Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction	Enable Conditions	Time Require		Mil Illum.
Transmission Control Module (TCM)	P0601	Transmission Electro- Hydraulic Control Module Read Only Memory	Incorrect program/calibr ations checksum	= TRUE	Boolean			>= 5	Fail Counts	One Trip
					Disable Conditi ons:	MIL not Illuminated for DTC's:				
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 Contino usly		One Trip
					Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None			
Transmission Control Module (TCM)	P0604	Transmission Electro- Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	= TRUE	Boolean			>= 5	Fail Counts	One Trip
									Sample Counts	
					Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions		Time Requir		Mil Illum.
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 Contino usly		One Trip
						Disable Conditi ons:	for DTC's:					
Transmission Control Module (TCM)	P0634	Transmission Electro- Hydraulic Control Module Internal Temperature Too High		>=	146.29688	°C			>=	5	Fail Time (Sec)	One Trip
			Fail Substrate Case Temperature 2 Ignition	>=	50	°C			>=	2	Fail Time (Sec)	
			Voltage Note: either fail case can set the DTC	>=	18	Volts						
							Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp Range for Time	<= 31.9902 Volts >= 0 °C <= 170 °C >= 0.25 Sec				
							P0634 Status is	Test Failed ≠ This Key On or Fault Active				

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12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction		able litions		Tim Requi		Mil Illum.
)isable Conditi ons:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
High Side Driver 1		Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	= TRUE B	oolean				>=	3	Fail Counts	One Trip
									out of	5	Sample Counts	
						P0658 Status is not	Te Fai = This On Fa Act	ed Key or ult				
						High Side Driver 1 On	= Tr	ue Boolean				
)isable Conditi ons:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ		C							Two Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			lf TCM substrate temp to power up temp Δ	> Table 20 in _{°C} supporting				
			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.				Sample Ou 3750 Counts t of loop)	
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700 Pass Counts (100ms loop)	
							Sample Ou Counts t of 875 (100ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	ıs	Time Required	Mil Illum
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Accelerator Position Signal Valid	=	TRUE	Boolean		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= <= >=	8.59961 31.9902 400	Volts Volts RPM		
					Engine Speed Hi		7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Brake torque active Below describes the	=	FALSE			
					brake torque entry criteria					
					Engine Torque Throttle	>= >=	90 30.0003	N*m Pct		
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed		8	Kph		
					Transmission Range		Park			
					Transmission Range	≠	Neutral			
					PTO	=	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec		
					Below describes the brake torque exit criteria					
					Brake torque entry criteria	=	Not Met			
					Clutch hydraulic pressure	¥	Clutch Hydrauli c Air Purge Event			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Clutch used to exit brake torque active	CeTFTD = _e_C3_ RatlEnbl		
					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		
					P0667 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditi ons:	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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used					Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate Temperature Sensor = Indirect	<= -249 °C >= -249 °C				
			Proportional and Temp					-
			Either condition above will satisfy the fail conditions				Fail >= 60 Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= 31.9902 Volts >= 400 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0668 Status is	Test Failed ≠ This Key On or Fault Active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Condition	IS		Tim Requi		Mil Illum.
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: ECM:						
Transmission Control Module (TCM)	P0669	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								>=	60	Fail Timer (Sec)	
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0669 Status is	¥	Test Failed This Key On or Fault Active					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time	>= 0 kW >= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		
				Disable Condit ons	for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	If TCM power- up temp to substrate temp Δ	Refer to Table 20 in °C supporting documents				Two Trips
			If transmission oil temp to power up temp Δ	Refer to Table 18 in ∘C supporting documents				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Both conditions above required to increment fail counter				Fail >= 3000 Counts (100ms loop)	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Sample Ou 3750 Counts t of 100ms loop)	
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until				Pass >= 700 Counts (100ms loop)	
							Sample Ou 875 Counts t of (100ms loop)	
					Engine Torque Signal Valid Accelerator Position Signal Valid Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 400 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	S	Time Required	Mil Illum.
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Brake torque active Below describes the brake torque entry	=	FALSE			
					criteria Engine Torque Throttle	>= >=	90 30.0003	N*m Pct		
					Transmission Input Speed Vehicle Speed	<= <=	200 8	RPM Kph		
					Transmission Range Transmission Range	≠	Park Neutral			
					PTO	≁ =	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec		
					Below describes the brake torque exit criteria					
					Brake torque entry criteria	=	Not Met Clutch			
					Clutch hydraulic pressure	¥	Hydrauli c Air Purge Event			
					Clutch used to exit brake torque active	=	CeTFTD _e_C3_ RatlEnbl			
					The above clutch pressure is greater than this value for one loop	>=	600	kpa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Set Brake Torque Active FALSE if above conditions are met for:			
					P06AC Status is	Test Failed ≠ On or Fault Active		
				Disabl Condi ons	i 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		
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 °C			Fail >= 60 Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.9902 Volts >= 400 RPM <= 7500 RPM		

Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu		Secondary Malfunction		Enable Condition	s		Tim Requi		Mil Illum.
					P06AD Status is	¥	Test Failed This Key On or Fault Active					
					conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit	>=	0 0	kW Sec				
					Lost Communication with Hybrid Processor Control Module	=	FALSE					
					Estimated Motor Power Loss Fault	=	FALSE					
					for DTC's:	P0722	, P0723	717,				
P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= 164	°C					>=	60	Fail Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within	>= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM			()	
	P06AE	P06AE TCM power-up thermistor circuit voltage high			DOGAE TCM power-up thermistor Power Up - 164 %C	P06AE TCM power-up thermistor Power Up >= 164 °C Ignition Voltage Lo P06AE TCM power-up thermistor Power Up >= 164 °C Ignition Voltage Lo	P06AE TCM power-up thermistor cruit voltage high Power Up Temp >= 164 °C Ignition Voltage Lo >= P06AE TCM power-up thermistor cruit voltage high Power Up Temp >= 164 °C >= Ignition Voltage high Ignition Voltage Lo >= 164 °C >= Ignition Voltage high Ignition Voltage Lo >= 164 °C >= Ignition Voltage Lo >= Ignition Voltage Lo >= 164 >= 164 >= Ignition Voltage Lo >= Ignition Voltage Lo >= >= 164 >= >= 164 >= >= 164 </td <td>P06AD Status is ≠ Failed On or Fault Active For Hybrids, below conditions must also be met Loss >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= FALSE Control Module = FALSE Estimated Motor Power Loss Fault = FALSE Control Module = FALSE Conditions mith hybrid Processor Control Module = P06AE TCM power-up thermistor circuit voltage high FOWEr Up Temp >= 164 °C P06AE TCM power-up thermistor circuit voltage high Power Up Temp >= 164 °C >= 8.59961 Engine Speed Lo Engine Speed Lo Eng</td> <td>P06AD Failed Failed P06AD Status is Failed P06AD Status is Failed P06AD For Hybrids, below conditions must also be met Loss Portuge Estimated Motor Power Loss Power Up Estimated Motor Power Loss Power Up Estimated Motor Power Loss Fault Power Up Estimated Motor Power Loss Fault Pote Power Power Up P06AE TCM power-up thermistor circuit voltage high Power Up Temp Power Up Temp Power Up P06AE TCM power-up thermistor circuit voltage high Power Up Temp Power Up Temp Power Up Temp Power Up Temp Power Up Engine Speed Lo Power Up Engine Speed Lo Power Up Status Power Up Temp Power Up Tem</td> <td>P06AD Status is ≠ Failed This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active >= P06AD Status is = 0 KW Estimated Motor Power Loss greater than limit for time >= 0 Sec Lost Communication = FALSE Control Module = FALSE P06AE TCM power-up thermistor circuit voltage high Power Up Temp >= 164 °C >= 8.59961 Volts <</td> >= > >= >= > >= >= >= > >= >= > >= > >= > >= > >= > > > > >= > <td< td=""><td>P06AD Status is</td><td>P06AD Status is ror Hybrids, below ror Hybri</td></td<>	P06AD Status is ≠ Failed On or Fault Active For Hybrids, below conditions must also be met Loss >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= 0 Estimated Motor Power Loss greater than limit for time >= FALSE Control Module = FALSE Estimated Motor Power Loss Fault = FALSE Control Module = FALSE Conditions mith hybrid Processor Control Module = P06AE TCM power-up thermistor circuit voltage high FOWEr Up Temp >= 164 °C P06AE TCM power-up thermistor circuit voltage high Power Up Temp >= 164 °C >= 8.59961 Engine Speed Lo Engine Speed Lo Eng	P06AD Failed Failed P06AD Status is Failed P06AD Status is Failed P06AD For Hybrids, below conditions must also be met Loss Portuge Estimated Motor Power Loss Power Up Estimated Motor Power Loss Power Up Estimated Motor Power Loss Fault Power Up Estimated Motor Power Loss Fault Pote Power Power Up P06AE TCM power-up thermistor circuit voltage high Power Up Temp Power Up Temp Power Up P06AE TCM power-up thermistor circuit voltage high Power Up Temp Power Up Temp Power Up Temp Power Up Temp Power Up Engine Speed Lo Power Up Engine Speed Lo Power Up Status Power Up Temp Power Up Tem	P06AD Status is ≠ Failed This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active P06AD Status is ≠ This Key On or Fault Active >= P06AD Status is = 0 KW Estimated Motor Power Loss greater than limit for time >= 0 Sec Lost Communication = FALSE Control Module = FALSE P06AE TCM power-up thermistor circuit voltage high Power Up Temp >= 164 °C >= 8.59961 Volts <	P06AD Status is	P06AD Status is ror Hybrids, below ror Hybri

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P06AE Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditi ons:				
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	Table 19 in ₀				Two Trips
			lf transmission oil temp to power up temp Δ	S Table 18 in				
			Both conditions above required to increment fail counter				Fail >= 3000 Counts (100ms loop)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio			Tim Requi		Mil Illum.
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.					Ou t of	3750	Sample Counts (100ms loop)	
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until					>=	700	Pass Counts (100ms loop)	
								Ou t of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid	= TRUE	Boolean				
					Accelerator Position Signal Valid	= TRUE	Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.59961 <= 31.9902 >= 400 <= 7500					
					Engine Speed is within the allowable limits for	>= 5	Sec				
					Brake torque active Below describes the brake torque entry criteria	= FALSE					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
					Engine Torque Throttle	>= >=	90 30.0003	N*m Pct		
					Transmission Input Speed	<=	200	RPM		
					Vehicle Speed	<=	8	Kph		
					Transmission Range	¥	Park			
					Transmission Range	¥	Neutral			
					РТО	=	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec		
					Below describes the brake torque exit criteria					
					Brake torque entry criteria	=	Not Met			
					Clutch hydraulic pressure	¥	Clutch Hydrauli c Air Purge Event			
					Clutch used to exit brake torque active	=	CeTFTD _e_C3_ RatlEnbl			
					The above clutch pressure is greater than this value for one loop	>=	600	kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>=	20	Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0711 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditi ons:	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 		
Transmission Fluid Temperature Sensor (TFT)	P0712	Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	- voltageDir ectProp				Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			lf 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	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0712 Status is	Test Failed ≠ This Key On or Fault Active		
					For Hybrids, below conditions must also be met			
					Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Jystein		Description	ontend	Disable Conditi ons:	MIL not Illuminated	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0713	Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used If Transmission Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp Either condition above will satisfy the fail conditions	volageDif ectProp >= 174 °C	Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec	>= 60 Fail (Sec)	Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Conditio	าร		Time Requir		Mil Illum.
							P0713 Status is	¥	Test Failed This Key On or Fault Active			<u> </u>		
						Disable Conditi ons:	MIL not Illuminated for DTC's:		, P0722, P					
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>=	1350	RPM					>=	0.8	Fail Time (Sec)	One Trip
							Engine Torque is Engine Torque is Engine Speed Engine Speed		0 8191.88 400 7500	N*m N*m RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							Vehicle Speed is Throttle Position is	>= >=	10 0	Kph Pct				
							Transmission Input Speed is	>=	0	RPM				
							The previous requirement has been satisfied for 	>=	0	Sec				
							The change (loop to loop) in transmission input speed is	<	8191.88	RPM/Lo op				
							The previous requirement has been satisfied for	>=	0	Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction		Enable Conditio			Time Requir		Mil Illum.
System	Code	Description	Chiena	Value	,	Throttle Position Signal	=		Boolean		Requi	eu	indin.
						Valid Engine Torque Signal Valid	=	TRUE					
						Ignition Voltage Ignition Voltage	>= <=	8.59961 31.9902 Test	Volts Volts				
						P0716 Status is not	=	Failed This Key On or Fault Active	,				
					Disable Conditi ons:		P0973 ECM:	8, P0974 P0101, P0 8, P0121, F	102,				
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Transmission Case Input Speed is	< 67	RPM					>=	4.5	Fail Time (Sec)	One Trip
			Fail CaseWhen P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 1000	RPM	Controller uses a single power supply for the speed sensors	=	1	Boolean				
						Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid	>= <= >= =	50 8191.88 16 TRUE	Kph				
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Condition			Time Requir		Mil Illum.
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0717 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditi ons:	MIL not Illuminated for DTC's:		P0101, P0					
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<=	35	RPM					>=	3.75	Fail Time (Sec)	One Trip
							P0722 Status is not	=	Test Failed This Key On or Fault Active					
							Transmission Input Speed Check		TRUE	Boolean				
							Engine Torque Check	=	TRUE	Boolean				
							Throttle Position Transmission Fluid Temperature	>= >=	5.00031 -40	Pct ⁰C				
							Disable this DTC if the PTO is active	_	1	Boolean				
							Engine Torque Signal Valid	_	TRUE	Boolean				
							Throttle Position Signal Valid	_	TRUE	Boolean				
							Ignition Voltage is Ignition Voltage is Engine Speed is	>= <=	8.59961 31.9902 400	Volts Volts RPM				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Molfunction		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition		Required	Illun
					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			
					Range Shift Status	≠	shift	ENUM		
					Ű		complet ed			
					OR		eu			
					Transmission Range is	=	Park or			
							Neutral 8191.75	N*m		
					Engine Torque is Engine Torque is	>= <=	8191.75	N*m		
							0101.70			
					Engine Torque					
					Condition 2	\-	35	N*m		
					Engine Torque is Engine Torque is	>= <=		N*m		
						-	0101.70			
					The Transmission					
					Input Speed (TIS)					
					Check is TRUE, if either of the two					
					following conditions					
					are TRUE					
					TIS Check Condition 1					
					Transmission Input		1000			
					Transmission Input Speed is	>=	1000	RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
							Transmission Input Speed is	<=	8191	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	RPM RPM				
							Controller uses a single power supply for the speed sensors	=	1	Boolean				
							Powertrain Brake Pedal is Valid	=	TRUE	Boolean				
						Disable Conditi ons:	for DTC's:	P0723 ECM: F	20716, PC 20101, PC 20121, F	0102,				
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed	>=	105	RPM					>=	0.2	Enable Time (Sec)	One Trip
			Output Speed Delta		8191	RPM					>=	0	Enable Time (Sec)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
			Output Speed Drop	>	650	RPM					>=	1.5	Output Speed Drop Recove ry Fail Time (Sec)	
			AND Transmission Range is	=	Driven range (R,D)									
							Range_Disable		FALSE	See Below				
							Neutral_Range_Enable		TRUE	See Below				
							Neutral_Speed_Enable are TRUE concurrently		TRUE	See Below				
							Transmission_Range_ Enable Transmission_Input_S peed_Enable		TRUE TRUE	See Below See Below				
							No Change in Transfe Case Range (High <-> Low) fo	· >=	5	Seconds				
							P0723 Status is no	: =	Test Failed This Key On or Fault Active	,				
							Disable this DTC if the PTO is active Ignition Voltage is	. =	1	Boolean Volts				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum
					Ignition Voltage is Engine Speed is Engine Speed is	<= >= <=	31.9902 400 7500	Volts RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Enable_Flags Defined Below					
					Transmission_Input_S peed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:					
					TIS Condition 1 is TRUE when both of the following conditions are satsified for	>=	0	Enable Time (Sec)		
					Input Speed Delta Raw Input Speed	<= >=	4095 500	RPM RPM		
					TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied					
					Input Speed A Single Power Supply is used for all speed sensors	=	0 TRUE	RPM Boolean		
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE					
					Transmission Range is	=	Neutral	ENUM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
					Transmission Range is	Reverse /Neutral Transito nal		
					Transmission Range is	nal		
					And when a drop occurs Loop to Loop Drop of Transmission Output Speed is			
					Range_Disable is TRUE when any of the next three conditions are TRUE			
					Transmission Range is	= Park ENUM		
					Transmission Range is	Park/Re verse Transito nal		
					Input Clutch is not	ON = (Fully ENUM Applied)		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	> 1.5 Seconds		
					Transmission Output Speed The loop to loop	> 130 RPM		
					change of the Transmission Output Speed is	< 20 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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	Reverse /Neutral Transitio nal		
					Transmission Range is	Neutral/ Drive Transitio nal		
					Time since a driven range (R,D) has been selected	Table Based Time Please Refer to >= Table 21 Sec in supporti ng docume nts		
					Transmission Output Speed Sensor Raw Speed Output Speed when a	>= 500 RPM >= 500 RPM		
					fault was detected			

Component/	Fault	Monitor Strategy	Malfunction Criteria		reshold /alue	Secondary Malfunction	Enable Conditions		Time		Mil Illum.
System	Code	Description	Criteria		Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123	T	Requir	ea	mum.
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met	>= 80	00 Kpa			>=	2	Enable Time (Sec)	Two Trips
			(A) TCC Slip Error @ TCC On Mode	Refe Table Supp Docur	1 in orting			>=	5	Fail Time (Sec)	
			(B) TCC Slip @ Lock On Mode		30 RPM			>=	5	Fail Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter					>=	3	TCC Stuck Off Fail Counte r	
						TCC Mode Ignition Voltage Lo Ignition Voltage Hi Engine Speed Engine Speed	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM				
						Engine Speed is within the allowable limits for	>= 5 Sec				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	าร	Required	Illum.
					Engine Torque Lo	>=	50	N*m		
					Engine Torque Hi	<=	8191.88	N*m		
					Throttle Position Lo	>=	8.00018	Pct		
					Throttle Position Hi	<=	99.9985	Pct		
					2nd Gear Ratio Lo	>=	2.67102	Ratio		
					2nd Gear Ratio High	<=	3.073	Ratio		
					3rd Gear Ratio Lo	>=	1.71301	Ratio		
					3rd Gear Ratio High	<=	1.97095	Ratio		
					4th Gear Ratio Lo	>=	1.31506	Ratio		
					4th Gear Ratio High	<=	1.51294	Ratio		
					5th Gear Ratio Lo	>=	0.93005	Ratio		
					5th Gear Ratio Hi	<=	1.06995	Ratio		
					6th Gear Ratio Lo	>=	0.69006	Ratio		
					6th Gear Ratio High	<=	0.79395	Ratio		
					Transmission Fluid	>=	-6.6641	°C		
					Temperature Lo		-0.0041	0		
					Transmission Fluid	<=	130	°C		
					Temperature Hi	~-	150	0		
					PTO Not Active	=	TRUE	Boolean		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal					
					Valid	=	TRUE	Boolean		
					Dynamic Mode	=	FALSE	Boolean		
					P0741 Status is	¥	Test Failed This Key On or Fault Active			

Component/	Fault	Monitor Strategy	Malfunction		Thresh		Secondary		Enable			Tim		Mil
System	Code	Description	Criteria		Valu		Malfunction		Conditio			Requi	red	Illun
						Disable	MIL not Illuminated							
						Conditi ons:	for DTC's:	P0722 P2763	, P0723, , P2764	P0742,				
						0115.		1 2700	,12104					
									P0101, P					
									, P0106, F					
									, P0171, F , P0175, F					
									, P0203, F					
									, P0206, F					
									, P0300, F					
								P0302	, P0303, F , P0306, F	20304,				
									, P0300, F , P0401, F					
									,	•				
orque			TCC Slip											Or
Converter Clutch	P0742	TCC System Stuck ON	Speed	>=	-50	RPM								Tri
TCC)			TCC Slip											
			Speed	<=	13	RPM								
			opood										Fail	
											>=	2.5	Time	
													(Sec)	
			If Above											
			Conditions											
			Have been									-	Fail	
			Met, and Fail Timer Expired,								>=	6	Counte	
			Increment Fail										ſ	
			Counter											
							TCC Mode	=	Off					
							Enable test if Cmnd		Oli					
							Gear = 1stFW and	=	1	Boolean				
							value true							
							Enable test if Cmnd							
							Gear = 2nd and value		0	Boolean				
							true Engine Speed Hi		6000	RPM				
							Engine Speed Hi Engine Speed Lo		500	RPM RPM				
							Vehicle Speed HI		511	KPH				
							Vehicle Speed Lo	>=	1	KPH				
							Engine Torque Hi	<=	8191.88	8 Nm				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
					Engine Torque Lo Current Range	>= ≠	80 Neutral	Nm Range		
					Current Range	¥	Reverse	Range		
					Transmission Sump Temperature	<=	130	°C		
					Transmission Sump Temperature	>=	18	°C		
					Throttle Position Hyst High AND	>=	5.00031	Pct		
					Max Vehicle Speed to Meet Throttle Enable	<=	8	KPH		
					Once Hyst High has been met, the enable will remain while Throttle Position	>=	2.00043	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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum
						Disable if Air Purge active and value false	=	0	Boolean		
						RVT Diagnostic Active	=	FALSE	Boolean		
						Ignition Voltage Ignition Voltage Vehicle Speed Engine Speed Engine Speed	<= <= >=	8.59961 31.9902 511 400 7500	V V KPH RPM RPM		
						Engine Speed is within the allowable limits for	>=	5	Sec		
						Engine Torque Signal Valid	=	TRUE	Boolean		
						Throttle Position Signal Valid	=		Boolean		
						P0742 Status is	¥	Test Failed This Key On or Fault Active			
					Disable Conditi ons:	MIL not Illuminated for DTC's:	P0722				
							P0103 P0108 P0174	P0101, P0 3, P0106, F 3, P0171, F 4, P0175, F	20107, 20172, 20201,		
							P0205 P0208 P0302 P0305	2, P0203, F 5, P0206, F 8, P0300, F 2, P0303, F 5, P0306, F 3, P0401, F	20207, 20301, 20304, 20307,		
/ode 2 Multiplex /alve	P0751	Shift Solenoid Valve A	Commaned	>= 4	00 RPM			,, .			Tw

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Commanded Gear	= ISLLOCK rpm			Sa o a Fail	
			Gear Ratio	<= 1.4849854			>= 0.3 Tmr	
			Gear Ratio	>= 1.3430176			= 5 Fail Counts	
			If the above parameters are true					
							Neutral ≠ 0 Timer (Sec)	
							Fail >= 0.3 Timer (Sec)	
							>= 8 Counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Transmission Fluid Temperature	>= -6.6563 °C		
					Range Shift State	Range Shift ENUM Complet ed		
					TPS OR	>= 0.50049 %		
					Output Speed	>= 36 RPM		
					Throttle Position Signal Valid from ECM	= TRUE Boolean		

Component/	Fault	Monitor Strategy	Malfunction		Thresho		Secondary Malfunction		Enable	Time Do guiro d	Mil Illum.
System	Code	Description	Criteria		Value		Engine Torque Signal Valid from ECM, High		onditions TRUE Boolean	Required	mum.
							side driver is enabled High-Side Driver is Enabled	= '	TRUE Boolean		
							Input Speed Sensor fault	= F	ALSE Boolean		
							Output Speed Sensor fault	= F	ALSE Boolean		
							Default Gear Option is not present	= '	TRUE		
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P07 P0722, P	716, P0717, 0723, P182E		
						0113.		P0103, P P0108, P	101, P0102, 0106, P0107, 0171, P0172,		
								P0202, P P0205, P P0208, P	0175, P0201, 0203, P0204, 0206, P0207, 0300, P0301,		
								P0305, P	0303, P0304, 0306, P0307, 0401, P042E		
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM					One Trip
			Commanded Gear	=	3rd	Gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Commanded Gear has Achieved 1st Locked OR 1st Free- Wheel OR 2nd with Mode 2 Sol. Commanded On If the above parameters are true	= TRUE Boolean				
			Command 4th Gear once Output Shaft	<= 800 RPM			Please Refer to Table Neutral >= 16 in Timer Support (Sec) ing Docum ents	
			Speed	>= 4.2597656 <= 4.708252			Fail >= 1.5 Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	<= 31.9902 \ >= 400	>= 5 Counts Volts RPM	-
					Engine Speed Hi Engine Speed is within the allowable limits for		RPM Sec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					High-Side Driver is Enabled	= TRUE Boolean		
					Throttle Position Signal Valid from ECM			
					Output Speed OR	>= 36 RPM		
					TPS	>= 0.50049 % Range		
					Range Shift State	Chiff		
					Transmission Fluid Temperature	N= 6.6562 90		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Condit ons	i for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207,		
						P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
/lode 2 Multiplex /alve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail</u> Commanded <u>Case</u> Gear <u>1</u>	= 1st Locked				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS	Tir Requ		Mil Illum.
			Gear Box Slip	>= 400 RPM					>= in	5 Neutral Timer rt (Sec) n	
			Intrusive Shift to 2nd								
			Commanded Gear Previous	= 1st Locked Gear							
			Gear Ratio Gear Ratio If the above parameters are true								
									>= 1 >= 3	sec counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM			
					Engine Speed is within the allowable limits for	>=	5	Sec			
					Output Speed OR	>=	36	RPM			
					TPS	>=	0.50049 Range	%			
					Range Shift State	=	Shift Complet ed	ENUM			
					Transmission Fluid Temperature	>=	-6.6563	°C			
					High-Side Driver is Enabled	=	TRUE	Boolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Throttle Position Signal Valid from ECM			
					Input Speed Sensor fault			
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present			
				Coi	able MIL not Illuminated nditi for DTC's: ons:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207,		
						P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	Fail Case 1 Case State 3rd Gear Commanded Gear Gearbox Slip	= 3rd Gea				One Trip
			Gearbox Slip	- 1 00 KFN			Please Refer to Table Neutral >= 16 in Timer Support (Sec) ing Docum ents	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illun
			Command 4th Gear once Output Shaft	<- 900 DDM				
			Speed					
			And Gear Ratio	<= 1.4847412				
			T alo				Fail >= 3 Timer (Sec)	
			It the above condiations are true,				3rd Sear	
			Increment 3rd gear fail counter				Counts	
			and C35R Fail counter				or 3-5R Clutch Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 5th Gear <u>2</u>					
			Commanded Gear	= 5th Gear				
			Gearbox Slip	>= 400 Rpm			Please Refer to Table 5 Neutral >= in Timer Support (Sec)	
			Intrusive Test: Command 6th Gear				ing Docum ents	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio	าร		Tim Requi		Mil Illum.
			If attained Gear=6th gear Time	Please refer to Shift						•		
			It the above condiations are true, Increment 5th gear fail counter						>=	3	5th Gear Fail Counts or	
			and C35R Fail counter						>=	14	3-5R Clutch Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B (A) Output speed enable	>=	36	RPM				
					(B) Accelerator Pedal enable	>=	0.50049	Pct				
					Common Enable Criteria							
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Throttle Position Signal valid			
					HSD Enabled	= TRUE Boolean		
					Transmission Fluid Temperature			
					Input Speed Sensor fault	- FALSE DUUIEdII		
					Output Speed Sensor fault	E FALSE BOOLEAN		
					Default Gear Option is not present			
				Disabl Condi		TCM: P0716, P0717, P0722, P0723, P182E		
				ons		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) Solinoid B Stuck On [C35R] (Steady State)	Fail Case Case: Steady 1 State 1st					One Trip
			Attained Gear slip					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time Please Refer to Table 4 in supporting documents				
			Intrusive test: (CBR1 clutch exhausted)					
			Gear Ratio Gear Ratio If the above parameters are true	>= 1.75				
							Fail >= 1.1 Timer (Sec) Fail	
							>= 2 Count in 1st Gear or	
							Total >= 3 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 2nd gear 2					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			Max Delta Output Speed Hysteresis	Table Based value >= Please rpm/sec				
			Min Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				
			Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio	<= 1.93396				

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 2nd Gear or	
							Total >= 3 Fail Counts	;
			<u>Fail</u> Case: Steady <u>Case</u> State 4th gear					
			Max Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			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	Table Based Time Please Sec Refer to Table 17 in supporting documents				
			Intrusive test: (C1234 clutch exhausted)					
							Fail >= 1.1 Timer (Sec) Fail	
							>= 3 Count in 4th Gear or	
							Total >= 3 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 6th gear <u>4</u>					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	Table Based value >= Please Please rpm/sec				
			Min Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (CB26 clutch exhausted)					
				<= 1.0500488 >= 0.9499512			Fail >= 1.1 Timer (Sec) >= 3 counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum.
-			If the above parameters are true							-		
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
									>=	3	or Total Fail Counts	
					PRNDL State defaulted	=	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_Pre ssurized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	36	Nm				
					(B) Accelerator Pedal enable	>=	0.50049	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
					if Attained Gear=1st FW Accelerator Pedal enable	>= 5.00031 Pct		
					if Attained Gear=1st FW Engine Torque Enable	>= 20 Nm		
					if Attained Gear=1st FW Engine Torque Enable	<= 8191.88 Nm		
					Transmission Fluid Temperature	>= -6.6563 °C		
					Input Speed Sensor fault	= FALSE Boolea	n	
					Output Speed Sensor fault	= FALSE Boolea	ı	
				Disable Conditi ons:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

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) 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 Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip	Initial				
			If the above conditions are true run appropriate Fail 1 Timers Below: fail timer 1 (3-1 shifting with Closed Throttle)	(500)				

Component/	Fault	Monitor Strategy	Malfunction	٦	Thresho	ld	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Value		Malfunction	Conditions	Required	Illum.
			fail timer 1 (3-2 shifting with Throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Closed Throttle)		0.5	Fail Time (Sec)				
			fail timer 1 (3-4 shifting with Throttle)		0.5	Fail Time (Sec)				
			fail timer 1 (3-4shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)	>=		Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Throttle)		0.5	Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Closed Throttle)		0.5	Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.1	503906	Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Closed Throttle)	>=	0.5	Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Throttle)		0.5	Fail Time (Sec)				
			fail timer 1 (5-6 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.
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer sec 1, and Refere nce Support ing 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 OR 5th	
			5th gear fail counter				>= 5 gear fail counts OR	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Total fail counter				>= 5 total f	
					TUT Enable temperature	>= -6.6563 °C		
					Input Speed Sensor fault	= FALSE Boolea	n	
					Output Speed Sensor fault	= FALSE Boolea	n	
					Command / Attained Gear	≠ 1st Boolea	n	
					High Side Driver ON	= TRUE Boolea	n	
					output speed limit for TUT	>= 100 RPM		
					input speed limit for TUT	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolea		
					IMS Fault Pending		n	
					Service Fast Learn Mode		n	
					HSD Enabled	= TRUE Boolea	n	
					Default Gear Option is not present	= TRUE		
				Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172,		
						P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301,		
						P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	<u>Fail</u> Case: Steady <u>Case</u> State 4th Gear 1					One Trip
			Gear slip	>= 400 RPM			Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 5th gear					
			If attained Gear <i>≠</i> 5th for time					
			if the above conditions have been met					
			Increment 4th Gear Fail Counter				4th Sear Fail Count OR	
			and C456 Fail Counters				C456 >= 14 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 5th Gear <u>2</u>					

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

1 OF 9 SECTIONS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illun
-,			Intrusive test: commanded 5th gear								-	
			lf attained Gear <i>≠</i> 5th for time	>= Table 3 in Time								
			if the above conditions have been met									
			Increment 6th Gear Fail Counter and C456 Fail Counter						>=	3	6th Gear Fail Count	
			and C456 Fail Counter						>=	14	OR C456 Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT	>=	0	RPM				
					A OR B (A) Output speed enable	>=	36	RPM				
					(B) Accelerator Pedal enable	>=	0.50049	Pct				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM		
					the allowable limits for Throttle Position Signal valid	>= 5 Sec = TRUE Boolean		
					HSD Enabled Transmission Fluid Temperature Input Speed Sensor	>= -6.6563 °C		
					fault OutputSpeed Sensor fault Default Gear Option is not present	= FALSE Boolean		
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307,		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> Case: Steady <u>Case</u> State 1st			P0308, P0401, P042E		One Trip
		,	Attained Gear slip	>= 400 RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time Enable Please Time				
			Intrusive test: (CBR1 clutch exhausted)					
							Fail >= 1.1 Timer (Sec) Fail	
							>= 2 Count in 1st Gear or	
							Total >= 3 Fail Counts	
			<u>Fail</u> Case Steady <u>Case</u> State 2nd 2					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	>= prease rpm/sec				
			Min Delta Output Speed Hysteresis	>= Defente 2D rpm/sec				
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				

Component/ System	Fault Code	Code Description Criteria			Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above parameters are true				Fail	
							>= 1.1 Timer (Sec) Fail	
							>= 3 Count in 2nd Gear or	
							>= 3 fail counts	
			<u>Fail</u> Case Steady <u>Case</u> State 3rd <u>3</u>					
			Max Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions		Tim Requi	
			If the Above is True for Time	Table Based Time Please						~**
			Intrusive test: (C35R clutch exhausted)							
								>=	1.1	Fail Timer (Sec) Fail
								>=	3 OR	Count in 3rd Gear
								>=	3	Total Fail Counts
					PRNDL State defaulted	=	FALSE Boolear	1		
					inhibit RVT	=	FALSE Boolear			
					IMS fault pending indication	=	FALSE Boolear	1		
					output speed	>=	0 RPM			
					TPS validity flag	=	TRUE Boolear	1		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
					HSD Enabled	=	TRUE	Boolean		
					Hydraulic_System_Pre ssurized A OR B	=	TRUE	Boolean		
					(A) Output speed enable	>=	36	Nm		
					(B) Accelerator Pedal enable	>=	0.50049	Nm		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi		8.59961 31.9902 400 7500	Volts Volts RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.00031	Pct		
					if Attained Gear=1st FW Engine Torque Enable	>=	20	Nm		
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.88	Nm		
					Transmission Fluid Temperature	>=	-6.6563	°C		
					Input Speed Sensor fault	=	FALSE	Boolean		
					Output Speed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshol Value	d	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Conditi ons:		TCM: P0716, P0717, P0722, P0723, P182E		
							ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
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	Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d					
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command					
			Range Shift Status	Initial ≠ Clutch Control					

Component/	Fault	Monitor Strategy	Malfunction		Thresh		Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria		Valu	e	Walfunction	Conditions	Required	lllum
			Attained Gear		40	RPM				
			Slip							
			If the above							
			conditions are							
			true increment							
			appropriate							
			Fail 1 Timers							
			Below:							
			fail timer 1			Fail				
			(4-1 shifting	>=	0.5	Time				
			with throttle)			(Sec)				
			fail timer 1			Fail				
			(4-1 shifting	>=	0.5	Time				
			without			(Sec)				
			throttle) fail timer 1			Fail				
			(4-2 shifting	>=	0.5	Time				
			with throttle)		0.0	(Sec)				
			fail timer 1							
			(4-2 shifting		0.5	Fail Time				
			without		0.5	(Sec)				
			throttle)							
			fail timer 1 (4-3 shifting	\ _	0.5	Fail Time				
			with throttle)		0.5	(Sec)				
			fail timer 1							
			(4-3 shifting		0.5	Fail				
			without	/-	0.5	Time (Sec)				
			throttle)							
			fail timer 1			Fail				
			(5-3 shifting		0.5	Time				
			with throttle) fail timer 1			(Sec)				1
			(5-3 shifting		• -	Fail				1
			without	>=	0.5	Time				1
			throttle)			(Sec)				1
			fail timer 1			Fail				1
			(6-2 shifting	>=	0.5	Time				
			with throttle)			(Sec)				1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (6-2 shifting without throttle)	Fail >= 0.5 Time				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer sec 1, and Refere nce Support ing 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 Counte >= 3 r From 4th Gear	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Tim Requ		Mil Illum.
		2000.19101							OR	
			5th gear fail counter				>=	3	Fail Counte r From 5th Gear	
			6th gear fail counter				>=	3	OR Fail Counte r From 6th Gear	
			Total fail counter				>=	5	OR Total Fail Counte r	
					TUT Enable temperature Input Speed Sensor	>= -6.6563 °C = FALSE Boolean				
					fault Output Speed Sensor fault	= FALSE Boolean				
					Command / Attained Gear	≠ 1st Boolean				
					High Side Driver ON output speed limit for	= TRUE Boolean				
					TUT input speed limit for TUT	>= 200 RPM				
					PRNDL state defaulted	= FALSE Boolean				
					IMS Fault Pending	= FALSE Boolean				
					Service Fast Learn Mode	= FALSE Boolean				
					HSD Enabled	= TRUE Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Т	hresho Value	ld	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
								ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Case 1 Tap Up Switch Stuck in the Up Position in Range 1 Enabled		0	Boolean				Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled		0	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled		0	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled		0	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	0	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	0	Boolean						
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean						
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0	Boolean						
			Tap Up Switch ON	=	TRUE	Boolean			>=	1	Fail Time (Sec)	
			Fail Case 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	=	1	Boolean						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	0	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	0	Boolean				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Condition	S		Time Requir		Mil Illum.
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0	Boolean								
			Tap Up Switch ON	=	TRUE	Boolean								
			NOTE: Both Failcase1 and Failcase 2 Must Be Met								>=	600	Fail Time (Sec)	
							Time Since Last Range	>=	1	Enable Time				
							Change Ignition Voltage Lo Ignition Voltage Hi	>= <=	8.59961 31.9902	(Sec) Volts Volts				
							Engine Speed Lo Engine Speed Hi	>= <=	400 7500	RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0815 Status is	¥	Test Failed This Key On or Fault Active					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold ⁄alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
					Disable Conditi ons:	for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761		
							ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	FailTap DownCaseSwitch Stuck1in the DownPosition inRange 1Enabled	= 0	Boolean				Specia No MI
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 0	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Valu		Secondary Malfunction	Enable Conditions	Time Required	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	
			FailTap DownCaseSwitch Stuck2in the DownPosition inRange 1Enabled	=	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				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	=	0	Boolean				
			Tap Down Switch ON	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			NOTE: Both Failcase1 and Failcase 2 Must Be Met				>= 600 sec	
					Time Since Last Range Change	(Sec)		-
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 400 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0816 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditi ons:	for DTC's:	TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761		
						ECM: None		

Fault Code	Monitor Strategy Description	Malfunction Criteria				Secondary Malfunction		Enable Condition	s				Mil Illum.
P0826	Up and Down Shift Switch Circuit		=	TRUE	Boolean					>=	60	Fail Time (Sec)	Special No MIL
						Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	> = = = = =	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
						P0826 Status is	¥	Test Failed This Key On or Fault Active					
						MIL not Illuminated for DTC's:							
P0961	Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS)	reports an invalid voltage (out of range)	=	TRUE	Boolean					>=	4.4	Fail Time (Sec)	Two Trips
										out of	5	Sample Time (Sec)	
								8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
	Code P0826	CodeDescriptionP0826Up and Down Shift Switch CircuitP0826Up and Down Shift Switch CircuitP0961Pressure Control (PC) Solenoid A Control Circuit Rationality Test	CodeDescriptionCriteriaP0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid VoltageP0826Image: Control Circuit Solenoid A Control Circuit Reads Invalid Reads Invalid VoltageP0961Pressure Control (PC) Solenoid A Control Circuit Rationality TestThe HWIO reports an invalid voltage	CodeDescriptionCriteriaP0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage=P0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage=P0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage=P0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage=P0961Pressure Control (PC) Solenoid A Control Circuit Rationality Test (ine Pressure VBS)The HWIO reports an invalid voltage (out of range)=	CodeDescriptionCriteriaValueP0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage= TRUEP0826Image: Stress of the stress of	CodeDescriptionCriteriaValueP0826Up and Down Shift Switch CircuitTUTD Circuit Reads Invalid Voltage=TRUEBooleanVoltageImage: State	Code Description Criteria Value Malfunction P0826 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolean Ignition Voltage Lo Ignition Voltage Lo Engine Speed Lo Engine Speed Jo P0826 Image: Speed Sp	Code Description Criteria Value Malfunction P0826 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolean Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo >= P0826 Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo >= Ignition Voltage Hi Engine Speed Lo >= P0826 Status Is Ignition Voltage Hi Engine Speed Is within the allowable limits for >= P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is Image: Speed Is Image: Speed Is P0826 Status Is Image: Speed Is Image: Speed Is	Code Description Criteria Value Malfunction Condition P0826 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolean Ignition Voltage Lo Ignition Voltage Lo Engine Speed Lo Engine Speed Li engine Speed Li e	Code Description Criteria Value Malfunction Conditions P0826 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolean Ignition Voltage Ling >= 8.59961 Volts P0826 Ignition Voltage Ling ->= 8.59961 Volts ->= 400 RPM Engine Speed Is -= TRUE Boolean Ignition Voltage Ling >= 5 Sec P0826 Status Is -= 5 Sec Test Failed P0826 Status Is Test Failed Active Test Failed P0826 Status Is Test Failed P0826 Status Is Test Failed Conditi Test Failed P0826 Status Is Test Fault Active P0981 </td <td>Code Description Criteria Value Mailunction Conditions Image: Condition State S</td> <td>Code Description Criteria Value Malfunction Conditions Requirement P0828 Up and Down Shift Switch Crout TUTD Circuit Reads Invalid Voltage = TRUE Boolean Implicit Notage Lo >= 6.59961 Volts >= 6.0 P0826 Implicit Notage Lo >= 6.59961 Volts Signation Volts<td>Code Description Oriteria Value Malfunction Conditions Require P0828 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolan Image: Condition Voltage in Voltage >= 8.5961 Voltage >= 8.0 Fail P0826 Up and Down Shift Switch Circuit Total Circuit Fail South Shift Switch Fail South Shift Switch South Shift Switch</td></td>	Code Description Criteria Value Mailunction Conditions Image: Condition State S	Code Description Criteria Value Malfunction Conditions Requirement P0828 Up and Down Shift Switch Crout TUTD Circuit Reads Invalid Voltage = TRUE Boolean Implicit Notage Lo >= 6.59961 Volts >= 6.0 P0826 Implicit Notage Lo >= 6.59961 Volts Signation Volts <td>Code Description Oriteria Value Malfunction Conditions Require P0828 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolan Image: Condition Voltage in Voltage >= 8.5961 Voltage >= 8.0 Fail P0826 Up and Down Shift Switch Circuit Total Circuit Fail South Shift Switch Fail South Shift Switch South Shift Switch</td>	Code Description Oriteria Value Malfunction Conditions Require P0828 Up and Down Shift Switch Circuit TUTD Circuit Reads Invalid Voltage = TRUE Boolan Image: Condition Voltage in Voltage >= 8.5961 Voltage >= 8.0 Fail P0826 Up and Down Shift Switch Circuit Total Circuit Fail South Shift Switch Fail South Shift Switch South Shift Switch

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction	Enable Conditior	ıs		Tim Requi		Mil Illum.
					Disable Conditi ons:	MIL not Illuminated for 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		Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>= 5	Sec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:						
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	>= 400	Volts Volts RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Condition	S		Tim Requi		Mil Illum.
							Engine Speed is within the allowable limits for	>=	5	Sec				
						Disable Conditi ons:	MIL not Illuminated for DTC's:							
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	>=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0966 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditi ons:	MIL not Illuminated for DTC's:							

Component/	Fault	Monitor Strategy	Malfunction		Thresh	old	Secondary		Enable			Tim	e	Mil
System	Code	Description	Criteria		Value)	Malfunction		Condition	s		Requi	red	Illum.
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					>=	0.3	Fail Time (Sec)	One Trip
											out of	0.375	Sample Time (Sec)	
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed	> = = = = = = = = = = = = = = = = = = =	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0967 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: ECM:						
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	=	TRUE	Boolean					>=	0.3	Fail Time (Sec)	One Trip
											out of	0.375	Sample Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction		Enable Condition	S		Tim Requi		Mil Illum.
						P0970 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= <= >= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
					Disable Conditi ons:	for DTC's:	TCM: ECM:						
Variable Bleed Solenoid (VBS)	D0071	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag		Boolean					>=	0.3	Fail Time (Sec)	One Trip
										out of	0.375	Sample Time (Sec)	
						P0971 Status is not	=	Test Failed This Key On or Fault					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= >=	Active 8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction		nable ndition	s		Tim Requi		Mil Illum.
					Disable Conditi ons:	MIL not Illuminated for DTC's:							
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean					>=	1.2	Fail Time (Sec)	One Trip
										out of	1.5	Sample Time (Sec)	
					Disable		F: = Thi C F A >= 8.5 <= 31 >= 4 <= 7	Fest ailed is Key on or Fault ctive 59961 .9902 400 500 5	Volts Volts RPM RPM Sec				
					Conditi ons:	for DTC's:	ECM: None	9					
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>=	1.2	Fail Time (Sec)	Two Trips

Common SECTION 1 OF 9 SECTIONS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Val		Secondary Malfunction		Enable Condition	IS		Tim Requi		Mil Illum.
										out of	1.5	Sample Time (Sec)	
						P0974 Status is not	=	Test Failed This Key On or Fault					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= >=	Active 8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
					Disable Conditi ons:	for DTC's:							
Mode 3 Multiplex Valve		Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>=	1.2	Sec	One Trip
										out of	1.5	Sec	
						P0977 Status is not	=	Test Failed This Key On or Fault					
						Ignition Voltage Ignition Voltage	>= <=	Active 8.59961 31.9902	Volts Volts				

1 OF 9 SECTIONS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
Gystem	ooue	Description		- Value		Engine Speed Engine Speed	>= <=	400 7500	RPM RPM		Itoqui	iou	
						Engine Speed is within the allowable limits for	>=	5	Sec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:							
			Rolling count value received										Special No MIL
Tap Up Tap Down Switch (TUTD)	P1761	Tap Up and Down switch signal circuit (rolling count)	from BCM does not match expected value	= TRUE	Boolean					>=	3	Fail Counte r	
										>	10	Sample Timer (Sec)	
						Tap Up Tap Down Message Health Engine Speed Lo	= >=	TRUE 400	Boolean RPM				
						Engine Speed E Engine Speed is within the allowable limits for		7500 5	RPM Sec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: I ECM: I						
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> 1 Current range	Transition = 1 (bit state 1110)	Range								One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value		Secondary Malfunction	Enable Conditions		ime uired	Mil Illum.
			Previous range	¥	CeTRGR_ e_PRNDL_ Ran Drive6	ige					
			Previous range	¥	CeTRGR_ e_PRNDL_ Ran Drive5	ge					
			Range Shift State		Range Shift ENU Completed	JM					
			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						
			Engine Torque	<=	8191.75 Nm						
			If the above conditions are met then Increment Fail Timer						>= 1	Fail Second s	
			If Fail Timer has Expired then Increment Fail Counter						>= 5	Fail Counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			<u>Fail</u> <u>Case</u> Output Speed 2	<=		rpm				
			The following PRNDL sequence events occur in this exact order:							
			PRNDL state	=	Drive 6 (bit state 0110)	Range				
			PRNDL state = Drive 6 for	>=	1	Sec				
			PRNDL state	=	Transition 8 (bit state 0111)	Range				
			PRNDL state	=	Drive 6 (bit state 0110)	Range				
			PRNDL state	=	Transition 1 (bit state 1110)	Range				
			Above sequencing occurs in Neutral Idle Mode	<=	1 Inactive	Sec				
			If all conditions above are met Increment delay Timer							

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction		Enable Conditions		Tim Requi		Mil Illum.
			If the below two conditions are met Increment Fail Timer						>=	3	Fail Second s	
			delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	>=	1 Sec 400 Sec				>=	2	Fail Counts	
			<u>Fail</u> <u>Case</u> Current range <u>3</u>	=	Transition 13 (bit Range state 0010)	Previous range	¥	CeTRG R_e_PR NDL_Dri ve3 CeTRG				
			Engine Torque	>=	-8192 Nm	Previous range	¥	R_e_PR NDL_Dri ve1				
			Engine Torque	<=	8191.75 Nm	IMS is 7 position configuration		0 Boolear	ı			
			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	Second s	
			If Fail Timer has Expired then Increment Fail Counter						>=	15	Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	=	Transition 8 (bit state Range 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Inhibit bit (see definition)	=	FALSE		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque	>=	100	Nm				
			Steady State Engine Torque	<=	8191.75	Nm				
			If the above conditions are met then Increment Fail Timer						>= 0.225 Second s	1
			If the above Condtions have been met, Increment Fail Counter						>= 15 Fail Counts	
			FailThrottleCasePosition5Available	=	TRUE	Boolean				
			The following PRNDL sequence events occur in this exact order:							
			PRNDL State	=	Reverse (bit state 1100)	Range				
			PRNDL State		Transition 11 (bit state 0100)	Range				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		Decemption	PRNDL State	Noutral (bit				
			PRNDL State	Transition = 11 (bit Range state 0100)				
			Above sequencing occurs in Then delay timer increments	<= 1 Sec				
			Delay timer Range Shift State	Range				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear					
			Attained Gear Throttle Position					
			Output Speed	>= 200 rpm				
			If the above conditions are met Increment Fail Timer				>= 20 Second s	
			<u>Fail</u> <u>Case</u> <u>6</u> Current range	Illegal (bit = state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction		Enable Conditions	S	Tim Requi		Mil Illum
			and			Current Range	¥	Transitio n 11 (bit state 0100)				
			A Open Circuit (See Definition)	= FALSE	Boolean	or						
						Last positive state	¥	Neutral (bit state 0101)				
						or						
						Previous transition state	¥	Transitio n 8 (bit state 0111)				
						Fail case 5 delay timer	=	0	sec			
			If the above Condtions are met then, Increment Fail timer							>= 6.25	Second s	
			<u>Fail</u> <u>Case</u> Current <u>7</u> PRNDL State	= PRNDL circuit ABCP = 1101	Range							
			and Previous PRNDL state	PRNDL circuit ABCP =1111	Range							
			Input Speed Reverse Trans Ratio		RPM ratio							
			Reverse Trans Ratio	>= 3.081543	ratio							

Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		If the above Condtions are met then, Increment Fail timer				>= 6.25 Second s	
		P182E will report test fail when any of the above 7 fail cases are					
		met		Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within	<= 31.9902 Volts >= 400 RPM <= 7500 RPM		
				Engine Torque Signal			
			Conditi	for DTC's:	P0722, P0723, P07C0,		
					P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304,		
			Code Description Criteria If the above Condtions are met then, Increment Fail timer If the above Condtions are met then, Increment Fail timer P182E will report test fail when any of the above 7	Code Description Criteria Value If the above Conditions are met then, Increment Fail timer If the above Conditions are met then, Increment Fail timer P182E will report test fail when any of the above 7 fail cases are met P182E will report test fail when any of the above 7 fail cases are met	Code Description Criteria Value Malfunction If the above Conditions are met then, increment Fail timer P182E will report test fail when any of the above 7 fail cases are met If the above Conditions are met If the above If the above 7 fail cases are met If the above Conditions are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met If the above 7 fail cases are met	Code Description Criteria Value Malfunction Conditions Image: Condition of the above Conditions are met then, increment Fail timer Image: Condition of the above Conditions are met then, increment Fail timer Image: Condition of the above Conditions are met then, increment Fail timer Image: Condition of the above Conditions are met then, increment Fail timer Image: Condition of the above Conditions are met then, increment Fail timer Image: Condition of the above Condition of the a	Code Description Criteria Value Malfunction Conditions Required Image: Code of the above Conditions in the number of the above Conditions in the number of the above Conditions in the number of the above Conditions are met then, increment Fail when any of the above 7 fail cases are met Image: Code of the above Code of the above 7 fail cases are met Image: Code of the above 7 fail cases are fail cases Image: Code of the above 7 fail cases ar

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	C	Enable onditio			Tim Requi		Mil Illum.
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is	¥	Park or Neutral	Enumer ation								One Trip
			The following events must occur Sequentially											
			Initial Engine speed	<=	50	RPM					>=	0.25	Enable Time (Sec)	
			Then Engine Speed											
			Following Cals											
			Engine Speed Lo Hist	>=	50	RPM								
			Engine Speed Hi Hist	<=	480	RPM					>=	0.0688	Enable Time (Sec)	
			Then Final Engine Speed	>=	525	RPM								
			Final Transmission Input Speed	>=	100	RPM					>=	1.25	Fail Time (Sec)	
							DTC has Ran this Key Cycle?			Boolean				
							Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst	>= <=	6 31.999	V V				
							High (enables above this value)	>=	5	V				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu		Secondary Malfunction	С	Enable onditior	າຣ		Tim Requi		Mil Illum.
						Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed	<= <=	2 90	V rpm				
						P1915 Status is	۲ ≠	Test Failed This Key On or Fault Active					
					Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0 ECM: No		723				
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 Ioop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts					Ou t of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available	=	TRUE	Boolean				
						ECM run/crank active status	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions		Tim Requi		Mil Illum.
					Disable Condit ons	i for DTC's:			-		
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below)	= TRI	JE Boolear	1					One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)	5	Volts			>=	280	Fail Counts (25ms Ioop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts			Ou t of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available					
						ECM run/crank active status					
					Disabl Condit ons	i for DTC's:					
Variable Bleed Solenoid (VBS)	P2714		Fail_Case: Steady <u>Case</u> State 2nd <u>1</u> Gear								One Trip

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12 OBDG05B Transmission Diagnostics

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gear slip				Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 5th gear					
			lf attained Gear = 5th For Time	>= Please see Time				
			If Above Conditions have been met, Increment 5th gear fail counter				5th >= 3 Gear Fail Count	
			and CB26 Fail Count				or CB26 >= 14 Fail Count	
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mil Illum.
					Minimum output speed for RVT A OR B	>=	0	RPM		
					(A) Output speed enable	>=	36	RPM		
					(B) Accelerator Pedal enable	>=	0.50049	Pct		
					Common Enable Criteria					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= >=	8.59961 31.9902 400 7500	Volts Volts RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Throttle Position Signal valid	=	TRUE	Boolean		
					HSD Enabled	=	TRUE	Boolean		
					Transmission Fluid Temperature	>=	-6.6563	°C		
					Input Speed Sensor fault	=	FALSE	Boolean		
					Output Speed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			

Component/ System	Fault Code	Monitor Strategy	Malfunction Criteria	Thresh Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	Value	e Disable Conditi ons:	MIL not Illuminated	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	Required	Illum.
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)	= TRUE	Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status						
			Primary Offgoing Clutch Pressure Command Status	command					
			Range Shift Status Attained Gear Slip	 ≠ Clutch Control 	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			lf above							
			coditons are							
			true,							
			increment							
			appropriate Fail 1 Timers							
			Below:							
			fail timer 1			Fail				
			(2-1 shifting		0.5	Time				
			with throttle)			(Sec)				
			fail timer 1			Fail				
			(2-1 shifting without	>=	0.5	Time				
			throttle)			(Sec)				
			fail timer 1			Fail				
			(2-3 shifting		0.5	Time				
			with throttle)			(Sec)				
			fail timer 1			Fail				
			(2-3 shifting without	>=	0.5	Time				
			throttle)			(Sec)				
			fail timer 1			Fail				
			(2-4 shifting	>=	0.5	Time				
			with throttle)			(Sec)				
			fail timer 1			Fail				
			(2-4 shifting without	>=	0.5	Time				
			throttle)			(Sec)				
			fail timer 1			Fail				
			(6-4 shifting	>=	0.5	Time				
			with throttle)			(Sec)				
			fail timer 1			Fail				
			(6-4 shifting	>=	0.5	Time				
			without throttle)			(Sec)				
			fail timer 1			Fail				
			(6-5 shifting	>=	0.5	Time				
			with throttle)		0.0	(Sec)				

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enab Condit			Tim Requi		Mil Illum.
			2nd gear fail counter					>=	3	Fail Counte r From 2nd Gear	
			6th gear fail counter					>=	3	OR Fail Counte r From 6th Gear	
			total fail counter					>=	5	OR Total Fail Counte r	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor		3 °C E Boolean E Boolean				
					fault Command / Attained Gear	≠ 1st	Boolean				
					High Side Driver ON output speed limit for TUT input speed limit for	= TRUE >= 100 >= 200	Boolean RPM RPM				
					TUT PRNDL state defaulted		E Boolean				
					IMS Fault Pending Service Fast Learn		E Boolean				
					HSD Enabled		E Boolean E Boolean				

Component/	Fault	Monitor Strategy	Malfunction		Threshold	k	Secondary	Enable	Time		Mil
System	Code	Description	Criteria		Value	\rightarrow	Malfunction	Conditions	Requir	ed	Illum.
						Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E			
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	Fail Case Case: Steady 1 State 1st Attained Gear slip If the Above is True for Time	>= >= - s	Table Based Time Please	RPM Enable Time (Sec)					One Trip
			Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 3 >= 2					>= 1.1	Fail Timer (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		Doonplien					>= 3 Fail Count in 1st Gear or Total >= 3 Fail	
			<u>Fail</u> Case: Steady <u>Case</u> State 3rd Gear <u>2</u>				Counts	
			Max Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			Min Delta Output Speed Hysteresis	>= peter to 2p rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted)					
			are true				Fail >= 1.1 Timer (Sec) Fail	
							>= 3 Count in 3rd Gear or	
							Total >= 3 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 4rd Gear <u>3</u>					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
-			Max Delta Output Speed Hysteresis	Table Based value >= Please rpm/sec				
			Min Delta Output Speed Hysteresis	>= Defente 2D rpm/sec				
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio			Tim Requi	
-			If the Above is True for Time	Table Based Time Please Soc					-	
			Intrusive test: (C35R clutch exhausted)							
								>=	1.1	Fail Timer (Sec) Fail
								>=	3	Count in 5th Gear or
								>=	3	Total Fail Counts
					PRNDL State defaulted	= FALSE	Boolean			
					inhibit RVT		Boolean			
					IMS fault pending indication	= FALSE	Boolean			
					output speed		RPM			
					TPS validity flag	= TRUE	Boolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
					HSD Enabled	=	TRUE	Boolean		
					Hydraulic_System_Pre ssurized A OR B	=	TRUE	Boolean		
					(A) Output speed enable	>=	36	Nm		
					(B) Accelerator Pedal enable	>=	0.50049	Nm		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi		8.59961 31.9902 400 7500	Volts Volts RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.00031	Pct		
					if Attained Gear=1st FW Engine Torque Enable	>=	20	Nm		
					if Attained Gear=1st FW Engine Torque Enable	<=	8191.88	Nm		
					Transmission Fluid Temperature	>=	-6.6563	°C		
					Input Speed Sensor fault	_	FALSE	Boolean		
					Output Speed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Valu		Secondary Malfunction		Enable onditions	s		Tim Requi		Mil Illum.
					Disable Conditi ons:		TCM: P0 P0722, P P0103, P P0108, P P0108, P P0174, P P0202, P P0205, P P0208, P P0305, P P0305, P P0308, P	20723, P1 20106, P0 20171, P0 20175, P0 20203, P0 20206, P0 20300, P0 20303, P0 20306, P0	82E 02, 1107, 1172, 1201, 1204, 1207, 1301, 1304, 1307,				
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					>= out	0.3 0.375	Fail Time (Sec) Sample Time (Sec)	One Trip
						P2770 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	= T >= 8 <= 3 >= <=	Test Failed This Key On or Fault Active 3.59961 31.9902 400 7500 5	Volts Volts RPM RPM Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction	C	Enable Condition	s		Tim Requi		Mil Illum.
					Disable Conditi ons:		TCM: No ECM: No						
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE	Boolean					>=	0.3	Fail Time (Sec)	One Trip
										out of	0.375	Sample Time (Sec)	
						P2721 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed		8.59961 31.9902 400 7500	Volts Volts RPM RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: No ECM: No						
Variable Bleed Solenoid (VBS)	P2723		Fail_ Case_ Case: Steady 1State 1st Gear										One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		2000.194011	Gear slip				Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 2nd gear					
			lf attained Gear ≠ 2nd for Time	>= Table 3 in Time				
			If Above Conditions have been met, Increment 1st gear fail counter				1st >= 3 Gear Fail Count	
			and C1234 fail counter				>= 14 or C1234 Clutch Fail Count	
			<u>Fail</u> Case: Steady <u>Case</u> State 2nd <u>2</u> Gear				Please	
			Gear slip	>= 400 RPM			Flease See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	

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

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

Common SECTION 1 OF 9 SECTIONS

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
			If Above Conditions have been met, Increment 4th gear fail					-	>=	3	4th Gear Fail Count	
			counter and C1234 fail counter						>=	14	or C1234 Clutch Fail Count	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT A OR B	>=	0	RPM				
					(A) Output speed enable	>=	36	RPM				
					(B) Accelerator Pedal enable Common Enable Criteria	>=	0.50049	Pct				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	>= <= >=	8.59961 31.9902 400	RPM				
					Engine Speed Hi Engine Speed is within the allowable limits for	<= >=	7500 5	RPM Sec				
					Throttle Position Signal valid	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
					isable onditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)		oolean				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d				
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status	Initial ≠ Clutch Control				
			Attained Gear Slip	<- 10 DDM				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-6 shifting with throttle)	>= 0.5 sec				
			fail timer 1 (2-6 shifting without throttle)	>= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle)	>= 0.5 sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (3-5 shifting without throttle)	>=	0.5 sec				
			fail timer 1 (4-5 shifting with throttle)	>=	0.5 sec				
			fail timer 1 (4-5 shifting without throttle)	>=	0.5 sec				
			fail timer 1 (4-6 shifting with throttle)	>=	0.5 sec				
			fail timer 1 (4-6 shifting without throttle)	>=	0.5 sec				

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

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12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enal Condi			Tim Requ		Mil Illum.
			3rd gear fail counter					>=	3	Fail Counte r From 3rd Gear	
			4th gear fail counter					>=	3	Fail Counte r From 4th Gear	
			total fail counter					>=	5	Total Fail Counte r	
					TUT Enable temperature	>= -6.65	63 °C				
					Input Speed Sensor fault	= FALS	E Boolean				
					Output Speed Sensor fault	= FALS	E Boolean				
					Command / Attained Gear	≠ 1st	Boolean				
					High Side Driver ON	= TRU	E Boolean				
					output speed limit for TUT	>= 100	RPM				
					input speed limit for TUT	>= 200	RPM				
					PRNDL state defaulted	= FALS	E Boolean				
					IMS Fault Pending	= FALS	E Boolean				
					Service Fast Learn Mode	= FALS	E Boolean				
					HSD Enabled	= TRU	E Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil Illum.
System	Code	Description	Criteria	Value Disable Conditi ons:	MIL not Illuminated	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	Required	
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	Fail Case: 5th Case Gear 1 Max Delta Output Speed Hysteresis	Table Based value Please Please Pofor to 2D rpm/sec				One Trip
			Min Delta Output Speed Hysteresis	>= Please Refer to 2D rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio					
				>= 1.3430176				
							Fail >= 1.1 Timer (Sec) Fail	
							>= 3 Count in 5th Gear OR	
							Total >= 3 Fail Counts	
			<u>Fail</u> Case: 6th <u>Case</u> Gear <u>2</u>					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	Table Based value >= Please rpm/sec				
			Min Delta Output Speed Hysteresis	>= Defer to 2D rpm/sec				
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				
				<= 1.4849854 >= 1.3430176				

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12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum
										1.1 3	Fail Timer (Sec) Fail Count in 6th Gear OR	
									>=	3	Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Pre ssurized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	36	Nm				
					(B) Accelerator Pedal enable	>=	0.50049	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.59961 31.9902 400 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.00031	Pct				

Component/	Fault	Monitor Strategy	Malfunction	Thresh		Secondary Malfunction	Enat			Time	4	Mil
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu	e Disable Conditi	Malfunction if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	Condit >= 20 <= 8191.8 >= -6.656 = FALS = FALS = TRUE	ions Nm 38 Nm 33 °C E Boolean E Boolean E P0717,		Time Required	d	Mil Illum.
					Conditi ons:		ECM: P0101, P0103, P0106 P0108, P0171 P0174, P0175 P0202, P0203 P0205, P0206 P0208, P0300 P0302, P0303 P0305, P0306 P0308, P0401	P0102, , P0107, , P0172, , P0201, , P0204, , P0207, , P0301, , P0304, , P0307,				
Variable Bleed Solenoid (VBS)	P2729	Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean				aut	S .375	Fail Time (Sec) Sample Time (Sec)	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P2729 Status is not	Test Failed = This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= 8.59961 Volt <= 31.9902 Volt >= 400 RPM		
					Engine Speed is within the allowable limits for			
				Disa Con o				
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		an		Fail >= 0.3 Time (Sec)	One Trip
							out Sample of 0.375 Time (Sec)	
					P2730 Status is not	Fault		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= 31.9902 Volt >= 400 RPM		
					Engine Speed is within the allowable limits for			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Condition	าร		Tim Requi		Mil Illum.
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: ECM:						
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	=	TRUE	Boolean					>=	4.4	Fail Time (Sec)	Two Trips
											out of	5	Sample Time (Sec)	
							P2763 Status is not	=	Test Failed This Key On or Fault Active					
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= <= >= <=	8.59961 31.9902 400 7500	Volt Volt RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							High Side Driver Enabled	=	TRUE	Boolean				
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: ECM:		659				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	=	TRUE	Boolean					>=	4.4	MPH	One Trip
											out of	5	MPH	
							P2764 Status is not	Ш	Test Failed This Key On or Fault					
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed		Active 8.59961 31.9902 400 7500	Volt Volt RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							High Side Driver Enabled	=	TRUE	Boolean				
						Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: ECM:		659				
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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Condition	s		Tim Requi		Mil Illum.
			Delay timer	>=	0.1125	sec					Ou t of	70	Sample Counts (≈ 11 second s)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= <= =	3 8.59961 31.9902 Run	sec Volt Volt				
						Disable Conditi ons:	MIL not Illuminated for DTC's:		None None					
Communication	U0100	Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM	=	TRUE	Boolean					>=	12	sec	One Trip
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= >= =	3 8.59961 31.9902 Run	sec Volt Volt				
						Disable Conditi ons:	MIL not Illuminated for DTC's:		U0073 None					

Supporting Documents - 2D Tables

Table 1										
	Axis	0.00	64.00	128.00	192.00	256.00	320.00	384.00	448.00	512.00 N*m
	Curve	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00 RPM
Table 2										
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	2.00	2.00 S	ec					
Table 3										
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	4.00	4.00 S	ec					
Table 4										
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	2.00	2.00 S	ec					
Table 5	_									
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	3.00	3.00 S	ec					
Table 6	_									
	Axis	-6.66	-6.66	40.00	80.00	120.00 °C				
	Curve	409.00	3.60	1.60	1.40	1.40 S	ec			
Table 7	_									
	Axis	-6.66	-6.66	40.00	80.00	120.00 °C				
	Curve	409.00	3.40	1.40	1.30	1.20 S	ec			
Table 8	_									
	Axis	-6.66	-6.66	40.00	80.00	120.00 °C				
	Curve	409.00	3.60	1.60	1.50	1.40 S	ec			

Supporting Documents - 2D Tables

Table 9									
	Axis	-6.66	-6.66	40.00	80.00	120.00 °C			
	Curve	409.00	3.30	1.30	1.20	1.10 Sec	;		
	-								
T-1-1-40									
<u>Table 10</u>	Avia	-40.00	20.00	0.00	30.00	110.00 °C			
	Axis Curve	3.10	-20.00 1.90	0.00	0.80	0.60 Sec			
	Curve	5.10	1.90	1.10	0.00	0.00 300			
Table 11									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	1.80	1.20	0.60	0.40	0.30 Sec			
<u>Table 12</u>	A	40.00	00.00	0.00	00.00	110.00			
	Axis	-40.00 2.20	-20.00 1.40	0.00	30.00 0.70	<mark>110.00</mark> °C 0.40 Sec			
	Curve	2.20	1.40	0.90	0.70	0.40 500			
Table 13									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	2.60	1.00	0.50	0.30	0.20 Sec	;		
<u>Table 14</u>	A : a	40.00	00.001	0.001	20.00	110.00			
	Axis Curve	-40.00 3.00	-20.00 0.90	0.00	30.00 0.30	<mark>110.00</mark> °C 0.20 Sec			
	Curve	3.00	0.90	0.50	0.30	0.20 300			
Table 15									
	Axis	-40.00	-30.00	-20.00	-10.00	0.00	10.00	20.00	30.00
	Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<u>Table 16</u>	A	0.071	0.001	40.00					
	Axis	-6.67	-6.66	40.00 °C	•				
	Curve	409.59	1.50	1.50 Se	C				

40.00 °C 0.00 Sec

Supporting Documents - 2D Tables

Table 17

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

Table 18

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	149.10	°C
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00	⁰С

<u>Table 19</u>

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	<mark>149.10</mark> °C
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00 °C

<u>Table 20</u>

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	<mark>149.10</mark> °C
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00 °C

<u>Table 21</u>

Axis	-40.00	0.00	40.00	°C
Curve	5.00	3.00	1.00	Sec

Supporting Documents - 3D Tables

3D_Table 1

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

	0.00	2.00	5.00	25.00	100.00
-6.67	8191.75	8191.75	8191.75	8191.75	8191.75
-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
Та	able 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/	Fault	Monitor Strategy	Malfunction		Threshold		Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Value		Malfunction	Conditions	Required	Illum.
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> Current range <u>1</u>	=	Transition 1 (bit state 1110)	Range				One Trip
			Previous range	¥	CeTRGR_e_PR NDL_Drive6	Range				
			Previous range	¥	CeTRGR_e_PR NDL_Drive4	Range				
			Range Shift State	=	Range Shift Completed	ENUM				
			Absolute Attained Gear Slip		50	rpm				
			Attained Gear Attained Gear		Sixth First					
			Throttle Position Available	_	TRUE					
			Throttle Position Output Speed		8.000183105 200	pct rpm				
			Engine Torque Engine Torque	>=	50 8191.75	Nm Nm				
			If the above conditions are met						Fail	
			then Increment Fail Timer						>= 1 Seconds	;
			If Fail Timer has Expired then						, _– Fail	
			Increment Fail Counter						>= 5 Counts	
			<u>Fail</u> <u>Case</u> Output Speed 2		70	rpm				
			The following							
			PRNDL sequence events occur in this							
			exact order:		Drive 6 (bit state					
			PRNDL state	=	0110)	Range				
			PRNDL state = Drive 6 for	>=	1	Sec				

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Component/	Fault	Monitor Strategy	Malfunction		Threshold		Secondary		Enable		٦	ſime	Mil
System	Code	Description	Criteria		Value		Malfunction		Conditions		Re	quired	Illum.
			PRNDL state		SIGLEUTIT	Range							
			PRNDL state	=	Drive 6 (bit state 0110)	Range							
			PRNDL state	=	Transition 1 (bit state 1110)	Range							
			Above sequencing occurs in	<=	1 5	Sec							
			Neutral Idle Mode	=	Inactive								
			If all conditions above are met Increment delay Timer										
			If the below two conditions are met Increment Fail Timer								>= 3	Fail Seconds	
			delay timer Input Speed			Sec Sec							
			If Fail Timer has Expired then Increment Fail Counter								>= 2	Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Current range	=	Transition 13 (bit state 0010)	Range	Previous range	¥	CeTRGR _e_PRND L_Drive3				
			Engine Torque	>=	-8192	Nm	Previous range	¥	CeTRGR _e_PRND L_Drive1				
			Engine Torque	<=	8191.75	Nm	IMS is 7 position configuration	=	0	Boolean			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		Decomption	If the above conditions are met then, Increment Fail Timer		Vulue	If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.23 Seconds	
			If Fail Timer has Expired then Increment Fail Counter					>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	=	Transition 8 (bit state 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 Steady State Engine Torque	-	100 Nm 8191.75 Nm				
			If the above conditions are met then Increment Fail Timer					>= 0.23 Seconds	
			If the above Condtions have been met, Increment Fail Counter					>= 15 Fail Counts	

Component/	Fault	Monitor Strategy	Malfunction		Threshold		Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Value		Malfunction	Conditions	Required	Illum.
			<u>Fail</u> Throttle Position <u>5</u> Available	=	TRUE	Boolean				
			The following PRNDL sequence events occur in this exact order:							
			PRNDL State	=	Reverse (bit state 1100)	Range				
			PRNDL State	=	Transition 11 (bit state 0100)					
			PRNDL State	=	Neutral (bit state 0101)	Range				
			PRNDL State	=	Transition 11 (bit state 0100)	Range				
			Above sequencing occurs in	<=	1	Sec				
			Then delay timer increments Delay timer Range Shift State	>=	5 Range Shift Complete	sec				
			Absolute Attained Gear Slip		50	rpm				
			Attained Gear Attained Gear Throttle Position Output Speed If the above conditions are met Increment Fail Timer	>= >= >=	First 8.000183105	pct rpm			>= 20 Seconds	
			<u>Fail</u> <u>Case</u> <u>6</u> Current range	=	Illegal (bit state 0000 or 1000 or 0001)		A Open Circuit Definition (flag set false if the following conditions are met):			

Component/	Fault	Monitor Strategy	Malfunction		Threshold		Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Value		Malfunction		Conditions		Required	Illum
			and				Current Range	¥	Transition 11 (bit state 0100)			
			A Open Circuit (See Definition)	=	FALSE	Boolean	or		Neutral			
							Last positive state or	¥	(bit state 0101)			
							Previous transition state	¥	Transition 8 (bit state 0111)			
							Fail case 5 delay timer	=	0	sec		
			If the above Condtions are met then, Increment Fail timer								>= 6.25 Seconds	
			Fail Current PRNDL Case State	=	PRNDL circuit ABCP = 1101	Range						
			and Previous PRNDL state Input Speed	= >=	PRNDL circuit ABCP =1111 150	Range RPM						
			Reverse Trans Ratio Reverse Trans	<=	2.678344727	ratio						
			Ratio	>=	3.081542969	ratio						
			Condtions are met then, Increment Fail timer								>= 6.25 Seconds	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	5	Time Required	Mil Illum.
			P182E will report test fail when any of the above 7 fail cases are met							
					Ignition Voltage Lo	>=	8.599609	Volts		
					Ignition Voltage Hi	<=	31.99023	Volts		
					Engine Speed Lo Engine Speed Hi		400 7500	RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Engine Torque Signal Valid		TRUE	Boolean		
				Disable Conditi ons:	Illuminated for		0716, P0717 P07C0, P07E P077D			
						P0106, F P0172, F P0202, F P0206, F P0206, F	0101, P0102 P0107, P010 P0174, P017 P0203, P020 P0207, P020 P0302, P030 P0306, P030 P042E	8, P0171, 5, P0201, 4, P0205, 8, P0300, 3, P0304,		

Component/ System	Fault Code	Monitor Strategy Description		Malfunction Criteria		Threshold Value		Secondary Malfunction		Enable Condition	S		Mil Illum.		
Mode Switch	P071D	Transmission Mode Switch B Circuit		Sport Mode Switch state	=	TRUE	Boolean					>=	600	Fail Time (Sec)	Special No MIL
								Ignition Voltage Lo	>=	8.599609	Volts				
								Ignition Voltage Hi	<=	31.99023	Volts				
								Engine Speed Lo	>=	400	RPM				
								Engine Speed Hi	<=	7500	RPM				
								Engine Speed is within the allowable limits for	>=	5	Sec				
							Disable Conditions:	MIL not Illuminated for DTC's:							
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	<u>Fail</u> <u>Case</u> <u>1</u>	Tap Up Switch Stuck in the Up Position in Range 1 Enabled	=	1	Boolean								Special No MIL
				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/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold /alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	= 1	Boolean				
			Tap Up Switch ON	= TRUE	Boolean			Fail >= 1 Time (Sec)	
			Fail CaseTap Up Switch Stuck2in 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				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value			Secondary Malfunction		Enable Conditior	າຣ	Time Required			Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	1	Boolean								
			Tap Up Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met		TRUE	Boolean					>=	600	Fail Time (Sec)	
							Time Since Last Range Change	>=	1	Enable Time (Sec)				
							Ignition Voltage Lo	>=	8.599609	Volts				
							Ignition Voltage Hi	<=	31.99023	Volts				
							Engine Speed Lo	>=	400	RPM				

Component/ System	Fault Code	Monitor Strategy Description		Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions			Time Required	Mil Illum.
								Engine Speed Hi Engine Speed is within the allowable limits for		7500 5	RPM Sec		
								P0815 Status is	¥	Test Failed This Key On or Fault Active			
							Disable Conditions:	Illuminated for	P182I P191	P0816, P08 E, P1876, P 5, P1761 None	326, 1877,		
Tap Up Tap Down Switch (TUTD)		Downshift Switch Circuit	<u>Fail</u> <u>Case</u> 1	Tap Down Switch Stuck in the Down Position in Range 1 Enabled	=	1	Boolean						Special No MIL
				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/	Fault	Monitor Strategy	Malfunction	Th	reshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	,	Value	Malfunction	Conditions	Required	Illum.
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Park Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	= 1	Boolean				
			Tap Down Switch ON	= TRUE	E Boolean			>= 1 sec	
			FailTap Down SwitchCaseStuck in the Down2Position in Range 1Enabled	= 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				

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Component/	Fault	Monitor Strategy	Malfunction		Thre	shold	Secondary	Enable				Time		Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Condition	IS		Require	d	Illum.
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled Tap Down Switch	=	1	Boolean								
			Stuck in the Down Position in Neutral Enabled	=	1	Boolean								
			Tap Down Switch Stuck in the Down Position in Park Enabled	=	1	Boolean								
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	=	1	Boolean								
			Tap Down Switch ON		TRUE	Boolean								
			NOTE: Both Failcase1 and Failcase 2 Must Be Met								>=	600	sec	
							Time Since Last Range Change	>=	1	Enable Time (Sec)				
							Ignition Voltage Lo	>=	8.599609	Volts				
							Ignition Voltage Hi	<=	31.99023	Volts				
							Engine Speed Lo	>=	400	RPM				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Hi Engine Speed is within the allowable limits for	>= 5 Sec		
					P0816 Status is	Test Failed ≁ This Key On or Fault Active		
				Disable Conditions:	Illuminated for	TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761		
						ECM: None		
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 Sample > 10 Timer (Sec)	Special No MIL
					Pattern Switch Message Health			
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi			
					Engine Speed is within the allowable limits for			

Component/	Fault	Monitor Strategy	Malfunction		Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Value	Malfunction	Conditions	Required	Illum.
					Disable Conditions:	Illuminated for	TCM: None ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> <u>1</u> Current range	=	Transiti on 1 (bit state 1110)				One Trip
			Previous range	¥	CeTRG R_e_P RNDL_ Drive6				
			Previous range	¥	CeTRG R_e_P RNDL_ Drive5				
			Range Shift State	=	Range Shift Complet ed				
			Absolute Attained Gear Slip	<=	50 rpm				
			Attained Gear	<=	Sixth				
			Attained Gear	>=	First				
			Throttle Position Available	=	TRUE				
			Throttle Position	>=	8.0002 pct				
			Output Speed	>=	200 rpm				
			Engine Torque	>=	50 Nm				
			Engine Torque	<=	8191.8 Nm				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			If the above conditions are met then Increment Fail Timer	t I			>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 5 Fail Counts	
			Fail <u>Case</u> Output Speed <u>2</u>					
			The following PRNDL sequence events occur in this exact order:	s t				
			PRNDL state	e = Drive 6 (bit state 0110)				
			PRNDL state = Drive 6 for					
			PRNDL state	e = Transiti on 8 (bit state 0111)				
			PRNDL state	Drive 6 (bit state 0110)				
			PRNDL state	e = Transiti on 1 (bit state 1110)				
			Above sequencing occurs in	<= 1 Sec				
			Neutral Idle Mode	e = Inactive				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditior			Tin Requ		Mil Illum.
			If all conditions above are met Increment delay Timer											
			If the below two conditions are met Increment Fail Timer								>=	3	Fail Seconds	
			delay timer	>=	1	Sec								
			Input Speed If Fail Timer has		400	Sec								
			Expired then Increment Fail Counter								>=	2	Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Current range	=	Transiti on 13 (bit state 0010)	Range	Previous range	¥	CeTRGR _e_PRND L_Drive5					
			Engine Torque	>=	-8192	Nm	Previous range	¥	CeTRGR _e_PRND L_Drive5					
			Engine Torque	<=	8191.8	Nm	IMS is 7 position configuration	=	0	Boolean				
			If the above conditions are met then, Increment Fail Timer				If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"				>=	0.225	Seconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction	Enable	Time	Mil Illum.
Jystem	Code	Description	If Fail Timer has Expired then Increment Fail Counter		Manufiction	Conditions	Required >= 15 Fail Counts	indin.
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	Transiti = on 8 (bit Range state 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			
			Inhibit bit (see definition)		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer	<= 8191.8 Nm			>= 0.225 Seconds	
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail Throttle Position <u>Case</u> Available 5 The following PRNDL sequence events occur in this exact order: Order:					
			PRNDL State	Reverse = (bit state 1100) SECTION Page 147 c	6 405		DF 9 SECTIONS	

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Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary	Enable		Time		Mil
System	Code	Description	Criteria		Val	ue	Malfunction	Conditions		Required	d	Illum.
			PRNDL State		Transiti on 11 (bit F state 0100)	Range						
			PRNDL State		Neutral (bit state 0101)	Range						
			PRNDL State		Transiti on 11 (bit F state 0100)	Range						
			Above sequencing occurs in Then delay timer increments	~-	1 5	Sec						
			Delay timer	>=	5 క	sec						
			Range Shift State	_	Range Shift Complet e							
			Absolute Attained Gear Slip			rpm						
			Attained Gear	<=	Sixth							
			Attained Gear	>=	First							
			Throttle Position	>=	8.0002 p	oct						
			Output Speed	>=	200 r	rpm						
			If the above conditions are met Increment Fail Timer						>=	20 Se	econds	

FWD2 SECTION 3 OF 9 SECTIONS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> <u>Case</u> <u>6</u> 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 or	Neutral ≠ (bit state 0101)		
					Previous transition state	Transition ≠ 8 (bit state 0111)		
					Fail case 5 delay timer	= 0 sec		
			If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	
			<u>Fail</u> <u>Case</u> <u>7</u> Current PRNDL State	PRNDL = circuit ABCP = Range 1101				
			and Previous PRNDL state	PRNDL = ^{circuit} ABCP =1111				
			Input Speed	>= 150 RPM				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
-				Value <= 2.6783 ratio >= 3.0815 ratio	Malfunction Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed s within the allowable limits for Engine Torque Signal Valid MIL not Illuminated for	Conditions >= 8.599609 Volts <=	Required >= 6.25 Seconds	Illum.
						P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	ıs		Tim Regui	Mil Illum.
System Tap Up Tap Down Switch (TUTD)	Code			Value Park or Reverse or Neutral	Malfunction Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P1876 Status is MIL not Illuminated for	<pre><= <= <= <= <= >= <# TCM P082</pre>	Condition 8.599609 31.99023 511 400 7500 5 Test Failed This Key On or Fault Active : P0815, P08	Volts Volts KPH RPM Sec	>= >=	Requi	
						ECM	: None				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu		Secondary Malfunction	Enable Conditions	Tim Requi		Mil Illum.
Mode Switch		Transmission Mode Switch Signal Circuit (rolling count)	Rolling count value received from BCM does not match expected value		Boolean			>= 3	Fail Counter	Special No MIL
								> 10	Sample Timer (Sec)	
						Pattern Switch Message Health Engine Speed Lo Engine Speed Hi	= TRUE Boolean >= 400 RPM <= 7500 RPM			
						Engine Speed is within the allowable limits for	>= 5 Sec			
					Disable Conditions:	for DTC's:	TCM: None ECM: None			
Internal Mode Switch (IMS)	P182E	Internal Mode Switch	<u>Fail</u> <u>Case</u> <u>1</u> Current range	Transition = 1 (bit state 1110)	Range					One Trip
			Previous range	CeTRGR_ ≠ e_PRNDL_ Drive6	Range					
			Previous range	CeTRGR_ ≠ e_PRNDL_ Drive4	Range					
			Range Shift State	Range = Shift Completed	ENUM					
			Absolute Attained Gear Slip Attained Gear	<= Sixth	rpm					
]	I	I	Attained Gear	>= First FWD3 SECT	ION Page	152 of 495	4	OF 9 SECT	TIONS	I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Throttle Position Available	= TRUE				
			Throttle Position	>= 8.0001831 pct				
			Output Speed Engine Torque Engine Torque	>= 50 Nm <= 8191.75 Nm				
			If the above conditions are met then Increment Fail Timer				>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 5 Fail Counts	
			<u>Fail</u> <u>Case</u> Output Speed <u>2</u>	<= 70 rpm				
			The following PRNDL sequence events occur in this exact order:					
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state = Drive 6 for					
			PRNDL state	Transition = 8 (bit state Range 0111)				
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state	Transition = 1 (bit state Range 1110)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Valu		Secondary Malfunction		Enable Conditio			Time Requi		Mil Illum.
			Above sequencing occurs in Neutral Idle Mode	<=	1 Inactive	Sec								
			If all conditions above are met Increment delay Timer If the below two conditions are										Fail	
			met Increment Fail Timer delay timer Input Speed If Fail Timer has Expired then Increment Fail	>= >=	1 400	Sec Sec					>=	3	Seconds Fail Counts	
			Counter <u>Fail</u> <u>Case</u> <u>3</u> Current range	=	Transition 13 (bit state 0010)		Previous range	¥	CeTR GR_e_ PRND L_Driv e3 CeTR					
			Engine Torque	>=	-8192	Nm	Previous range	¥	GR_e_ PRND L_Driv e2					
			Engine Torque	<=	8191.75	Nm	IMS is 7 position configuration	=	0	Boolean				
			If the above conditions are met then, Increment Fail Timer				If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"				>=	0.225	Seconds	
			If Fail Timer has Expired then Increment Fail Counter								>=	15	Fail Counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Fail Case 4 Current range	Transition	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8		Required	
			Inhibit bit (see definition)	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque Steady State Engine Torque If the above conditions are	<= 8191.75 Nm				
			met then Increment Fail Timer If the above Condtions have been met,				>= 0.225 Seconds >= 15 Fail Counts	
			Increment Fail Counter Fail Case 5 5 The following					
			PRNDL sequence events occur in this exact order:	Reverse				
			PRNDL State	 (bit state Range 1100) Transition 				
			PRNDL State					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
Oystem	Odde	Description	PRNDL State	Noutral (bit			noquiou	
			PRNDL State	Transition = 11 (bit Range state 0100)				
			Above sequencing occurs in					
			Then delay timer increments					
			Delay timer					
			Range Shift State	Range = Shift Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear Attained Gear					
			Throttle Position	>= 8.0001831 pct				
			Output Speed If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			<u>Fail</u> <u>Case</u> <u>6</u> Current range	lllegal (bit = state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			
			and		Current Range	Transit ion 11 ≠ (bit state 0100)		
			A Open Circuit (See Definition)	= FALSE Boolean	or			

Component/	Fault	Monitor Strategy	Malfunction	Thresl Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	vait	ie	Wallunction		Requirea	munn.
						Last positive state or	Neutra I (bit state 0101)		
						Previous transition state	Transit		
						Fail case 5 delay timer	= 0 sec		
			If the above Condtions are met then, Increment Fail timer					>= 6.25 Seconds	
			<u>Fail</u> <u>Case</u> Current PRNDL <u>7</u> State and		Range				
			Previous PRNDL state	= PRNDL circuit ABCP =1111	Range				
			Input Speed Reverse Trans	>= 150 <= 2.6783447	RPM ratio				
			Ratio Reverse Trans Ratio	>= 3.081543	ratio				
			If the above Condtions are met then, Increment Fail timer					>= 6.25 Seconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Joystein	oode	Description	P182E will report test fail when any of the above 7 fail cases are met					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= 31.99 Volts >= 400 RPM		
					Engine Speed is within the allowable limits for			
					Engine Torque Signal Valid	= TRUE Boolean		
				Disable Conditions:		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,		
						P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold Ilue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Tap Up Switch Case Stuck in the Up 1 Position in Range 1	=	1	Boolean		Conditions	required	Special No MIL
			Enablec Tap Up Switch Stuck in the Up Position in Range 2 Enablec	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutra Enablec	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	1	Boolean				
			Tap Up Switch ON	=	TRUE	Boolean			Fail >= 1 Time (Sec)	

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 1 Time (Sec) >= 8.5996 Volts <= 31.99 Volts >= 400 RPM <= 7500 RPM		
						Engine Speed is within the allowable limits for P0815 Status is	>= 5 Sec Test Failed This		
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Гар Up Tap Down Switch TUTD)	P0816	Downshift Switch Circuit	Fail Tap Down Switch Case Stuck in the Down 1 Position in Range 1 Enabled Tap Down Switch Stuck in the Down Stuck in the Down	= 1	Boolean Boolean				Specia No MII
			Position in Range 2 Enabled FW		FION Page 1	61 of 495	5	OF 9 SECTIONS	

Code		Critoria		Value	Secondary Malfunction	Conditions	Required	Mil Illum.
	Description	Criteria Tap Down Switch		Value	Mananetion	Conditions	Required	
		Stuck in the Down Position in Range 3	= 1	Boolean				
		Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1	Boolean				
		Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1	Boolean				
		Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1	Boolean				
		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	= 1	Boolean				
		Tap Down Switch ON	= TRI	JE Boolean			>= 1 sec	
		FailTap Down SwitchCaseStuck in the Down2Position in Range 1Enabled	= 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				
			EnabledTap Down SwitchStuck in the DownPosition in Range 4EnabledTap Down SwitchStuck in the DownPosition in Range 5EnabledTap Down SwitchStuck in the DownPosition in Range 6EnabledTap Down SwitchStuck in the DownPosition in Range 6EnabledTap Down SwitchStuck in the DownPosition in RangeNeutral EnabledTap Down SwitchStuck in the DownPosition in RangePark EnabledTap Down SwitchStuck in the DownPosition in RangePark EnabledTap Down SwitchStuck in the DownPosition in RangeReverse EnabledTap Down SwitchStuck in the DownQNFailTap Down SwitchStuck in the DownQPosition in Range 1EnabledTap Down SwitchStuck in the DownQPosition in Range 2EnabledTap Down SwitchStuck in the DownPosition in Range 2EnabledTap Down SwitchStuck in the DownPosition in Range 3Enabled	EnabledTap Down SwitchStuck in the DownPosition in Range 4EnabledTap Down SwitchStuck in the DownPosition in Range 5EnabledTap Down SwitchStuck in the DownPosition in Range 6EnabledTap Down SwitchStuck in the DownPosition in Range 6EnabledTap Down SwitchStuck in the DownPosition in RangeNeutral EnabledTap Down SwitchStuck in the DownPosition in RangePark EnabledTap Down SwitchStuck in the DownPosition in RangePark EnabledTap Down SwitchStuck in the DownPosition in RangePark EnabledTap Down SwitchStuck in the DownPosition in RangePosition in RangeTap Down SwitchStuck in the DownPosition in Range 1EnabledTap Down SwitchStuck in the DownPosition in Range 2Position in Range 3EnabledTap Down SwitchStuck in the DownPosition in Range 3Enabled <td>Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 5 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Position in Range Park Enabled1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled1BooleanTap Down Switch Stuck in the Down 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Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 2 Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Posi</br></br></br></br></br></br></br></br></br></br></br></br></br></br></br></br></td><td>Eabled Tap Down Switch = 1 Boolean Position in Range 4 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Position in Range 6 = 1 Boolean Position in Range 7 =</td><td>Image: Stuck in the Down Svitch Stuck in the Down Position in Range 4 = 1 Boolean Image: Stuck in the Down Position in Range 5 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 7 = 1 Boolean Image: Position in Range 7 = 1 Boolean Position in Range 7 = 1</td></td<></td>	Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 5 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled1BooleanTap Down Switch Stuck in the Down Position in Range 6 Position in Range Park Enabled1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled1BooleanFail 2Tap Down Switch Stuck in the Down Position in Range 11BooleanFail 2Tap Down Switch Stuck in the Down Position in Range 11BooleanFail 2Tap Down Switch Stuck in the Down Position in Range 11Boolean2Tap Down Switch Stuck in the Down Position in Range 11Boolean2Tap Down Switch Stuck in the Down Position in Range 21Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1Boolean1 <td< td=""><td>Enabled Tap Down Switch Position in Range 4 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 5 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Neutral Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Position in Range Park Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 2 Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 3=1BooleanFail Tap Down Switch Stuck in the Down Posi</br></br></br></br></br></br></br></br></br></br></br></br></br></br></br></br></td><td>Eabled Tap Down Switch = 1 Boolean Position in Range 4 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Position in Range 6 = 1 Boolean Position in Range 7 =</td><td>Image: Stuck in the Down Svitch Stuck in the Down Position in Range 4 = 1 Boolean Image: Stuck in the Down Position in Range 5 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 7 = 1 Boolean Image: Position in Range 7 = 1 Boolean Position in Range 7 = 1</td></td<>	Enabled Tap Down Switch Position in Range 4 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 5 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range 6 Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Neutral Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Position in Range Park Enabled=1BooleanTap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Reverse Enabled Tap Down Switch Stuck in the Down Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range Position in Range Park Enabled Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail Tap Down Switch Stuck in the Down Position in Range 1=1BooleanFail 	Eabled Tap Down Switch = 1 Boolean Position in Range 4 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Tap Down Switch Stuck in the Down = 1 Boolean Position in Range 5 = 1 Boolean Position in Range 6 = 1 Boolean Position in Range 7 =	Image: Stuck in the Down Svitch Stuck in the Down Position in Range 4 = 1 Boolean Image: Stuck in the Down Position in Range 5 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 6 = 1 Boolean Image: Stuck in the Down Position in Range 7 = 1 Boolean Image: Position in Range 7 = 1 Boolean Position in Range 7 = 1

Component/	Fault Code	Monitor Strategy	Malfunction			shold Ilue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	1	Boolean	Manufiction	Conditions	Requireu	inum.
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	=	1	Boolean				
			Tap Down Switch ON NOTE: Both Failcase1 and	=	TRUE	Boolean				
			Failcase 2 Must Be Met						>= 600 sec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Time Since Last Range Change	>= 1 Enable >= 1 Time (Sec)		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.5996 Volts <= 31.99 Volts >= 400 RPM		
					Engine Speed is within the allowable limits for			
					P0816 Status is	Test Failed This Key On or Fault Active		
				Dis Conditi	able MIL not Illuminated ons: for DTC's:	TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> <u>1</u> Current range	Transiti = on 1 (bit state 1110)				One Trip
			Previous range	CeTRG ≠ R_e_P RNDL_ Range Drive6				
			Previous range	CeTRG ≠ R_e_P RNDL_ Drive4				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Joystem	Code	Description	Range Shift State	Range		Conditions	Required	
			Absolute Attained Gear Slip Attained Gear Attained Gear	<= 50 rpm <= Sixth >= First				
			Output Speed Engine Torque	 >= 8.0002 pct >= 200 rpm >= 50 Nm 				
			Engine Torque If the above conditions are met then Increment Fail Timer				>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 5 Fail Counts	
			Fail_ Case_ Output Speed 2					
			The following PRNDL sequence events occur in this exact order:					
			PRNDL state	Drive 6 (bit state 0110)				
			PRNDL state = Drive 6 for	Transiti				
			PRNDL state	on 9 (hit				

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	Drive 6	Manufiction	Conultions	Nequireu	indin.
			PRNDL state	(bit				
			PRNDL state	Transiti = on 1 (bit state 1110)				
			Above sequencing occurs in					
			Neutral Idle Mode	= Inactive				
			If all conditions above are met Increment delay Timer If the below two conditions are met Increment Fail Timer delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	>= 1 Sec >= 400 Sec			>= 3 Fail Seconds >= 2 Fail Counts	
			Fail <u>Case</u> <u>3</u> Current range	Transiti on 13 = (bit Range state 0010)	Previous range	CeTRG ≠ R_e_P RNDL_ Drive5		
			Engine Torque	>= -8192 Nm	Previous range	CeTRG R_e_P RNDL_ Drive5		
			Engine Torque	<= 8191.8 Nm	IMS is 7 position configuration			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	Transiti = on 8 (bit Range state 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			
			Inhibit bit (see definition)		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque Steady State Engine Torque	2 30 Nm <= 8191.8 Nm				
			If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail</u> Throttle Position <u>Case</u> Available <u>5</u>	= TRUE Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			The following PRNDL sequence events occur in this exact order:					
			PRNDL State	Reverse (bit state 1100)				
			PRNDL State	Transiti on 11 = (bit Range state 0100)				
			PRNDL State	Neutral (bit state 0101)				
			PRNDL State	Transiti on 11 = (bit Range state 0100)				
			Above sequencing occurs in	<= 1 Sec				
			Then delay timer increments Delay timer	>= 5 sec Range				
			Range Shift State	= Shift Complet e				
			Absolute Attained Gear Slip Attained Gear	<= 50 rpm				
			Attained Gear Throttle Position Output Speed If the above conditions are met	>= First >= 8.0002 pct				
			Increment Fail Timer	D4 SECTION Page 16	68 of 495	5	>= 20 Seconds OF 9 SECTIONS	

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	Criteria	value	Wanufiction	Conditions	Required	mum.
			<u>Fail</u> <u>Case</u> <u>6</u> Current range	lllegal (bit = state 0000 or 1000 or 0001)	A Open Circuit Definition (flag set false if the following conditions are met):			
			and A Open Circuit (See		Current Range	Transiti on 11 ≠ (bit state 0100)		
			A Open Circuit (See Definition)	= FALSE Boolean	or			
			,		Last positive state	Neutral		
					Previous transition state	Transiti ≠ on 8 (bit state 0111)		
					Fail case 5 delay timer	-		
			If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	
			<u>Fail</u> <u>Case</u> Current PRNDL <u>7</u> State					
		I	and	l			I	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold lue	Secondary Malfunction		Enab Conditi		I	Time Required		Mil Illum.
			Previous PRNDL state	=	PRNDL circuit ABCP =1111	Range						·		
			Input Speed	>=	150	RPM								
			Reverse Trans Ratio	<=	2.6783	ratio								
			Reverse Trans Ratio	>=	3.0815	ratio								
			If the above Condtions are met then, Increment Fail timer								>=	6.25 Sec	onds	
			P182E will report test fail when any of the above 7 fail cases are met											
							Ignition Voltage Lo	>=	8.5996	Volts				
							Ignition Voltage Hi	<=	31.99	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/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	Criteria	Value		Conditions	Required	illum.
				Disable Conditions:		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		
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range	Park or = Reverse or Neutral				Special No MIL
			TUTD Enable Switch is Active	= TRUE Boolean			Fail	
							>= 3 Time (Sec) >= 5 Fail	
					Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi	<= 31.99 Volts <= 511 KPH >= 400 RPM	Counts	
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P1876 Status is	Test Failed		

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	for DTC's:	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None		

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Va	alue	Malfunction	Conditions	Required	Illum.
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Tap Up Switch Case Stuck in the Up 1 Position in Range 1 Enabled	=	1	Boolean				Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled		1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	1	Boolean				
			Tap Up Switch ON	=	TRUE	Boolean			>= 1 Fail Time (Sec)	e

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction	Enable Conditions	Time Required	
oystem	0008	Description	Fail Tap Up Switch Case Stuck in the Up 2 Position in Range 1 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled		1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled		1	Boolean				
			Tap Up Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	=	TRUE	Boolean				il Time Sec)
				5 SE	CTION	I Page 174	of 495		6 OF 9 SECTIO	NS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
o jotom		Decomption						
					Time Since Last Range Change Ignition Voltage Lo	>= 1 Enable >= 1 Time (Sec) >= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.9902 Volts		
					Engine Speed Lo Engine Speed Hi	>= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for			
					P0815 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditions:	Illuminated for	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
ap Up Tap Down witch (TUTD)	P0816	Downshift Switch Circuit	F <u>ail</u> Tap Down Switch Case Stuck in the Down <u>1</u> Position in Range 1 Enabled	= 1 Boolean				Speci No M

FWD5 SECTION 6 OF 9 SECTIONS

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

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Component/	Fault	Monitor Strategy	Malfunction		Thres		Secondary	Enable	Time	Mil
System	Code	Description	Criteria	<u> </u>	Val	ue	Malfunction	Conditions	Required	Illum.
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	=	1	Boolean				
			Tap Down Switch ON NOTE: Both	= т	RUE	Boolean				
			Failcase1 and Failcase 2 Must Be Met						>= 600 sec	
			_			Page 177				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Frakla		
					Time Since Last Range Change	Enable >= 1 Time (Sec)		
					Ignition Voltage Lo	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.9902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0816 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditions	Illuminated for DTC's:	TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761		
			<u>Fail</u>	Tropoiti		ECM: None		One Trip
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Case</u> <u>1</u> Current range	Transiti = ^{on 1 (bit} Range state 1110)				
			Previous range	CeTRG ≠ R_e_P RNDL_ Drive6				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
- Cystem	0000	Description	Previous range	CeTRG				
			Range Shift State	ted				
			Output Speed Engine Torque	r <= 30 rpm $r <= Sixth$ $r >= First$ $r = TRUE$ $r >= 8.0002 pct$ $r >= 200 rpm$				
			If the above conditions are met then Increment Fail Timer	e t			>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter	n Il			>= 5 Fail Counts	
			Fail Output Speed <u>2</u> The following PRNDL sequence events occur in this events occur in this exact order:					
			PRNDL state PRNDL state = Drive 6 for					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL state	Transiti = on 8 (bit state 0111)				
			PRNDL state	Drive 6 = (bit state 0110)				
			PRNDL state	Transiti = ^{on 1 (bit} state 1110)				
			Above sequencing occurs in	<= 1 Sec				
			Neutral Idle Mode	= Inactive				
			If all conditions above are met Increment delay Timer					
			If the below two conditions are met Increment Fail Timer				>= 3 Fail Seconds	
			delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	>= 400 Sec			>= 2 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Current range	Transiti on 13 = (bit Range state 0010)	Previous range	5		
			Engine Torque	>= -8192 Nm	Previous range	CeTRGR ≠ _e_PRN DL_Drive 5		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				<= 8191.8 Nm	IMS is 7 position configuration	= 0 Boolean		
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	Transiti = on 8 (bit Range state 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 Steady State Engine Torque	>= 30 Nm <= 8191.8 Nm				
			If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail CaseThrottle Position5Available	= TRUE Boolean				
			The following PRNDL sequence events occur in this exact order:					
			PRNDL State	1100)				
			PRNDL State	state 0100)				
			PRNDL State	Neutral = (bit state 0101)				
			PRNDL State	Transiti on 11				
			Above sequencing occurs in	<= 1 Sec				
			Then delay timer increments Delay timer	>= 5 sec Range				
			Range Shift State	= Shift Comple				
			Absolute Attained Gear Slip	<= 50 ipin				
			Attained Gear FWD	<= Sixth 5 SECTION Page 182	l l 2 of 495	6	I 6 OF 9 SECTIONS	I

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Attained Gear					
			Throttle Position Output Speed					
				>= 200 rpm				
			If the above					
			conditions are met				>= 20 Seconds	
			Increment Fail Timer					
			<u>Fail</u>					
			<u>Case</u>	Illegal	A Open Circuit			
			<u>6</u>	(bit _ state	Definition (flag set false if the			
			Current range	$= \frac{3110}{0000 \text{ or}}$	following			
				1000 or	conditions are			
				0001)	met):			
						Transitio		
						n 11 (bit		
			and		Current Range	≠ state		
						0100)		
			A Open Circuit (See					
			Definition)	= FALSE Boolean	or			
						Neutral		
					Last positive state	≠ (bit state		
						0101)		
					or			
					01			
					Previous transition	Transitio		
					state	≠ n 8 (bit		
					51010	state		
						0111)		
					Fail case 5 delay timer	= 0 sec		
					umer			
			If the above					
			Condtions are met				>= 6.25 Seconds	
			then, Increment Fail timer					
			umer					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio		Time Required	Mil Illum.
			<u>Fail</u> <u>Case</u> Current PRNDL <u>7</u> State	PRNDL = circuit ABCP = Range 1101						
			and Previous PRNDL state	PRNDL = ^{circuit} Range						
			Input Speed	>= 150 RPM						
			Reverse Trans Ratio	<= 2.6783 ratio						
			Reverse Trans Ratio	>= 3.0815 ratio						
			If the above Condtions are met then, Increment Fail timer						>= 6.25 Seconds	
			P182E will report test fail when any of the above 7 fail cases are met							
					Ignition Voltage Lo	>=	8.59961	Volts		
					Ignition Voltage Hi	<=	31.9902	Volts		
					Engine Speed Lo	>=	400	RPM		
					Engine Speed Hi	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
				5 SECTION Page 184	Engine Torque Signal Valid	=	TRUE	Boolean	DF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold Ilue	Secondary Malfunction		Enable Condition	IS		Tin Requ		Mil Illum.
						Disable Conditions:	Illuminated for DTC's:	P0722 P07Bl P07Bl P0103 P0103 P0104 P0202 P0203 P0203 P0203 P0203 P0303	P0716, P07 2, P0723, P0 F, P077C, P P0101, P0 3, P0106, P0 3, P0171, P0 4, P0175, P0 2, P0203, P0 5, P0206, P0 3, P0300, P0 2, P0303, P0 5, P0306, P0 3, P0401, P0)7C0, 077D 102, 0107, 0172, 0201, 0204, 0207, 0301, 0304, 0307,				
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range		Park or Revers e or Neutral									Special No MIL
			TUTD Enable Switch is Active	=	TRUE	Boolean					>=	3	Fail Time (Sec)	
											>=	5	Fail Counts	
							Ignition Voltage Lo	>=	8.59961	Volts				
							Ignition Voltage Hi	<=	31.9902	Volts				
							Vehicle Speed Lo	<=	511	KPH				
							Engine Speed Lo	>=	400	RPM				
							Engine Speed Hi	<=	7500	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P1876 Status is	Test Failed ≠ This Key On or Fault Active		
				Disable Conditions:	Illuminated for	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None		

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Component/	Fault	Monitor Strategy	Malfunction		Three		Secondary		Enable			Tim		Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Conditions			Requi	red	Illum.
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	<u>Fail</u> <u>Case</u> <u>1</u> Substrate Temperature		142.10156	9 °C					>=	5	Fail Time (Sec)	One Trip
			<u>Fail</u> Substrate <u>Case</u> Temperature 2	>=	50	°C					>=	2	Fail Time (Sec)	
			Ignition Voltage Note: either fail case can set the DTC		18	Volts								
							Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp Range for Time	<= >= <= >=	8.5996094 31.999023 0 170 0.25	Volts Volts °C °C Sec				
							P0634 Status is	¥	Test Failed This Key On or Fault Active					
						Disable Conditions:	for DTC's:							
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>=	900	RPM					>=	0.8	Fail Time (Sec)	One Trip
							Engine Torque is Engine Torque is Engine Speed	<=	0 8191.875 400	N*m N*m RPM				

7 OF 9 SECTIONS

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	6	Required	Illum.
					Engine Speed	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Vehicle Speed is Throttle Position is		10 0	Kph Pct		
					Transmission Input Speed is The previous		0	RPM		
					requirement has been satisfied for		0	Sec		
					The change (loop to loop) in transmission input speed is	<	8191.875	RPM/Lo op		
					The previous requirement has been satisfied for		0	Sec		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					Engine Torque Signal Valid	-	TRUE	Boolean		
					Ignition Voltage Ignition Voltage		8.5996094 31.999023	Volts Volts		
					P0716 Status is not	=	Test Failed This Key On or Fault Active			
				Disable Conditions:	MIL not Illuminated for DTC's:	P0974 ECM:	P0101, P0102	2, P0103,		
						P0121	, P0122, P012	23		

Component/	Fault	Monitor Strategy	Malfunction		Three	shold	Secondary		Enable			Time	<i>j</i>	Mil
System	Code	Description	Criteria			lue	Malfunction		Condition	s		Requir		Illum.
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	Fail Transmission Case Input Speed is	<	67	RPM					>=	4.5	Fail Time (Sec)	One Trip
			FailWhen P0722CaseDTC Status2equal to TestFailed andTransmissionInput Speed is	<	653.125	RPM	Controller uses a single power supply for the speed sensors	=	1	Boolean				
							Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid	<=	50 8191.875 16 TRUE	N*m N*m Kph Boolean				
							Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= >=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							P0717 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditions:	for DTC's:		P0722, P072 P0101, P010					
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<=	35	RPM					>=	4.5	Fail Time (Sec)	One Trip

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	1	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	6	Required	Illum.
					P0722 Status is not	=	Test Failed This Key On or Fault Active			
					Transmission Input Speed Check		TRUE	Boolean		
					Engine Torque Check		TRUE	Boolean		
					Throttle Position	>=	8.0001831	Pct		
					Transmission Fluid Temperature	>=	-40	°C		
					Disable this DTC if the PTO is active	=	1	Boolean		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					Ignition Voltage is	>=	8.5996094	Volts		
					Ignition Voltage is	<=	31.999023	Volts		
					Engine Speed is		400	RPM		
					Engine Speed is	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Enable_Flags Defined Below					
					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						l				I I

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction		Enable		Time	Mil Illum.
System	Code	Description	Criteria	Value			Condition	S	Required	ilium.
					OR		Park or			
					Transmission Range is	=	Neutral			
					Engine Torque is Engine Torque is	>= <=	8191.75 8191.75	N*m N*m		
					Engine Torque Condition 2					
					Engine Torque is Engine Torque is	>= <=	50 8191.75	N*m N*m		
					The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE					
					TIS Check Condition 1					
					Transmission Input Speed is	>=	653.125	RPM		
					Transmission Input Speed is	<=	5350	RPM		
					TIS Check Condition 2					
					Engine Speed without the 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshol Value			Secondary Malfunction		Enable Condition			Tim Requ		Mil Illum.
						Disable Conditions:	for DTC's:	ECM:	P0716, P071 P0101, P010 , P0122, P01	2, 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	<=	8192	RPM					>=	0	Enable Time (Sec) Output Speed	
			Output Speed Drop	>	650	RPM					>=	1.5	Drop Recover y Fail Time (Sec)	
			AND Transmission Range is	_	Driven range (R,D)								(360)	
							Range_Disable OR	=	FALSE	See Below				
							Neutral_Range_Enable And	=	TRUE	See Below				
							Neutral_Speed_Enable are TRUE concurrently	=	TRUE	See Below				
							Transmission_Range_ Enable Transmission_Input_Sp eed_Enable		TRUE TRUE	See Below See Below				

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Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				No Change in Transfer Case Range (High <-> Low) for	>= 5 Seconds		
				P0723 Status is not	Test Failed = This Key On or Fault Active		
				Engine Speed is	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM		
				Engine Speed is within the allowable limits for	>= 5 Sec		
				Enable_Flags Defined Below			
				Transmission_Input_Sp eed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:			
				TIS Condition 1 is TRUE when both of the following conditions are satsified for	Enable >= 0 Time (Sec)		
				TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied			
					Code Description Criteria Value Malfunction Image:	Code Description Criteria Value Malfunction Conditions Image: Code in the second s	Code Description Critteria Value Maifunction Conditions Required Image: Second Sec

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	;	Required	Illum.
					Input Speed A Single Power Supply is used for all speed sensors	=	0 TRUE	RPM Boolean		
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE					
					Transmission Range is	=	Neutral	ENUM		
					Transmission Range is	=	Reverse/Ne utral Transitonal	ENUM		
					Transmission Range is		Neutral/Driv e Transitional	ENUM		
					And when a drop occurs Loop to Loop Drop of Transmission Output Speed is	>	650	RPM		
					Range_Disable is TRUE when any of the next three conditions are TRUE					
					Transmission Range is	=	Park	ENUM		
					Transmission Range is	=	Park/Rever se Transitonal	ENUM		
					Input Clutch is not	=	ON (Fully Applied)	ENUM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	> 1.5 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			
					Transmission_Range_ Enable is TRUE when one of the next six conditions is TRUE			
					Transmission Range is	= Neutral ENUM		
					Transmission Range is	Reverse/Ne = utral ENUM Transitional		
					Transmission Range is	Neutral/Driv = e ENUM Transitional		
					Time since a driven range (R,D) has been selected	>= Refer to Sec		
1					I			

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Transmission Output Speed Sensor Raw Speed Output Speed when a fault was detected	>= 500 RPM		
				Disable Conditions:	for DTC's:	TCM: P0973, P0974, P0976, P0977 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Torque Converter Clutch (TCC)	P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must				Enable >= 2 Time (Sec)	Two Trips
			be Met (A) TCC Slip Error @ TCC On Mode	Refer to >= Table 1 in Supporting RPM			Fail >= 6 Time (Sec)	
			(B) TCC Slip @ Lock On Mode				Fail >= 6 Time (Sec)	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter				>= 2 TCC Stuck Off Fail Counter	
					TCC Mode	= On or Lock		
					Ignition Voltage Lo	>= 8.5996094 Volts		

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					Ignition Voltage Hi Engine Speed Engine Speed	<= >= <=	31.999023 400 7500	Volts RPM RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Engine Torque Lo Engine Torque Hi Throttle Position Lo Throttle Position Hi 2nd Gear Ratio Lo 2nd Gear Ratio High 3rd Gear Ratio High 4th Gear Ratio Lo 4th Gear Ratio Lo 5th Gear Ratio Lo 5th Gear Ratio Lo 6th Gear Ratio Lo 6th Gear Ratio High Transmission Fluid Temperature Lo Transmission Fluid		50 8191.875 8.0001831 99.998474 2.1948242 2.5251465 1.4228516 1.637085 1.069458 1.2304688 0.7905273 0.9095459 0.6230469 0.7169189 -6.65625	N*m Pct Pct Ratio Ratio Ratio Ratio Ratio Ratio Ratio Ratio Ratio Ratio Ratio		
					Temperature Hi PTO Not Active	<= =	130 TRUE	°C Boolean		
					Engine Torque Signal Valid Throttle Position Signal	=	TRUE	Boolean		
					Valid Dynamic Mode	=	TRUE FALSE	Boolean Boolean		
					P0741 Status is	¥	Test Failed This Key On or Fault Active			

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Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary		Enable			Tim		Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Condition			Requi	red	Illum.
						Disable Conditions:	MIL not Illuminated for DTC's:	P0723 P2764 ECM: P0103 P0108 P0174 P0202 P0205 P0208 P0208 P0208 P0302 P0305	P0716, P071 P0742, P2 P0101, P010 P0106, P01 P0171, P01 P0175, P02 P0203, P02 P0206, P02 P0300, P03 P0303, P03 P0306, P03 P0401, P04	763, 02, 07, 72, 201, 204, 207, 201, 204, 207, 204, 207,				
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>=	-50	RPM								One Trip
			TCC Slip Speed If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter	<=	13	RPM	TCC Mode Enable test if Cmnd Gear = 1stFW and value true		Off 1	Boolean	>=	6	Fail Time (Sec) Fail Counter	
						CTION Page	Enable test if Cmnd Gear = 2nd and value true Engine Speed Hi Engine Speed Lo Vehicle Speed HI Vehicle Speed Lo Engine Torque Hi	= <= >= <= >=	0 6000 500 511 1 8191.875	Boolean RPM RPM KPH KPH Nm	- 9 SE			

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	6	Required	Illum.
					Engine Torque Lo Current Range Current Range Transmission Sump Temperature	≠ ≠ <=	80 Neutral Reverse 130	Nm Range Range ℃		
					Transmission Sump Temperature Throttle Position Hyst	>=	18	°C		
					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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
	0000			Value	Disable if Air Purge active and value false	=	0	Boolean	Required	
					RVT Diagnostic Active	=	FALSE	Boolean		
					Ignition Voltage	>=	8.5996094	V		
					Ignition Voltage	<=	31.999023	V		
					Vehicle Speed	<=	511	КРН		
					Engine Speed	>=	400	RPM		
					Engine Speed	<=	7500	RPM		
					Engine Speed is within the allowable limits for	>=	5	Sec		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					P0742 Status is	¥	Test Failed This Key On or Fault Active			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions	for DTC's:	TCM: P0716, P0717, P0722, P0723, P0741, P2763, P2764 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off		>= 400 RPM = 1st Lock rpm <= 1.2095947 >= 1.0943604	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	 >= 0.2 Fail Tmr = 5 Fail Counts → 0 Timer (Sec) >= 0.3 Timer (Sec) >= 8 Counts 	Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Fluid Temperature	>= -6.65625 °C		
					Range Shift State	= Range Shift Completed ENUM		
					TPS OR	>= 0.5004883 %		
					Output Speed	>= 67 RPM		
					Throttle Position Signal Valid from ECM	= TRUE Boolean		
					Engine Torque Signal Valid from ECM, High side driver is enabled	= TRUE Boolean		
					High-Side Driver is Enabled	= TRUE Boolean		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		

Component/	Fault	Monitor Strategy	Malfunction		Thre	shold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Va	lue	Malfunction	Conditions	Required	Illum.
						Disable Conditions:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302,		
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM		P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		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							

Command 4th Command 4th Please Refer o Command 4th Gear once Output Shatt Speed if in Support (Sec Output Shatt Speed >= 3.8256836 And Gear Ratio >= 4.2283936 >= 8.5996094 Volts If Gear Ratio <= 4.2283936 If ginition Voltage Lo >= 8.5996094 Volts >= 5 Count If ginition Voltage Hi <= 7500 RPM Speed Hi <= 7500 RPM >= 5 Sec If ginition Voltage Hi <= 7500 RPM Speed Hi <= 7500 RPM Speed Hi <= 7500 RPM If ginition Voltage Hi <= 5 Sec	omponent/ System	Mil Illum.
Image: Section of the section of th		
Ignition Voltage Hi <= 31.999023		
the allowable limits for >= 5 Sec High-Side Driver is Enabled = TRUE Boolean Throttle Position Signal = TBUE Bealean		
Enabled - TROE Boolean Throttle Position Signal - 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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Fluid Temperature			
					Input Speed Sensor fault			
					Output Speed Sensor fault			
					Default Gear Option is not present			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail</u> <u>Case</u> 1 Commanded Gear	= 1st Locked				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	6	Time Require		Mil Illum.
			Gear Box Slip	>= 400 RPM					Please Refer to Table 5 >= in Support ing Docum ents	Timer	
			Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio Gear Ratio If the above parameters are true	 = 1st Locked Gear <= 2.4821777 >= 2.2458496 					>= 1	sec	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM	>= 3	counts	
					Engine Speed is within the allowable limits for	>=	5	Sec			
					Output Speed OR TPS	>= >=	67 0.5004883	RPM %			
					Range Shift State	=	Range Shift Completed	ENUM			
					Transmission Fluid Temperature	>=	-6.65625	°C			
					High-Side Driver is Enabled	=	TRUE	Boolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Throttle Position Signal Valid from ECM			
						Input Speed Sensor fault	= FALSE Boolean		
						Output Speed Sensor fault	= FALSE Boolean		
						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)	P0776	(PC) Solenoid B	Fail_ Case_Case: Steady State 3rd Gear				1 0401, 1 042L		One Trip
		Stuck Off [C35R]	1 Commanded Gear	= 3rd	Gear				
			Gearbox Slip						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Please Refer to Table Neutral >= 16 in Timer Support (Sec) ing Docum ents	
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	<= 400 RPM >= 1.0943604				
							Fail >= 3 Timer (Sec)	
			It the above condiations are true, Increment 3rd gear fail counter				3rd Gear >= 3 Fail Counts	
			and C35R Fail counter				or 3-5R >= 14 Clutch Fail Counts	
			Fail Case: Steady Case State 5th Gear Commanded Gear	- 5th Coor				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	IS	Time Requii		Mil Illum.
			Gearbox Slip	>= 400 Rpm					Please Refer to Table 5 >= in Support ing Docum ents	Neutral Timer (Sec)	
			Intrusive Test: Command 6th Gear								
			If attained Gear=6th gear Time								
			It the above condiations are true, Increment 5th gear fail counter						>= 3	5th Gear Fail Counts	
			and C35R Fail counter						>= 14	or 3-5R Clutch Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean			
					inhibit RVT	=	FALSE	Boolean			
					IMS fault pending indication	=	FALSE	Boolean			
					TPS validity flag	=	TRUE	Boolean			
					Hydraulic System Pressurized	=	TRUE	Boolean			
•	•	•	I I	RWD1 SECTION Page	1 1	I		7 OF	9 SECTIO	NS	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	S	Required	Illum.
					Minimum output speed for RVT A OR B	>=	0	RPM		
					(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	=	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			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable		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) Solinoid B Stuck On [C35R] (Steady State)	<u>Fail</u> <u>Case</u> Case: Steady <u>1</u> State 1st Attained Gear slip If the Above is True for Time					One Trip
			Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.6086426 >= 1.4554443			Fail >= 1.1 Timer (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> Case: Steady <u>Case</u> State 2nd gear 2	Table Based			Fail >= 2 Count in 1st Gear or Total >= 3 Fail Counts	
			Max Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		2000.101011	If the Above is True for Time	Table Based Time Please Soo		Conditiona	Roquirou	
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.6086426				
				>= 1.4554443				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 2nd Gear	
							or Total >= 3 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Case: Steady					
			State 4th gear					
•		•				I — —		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			If the Above is True for Time	Table Based Time Please Sec Refer to Table 17 in supporting documents				
			Intrusive test: (C1234 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 0.8946533 >= 0.8094482				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Requir	
							>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 4th Gear
							>= 3	or Total Fail Counts
			<u>Fail</u> Case: Steady <u>Case</u> State 6th gear <u>4</u>					
			Max Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	IS		Tin Requ		Mil Illum.
			If the Above is True for Time	Table Based Time Please						-		
			Intrusive test: (CB26 clutch exhausted)									
				<= 0.8946533 >= 0.8094482					>=	1.1 3	Fail Timer (Sec) counts	
			If the above parameters are true	- 0.0004402					~-	5	counts	
									>=	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	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	s	Time Required	Mil Illum.
Gyötölli	0000	Decemption		Value	HSD Enabled			Boolean	Required	
					Hydraulic_System_Pre ssurized	=	TRUE 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	Thresl Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
							ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B StuckOn [C35R] (Dymanic)	Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers)		Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d					
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command					
			Range Shift Status Attained Gear Slip	Initial ≠ Clutch Control <= 40	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Throttle)	>= 0.2998047				
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-4 shifting with Throttle)					
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)					
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Throttle)	>= 0.2998047 Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (5-3 shifting with Closed Throttle)	>= 0.5 (See)				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.2998047 (See)				
			fail timer 1 (5-4 shifting with Closed Throttle)	≥ 0.5 (Sec)				
			fail timer 1 (5-6 shifting with Throttle)	>= 0.2998047 (Soc)				
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5 Fail Time				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer sec 1, and Refere nce Support ing Table 15 for Fail Timer 2	
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s		Tim Requi		Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter									
			3rd gear fail counter						>=	3	3rd gear fail counts	
			5th gear fail counter						>=	3	OR 5th gear fail counts	
			Total fail counter						>=	5	OR total fail counts	
					TUT Enable temperature Input Speed Sensor	>= =	-6.65625 FALSE	°C Boolean				
					fault Output Speed Sensor fault	=	FALSE	Boolean				
					Command / Attained Gear	¥	1st	Boolean				
					High Side Driver ON	=	TRUE	Boolean				
					output speed limit for TUT input speed limit for TUT	>=	100 150	RPM RPM				
					PRNDL state defaulted	=	FALSE	Boolean				
					IMS Fault Pending	=	FALSE	Boolean				
					Service Fast Learn Mode	=	FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
	0000	Description		Value	HSD Enabled Default Gear Option is not present	= TRUE Boolean	Required	
				Di Condit		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	<u>Fail</u> <u>Case</u> <u>1</u> Case: Steady State 4th Gear					One Trip
			Gear slip	>= 400 RPM			Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 5th gear					

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

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	1	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					PRNDL State defaulted	=	FALSE	Boolean		
					inhibit RVT	=	FALSE	Boolean		
					IMS fault pending indication	=	FALSE	Boolean		
					TPS validity flag	=	TRUE	Boolean		
					Hydraulic System Pressurized	=	TRUE	Boolean		
					Minimum output speed for RVT	>=	0	RPM		
					A OR B (A) Output speed enable	>=	67	RPM		
					(B) Accelerator Pedal enable	>=	0.5004883	Pct		
					Common Enable Criteria					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>=	8.5996094 31.999023 400 7500	Volts Volts RPM 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		
					OutputSpeed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			

			· · · · · · · · · · · · · · · · · · ·						
Component/	Fault	Monitor Strategy	Malfunction	Thres		Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Valu		Malfunction	Conditions	Required	Illum.
					Disable Conditions:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202,		
							P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> <u>Case</u> Case: Steady <u>1</u> State 1st						One Trip
			Attained Gear slip		RPM				
			If the Above is True for Time	Table Based Time Please Refer to Table 4 in supporting documents					
				<= 1.2095947 >= 1.0943604				>= 1.1 Tin	ail ner ec)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Fail >= 2 Count in 1st Gear	
							or Total >= 3 Fail Counts	
			<u>Fail</u> Case Steady <u>Case</u> State 2nd <u>2</u>					
			Max Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time Please				
			Intrusive test: (CB26 clutch exhausted) Gear Ratio					
			Gear Ratio If the above	>= 1.0943604				
			parameters are true				Fail	
							>= 1.1 Timer (Sec)	
							Fail >= 3 Count in 2nd Gear	
							or >= 3 Total fail counts	
			<u>Fail</u> <u>Case</u> Case Steady <u>3</u> State 3rd					
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Gystein		Description	Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec	Manufiction	Conditions	Required	
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.2095947 >= 1.0943604				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	5		Tim Requi		Mil Illum.
								-	>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 3rd Gear	
									>=	OR 3	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_Pre ssurized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.5996094 31.999023 400 7500	Volts Volts RPM 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				

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					if Attained Gear=1st FW Engine Torque Enable Transmission Fluid	<= 8191.875 Nm		
					Temperature Input Speed Sensor	>= -6.65625 °C		
					fault Output Speed Sensor	= FALSE Boolean = FALSE Boolean		
					fault Default Gear Option is not present			
				Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	D0707	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 Boolean				One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d				
			Primary Offgoing Clutch Pressure Command Status	= exhaust				
			Range Shift Status Attained Gear Slip	Control				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (4-1 shifting with throttle)	>= 0.2998047 (Sec)				
			fail timer 1 (4-1 shifting without throttle)	>= 0.5 (Sec)				
			fail timer 1 (4-2 shifting with throttle)	>= 0.2998047 (Sec)				
			fail timer 1 (4-2 shifting without throttle)	>= 0.5 Fair Time				
			fail timer 1 (4-3 shifting with throttle)	>= 0.2998047 (See)				

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				
			fail timer 1 (5-3 shifting with throttle)					
			fail timer 1 (5-3 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			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 sec 1, and Refere nce Support ing Table 15 for Fail Timer 2	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				Fail >= 3 Counter From 4th Gear OR	
			5th gear fail counter				Fail >= 3 Counter From 5th Gear	
			6th gear fail counter				OR Fail >= 3 Counter From 6th Gear	
			Total fail counter				OR Total >= 5 Fail Counter	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON	>= -6.65625 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean		

Component/	Fault	Monitor Strategy	Malfunction		Thre	shold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria		Va	alue	Malfunction		Conditio	าร	Required	Illum.
							output speed limit for TUT input speed limit for	>= >=	100 150	RPM RPM		
							TUT PRNDL state defaulted	=	FALSE	Boolean		
							IMS Fault Pending Service Fast Learn		FALSE	Boolean		
							Mode HSD Enabled	_	FALSE TRUE	Boolean Boolean		
						Disable Conditions:		TCM: I	P0716, P07 ⁻			
								P0106 P0171 P0175 P0203 P0206 P0300 P0303 P0306	P0101, P01 , P0107, P0 , P0172, P0 , P0201, P0 , P0204, P0 , P0207, P0 , P0301, P0 , P0304, P0 , P0307, P0 , P042E	108, 174, 202, 205, 208, 302, 305,		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Tap Up Switch Case Stuck in the Up 1 Position in Range 1 Enabled	=	1	Boolean						Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled		1	Boolean						

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Va	lue	Malfunction	Conditions	Required	Illum.
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled		1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled		1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	-	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled		1	Boolean				
			Tap Up Switch ON	=	TRUE	Boolean			Fail >= 1 Time (Sec)	

Component/	Fault	Monitor Strategy	Malfunction			shold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria		Va	alue	Malfunction	Conditions	Required	Illum.
			F <u>ail</u> Tap Up Switch <u>Case</u> Stuck in the Up <u>2</u> Position in Range 1 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Reverse Enabled Tap Up Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	h p e d d h N = TRUE Boolean h d d			Fail >= 600 Time (Sec)	
					Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed is within the allowable limits for P0815 Status is	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed Think		

Component/	Fault	Monitor Strategy	Malfunction Criteria			eshold	Secondary Malfunction	Enable	Time	Mil Illum.
System	Code	Description	Criteria		Va	alue Disable Conditions:	MIL not Illuminated for DTC's:	Conditions TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None	Required	num.
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	FailTap DownCaseSwitch Stuck in1the DownPosition inRange 1Enabled	=	1	Boolean				Special No MIL
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled		1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	1	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value		Secondary Malfunction	Enable Conditions	Time Required	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	=	1	Boolean				
			Tap Down Switch ON	=	TRUE	Boolean			>= 1 sec	
			FailTap Down CaseSwitch Stuck in 2Position 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				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	i = 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	i = 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	i = 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	n = 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	n = 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	i = 1 Boolean				
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	n = TRUE Boolean n t			>= 600 sec	

Component/	Fault	Monitor Strategy	Malfunction		eshold	Secondary		Enable			Time		Mil
System	Code	Description	Criteria	V	alue	Malfunction		Conditions			Requir	ed	Illum.
									E				
						Time Since Last Range Change	>=	1	Enable Time				
						Ignition Voltage Lo		8.5996094	(Sec) Volts				
						Ignition Voltage Hi Engine Speed Lo		31.999023 400	Volts RPM				
						Engine Speed Lo		7500	RPM				
						Engine Speed is within	>=	5	Sec				
						the allowable limits for							
								Test Failed					
						P0816 Status is	¥	This Key On or Fault					
								Active					
					Disable	MIL not Illuminated	TCM:	P0815, P0826	, P182E,				
					Conditions:	for DTC's:	P1876 P1761	, P1877, P191	15,				
							ECM:						
Tap Up Tap Down Switch	P0826	Up and Down Shift	TUTD Circuit Reads Invalid	= TRUE	Boolean					>=	60	Fail Time	Special No MIL
(TUTD)		Switch Circuit	Voltage			Ignition Voltage Lo	>=	8.5996094	Volts			(Sec)	
						Ignition Voltage Hi	<=	31.999023	Volts				
						Engine Speed Lo Engine Speed Hi		400 7500	RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
						-	Engine Speed is within the allowable limits for	>=	5	Sec		
							P0826 Status is	¥	Test Failed This Key On or Fault Active			
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: I ECM:				
Tap Up Tap Down Switch (TUTD)	P1765	Upshift Switch Circuit #2	Fail Tap Up Switch Case Stuck in the Up 1 Position in Range 1 Enabled	=	0	Boolean						Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	=	0	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	=	0	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	0	Boolean						
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	0	Boolean						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			shold	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	0	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0	Boolean				
			Tap Up Switch ON	=	TRUE	Boolean			>= 1 Fail >= 1 Time (Sec)	
			FailTap Up SwitchCaseStuck in the Up2Position inRange 1Enabled	=	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				

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Component/	Fault	Monitor Strategy	Malfunction		Three	shold	Secondary		Enable			Time	е	Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Conditions	i		Requi	red	Illum.
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	=	1	Boolean								
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	=	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Park Enabled	=	0	Boolean								
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	=	0	Boolean								
			Tap Up Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	-	TRUE	Boolean					>=	600	Fail Time (Sec)	
							Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>=	1 8.5996094 31.999023 400 7500	Enable Time (Sec) Volts Volts RPM RPM				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria			eshold alue	Secondary Malfunction		Enable Conditions		Time Required	Mil Illum.
							Engine Speed is within the allowable limits for	>=	5	Sec		
							P1765 Status is	¥	Test Failed This Key On or Fault Active			
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1915 ECM:	5	, P182E,		
Tap Up Tap Down Switch (TUTD)	P1766	Downshift Switch Circuit #2	Fail Tap Down Case Switch Stuck in 1 the Down Position in Range 1 Enabled	=	0	Boolean						Special No MIL
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	=	0	Boolean						
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled		0	Boolean						
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	=	0	Boolean						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Va	shold lue	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
-			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	=	0	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Park Enabled	=	1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	=	0	Boolean				
			Tap Down Switch ON	=	TRUE	Boolean			>= 1 sec	
			FailTap DownCaseSwitch Stuck in2the DownPosition inRange 1Enabled	=	1	Boolean				

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

Component/	Fault	Monitor Strategy	Malfunction Criteria			shold	Secondary Malfunction		Enable			Time		Mil Illum.
System	Code	Description	Tap Down Switch Stuck in Position in Reverse Enabled Tap Down Switch ON NOTE: Both Failcase 1 and Failcase 2 Must Be Met		<u>Va</u> 0 RUE	Boolean Boolean	Mairunction		Conditions		>=	Require 600	ed sec	ilium.
							Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>=	1 8.5996094 18 400 7500 5	Sec Volts Volts RPM RPM Sec				
							P1766 Status is	¥	Test Failed This Key On or Fault Active					
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1918 ECM:	5	, P182E,				
Tap Up Tap Down Switch (TUTD)	P1767	Up and Down Shift Switch Circuit #2	TUTD Circuit Reads Invalid Voltage	= TF	RUE	Boolean					>=	60	Fail Time (Sec)	Special No MIL
							Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Malfunction	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Engine Speed is within the allowable limits for			
					P1767 Status is	Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:			
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> <u>1</u> Current range	Transition = 1 (bit state Range 1110)				One Trip
			Previous range	CeTRGR_ ≠ e_PRNDL_ Range Drive6				
			Previous range	CeTRGR_ ≠ e_PRNDL_ Range Drive5				
			Range Shift State					
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear Attained Gear	<= Sixth				
			Throttle Position Available					
			Throttle Position	>= 8.0001831 pct				
			Output Speed	>= 200 rpm				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary Molfurnation	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Engine Torque Engine Torque If the above conditions are met then Increment Fail Timer	<= 8191.75 Nm			>= 1 Fail Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 5 Fail Counts	
			<u>Fail</u> <u>Case</u> Output Speed <u>2</u>	<= 70 rpm				
			The following PRNDL sequence events occur in this exact order:					
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state = Drive 6 for	>= 1 Sec				
			PRNDL state	Transition = 8 (bit state Range 0111)				
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state	Transition = 1 (bit state Range 1110)				
			Above sequencing occurs in	<= 1 Sec				
			Neutral Idle Mode					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	If all conditions above are met Increment delay Timer		Manufiction	Conditions	Required	
			If the below two conditions are met Increment Fail Timer				>= 3 Fail Seconds	
			delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	>= 400 Sec			>= 2 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Current range	Transition = 13 (bit Range state 0010)	Previous range	CeTRGR_e ≠ _PRNDL_D rive5		
			Engine Torque	>= -8192 Nm	Previous range	CeTRGR_e ≠ _PRNDL_D rive5		
			Engine Torque	<= 8191.75 Nm	IMS is 7 position configuration	= 0 Boolean		
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range	Transition = 8 (bit state Range 0111)	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Inhibit bit (see definition)	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque Steady State Engine Torque If the above conditions are met then Increment Fail Timer If the above	<= 8191.75 Nm			>= 0.225 Seconds	
			Condtions have been met, Increment Fail Counter				>= 15 Fail Counts	
			Fail Throttle Position <u>5</u> Available The following PRNDL sequence events occur in this exact order: this exact order:					
			PRNDL State	Reverse = (bit state Range 1100)				
			PRNDL State	Transition = 11 (bit Range state 0100)				
			PRNDL State	= Neutral (bit state 0101) Range				

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			PRNDL State Above	state 0100)				
			sequencing occurs in	<= 1 Sec				
			Then delay timer increments					
			Delay timer					
			Range Shift State	Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear Attained Gear	<= Sixth >= First				
			Throttle Position	>= 8.0001831 pct				
			Output Speed If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			<u>Fail</u> <u>Case</u> <u>6</u> 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></pre>		
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Previous transition state	Transition ≠ 8 (bit state 0111)		
					Fail case 5 delay timer	= 0 sec		
			If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	
			Fail <u>Case</u> Current PRNDL <u>7</u> State and	PRNDL circuit ABCP = Range 1101				
			Previous PRNDL state	PRNDL circuit ABCP =1111				
			Input Speed Reverse Trans Ratio Reverse Trans	>= 150 RPM <= 2.9759521 ratio >= 3.4239502 ratio				
			Ratio If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	
			P182E will report					
			test fail when any of the above 7 fail cases are met					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	<= 31.999023 Volts		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Hi			
					Engine Speed is within the allowable limits for			
					Engine Torque Signal Valid			
				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		
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range	Park or = Reverse or Range State Neutral				Special No MIL
			TUTD Enable Switch is Active	= TRUE Boolean			Fail	
							>= 3 Time (Sec)	
							>= 5 Fail Counts	
					Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi	<= 31.999023 Volts <= 511 KPH >= 400 RPM		
					Engine Speed is within the allowable limits for			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Conditions	Time Requir		Mil Illum.
							P1876 Status is	Test Failed			
						Disable Conditions:	for DTC's:	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None			
Internal Mode Switch (IMS)		Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is	¥	Park or Neutral	Enumeration					One Trip
			The following events must occur Sequentially							5.44	
			Initial Engine speed	<=	50	RPM			>= 0.25	Enable Time (Sec)	
			Then Engine Speed Between Following Cals Engine Speed Lo Hist	>=	50	RPM					
			Engine Speed Hi Hist	<=	480	RPM			>= 0.0688	Enable Time (Sec)	
			Then Final Engine Speed	>=	525	RPM					
			Final Transmission Input Speed	>=	200	RPM			>= 1.25	Fail Time (Sec)	
						TION Page (DTC has Ran this Key Cycle?	= FALSE Boolean			

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Component/	Fault	Monitor Strategy	Malfunction	Thre	eshold	Secondary		Enable		Time)	Mil
System	Code	Description	Criteria	V	alue	Malfunction		Conditions		Requir	ed	Illum.
						Ignition Voltage Lo	>=	6	V			
						Ignition Voltage Hi	<=	31.999023	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:						
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	Fail_ Case_ Case_ 1_ Case_ State 2nd Gear									One Trip
			Gear slip	>= 400	RPM					Please See Table 5 >= For Neutral Time Cal	Neutral Timer (Sec)	
			Intrusive test: commanded 3rd gear									

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	5		Tim Requi		Mil Illum.
			If attained Gear = 5th For Time	Table Based Time Enable Time								
			If Above Conditions have been met, Increment 5th gear fail counter						>=	3	5th Gear Fail Count	
			and CB26 Fail Count						>=	14	or CB26 Fail Count	
					PRNDL State defaulted	=	FALSE	Boolean		_		1
					inhibit RVT	=	FALSE	Boolean	ļ			1
					IMS fault pending indication	=	FALSE	Boolean	ļ			
					TPS validity flag		TRUE	Boolean	ļ			1
					Hydraulic System Pressurized	=	TRUE	Boolean	l			1
					Minimum output speed for RVT A OR B	>=	0	RPM				
					(A) Output speed enable	>=	67	RPM	l			
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria	\-	8 5006004					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo	<=	8.5996094 31.999023 400					
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Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold	Secondary Malfunction		Enable		Time	Mil Illum.
System	Code	Description	Criteria	Va	lue	Engine Speed Hi	<=	Condition 7500	s RPM	Required	mum.
						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:	P0723 ECM: P0106	, P182E P0101, P010 , P0107, P01	02, P0103, 108,		
							P0175 P0203 P0206 P0300 P0303 P0306	, P0172, P01 , P0201, P02 , P0204, P02 , P0307, P02 , P0301, P03 , P0304, P03 , P0307, P03 , P042E	202, 205, 208, 302, 305,		
Variable Bleed Solenoid (VBS)	D2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers)	= TRUE	Boolean						One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d				
			Primary Offgoing Clutch Pressure Command Status	= exhaust				
			Range Shift Status Attained Gear Slip	Control				
			If above coditons are true, increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-1 shifting with throttle)	>= 0.2998047 (Soc)				
			fail timer 1 (2-1 shifting without throttle)	>= 0.5 (See)				
			fail timer 1 (2-3 shifting with throttle)	>= 0.2998047 (Soc)				
			fail timer 1 (2-3 shifting without throttle)	>= 0.5 (Soc)				
			fail timer 1 (2-4 shifting with throttle)	>= 0.2998047 (See)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (2-4 shifting without throttle)	>= 0.5 (Soo)				
			fail timer 1 (6-4 shifting with throttle)	>= 0.2998047 (See)				
			fail timer 1 (6-4 shifting without throttle)					
			fail timer 1 (6-5 shifting with throttle)	>= 0.2998047 (Soc)				
			fail timer 1 (6-5 shifting without throttle)	>= 0.5 Fair Time				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer sec 1, and Refere nce Support ing Table 15 for Fail Timer 2	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s		Tin Requ		Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter									
			2nd gear fail counter						>=	3	Fail Counter From 2nd Gear OR	
			6th gear fail counter						>=	3	Fail Counter From 6th Gear	
			total fail counter						>=	5	OR Total Fail Counter	
					TUT Enable temperature Input Speed Sensor	>= =	-6.65625 FALSE	°C Boolean				
					fault 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				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode			
					HSD Enabled	= TRUE Boolean		
				Disab Conditior		TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26]	Fail Case Case: Steady 1 State 1st					One Trip
		(Steady State)	Attained Gear slip	>= 400 RPM				
			If the Above is True for Time	Table Based Time Please Enable Tim Refer to (Sec) Table 4 in supporting documents	e			
			Intrusive test: (CBR1 clutch exhausted) Gear Ratio	<= 2.4821777				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				>= 2.2458496			Fail >= 1.1 Timer (Sec) Fail >= 3 Count in 1st Gear or Total >= 3 Fail	
			<u>Fail</u> Case: Steady <u>Case</u> State 3rd Gear <u>2</u>				Counts	
			Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec 3D Table 1 in supporting documents				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
				<= 2.4821777 >= 2.2458496			Fail >= 1.1 Timer	
							(Sec) Fail >= 3 Count in 3rd Gear or	
				RWD1 SECTION Page	267 of 495	7 OF	Total >= 3 Fail Counts 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> Case: Steady <u>Case</u> State 4rd Gear <u>3</u>					
			Max Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
				<= 0.7003174				
I		l	Gear Ratio	>= 0.633667				

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 4th Gear	
							or Total >= 3 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 5th Gear 4					
			Max Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			I	RWD1 SECTION Page 2	269 of 495	7 0	F 9 SECTIONS	I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior			Tim Requ		Mil Illum.
			If the Above is True for Time	Table Based Time >= Please Refer to Table 17 in supporting documents								
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true								Fail	
									>=	1.1	Timer (Sec)	
									>=	3	Fail Count in 5th Gear	
									>=	3	or Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					Hydraulic_System_Pre ssurized A OR B	=	TRUE	Boolean		
					(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		
					Default Gear Option is not present	=	TRUE			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disab Condition	le MIL not Illuminated s: for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid E Stuck Off	Fail_ Case_ Case_ State 1st Gear					One Trip
			Gear slip	>= 400 RPM			Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	
			Intrusive test: commanded 2nd gear					
			If attained Gear ≠ 2nd for Time	Please refer to Table 3 in Supporting Documents				
			If Above Conditions have been met, Increment 1st gear fail counter				1st Gear >= 3 Fail Count	

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

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

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tim	ne	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s		Requ	ired	Illum.
			Intrusive test: commanded 5th gear	Please refer to Chiff Time								
			If attained Gear = 5th For Time	>= Table 3 in Supporting Documents								
			If Above									
			Conditions have been met,						>=	3	4th Gear Fail	
			Increment 4th gear fail counter								Count	
			gear fair counter								or	
											or C1234	
			and C1234 fail counter						>=	14	Clutch Fail Count	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT A OR B	>=	0	RPM				
					(A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria							
					Ignition Voltage Lo		8.5996094	Volts				
		1 1	i I	RWD1 SECTION Page	Ignition Voltage Hi	<=	31.999023	Volts	I = 9.SF			

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Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction		Enable		Time	Mil Illum.
System	Code	Description	Criteria	Value		>=	Condition 400	s RPM	Required	mum.
					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		
					Transmission Fluid Temperature	>=	-6.65625	°C		
					Input Speed Sensor fault	=	FALSE	Boolean		
					Output Speed Sensor fault	=	FALSE	Boolean		
					Default Gear Option is not present	=	TRUE			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0723	P0716, P071 , P182E	7, P0722,		
						P0106 P0171 P0175 P0203 P0206 P0300 P0303 P0306	P0101, P010 , P0107, P01 , P0201, P02 , P0204, P02 , P0207, P02 , P0301, P03 , P0304, P03 , P0307, P03 , P042E	08, 174, 202, 205, 208, 302, 305,		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)					One Trip
			Primary Oncoming Clutch Pressure Command Status	Maximum = pressurize d				
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status Attained Gear Slip	Control				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-6 shifting with throttle)	>= 0.2998047 sec				
			fail timer 1 (2-6 shifting without throttle)	>= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle)	>= 0.2998047 sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (3-5 shifting without throttle)					
			fail timer 1 (4-5 shifting with throttle)	>= 0.2998047 sec				
			fail timer 1 (4-5 shifting without throttle)	>= 0.5 sec				
			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 sec 1, and Refere nce Support ing Table 15 for Fail Timer 2	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time equired	Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter						
			2nd gear fail counter				>= ;	Fail Counter 3 From 2nd Gear	
			3rd gear fail counter				>= ;	Fail 3 Counter From 3rd Gear	
			4th gear fail counter				>= :	Fail Counter 3 From 4th Gear	
			total fail counter				>=	Total 5 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			

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction	Enable	Time	Mil Illum.
System	Code	Description	Criteria	Value	output speed limit for	Conditions	Required	mum.
					TUT	>= 100 RPM		
					input speed limit for TUT	>= 150 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode			
					HSD Enabled	= TRUE Boolean		
				Disable Conditions:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	<u>Fail</u> <u>Case</u> <u>1</u> Case: 5th Gear					One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Gystein		Description	Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec	Manufiction	Conditions	Required	
			Min Delta Output Speed Hysteresis	>= Refer to rpm/sec				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio 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 Required	Mil Illum.
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 5th Gear OR	
			Fail_ Case_ Case: 6th Gear				Total >= 3 Fail Counts	
			<u>2</u> Max Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec 3D Table 1 in supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please >= Refer to rpm/sec 3D Table 2 in supporting documents				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior			Tim Requ		Mil Illum.
			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								Feil	
									>=	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	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	1	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					Hydraulic_System_Pre ssurized A OR B	=	TRUE	Boolean		
					(A) Output speed enable	>=	67	Nm		
					(B) Accelerator Pedal enable	>=	0.5004883	Nm		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.5996094 31.999023 400 7500	Volts Volts RPM 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			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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		

RWD1 Supporting Documents

	Table 1										
Table 2 Axis -6.67 -6.66 40.00 °C Curve 409.59 2.00 2.00 Sec Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 °C Sec Sec Sec											<mark>512.00</mark> N*m
Axis -6.67 -6.66 40.00 °C Curve 409.59 2.00 2.00 Sec Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 4.00 °C Sec Sec Sec		Curve	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00 RPM
Axis -6.67 -6.66 40.00 °C Curve 409.59 2.00 2.00 Sec Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 4.00 °C Sec Sec Sec											
Axis -6.67 -6.66 40.00 °C Curve 409.59 2.00 2.00 Sec Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 4.00 °C Sec Sec Sec	Table 2										
Curve 409.59 2.00 2.00 Sec Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 Sec	Table 2	Avie	6 67	6 66	40.00.00						
Table 3 Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 4.00 Sec											
Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 Sec		Cuive	+03.53	2.00	2.00	60					
Axis -6.67 -6.66 40.00 °C Curve 409.59 4.00 Sec											
Curve 409.59 4.00 4.00 Sec	Table 3										
		Axis	-6.67	-6.66							
Table 4		Curve	409.59	4.00	4.00 S	ec					
Table 4											
ladie 4	Table 4										
Axis -6.67 -6.66 40.00 °C	Table 4	Avie	6 67	6 66	40.00.00						
Curve 409.59 2.00 2.00 Sec											
		Cuive	+03.53	2.00	2.00	60					
Table 5	Table 5										
Axis -6.67 -6.66 40.00 °C		Axis									
Curve 409.59 3.00 3.00 Sec		Curve	409.59	3.00	3.00 S	ec					
	Table C										
Table 6 Axis -6.67 -6.66 40.00 80.00 120.00 °C		۸vie	6.67	6 66	40.00	80.00	120.00.00	`			
Curve 409.00 3.60 1.60 1.40 1.40 Sec											
			100.00	0.00	1.00						
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 1.20 Sec		Curve	409.00	3.40	1.40	1.30	1.20 S	ec			
Table 8	Tablo 8										
Axis -6.67 -6.66 40.00 80.00 120.00 °C		Axis	-6 67	-6 66	40.00	80.00	120 00 °C	2			
Curve 409.00 3.60 1.60 1.50 1.40 Sec											

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Table 9	_								
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C			
	Curve	409.00	3.30	1.30	1.20	1.10 Sec			
	-								
<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 Sec			
Table 11									
	Avie	-40.00	-20.00	0.00	30.00	110.00 °C			
	Axis Curve	1.72	1.11	0.60	0.36	0.22 Sec			
	Curve	1.72	1.11	0.00	0.30	0.22 360			
Table 12									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	2.12	1.39	0.84	0.64	0.33 Sec			
				I					
<u> Table 13</u>	_								
	Axis	-40.00	-20.00	0.00	30.00	<mark>110.00</mark> °C			
	Curve	2.51	0.95	0.50	0.29	0.13 Sec			
<u>Table 14</u>									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	2.97	0.82	0.47	0.20	0.13 Sec			
Table 15									
	Axis	-40.00	-30.00	-20.00	-10.00	0.00	10.00	20.00	30.00
	Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Table 16									
	Axis	-6.67	-6.66	40.00 °C					
	Curve	409.59	2.50	2.50 Se	C				

40.00 °C

0.00 Sec

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Table 17

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

Table 18

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

Table 19

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

Table 20

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	<mark>149.10</mark> °C
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00 °C

Table 21

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Conditions				me	Mil Illum.
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	Fail Case 1 Substrate Temperature	>=	142.10156		Manufiction		Conditions		>=	Req	Fail Time (Sec)	One Trip
			<u>Fail</u> Substrate <u>Case</u> Temperature <u>2</u>	>=	50	°C					>=	2	Fail Time (Sec)	
			Ignition Voltage		18	Volts								
			Note: either fail case can set the DTC											
							Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi	>=	8.5996094 31.999023 0 170	Volts Volts °C °C				
							Substrate Temp Between Temp Range for Time		0.25	Sec				
							P0634 Status is	¥	Test Failed This Key On or Fault Active					
						Disable Conditions:	MIL not Illuminated for DTC's:	TCM: ECM:						
Transmission nput Speed P Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor	>=	900	RPM					>=	0.8	Fail Time (Sec)	One Trip
							Engine Torque is Engine Torque is Engine Speed Engine Speed	>=	0 8191.875 400 7500	N*m N*m RPM RPM				

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Component/	Fault	Monitor Strategy	Malfunction	Th	reshold	Secondary		Enable			Tim	ie	Mil
System	Code	Description	Criteria		Value	Malfunction		Condition	S		Requ	ired	Illum
						Engine Speed is within the allowable limits for Vehicle Speed is Throttle Position is		5 10 0	Sec Kph Pct				
						Transmission Input Speed is	>=	0	RPM				
						The previous requirement has been satisfied for	>=	0	Sec				
						The change (loop to loop) in transmission input speed is	<	8191.875	RPM/Lo op				
						The previous requirement has been satisfied for	>=	0	Sec				
						Throttle Position Signal Valid	=	TRUE	Boolean				
						Engine Torque Signal Valid	=	TRUE	Boolean				
						Ignition Voltage Ignition Voltage		8.5996094 31.999023 Test Failed	Volts Volts				
						P0716 Status is not	=	This Key On or Fault Active					
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0974	P0717, P075; I	2, P0973,				
								P0101, P010 I, P0122, P01					
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage		< 67	RPM					>=	4.5	Fail Time (Sec)	One Trip

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Component/	Fault	Monitor Strategy	Malfunction		Thres	hold	Secondary	1	Enable			Tir	ne	Mil
System	Code	Description	Criteria		Val	ue	Malfunction		Conditions	6		Requ	iired	Illum.
			FailWhen P0722CaseDTC Status2equal to TestFailed andTransmissionInput Speed	<	653.125	RPM	Controller uses a single power supply for the speed sensors	=	1	Boolean				
							Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid	>=	50 8191.875 16 TRUE	N*m N*m Kph Boolean				
							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				
							P0717 Status is not	=	Test Failed This Key On or Fault Active					
						Disable Conditions:	MIL not Illuminated for DTC's:		P0722, P0723 P0101, P0102					
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw	<=	35	RPM					>=	4.5	Fail Time (Sec)	One Trip
					_		P0722 Status is not	=	Test Failed This Key On or Fault Active					
							Transmission Input Speed Check	=	TRUE	Boolean				
							Engine Torque Check	=	TRUE	Boolean				
							Throttle Position Transmission Fluid Temperature	>-	8.0001831 -40	Pct ℃				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					Disable this DTC if the PTO is active		1	Boolean		
					Engine Torque Signal Valid	-	TRUE	Boolean		
					Throttle Position Signal Valid	-	TRUE	Boolean		
					Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is	<= >=	8.5996094 31.999023 400 7500	Volts Volts RPM 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					
					Range Shift Status		Range shift completed	ENUM		
					OR Transmission Range is		Park or			
					Engine Torque is Engine Torque is	>=	Neutral 8191.75 8191.75	N*m N*m		
					Engine Torque Condition					
					Engine Torque is Engine Torque is 		50 8191.75	N*m N*m		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction		Enable Condition	IS		Tim Requ		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	<=	653.125 5350	RPM RPM				
							is TIS Check Condition 2 Engine Speed without the brake applied is Engine Speed with the brake applied is Engine Speed is Controller uses a single power supply for the speed sensors Powertrain Brake Pedal is	>= >= <= =	3200 3200 8191.875 1	RPM RPM RPM Boolean				
						Disable Conditions:	Valid MIL not Illuminated for DTC's:	ECM:	TRUE P0716, P071 P0101, P010 , P0122, P01	2, P0103,				
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw	>=	105	RPM					>=	0	Enable Time (Sec)	One Trip
			Output Speed Delta		8192	RPM					>=	0	Enable Time (Sec)	

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Component/	Fault	Monitor Strategy					Tir	ne	Mil			
System	Code	Description	Criteria	Value	Malfunction		Conditions	6		Requ	uired	Illum.
			Output Speed Drop	> 650 RPM					>=	1.5	Output Speed Drop Recovery Fail Time (Sec)	
			AND									
			Transmission Range is	= Driven range (R,D)								
					Range_Disable OR	=	FALSE	See Below				
					 Neutral_Range_Enable And	=	TRUE	See Below				
					Neutral_Speed_Enable are TRUE concurrently	=	TRUE	See Below				
					Transmission Dango En			See				
					Transmission_Range_En able	=	TRUE	Below				
					Transmission_Input_Spee d_Enable	=	TRUE	See Below				
					No Change in Transfer Case Range (High <-> Low) for	>=	5	Seconds				
					P0723 Status is not	=	Test Failed This Key On or Fault Active					
					Disable this DTC if the PTO is active	=	1	Boolean				
					Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is	>= <= >=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM				
					Engine Speed is Engine Speed is within the allowable limits for	>=	5	Sec				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Enable_Flags Defined Below			
					Transmission_Input_Spee d_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:			
					TIS Condition 1 is TRUE when both of the following conditions are satsified for	Ena >= 0 Tir (Se	ne	
					Input Speed Delta Raw Input Speed			
					TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied			
					Input Speed	= 0 RF	M	
					A Single Power Supply is used for all speed sensors	= TRUE Bool	ean	
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE			
					Transmission Range is	= Neutral EN	ML	
					Transmission Range is	Reverse/N = eutral EN Transitonal	ML	
					Transmission Range is	Neutral/Dri = ve EN Transitional	ML	
					And when a drop occurs			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	5	Required	Illum
					Loop to Loop Drop of Transmission Output Speed is	>	650	RPM		
					Range_Disable is TRUE when any of the next three conditions are TRUE					
					Transmission Range is	=	Park	ENUM		
					Transmission Range is	=	Park/Rever se Transitonal	ENUM		
					Input Clutch is not	=	ON (Fully Applied)	ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satsified for	>	1.5	Seconds		
					Transmission Output Speed	>	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_En able is TRUE when one of the next six conditions is TRUE					
					Transmission Range is	=	Neutral	ENUM		
					Transmission Range is	=	Reverse/N eutral Transitional	ENUM		

Fault Code	Monitor Strategy	Malfunction Criteria	Т	hreshold Value	Secondary Malfunction		Enable			Tim		Mil Illum.
	Decomption			Value		6 =	Neutral/Dri ve Transitional	ENUM		Nequi	iieu	
					(R,D) has been selected	=	Table Based Time Please Refer to Table 21 in supporting documents	Sec				
					Speed Sensor Rav Speed Output Speed when a	v >= d a	500 500	RPM RPM				
					able MIL not Illuminated fo	r TCM: : P0977 ECM:	7 P0101, P0102	2, P0103,				
P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met	>= 75	0 Kpa		P0121	I, P0122, P012	23	>=	2	Enable Time (Sec)	Two Trips
		(A) TCC Slip Error @ TCC On Mode	>= Table Suppo	1 in rting RPM					>=	6	Fail Time (Sec)	
		(B) TCC Slip @ Lock On Mode	>= 13	0 RPM					>=	6	Fail Time (Sec)	
	Code	Code Description Image: Code Image: Code Image: Code Image: Code <td>CodeDescriptionCriteriaCodeDescriptionCriteriaCodeCodeCodeCodeCodeCodeCodeCodeCodeP0741TCC System Stuck OFFTCC Pressure Either Condition (A) or (B) Must be MetP0741TCC System Stuck OFFCCC Pressure Condition (A) or (B) Must be MetCodeCODECODECodeCODE</td> <td>CodeDescriptionCriteriaCodeDescriptionCriteriaCodeCriteria</td> <td>Code Description Criteria Value Image: Code of the second second</td> <td>Code Description Criteria Value Malfunction Image: Code Description Criteria Value Malfunction Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria <</td> <td>CodeDescriptionCriteriaValueMalfunctionImage: Code of the second second</td> <td>CodeDescriptionCriteriaValueMalfunctionConditionsImage: Conditional series of the series o</td> <td>CodeDescriptionCriteriaValueMalfunction\coditionsImage: Condition in the second s</td> <td>Code Description Criteria Value Matfunction Conditions Activation A Financial Science Financial Scie<</td> <td>Code Description Criteria Value Mediunction $Conditions$ Requirement A Financian (R) Financ</td> <td>Code Description Oriteria Value Malfunction $I = 0$ condition: Required $I = 0$ $I = 0$</td>	CodeDescriptionCriteriaCodeDescriptionCriteriaCodeCodeCodeCodeCodeCodeCodeCodeCodeP0741TCC System Stuck OFFTCC Pressure Either Condition (A) or (B) Must be MetP0741TCC System Stuck OFFCCC Pressure Condition (A) or (B) Must be MetCodeCODECODECodeCODE	CodeDescriptionCriteriaCodeDescriptionCriteriaCodeCriteria	Code Description Criteria Value Image: Code of the second	Code Description Criteria Value Malfunction Image: Code Description Criteria Value Malfunction Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Code Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria Image: Criteria <	CodeDescriptionCriteriaValueMalfunctionImage: Code of the second	CodeDescriptionCriteriaValueMalfunctionConditionsImage: Conditional series of the series o	CodeDescriptionCriteriaValueMalfunction \coditions Image: Condition in the second s	Code Description Criteria Value Matfunction Conditions Activation A Financial Science Financial Scie<	Code Description Criteria Value Mediunction $Conditions$ Requirement A Financian (R) Financ	Code Description Oriteria Value Malfunction $I = 0$ condition: Required $I = 0$

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

Component/	Fault	Monitor Strategy	Malfunction	Thr	reshold	Secondary	Enable	т	ime	Mil
System	Code	Description	Criteria	V	/alue	Malfunction	Conditions	Rec	uired	Illum.
						P0741 Status is	Test Failed This Key Øn or Fault Active			
					Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P0742, 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			
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>= -50	RPM					One Trip
			TCC Slip Speed	<= 13	RPM					
			If Above					>= 1.5	Fail Time (Sec)	
			Conditions Have been Met, and Fail Timer Expired, Increment					>= 6	Fail Counter	
						TCC Mode Enable test if Cmnd Gear = 1stFW and value true	– 1 Boolean			

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- · ·		Malfunction	Threshold	Secondary		Enable		Time	Mil
Code	Description	Criteria	Value	Malfunction		Conditions	s	Required	lllum
				Enable test if Cmnd Gear = 2nd and value true	=	0	Boolean		
				Engine Speed Hi Engine Speed Lo	<= >=	6000 500	RPM RPM		
				Vehicle Speed HI Vehicle Speed Lo	<= >=	511 1	KPH KPH		
				Engine Torque Hi Engine Torque Lo	<= >=	8191.875 80	Nm Nm		
				Current Range	≠ ≠	Neutral	Range		
				Transmission Sump	<=	130	°C		
				Transmission Sump	>=	18	°C		
				Throttle Position Hyst High	>=	5.0003052	Pct		
				Max Vehicle Speed to Meet Throttle Enable	<=	8	КРН		
				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	=	1	Boolean		
				Disable if in MUMD and	=	1	Boolean		
				Disable if in TUTD and value true	=	1	Boolean		
					= 2nd and value true Engine Speed Hi Engine Speed Hi Engine Torque Li Vehicle Speed Lo Engine Torque Lo Current Range Once Hyst High has been Once Hyst High has been Once Hyst High has been Disable if n Tonttle	= 2nd and value true = Engine Speed Hi <=	= 2nd and value true = 0 Engine Speed Hi <=	= 2nd and value true = 0 Boolean Engine Speed Li >= 00 RPM Engine Speed Li >= 500 RPM Vehicle Speed Lo >= 1 KPH Vehicle Speed Li >= 1 KPH Vehicle Speed Li >= 1 KPH Vehicle Speed Li >= 1 Range Current Range ≠ Neutral Range Current Range ≠ Neutral Range Transmission Sump <=	= 2nd and value true = 0 Boolean Engine Speed Lo >= 500 RPM Engine Speed Lo >= 500 RPM Vehicle Speed Lo >= 511 KPH Vehicle Speed Lo >= 1 KPH Engine Torque Li >= 8191.8775 Nm Engine Torque Li >= 80 Nm Current Range # Reverse Range Transmission Sump Temperature <= 118 °C Throttle Postent Here Nature 1 Not the Speed Lo >= 5.0003052 Pct ADD Max Vehicle Speed Lo >= 5.0003052 Pct High Participant Part High has been

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction	(Conditions	\$	Required	Illum.
					4 Wheel Drive Low Active	=	FALSE	Boolean		
					Disable if Air Purge active and value false	=	0	Boolean		
					RVT Diagnostic Active	=	FALSE	Boolean		
					Ignition Voltage Ignition Voltage Vehicle Speed Engine Speed Engine Speed is within	<= 3 <=	3.5996094 31.999023 511 400 7500 5	V V RPH RPM RPM Sec		
					the allowable limits for Engine Torque Signal	=	TRUE	Boolean		
					Valid Throttle Position Signal Valid	=	TRUE	Boolean		
					P0742 Status is	<u> </u>	est Failed This Key On or Fault Active			
				Disable Conditions:			716, P0717 0741, P276			
						P0103, P P0108, P P0174, P P0202, P P0205, P P0208, P P0302, P P0305, P	0101, P010 0106, P010 0171, P017 0175, P020 0203, P020 0206, P020 0300, P030 0303, P030 0306, P030 0401, P042	07, 72, 01, 04, 07, 01, 04, 07,		

Component/	Fault	Monitor Strategy	Malfunction	Thresh	nold	Secondary		Enable			Tir	ne	Mil
System	Code	Description	Criteria	Valu	e	Malfunction		Conditions	6		Requ	lired	Illum.
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>= 400	RPM								Two Trips
			Commanded Gear	= 1st Lock	rpm								
			Gear Ratio	<= 1.2095947						>=	0.2	Fail Tmr	
			Gear Ratio	>= 1.0943604						=	5	Fail Counts	
			If the above parameters are true										
										¥	0	Neutral Timer (Sec)	
										>=	0.3	Fail Timer (Sec)	
										>=	8	Counts	
						Ignition Voltage Lo	>=	8.5996094 31.999023	Volts Volts				
						Ignition Voltage Hi Engine Speed Lo	<= >=	400	RPM				
						Engine Speed Eo	<=	7500	RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				
						Transmission Fluid Temperature	>=	-6.65625	°C				
						Range Shift State	=	Range Shift Completed	ENUM				
						TPS OR	>=	0.5004883	%				
						Output Speed	>=	67	RPM				
						Throttle Position Signal Valid from ECM	=	TRUE	Boolean				
						Engine Torque Signal Valid from ECM, High side driver is enabled	=	TRUE	Boolean				
						High-Side Driver is Enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thres Val		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= FALSE Boolean		
						Disable Conditions:		TCM: P0716, P0717, P0722, P0723, P182E		
								ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>=	400	RPM				One Trip
			Commanded Gear Commanded Gear has Achieved 1st	-	3rd	Gear				
			Locked OR 1st Free- Wheel OR 2nd with Mode 2 Sol. Commanded If the above parameters are true	=	TRUE	Boolean				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	;	Time equired	Mil Illum.
-				Value <= 400 RPM		<= >= <=		Volts Volts RPM RPM Sec	equired ase fer ole Neutral in Timer po (Sec) g cu nts Fail 5 Timer (Sec)	
					High-Side Driver is Enabled Throttle Position Signal	=	TRUE TRUE	Boolean Boolean		
					Valid from ECM Output Speed OR		67	RPM		
					TPS	>=	0.5004883	%		
					Range Shift State	=	Range Shift Completed	ENUM		
					Transmission Fluid Temperature	>=	-6.65625	°C		
					Input Speed Sensor fault	=	FALSE	Boolean		

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Output Speed Sensor fault Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail</u> Commanded <u>Case</u> Gear <u>1</u>	= 1st Locked				One Trip
			Gear Box Slip	>= 400 RPM			Please Refer to Table Neutral >= 5 in Timer Suppo (Sec) rting Docu ments	
			Intrusive Shift to 2nd Commanded Gear Gear Ratio Gear Ratio	 = 1st Locked Gear <= 2.4821777 >= 2.2458496 				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tin	ne	Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	6		Requ	iired	Illum.
			If the above parameters are true						>= >=	1 3	sec counts	
					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				
					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				
					Default Gear Option is not present	=	TRUE					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		Γ
						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]	<u>Fail</u> Case: Steady <u>Case</u> State 3rd <u>1</u> Gear Commanded					One Trip
			Gearbox Slip	= Siù Geai				
							Please Refer to Table Neutral >= 16 in Timer Suppo (Sec) rting Docu ments	
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	<= 400 RPM >= 1.0943604				
							Fail >= 3 Timer (Sec)	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			It the above condiations are true, Increment 3rd gear fail counter				3rd Gear >= 3 Fail Counts	
			and C35R Fail counter				or 3-5R Clutch Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 5th <u>2</u> Gear Commanded Gear					
			Gearbox Slip	>= 400 Rpm			Please Refer to Table Neutral >= 5 in Timer Suppo (Sec) rting Docu ments	
			Intrusive Test: Command					
			If attained Gear=6th gear Time	>= Table 3 in (Soc)				

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tin		Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s		Requ	lired	Illum.
			It the above condiations are true, Increment 5th gear fail counter						>=	3	5th Gear Fail Counts	
			and C35R Fail counter						>=	14	or 3-5R Clutch Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT A OR B	>=	0	RPM				
					(A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria							
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within	>= <=	8.5996094 31.999023 400 7500	Volts Volts RPM RPM				
					the allowable limits for	>=	5	Sec				
					Throttle Position Signal valid	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Transmission Fluid Temperature	>=	-6.65625	°C				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System				Disable Conditions:	Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present MIL not Illuminated for	 FALSE Boolean FALSE Boolean FALSE Boolean TRUE TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, 	Kequirea	
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)	<u>Fail</u> <u>Case</u> Case: Steady <u>1</u> State 1st Attained Gear slip	>= 400 RPM		P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		One Trip
			If the Above is True for Time					
			Intrusive test: (CBR1 clutch exhausted)					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Gear Ratio	<= 1.6086426				
			Gear Ratio	>= 1.4554443				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 2 Count in 1st Gear	
							or	
							>= 3 Total Fail Counts	
			Fail <u>Case</u> Case: Steady <u>2</u> State 2nd gear					
			Max Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			If the Above is True for Time					
			Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.6086426 >= 1.4554443			Fail >= 1.1 Timer	
							 Sec) Fail Sec) Fail Count in 2nd Gear or Total Fail Counts 	-

Component/	Fault	Monitor Strategy		Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			<u>Fail</u> Case: Steady <u>Case</u> State 4th <u>3</u> gear					
			Max Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			If the Above is True for Time					
			Intrusive test: (C1234 clutch Gear Batio	<= 0.8946533				
			Gear Rallo	RWD2 SECTION Page	212 of 40E	0 05	9 SECTIONS	1

Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
		If the above parameters				>= 1.1 Time	r
						Fail >= 3 Count 4th Ge	in
						Service Service Total F	
		<u>Fail</u> Case: Steady <u>Case</u> State 6th <u>4</u> gear					
		Output Speed	>= Please Refer to 3D ^{rpm/sec}				
		Output Speed	Please				
	Fault Code		CodeDescriptionCriteriaGear Ratio If the above parameters are trueIf the above parameters are trueFail Case State 6th 4Case: Steady Case gearFail Case State 6th 4Case: Steady Steed HysteresisMax Delta Output Speed Hysteresis	Code Description Criteria Value Gear Ratio If the above parameters are true >= 0.8094482 Image: Stand State Steady Case >= 100000000000000000000000000000000000	Code Description Criteria Value Malfunction Gear Ratio If the above parameters are true >= 0.8094482	Code Description Criterla Value Malfunction Conditions Gear Ratio If the above parameters are true >= 0.8094482 Image: Condition of the above parameters are true >= 0.8094482 Image: Condition of the above parameters are true Image: Condition of the above parameters are true >= 0.8094482 Image: Condition of the above parameters are true Image: Condition of the above are true Image: Condition of the ab	Code Description Criteria Value Malfunction Conditions Required Image: Second Seco

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio			Tiı Requ		Mil Illum.
			If the Above is True for Time								
			Intrusive test: (CB26 clutch exhausted)								
			Gear Ratio	<= 0.8946533				>=	1.1	Fail Timer	
			Gear Ratio If the above parameters are true					>=	3	(Sec) counts	
								>=	1.1	Fail Timer (Sec)	
								>=	3	Fail Count in 6th Gear	
								>=	3	or Total Fail	
									3	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				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	l	Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum
					HSD Enabled	=	TRUE	Boolean		
					Hydraulic_System_Press urized A OR B	=	TRUE	Boolean		
					(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/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B StuckOn [C35R] (Dymanic)	Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust					One Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				
			Primary Offgoing Clutch Pressure Command Status					
			Range Shift Status	Initial ≠ Clutch Control				
			Attained Gear Slip	<= 40 RPM				

Component/	Fault	Monitor Strategy	Malfunction	Thres	hold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Valu	le	Malfunction	Conditions	Required	Illum.
			If the above conditions are true run appropriate Fail 1 Timers Below:						
			fail timer 1 (3-1 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (3-4 shifting with Throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (5-3 shifting with Closed Throttle)	- 0.5	Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.2998047	Fail Time (Sec)				

Component/ Faul	t Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System Code	e Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
	Description	fail timer 1 (5-4 shifting with Closed Throttle) fail timer 1	>= 0.5 Fail Time (Sec) >= 0.2998047 Fail Time (Sec) >= 0.5 Fail Time (Sec)	Manunction	Conditions	Required	mum.
		If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enabl e Timers for Fail >= Timer sec 1, and Refere nce Suppo rting Table 15 for Fail Timer 2	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold	Secondary Malfunction		Enable Condition			Tir		Mil Illum
Jystem	Coue	Description	If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter 3rd gear fail counter	Value	Manufiction		Condition	IS	>=	Req ι 3	3rd gear fail counts OR	
			5th gear fail counter						>=	3	5th gear fail counts	
			Total fail counter						>=	5	OR total fail counts	
					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				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					HSD Enabled Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	<u>Fail</u> Case: Steady <u>Case</u> State 4th 1 Gear				Please See	One Trip
			Gear slip	>= 400 RPM			Table Neutral >= 5 For Timer Neutra (Sec) I Time Cal	
			Intrusive test: commanded 5th gear					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			lf attained Gear <i>≠</i> 5th for time					
			if the above conditions have been					
			Increment 4th Gear Fail Counter				4th Gear >= 3 Fail Count OR	
			and C456 Fail Counters <u>Fail</u> Case: Steady				C456 >= 14 Fail Counts	
			<u>Case</u> State 5th <u>2</u> Gear				Please See	
			Gear slip	>= 400 RPM			Table Neutral >= 5 For Timer Neutra (Sec) I Time Cal	
			Intrusive test: commanded 6th gear					
			If attained Gear ≠ 6th for time	Please Refer to Table 3 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 conditions have been Increment				5th Gear	
			5th Gear Fail Counter				>= 3 Fail Count OR	
			and C456 Fail Counters				>= 14 C456 >= 14 Fail Counts	
			<u>Fail</u> Case: Steady <u>Case</u> State 6th <u>3</u> Gear				Please	
			Gear slip	>= 400 RPM			See Table Neutral >= 5 For Timer Neutra (Sec) I Time Cal	
			Intrusive test: commanded 5th gear					
			If attained Gear ≠ 5th for time					
			if the above conditions have been Increment					
			6th Gear Fail Counter and C456 Fail Counter				6th Gear >= 3 Fail Count	
	I	I		RWD2 SECTION Page		l	OR 9 SECTIONS	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tim	ne	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	S		Requ		Illum.
			and C456 Fail Counter						>=	14	C456 Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT A OR B	>=	0	RPM				
					(A) Output speed enable	>=	67	RPM				
					(B) Accelerator Pedal enable	>=	0.5004883	Pct				
					Common Enable Criteria							
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <=	8.5996094 31.999023 400 7500 5	Volts Volts RPM RPM Sec				
					Throttle Position Signal valid	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	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					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Dis Conditi	able MIL not Illuminated fo ons: DTC's	 TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E 		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	Fail Case Case: Steady <u>1</u> State 1st Attained Gear slip	>= 400 RPM				One Trip
			If the Above is True for Time	Table Based Time Please Enable Refer to (Sec) Table 4 in supporting documents	ïme			
				>= 1.0943604				

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

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	>= Please Sec				
			Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.2095947 >= 1.0943604			Fail >= 1.1 Timer	
							 (Sec) Fail = 3 Count in 2nd Gear 	
							or >= 3 Total fail counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Case Steady State 3rd					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	Table Based value >= Please Refer to 3D				
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			If the Above is True for Time					
			Intrusive test: (C35R clutch Gear Ratio					
				>= 1.0943604				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable			Tir		Mil
System	Code	Description	Criteria	Value	Malfunction		Conditions	6		Requ	uired	Illum.
			If the above parameters are true						>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 3rd Gear	
									>=	OR 3	Total Fail Counts	
					PRNDL State defaulted	=	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_Press urized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.5996094 31.999023 400 7500 5	Volts Volts RPM RPM Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres		Secondary Malfunction		Enable Conditior	IS	Time Required	Mil Illum.
						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:	TCM: F P0723	P0716, P071 , P182E	7, P0722,		
							P0106 P0171 P0175 P0203 P0206 P0300 P0303 P0306	P0101, P010 , P0107, P07 , P0201, P02 , P0204, P02 , P0207, P02 , P0301, P03 , P0304, P03 , P0307, P03 , P042E	108, 174, 202, 205, 208, 302, 305,		
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)		Boolean						One Trip

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status Attained	Control				
			Gear Slip	<= 40 RPM				
			If the above conditions are true increment appropriate Fail 1 Timers					
			fail timer 1 (4-1 shifting with throttle)	>= 0.2998047				
			fail timer 1 (4-1 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (4-2 shifting with throttle)	>= 0.2998047				
			fail timer 1 (4-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (4-3 shifting with throttle)	>= 0.2998047 Fail Time (Sec)				

Component/ Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
		fail timer 1 (4-3 shifting without throttle)					
		fail timer 1 (5-3 shifting with throttle)	>= 0.2998047				
		fail timer 1 (5-3 shifting without throttle)	(Sec)				
		fail timer 1 (6-2 shifting with throttle) fail timer 1	>= 0.2998047 (See)				
		(6-2 shifting without throttle)	>= 0.5 Fail Time (Sec)				
		If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enabl e Timers for Fail >= Timer sec 1, and Refere nce Suppo rting Table 15 for Fail Timer 2	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s		Tiı Requ	ne Jired	Mil Illum.
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter					~				
			4th gear fail counter						>=	3	Fail Counter From 4th Gear	
			5th gear fail counter						>=	3	OR Fail Counter From 5th Gear	
			6th gear fail counter						>=	3	OR Fail Counter From 6th Gear	
			Total fail counter						>=	5	OR 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				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		shold lue	Secondary Malfunction		Enable ondition	IS		Tin Requ		Mil Illum.
						output speed limit for TUT	>=	100	RPM				
						input speed limit for TUT	>=	150	RPM				
						PRNDL state defaulted	= F	ALSE	Boolean				
						IMS Fault Pending	= F	ALSE	Boolean				
						Service Fast Learn Mode	= F	ALSE	Boolean				
						HSD Enabled	= 7	TRUE	Boolean				
					Disable Conditions:		TCM: P071 P0723, P18		7, P0722,				
							ECM: P010 P0106, P01 P0171, P01 P0175, P02 P0203, P02 P0206, P02 P0300, P03 P0303, P03 P0306, P03 P0401, P04	107, P01 172, P01 201, P02 204, P02 207, P02 301, P03 304, P03 307, P03	108, 174, 202, 205, 208, 302, 305,				
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	= TRUE	Boolean					>=	3	Fail Counter	Specia I No MIL
										>	10	Sample Timer (Sec)	
						Tap Up Tap Down Message Health Engine Speed Lo	=	TRUE 400	Boolean RPM				

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
					Engine Speed Hi Engine Speed is within the allowable limits for	>= 5 Sec		
				D Cond	sable MIL not Illuminated for tions: DTC's:			
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail</u> <u>Case</u> Current <u>1</u> range					One Trip
			Previous range	CeTRGR_e ≠ _PRNDL_D Range rive6				
			Previous range	CeTRGR_e ≠ _PRNDL_D Range rive4				
			Range Shift State					
			Absolute Attained Gear Slip Attained	<= 50 rpm				
			Attained Throttle Position Available	= TRUE				
			Throttle Position Output	>= 0.0001031 pct				
			Engine					
			Engine Torque					

Component/	Fault	Monitor Strategy	Malfunction	Threst	nold	Secondary	Enable		Tin	ne	Mil
System	Code	Description	Criteria	Valu	le	Malfunction	Conditions		Requ	iired	Illum.
			If the above conditions are met then Increment Fail Timer If Fail Timer					>=	1	Fail Seconds	
			has Expired then Increment					>=	5	Fail Counts	
			<u>Fail</u> Output <u>Case</u> Speed	<= 70	rpm						
			The following PRNDL sequence events occur in this exact order:								
			PRNDL state	= Drive 6 (bit state 0110)	Range						
			PRNDL state = Drive 6 for		Sec						
			PRNDL state	Transition 8 = (bit state 0111)							
			PRNDL state	= Drive 6 (bit state 0110)	Range						
			PRNDL state	Transition 1 = (bit state 1110)							
			Above sequencing occurs in	<= 1	Sec						
			Neutral Idle Mode	= Inactive							

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
			If all conditions above are met If the below two conditions are met Increment delay timer Input Speed If Fail Timer has Expired then Increment	>= 1 Sec >= 400 Sec			>= 3 Fail Seconds >= 2 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>3</u> Current range	Transition = 13 (bit state Range 0010)	Previous range	CeTRGR_e ≠ _PRNDL_D rive4		
			Engine Torque Engine Torque		Previous range IMS is 7 position configuration	CeTRGR_e ≠ _PRNDL_D rive4 = 0 Boolean		
			If the above conditions are met then, Increment Fail Timer		If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment				>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>4</u> Current range		Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			Inhibit bit (see definition) Steady State	= FALSE	Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)			
			Engine Steady State Engine If the above	<= 8191.75 Nm				
			conditions are met then Increment Fail Timer				>= 0.225 Seconds	
			If the above Condtions have been met, Increment				>= 15 Fail Counts	
			Fail Throttle <u>Case</u> Position <u>5</u> Available The following PRNDL sequence events occur in this exact order:	= TRUE Boolean				
			PRNDL State	Reverse = (bit state Range 1100)				
			PRNDL State	Transition = 11 (bit state Range 0100)				
			PRNDL State	= Neutral (bit state 0101) Range				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			PRNDL State	Transition = 11 (bit state Range 0100)				
			Above sequencing occurs in Then delay timer increments	<= 1 Sec				
			Delay timer Range Shift State	>= 5 sec _ Range Shift				
			Absolute Attained Gear Slip Attained	<= 50 rpm <= Sixth				
			Attained Throttle Position Output If the above	>= 8.0001831 pct				
			conditions are met Increment Fail				>= 20 Seconds	_
			<u>Case</u> <u>6</u> Current range		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			

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	м
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illu
					Last positive state	<pre></pre>		
					or	Transition		
					Previous transition state	≠ 8 (bit state 0111)		
					Fail case 5 delay timer			
			If the above Condtions are met then, Increment				>= 6.25 Seconds	
			Fail timer	PRNDL				
			<u>Case</u> Current <u>7</u> PRNDL State					
			and	PRNDL				
			Previous PRNDL state	ABCP Range =1111				
			Input Speed Reverse Trans Ratio	>= 150 RPM <= 2.8458252 ratio				
			Reverse Trans Ratio	>= 3.2741699 ratio				
			If the above Condtions					
			are met then, Increment Fail timer				>= 6.25 Seconds	
			P182E will report test					
			fail when any of the above 7 fail cases					
					Ignition Voltage Lo	>= 8.5996094 Volts		

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Component/	Fault	Monitor Strategy	Malfunction		Thres	hold	Secondary	Enable	Tim	ie	Mil
System	Code	Description	Criteria		Val	ue	Malfunction	Conditions	Requ	ired	Illum.
							Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	>= 400 RPM <= 7500 RPM >= 5 Sec			
						Disable Conditions:		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			
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is	¥	Park or Neutral	Enumeration					One Trip
			The following events must occur Sequentially								
			Initial Engine speed	<=	50	RPM			>= 0.25	Enable Time (Sec)	
			Then Engine Speed Between Engine								
			Engine Speed Lo	>=	50	RPM					

Component/	Fault	Monitor Strategy	Malfunction		Thre	shold	Secondary		Enable			Tin	ie	Mil
System	Code	Description	Criteria		Va	lue	Malfunction		Condition	S		Requ	ired	Illum
			Engine Speed Hi Hist		480	RPM					>=	0.069	Enable Time (Sec)	
			Then Final Engine Speed		525	RPM								
			Final Transmission Input Speed	>=	200	RPM					>=	1.25	Fail Time (Sec)	
							DTC has Ran this Key Cycle? Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst High (enables above this value) Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed	= >= >= <= <= ≠	FALSE 6 31.999023 5 2 90 Test Failed This Key On or Fault	Boolean V V V rpm				
			F ail			Disable Conditions:	MIL not Illuminated for DTC's:	TCM: ECM:		3				
ariable Bleed olenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>Fail</u> <u>Case</u> <u>1</u> Case: Steady <u>5</u> State 2nd Gear											One Trip

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

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		nable		me	Mil
System	Code	Description	Criteria	Value	Malfunction	Col	nditions	Req	uired	Illum.
			Gear slip	>= 400 RPM				Please See Table >= 5 For Neutra I Time Cal	Neutral Timer a (Sec)	
			Intrusive test: commanded 5th gear							
			lf attained Gear = 5th For Time	>= Please see (Soc)	e					
			If Above Conditions have been met, Increment 5th gear fail					>= 3	5th Gear Fail Count	
			and CB26 Fail Count					>= 14	or CB26 Fail Count	
					PRNDL State defaulted	= FA	LSE Boolean			
					inhibit RVT	= FA	LSE Boolean			
					IMS fault pending indication	= FA	LSE Boolean			
					TPS validity flag	= TI	RUE Boolean			
					Hydraulic System Pressurized	= TI	RUE Boolean			

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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					Minimum output speed for RVT A OR B	>=	0	RPM		
					(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	=	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			
l i										

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust	= TRUE Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status	Initial ≠ Clutch Control				
			Attained Gear Slip	<= 40 RPM				

Component/	Fault	Monitor Strategy	Malfunction	Thres	hold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Valu	le	Malfunction	Conditions	Required	Illum.
			If above coditons are true, increment appropriate Fail 1 Timers						
			fail timer 1 (2-1 shifting with throttle)	>= 0.2998047	Fail Time (Sec)				
			fail timer 1 (2-1 shifting without throttle)	>= 0.5	Fail Time (Sec)				
			with throttle)	>= 0.2998047	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
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enabl e Timers for Fail >= Timer sec 1, and Refere nce Suppo rting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter 2nd gear fail counter				Fail >= 3 Counter From 2nd Gear	
				RWD2 SECTION Page	348 of 495	8 OF	OR 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	S			me uired	Mil Illum.
			6th gear fail counter						>=	3	Fail Counter From 6th Gear	
			total fail counter						>=	5	OR 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	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	<u>Fail</u> <u>Case</u> Case: Steady <u>1</u> State 1st Attained Gear slip	>= 400 RPM				One Trip
			If the Above is True for Time	Table Based Time Please Enable Time Refer to (Sec) Table 4 in supporting documents				
				<= 2.4821777 >= 2.2458496			Fail >= 1.1 Timer (Sec)	

Component/ System	ult Monitor Strategy Malfunction de Description Criteria		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
Jystem		Value	Manufiction	Conditions	Fail >= 3 Count in 1st Gear	
					or >= 3 Total Fail Counts	
	<u>Fail</u> <u>Case</u> Case∶ <u>2</u> St	Steady ate 3rd Gear				
		x Delta Output Speed teresis >= Table Please Refer to 3D Table 1 in supporting documents				
		n Delta Output Speed teresis >= Table Based value Please Refer to 3D Table 2 in supporting documents				
		n Delta value Output Speed teresis Table 2 in supporting	ge 351 of 495	8 OF	9 SECTION	s

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the Above is True for Time	Table Based Time				
			Intrusive test: (C35R clutch					
				<= 2.4821777				
			Gear Ratio	>= 2.2458496				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 3rd Gear	
							or >= 3 Total Fail Counts	
			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	>= Please Refer to 3D rpm/sec				
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			If the Above is True for Time	>= Please Sec				
				<= 0.7003174 >= 0.633667				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
			If the above parameters are true				Fail >= 1.1 Timer	
							(Sec) Fail >= 3 Count in 4th Gear	
			Feil Occar Otrach				or >= 3 Total Fai Counts	1
			<u>Fail</u> Case: Steady <u>Case</u> State 5th <u>4</u> Gear					
			Max Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio		Tiı Requ	ne Jired	Mil Illum.
			If the Above is True for Time							
			Intrusive test: (C35R clutch Gear Ratio Gear Ratio If the above parameters are true	<= 0.7003174 >= 0.633667				>= 1.1 >= 3 >= 3	Fail Timer (Sec) Fail Count in 5th Gear or Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication	= FALSE = FALSE = FALSE	Boolean Boolean Boolean			
					output speed TPS validity flag	= TRUE	RPM Boolean			
					HSD Enabled	= TRUE	Boolean			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
					Hydraulic_System_Press urized A OR B	=	TRUE	Boolean		
					(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		
					Default Gear Option is not present	=	TRUE			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable	MIL not Illuminated for	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail</u> Case: Steady <u>Case</u> State 1st <u>1</u> Gear					One Trip
			<u>-</u> Gear Gear slip	>= 400 RPM			Please See Table Neutra >= 5 For Timer Neutra (Sec) I Time Cal	
			Intrusive test: commanded 2nd gear					
			lf attained Gear ≠ 2nd for Time					

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

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio			ime quired	Mil Illum.
			Gear slip	>= 400 RPM				Pleas See Tabl >= 5 Fo Neut I Tim Cal	e Neutral r Timer ra (Sec) e	
			Intrusive test: commanded 5th gear							
			If attained Gear = 5th For Time							
			If Above Conditions have been met, Increment 4th gear fail					>= 3	4th Gear Fail Count	
			and C1234 fail counter					>= 14	or C1234 Clutch Fail Count	
					PRNDL State defaulted	= FALSE	Boolean			
					inhibit RVT	= FALSE	Boolean			
					IMS fault pending indication	= FALSE	Boolean			
					TPS validity flag	= TRUE	Boolean			
					Hydraulic System Pressurized	= TRUE	Boolean			
					Minimum output speed for RVT	>= 0	RPM			
	•	•	I I	RWD2 SECTION Page	•	I	8 OF	9 SECT	IONS	•

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary		Enable		Time	Mil
System	Code	Description	Criteria	Value	Malfunction		Condition	s	Required	Illum.
					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	=	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			
I										

Component/	Fault	Monitor Strategy	Malfunction	Threshold		Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value		Malfunction	Conditions	Required	Illum.
					Disable ditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
							ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Primary	= TRUE Boole	ean				One Trip
			Oncoming Clutch Pressure Command Status	= Maximum pressurized					
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command					
			Range Shift Status	Initial ≠ Clutch Control					
			Attained Gear Slip	<= 40 RPM					

Component/	Fault	Monitor Strategy	Malfunction Criteria	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	If the above conditions are true increment appropriate Fail 1 Timers		Malfunction	Conditions	Required	Illum.
			fail timer 1 (2-6 shifting with throttle)	>= 0.2998047 sec				
			fail timer 1 (2-6 shifting without throttle)					
			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)	>= 0.2998047 sec				
			fail timer 1 (4-5 shifting without throttle)	>= 0.5 sec				
			fail timer 1 (4-6 shifting with throttle)	>= 0.2998047 sec				
			fail timer 1 (4-6 shifting without throttle)	>= 0.5 sec				

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS			me uired	Mil Illum.
			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	>=	-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	Threshold	Secondary	Enable	Time	Mil
System	Code	Description	Criteria	Value	Malfunction	Conditions	Required	Illum
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308,	Inoquirou	
/ariable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	<u>Fail</u> <u>Case</u> Case: 5th <u>1</u> Gear			P0401, P042E		One Trip
			Max Delta Output Speed Hysteresis	>= Please Refer to 3D				
			Min Delta Output Speed Hysteresis					

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	>= Please Sec				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 1.2095947				
			Gear Ratio	>= 1.0943604				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 5th Gear	
							OR	
							>= 3 Total Fail Counts	
			<u>Fail</u> <u>Case</u> <u>2</u> Case: 6th 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	>= Please Refer to 3D rpm/sec				
			Min Delta Output Speed Hysteresis	>= Please Refer to 3D rpm/sec				
			If the Above is True for Time	>= Please Sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditions	6			me uired	Mil Illum.
			If the above parameters are true						>=	1.1	Fail Timer	
									>=	3	(Sec) Fail Count in 6th Gear	
									>=	3	OR Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled	=	TRUE	Boolean				
					Hydraulic_System_Press urized A OR B	=	TRUE	Boolean				
					(A) Output speed enable	>=	67	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= <= >= <= >=	8.5996094 31.999023 400 7500 5	Volts Volts RPM RPM Sec				
					if Attained Gear=1st FW Accelerator Pedal enable	>=	5.0003052	Pct				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
					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:			P0716, P071 , P182E	7, P0722,		
						P0106 P0171 P0175 P0203 P0206 P0300 P0303 P0306	P0101, P010 , P0107, P01 , P0172, P01 , P0201, P02 , P0204, P02 , P0207, P02 , P0301, P03 , P0304, P03 , P0307, P03 , P042E	08, 74, 202, 205, 208, 302, 305,		

RWD2 Supporting Documents

Table 1	_									
	Axis	0.00	64.00	128.00	192.00	256.00	320.00	384.00	448.00	512.00 N*m
	Curve	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00 RPM
Table 2										
<u></u>	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	2.00	2.00 Se	C					
	_									
Table 2										
Table 3	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	4.00	4.00 Se						
		100.00		1.00						
Table 4										
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	2.00	2.00 Se	eC					
Table 5										
	Axis	-6.67	-6.66	40.00 °C						
	Curve	409.59	3.00	3.00 Se	C					
Table 6										
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C	2			
	Curve	409.00	3.60	1.60	1.40	1.40 S	ec			
Table 7										
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C	2			
	Curve	409.00	3.40	1.40	1.30		ec			
	-									
<u>Table 8</u>	Axis	-6.67	-6.66	40.00	80.00	120.00 °C	~			
	Curve	409.00	3.60	1.60	1.50	1.40 S				
		100.00	0.00	1.00	1.00	1.15				

RWD2 Supporting Documents

Table 9									
	Axis	-6.67	-6.66	40.00	80.00	120.00 °C			
	Curve	409.00	3.30	1.30	1.20	1.10 Sec)		
<u> Table 10</u>									
	Axis	-40.00	-20.00	0.00	30.00	<u>110.00</u> °C			
	Curve	3.03	1.86	1.00	0.75	0.58 Sec)		
<u>Table 11</u>									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	1.72	1.11	0.60	0.36	0.22 Sec			
	Cuive	1.72	1.11	0.00	0.50	0.22 000	,		
<u>Table 12</u>									
	Axis	-40.00	-20.00	0.00	30.00	110.00 °C			
	Curve	2.12	1.39	0.84	0.64	0.33 Sec	>		
		!	I	I	I				
<u>Table 13</u>	_								
	Axis	-40.00	-20.00	0.00	30.00	<mark>110.00</mark> °C			
	Curve	2.51	0.95	0.50	0.29	0.13 Sec)		
<u>Table 14</u>	A :	40.00	00.00	0.00	20.00	110.00			
	Axis Curve	<u>-40.00</u> 2.97	-20.00	0.00	30.00	<mark>110.00</mark> °C 0.13 Sec			
	Curve	2.97	0.82	0.47	0.20	0.13 Sec	;		
Table 15									
		10.00	00.00	-20.00	-10.00	0.00	10.00	20.00	30.00
	Axis	-40.00	-30.001	-20.001					
	Axis Curve	-40.00 0.00	-30.00					0.00	0.00
	Axis Curve	-40.00 0.00	-30.00	0.00	0.00	0.00	0.00	0.00	0.00
								0.00	0.00
Table 16		0.00	0.00	0.00	0.00			0.00	0.00
Table 16					0.00 C			0.00	0.00

40.00 °C

0.00 Sec

RWD2 Supporting Documents

Table 17

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

Table 18

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

Table 19

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	<mark>149.10</mark> °C
Curve	256.00	50.00	45.00	40.00	34.00	25.00	20.00	20.00	256.00 °C

Table 20

Axis	-40.10	-40.00	-20.00	0.00	30.00	60.00	100.00	149.00	<mark>149.10</mark> °C
Curve	256.00	10.00	8.00	8.00	8.00	8.00	8.00	8.00	256.00 °C

Table 21

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

Fault Code	Monitor Strategy Description	Malfunction Criteria		d	Secondary Enable Malfunction Conditions			Time Require	d	Mil Illum.	
	Transmission Electro- Hydraulic Control	<u>Fail</u> Cas		°C			-	>=	5	Fail Time (Sec)	One Trip
		Temperature	>= 50	°C				>=	2	Fail Time (Sec)	
		Voltage Note: either fail case can set the DTC		Volts							
					Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp	<= 31.999023 >= 0 <= 170 >= 0.25	Volts Volts °C °C Sec				-
					P0634 Status is	Test Failed This Key On or Fault Active					
					for DTC's:						
P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	lf transmission oil temp to substrate temp Δ	eupporting	°C							Two Trips
	Code	CodeDescriptionP0634Transmission Electro- Hydraulic Control Module Internal Temperature Too HighP0637Nodule Internal Temperature Too HighP0667TCM Internal Temp (substrate) Sensor Circuit	CodeDescriptionCriteriaP0634Transmission Electro- Hydraulic Control Module Internal Temperature Too HighFail Cas e_1Substrate TemperatureFail Cas e_2Substrate TemperatureIgnition VoltageNote: either fail case can set the DTCNote: either fail case can set the DTCP0667TCM Internal Temp (substrate) Sensor Circuit Pance/PerformanceImage: Substrate fail case can set the DTC	CodeDescriptionCriteriaValueP0634Transmission Electro-Hydraulic Control Module Internal Temperature Too HighFail Cas e_2Substrate Temperature>= 142.101563P0634Fail Cas e_2Substrate Temperature>= 5018P0634Fail Cas e_2Substrate Temperature>= 50Ignition Voltage>= 18Note: either fail case can set the DTC18P0667TCM Internal Temp Substrate) Sensor CircuitTCM Internal Temp SubstrateIf transmission oil temp to substrateRefer to Table 19 in suporting documents	Code Description Criteria Value P0634 Transmission Electro- Hydraulic Control Module Internal Temperature Too High Fail Cas e.1 Substrate Temperature >= 142.101563 °C P0634 Fail Module Internal Temperature Too High Fail Cas e.1 Substrate Temperature >= 50 °C P0637 Fail Cas e.2 Substrate Temperature >= 50 °C Ignition Voltage >= 18 Volts Note: either fail case can set the DTC >= 18 Volts Disable Conditi ons: Disable Conditi ons: Disable Conditi ons: P0667 TCM Internal Temp (substrate) Sensor Circuit Panee/Referemance If transmission oil temp to substrate > Refer to Table 19 in supporting °C	Code Description Criteria Value Malfunction P0634 Transmission Electrol Module Internal Temperature Too High Fail Cas Substrate Entreperature Substrate Temperature >= 142.101563 °C ************************************	Code Description Criteria Value Malfunction Condition P0634 Transmission Electro- Hydraulic Control Module Internal Temperature Too High Substrate 2.1 Substrate Temperature >= 142.101563 °C Image: Control Case Image: Contro Case Image: Control Case	Code Description Criteria Value Malfunction Conditions P0634 Transmission Electron Module Internal Temperature Too High Fail Case E-1 Substrate Temperature Substrate Temperature >= 142.101563 °C Image: Conditions Image: Conditions P0634 Fail Temperature Too High Eail Case Substrate E-2 Temperature Substrate E-2 Temperature >= 50 °C Image: Conditions Image: Conditions P0634 Fail Case Case Substrate Fail Case E-2 Temperature Substrate Temperature >= 50 °C Image: Conditions Image: Conditions P0647 Eail Case Case P0647 Fail Case Substrate Substrate Temperature >= 60 °C Image: Conditions Image: Conditions P0667 Case Cubstrate Fail Case Substrate Fail Case Substrate Fail Case Substrate Fail Case Substrate Fail Case Substrate Fail Case Substrate Fail Case Substrate Fail P0634 Substrate P0634 Fail P0634 Fail Case Substrate Fail P0634 Fail P0634	CodeDescriptionCriteriaValueMalfunctionConditionsP0634Transmission Electron Module Internal Temperature Too HighEall Temperature Too HighSubstrate 2.2 $= 142.101563$ °CImage: Substrate 2.2 $= 142.101563$ °C $= 142.10$	Code Description Criteria Value Maffunction Conditions Require P0634 Transmission Electro- Module Internal Temperature Too, high Eall Case e_1 Substrate e_2 = 142.101563 °C Image: Control Case Image: Control Case Image: Control Case Image: Control Case Image: Control Case <t< td=""><td>Code Description Criteria Value Malfunction Conditions Required P0834 Hydraulic Control Module Internal High Substrate e.l. Substrate substrate = 142.101563 °C Image: Control Substrate Image: Control Substrate >= 5 Fail Case Substrate >= 60 °C Image: Control Substrate >= 2 Fail Case Substrate >= 60 °C Image: Control Substrate >= 2 Fail Case >= 2 Fail Case >= 2 Fail Case >= 18 Voits >= - >= 2 Fail Case >= - Substrate >= - 2 Fail Case >= - Substrate >= - 2 Time (Sec) Ignition Voitage >= 18 Voits -</td></t<>	Code Description Criteria Value Malfunction Conditions Required P0834 Hydraulic Control Module Internal High Substrate e.l. Substrate substrate = 142.101563 °C Image: Control Substrate Image: Control Substrate >= 5 Fail Case Substrate >= 60 °C Image: Control Substrate >= 2 Fail Case Substrate >= 60 °C Image: Control Substrate >= 2 Fail Case >= 2 Fail Case >= 2 Fail Case >= 18 Voits >= - >= 2 Fail Case >= - Substrate >= - 2 Fail Case >= - Substrate >= - 2 Time (Sec) Ignition Voitage >= 18 Voits -

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Jystem		Description	If TCM substrate temp to power up temp Δ	Refer to > Table 20 in ∘C supporting		Contractione	rioquirou	
			Both conditions above required to increment fail counter				Fail >= 3000 Counts (100ms loop)	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Sample Out 3750 Counts of (100ms loop)	
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until				Pass >= 700 Counts (100ms loop)	
							Sample Out 875 Counts of (100ms loop)	
					Engine Torque Signal Valid	= TRUE Boolean		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS	Time Required	Mil Illum.
					Accelerator Position Signal Valid	=	TRUE	Boolean		
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM		
					Engine Speed is within the allowable limits for Brake torque active	>=	5 FALSE	Sec		
					Below describes the brake torque entry criteria Engine Torque	>=	90	N*m		
					Throttle Transmission Input Speed	>= <=	30.000305 200 8	Pct RPM		
					Vehicle Speed Transmission Range	<= ≠	8 Park	Kph		
					Transmission Range	¥	Neutral			
					РТО	=	Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>=	7	sec		
					Below describes the brake torque exit criteria Brake torque entry					
					criteria	=	Not Met Clutch			
					Clutch hydraulic pressure	¥	Hydraulic Air Purge Event			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Clutch used to exit brake torque active	COTETD O		
					The above clutch pressure is greater than this value for one loop	>= 600 kpg		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec		
					P0667 Status is	Test Failed		
				Disable Conditi ons:	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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltge	Type of Sensor Used	CeTFTI_e_V = oltageDirect Prop				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	>= 350 RPM <= 7500 RPM		
					P0668 Status is	Test Failed This Key On or Fault Active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria		value	Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: None	Required	
Transmission Control Module P0 (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used If TCM Substrate Temperature Sensor = Direct Proportional and Temp If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	= 0 >= <=	eTFTI_e_V ItageDirect Prop 249 249	°C				Two Trips
			Either condition above will satisfy the fail conditions				Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0669 Status is	<= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec Test Failed This Koy	>= 60	Fail Fimer (Sec)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					For Hybrids, below conditions must also be met Estimated Motor Power Loss	>= 0 kW		
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		
				Disable Condit ons	for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P06AC	TCM Power-up Temp Sensor Circuit Range/Performance	lf TCM power up temp to substrate temp Δ	Refer to Table 20 in °C supporting documents				Two Trips
			lf transmission oil temp to power up temp Δ	Refer to Table 18 in supporting documents				
			Both conditions above required to increment fail counter				Fail Counts (100ms loop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS		Time Require		Mil Illum.
			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	=	TRUE	Boolean				
					Accelerator Position Signal Valid	=	TRUE	Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= >= <= >=	8.5996094 31.999023 350 7500 5	Volts Volts RPM RPM Sec				
					Brake torque active		FALSE					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	5	Time Required	Mil Illum.
					Below describes the brake torque entry criteria			•* •*	
					Engine Torque Throttle	>= 90 >= 30.000305	N*m Pct		
					Transmission Input Speed	<= 200	RPM		
					Vehicle Speed		Kph		
					Transmission Range	≠ Park			
					Transmission Range	≠ Neutral			
					PTO	= Not Active			
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7	sec		
					Below describes the brake torque exit criteria				
					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	>- 600	kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20	Sec		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P06AC Status is	Test Failed This Key On or Fault Active		
				Disable Conditi ons:	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		
Transmission		TOM					E -11	Two
Transmission Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 °C			Fail >= 60 Time (Sec)	Trips
		C C			Ignition Voltage Lo	>= 8.5996094 Volts		
					Ignition Voltage Hi	<= 31.999023 Volts		
					Engine Speed Lo	>= 350 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		reshold Value	Secondary Malfunction		Enable Conditions	5		Time Require		Mil Illum.
						P06AD Status is	¥	Test Failed This Key On or Fault Active					
						For Hybrids, below conditions must also be met Estimated Motor Power Loss		0	kW				
						Estimated Motor Power Loss greater than limit for time	>=	0	Sec				
						Lost Communication with Hybrid Processor Control Module	=	FALSE					
						Estimated Motor Power Loss Fault	=	FALSE					
					Disable Conditi ons:	i for DTC's:		3	7, P0722,				
Transmission Control Module	DOGAE	TCM power-up thermistor circuit	Power Up	>= 16	54 °C					>=	60	Fail Time	Two Trips
(TCM)	FUCAL	voltage high	Temp	~- IC	<u> </u>			0.5000004	N (- 1(-	~-	00	(Sec)	11103
						Ignition Voltage Lo Ignition Voltage Hi		8.5996094 31.999023	Volts Volts				
						Engine Speed Lo		350	RPM				
						Engine Speed Hi	<=	7500	RPM				
						Engine Speed is within the allowable limits for	>=	5	Sec				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P06AE Status is	Test Failed This Key On or Fault Active		
				Disable Condit ons	i for DTC's:			
Fransmission Fluid Femperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	lf transmission oil temp to substrate temp Δ	Refer to Table 19 in supporting documents				Two Trips
			lf transmission oil temp to power up temp Δ	Refer to Table 18 in supporting documents				
			Both conditions above required to increment fail counter				Fail >= 3000 Count (100m loop)	s
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Sampl Out 3750 Count of 100m loop)	S

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	IS		Time Require		Mil Illum
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until						>=	700	Pass Counts (100ms Ioop)	
									Out of	875	Sample Counts (100ms loop)	
					Engine Torque Signal Valid	=	TRUE	Boolean				
					Accelerator Position Signal Valid	=	TRUE	Boolean				
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is	>= <=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM				
					within the allowable limits for Brake torque active	>=	5 FALSE	Sec				
					Below describes the brake torque entry criteria		TALOL					
					Engine Torque Throttle	>=	90 30.000305	N*m Pct				
					Transmission Input Speed Vehicle Speed	~=	200 8	RPM Kph				
					Transmission Range		Park	1.ph				
					Transmission Range	¥	Neutral					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					PTO Set Brake Torque Active TRUE if above conditions are met for:	= Not Active		
					Below describes the brake torque exit criteria			
					Brake torque entry criteria	= Not Met		
					Clutch hydraulic pressure			
					Clutch used to exit brake torque active	CeTFTD_e = _C3_RatIE nbl		
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec		
					P0711 Status is	Test Failed This Key On or Fault Active		

SystemCodeDescriptionCriteriaValueMalfunctionConditionsRequiredIIIuSystemLabel ConditionDisable ConditionMIL not IlluminatedTCM: P0658, P0668, P0669, P0669, P0670, P0712, P0713, P0717, P0722, P0723, P0620, P0687, P0967, P0970, P0971, P2150, P0967, P0970, P0971, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0301, P0305, P0306, P0307, P0308, P0301, P0305, P0306, P0307, P0308, P0304, P0305, P0306, P0307, P0308, P0305, P0306, P0307, P0308, P0304, P030									T
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ansmission Fuld mperature nsor (TFT) P072 P073 P0717 P0722 P071 P072 P073 P0717 P0722 P072 P072 P072 P072 P072 P072 P072 P072 P072 P072 <t< td=""><td>System</td><td>Code</td><td>Description</td><td>Criteria</td><td></td><td></td><td></td><td>Required</td><td>mun</td></t<>	System	Code	Description	Criteria				Required	mun
ansmission Fluid mperature nsor (TFT) H V12 Transmission fluid temperature nsor (TFT) H V12 Transmission fluid temperature sensor H V12 Transmission H V12 Transmis						for DTC's:	P06AD, P06AE, P0716,		
ansmission Fluid mperature nsor (TFT) P0712 P0712 P0712 P0712 P0712 P0712 Transmission nsor (TFT) P0712 P071							P0712, P0713, P0717, P0722,		
ansmission Fluid meretature insor (TFT) horize, Paran, Par									
ansmission Fluid merature nsor (TFT) P0712 P0712 									
ansmission Fluid mperature nsor (TFT) h P0712 Transmission fluid temperature thermistor failed at a low voltage Transmission Time Transmission Fluid Transmission							1 2120, 1 2121, 1 2120, 1 2100		
ansmission Fluid morature nsor (TFT) H P0712 P0172, P0175, P0201, P0203, P0204, P0205, P0209, P0204, P0205, P0209, P0204, P0205, P0209,									
ansmission Fluid memorature thermistor failed at a low voltage									
ansmission Fluid mperature nsor (TFT)									
ansmission Fluid mperature insor (TFT) P0712 Transmission fluid temperature themistor failed at a insor (TFT) P0712 Transmission fluid temperature themistor failed at a insor (TFT) P0712 Transmission Fluid Temperature Sensor Used Frop Transmission Fluid Temperature Sensor = Fluid Transmission Fluid Temperature Sensor = Fluid Transmission Fluid Temperature Sensor = Fluid Transmission Fluid Temperature Sensor = Fluid Transmission Fluid Temperature Sensor = Fluid Temperature Sensor = Transmission Fluid Temperature Sensor = Transmission Temperature Sensor = Transmission Fluid Temperature Sensor = Transmission Temperature Sensor = Transmission Temperature Sensor = Transmission Temperature Sensor = Transmission Temperature Sensor = Transmission Temperature Sensor = Transmission Temperature Sensor = Temperature Sensor = Temp							P0206, P0207, P0208, P0300,		
ansmission Fluid mperature nsor (TFT) P0712									
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Ansmission Fluid mperature insor (TFT) P0712 temperature thermistor failed at a low voltage Tri Sensor Used Temperature Sensor Used Temperature Sensor Sensor = Direct Proportional and Temp Fluid Temperature Sensor = Direct Proportional and Temp Sensor = -74 °C Tri							10101,1012		
Ansmission Fluid mperature insor (TFT) P0712 temperature thermistor failed at a low voltage Tri Sensor Used Temperature Sensor Used Temperature Sensor Sensor = Direct Proportional and Temp Fluid Temperature Sensor = Direct Proportional and Temp Sensor = -74 °C Tri									
Ansmission Fluid mperature insor (TFT) P0712 temperature thermistor failed at a low voltage Tri Sensor Used Temperature Sensor Used Temperature Sensor Sensor = Direct Proportional and Temp Fluid Temperature Sensor = Direct Proportional and Temp Sensor = -74 °C Tri									
Ansmission Fluid mperature insor (TFT) P0712 temperature thermistor failed at a low voltage Tri Sensor Used Temperature Sensor Used Temperature Sensor Sensor = Direct Proportional and Temp Fluid Temperature Sensor = Direct Proportional and Temp Sensor = -74 °C Tri									
Ansmission Fund Imperature Insor (TFT) P0712 temperature Imperature Insor (TFT) P0712 temperature Insor (TFT) P0712 temperature Impe			Transmission fluid						Τw
http://www.oltage Sensor Used Prop low voltage If Transmission Fluid and Temperature Sensor = Direct Proportional and Temperature Sensor = -74 °C		P0712	temperature						Tri
If Transmission Fluid Temperature Sensor = -74 °C Direct Proportional and Temp If Transmission Fluid = remperature >= Sensor = -74 °C Indirect Proportional and Temp	Sensor (TFT)	1 07 12		Sensor Used	J				
Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp			low voltage						
Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp				lf Tronomiosion					
Temperature Sensor = Direct Proportional and Temp <= -74 °C									
Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp					<- 74 °C				
Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp					74 0				
and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp									
If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp									
Fluid Temperature Sensor = Indirect Proportional and Temp									
Fluid Temperature Sensor = Indirect Proportional and Temp				If					1
Fluid Temperature Sensor = Indirect Proportional and Temp				Transmission					
Sensor = Indirect Proportional and Temp				Fluid					1
Indirect Proportional and Temp					>= -74 °C				
Proportional and Temp									1
									1
RWD3 SECTION Page 388 of 495 9 OF 9 SECTIONS				and Temp					1
RWD3 SECTION Page 388 of 495 9 OF 9 SECTIONS									
					RWD3 SECTION Pag	ge 388 of 495	9	OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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	>= 350 RPM <= 7500 RPM >= 5 Sec		
					P0712 Status is	Test Failed This Key On or Fault Active		
					For Hybrids, below conditions must also be met Estimated Motor Power Loss			
					Estimated Motor Power Loss greater than limit for time	>= 0 Sec		
					Lost Communication with Hybrid Processor Control Module	= FALSE		
					Estimated Motor Power Loss Fault	= FALSE		
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		

Component/	Fault	Monitor Strategy	Malfunction		Thresh		Secondary Molfunction		Enable			Time		Mil
System Transmission Fluid Temperature Sensor (TFT)	P0/13	Description Transmission fluid temperature thermistor failed at a high voltage	Criteria Type of Sensor Used	=	CeTFTI_e_` oltageDirec Prop	V	Malfunction		Conditions	8		Require	ed	Illum. Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	>=	174	°C								
			Either condition above will satisfy the fail conditions								>=	60	Fail Time (Sec)	
							Ignition Voltage Lo	>=	8.5996094	Volts				
							Ignition Voltage Hi	<=	31.999023	Volts				
							Engine Speed Lo	>=	350	RPM				
							Engine Speed Hi Engine Speed is within the allowable limits for	<= >=	7500 5	RPM Sec				
							P0713 Status is	¥	Test Failed This Key On or Fault Active					
							no 200 of 405					SECTIO		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value	old	Secondary Malfunction		Enable Conditio			Time Require	d	Mil Illum.
Cystem	oode	Description	ontena			Disable Conditi ons:	MIL not Illuminated for DTC's:		P0713, P071 2, P0723					
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>=	881.75	RPM					>=	0.8	Fail Time (Sec)	One Trip
							Engine Torque is Engine Torque is Engine Speed Engine Speed Engine Speed is within the allowable	<= >= <=	0 8191.875 350 7500 5	N*m N*m RPM RPM Sec				
							limits for Vehicle Speed is Throttle Position is 		0	Kph Pct				
							Transmission Input Speed is	>=	0	RPM				
							The previous requirement has been satisfied for		0	Sec				
							The change (loop to loop) in transmission input speed is	<	8191.875	RPM/Loop				
							The previous requirement has been satisfied for	>=	0	Sec				
							Throttle Position Signal Valid	=	TRUE	Boolean				
							Engine Torque Signal Valid	=	TRUE	Boolean				
	I			 			Ignition Voltage ae 391 of 495	>=	8.5996094	Volts		SECTIO		I

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage	<= 31.999023 Volts		
					P0716 Status is not	Test Failed This Key On or Fault Active		
				Disable Conditi ons:	for DTC's:	TCM: P0717, P0752, P0973, P0974 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	<u>Fail</u> <u>Cas</u> Transmission <u>e 1</u> Input Speed is	< 32.625 RPM			Fail >= 4.5 Time (Sec)	One Trip
			FailCasWhen P0722e 2DTC Statusequal to TestFailed andTransmissionInput Speedis	< 653.125 RPM	Controller uses a single power supply for the speed sensors			
					Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= 8191.875 N*m >= 16 Kph = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
oystem	oode	Description	ontena		Engine Speed is within the allowable limits for		ec	
					P0717 Status is not	= Test Failed This Key On or Fault Active		
				Disable Conditi ons:	for DTC's:	TCM: P0722, P0723 ECM: P0101, P0102, P0 [.]	103	
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 35 RPM			Fail >= 4.5 Time (Sec)	One Trip
					P0722 Status is not	Test Failed This Key On or Fault Active		
					Transmission Input Speed Check	= TRUE Boo	blean	
					Engine Torque Check	= TRUE Boo	blean	
					Throttle Position Transmission Fluid Temperature		Pct PC	
					Disable this DTC if the PTO is active	= 1 Boo	blean	
					Engine Torque Signal Valid	= TRUE Boo	blean	
					Throttle Position Signal Valid		blean	
					Ignition Voltage is		olts	
				RWD3 SECTION Pa	Ignition Voltage is	<= 31.999023 Vo	9 OF 9 SECTIONS	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
					Engine Speed is Engine Speed is Engine Speed is within the allowable	>= <= >=	350 7500 5	RPM RPM 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 OR	¥	Range shift completed	ENUM		
					Transmission Range is Engine Torque is Engine Torque is	= >= <=	Park or Neutral 8191.75 8191.75	N*m N*m		
					Engine Torque Condition 2 Engine Torque is Engine Torque is 	>=	50 8191.75	N*m N*m		
					The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE					
				RWD3 SECTION Pa	TIS Check Condition			٥	OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Conditior	ıs		Time Require		Mil Illum.
							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	>=	3200	RPM				
							Engine Speed is	<=	8191.875	RPM				
							Controller uses a single power supply for the speed sensors	=	1	Boolean				
							Powertrain Brake Pedal is Valid	=	TRUE	Boolean				
						Disable Conditi ons:		ECM:	P0716, P071 [°] P0101, P010 , P0122, P01	2, 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	<=	8192	RPM					>=	0	Enable Time (Sec)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Output Speed Drop	> 650 RPM			>= 1.5 Output Speed Drop >= 1.5 Recover y Fail Time (Sec)	
			AND				(000)	
			Transmission Range is	= Driven range (R,D)				
					 Range_Disable OR	= FALSE See Below	,	
					 Neutral_Range_Enabl e	= TRUE See Below	,	
					And Neutral_Speed_Enabl e	= TRUE See Below	,	
					are TRUE concurrently			
					Transmission_Range _Enable	= TRUE See Below	,	
					Transmission_Input_ Speed_Enable	= TRUE See Below	,	
					No Change in Transfer Case Range (High <-> Low) for	>= 5 Seconds		
					P0723 Status is not	Test Failed This Key On or Fault Active		
					Disable this DTC if the PTO is active Ignition Voltage is	= 1 Boolean >= 8.5996094 Volts		
1					Ignition Voltage is			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Inditior	ns	Time Required	Mil Illun
*					Engine Speed is	>= 3	50	RPM		
					Engine Speed is		500	RPM		
					Engine Speed is					
					within the allowable	>=	5	Sec		
					limits for					
					Enable_Flags Defined					
					Below					
					Transmission_Input_ Speed_Enable is					
					TRUE when either					
	1				TIS Condition 1 or TIS					
					Condition 2 is TRUE:					
					TIS Condition 1 is					
					TRUE when both of					
					the following	>=	0	Enable		
					conditions are			Time (Sec)		
					satsified for					
					Input Speed Delta	<= 409	5.875	RPM		
					Raw Input Speed	>= 5	00	RPM		
					TIS Condition 2 is					
					TRUE when ALL of the next two					
					conditions are					
	1				satisfied					
	1				Input Speed	=	0	RPM		
	1				A Single Power		-			
					Supply is used for all	= TF	RUE	Boolean		
					speed sensors					
										_
					Neutral_Range_Enabl					
	1				e is TRUE when any					
					of the next 3					
					conditions are TRUE					
					Transmission Range	= Ne	utral	ENUM		
					is	- 116	utiai			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Range is	Reverse/N = eutral ENUM Transitonal		
					Transmission Range is	Neutral/Dri = ve ENUM Transitional		
					And when a drop occurs Loop to Loop Drop of Transmission Output Speed is	> 8192 RPM		
					Range_Disable is TRUE when any of the next three conditions are TRUE			
					Transmission Range is	= Park ENUM		
					Transmission Range is	Park/Rever = se ENUM Transitonal		
					Input Clutch is not	= ON (Fully ENUM Applied)		
					Neutral_Speed_Enabl e is TRUE when All of the next three conditions are satsified for	> 1.5 Seconds		
					Transmission Output Speed	> 0 RPM		
					The loop to loop change of the Transmission Output Speed is	< 20 RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	5	Time Required	Mil Illum.
					The loop to loop change of the Transmission Output Speed is	> -60	RPM		
					Transmission_Range _Enable is TRUE when one of the next six conditions is TRUE				
					Transmission Range is	= Neutral	ENUM		
					Transmission Range is	Reverse/N = eutral Transitional	ENUM		
					Transmission Range is	Neutral/Dri = ve Transitional	ENUM		
					Time since a driven range (R,D) has been selected	Table Based Time Please Refer to Table 21 in supporting documents	Sec		
					Transmission Output Speed Sensor Raw Speed	>= 500	RPM		
					Output Speed when a fault was detected	>= 500	RPM		
l I			I I		I		I		1

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Code	Description	Criteria	Value			Conditions			Require	-u	Illum.
				Disable Conditi ons:		TCM: P0973, P0974	, P0976, , P0103,				
P0741	TCC System Stuck OFF	TCC Pressure Either Condition (A) or (B) Must be Met		Кра				>=	2	Enable Time (Sec)	Two Trips
		(A) TCC Slip Error @ TCC On Mode	>= Table I In Supporting	RPM				>=	6	Fail Time (Sec)	
		Mode		RPM				>=	6	Fail Time (Sec)	
		If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter						>=	2	TCC Stuck Off Fail Counter	
					TCC Mode	= On or Lock					
					Engine Speed is within the allowable limits for Engine Torque Lo	>= 5 >= 50	Volts Volts RPM RPM Sec N*m				
F	P0741		OFF Pressure Either Condition (A) or (B) Must be Met (A) TCC Slip Error @ TCC On Mode (B) TCC Slip @ Lock On Mode If Above Conditions Have been Met, and Fail Timer Expired, Increment	OFF Pressure	OFF Pressure	OFF Pressure	OFF Pressure 2 750 Npa Either Condition (A) or (B) Must be Met Either Condition (A) or (B) Must be Met Refer to Table 1 in Table 1 in Person @ TCC On Mode RPM Supporting Documents RPM (B) TCC Slip @ Lock On Mode >= 130 RPM (B) TCC Slip @ Lock On Mode >= 130 RPM If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter >= 0 or Lock Image: State of the state	OFF Pressure	OFF Pressure 2 7.50 Npa 2 Either Condition (A) or (B) Must be Met Refer to Table 1 in Supporting Documents Refer to Table 1 in Supporting Documents >= >= (B) TCC Slip (B) TCC Slip (C) Code >= 130 RPM >= (B) TCC Slip (B) TCC	OFF Pressure 2 730 Npa 2 2 Either Condition (A) or (B) Must be Met Refer to Table 1 in Supporting Documents Refer to Table 1 in Supporting Documents >= 6 (B) TCC Slip @ Lock On >= 130 RPM Mode >= 6 If Above Conditions Have been Expired, Increment Fail Counter >= 130 RPM >= 2 TCC Mode = On or Lock >= 2 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock >= 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock >= 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock >= 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock >= 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock >= 2 If Above Conditions Have been Expired, Increment Fail Counter TCC Mode = On or Lock = 30 S	20741 ICC System Suck OFF ICC Signers Suck Beroro RCC >= 750 Kpa >= 2 Time (Sec) Either Condition (A) or (B) Must be Met Refer to Table 1 in Supporting Documents RPM Documents >= 6 Time (Sec) (B) TCC Stip (B) TCC Stip Occuments = Table 1 in Supporting Documents RPM Documents >= 6 Time (Sec) (B) TCC Stip (B) TCC Stip (Condition KA) Mode = 130 RPM >= 6 Time (Sec) If Above Conditions Have been Met, and Fail Time Expired, Increment TCC Mode = On or Lock = 2 Stuck Off Fail Counter If all Counter Time Expired, Increment TCC Mode = On or Lock = 2 Off Fail Counter Increment Fail Counter Time Engine Speed is within the allowable >= 5 Sec Imits for Engine Torque bit >= 5 N'm

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
oyotom	0000	Booonption	ontona		Throttle Position Hi	<=	99.998474	Pct		
					2nd Gear Ratio Lo		2.1948242	Ratio		
					2nd Gear Ratio High	<=	2.5251465	Ratio		
					3rd Gear Ratio Lo	>=	1.4228516	Ratio		
					3rd Gear Ratio High	<=	1.637085	Ratio		
					4th Gear Ratio Lo	>=	1.069458	Ratio		
					4th Gear Ratio High	<=	1.2304688	Ratio		
					5th Gear Ratio Lo	>=	0.7905273	Ratio		
					5th Gear Ratio Hi	<=	0.9095459	Ratio		
					6th Gear Ratio Lo	>=	0.6230469	Ratio		
					6th Gear Ratio High	<=	0.7169189	Ratio		
					Transmission Fluid Temperature Lo	>=	-6.65625	°C		
					Transmission Fluid Temperature Hi	<=	130	°C		
					PTO Not Active	=	TRUE	Boolean		
					Engine Torque Signal Valid	=	TRUE	Boolean		
					Throttle Position Signal Valid	=	TRUE	Boolean		
					Dynamic Mode	=	FALSE	Boolean		
					P0741 Status is	¥	Test Failed This Key On or Fault Active			
				RWD3 SECTION Pa	ge 401 of 495			9	OF 9 SECTIONS	I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresh Value		Secondary Malfunction		Enable Conditio			Time Requir		Mil Illum.
Gystein	0000	Description				Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P07 P0723, F ECM: P0 P0106, P P0172, P P0202, P P0206, P P0206, P	716, P07 20742, P2 101, P01 0107, P0 0174, P0 0203, P0 0207, P0 0302, P0 0306, P0					
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed TCC Slip Speed	>= <=	-50 13	RPM RPM					>=	2.5	Fail Time	One Trip
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter								>=	6	(Sec) Fail Counter	
							TCC Mode		Off					
							Enable test if Cmnd Gear = 1stFW and value true	=	1	Boolean				
							Enable test if Cmnd Gear = 2nd and value true	=	0	Boolean				
I							Engine Speed Hi Engine Speed Lo	<=	6000 500	RPM RPM				

Component/	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction		Enable Condition		Time Required	Mi Illun
System	Code	Description	Criteria	value		<=	511	KPH	Required	mun
					Vehicle Speed HI Vehicle Speed Lo	<= >=	1	KPH KPH		
					Engine Torque Hi	<=	8191.875	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	>=	5.0003052	Pct		
					AND Max Vehicle Speed to Meet Throttle Enable	<=	8	KPH		
					Once Hyst High has been met, the enable will remain while Throttle Position	>=	2.0004272	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		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshold Value	l	Secondary Malfunction		Enable Condition	s	Time Required	Mil Illum.
							Disable if Air Purge active and value false	=	0	Boolean		
							RVT Diagnostic Active Ignition Voltage Ignition Voltage Vehicle Speed Engine Speed Engine Speed is within the allowable limits for Engine Torque Signal Valid Throttle Position Signal Valid	- ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,	FALSE 8.5996094 31.999023 511 350 7500 5 TRUE TRUE	Boolean V V KPH RPM RPM Sec Boolean Boolean		
							P0742 Status is	4	Test Failed This Key On or Fault Active			
						Disable Conditi ons:	for DTC's:	P0723, ECM: 1 P0106, P0172, P0202, P0206, P0301, P0305,	20716, P0717 P0741, P276 P0101, P0102 P0107, P010 P0174, P017 P0203, P020 P0207, P020 P0302, P030 P0306, P030 P042E	63, P2764 2, P0103, 08, P0171, 75, P0201, 04, P0205, 08, P0300, 03, P0304,		
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>=	400	RPM						Two Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	s		Time Requir		Mil Illum.
			Commanded Gear	= 1st Lock rpm								
			Gear Ratio	<= 1.20959473					>=	0.2	Fail Tmr	
			Gear Ratio	>= 1.09436035					=	8	Fail Counts	
			If the above parameters are true									
									¥	0	Neutral Timer (Sec) Fail	
									>=	0.3	Timer (Sec)	
									>=	8	Counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= >= <=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>=	5	Sec				
					Transmission Fluid Temperature	\-	-6.65625	°C				
					Range Shift State	=	Range Shift Completed	ENUM				
					TPS OR	>=	0.5004883	%				
					Output Speed Throttle Position		16	RPM				
					Signal Valid from ECM		TRUE	Boolean				
					Engine Torque Signal Valid from ECM, High side driver is enabled	=	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Jystem		Description	Gilleria	Value	Disable Conditi ons:	High-Side Driver is Enabled Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present MIL not Illuminated for DTC's:	= TRUE Boolean = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0106, P0174, P0175, P0201, P0105, P0201, P01075, P0201, P0106, P0107, P0106, P		
							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 Commanded Gear	>= 400 = 3rd	RPM Gear				One Trip
			Commanded Gear has Achieved 1st Locked OR 1st Free- Wheel OR 2nd with Mode 2 Sol. Commanded On	= TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio			Time Require	d	Mil Illum
			If the above parameters are true						Please Refer to able 16 in	Neutral Timer	
			Command 4th Gear once Output Shaft Speed	<= 400 RPM >= 3.82568359				S	Supporting	(Sec)	
			And Gear Ratio	<= 4.22839355						Fail	
								>=	1.5	Timer (Sec)	
						0.5000004) (= 14 =	>=	5	Counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.5996094 <= 31.999023 >= 350 <= 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for	>= 5	Sec				
					High-Side Driver is Enabled	= TRUE	Boolean				
					Throttle Position Signal Valid from ECM	= TRUE	Boolean				
					Output Speed OR	>= 16	RPM				
					TPS	>= 0.5004883	%				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Range Shift State	= Range Shift Completed ENUM		
					Transmission Fluid Temperature Input Speed Sensor	>= -0.00025 °C		
					fault Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present			
				Disabl Condi ons	ti for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve		Shift Solenoid Valve B Stuck Off	Fail Cas e 1 Commanded Gear	= 1st Locked				One Trip
			Gear Box Slip	>= 400 RPM			Please Refer to Neutral >= Table 5 in Timer Supporting (Sec) Documents	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	IS		Time Requir		Mil Illum.
Jystem	oue	Description	Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio						>=	1	Sec	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is	<=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM	>=	3	counts	
					within the allowable limits for Output Speed OR	>=	5 16	Sec RPM				
					TPS	>=	0.5004883	%				
					Range Shift State	=	Range Shift Completed	ENUM				
					Transmission Fluid Temperature High-Side Driver is	>=	-6.65625	°C				
					Throttle Position Signal Valid from ECM		TRUE TRUE	Boolean Boolean				
					Input Speed Sensor fault	=	FALSE	Boolean				
					Output Speed Sensor fault	=	FALSE	Boolean				
					Default Gear Option is not present	=	TRUE					
					I							

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	k	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value	Disable		TCM: P0716, P0717, P0722,	Requirea	mum.
					Conditi	for DTC's:	P0723, P182E		
					ons:				
							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		
			<u>Fail</u>						One
ariable Bleed		Pressure Control (PC)							Trip
olenoid (VBS)	P0776	Solenoid B Stuck Off [C35R]	State 3rd Gear						
			Commanded	= 3rd	Coor				
			Gear	= 3rd	Gear				
			Gearbox Slip	>= 400	RPM				
								Please	
								Refer to Neutr	
								Supporting (Sec	
								Documents	
			Command						
			4th Gear	<= 400	RPM				
			once Output Shaft Speed	< <u> </u>					
			Shan Speed						
			If Gear Ratio	>= 1.09436035					
			•	RWD3 SECT	ION Pag	ge 410 of 495	9	OF 9 SECTIONS	•

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria And Gear Ratio	<= 1.20959473	Manufiction	Conditions		inum.
							Fail >= 3 Timer (Sec)	
			It the above condiations are true, Increment 3rd gear fail counter				3rd Gear >= 3 Fail Counts	
			and C35R Fail counter				or 3-5R Clutch Fail Counts	
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 2</u> State 5th Gear					
			Commanded Gear	= 5th Gear				
			Gearbox Slip	>= 400 Rpm			Please Refer to Neutral >= Table 5 in Timer Supporting (Sec) Documents	
			Intrusive Test: Command 6th Gear					
			lf attained Gear=6th gear Time	>= COTAble 3 In Time				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum.
System	Coue	Description	It the above condiations are true, Increment 5th gear fail counter	V UIUG			Contractor		>=	3	5th Gear Fail Counts	
			and C35R Fail counter						>=	14	or 3-5R Clutch Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending	= = =	FALSE FALSE FALSE	Boolean Boolean Boolean				
					indication TPS validity flag Hydraulic System Pressurized	=	TRUE	Boolean Boolean				
					Minimum output speed for RVT A OR B (A) Output speed	>=	0	RPM				
					enable (B) Accelerator Pedal enable Common Enable	>= >=	16 0.5004883	RPM Pct				
					Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= <= >= <=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM				
					Engine Speed is within the allowable limits for Throttle Position	>=	5 TRUE	Sec Boolean				
					Signal valid HSD Enabled Transmission Fluid Temperature	=	TRUE -6.65625	Boolean °C				

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	= FALSE Boolean		
					fault Default Gear Option is not present			
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solinoid B Stuck On [C35R] (Steady State)	<u>Fail</u> <u>Cas</u> <u>e 1</u> Case: Steady State 1st					One Trip
			Attained Gear slip	>= 400 RPM				
			If the Above is True for Time					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Intrusive test: (CBR1 clutch exhausted)					
			Gear Ratio	<= 1.60864258				
			If the above	>= 1.45544434				
			parameters are true					
								Fail Timer (Sec)
								Fail ount in st Gear
							>= 3	or Total Fail Counts
			<u>Fail</u> <u>Cas</u> <u>e 2</u> Case: Steady State 2nd gear					
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
			If the Above is True for Time	>= Refer to Sec				
			Intrusive test: (CB26 clutch exhausted)					
							Fail >= 1.1 Timer (Sec) Fail	
							>= 3 Count Count Gear or	in
							Total >= 3 Fail Count	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		Decemption	F <u>ail</u> Cas Case: Steady <u>e 3</u> State 4th gear					
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
			If the Above is True for Time					
			Intrusive test: (C1234 clutch exhausted)					
				<= 0.89465332 >= 0.80944824				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions		Time Require		Mil Illum.
							>=	1.1	Fail Timer (Sec)	
							>=	3	Fail Count in 4th Gear	
									or	
							>=	3	Total Fail Counts	
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 4</u> State 6th gear							
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec						
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec						
			If the Above is True for Time							

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction		Enable Condition	c		Time Requir		Mil Illum.
System	Code	Description	Criteria	value	Manunction		Condition	s		Requir	ea	mum.
			Intrusive test: (CB26 clutch exhausted)									
				<= 0.89465332 >= 0.80944824					>=	1.1 3	Fail Timer (Sec) counts	
			If the above parameters are true	0.00044024						0		
									>=	1.1	Fail Timer (Sec)	
									>=	3	Fail Count in 6th Gear	
											or	
									>=	3	Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag HSD Enabled	=	TRUE TRUE	Boolean Boolean				
					Hydraulic_System_Pr essurized	=	TRUE	Boolean				
					A OR B (A) Output speed enable	>=	16	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo Ignition Voltage Hi	>= <=	8.5996094 31.999023	Volts Volts				
I					Engine Speed Lo	>=	350	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	ıs	Time Required	Mil Illum.
Oystein	ooue	Description	Onterna	Fuldo	Engine Speed Hi	<=	7500	RPM	roquirou	
					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		
				Disable Conditi ons:	for DTC's:	TCM: P0723	P0716, P071 [°] , P182E	7, P0722,		
						P0106 P0172 P0202 P0206 P0301 P0305	P0101, P010, p0107, P01 P0174, P01 P0203, P02 P0207, P02 P0302, P03 P0306, P03 P042E	08, P0171, 75, P0201, 04, P0205, 08, P0300, 03, P0304,		
							, 1 072L			

Component/	Fault	Monitor Strategy	Malfunction	Threshold Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	value		Walturiction	Conditions	Required	
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)	= TRUE I	Boolean				One Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized					
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command					
			Range Shift Status	≠ Initial Clutch Control					
			Attained Gear Slip	<= 40 1	RPM				
			If the above conditions are true run appropriate Fail 1 Timers Below:						
			fail timer 1 (3-1 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (3-2 shifting with Throttle)	>= 0.29980469 Time				
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5 Time				
			fail timer 1 (3-4 shifting with Throttle)	>= 0.29980469 Time				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5 Time				
			fail timer 1 (3-5 shifting with Throttle)	>= 0.29980469				
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5 Time				
			fail timer 1 (5-3 shifting with Throttle)	>= 0.29980469 Time				
			fail timer 1 (5-3 shifting with Closed Throttle)	>= 0.5 Time				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.29980469				
			fail timer 1 (5-4 shifting with Closed Throttle)	Fail >= 0.5 Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1	Fail >= 0.29980469 Time (Sec) Fail				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer sec 1, and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter					
			3rd gear fail counter				3rd gear >= 3 fail counts OR	
			5th gear fail counter				5th gear >= 3 fail counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Total fail counter				OR >= 5 total fail counts	
					TUT Enable temperature			
					Input Speed Sensor fault Output Speed Sensor	= FALSE Boolean		
					fault Command / Attained	= FALSE Boolean ≠ 1st Boolean		
					Gear High Side Driver ON			
					output speed limit for TUT	>= 100 RPM		
					input speed limit for TUT PRNDL state	>= 150 RPM		
					defaulted IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode HSD Enabled	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

Component/	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System		Pressure Control (PC)	<u>Fail</u> <u>Cas</u> Case: Steady			Conditions	กรุนแรน	One Trip
Variable Bleed Solenoid (VBS)		Solenoid C Stuck Off [C456] (Steady State)	<u>e 1</u> State 4th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Time Cal	
			Intrusive test: commanded 5th gear					
			lf attained Gear ≠5th for time	>= Supporting Time				
			if the above conditions have been met					
			Increment 4th Gear Fail Counter				4th Gear >= 3 Fail Count OR	
			and C456 Fail Counters				C456 >= 14 Fail Counts	
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 2</u> State 5th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Time Cal	

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition			Tim Requi		Mil Illum
System	Soue	υσοσιμισπ	if the above conditions have been met	t uluo			2 chantion			····yuli		
			Increment 6th Gear Fail Counter and C456 Fail Counter						>=	3	6th Gear Fail Count	
											OR	
			and C456 Fail Counter						>=	14	C456 Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending	=	FALSE	Boolean				
					indication TPS validity flag	=	TRUE	Boolean				
					Hydraulic System Pressurized	=	TRUE	Boolean				
					Minimum output speed for RVT A OR B	>=	0	RPM				
					A OR B (A) Output speed enable	>=	16	RPM				
					(B) Accelerator Pedal enable Common Enable	>=	0.5004883	Pct				
					Criteria	<u> </u>	9 5006004	Valta				
					Ignition Voltage Lo Ignition Voltage Hi	>= <=	8.5996094 31.999023	Volts Volts				
					Engine Speed Lo	>=	350	RPM				
					Engine Speed Hi	<=	7500	RPM				
					Engine Speed is within the allowable limits for		5	Sec				
					Throttle Position Signal valid	_	TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		Decomption			HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present			
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC)	<u>Fail</u> <u>Cas</u> <u>e 1</u> Case: Steady State 1st					One Trip
			Attained Gear slip If the Above is True for Time	Table Based Time Please Refer to Enable				
1	I			RWD3 SECTION Page	l 127 of 495	0	OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Gystem		Description	Intrusive test: (CBR1 clutch exhausted)					
			Gear Ratio	<= 1.20959473				
			Gear Ratio	>= 1.09436035				
			If the above parameters are true					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 2 Count in 1st Gear	
							or Total >= 3 Fail Counts	
			<u>Fail</u> <u>Cas</u> <u>e 2</u> Case Steady State 2nd					
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
			If the Above is True for Time	>= Refer to Sec				
			Intrusive test: (CB26 clutch exhausted)					
							Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 2nd Gear	
							or >= 3 Total fail counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> <u>Cas</u> <u>e 3</u> Case Steady State 3rd					
			Max Delta Output Speed Hysteresis					
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time					
			Intrusive test: (C35R clutch exhausted)					
				<= 1.20959473 >= 1.09436035			Fail	
							>= 1.1 Timer (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS		Time Requir		M Illu
-									>=	3	Fail Count in 3rd Gear	
										OR		
									>=	3	Total Fail Counts	
					PRNDL State defaulted	=	FALSE	Boolean				
					inhibit RVT	=	FALSE	Boolean				
					IMS fault pending indication	=	FALSE	Boolean				
					output speed	>=	0	RPM				
					TPS validity flag	=	TRUE	Boolean				
					HSD Enabled Hydraulic_System_Pr	=	TRUE	Boolean				
					essurized	=	TRUE	Boolean				
					A OR B (A) Output speed enable	>=	16	Nm				
					(B) Accelerator Pedal enable	>=	0.5004883	Nm				
					Ignition Voltage Lo	>=	8.5996094	Volts				
					Ignition Voltage Hi	<=	31.999023	Volts				
					Engine Speed Lo	>=	350	RPM				
					Engine Speed Hi Engine Speed is	<=	7500	RPM				
					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				

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 Default Gear Option is not present	= FALSE Boolean = FALSE Boolean = TRUE		
				Disable Conditi ons:	MIL not Illuminated	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		
			Primary Offgoing					One Trip
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized RWD3 SECTION Pa			OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
e jetom		2000.19101	Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip	<= 40 RPM				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			with throttle) fail timer 1 (4-1 shifting without	>= 0.29980469 Time (Sec) >= 0.5 Time (Sec)				
			throttle) fail timer 1 (4-2 shifting with throttle)	Fail >= 0.29980469 Time				
			fail timer 1 (4-2 shifting without throttle)	Fail >= 0.5 Time				
			fail timer 1					
			fail timer 1 (4-3 shifting without throttle)	Fail >= 0.5 Time (Sec)				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
oystem	0006	Description	fail timer 1	Fail >= 0.29980469 Time (Sec)				
			fail timer 1 (5-3 shifting without throttle)	Fail >= 0.5 Time (Sec)				
			fail timer 1 (6-2 shifting with throttle)	Fail >= 0.29980469 Time (Sec)				
			fail timer 1 (6-2 shifting without throttle)	Fail >= 0.5 Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer sec 1, and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
			4th gear fail counter						>=	3	Fail Counter From 4th Gear	
			5th gear fail counter						>=	3	OR Fail Counter From 5th Gear	
			6th gear fail counter						>=	3	OR Fail Counter From 6th Gear	
			Total fail counter						>=	5	OR Total Fail Counter	
					TUT Enable temperature Input Speed Sensor	-	-6.65625 FALSE	°C Boolean				
					fault Output Speed Sensor fault Command / Attained	=	FALSE	Boolean				
					Gear High Side Driver ON	7	1st	Boolean				
					output speed limit for	\-	TRUE	Boolean RPM				
					TUT input speed limit for TUT	\-	150	RPM				
					PRNDL state defaulted	=	FALSE	Boolean				
I		l			IMS Fault Pending	=	FALSE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Service Fast Learn Mode HSD Enabled	= FALSE Boolean		
				Disal Conc or	iti for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	Fail Tap Up Cas Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boole	n			Special No MIL
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boole	n			
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1 Boole	n			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Park Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	= 1	Boolean				
			Tap Up Switch ON	= TRUE	Boolean			Fail >= 1 Time (Sec	е

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Valu		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Gystem	oode	Description	Fail Tap Up Cas Switch Stuck e 2 in the Up Position in Range 1 Enabled		Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Range 6 Enabled	= 1	Boolean				
			Tap Up Switch Stuck in the Up Position in Neutral Enabled	= 1	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Up Switch Stuck in the Up Position in Park Enabled	= 1 Boolea	ו			
			Tap Up Switch Stuck in the Up Position in Reverse Enabled	= 1 Boolea	ı			
			Tap Up Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be	= TRUE Boolea	ו		Fail >= 600 Time (Sec)	
			Met					
					Time Since Last Range Change	>= 1 Enable Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	<= 31.999023 Volts >= 350 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0815 Status is	Test Failed This Key On or Fault Active		
				Disable Condit ons	i for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	Fail Cas E 1 Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolear				Special No MIL
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolear				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolear				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1 Boolear				
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value	old 9	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1	Boolean				
			Tap Down Switch Stuck in the Down Position in 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	= 1	Boolean				
			Tap Down Switch ON	= TRUE	Boolean			>= 1	sec

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Fail Tap Down Cas Switch Stuck e 2 Switch Down Position in Range 1	= 1 Boolean			Nequireu	
			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 Baalaan				
			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 Declase				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1 Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Jystem	Coue	Description	Tap Down Switch Stuck in the Down Position in Neutral Enabled	= 0 Boolean		Conditions	noquirou	
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0 Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	= 0 Boolean				
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	- IRUE BOOIean			>= 600 sec	
					Time Since Last Range Change	>= 1 Enable Time (Sec)		

	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Criteria	Disable	Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	Conditi ons: = TRUE Boolean	for DTC's:	P1876, P1877, P1915, P1761 ECM: None	Fail >= 60 Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi			
					Engine Speed Lo	>= 350 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for			
					P0826 Status is	Test Failed This Key On or Fault Active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		eshold alue	Secondary Malfunction		Enable Condition	s		Time Requir		Mil Illum.
					Disat Conc or	iti for DTC's	:	: P1761 : None					
Variable Bleed Solenoid (VBS)	P0961	Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS)	The HWIO reports an invalid voltage (out of range) error flag	= TRU	JE Boolea	in				>=	4.4	Fail Time (Sec)	Two Trips
										out of	5	Sample Time (Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits fo	e <= >= <= <=	8.5996094 31.999023 350 7500 5	Volts Volts RPM RPM Sec				
					Disat Conc or	iti for DTC's	:	None None					
Variable Bleed Solenoid (VBS)	P0962	Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS)	The HWIO reports a low voltage (ground short) error flag	= TRL	IE Boolea	In				>=	1.5	Fail Time (Sec)	One Trip
										out of	1.875	Sample Time (Sec)	
						Ignition Voltage	e >=	8.5996094	Volts				
						Ignition Voltage	; <=	31.999023	Volts				
						Engine Speed	i >=	350	RPM				
						Engine Speed	<=	7500	RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Conditions			Time Require	ed	Mil Illum.
						Engine Speed is within the allowable limits for		ec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:						
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 E	Boolean				>=	4.4	Fail Time (Sec)	Two Trips
									out of	5	Sample Time (Sec)	
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Vo >= 350 RF <= 7500 RF	lts				
					Disable Conditi ons:	MIL not Illuminated for DTC's:						
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 E	3oolean				>=	0.3	Fail Time (Sec)	One Trip
						Ignition Voltage	>= 8.5996094 Vc	lte	out of	0.375	Sample Time (Sec)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System	Code	Description	Gineira		Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 350 RPM <= 7500 RPM	Roquirou	
					P0966 Status is not	Test Failed This Key On or Fault Active		
				Disable Conditi ons:	for 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				Fail >= 0.3 Time (Sec)	One Trip
							out Sample of 0.375 Time of (Sec)	
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	>= 8.5996094 Volts <=		
					P0967 Status is not	Test Failed This Key On or Fault Active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction	Enable Conditions		Time Require	d	Mil Illum.
					Disable Conditi ons:	MIL not Illuminated for DTC's:					
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean			>=	0.3	Fail Time (Sec)	One Trip
								out of	0.375	Sample Time (Sec)	
						P0970 Status is not	= Test Failed This Key On or Fault Active				
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 350 RPM <= 7500 RPM				
					Disable Conditi ons:	MIL not Illuminated for DTC's:					
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag		Boolean			>=	0.3	Fail Time (Sec)	One Trip
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction		Enable Condition	s		Time Require		Mil Illum.
										out of	0.375	Sample Time (Sec)	
						P0971 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<= >= <= >=	8.5996094 31.999023 350 7500 5	Volts Volts RPM RPM Sec				
					Disable Conditi ons:	MIL not Illuminated for DTC's:							
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE	Boolean					>=	1.2	Fail Time (Sec)	One Trip
										out of	1.5	Sample Time (Sec)	
						P0973 Status is not	=	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed	<= >=	8.5996094 31.999023 350 7500	Volts Volts RPM RPM				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed is within the allowable limits for	>= 5 Sec		
				Disable Conditi ons:				
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			Fail >= 1.2 Time (Sec)	Two Trips
							out 1.5 Sample of 1.5 Time (Sec)	
					P0974 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage	>= 8.5996094 Volts		
					Ignition Voltage			
					Engine Speed	>= 350 RPM		
					Engine Speed			
					Engine Speed is within the allowable limits for	>= 5 Sec		
				Disable Conditi ons:				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Mode 3 Multiplex Valve		Shift Solenoid BControl Circuit Low (Mode 3 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 1.2 Sec	Two Trips
							out 1.5 Sec	
					P0976 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is	<= 31.999023 Volts >= 350 RPM <= 7500 RPM		
					within the allowable limits for			
				Disable Conditi ons:	for DTC's:			
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 1.2 Sec	One Trip
			liag				out 1.5 Sec	
					P0977 Status is not	Test Failed This Key On or Fault Active		
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditi ons:	for 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	= 1RUE Boolean >= 350 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditi ons:	for DTC's:			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	Fail Cas e 1 range	Transition 1			noquireu	One Trip
			Previous range	PRINDL_DIN Range e6				
			Previous range					
			Range Shift State					
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position Available	= TRUE				
			Throttle Position	>= 8.00018311 pct				
			Output Speed	>= 200 rpm				
			Engine Torque	>= 50 Nm				
			Engine Torque	<= 8191.75 Nm				
			If the above conditions are met then Increment Fail Timer				>= 1 Fail Second	s

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Fail Timer has Expired then Increment Fail Counter					>= 5 Fail Counts	
			<u>Fail</u> <u>Cas</u> Output <u>e 2</u> Speed	<= 70	rpm				
			The following PRNDL sequence events occur in this exact order:						
			PRNDL state	= Drive 6 (bit state 0110)	Range				
			PRNDL state = Drive 6 for	>= 1	Sec				
			PRNDL state	Transition 8 = (bit state 0111)	Range				
			PRNDL state	= Drive 6 (bit state 0110)	Range				
			PRNDL state	1110)	Range				
			Above sequencing occurs in	<= 1	Sec				
			Neutral Idle Mode						
			If all conditions above are met Increment						
		l	delay Timer			l			I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction		Enable Conditior			Time Requir		Mil Illum.
			If the below two conditions are met Increment Fail Timer delay timer	>=	1	Sec					>=	3	Fail Seconds	
			Input Speed If Fail Timer has Expired then Increment Fail Counter		400	Sec					>=	2	Fail Counts	
			<u>Fail</u> <u>Cas</u> Current <u>e 3</u> range	=	Transition 13 (bit state 0010)		Previous range	¥	CeTRGR_e _PRNDL_D rive5					
			Engine Torque	>=	-8192	Nm	Previous range	¥	CeTRGR_e _PRNDL_D rive5					
			Engine Torque	<=	8191.75	Nm	IMS is 7 position configuration	=	0	Boolean				
			If the above conditions are met then, Increment Fail Timer				If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satsified when the "current range" = "Transition 13"				>=	0.225	Seconds	
			If Fail Timer has Expired then Increment Fail Counter								>=	15	Fail Counts	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Threshol Value	d	Secondary Malfunction	Enable Conditions	Time Require		Mil Illum.
			Fail Cas e 4 Current range	-	Transition 8 (bit state 0111)	Range	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8				
			Inhibit bit (see definition)	=	FALSE		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)				
			Steady State Engine Torque	>=	30	Nm					
			Steady State Engine Torque	<=	8191.75	Nm					
			If the above conditions are met then Increment Fail Timer						>= 0.225	Seconds	
			If the above Condtions have been met, Increment Fail Counter						>= 15	Fail Counts	
			<u>Fail</u> <u>Cas</u> <u>e 5</u> Throttle Position Available	=	TRUE	Boolean					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			The following PRNDL sequence events occur in this exact order:					
			PRNDL State	= Reverse (bit state 1100) Range				
			PRNDL State	Transition 11 = (bit state Range 0100)				
			PRNDL State	= Neutral (bit state 0101) Range				
			PRNDL State	Transition 11 = (bit state Range 0100)				
			Above sequencing occurs in	<= 1 Sec				
			Then delay timer increments Delay timer	>= 5 sec				
			Range Shift State	= Range Shift Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position	>= 8.00018311 pct				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Output Speed If the above conditions are met Increment Fail Timer	>= 200 rpm			>= 20 Seconds	
			<u>Fail</u> <u>Cas</u> <u>e 6</u> Current range		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 or	✓ Neutral (bit ≠ state 0101)		
					Previous transition state	Transition ≠ 8 (bit state 0111)		
					Fail case 5 delay timer	= 0 sec		
			If the above Condtions are met then, Increment Fail timer				>= 6.25 Seconds	

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditior		Time Require		Mil Illum.
System	Code	Description	Fail	value	Manufiction	Condition	15	Kequit	eu	inum.
			<u>Cas</u> <u>e 7</u> Current PRNDL State	PRNDL = circuit ABCP Range = 1101						
			and							
			Previous PRNDL state	PRNDL = circuit ABCP Range =1111						
			Input Speed	>= 150 RPM						
			Reverse Trans Ratio	<= 2.97595215 ratio						
			Reverse Trans Ratio	>= 3.4239502 ratio						
			If the above Condtions are met then, Increment Fail timer					>= 6.25	Seconds	
			P182E will report test fail when any of the above 7 fail cases are met							
					Ignition Voltage Lo	>= 8.5996094	Volts			
					Ignition Voltage Hi	<= 31.999023	Volts			
					Engine Speed Lo Engine Speed Hi	>= 350	RPM 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	Thresho Value		Secondary Malfunction	Enable Conditions			Time Requir		Mil Illum.
					Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0723, P07C0, P07B P077C, P077D ECM: P0101, P0102, P0106, P0107, P0108 P0172, P0174, P0175 P0202, P0203, P0204 P0206, P0207, P0208 P0301, P0302, P0303 P0305, P0306, P0307 P0401, P042E	F, , P0103, 3, P0171, 5, P0201, 4, P0205, 3, P0300, 3, P0304,				
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range TUTD Enable Switch is	Park or = Reverse or Neutral = TRUE	Range State Boolean							Special No MIL
			Active						>=	3	Fail Time (Sec)	
									>=	5	Fail Counts	
						Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	<= 31.999023 <= 511 >= 350 <= 7500	Volts Volts KPH RPM RPM Sec				
						P1876 Status is	Test Failed This Key On or Fault Active					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria		Thresho Value		Secondary Malfunction	Enable Conditions		Time Require	d	Mil Illum.
						Disable Conditi ons:	for DTC's:	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None				
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is	¥	Park or Neutral	Enumer ation						One Trip
			The following events must occur Sequentially									
			Initial Engine speed	<=	50	RPM			>=	0.25	Enable Time (Sec)	
			Then Engine Speed Between Following Cals									
			Engine Speed Lo Hist	>=	50	RPM						
			Speed Hi Hist	<=	480	RPM			>=	0.06875	Enable Time (Sec)	
			Then Final Engine Speed	>=	525	RPM						
			Final Transmission Input Speed	>=	200	RPM			>=	1.25	Fail Time (Sec)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresho Value		Secondary Malfunction		Enable Conditior	IS		Time Require		Mil Illum.
						DTC has Ran this Key Cycle? Ignition Voltage Lo Ignition Voltage Hi Ignition Voltage Hyst	= >= <=	FALSE 6 31.999023	Boolean V V				
						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 Conditi ons:			P0722, P0723 None	3				
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 Ioop)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thresh Value		Secondary Malfunction	Enable Conditio			Time Require		Mil Illum.
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts				Out of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available ECM run/crank active status	= TRUE = TRUE	Boolean Boolean				
					Disable Conditi ons:	for DTC's:	TCM: None ECM: None					
Transmission Control Module (TCM)	P2535	Ignition Switch Run/Start Position Circuit High	TCM Run crank active (based on voltage thresholds below)	= TRUE	Boolean							One Trip
			Ignition Voltage High Hyst (run crank goes true when above this value)	5	Volts				>=	280	Fail Counts (25ms Ioop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2	Volts				Out of	280	Sample Counts (25ms loop)	
						ECM run/crank active status available	= TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditi ons:				
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>e 1</u> State 2nd Gear Gear slip Intrusive test: commanded 3rd gear	Table Based			Please See Table 5 For Neutral Time Cal (Sec)	One Trip
			If attained Gear = 3rd for Time If Above Conditions have been met Increment 2nd gear fail count and CB26 Fail Count	>= see Table 2 Time in Supporting (Sec) Documents			>= 3 Fail Count or CB26 >= 14 Fail Count	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditio		Time Require		Mil Illum.
			Fail Cas Case: Steady e 2 State 6th Gear							
			Gear slip	>= 400 RPM				Please See >= Table 5 For Neutral Time Cal	e Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear							
			If attained Gear = 5th For Time	>= see Table 2 Time						
			If Above Conditions have been met, Increment 5th gear fail counter					>= 3	5th Gear Fail Count	
			and CB26 Fail Count					>= 14	or CB26 Fail Count	
					PRNDL State defaulted	= FALSE	Boolean			
					inhibit RVT		Boolean			
					IMS fault pending indication	TALOL	Boolean			
					TPS validity flag Hydraulic System		Boolean Boolean			
					Pressurized Minimum output					
l			l		speed for RVT	>= 0	RPM			l

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Condition	s	Time Required	Mil Illum.
System	Code	Description	Criteria	Value			3	Required	inuini.
					A OR B				
					(A) Output speed enable	>= 16	RPM		
					(B) Accelerator Pedal enable	>= 0.5004883	Pct		
					Common Enable				
					Criteria		N / . 11 .		
					Ignition Voltage Lo	>= 8.5996094	Volts		
					Ignition Voltage Hi		Volts RPM		
					Engine Speed Lo Engine Speed Hi		RPM		
					Engine Speed is				
					within the allowable limits for	>= 5	Sec		
					Throttle Position		Boolean		
					Signal valid				
					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			′, P0722,		
				Conditi	for DTC's:	P0723, P182E			
				ons:					
						ECM: P0101, P0102	2. P0103.		
						P0106, P0107, P010			
						P0172, P0174, P017			
						P0202, P0203, P020			
						P0206, P0207, P020			
						P0301, P0302, P030			
						P0305, P0306, P030 P0401, P042E	J7, P0308,		
						F 040 I, F042E			

Component/	Fault Code	Monitor Strategy	Malfunction	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
System Variable Bleed Solenoid (VBS)	P2715	Description Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Criteria Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Delay Timers)			Conditions	Keyuneu	One Trip
			Primary Oncoming Clutch Pressure Command Status	= Maximum pressurized				
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command				
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip	<= 40 RPM				
			If above coditons are true, increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-1 shifting with throttle)	Fail >= 0.29980469 Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (2-1 shifting without throttle)					
			fail timer 1 (2-3 shifting with throttle)	>= 0.29980469 Time				
			fail timer 1 (2-3 shifting without throttle)	>= 0.5 Time				
			fail timer 1 (2-4 shifting with throttle)					
			fail timer 1 (2-4 shifting without throttle)					
			fail timer 1 (6-4 shifting with throttle)	>= 0.29980469 Time				
			fail timer 1 (6-4 shifting without throttle)	>= 0.5 Time				
			fail timer 1 (6-5 shifting with throttle)	>= 0.29980469 Time				
			fail timer 1 (6-5 shifting without throttle)	Fail >= 0.5 Time (Sec)				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer sec 1, and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter					
			2nd gear fail counter				Fail Counter >= 3 From 2nd Gear OR	
			6th gear fail counter				Fail >= 3 Counter From 6th Gear OR	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Condition	s		Time Requir		Mil Illum.
			total fail counter					>=	5	Total Fail Counter	
					TUT Enable temperature		°C				
					Input Speed Sensor fault Output Speed Sensor	= FALSE	Boolean				
					fault Command / Attained	= FALSE	Boolean				
					Gear High Side Driver ON		Boolean Boolean				
					output speed limit for		RPM				
					TUT input speed limit for TUT	>= 150	RPM				
					PRNDL state defaulted	= FALSE	Boolean				
					IMS Fault Pending		Boolean				
					Service Fast Learn Mode		Boolean				
					HSD Enabled	= TRUE	Boolean				
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717 P0723, P182E	, P0722,				
						ECM: P0101, P0102 P0106, P0107, P010 P0172, P0174, P017 P0202, P0203, P020 P0206, P0207, P020 P0301, P0302, P030 P0305, P0306, P030 P0401, P042E	08, P0171, 75, P0201, 04, P0205, 08, P0300, 03, P0304,				

$ \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c } \hline \begin{tabular}{ c c } \hline \begin{tabular}{ c c } \hline $
Variable Bleed Solenoid (VBS) P2716 Pressure Control (PC) (252 Solenoid D Stuck On (CB20) (Steady State) Eall 2 Case: Steady State 1st Attained Gear slip >= 400 RPM Table Based Time 's Ture for Time Table Based Time Please to COUNTING (Sec) Table Based Time Please adocuments Intrusive test: (CBR1 clutch exhausted) <= 2.49217773 Gear Ratio >= 2.245217773 Z.24584961 Gear Ratio 's re true <= 2.49217773 Gear Ratio >= <= 's re true <= 1.1 's re true <= 2.4584961 's re true <= 2.45217773 Gear Ratio >= 's re true <= 's re true
Gear slip Gear slip If the Above is Tue for Time Time Piezse Fable Table Based Time Piezse Fable Table 4 in supporting documents Gear Ratio Autore test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio Sec 2.48217773 Gear Ratio Sec 2.48217773 Gear Ratio Sec 2.4824961 If the above parameters are true Sec 2.4824961 If the above parameters are true Sec 2.4824961 Sec
Intrusive test: (CBR1 clutch exhausted) Gear Ratio Jean Brue exhausted) Gear Ratio Jean Brue exhausted) Gear Ratio Jean Brue Jean Brue Jean Brue Time Sec) Jean Brue Time Sec) Jean Brue Jean
(CBR1 clutch exhausted) Gear Ratio Sear Ratio Jeaneters are true <= 2.48217773 Sear Ratio Jeaneters are true >= 2.4584961 >= 1.1 Timer (Sec) >= 2 Fail Count in 1st Gear >= 3 Fail Fail Counts
Gear Ratio If the above parameters are true Are true
>= 1.1 Timer (Sec) >= 2 Count in 1st Gear or >= 3 Fail Counts
>= 2 Count in 1st Gear or Total >= 3 Fail Counts
Total >= 3 Fail Counts
Fail
Cas e 2 State 3rd Gear

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
			If the Above is True for Time					
			Intrusive test: (C35R clutch exhausted)					
				<= 2.48217773 >= 2.24584961				
							>= 1.1 T	Fail imer Sec)
							>= 3 Co	Fail unt in Gear
								or

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 3</u> State 4rd Gear				Total >= 3 Fail Counts	
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents				
			If the Above is True for Time					
			Intrusive test: (C1234 clutch exhausted)	RWD3 SECTION Pag	ne 473 of 495	۵	OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
		2000.19101	Gear Ratio	<= 0.70031738 >= 0.63366699				
			are true				Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count in 4th Gear	
							or Total >= 3 Fail Counts	
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 4</u> State 5th Gear					
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
				RWD3 SECTION Pa	ao 474 of 405		OF 9 SECTIONS	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditior			Time Requir		Mil Illum.
			If the Above is True for Time	>= Refer to Sec							
			Intrusive test: (C35R clutch exhausted)								
								>=	1.1	Fail Timer (Sec)	
								>=	3	Fail Count in 5th Gear	
								>=	3	or Total Fail Counts	
					PRNDL State defaulted	= FALSE	Boolean				
					inhibit RVT	= FALSE	Boolean				
					IMS fault pending indication	= FALSE	Boolean				
					output speed TPS validity flag HSD Enabled	>= 0 = TRUE = TRUE	RPM Boolean Boolean				
					HSD Enabled Hydraulic_System_Pr essurized A OR B	= TRUE	Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior		Time Required	Mil Illun
					(A) Output speed enable	>=	16	Nm		
					(B) Accelerator Pedal enable	>=	0.5004883	Nm		
					Ignition Voltage Lo	>=	8.5996094	Volts		
					Ignition Voltage Hi	<=	31.999023	Volts		
					Engine Speed Lo	>=	350	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		
					Default Gear Option is not present		TRUE			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Jystem		Description	Griteria	Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	lioquirou	
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 >= 0.3 Time (Sec) Sample out 0.375 Time of 0.375 (Sec)	One Trip
					P2770 Status is not	Test Failed This Key On or Fault Active		
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable Iimits for	<= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: None ECM: None		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Valu		Secondary Malfunction	Enable Conditions			Time Require	d	Mil Illum.
Variable Bleed Solenoid (VBS)		Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO	= TRUE	Boolean				>=	0.3	Fail Time (Sec)	One Trip
									out of	0.375	Sample Time (Sec)	
						P2721 Status is not	Test Failed This Key On or Fault Active					
						Ignition Voltage Ignition Voltage Engine Speed Engine Speed is within the allowable limits for	<= 31.999023 Vo >= 350 Rf <= 7500 Rf >= 5 S	olts PM PM ec				
					Disable Conditi ons:	for DTC's:						
Variable Bleed Solenoid (VBS)	P2723		<u>Fail</u> <u>Cas</u> Case: Steady <u>e 1</u> State 1st Gear									One Trip
			Gear slip	>= 400	RPM				>= ^T	Please See Table 5 For Neutral Time Cal		

Code E	- · · ·	Malfunction	Threshold	Secondary Molfunction	Enable	Time Do guirro d	Mil
	Description	Criteria Intrusive test: commanded 2nd gear	Value	Malfunction	Conditions	Required	Illum.
		lf attained Gear ≠ 2nd for Time	>= Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
		If Above Conditions have been met, Increment 1st gear fail counter				1st Gear >= 3 Fail Count	
		and C1234 fail counter				>= 14 C1234 Clutch Fail Count	
		Cas Case: Steady					
		Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Timer Cal (Sec)	
		Intrusive test: commanded 3rd gear					
		lf attained Gear ≠ 3rd for Time	>= Please refer to Table 3 in Supporting Documents (Sec)				
			commanded 2nd gear If attained Gear ≠ 2nd for Time If Above Conditions have been met, Increment 1st gear fail counter and C1234 fail counter Fail Cas Case: Steady e_2 State 2nd Gear Gear slip Intrusive test: commanded 3rd gear If attained Gear ≠ 3rd	commanded 2nd gear If attained >= Please refer Shift Gear ≠ 2nd >= Supporting Time for Time >= Conditions Note If Above Conditions have been met, Increment 1st gear fail counter and C1234 fail counter Fail Case Case: Steady e gear slip >= 400 RPM Intrusive test: commanded 3rd gear Shift Intrusive test: commanded 3rd gear Shift If attained Please refer Shift Table 3 in	commanded 2nd gear If attained >= Please refer Shift to Table 3 in Time Gear ≠ 2nd >= Please refer to Table 3 in Time Supporting Csec) If Above Conditions have been met, Increment 1st gear fail counter and C1234 fail counter Fail Cas Case: Steady e 2 State 2nd Gear Gear Intrusive test: commanded and gear Hease refer State 2nd Gear Gear Firstatianed Intrusive test: commanded and gear Please refer Shift to Table 3 in	commanded 2nd gear Please refer to Table 3 in Supporting for Time Shift Time (Sec) If Above Conditions have been met, Increment 1st gear fail counter Please refer (Sec) Shift Time (Sec) and C1234 fail counter and C1234 fail counter Field East Case: Steady e.2 State 2nd Gear slip >= 400 RPM Intrusive test: commanded 3rd gear Please refer to Table 3 in True Shift Time (Sec)	Image: Commanded 2nd gear Please refer Shift If Above for Time of the time of the time of the time of time o

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		nable ditions		Time Require	d	1
			and C1234 fail counter <u>Fail</u>					>=	14	C1234 Clutch Fail Count	Ī
			<u>Cas</u> Case: Steady <u>e 4</u> State 4th Gear					Ple	ease See	Nervivel	
			Gear slip	>= 400 RPM				>= ^{Ta}	ble 5 For Neutral ïme Cal	Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear								
			If attained Gear = 5th For Time								
			If Above Conditions have been met, Increment 4th gear fail counter					>=	3	4th Gear Fail Count	
			and C1234 fail counter					>=	14	or C1234 Clutch Fail Count	
					PRNDL State defaulted	= FAL	SE Boolean				
					inhibit RVT	= FAL	SE Boolean				
					IMS fault pending indication	= FAL	SE Boolean				
					TPS validity flag	= TRI	JE Boolean				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditior	ns	Time Required	Mil Illum.
·					Hydraulic System Pressurized	=	TRUE	Boolean		
					Minimum output speed for RVT	>=	0	RPM		
					A OR B					
					(A) Output speed enable	>=	16	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	>=	350	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			

Component/	Fault	Monitor Strategy	Malfunction	Threshol Value	d	Secondary Malfunction	Enable Conditions	Time	Mil Illum.
System	Code	Description	Criteria	Value	Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	Required	
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming	= TRUE	Boolean				One Trip
			Clutch Pressure Command Status	= Maximum pressurized					
			Primary Offgoing Clutch Pressure Command Status	Clutch = exhaust command					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Range Shift Status	≠ Initial Clutch Control				
			Attained Gear Slip					
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-6 shifting with throttle) fail timer 1	>= 0.29980469 sec				
			(2-6 shifting without throttle)	>= 0.5 sec				
			fail timer 1 (3-5 shifting with throttle) fail timer 1	>= 0.29980469 sec				
			(3-5 shifting without throttle)	- 0.0 300				
			with throttle)	>= 0.29980469 sec				
			fail timer 1 (4-5 shifting without throttle)	- 0.0 300				
			with throttle)	>= 0.29980469 sec				
			fail timer 1 (4-6 shifting without throttle)	>= 0.5 sec				

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Conditio			Tim Requi		Mil Illum.
			4th gear fail counter						>=	3	Fail Counter From 4th Gear	
			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/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum
Uystem		Description	ontena	Disable Conditi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	lingunou	
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)						One Trip
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				
			Min Delta Output Speed Hysteresis	Table 2 in				
			If the Above is True for Time	Table Based Time Please Refer to Table 17 in supporting documents				
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Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	
System	Code	Description	Criteria	Value	Malfunction	Conditions	Requir	red
			Intrusive test: (C35R clutch exhausted)					
				<= 1.20959473 >= 1.09436035				
			If the above parameters are true					
							>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 5th Gear
								OR
							>= 3	Total Fail Counts
			<u>Fail</u> <u>Cas</u> <u>e 2</u> Case: 6th Gear					
			Max Delta Output Speed Hysteresis	>= Refer to 3D Table 1 in rpm/sec				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	M Illu
			Min Delta Output Speed Hysteresis	>= Refer to 3D Table 2 in rpm/sec				
			If the Above is True for Time	>= Reler to Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio If the above parameters					
			are true				Fail >= 1.1 Timer (Sec)	
							Fail >= 3 Count ir 6th Gea	
							OR Total >= 3 Fail Counts	
					PRNDL State defaulted	= FALSE Boolean		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction		Enable Condition	IS	Time Required	M Illu
					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_Pr essurized A OR B	=	TRUE	Boolean		
					(A) Output speed enable	>=	16	Nm		
					(B) Accelerator Pedal enable	>=	0.5004883	Nm		
					Ignition Voltage Lo	>=	8.5996094	Volts		
					Ignition Voltage Hi	<=	31.999023	Volts		
					Engine Speed Lo	>=	350	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.
					Default Gear Option is not present	= TRUE		
				Disable Conditi ons:	for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E		
						ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2729	Pressure Control (PC) Solenoid E Control Circuit Low (C1234 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) Sample out 0.375 Time of (Sec)	One Trip
					P2729 Status is not	Test Failed This Key On or Fault Active	(Sec)	
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= 350 RPM <= 7500 RPM >= 5 Sec		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Condition	s		Time Require	d	Mil Illum.
				Dis Cor	able nditi ons:	MIL not Illuminated for DTC's:						
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 Bool	lean				>=	0.3	Fail Time (Sec)	One Trip
									out of	0.375	Sample Time (Sec)	
						P2730 Status is not	Test Failed This Key On or Fault Active					
						Ignition Voltage	>= 8.5996094	Volt				
						Ignition Voltage	<= 31.999023	Volt				
						Engine Speed	>= 350	RPM				
						Engine Speed	<= 7500	RPM				
						Engine Speed is within the allowable limits for	>= 5	Sec				
				Co	able nditi ons:	MIL not Illuminated for DTC's:						
L												

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Malfunction	Enable Conditions		Time Required			Mil Illum.
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE	Boolean				>=	4.4	Fail Time (Sec)	Two Trips
									out of	5	Sample Time (Sec)	
						P2763 Status is not	Test Failed This Key On or Fault Active					
						Ignition Voltage	>= 8.5996094	Volt				
						Ignition Voltage Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled	>= 350 <= 7500 >= 5	Volt RPM RPM Sec Boolean				
					Disable Conditi ons:)				
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	= TRUE	Boolean				>=	4.4	MPH	One Trip

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Thres Valu			Secondary Malfunction	Enable Conditions			Time Required			Mil Illum.
											out of	5	MPH	
							P2764 Status is not	=	Test Failed This Key On or Fault Active					
							Ignition Voltage	>=	8.5996094	Volt				
							Ignition Voltage	<=	31.999023	Volt				
							Engine Speed	>=	350	RPM				
							Engine Speed		7500	RPM				
							Engine Speed is within the allowable limits for	>=	5	Sec				
							High Side Driver Enabled		TRUE	Boolean				
						Disable Conditi ons:	MIL not Illuminated for DTC's:		P0658, P0659 None)				
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	=	TRUE	Boolean					>=	62	Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>=	0.1125	sec					Out of	70	Sample Counts (≈ 11 seconds)	
							Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= <=	3 8.5996094 31.999023 Run	sec Volt Volt				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditi ons:				
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	>= 8.5996094 Volt <= 31.999023 Volt		
				Disable Conditi ons:				