>=	1 sec	
			Fail Tap Down Switch Case Stuck in the Down Position in Range 1 Enabled	=	1	Boolean					-
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	=	1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	=	1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	1	Boolean					
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	1	Boolean					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Condition		F	Time Required	Mil Illum.
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	- 1	Boolean					·	
			Tap Down Switch Stuck in the Down Position in Neutral Enabled		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		Boolean						
			Tap Down Switch ON	= TRUE	Boolean						
			NOTE: Both Failcase1 and Failcase 2 Must Be Met						>=	600 sec	
						Time Since Last Range Change Ignition Voltage Lo	/-	Enable Time (Sec) Volts			
						Ignition Voltage Hi		Volts			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 7500 RPM		
					P0816 Status is	Test Failed This Key ≠ On or Fault Active		
				Disable Conditions:	DTC's:	TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			Fail >= 60 Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 400 RPM <= 7500 RPM		
					P0826 Status is	Test Failed		
				Disable Conditions:	DTC's:			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres		Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
Variable Bleed Solenoid (VBS)	P0961	Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS)	The HWIO reports an invalid voltage (out of range) error flag	=	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	e <= 31.999023 Volts d >= 400 RPM d <= 7500 RPM				
						Disable Conditions:	DTC's:					
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	=	TRUE	Boolean			>=	1.5	Fail Time (Sec)	One Trip
									out of	1.875	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	e <= 31.999023 Volts d >= 400 RPM d <= 7500 RPM				
						Disable Conditions:	MIL not Illuminated for DTC's:					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction		Enable Condition	ıs		Time Require		Mil Illum.
Variable Bleed Solenoid (VBS)	P0963	Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS)	The HWIO reports a high voltage (open or power short) error flag	=	TRUE	Boolean					>=	4.4	Fail Time (Sec)	Two Trips
											out of	5	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= >= <=	8.5996094 31.999023 400 7500 5	Volts Volts RPM RPM Sec				
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: N						
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					>=	0.3	Fail Time (Sec)	One Trip
											out of	0.375	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= >= <= >=	8.5996094 31.999023 400 7500 5 Test Failed This Key	Volts Volts RPM RPM Sec				
							P0966 Status is not	=	On or Fault Active					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions	: DTC's:			
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			Fail >= 0.3 Time (Sec)	
							out Samplor of O.375 Time (Sec)	
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<pre></pre>		
					P0967 Status is not	Test Failed This Key On or Fault Active		
				Disable Conditions				
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			Fail >= 0.3 Time (Sec)	
		, , , , , , , , , , , , , , , , , , ,					out Samplout Samploof (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0970 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 400 RPM <= 7500 RPM		
				Disable Conditions		TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail >= 0.3 Time (Sec) out Sample of 0.375 Time (Sec)	One Trip
					P0971 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 400 RPM <= 7500 RPM		

Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
					DTC's:			•		
P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TR	UE Boolean			>=	1.2	Fail Time (Sec)	One Trip
							out of	1.5	Sample Time (Sec)	
					P0973 Status is not	Test Failed This Key On or Fault Active				
					Ignition Voltage Engine Speed Engine Speed	<= 31.999023 Volts >= 400 RPM <= 7500 RPM				
					MIL not Illuminated for DTC's:					
P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TR	UE Boolean			>=	1.2	Fail Time (Sec)	Two Trips
							out of	1.5	Sample Time (Sec)	
	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid) Shift Solenoid A Control Circuit Liph	P0973 Shift Solenoid A Control Circuit Low (Mode 2 Solenoid) Shift Solenoid A Control Short) error flag Shift Solenoid A Control Circuit High (Mode 2 Solenoid) The HWIO reports a high voltage (open or power short) error power short power shor	P0973 Shift Solenoid A Control (Mode 2 Solenoid) Shift Solenoid A Control (Mode 2 Solenoid) Shift Solenoid A Control (Circuit High (Mode 2 Solenoid)) The HWIO reports a low voltage (ground short) error flag The HWIO reports a high voltage (open or power short) error power short) error and the short of power short of power short of power short) error and the short of power short of po	Disable Conditions: Shift Solenoid A Control (Mode 2 Solenoid) P0974 Shift Solenoid A Control (Circuit High Mode 2 Solenoid) The HWIO reports a low voltage (ground short) error flag Disable Conditions: The HWIO reports a high voltage (open or power short) error power short power sho	P0973 Shift Solenoid A Control (Mode 2 Solenoid) P0974 Shift Solenoid A Control (The HWIO reports a low voltage (ground short) error flag P0975 Shift Solenoid A Control (Mode 2 Solenoid) P0976 Shift Solenoid A Control (Crouit High power short) error alog (ground short) error alog (ground short) error flag (ground short) error	Disable Conditions: Disable Conditions	Disable Conditions: MIL not Illuminated for DTC's: ECM: None Possible Conditions	Disable Conditions: Disable Conditions	Disable Conditions: Mill. not Illuminated for DTC's: ECM: None

Fault Code	Monitor Strategy Description	Malfunction Criteria			Secondary Malfunction	Enable Conditions		Time Required		Mil Illum.
					P0974 Status is not	Test Failed This Key On or Fault Active				
					Ignition Voltage Engine Speed Engine Speed Engine Speed is within the	<= 31.999023 Volts >= 400 RPM <= 7500 RPM				
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None				
P0977		The HWIO reports a high voltage (open or power short) error flag	= 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 Engine Speed Engine Speed Engine Speed is within the	<= 31.999023 Volts >= 400 RPM <= 7500 RPM				
	Code	Code Description Shift Solenoid B Control Circuit High	Code Description Criteria Shift Solenoid B Control Circuit High (Mode 3 Solenoid) The HWIO reports a high voltage (open or power short) error	P0977 Circuit High (Mode 3 Sclengid) Poscription Criteria Val The HWIO reports a high voltage (open or power short) error	Code Description Criteria Value Disable Conditions: Shift Solenoid B Control Circuit High (Mode 3 Solenoid) P0977 Circuit High (Mode 3 Solenoid) The HWIO reports a high voltage (open or power short) error power short) error	Code Description Criteria Value Malfunction	Description	Code Description Criteria Value Malfunction Conditions	Code Description Criteria Value Malfunction Conditions Required	Code Description Criteria Value Malfunction Conditions Required

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions	: DTC's:			
Tap Up Tap Down Switch (TUTD)	P1761	Tap Up and Down switch signal circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boolean			>= 3 Fail Counter	Special No MIL
							Sample > 10 Timer (Sec)	
					Tap Up Tap Down Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= 1ROE Boolean >= 400 RPM <= 7500 RPM		
				Disable Conditions				
Mode Switch	P1762	Transmission Mode Switch Signal Circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boolean			>= 3 Fail Counter	Special No MIL
							Sample > 10 Timer (Sec)	
					Pattern Switch Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 400 RPM <= 7500 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
- Gyotom		Возоприон	Ontona		Disal Condition	ole MIL not Illuminated fo	or TCM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Case Current range	=	Transition 1 (bit state Range 1110)				One Tri
			Previous range	≠	CeTRGR_ e_PRNDL_ Range Drive6				
			Previous range	≠	CeTRGR_ e_PRNDL_ Range Drive5				
			Range Shift State	=	Range Shift ENUM Completed				
			Absolute Attained Gear Slip		50 rpm				
			Attained Gear		Sixth				
			Attained Gear		First				
			Throttle Position Available		TRUE				
			Throttle Position		8.0001831 pct				
			Output Speed		200 rpm				
			Engine Torque		50 Nm				
					8191.75 Nm				
			If the above conditions are met then Increment Fail Timer						Fail econd s

Component/	Fault Code	Monitor Strategy	Malfunction		Threshold Value	Secondary Malfunction	Enable Conditions		Time Requir		Mi Illur
System	Code	Description	Criteria		value	mananotion	Conditions	1	Nequii	Gu	u
			If Fail Timer has Expired then							Fail	
			Increment Fail					>=	5	Counts	
			Counter							Counto	
			<u>Fail</u>								
			Case Output Speed	<=	70 rpm						
			<u>2</u>		70 15						
			The following PRNDL								
			sequence events								
			occur in this exact								
			order:								
			PRNDL state	=	Drive 6 (bit state 0110)						
					state 0110)						
			PRNDL state = Drive	>=	1 Sec						
			6 for	/-	1 Sec						
					Transition						
			PRNDL state	=							
					0111)						
					Drive 6 (hit						
			PRNDL state	=	Drive 6 (bit state 0110)						
					Transition						
			PRNDL state	=	1 (bit state Range						
					1110)						
			Above sequencing	<=	1 Sec						
			occurs in								
			Neutral Idle Mode	=	Inactive						
			If all conditions above								
			are met Increment								
			delay Timer								
			If the below two							Fail	
			conditions are met					>=	3	Second	
			Increment Fail Timer							s	
			dolou tire e		1 000						
			delay timer								
	1 1		Input Speed	>=	400 Sec	1		1			Ĭ

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Fail Timer has Expired then Increment Fail Counter				>= 2 Fail	
			Fail Case Current range	Transition = 13 (bit Range state 0010)	Previous range	CeTRGR_e ≠ _PRNDL_D rive2		
			Engine Torque	>= -8192 Nm	Previous range	CeTRGR_e ≠ _PRNDL_D rive1		
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration	= 1 Boolean		
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Secoi	nd
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Coun	
			Fail Case 4 Current range	Transition = 8 (bit state Range 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			
			Inhibit bit (see definition)	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque	>= 100 Nm				
			Steady State Engine Torque					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
2,500		2000.1911011	If the above conditions are met then Increment Fail Timer	t			>= 0.225 Second	
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail Throttle Position 5 Available					
			The following PRNDL sequence events occur in this exact order:	t				
			PRNDL State	Reverse = (bit state Range 1100)				
			PRNDL State	Transition = 11 (bit Range state 0100)				
			PRNDL State	Neutral (bit Range state 0101)				
			PRNDL State	Transition = 11 (bit Range state 0100)				
			Above sequencing occurs in	1 380				
			Then delay timer increments					
			Delay timer					
			Range Shift State	Range = Shift Complete				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
System	Code	Description	Absolute Attained		mananonon	Conditions	Required	man
			Gear Slip					
			Attained Gear					
			Attained Gear					
			Throttle Position					
			Output Speed	· ·				
			If the above conditions are met				>= 20 Second	
			Increment Fail Timer				s s	
			Fail Case Current range	Illegal (bit state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			
			and		Current Range	Transition ≠ 11 (bit state 0100)		
			A Open Circuit (See Definition)	= FALSE Boolean	or			
					Last positive state	<pre> Neutral (bit state 0101) </pre>		
					or			
					Previous transition state	Transition ≠ 8 (bit state 0111)		
					Fail case 5 delay timer	'		
			If the above					
			Condtions are met then, Increment Fail timer				>= 6.25 Second s	
			Fail_ Case 7 Current PRNDL State	PRNDL circuit ABCP = Range 1101				
			and					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Condition			Time Require		Mil Illum.
System	Ooue	Безсприон	Previous PRNDL state	_	PRNDL circuit ABCP =1111	Range						. to quii		
			Input Speed	>=	150	RPM								
			Reverse Trans Ratio	<=	2.8458252	? ratio								
			Reverse Trans Ratio	>=	3.2741699	ratio								
			If the above Condtions are met then, Increment Fail timer	t I							>=	6.25	Second s	
			P182E will report test fail when any of the above 7 fail cases are met	3										
							Ignition Voltage Lo	>=	8.5996094	Volts				
							Ignition Voltage Hi	<=	31.999023	Volts				
							Engine Speed Lo	>=	400	RPM				
							Engine Speed Hi	<=	7500	RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							Engine Torque Signal Valid	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Conditions		Time Require	d	Mil Illum.
System	Code	Безсприоп	Criteria		vai	Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P07C0, P07BF, P077C, P077D ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		rtequile	<u>u</u>	
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is The following events must occur Sequentially		Park or Neutral	Enumeration						One Trip
			Initial Engine speed	<=	50	RPM			>=	0.25	Enable Time (Sec)	
			Then Engine Speed Between Following Cals									
			Engine Speed Lo Hist	>=	50	RPM					Enable	
			Engine Speed Hi Hist	<=	480	RPM			>=	0.06875	Time (Sec)	
			Then Final Engine Speed	>=	525	RPM						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold lue	Secondary Malfunction		Enable Conditio			Time Require		Mil Illum.
			Final Transmission Input Speed	>= 200	RPM					>=	1.25	Fail Time (Sec)	
						DTC has Ran this Key Cycle?	=	FALSE	Boolean				
						Ignition Voltage Lo Ignition Voltage Hi		6 31.999023	V V				
						Ignition Voltage Hyst High (enables above this value)		5	V				
						Ignition Voltage Hyst Low (disabled below this value)	\-	2	V				
						Transmission Output Speed	<=	90	rpm				
						P1915 Status is	≠	Test Failed This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: F						
Transmission Control Module (TCM)	P2534	Ignition Switch Run/Start Position Circuit Low	TCM Run crank active (based on voltage thresholds below)	= FALSE	Boolean								One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)	5	Volts					>=	280	Fail Counts (25ms loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts					Out of	280	Sample Counts (25ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold Ilue	Secondary Malfunction	Enabl Conditi			Time Require		Mil Illum.
					Disable Conditions:	ECM run/crank active status available ECM run/crank active status MIL not Illuminated for DTC's:	= TRUE TCM: None	Boolean Boolean				
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds	= TRUE	Boolean		EGW. NOTIE					One Trip
			below) Ignition Voltage High Hyst (run crank goes true when above this value)	5	Volts				>=	280	Fail Counts (25ms loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts				Out of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available ECM run/crank active status	= IRUE	Boolean Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None : ECM: None					
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	Fail Case Case: Steady State 1 2nd Gear									One Trip

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

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Time		Mil
System	Code	Description	Criteria	Value	Malfunction		Conditio		<u> </u>	Require		Illum.
			If attained Gear = 5th For Time									
			If Above Conditions have been met, Increment 5th gear fail counter						>=	3	5th Gear Fail Count or	
			and CB26 Fail Count						>=	14	CB26 Fail Count	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication TPS validity flag		FALSE TRUE	Boolean Boolean				
					1P3 validity flag	_	IKUE	boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B							
					(A) Output speed enable		67	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria		0.5000004	\/a!!-				
					Ignition Voltage Lo	>=	8.5996094	Volts				
					Ignition Voltage Hi		31.999023 400	Volts RPM				
					Engine Speed Lo Engine Speed Hi		7500	RPM				
					Engine Speed is within the allowable limits for	\-	5	Sec				
					Throttle Position Signal valid		TRUE	Boolean				
					HSD Enabled		TRUE	Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code		Criteria	Value	Malfunction	Conditions	Required	Illum.
Cystom	Jour	Bescription	Ontena	Disable Conditions:	Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present MIL not Illuminated for DTC's:	>= -6.65625 °C = FALSE Boolean = FALSE Boolean		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status	= TRUE Boolean Maximum = pressurize d Clutch = exhaust command				One Trip
			Range Shift Status Attained Gear Slip	Control				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Val		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
•		·	If above coditons are true, increment appropriate Fail 1 Timers Below:						
			fail timer 1 (2-1 shifting with throttle)		Fail Time (Sec)				
			fail timer 1 (2-1 shifting without throttle)	>= 0.5	Fail Time (Sec)				
			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)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (2-4 shifting without throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (6-4 shifting with throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (6-4 shifting without throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (6-5 shifting with throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (6-5 shifting without throttle)	>= 0.5	Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
2,330			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, see and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				Fai Cour >= 3 Froi 2nd Gea	ter n I
			6th gear fail counter				OF Fai Cour >= 3 Froi 6th Gea OF	l ter m
			total fail counter				Tot: >= 5 Fai Cour	al I
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON	= FALSE Boolean = FALSE Boolean ≠ 1st Boolean		

input speed limit for TUT >= 150 PRNDL state defaulted = FALSE E IMS Fault Pending = FALSE E Service Fast Learn Mode = FALSE E HSD Enabled = TRUE E Disable Conditions:	Required PM PM lean lean lean lean	Illum.
Input speed limit for TUT	PM lean lean lean lean	
PRNDL state defaulted = FALSE E IMS Fault Pending = FALSE E IMS Fault Pending = FALSE E IMS Fault Pending = FALSE E IMS Exercise Fast Learn Mode = FALSE E IMSD Enabled = TRUE E IMSD Enabled = TRUE E IMSD Enabled = TRUE E IMSD Enable	ean lean lean lean	
IMS Fault Pending	ean lean lean	
Service Fast Learn Mode	ean ean	
HSD Enabled	ean	
Disable MIL not Illuminated for TCM: P0716, P0717, P077 Conditions: DTC's: P0723, P182E ECM: P0101, P0102, P010 P0106, P0107, P0108, P0		
Conditions: DTC's: P0723, P182E ECM: P0101, P0102, P010 P0106, P0107, P0108, P0		
P0106, P0107, P0108, P0		
P0172, P0174, P0175, P0 P0202, P0203, P0204, P0 P0206, P0207, P0208, P0 P0301, P0302, P0303, P0 P0305, P0306, P0307, P0 P0401, P042E	1, 5, 0, 1,	
Veriable Blood Pressure Control (PC) Fail Constitution Starts		One Tri
Variable Bleed Solenoid (VBS) P2715 Pessure Control (PC) Solenoid D Stuck On [CB26] (Steady State) Case: Steady State 1 1st		
Attained Gear slip >= 400 RPM		
If the Above is True for Time If the Above is True for Time For Time For Time For Time For Time		
Intrusive test: (CBR1 clutch exhausted) Gear Ratio <= 2.4821777		
Gear Ratio >= 2.2458496		

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

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable Conditions	Time	Mil Illun
System	Code	Description	Criteria	Value	Maitunction	Conditions	Required	IIIui
			If the Above is True for Time					
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 2.4821777				
				>= 2.2458496				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail Count in 3rd Gear	
							or Total >= 3 Fail Counts	6
			Fail Case 3 Case: Steady State 4rd Gear					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time					
				<= 0.7003174 >= 0.633667				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
							Fail >= 1.1 Timer (Sec)	
							Fail Count in 4th Gear	
							or Total >= 3 Fail Count	
			Fail Case: Steady State 4 Sth Gear					
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting	Manufiction	Conditions	Required	mon.
				<= 0.7003174 >= 0.633667			Fail	
							>= 1.1 Timer (Sec) Fail >= 3 Count in 5th Gear	
						544.05	or Total >= 3 Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled	= FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean		
					Hydraulic_System_Pressurized A OR B (A) Output speed enable			

MYD SECTION Page 91 of 158

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
					(B) Accelerator Pedal enable	>=	0.5004883	Nm		
					Ignition Voltage Lo	>=	8.5996094	Volts		
					Ignition Voltage Hi	<=	31.999023	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct		
					if Attained Gear=1st FW Engine Torque Enable		5	Nm		
					if Attained Gear=1st FW Engine Torque Enable		8191.875	Nm		
					Transmission Fluid Temperature	>=	-6.65625	°C		
					Input Speed Sensor fault		FALSE FALSE	Boolean		
					Output Speed Sensor fault Default Gear Option is not present	_	TRUE	Boolean		
					, i					
				Disable Conditions:	MIL not Illuminated for DTC's:			P0722,		
						P0106, P0172, P0202, P0206, P0301,	P0101, P0102, I P0107, P0108 P0174, P0175 P0203, P0204 P0207, P0208 P0302, P0303 P0306, P0307	, P0171, , P0201, , P0205, , P0300, , P0304,		
							P042E			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	Criteria	Value	wanunction	Conditions	Required	One Tri
Variable Bleed Solenoid (VBS)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3	Fail Time (Sec)
							out 0.375	Sample Time (Sec)
					P2770 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= 31.999023 Volts >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for			
				Disable Conditions:	DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3	Fail Time (Sec)
							out 0.375 of	Sample Time (Sec)
					P2721 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
- Cyclom	-	Boothpaon	Ontona		Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= 400 RPM <= 7500 RPM		
				Disable Conditions:	DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	Fail Case Case: Steady State					One Trip
			Gear slip	>= 400 RPM			Please See Table 5 For Timer Neutral Time (Sec)	
			Intrusive test: commanded 2nd gear					
			If attained Gear ≠ 2nd for Time					
			If Above Conditions have been met, Increment 1st gear fail counter				1st >= 3 Gear Fail Count or	
			and C1234 fail counter				C1234 >= 14 Clutch Fail Count	

Component/	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria Fail Case Case: Steady State 2 2 2nd Gear		Manunction	Conditions	Required	mani.
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Time Cal Neutral (Sec)	
			Intrusive test: commanded 3rd gear					
			If attained Gear ≠ 3rd for Time	Please refer to Shift Time Supporting Documents				
			If Above Conditions have been met, Increment 2nd gear fail counter				2nd Sear >= 3 Fail Count or	
			and C1234 fail counter				C1234 >= 14 Clutch Fail Count	
			Fail Case: Steady State 3 3rd Gear				Please See Noutral	
			Gear slip	>= 400 RPM			>= Table 5 For Neutral Timer (Sec)	
			Intrusive test: commanded 4th gear					

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Require		Mil Illum.
			and C1234 fail counter						>=	14	C1234 Clutch Fail Count	
					PRNDL State defaulted inhibit RVT IMS fault pending indication TPS validity flag		FALSE FALSE FALSE TRUE	Boolean Boolean Boolean				
					Hydraulic System Pressurized Minimum output speed for RVT A OR B (A) Output speed enable	>= >=	TRUE 0 67	Boolean RPM RPM				
					(B) Accelerator Pedal enable Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= >= <= >= <=	0.5004883 8.5996094 31.999023 400 7500	Pct Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for Throttle Position Signal valid HSD Enabled	>=	5 TRUE TRUE	Sec Boolean Boolean				
					Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present		-6.65625 FALSE FALSE TRUE	°C Boolean Boolean				
					ргезепт							

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code		Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)					One Trip
			Primary Oncoming Clutch Pressure Command Status	= pressurize				
			Primary Offgoing Clutch Pressure Command Status	= exhaust				
			Range Shift Status	Initial ≠ Clutch Control				
			Attained Gear Slip If the above conditions are true increment appropriate Fail 1 Timers Below: fail timer 1					
				>= 0.2998047 sec				

Component/	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria fail timer 1	value	Manufiction	Conditions	Required	mum
			(2-6 shifting without throttle)	>= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle)	>= 0.2998047 sec				
			fail timer 1 (3-5 shifting without throttle)					
			fail timer 1 (4-5 shifting with throttle)					
			fail timer 1 (4-5 shifting without throttle)					
			fail timer 1 (4-6 shifting with throttle)	>= 0.2998047 sec				
			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, sec and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
,			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	
			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 = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean				

Component/	Fault		Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	Fail Case Case: 5th Gear					One Trip
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in	Mairunction	Conditions	Required	illum.
			Intrusive test: (C35R clutch exhausted)	supporting documents				
				<= 1.2095947				
			Gear Ratio If the above parameters are true	>= 1.0943604				
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 5th Gear	
							OR Total >= 3 Fail Counts	
			Fail Case 2 Case: 6th Gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
- Cyclem		3 333 p 611	Max Delta Output Speed Hysteresis	Table Based value Please				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time					
				<= 1.2095947 >= 1.0943604				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Time Require		Mil Illum
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
									>=	3	OR Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication output speed	= >=	FALSE 0	Boolean RPM				
					TPS validity flag		TRUE	Boolean				
					HSD Enabled		TRUE	Boolean				
					Hydraulic_System_Pressurized		TRUE	Boolean				
					A OR B							
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo	>=	8.5996094	Volts				
					Ignition Voltage Hi	<=	31.999023	Volts				
					Engine Speed Lo	>=	400	RPM				
					Engine Speed Hi		7500	RPM				
					Engine Speed is within the allowable limits for		5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct				
					if Attained Gear=1st FW Engine Torque Enable	>=	5	Nm				
					if Attained Gear=1st FW Engine Torque Enable	/-	8191.875	Nm				
					Transmission Fluid Temperature	\-	-6.65625	°C				
					Input Speed Sensor fault		FALSE	Boolean				
					Output Speed Sensor fault		FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
9,000					Default Gear Option is not present		·	
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Time (Sec) out	One Trip
					P2729 Status is not	Test Failed This Key On or Fault Active	(360)	
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volt >= 400 RPM <= 7500 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		·		Disable Conditions:	DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	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			>= 0.3 Fail Time (Sec) out 0.375 Time (Sec)	One Trip
					P2730 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= 8.5996094 Volt <= 31.999023 Volt >= 400 RPM <= 7500 RPM		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE Boolean			Fail >= 4.4 Time (Sec)	Two Trips
							out Sample of 5 Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Val		Secondary Malfunction	Enable Condition			Time Require	d	Mil Illum.
Зузієні	Coue	Description	Onteria	vu	uo	P2763 Status is not	Test Failed	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		rtoquilo	<u>u</u>	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled	<pre></pre>	Volt Volt RPM RPM Sec Boolean				
					Disable Conditions:	MIL not Illuminated for DTC's:						
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	= TRUE	Boolean				>= out	4.4	MPH MPH	One Tr
						P2764 Status is not	Test Failed This Key On or Fault Active		of	<u> </u>	WIITI	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled	<pre><= 31.999023 >= 400 <= 7500 >= 5</pre>	Volt Volt RPM RPM Sec Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Condition	s		Time Require		Mil Illum.
		·				Disable Conditions:	MIL not Illuminated for DTC's:						
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error		TRUE	Boolean				>=	62	Fail counts (≈ 10 second s)	One Trip
			Delay timer	>=	0.1125	sec				Out of	70	Sample Counts (≈ 11 second s)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	e >= 8.5996094 e <= 31.999023	sec Volt Volt				
						Disable Conditions:	MIL not Illuminated for DTC's:						
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	e >= 8.5996094 e <= 31.999023	sec Volt Volt				

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

Supporting Tables--2D

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										
14010 2	Axis	-6.67	-6.66	40.00°	C					
	Curve	409.59	2.00	2.00	Sec					
Table 3	=	0.07	0.00	10.00						
	Axis	-6.67	-6.66	40.00 °						
	Curve	409.59	4.00	4.00	sec					
Table 4										
	Axis	-6.67	-6.66	40.00°						
	Curve	409.59	2.00	2.00	Sec					
Table 5	A i a	0.07	0.00	40.00	00					
	Axis Curve	-6.67 409.59	-6.66 3.00	40.00 °						
	Cuive	409.59	3.00	3.00	360					
Table 6										
<u> </u>	Axis	-6.67	-6.66	40.00	80.00	120.00°C				
	Curve	409.00	3.60	1.60	1.40	1.40 S	ec			
Table 7										
Table 7	Axis	-6.67	-6.66	40.00	80.00	120.00 °C				
	Curve	409.00	3.40	1.40	1.30		ec			
		.00.00	0.10			0				
Table 8	_									
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C				
	Curve	409.00	3.60	1.60	1.50	1.40 S	ec			
Table 9										
Table 3	Axis	-6.67	-6.66	40.00	80.00	120.00 °C	2			
	Curve	409.00	3.30	1.30	1.20	1.10 S				
<u>Table 10</u>										
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C				
	Curve	3.03	1.86	1.00	0.75	0.58 S	ec			

Supporting Tables--2D

Table 11										
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C				
	Curve	1.72	1.11	0.60	0.36	0.22 Sec				
=										
<u>Table 12</u>	Avio	-40.00	-20.00	0.00	30.00	110.00 °C				
	Axis Curve	2.12	1.39	0.00	0.64	0.33 Sec				
	Cuive	2.12	1.00	0.04	0.04	0.55				
Table 13										
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C				
	Curve	2.51	0.95	0.50	0.29	0.13 Sec				
<u>Table 14</u>	Accid	40.00	00.00	0.00	00.00	110.00				
	Axis	-40.00	-20.00 0.82	0.00	30.00 0.20	110.00 °C 0.13 Sec				
	Curve	2.97	0.02	0.47	0.20	0.13 Sec				
Table 15										
	Axis	-40.00	-30.00	-20.00	-10.00	0.00	10.00	20.00	30.00	40.00 °C
	Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 Sec
	_									
<u>Table 16</u>	=	0.07	2 22	10.00						
Table 16	Axis	-6.67	-6.66	40.00 °						
Table 16	Axis Curve	-6.67 409.59	-6.66 2.50	40.00°(2.50°S						
Table 16 Table 17	Curve	409.59	2.50	2.50 S	Sec					
					Sec C					
Table 17	Curve _	-6.67	2.50	2.50 S	Sec C					
	Curve Axis Curve	-6.67 0.40	2.50 -6.66 0.35	2.50 S 40.00 °C 0.30 S	Sec C Sec					
Table 17	Axis Curve	-6.67 0.40	-6.66 0.35	2.50 S 40.00 °(0.30 S	Sec C Sec 0.00	30.00	60.00	100.00	149.00	149.10 °C
Table 17	Curve Axis Curve	-6.67 0.40	2.50 -6.66 0.35	2.50 S 40.00 °C 0.30 S	Sec C Sec	30.00 34.00	60.00 25.00	100.00	149.00 20.00	149.10 °C 256.00 °C
Table 17 Table 18	Axis Curve	-6.67 0.40	-6.66 0.35	2.50 S 40.00 °(0.30 S	Sec C Sec 0.00					
Table 17	Axis Curve Axis Curve	-6.67 0.40 -40.10 256.00	-6.66 0.35 -40.00 50.00	2.50 S 40.00 °(0.30 S -20.00 45.00	Sec C Sec 0.00 40.00	34.00	25.00	20.00	20.00	256.00 °C
Table 17 Table 18	Axis Curve	-6.67 0.40	-6.66 0.35	2.50 S 40.00 °(0.30 S	Sec C Sec 0.00					
Table 17 Table 18	Axis Curve Axis Curve	-6.67 0.40 -40.10 256.00	-6.66 0.35 -40.00 50.00	2.50 S 40.00 °(0.30 S -20.00 45.00	0.00 40.00	34.00	25.00	20.00	20.00	256.00 °C
Table 17 Table 18	Axis Curve Axis Curve Axis Curve	-6.67 0.40 -40.10 256.00 -40.10 256.00	2.50 -6.66 0.35 -40.00 50.00 50.00	2.50 S 40.00 °(0.30 S -20.00 45.00 45.00	0.00 40.00 40.00	34.00 30.00 34.00	60.00 25.00	20.00 100.00 20.00	20.00 149.00 20.00	256.00 °C 149.10 °C 256.00 °C
Table 17 Table 18	Axis Curve Axis Curve	-6.67 0.40 -40.10 256.00	-6.66 0.35 -40.00 50.00	2.50 S 40.00 °(0.30 S -20.00 45.00	0.00 40.00	34.00	25.00	20.00	20.00	256.00 °C

Supporting Tables--2D

Table 21

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

Supporting Tables--3D

3D_Table 1

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

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

3D_Table 2 _____

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

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

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Transmission Fluid Te	mperat							
Transmission Fluid Temperature Sensor Circuit Range/Performance	P0711	This test detects performance of the transmission fluid temperature sensor by	For Case 1 (Stuck sensor after cold start-up) Start-up temperature change	<= 2 deg. C	All Cases No MIL-on DTCs for this drive cycle		Case 1: 300 seconds	В
Nange/Fenomiance		comparing changes in temperature from start up and between samples to calibration values.	for a time AND Vehicle speed	>= 100 seconds >= 8 KPH >= 300 seconds.	No Fault Pending DTCs for this drive cycle		Case 2: 300 seconds	
			after warm start-up)		No Pass DTCs for this drive cycle			
			Start-up temperature change for a time	<= 3 deg. C >= 100 seconds	No MIL-on DTC for this drive cycle cycle OR			
			AND		No Fault Active DTC Components powered AND	P0711		
			Vehicle speed for a time For Case 3 (Noisy sensor)	>= 8 KPH >= 300 seconds.	Battery Voltage between Engine Speed between	9 V and 18 V	Case 3: 7 seconds	
		for	>= 20 deg. C 14 events < 7 seconds.	Start-up transmission fluid temperature is available Transmission fluid temperature between	-39 deg. C and 149 deg. C	Case 4: Min. 250 seconds		
	For Case 4 (Doesn't warm up to at least 20 deg. C)		ECT is not defaulted					
			Time Enabled Criteria met		For Case 1 (Stuck sensor after cold start-up),		Case 5:	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MI Illu
			AND		Start-up transmission fluid	-40 deg. C and 21	2 seconds	
					temperature between	deg. C		
			transmission fluid					
			temperature					
							250 ms	
				250 seconds when start	for a time	>= 300 seconds		
			is determined by a lookup table ranging from					
			table ranging nom	zo deg. C				
					engine coolant temperature	-		
			to	2200 seconds when	AND			
				start-up temperature is <= -40 deg. C.	engine coolant temperature change from start-up	>= 15 dog C		
				~40 deg. C.	For Case 2 (Stuck sensor after	>= 15 deg. C		
			For Case 5		warm start-up),			
			(Reasonableness at start-		warm start up),			
			up):					
			At start-up (with no		Start-up transmission fluid			
			abnormal powerdown		temperature between	deg. C.		
			condition),					
			engine speed	> 500 RPM	T00 01:	. 400 DDM		
			AND			>= 120 RPM		
			AND engine coolant		engine coolant temperature	>= 300 seconds		
			temperature		engine coolant temperature	>= 70 deg. C		
			and	< 50 deg. C	AND			
			for a time	>= 2 seconds	engine coolant temperature			
					change from start-up	>= 55 deg. C		
			AND					
			//ABO//AT EGT)	. 0.10	For Case 4 (Doesn't warm up			
			((ABS(IAT-ECT)	<= 6 deg. C	to at least 20 deg. C),	> = 450 Nm-		
			A A I I D		net engine torque			
			AND		and vehicle speed	<= 1492 Nm		
			(F ○T <u>-</u> TET\\	> 40 deg. C		>= 22 KPH <= 512 KPH		
			(LU1-171))	TO GOY. O		>= 10.5%		
			OR			<= 100%		
					engine speed			
			(ABS(IAT-ECT)	> 6 deg. C		<= 6500 RPM		
			(= (= = = =)		engine coolant temperature			
			AND			<= 149 deg. C		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			(ECT-TFT)))	> 60 deg. C.	For Case 5 (Reasonableness at start-up):			
					Intake Air Temperature is not defaulted			
Transmission Fluid Temperature Sensor Circuit Low Input	P0712	Out of range low.	transmission fluid temperature		No MIL-on DTCs for this drive cycle	P0712	2.5 seconds 250 ms	В
			for a time	> 2.5 seconds.	Components powered AND			
					Battery Voltage between Engine Speed between for			
Transmission Fluid Temperature Sensor Circuit High Input	P0713	Out of range high.	transmission fluid temperature		No MIL-on DTCs for this drive cycle	P0711 P0712	2.5 seconds	В
от от триг				> 2.5 seconds		P0713	250 ms	
					Components powered AND			
					Battery Voltage between	9 V and 18 V		
						200 RPM and 7500 RPM 5 seconds		
					IF Engine run time	<= 600 seconds		
					THEN Engine Coolant Temperature			
					AND not defaulted for a time	>= 20 seconds.		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Speed Sensors	GGGG	Восоприон						man
	P0716	This test detects large changes in Input Speed and noisy Input	For Case 1: (Unrealistically large changes in input speed)		All cases		For Case 1: 0.15 s	А
		Speed by comparing to calibration values.	Change of Input Speed between samples for			P0717 P0721	For Case 2:	
			For Case 2: (Noisy Input Speed) For sample size IF the change in Input Speed	<= -800 RPM	No Fault Pending DTCs for this drive cycle.	P0721	2 s For Case 3: 1 s	
			THEN the Low Counter is incremented. IF the change in Input Speed	>= 800 RPM	Shifting complete		25 ms	
			THEN the High Counter is incremented. This test fails if both the		For Case 1 (Unrealistically large changes in input speed)			
			Low Counter and the High Counter OR	>= 5	and Case 2 (Noisy Input Speed),			
			High Counter For Case 3: (Wires to	>= 5	Input Speed for	> 200 RPM >= 0.5 seconds		
			speed sensors swapped)		For Case 3 (Wires to speed sensors swapped),			
	Increment counter when range attained and range commanded are neutral for a time		Input speed Engine speed					
			AND		Hydraulic system pressurized			
			when ratio of engine speed and input speed		Enables met			
			Arm test when counter OR		AND No MIL-on DTCs			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		2000	when time	> 3.5 seconds	for a time	P0717		
			Malfunction is reported when, for a time		for a time	>= 0.2 seconds		
			the range commanded is NOT neutral AND					
			the on-coming clutch control is complete AND					
			input speed AND					
Input/Turbine Speed	P0717	This test detects	engine speed For Case 1:	< 100 RPM			1 second	A
Sensor Circuit No Signal		unrealistically low value of input/turbine speed			All Cases			
		or unrealistically large changes in input/turbine speed.	Failure pending if change in transmission input	>= 800 RPM	No MIL-on DTCs for this drive cycle	P0717	25 ms	
			For Case 2: (Unrealistically low value of input speed)	>= 800 RPM	Reverse-to-Neutral shift not in process			
			Failure pending if transmission input speed		Shifting complete Engine is running			
					Range attained is not neutral			
			This test fails if input speed AND		Transmission fluid temperature	> -25 deg. C		
			output speed		For Case 2: (Unrealistically low input speed)			
					No MIL-on DTCs for this drive cycle	P0731 P0732 P0733 P0734 P0735		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
						P0736 P0721 P0722		
					No Fault Pending DTCs	P0721 P0722		
					Transmission output speed	>= 150 RPM		
Output Speed Sensor Circuit Range/Performance	P0721	This test detects a noisy output speed sensor or circuit by	For Case 1: (Unrealistically large change in output speed)		No MIL-on DTCs for this drive cycle		For Case 1: 0.15 s	A
		detecting large changes in output	Change in output speed	>= 500 RPM		P0717		
		speed.		>= 0.15 seconds			For Case 2: 2 seconds	
			For Case 2: (Noisy output speed)				25 ms	
			For sample size	80	No Fault Pending DTCs for this drive cycle			
			IF the change in output speed					
			THEN the Low Counter is incremented.					
			IF the change in output speed		Output Speed	> 200 RPM		
			THEN the High Counter is incremented.		for a time	>= 0.5 seconds		
			Test fails if both the Low Counter and the High	>= 5	Shift complete			
			Counter		AND			
			OR the Low Counter OR	>= 5	range attained NOT neutral			
			the High Counter					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Output Speed Sensor Circuit No Signal	P0722	unrealistically low value	For Case 1: (Unrealistically large change in output speed)		All Cases No MIL-on DTCs for this drive cycle.	P0721	1 second 25 ms	A
		change in output speed.	Failure pending if change in output speed Failure sets if range attained is Neutral.	>= 600 RPM	For Case 1: (Unrealistically large change in output speed)			
		For Case 2: (Unrealistically low value of output speed)			>= 600 RPM >= 1 seconds			
			Failure pending if output speed Failure sets if not monitoring for low speed neutral and output speed			<= 600 RPM > 1 seconds		
			AND range is 3rd, 4th, or 5th for a time	> 1 second	For Case 2: (Unrealistically low value of output speed)			
			Failure sets if not monitoring for low speed neutral and output speed		No MIL-on DTCs for this drive cycle.	P0731 P0732 P0733 P0734		
		AND ((net engine torque OR net engine torque)			P0735 P0736 P0716 P0717			
		OR (turbine speed	> 1500 RPM	No Fault Pending DTCs for this drive cycle				
			AND range is 2nd)) for a time	>= 4 seconds.	Engine is running	P0717		
					Shift not in process			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Range attained is not Neutral Reverse to Neutral shift not in process			
					Transmission fluid temperature Transmission input speed			
					Not waiting for Manual Selector Valve to attain forward range. PRNDL State is NOT D4, NOT			
Engine Speed Input Circuit	P0726		For Case 1: (Large change in Engine Speed)		Transitional D4 No MIL-on DTCs for this drive		For Case 1: 0.15 s	В
Range/Performance		Speed and noisy Engine Speed by comparing to calibration values.	Change in engine speed	>= 600 RPM >= 0.15 seconds		P0726 P0727		
			For Case 2: (Noisy Engine Speed) For samples, he change in engine speed then the Low Counter is	<= -650 RPM	Engine speed for a time Shifts complete and range	> 600 RPM >= 1 second	For Case 2: 2 seconds 25 ms	
			incremented. If the change in engine speed then the High Counter is incremented. This test fails if both the	>= 650 RPM,	attained is NOT Neutral		20 1110	
			Low Counter and the High Counter or the Low Counter or the High Counter					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Engine Speed Input Circuit No Signal	P0727	This test detects unrealistically low value of engine speed or unrealistically large change in engine speed.	speed) Failure pending if change in engine speed Case 2: (Unrealistically low value for engine speed) engine speed		All Cases: No MIL-on DTC for this drive cycle Case 2: (Unrealistically low value for engine speed) No MIL-on DTC for this drive cycle Turbine speed Ignition Key in RUN position Ignition Key is not being cycled Vehicle is not coasting with engine off.	P0716 P0717 >= 400 RPM	4 seconds 25 ms	В
Range Verification	_							_
Gear 1 Incorrect Ratio	P0731	This test verifies transmission operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.	AND	>= 2 second >= 100 RPM > 100 RPM	No MIL-on DTCs for this drive cycle. No Fault Pending DTC for this drive cycle. No range switch response active	P0877 P0878 P0721 P0722 P0716 P0717	2.25 seconds 25 ms	Α
			Slip)		Hydraulic System Pressurized Shift complete			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Output speed	>= 200 RPM		
					No hydraulic default condition			
					present Normal powertrain shutdown			
					not in process			
					Normal powertrain initialization is complete			
Gear 2 Incorrect Ratio	P0732	This test verifies	Pending failure occurs		i		2.25 seconds	A
		transmission operating ratio while 2nd range is	when accumulated event		No MIL-on DTCs for this drive	P0877	25 ms	
		commanded by		>= 2 second	cycle.	D0070		
		comparing computed ratio to the	Timer accumulates when transmission is in forward			P0878 P0721		
		commanded ratio.	or reverse range			P0722		
			AND output speed	>= 100 RPM		P0716 P0717		
			AND					
			gear slip	> 100 RPM	No Fault Pending DTC for this drive cycle.	P0717		
			In response to pending		unve eyele.			
			failure, a diagnostic response range is		No range switch response			
			commanded.		active			
			During this command, this					
			test fails if Abs(Converter	>= 200 RPM	Hydraulic System Pressurized			
			Slip) for					
			101	> 10 samples.	Shift complete			
					Output speed	>= 200 RPM		
					No hydraulic default condition			
					present Normal powertrain shutdown			
					not in process			
					Normal powertrain initialization is complete			
					is complete			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Gear 3 Incorrect Ratio	P0733	This test verifies transmission operating ratio while 3rd range is commanded by comparing computed ratio to the commanded ratio.	Timer accumulates when transmission is in forward or reverse range AND	>= 2 second	No MIL-on DTCs for this drive cycle.	P0877 P0878 P0721 P0722 P0716	2.25 seconds 25 ms	Α
			output speed AND gear slip	>= 100 RPM > 100 RPM	No Fault Pending DTC for this drive cycle.	P0717 P0717		
			In response to pending failure, a diagnostic response range is commanded. During this command, this		No range switch response active			
			test fails if Abs(Converter Slip)		Hydraulic System Pressurized			
					Shift complete Output speed			
					No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete			
Gear 4 Incorrect Ratio	P0734	This test verifies transmission operating ratio while 4th range is commanded by comparing computed ratio to the commanded ratio.	Timer accumulates when transmission is in forward or reverse range AND	>= 2 second	No MIL-on DTCs for this drive cycle.		2.25 seconds 25 ms	А
			AND	> 100 RPM	No Fault Pending DTC for this drive cycle.			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			In response to pending failure, a diagnostic response range is commanded.		No range switch response active			
			During this command, this test fails if Abs(Converter Slip)	>= 200 RPM	Hydraulic System Pressurized			
			for	> 10 samples.	Shift complete			
					Output speed	>= 200 RPM		
					No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete			
Gear 5 Incorrect Ratio	P0735	This test verifies	Pending failure occurs				2.25 seconds	A
	. 0,00	transmission operating ratio while 5th range is commanded by comparing computed ratio to the commanded ratio.	when accumulated event			P0877 P0878 P0721 P0722 P0716 P0717	25 ms	
				> 100 RPM	No Fault Pending DTC for this drive cycle.	P0717		
			In response to pending failure, a diagnostic response range is commanded.		No range switch response active			
			During this command, this test fails if Abs(Converter Slip)	>= 200 RPM	Hydraulic System Pressurized			
			for	> 10 samples.	Shift complete			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Output speed No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete			
Reverse Incorrect Ratio	P0736	This test verifies transmission range while reverse range is commanded by comparing computed ratio to the commanded ratio.	Accumulated event timer Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip			P0877 P0878 P0721 P0722 P0716 P0717 P0717 >= 200 RPM	2 seconds 25 ms	A
Torque Converter Clut	tch							
Torque Converter Clutch Circuit Performance or Stuck Off	P0741	This test detects the torque converter being stuck off (unlocked).			cycle.	P2761 P2763 P2764 P0721 P0722	15 s 100 ms	В

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
						P0716 P0717		
					No Fault Pending DTCs for this drive cycle.			
					Components powered AND Battery Voltage between	9 V and 18 V		
						RPM 5 seconds		
						> 10 % and <= 90 %		
					Transmission fluid temperature	> 5 deg. C and < 130 deg. C		
					Time Since Range Change	>= 6 seconds		
					AND TCC apply is complete			
					TCC pressure	>= 1000 kPa		
Torque Converter Clutch Circuit Stuck On	P0742	This test detects the torque converter being stuck on (locked).	Case 1: (High Torque condition)		No MIL-on DTCs for this drive cycle.		Case 1 2 s	В
		. ,	Set fault pending when throttle				Case 2	
			AND net engine torque Report malfunction when	>= 275 Nm.		P0721 P0722 P0716 P0717	5 s Case 3 10.5 s	
			fault pending exists continuously			P0726	100 ms	

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			for a time	>= 2 seconds.		P0727		
			Case 2: (High Acceleration condition) Set fault pending when output shaft acceleration Report malfunction when fault pending exists continuously	>= 100 RPM/second	No Fault Pending DTCs for this drive cycle.			
			for a time	>= 5 seconds.		P0727		
			Case 3: (Accel/Decel/Accel condition) Report malfunction when output acceleration event is followed by output deceleration event and followed by another output acceleration event. An output acceleration event occurs when output shaft acceleration		Components powered AND Battery Voltage between Engine Speed between	9 V and 18 V 200 RPM and 7500 RPM 5 seconds		
				>= 40 RPM/second				
			for a time	>= 4 seconds	TCC Slip	>=-20 RPM and <= 20 RPM		
			An output deceleration event occurs when output		% Throttle	>= 25%		
			shaft acceleration is		Net Engine Torque	>= 175 Nm		
			for a time	<=-40 RPM/second >= 2.5 seconds.				
						<= 3500 RPM <= 3500 RPM >= 100 RPM		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switches								
Pressure Switch Solenoid 1 Circuit Low	P0842	This test compares the commanded valve position to the PS1 pressure switch	Pending failure occurs when PS1 pressure switch indicates stroked for a time		S1 valve is destroked		100 ms 25 ms	А
		feedback. (part of S1 valve integrity test)			NOT Cold initialization unless transmission fluid temperature			
					Shutdown is NOT in process			
			In response to the pending failure, S1 valve is retried by triggering S1 valve command to stroked and back to destroked. If PS1 pressure switch continues to indicate stroked, then one of three malfunction cases exists:					
			For Case 1 (electrical malfunction), SS1 Circuit Low reports failure, also.	P0793				
			For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck On reports failure, also.	P0752				
			For Case 3 (intermittent malfunction), SS1 valve retry attempted AND					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			PS1 pressure switch continues to indicate stroked.					
Shift Solenoid 1 (SS1) Valve Performance – Stuck Off	P0751	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test)	S1 valve is commanded from destroked to stroked and the PS1 pressure switch indication remains destroked for a time	>= 5 seconds	S1 valve commanded from destroked to stroked.		5 seconds 25 ms	А
			WITH transmission fluid temperature	>= 0 deg. C				
			(Time increases as temperature decreases with maximum time	12 seconds				
			at transmission fluid temperature)					
Shift Solenoid 1 (SS1) Valve Performance – Stuck On	P0752	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test).	S1 valve commanded from stroked to destroked and the PS1 pressure switch indication remains stroked for a time		S1 valve changes from stroked to destroked		6.6 seconds 25 ms	А
			WITH transmission fluid temperature	>= 0 deg. C.				
			(Time increases as temperature decreases with maximum time	11 seconds				
			at transmission fluid temperature)					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Solenoid 1 Circuit High	P0843	This test compares the commanded valve position to the PS1 pressure switch	Pending failure occurs when PS1 pressure switch indicates destroked for a time		S1 valve is stroked		70 ms 25 ms	А
		feedback. (part of S1 valve integrity test)	IF a main pressure dropout is suspected, then time limit increases		NOT Cold initialization unless transmission fluid temperature			
			to time	5 seconds				
			In response to the pending failure, S1 valve is retried by triggering S1 valve command to destroked and back to stroked. If the PS1 pressure switch continues to indicate destroked, then one of three malfunction cases exists.		Shutdown NOT in process			
			For Case 1 (electrical malfunction), SS1 Control Circuit Low reports failure, also.	P0793				
			For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck Off reports failure, also.	P0751				
			For Case 3 (intermittent malfunction), S1 valve retry attempted AND PS1 pressure switch continues to indicate					
			continues to indicate destroked.	SECTION B. 404		0.05.0		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Solenoid 2 Circuit Low	P0847	This test compares the commanded valve position to the PS2 pressure switch	Pending failure occurs when PS2 pressure switch indicates stroked for a time		S2 valve is destroked		40 ms 25 ms	А
		feedback (part of the S2 valve integrity test).			NOT Cold initialization unless transmission fluid temperature			
			In response to the pending failure, S2 valve is retried by triggering S2 valve command to stroked and back to destroked. If PS2 pressure switch continues to indicate stroked, then one of three malfunction cases exists.		Shutdown is NOT in process			
			For Case 1 (electrical malfunction), SS2 Control Circuit Low reports failure, also.	P0976				
			For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck On reports failure, also.	P0757				
			For Case 3 (intermittent malfunction), S2 valve retry attempted AND PS2 pressure switch continues to indicate stroked.					

				Transmission Bia				
Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Shift Solenoid 2 Valve Performance – Stuck Off	P0756	This test compares the change of state of the valve command to the change of state of the PS2 pressure switch feedback (part of the S2 valve timeout test).	If the S2 valve is commanded from destroked to stroked and the PS2 pressure switch indication remains destroked for a time		S2 valve commanded from destroked to stroked.		5 seconds 25 ms	Α
			WITH transmission fluid temperature	>= 0 deg. C.				
			(Time increases as temperature decreases with maximum time	12 seconds				
			at transmission fluid temperature)	<= -40 deg. C.				
Shift Solenoid 2 Valve Performance – Stuck On	P0757	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve timeout test).	S2 valve commanded from stroked to destroked and the PS2 pressure switch does not indicate destroked for a time		S2 valve changes from stroked to destroked		6.4 seconds 25 ms	А
			WITH transmission fluid temperature	>= 0 deg. C.				
			(Time increases as temperature decreases with maximum time	15 seconds				
			at transmission fluid temperature)					
Pressure Switch Solenoid 2 Circuit High	P0848	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve integrity test).	Pending failure occurs when PS2 pressure switch indicates destroked for a time		S2 valve is stroked NOT Cold initialization unless transmission fluid temperature		300 ms 25 ms	Α

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			IF a main pressure dropout is suspected, THEN time limit increases to time	5 seconds		> -25 deg. C		
			In response to the pending failure, S2 valve is retried by triggering S2 valve command to destroked and back to stroked. If PS2 pressure switch continues to indicate destroked, then one of three malfunction cases exists.		Shutdown NOT in process			
			For Case 1 (electrical malfunction), SS2 Control Circuit Low reports failure, also.	P0976				
			For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance – Stuck Off reports failure, also.	P0756				
			For Case 3 (intermittent malfunction), S2 valve retry attempted AND					
			PS2 pressure switch continues to indicate destroked.					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Solenoid 3 Circuit Low	P0872	This test compares the commanded valve position to the PS3 pressure switch	Pending failure occurs when PS3 pressure switch indicates stroked for a time		S3 valve is destroked		20 ms 25 ms	А
		feedback. (part of S3 valve integrity test)			NOT Cold initialization unless transmission fluid temperature			
			In response to the pending failure, S3 valve is retried by triggering S3 valve command to stroked and back to destroked. If PS3 pressure switch continues to indicate stroked, then one of three malfunction cases exists.		Shutdown is NOT in process			
			For Case 1 (electrical malfunction), SS3 Control Circuit Low reports failure, also.	P0979				
			For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve	P0762				
		Performance – Stuck On reports failure, also. For Case 3 (intermittent malfunction), S3 valve retry						
			attempted AND PS3 pressure switch continues to indicate					

	,	•					•	
Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Shift Solenoid 3 Valve Performance – Stuck Off	P0761	This test compares the change of state of the valve command to the change of state of the PS3 pressure switch feedback. (part of the S3 valve timeout test)	If the S3 valve is commanded from destroked to stroked and the PS3 pressure switch indication remains destroked for a time	>= 5 seconds	S3 valve commanded from destroked to stroked.		5 seconds 25 ms	А
			WITH transmission fluid temperature	>= 0 deg. C.				
			(Time increases as temperature decreases with maximum time	12 seconds				
			at transmission fluid temperature)	<= -40 deg. C.				
Shift Solenoid 3 Valve Performance – Stuck On	P0762	This test compares the commanded valve position to the PS3 pressure switch feedback (part of the S3 valve timeout test).	S3 valve commanded from stroked to destroked and the PS3 pressure switch does not indicate destroked for a time	> 6.6 seconds	S3 valve changes from stroked to destroked		6.6 seconds 25 ms	А
			WITH transmission fluid temperature	>= 0 deg. C.				
			(Time increases as temperature decreases with maximum time	15 seconds				
			at transmission fluid temperature)	<u> </u>				
Pressure Switch Solenoid 3 Circuit High	P0873	switch PS3 feedback.	Pending failure occurs when PS3 pressure switch indicates destroked for a time	> 0.30 seconds	S3 valve is stroked		300 ms 25 ms	A
		(part of S3 valve integrity test)			NOT Cold initialization unless transmission fluid temperature			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		·	IF a main pressure dropout is suspected, THEN time limit increases to time	5 seconds	Shutdown NOT in process	> -25 deg. C		
			In response to the pending failure, S3 valve is retried by triggering S3 valve command to destroked and back to stroked. If PS3 pressure switch continues to indicate destroked, then one of the three malfunction cases exists.					
			For Case 1 (electrical malfunction),					
			SS3 Control Circuit Low reports failure, also.	P0979				
			For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve Performance – Stuck Off reports failure, also.	P0761				
			For Case 3 (intermittent malfunction), S3 valve retry attempted AND PS3 pressure switch continues to indicate destroked.					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Reverse Circuit Low	P0877	This test detects Reverse Pressure Switch closed indication by comparing the Reverse Pressure Switch state	Case 1: (Forward range) For a sample size	100 samples	No MIL-on DTCs for this drive cycle.	P0877 P0878 P0708	5 s 50 ms	А
		to the PRNDL switch state.	PRNDL is P, D1, D2, D3, D4, D5, D6, T8, or T4		No Fault Pending DTCs for this drive cycle	P0708		
			AND		Engine is Running			
			RPS indicates Reverse		Components powered AND			
	1		for a time	>= 1 seconds	Battery Voltage between	9 V and 18 V		
				Engine Speed between	200 RPM and 7500 RPM			
	1		Case 2: (Range indefinite)		for	5 seconds		
			For a sample size, net engine torque AND PRNDL is indefinitely D3		Transmission Fluid Temperature	>= 0 deg. C		
	1		or another forward range		Hydraulic System Pressurized			
				> 1 second	Reverse Pressure Switch State indicates REVERSE			
Pressure Switch Reverse Circuit High			For Case 1: (RPS State and PRNDL State do not agree)		For All Cases: Transmission Fluid Temperature		Case 1: 3 s	А
		the open position by comparing to the PRNDL switch state and detects the Reverse Pressure switch stuck open at shutdown.	For sample size PRNDL is REVERSE AND RPS indicates NOT REVERSE after a time	40 samples >= 1 second	For Case 1: (RPS State and PRNDL State do not agree)	>= 0 deg. C	Case 2: 60 s 50 ms	
			For Case 2: (RPS Shutdown Test)		No MIL-on DTCs for this drive cycle			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			If RPS indicates not Reverse for a time at transmission fluid temperature		No Fault Pending DTC for this drive cycle.	P0708		
			This time varies with transmission fluid temperature, from time		Battery Voltage between	9 V and 18 V		
			at transmission fluid temperature to time at transmission fluid	60 seconds	No range switch response active For Case 2: (RPS Shutdown			
			temperature		Test)			
					Ignition Key State is NOT RUN			
					Engine Stopped or Stalled End of Trip timer			
					Engine had been cranking or running this drive cycle			
					Engine speed Turbine speed Output speed	< 50 RPM		
On-coming/Off-going	Ratio							
Pressure Control Solenoid 1 Controlled Clutch Stuck Off	P2723	This test determines if the on-coming clutch energized by Pressure Control Solenoid 1	Pending failure occurs when accumulated event timer	>= 2 seconds	No MIL-on DTCs for this drive cycle.	P0721	2.25 s 25 ms	Α
		engages during a forward range shift.	(For rough road conditions, use)			P0722		
			Timer accumulates when transmission is shifting,			P0716 P0717 P0877		
			output speed AND commanded gear slip speed	> 75 RPM		P0878		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illun
			(For rough road conditions, use)	150 RPM.	Output Speed	>= 125 RPM		
					Turbine Speed	>= 60 RPM		
			In response of pending failure, a diagnostic		Hydraulic System Pressurized			
			response range is commanded. During this command, this test fails if ABS(Converter slip)	>= 200 RPM	Normal powertrain shutdown not in process			
			for sample size	> 10 samples	Normal or Cold powertrain initialization is complete			
					No range switch response active			
					No Cold Mode operation			
					No abusive garage shift to 1st range detected			
					On-coming clutch control enabled			
					Power downshift abort to previous range NOT active			
ressure Control olenoid 2 Controlled lutch Stuck Off	P0776	This test determines if the on-coming clutch energized by Pressure	Pending failure occurs when accumulated event timer		No MIL-on DTCs for this drive cycle.	P0721	2.25 s 25 ms	A
		Control Solenoid 2 engages during a forward range shift.	(For rough road conditions, use)	2 seconds		P0722		
		Timer accumulates when transmission is shifting,			P0716 P0717 P0877			
			output speed AND commanded gear			P0878		
			slip speed (For rough road conditions, use)		Output Speed Turbine Speed			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if ABS(Converter slip)		Hydraulic System Pressurized Normal powertrain shutdown not in process			
			for sample size	> 10 samples	Normal or Cold powertrain initialization is complete No range switch response active No Cold Mode operation No abusive garage shift to 1st range detected On-coming clutch control enabled			
					Power downshift abort to previous range NOT active			
Pressure Control Solenoid 1 Controlled Clutch Stuck On		This test determines if the off-going clutch energized by Pressure Control solenoid 1 remains engaged during a forward range shift.	Accumulated fail timer for forward range upshift; OR accumulated fail timer for direction change shifts;				3 s 25 ms	А
			OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed throttle.	>= 1.0 second	No Fault Pending DTC for this drive cycle.	P0877 P0878 P0717		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illun
			Fail timer accumulates during range to range shifts when attained gear slip speed	<= 25 RPM	Output Speed Turbine Speed Normal powertrain shutdown not in process	>= 200 RPM		
					Normal or Cold powertrain initialization is complete			
					No range switch response active			
					No Cold Mode operation			
					No abusive garage shift to 1st range detected			
Pressure Control Solenoid 2 Controlled Clutch Stuck On	P0777	77 This test determines if the off-going clutch energized by Pressure Control solenoid 2 remains engaged during a forward range shift.	Accumulated fail timer for forward range upshift;		No MIL-on DTCs for this drive cycle.		3 s 25 ms	Α
			OR accumulated fail timer	>= 3.0 seconds		P0716		
			for direction change shifts;			P0717		
			OR accumulated fail timer			P0877 P0878		
			for forward range closed throttle downshift;			P0070		
			OR accumulated fail timer		No Fault Pending DTC for this drive cycle.	P0717		
			for forward downshifts above closed throttle.					
			Fail timer accumulates during range to range		Output Speed Turbine Speed			
			shifts when attained gear slip speed	<= 25 RPM	Normal powertrain shutdown not in process			
					Normal or Cold powertrain			
					initialization is complete			

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Component/System	Code	Description	Manufiction Criteria	Tillesilolu value	Jecondary Farameters	Litable Collultions	Time Kequired	Illun
					No range switch response active			
					No Cold Mode operation			
					No abusive garage shift to 1st range detected			
PRNDL/IMS								
Transmission Range Sensor High Input	P0708	This test monitors the transmission range switch for invalid input	For Case 1 (No Information):		Components powered		Case 1: 1 s	Α
		conditions and parity errors occurring over	Illegal electrical state for a time	>= 1 second	AND		Case 2:	
		consecutive ignition cycles.	For Case 2 (Long-term Parity):		Battery Voltage between	9 V and 18 V	5 th occurrence	
			There are 3 counters for long-term parity. These		Engine Speed between	200 RPM and 7500 RPM		
			counters are updated at the end of each drive cycle, immediately prior to TCM shutdown.		for	5 seconds	100 ms	
			For Counter 1, increment counter IF Parity Error Detected; decrement counter IF No Parity Error Detected AND No Motion Detected.					
			IF Counter 1 THEN report failure.	>= 15 counts				
			For Counter 2, increment counter IF Parity Error Detected AND (No Valid Drive Detected OR No Valid Park/Neutral Detected) AND Motion Detected; decrement					

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illur
		·	counter IF No Parity Error Detected AND Valid Park/Neutral Detected AND Valid Drive Detected AND Motion Detected.					
			IF Counter 2, THEN report failure.	>= 5 counts				
			For Counter 3, increment Counter 3 IF Parity Error Detected while in Reverse AND No Valid Reverse Detected AND Motion Detected. Decrement Counter 3 IF No Parity Error Detected AND Valid Reverse Detected AND Motion Detected.					
			IF Counter 3, THEN report failure.	>= 5 counts				
			Where Parity Error Detected is defined as a failure of the 4-bit PRNDL input such that the sum of those bits yields an odd result for a time;					
			Motion Detected is defined as output speed for a time;					
			Valid Drive Detected is defined as the 4-bit DL indicates Valid Drive for a time;	>= 3 seconds				

	_					•		
Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Valid Neutral Detected is defined as the 4-bit PRNDL indicates Valid Neutral	>= 0.2 seconds <= 20 RPM >= 15 seconds; >= 0.2 seconds <= 20 RPM				
Transmission Range Sensor Circuit Range/Performance	P0706	This test monitors the transmission range switch inputs at engine start to determine that it is indicating a valid starting position (Park or Neutral).	For sample size, PRNDL C input is closed OR PRNDL P is NOT closed.		No MIL-on DTC for this drive cycle. Battery voltage between Powertrain State is READY or CRANKING Engine speed	P0706 9V and 18V	225 ms 25 ms	В
Solenoid Electrical Main Modulation/Line Pressure Control Solenoid Control Circuit Open	P0960	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. IF hardware fault is present for a sample size	>= 10 samples	No MIL-on DTC for this drive cycle		325 ms 25 ms	A

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN initiate intrusive test by opening low side driver. IF engine is cranking or running and intrusive test indicates no short to ground exists for a sample size, THEN report malfunction.		Components powered AND Battery Voltage between If Engine Cranking, then Crank Time	9 V and 18 V		
					AND Battery Voltage High side driver 1 enabled	> 10 V		
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence.		No MIL-on DTC for this drive cycle		300 ms 25 ms	А
			IF the electrical open test is enabled and an electrical hardware fault to ground is present for a sample size,		Components powered AND			
			THEN initiate intrusive test by opening low side driver.		Battery Voltage between	9 V and 18 V		
			IF engine is cranking or running and hardware fault is present for a sample size,		If Engine Cranking, then Crank Time AND	< 4 seconds		
			THEN report malfunction.		Battery Voltage	> 10 V		
					High side driver 1 enabled			
Main Modulation/Line Pressure Control Solenoid Control Circuit High	P0963	This test detects solenoid electrical short to power circuit malfunctions.		3 consecutive samples	,	P0657 P0658 P0659	75 ms 25 ms	А

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Components powered AND Battery Voltage between If Engine Cranking, then Crank Time	9 V and 18 V		
					AND Battery Voltage			
					High side driver 1 enabled			
Pressure Control Solenoid 2 Control Circuit Open	P0964	This test detects solenoid electrical open circuit malfunctions.	occurrence.		No MIL-on DTC for this drive cycle	P2669	225 ms 25 ms	А
			IF hardware fault is present for a sample size			P2670 P2671		
			THEN initiate intrusive test by opening low side driver.		Components powered AND			
			IF engine is cranking or running and intrusive test indicates no short to		Battery Voltage between	9 V and 18 V		
			ground exists for a sample size,	>= 3 samples	If Engine Cranking, then			
			THEN report malfunction.			< 4 seconds		
					AND Battery Voltage			
					High side driver 2 enabled			
Pressure Control Solenoid 2 Control Circuit Low	P0966	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence.		No MIL-on DTC for this drive		200 ms 25 ms	А
			IF the electrical open test is enabled and an electrical hardware fault to ground is present for a sample size,	>= 6 samples	Components powered AND			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN initiate intrusive test by opening low side driver. IF engine is cranking or running and hardware fault is present for a sample size, THEN report malfunction.		Battery Voltage between If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
					High side driver 2 enabled			
Pressure Control Solenoid 2 Control Circuit High	P0967	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size		No MIL-on DTC for this drive cycle	P2669	75 ms 25 ms	А
					Components powered AND Battery Voltage between			
					If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
					High side driver 2 enabled			
Pressure Control Solenoid 1 Control Circuit Open	P2727	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. IF hardware fault is present for a sample size		No MIL-on DTC for this drive cycle	P0657	200 ms 25 ms	А
			THEN initiate intrusive test by opening low side driver.		Components powered			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			IF engine is cranking or running and intrusive test indicates no short to ground exists for a sample size,	>= 3 samples	AND Battery Voltage between	9 V and 18 V		
			THEN report malfunction.		If Engine Cranking, then			
					Crank Time AND Battery Voltage	< 4 seconds > 10 V		
					High side driver 1 enabled			
Pressure Control Solenoid 1 Control Circuit Low	P2729	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence. IF the electrical open test is enabled and an electrical hardware fault to ground is present for a sample size, THEN initiate intrusive test by opening low side driver. IF engine is cranking or running and hardware fault is present for a sample size,	>= 5 samples	No MIL-on DTC for this drive cycle Components powered AND Battery Voltage between If Engine Cranking, then Crank Time	P0658 P0659 9 V and 18 V	175 ms 25 ms	A
			THEN report malfunction.		AND Battery Voltage	> 10 V		
Danas Oscillation	D0700	This test date (High side driver 1 enabled		75	_
Pressure Control Solenoid 1 Control Circuit High	P2730	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size	3 consecutive samples		P0657 P0658 P0659 P2730	75 ms 25 ms	Α

ALLISON SECTION Page 149 of 158

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Components powered AND Battery Voltage between	9 V and 18 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
					High side driver 1 enabled			
Shift Solenoid 1 Control Circuit Open	P0972	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence.		No MIL-on DTC for this drive cycle		325 ms 25 ms	А
			IF hardware fault is present for a sample size			P2670 P2671		
			THEN initiate intrusive test by opening low side driver.		Components powered			
			IF engine is cranking or running and intrusive test indicates no short to		AND Battery Voltage between	9 V and 18 V		
			ground exists for a sample size,		If Engine Cranking, then			
			THEN report malfunction.		Crank Time AND Battery Voltage	< 4 seconds > 10 V		
					High side driver 2 enabled			
Shift Solenoid 1 Control Circuit Low	P0973	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence.		No MIL-on DTC for this drive		300 ms 25 ms	A
			IF the electrical open test is enabled and an electrical hardware fault to			P2671		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			ground is present for a sample size,	>= 10 samples	Components powered AND			
			THEN initiate intrusive test by opening low side driver.		Battery Voltage between	9 V and 18 V		
			IF engine is cranking or running and hardware fault is present for a sample size,		If Engine Cranking, then Crank Time AND	< 4 seconds		
			THEN report malfunction.		Battery Voltage	> 10 V		
					High side driver 2 enabled			<u> </u>
Shift Solenoid 1 Control Circuit High	P0974	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size		No MIL-on DTC for this drive cycle Components powered AND		75 ms 25 ms	Α
					Battery Voltage between If Engine Cranking, then	< 4 seconds		
					Lligh aide driver 2 enabled			
Shift Solenoid 2 Control Circuit Open	P0975	This test detects solenoid electrical open circuit malfunctions.	occurrence.		High side driver 2 enabled No MIL-on DTC for this drive cycle		325 ms 25 ms	A
			IF hardware fault is present for a sample size			P2670 P2671		
			THEN initiate intrusive test by opening low side driver.		Components powered			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			IF engine is cranking or running and intrusive test indicates no short to ground exists for a sample size, THEN report malfunction.		AND Battery Voltage between If Engine Cranking, then Crank Time			
					AND Battery Voltage	> 10 V		
					High side driver 2 enabled			
Shift Solenoid 2 Control Circuit Low	P0976	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence.		No MIL-on DTC for this drive cycle		300 ms 25 ms	Α
			IF the electrical open test is enabled and an electrical hardware fault to ground is present for a sample size,		Components powered AND	P2671		
			THEN initiate intrusive test by opening low side driver.		Battery Voltage between	9 V and 18 V		
			IF engine is cranking or running and hardware fault is present for a sample size,		If Engine Cranking, then Crank Time AND	< 4 seconds		
			THEN report malfunction.		Battery Voltage	> 10 V		
					High side driver 2 enabled			
Shift Solenoid 2 Control Circuit High	P0977	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size		No MIL-on DTC for this drive cycle	P2669 P2670 P2671 P0977	75 ms 25 ms	А

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND Battery Voltage	< 4 seconds > 10 V		
Shift Solenoid 3 Control Circuit Low	P0979	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set a single hardware fault occurrence. If engine is cranking or running and hardware fault is present for sample size, then report malfunction.		Components powered AND Battery Voltage between If Engine Cranking, then	P2669 P2670 P2671 P0979 P0980 9 V and 18 V < 4 seconds > 10 V	250 ms 25 ms	A
Shift Solenoid 3 Control Circuit High	P0980	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size		No MIL-on DTC for this drive cycle Components powered AND Battery Voltage between If Engine Cranking, then	P2669 P2670 P2671 P0980 9 V and 18 V	75 ms 25 ms	А

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND Battery Voltage	> 10 V		
					High side driver 2 enabled			
					Commanded gear NOT Reverse Trim, NOT 5th, NOT 6th			
Actuator Supply 1 (HSD1) Voltage Open	P0657	This test detects if the voltage measured at the HSD1 detection circuit shows that multiple low side	Report malfunction when the engine is running or cranking AND the number of failure events	>= 3.	No MIL-on DTCs for this drive cycle	P0657	75 ms 25 ms	A
		detection circuits indicate open, but the high side detection circuit indicates high voltage.	A failure event occurs when the number of failed solenoids connected to HSD1		HSD1 is commanded ON.			
			AND HSD1 voltage		Components powered AND Battery Voltage between	9 V and 18 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
Actuator Supply 1 (HSD1) Voltage Low	P0658	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when short to ground is detected for a number of events	>= 3 times	No MIL-on DTC for this drive cycle HSD1 is commanded ON.	P0658	75 ms 25 ms	A
			AND the engine is running or cranking-		Components powered AND Battery Voltage between			
					If Engine Cranking, then Crank Time AND	< 4 seconds		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage	> 10 V		
Actuator Supply 1 (HSD1) Voltage High	P0659	This test detects if the voltage measured at the HSD 1 detection circuit indicates high during initialization (when the circuit is off)	During initialization, report malfunction when the number of failure events A failure event occurs when HSD1 voltage	>= 3 times	During initialization		75 ms 25 ms	А
Actuator Supply2 (HSD2) Voltage Open	P2669	This test detects if the voltage measured at the HSD2 detection circuit shows that multiple low side detection circuits indicate open, but the	Report malfunction when the engine is running or cranking AND the number of failure events.		No MIL-on DTC for this drive cycle	P2669	75 ms 25 ms	А
		high side detection circuit indicates high voltage.	A failure event occurs when the number of failed solenoids connected to HSD1 AND		HSD2 is commanded ON.			
			HSD1 voltage	>= 6V	Components powered AND Battery Voltage between	9 V and 18 V		
					If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
Actuator Supply2 (HSD2) Voltage Low	P2670	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when short to ground is detected for a number of events	>= 3 times	No MIL-on DTC for this drive cycle HSD2 is commanded ON.	P2670	75 ms 25 ms	А
			AND the engine is running or cranking-		Components powered AND Battery Voltage between			

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					If Engine Cranking, then Crank Time AND Battery Voltage	< 4 seconds		
Actuator Supply 2 (HSD2) Voltage High	P2671	This test detects if the voltage measured at the HSD 2 detection circuit indicates high during initialization (when the circuit is off)	During initialization, report malfunction when the number of failure events A failure event occurs when HSD1 voltage		During initialization		75 ms 25 ms	А
TCC Pressure Control Solenoid Control Circuit Open	P2761	This test detects torque converter solenoid electrical open circuit malfunctions.	Fault pending is set a single hardware fault occurrence. IF hardware fault is present for a sample size THEN initiate intrusive test by opening low side driver. IF engine is cranking or running and intrusive test indicates no short to ground exists for a sample size, THEN report malfunction.		AND Battery Voltage	P0657 P0658 P0659 9 V and 18 V < 4 seconds > 10 V	3075 ms 25 ms	В
TCC Pressure Control Solenoid Control Circuit High	P2763	This test detects solenoid electrical short to power circuit malfunctions.	Short to power is present for a sample size	3 consecutive samples	High side driver 1 enabled No MIL-on DTC for this drive cycle Components powered	P0657 P0658 P0659 P2763	75 ms 25 ms	В

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND Battery Voltage between	9 V and 18 V		
					If Engine Cranking, then Crank Time AND	< 4 seconds		
					Battery Voltage			
					High side driver 1 enabled			
TCC Pressure Control Solenoid Control Circuit Low		This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set at single electrical hardware fault to ground occurrence.		No MIL-on DTC for this drive cycle	P0657 P0658	3050 ms 25 ms	В
			IF the electrical open test is enabled and an electrical hardware fault to			P0659		
			ground is present for a sample size,	>= 120 samples	Components powered			
			THEN initiate intrusive test by opening low side driver.		AND Battery Voltage between	9 V and 18 V		
			IF engine is cranking or running and hardware fault is present for a sample size,		If Engine Cranking, then Crank Time	< 4 seconds		
			THEN report malfunction.		AND Battery Voltage	> 10 V		
					High side driver 1 enabled			
Communications								
GMLAN Bus Reset Counter Overrun	U0073	This test detects if the GMLAN bus is off for a calibration duration.	CANB_bus is off for a time		Components powered		3 sec 100 ms	В
					AND Battery Voltage between	9 V and 18 V		
						RPM		
					for	5 seconds		

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
GMLAN ECM Controller State of Health Failure	U0100	This test detects CAN (GMLAN) bus failures by detecting State of Health failures in GMLAN message \$191 from ECM.	Case 1 (x out of y): The failure counter increments when a State of Health (SOH) failure is detected. A SOH failure occurs when message is missing. When the failure counter is a number of samples	>= 3 samples	Components powered AND Battery Voltage between Engine Speed between for	9 V and 18 V	For Case 1: 500 ms For Case 2: 2.5 seconds 100 ms	В
			out of a number of samples, report fail. Case 2 (intermittent): Report fail, when the failure counter and number of samples	> 0 counts	Ignition Key State is RUN GMLAN message \$191 is received from ECM			
			out of number of samples	5 samples	Enable criteria met for a time	> 3 seconds		