

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0601	Transmission Electro-Hydraulic Control Module Read Only Memory	Incorrect program/calibrations checksum	= TRUE Boolean	MIL not Illuminated for DTC's:	TCM: P0601 ECM: None	>= 5 Fail Counts	One Trip
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	MIL not Illuminated for DTC's:	TCM: P0603 ECM: None	Runs Continuously	One Trip
Transmission Control Module (TCM)	P0604	Transmission Electro-Hydraulic Control Module Random Access Memory	RAM Read/Write Failure (Single Word)	= TRUE Boolean	MIL not Illuminated for DTC's:	TCM: P0604 ECM: None	>= 5 Fail Counts = 16 Sample Counts	One Trip

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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 Condi tions:	MIL not Illuminated for DTC's: TCM: P062F ECM: None			
Transmission Control Module (TCM)	P0634	Transmission Electro- Hydraulic Control Module Internal Temperature Too High	<u>Fail Case 1</u>	Substrate Temperature	>= 146.29688 °C			>= 5 Fail Time (Sec)	One Trip
			<u>Fail Case 2</u>	Substrate Temperature	>= 50 °C			>= 2 Fail Time (Sec)	
				Ignition Voltage	>= 18 Volts				
				Note: either fail case can set the DTC					
					Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi Substrate Temp Between Temp Range for Time	>= 8.59961 Volts <= 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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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions: MIL not Illuminated for DTC's:	TCM: None ECM: None		
High Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	= TRUE Boolean			>= 3 Fail Counts out of 5 Sample Counts	One Trip
					P0658 Status is not High Side Driver 1 On	= Test Failed This Key On or Fault Active = True Boolean		
					Disable Condi- tions: 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	> Refer to Table 19 in °C supporting documents				Two Trips

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			If TCM substrate temp to power up temp Δ	> Refer to Table 20 in °C supporting documents				
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				>= 3000 Fail Counts (100ms loop)	
			Non- continuous (intermittent) fail conditions will delay resetting fail counter until				Out of 3750 Sample Counts (100ms loop)	
							>= 700 Pass Counts (100ms loop)	
							Out of 875 Sample Counts (100ms loop)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Torque Signal Valid	= TRUE Boolean		
					Accelerator Position Signal Valid	= TRUE Boolean		
					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		
					Brake torque active	= FALSE		
					Below describes the brake torque entry criteria			
					Engine Torque	>= 90 N*m		
					Throttle	>= 30.0003 Pct		
					Transmission Input Speed	<= 200 RPM		
					Vehicle Speed	<= 8 Kph		
					Transmission Range	≠ Park		
					Transmission Range	≠ Neutral		
					PTO	= Not Active		
					Set Brake Torque Active TRUE if above conditions are 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					<p>Clutch used to exit brake torque active</p> <p>The above clutch pressure is greater than this value for one loop</p> <p>Set Brake Torque Active FALSE if above conditions are met for:</p> <p>P0667 Status is</p>	<p>CeTFTD = <u>e_C3_</u> RatIEnbl</p> <p>>= 600 kpa</p> <p>>= 20 Sec</p> <p>Test Failed This Key On or Fault Active</p>		
				<p>Disable Conditions:</p>	<p>MIL not Illuminated for DTC's:</p>	<p>TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730</p> <p>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</p>		

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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 voltage	Type of Sensor Used =	CeTFTI_e_ VoltageDir ectProp				Two Trips
			If TCM Substrate Temperature Sensor =	<= -249 °C				
			If TCM Substrate Temperature Sensor =	>= -249 °C				
			Either condition above will satisfy the fail conditions				>= 60	Fail Timer (Sec)
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0668 Status is	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec 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.
				Disable Condi tions:	MIL not illuminated for DTC's:	TCM: None ECM: None		
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used =	CeTFTI_e_ VoltageDir ectProp				Two Trips
			If TCM Substrate Temperature Sensor =	>= 249 °C				
			Direct Proportional and Temp					
			If TCM Substrate Temperature Sensor =	<= 249 °C				
			Indirect Proportional and Temp					
			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 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P0669 Status is	≠ 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.
					For Hybrids, below conditions must also be met Estimated Motor Power Loss ≥ 0 kW Estimated Motor Power Loss greater than limit for time ≥ 0 Sec Lost Communication with Hybrid Processor Control Module = FALSE Estimated Motor Power Loss Fault = FALSE			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, 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 If transmission oil temp to power up temp Δ	$>$ Refer to Table 20 in supporting documents °C $>$ Refer to Table 18 in supporting documents °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.
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				>= 3000 Fail Counts (100ms loop) 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	>= 8.59961 Volts		
					Ignition Voltage Hi	<= 31.9902 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 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 is within the allowable limits for	>= 5 Sec		
					Brake torque active	= FALSE		
					Below describes the brake torque entry criteria			
					Engine Torque	>= 90 N*m		
					Throttle	>= 30.0003 Pct		
					Transmission Input Speed	<= 200 RPM		
					Vehicle Speed	<= 8 Kph		
					Transmission Range	≠ Park		
					Transmission Range	≠ Neutral		
					PTO	= Not Active		
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7 sec		
					Below describes the brake torque exit criteria			
					Brake torque entry criteria	= Not Met		
					Clutch hydraulic pressure	≠ Clutch Hydraulic Air Purge Event		
					Clutch used to exit brake torque active	= CeTFTD_e_C3_RatlEnbl		
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		

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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	>= 20 Sec Test Failed ≠ This Key On or Fault Active			
					Disable Condi tions: 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 Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 °C			>= 60	Fail Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 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.
					P06AD Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss Fault	≠ Test Failed This Key On or Fault Active ≥ 0 kW ≥ 0 Sec = FALSE = FALSE		
					Disable Condi tions:	MIL not Illuminated for DTC's:		
						TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	≥ 164 °C			≥ 60	Fail Time (Sec)
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	≥ 8.59961 Volts ≤ 31.9902 Volts ≥ 400 RPM ≤ 7500 RPM ≥ 5 Sec		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.
					P06AE Status is	Test Failed This Key On or Fault Active ≠		
				Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	> Refer to Table 19 in °C supporting documents				Two Trips
			If transmission oil temp to power up temp Δ	> Refer to Table 18 in °C supporting documents				
			Both conditions above required to increment fail counter				>= 3000 Fail Counts (100ms loop)	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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	>= 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		
					Brake torque active	= FALSE		
					Below describes the brake torque entry criteria			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Torque Throttle Transmission Input Speed Vehicle Speed Transmission Range Transmission Range PTO Set Brake Torque Active TRUE if above conditions are met for:	>= 90 N*m >= 30.0003 Pct <= 200 RPM <= 8 Kph ≠ Park ≠ Neutral = Not Active >= 7 sec		
					Below describes the brake torque exit criteria Brake torque entry criteria Clutch hydraulic pressure Clutch used to exit brake torque active The above clutch pressure is greater than this value for one loop Set Brake Torque Active FALSE if above conditions are met for:	= Not Met ≠ Clutch Hydraulic Air Purge Event = CeTFTD _e_C3_ RatIEnbl >= 600 kpa >= 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.
					P0711 Status is	Test Failed This Key On or Fault Active ≠ 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	CeTFTI_e_VoltageDirectProp ≤ -74 °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.
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	>= -74 °C				
			Either condition above will satisfy the fail conditions				>= 60	Fail Time (Sec)
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0712 Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss Fault	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active = FALSE = FALSE		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not illuminated for DTC's: TCM: P0716, P0717, P0722, P0723 ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0713	Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used = CeTFTI_e_ VoltageDir ectProp					Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	>= 174 °C				
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	<= 174 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0713 Status is	Test Failed This Key On or Fault Active ≠		
					Disable Condi tions:	MIL not Illuminated for DTC's:		
						TCM: P0713, P0716, P0717, P0722, P0723 ECM: None		
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>= 1350 RPM			>= 0.8	Fail Time (Sec) One Trip
					Engine Torque is Engine Torque is Engine Speed Engine Speed	>= 0 N*m <= 8191.88 N*m >= 400 RPM <= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Vehicle Speed is Throttle Position is -----	>= 10 Kph >= 0 Pct		
					Transmission Input Speed is The previous requirement has been satisfied for -----	>= 0 RPM >= 0 Sec		
					The change (loop to loop) in transmission input speed is The previous requirement has been satisfied for	< 8191.88 RPM/Lo op >= 0 Sec		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
					Throttle Position Signal Valid Engine Torque Signal Valid Ignition Voltage Ignition Voltage P0716 Status is not MIL not Illuminated for DTC's:	= TRUE Boolean = TRUE Boolean >= 8.59961 Volts <= 31.9902 Volts Test Failed = This Key On or Fault Active 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 Case 1</u> Transmission Input Speed is	< 67 RPM			>= 4.5	Fail Time (Sec)	One Trip
			<u>Fail Case 2</u> When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 1000 RPM	Controller uses a single power supply for the speed sensors	= 1 Boolean			
					Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= 50 N*m <= 8191.88 N*m >= 16 Kph = TRUE Boolean >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 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 is within the allowable limits for P0717 Status is not	>= 5 Sec Test Failed = This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: P0101, P0102, P0103		
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 Transmission Input Speed Check Engine Torque Check Throttle Position Transmission Fluid Temperature Disable this DTC if the PTO is active Engine Torque Signal Valid Throttle Position Signal Valid Ignition Voltage is Ignition Voltage is Engine Speed is	= This Key On or Fault Active = TRUE Boolean = TRUE Boolean >= 5.00031 Pct >= -40 °C = 1 Boolean = TRUE Boolean = TRUE Boolean >= 8.59961 Volts <= 31.9902 Volts >= 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 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		
					OR			
					Transmission Range is	= Park or Neutral		
					Engine Torque is	>= 8191.75 N*m		
					Engine Torque is	<= 8191.75 N*m		
					Engine Torque Condition 2			
					Engine Torque is	>= 35 N*m		
					Engine Torque is	<= 8191.75 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	>= 1000 RPM		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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	>= 3200 RPM		
					Engine Speed is	<= 8191 RPM		
					Controller uses a single power supply for the speed sensors	= 1 Boolean		
					Powertrain Brake Pedal is Valid	= TRUE Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's:		
						TCM: P0716, P0717, P0723		
						ECM: P0101, P0102, P0103, P0121, P0122, P0123		
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	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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 ----- Neutral_Range_Enable And Neutral_Speed_Enable are TRUE concurrently -----	= FALSE See Below = TRUE See Below = TRUE See Below		
					Transmission_Range_Enable Transmission_Input_Speed_Enable No Change in Transfer Case Range (High <-> Low) for P0723 Status is not Disable this DTC if the PTO is active Ignition Voltage is	= TRUE See Below = TRUE See Below >= 5 Seconds = Test Failed This Key On or Fault Active = 1 Boolean >= 8.59961 Volts		

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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 is Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	<= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
					Enable_Flags Defined Below			
					Transmission_Input_Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE: TIS Condition 1 is TRUE when both of the following conditions are satisfied for Input Speed Delta Raw Input Speed 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 Enable Time (Sec) <= 4095 RPM >= 500 RPM = 0 RPM = TRUE Boolean		
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is	= Neutral ENUM		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Range is	= Reverse /Neutral Transitional ENUM		
					Transmission Range is	= Neutral/ Drive 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/Reverse Transitional ENUM		
					Input Clutch is not	= ON (Fully Applied) ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satisfied for	> 1.5 Seconds		
					Transmission Output Speed	> 130 RPM		
					The loop to loop change of the Transmission Output Speed is	< 20 RPM		

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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 Transitional ENUM		
					Transmission Range is	= Neutral/ Drive 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
					Disable Condi tions:	MIL not illuminated 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	>= 800 Kpa			>= 2	Enable Time (Sec)	Two Trips
			Either Condition (A) or (B) Must be Met						
			(A) TCC Slip Error @ TCC On Mode	>= Refer to Table 1 in Supporting Documents RPM			>= 5	Fail Time (Sec)	
			(B) TCC Slip @ Lock On Mode	>= 130 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	= On or Lock			
					Ignition Voltage Lo	>= 8.59961 Volts			
					Ignition Voltage Hi	<= 31.9902 Volts			
					Engine Speed	>= 400 RPM			
					Engine Speed	<= 7500 RPM			
					Engine Speed is within the allowable limits for	>= 5 Sec			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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 Temperature Lo	>= -6.6641 °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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: MIL not illuminated for DTC's:	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 TCC Slip Speed If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter	>= -50 RPM <= 13 RPM			>= 2.5 Fail Time (Sec) >= 6 Fail Counte r	One Trip
					TCC Mode Enable test if Cmnd Gear = 1stFW and value true Enable test if Cmnd Gear = 2nd and value true Engine Speed Hi Engine Speed Lo Vehicle Speed Hi Vehicle Speed Lo Engine Torque Hi	= Off = 1 Boolean = 0 Boolean <= 6000 RPM >= 500 RPM ≤ 511 KPH >= 1 KPH ≤ 8191.88 Nm		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Torque Lo Current Range	>= 80 Nm ≠ Neutral 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable if Air Purge active and value false RVT Diagnostic Active Ignition Voltage Ignition Voltage Vehicle Speed Engine Speed Engine Speed Engine Speed is within the allowable limits for Engine Torque Signal Valid Throttle Position Signal Valid P0742 Status is	= 0 Boolean = FALSE Boolean >= 8.59961 V <= 31.9902 V <= 511 KPH >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean ≠ This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated 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	Commaned Gear Slip	>= 400 RPM				Two Trips

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Commanded Gear	= 1st Lock rpm				
			Gear Ratio	<= 1.4849854			>= 0.3	Fail Tmr
			Gear Ratio	>= 1.3430176			= 5	Fail Counts
			If the above parameters are true					
					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		
					Transmission Fluid Temperature	>= -6.6563 °C		
					Range Shift State	= Range Shift Completed ENUM		
					TPS OR Output Speed	>= 0.50049 %		
					Throttle Position Signal Valid from ECM	= TRUE Boolean		
							>= 0.3	Fail Timer (Sec)
							= 5	Fail Counts
							≠ 0	Neutral Timer (Sec)
							>= 0.3	Fail Timer (Sec)
							>= 8	Counts

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Torque Signal Valid from ECM, High side driver is enabled High-Side Driver is Enabled Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= TRUE Boolean = TRUE Boolean = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip	>= 400 RPM				One Trip
			Commanded Gear	= 3rd Gear				

12 OBDG05B Transmission Diagnostics

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			Please Refer to Table Neutral >= 16 in Timer (Sec) Supporting Documents	
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	<= 800 RPM >= 4.2597656 <= 4.708252			>= 1.5 Fail Timer (Sec) >= 5 Counts	
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					High-Side Driver is Enabled Throttle Position Signal Valid from ECM Output Speed OR TPS Range Shift State Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= TRUE Boolean = TRUE Boolean >= 36 RPM >= 0.50049 % = Shift Completed ENUM >= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail Case</u> 1 Commanded Gear	= 1st Locked				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gear Box Slip	>= 400 RPM			Please Refer to Table 5 Neutral in Timer Support (Sec) ing Documents	
			Intrusive Shift to 2nd Commanded Gear Previous	= 1st Locked Gear				
			Gear Ratio	<= 3.0159912				
			Gear Ratio	>= 2.7280273				
			If the above parameters are true				>= 1 sec >= 3 counts	
					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		
					Output Speed	>= 36 RPM		
					OR			
					TPS	>= 0.50049 %		
					Range Shift State	= Shift Completed ENUM		
					Transmission Fluid Temperature	>= -6.6563 °C		
					High-Side Driver is Enabled	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

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 Default Gear Option is not present MIL not Illuminated for DTC's:	= TRUE 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, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	<u>Fail Case</u> 1 Case: Steady State 3rd Gear Commanded Gear = 3rd Gear Gearbox Slip >= 400 RPM				Please Refer to Table Neutral >= 16 in Timer Support ing Documents (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	\leq 800 RPM \geq 1.3432617 \leq 1.4847412			\geq 3 Fail Timer (Sec) \geq 3 3rd Gear Fail Counts or \geq 14 3-5R Clutch Fail Counts	
			It the above condiations are true, Increment 3rd gear fail counter and C35R Fail counter					
			<u>Fail</u> <u>Case</u> <u>2</u> Case: Steady State 5th Gear Commanded Gear	$=$ 5th Gear				
			Gearbox Slip	\geq 400 Rpm			\geq Please Refer to Table 5 Neutral in Timer Supporting Docum ents (Sec)	
			Intrusive Test: Command 6th Gear					

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present MIL not Illuminated for DTC's:	>= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.6563 °C = 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, 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 Case</u> 1 Case: Steady State 1st Attained Gear slip	>= 400 RPM				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (CBR1 clutch exhausted)</p> <p>Gear Ratio</p> <p>Gear Ratio</p> <p>If the above parameters are true</p>	<p>>=</p> <p>Table Based Time Please Refer to Table 4 in supporting documents</p> <p>Enable Time (Sec)</p> <p><= 1.93396</p> <p>>= 1.75</p>			<p>>= 1.1</p> <p>>= 2</p> <p>>= 3</p> <p>Fail Timer (Sec)</p> <p>Fail Count in 1st Gear or</p> <p>Total Fail Counts</p>	
			<p>Fail Case: Steady State 2nd gear</p>					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.93396				
			Gear Ratio	>= 1.75				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 2nd Gear or >= 3 Total Fail Counts	
			<u>Fail Case 3</u> Case: Steady State 4th gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec >= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C1234 clutch exhausted)</p> <p>Gear Ratio <= 1.0500488 Gear Ratio >= 0.9499512 If the above parameters are true</p>	<p>>=</p> <p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>Sec</p>			<p>>= 1.1</p> <p>Fail Timer (Sec)</p> <p>>= 3</p> <p>Fail Count in 4th Gear or</p> <p>>= 3</p> <p>Total Fail Counts</p>	
			<p><u>Fail Case</u> 4</p> <p>Case: Steady State 6th gear</p>					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.0500488			>= 1.1	Fail Timer (Sec)
			Gear Ratio	>= 0.9499512			>= 3	counts

12 OBDG05B Transmission Diagnostics

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				>= 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	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized A OR B	= TRUE Boolean		
					(A) Output speed enable	>= 36 Nm		
					(B) Accelerator Pedal enable	>= 0.50049 Nm		
					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		

12 OBDG05B Transmission Diagnostics

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 Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
				Disable Condi tions:	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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P0777	Pressure Control (PC) Solenoid B StuckOn [C35R] (Dymanic)	<p>Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers)</p> <p>Primary Oncoming Clutch Pressure Command Status = Maximum pressurized</p> <p>Primary Offgoing Clutch Pressure Command Status = Clutch exhaust command</p> <p>Range Shift Status ≠ Initial Clutch Control</p> <p>Attained Gear Slip ≤ 40 RPM</p> <p>If the above conditions are true run appropriate Fail 1 Timers Below:</p> <p>fail timer 1 (3-1 shifting with Closed Throttle) ≥ 0.5 Fail Time (Sec)</p>	<p>= TRUE Boolean</p>				One Trip

12 OBDG05B Transmission Diagnostics

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)	>= 0.5				
			fail timer 1 (3-2 shifting with Closed Throttle)	>= 0.5				
			fail timer 1 (3-4 shifting with Throttle)	>= 0.5				
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5				
			fail timer 1 (3-5 shifting with Throttle)	>= 0.5				
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5				
			fail timer 1 (5-3 shifting with Throttle)	>= 0.5				
			fail timer 1 (5-3 shifting with Closed Throttle)	>= 0.5				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.1503906				
			fail timer 1 (5-4 shifting with Closed Throttle)	>= 0.5				
			fail timer 1 (5-6 shifting with Throttle)	>= 0.5				
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5				

12 OBDG05B Transmission Diagnostics

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				>= 3 3rd gear fail counts	
			3rd gear fail counter				OR >= 5 5th gear fail counts OR	
			5th gear fail counter					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Total fail counter				>= 5 total fail counts	
					TUT Enable temperature	>= -6.6563 °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	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		
					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		

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	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Time Cal	
			Intrusive test: commanded 6th gear					
			If attained Gear ≠ 6th for time	>=	Please Refer to Table 3 in Shift Time Supporting Documents (Sec)			
			if the above conditions have been met					
			Increment 5th Gear Fail Counter				>= 3	5th Gear Fail Count OR
			and C456 Fail Counters				>= 14	C456 Fail Counts
			<u>Fail Case 3</u> Case: Steady State 6th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Time Cal	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Intrusive test: commanded 5th gear					
			If attained Gear ≠ 5th for time	>=	Please refer to Shift Table 3 in Time Supporting (Sec) Documents			
			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	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		

12 OBDG05B Transmission Diagnostics

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 the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Condi tions:	MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> <u>Case</u> 1 Case: Steady State 1st Attained Gear slip	>= 400 RPM				One Trip

12 OBDG05B Transmission Diagnostics

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 Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	Table Based Time Enable Please Refer to Time (Sec) Table 4 in supporting documents <= 1.4849854 >= 1.3430176			>= 1.1 Fail Timer (Sec) >= 2 Fail Count in 1st Gear or >= 3 Total Fail Counts	
			Fail Case 2 Case Steady State 2nd					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.4849854				
			Gear Ratio	>= 1.3430176				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 2nd Gear or >= 3 Total fail counts	
			<u>Fail Case 3</u> Case Steady State 3rd Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec >= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				

12 OBDG05B Transmission Diagnostics

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	>= Please Refer to Table 17 in supporting documents Sec			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear OR >= 3 Total Fail Counts	
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio <= 1.4849854 Gear Ratio >= 1.3430176 If the above parameters are true					
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized A OR B	= TRUE Boolean		
					(A) Output speed enable	>= 36 Nm		
					(B) Accelerator Pedal enable	>= 0.50049 Nm		
					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		
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Condi tions:	MIL not illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status	= TRUE Boolean = Maximum pressurize d = Clutch exhaust command ≠ Initial Clutch Control				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Attained Gear Slip	<= 40 RPM				
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (4-1 shifting with throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-1 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-2 shifting with throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-2 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-3 shifting with throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-3 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (5-3 shifting with throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (5-3 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (6-2 shifting with throttle)	>= 0.5	Fail Time (Sec)			

12 OBDG05B Transmission Diagnostics

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)	>= 0.5 Fail Time (Sec)			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 Attained Gear Slip is Less than Above Cal Increment Fail Timers					
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3 Fail Counte r From 4th Gear	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			5th gear fail counter				OR Fail Counter From 5th Gear >= 3	
			6th gear fail counter				OR Fail Counter From 6th Gear >= 3	
			Total fail counter				OR Total Fail Counter >= 5	
					TUT Enable temperature	>= -6.6563 °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	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions:	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	<u>Fail</u> <u>Case</u> 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				

12 OBDG05B Transmission Diagnostics

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 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)
			<u>Fail</u> <u>Case</u> <u>2</u> Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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				

12 OBDG05B Transmission Diagnostics

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	= 0 Boolean = TRUE Boolean			>= 600 Fail Time (Sec)	
						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 P0815 Status is	>= 1 Enable Time (Sec) >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	<u>Fail</u> Tap Down <u>Case</u> Switch Stuck 1 in the Down Position in Range 1 Enabled Tap Down Switch Stuck in the Down Position in Range 2 Enabled Tap Down Switch Stuck in the Down Position in Range 3 Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled Tap Down Switch Stuck in the Down Position in Range 5 Enabled Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 0 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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	= 0 Boolean				
			Tap Down Switch ON	= TRUE Boolean			>= 1 sec	
			<u>Fail</u> <u>Case</u> <u>2</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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				

12 OBDG05B Transmission Diagnostics

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 Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is MIL not Illuminated for DTC's:	>= 1 Enable Time (Sec) >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			>= 60 Fail Time (Sec)	Special No MIL
					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 P0826 Status is ≠ Test Failed This Key On or Fault Active Disable Condi tions: MIL not Illuminated for DTC's: TCM: P1761 ECM: None			
Variable Bleed Solenoid (VBS)	P0961	Pressure Control (PC) Solenoid A Control Circuit Rationality Test (Line Pressure VBS)	The HWIO reports an invalid voltage (out of range) error flag	= TRUE Boolean			>= 4.4 Fail Time (Sec) out of 5 Sample Time (Sec)	Two Trips
					Ignition Voltage >= 8.59961 Volts Ignition Voltage <= 31.9902 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	P0962	Pressure Control (PC) Solenoid A Control Circuit Low Voltage (Line Pressure VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 1.5 Fail Time (Sec) out of 1.875 Sample Time (Sec)	One Trip
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			TCM: None ECM: None	Two Trips

12 OBDG05B Transmission Diagnostics

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 Conditions: MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0966	Pressure Control (PC) Solenoid B Control Circuit Low Voltage (C35R VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
					Ignition Voltage >= 8.59961 Volts Ignition Voltage <= 31.9902 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec P0966 Status is not = Test Failed This Key On or Fault Active			
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: None ECM: None		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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) out of 0.375 Sample Time (Sec)	One Trip
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) out of 0.375 Sample Time (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
						Test Failed This Key On or Fault Active = Ignition Voltage >= 8.59961 Volts Ignition Voltage <= 31.9902 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
						Test Failed This Key On or Fault Active = Ignition Voltage >= 8.59961 Volts Ignition Voltage <= 31.9902 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 1.2 Fail Time (Sec) out of 1.5 Sample Time (Sec)	One Trip
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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							out of 1.5 Sample Time (Sec)	
					P0974 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	= This Key On or Fault Active >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
					Disable Conditions:	MIL not Illuminated for DTC's:		
						TCM: None ECM: None		
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 1.2 Sec	One Trip
							out of 1.5 Sec	
					P0977 Status is not Ignition Voltage Ignition Voltage	= This Key On or Fault Active >= 8.59961 Volts <= 31.9902 Volts		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Engine Speed Engine Speed is within the allowable limits for	>= 400 RPM <= 7500 RPM >= 5 Sec		
					Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Tap Up Tap Down Switch (TUTD)	P1761	Tap Up and Down switch signal circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boolean			>= 3 Fail Counte r > 10 Sample Timer (Sec)	Special No MIL
					Tap Up Tap Down Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= TRUE Boolean >= 400 RPM <= 7500 RPM >= 5 Sec	TCM: None ECM: None	
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail Case</u> 1 Current range	= Transition 1 (bit state Range 1110)				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Previous range	≠ CeTRGR_e_PRNDL_Range Drive6				
			Previous range	≠ CeTRGR_e_PRNDL_Range Drive5				
			Range Shift State	= Range Shift Completed ENUM				
			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 Seconds
			If Fail Timer has Expired then Increment Fail Counter				>= 5	Fail Counts

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the below two conditions are met Increment Fail Timer</p> <p>delay timer ≥ 1 Sec Input Speed ≥ 400 Sec If Fail Timer has Expired then Increment Fail Counter</p>				<p>≥ 3 Fail Seconds</p> <p>≥ 2 Fail Counts</p>	
			<p><u>Fail Case 3</u> Current range</p> <p>Engine Torque</p> <p>Engine Torque</p> <p>If the above conditions are met then, Increment Fail Timer</p> <p>If Fail Timer has Expired then Increment Fail Counter</p>	<p>= Transition 13 (bit Range state 0010)</p> <p>≥ -8192 Nm</p> <p>≤ 8191.75 Nm</p>	<p>Previous range</p> <p>Previous range</p> <p>IMS is 7 position configuration</p> <p>If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"</p>	<p>\neq CeTRG R_e_PR NDL_Drive3</p> <p>\neq CeTRG R_e_PR NDL_Drive1</p> <p>= 0 Boolean</p>	<p>≥ 0.225 Seconds</p> <p>≥ 15 Fail Counts</p>	
			<p><u>Fail Case 4</u> Current range</p>	<p>= Transition 8 (bit state Range 0111)</p>	<p>Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8</p>			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold 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 Seconds	
			If the above Conditions have been met, Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail Case 5</u> Throttle Position 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) Range				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL State = Neutral (bit state 0101) Range					
			PRNDL State = Transition 11 (bit state 0100) Range					
			Above sequencing occurs in Then delay timer increments Delay timer	<= 1 Sec				
			Range Shift State = Range Shift Complete					
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position	>= 8.0001831 pct				
			Output Speed	>= 200 rpm				
			If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			<u>Fail Case 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):			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and A Open Circuit (See Definition)	= FALSE Boolean	Current Range or Last positive state or Previous transition state	≠ Transition 11 (bit state 0100) ≠ Neutral (bit state 0101) ≠ Transition 8 (bit state 0111)		
			If the above Conditions are met then, Increment Fail timer		Fail case 5 delay timer	= 0 sec	>= 6.25 Seconds	
			<u>Fail Case 7</u> Current PRNDL State and Previous PRNDL state	= PRNDL circuit ABCP = 1101 = PRNDL circuit ABCP = 1111	Range Range			
			Input Speed Reverse Trans Ratio Reverse Trans Ratio	>= 150 RPM <= 2.6783447 ratio >= 3.081543 ratio				

12 OBDG05B Transmission Diagnostics

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				>= 6.25 Seconds	
			P182E will report test fail when any of the above 7 fail cases are met					
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	>= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean		
				Disable Condi tions:	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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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 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	>= 100 RPM				>= 1.25 Fail Time (Sec)			
					DTC has Ran this Key Cycle?	= FALSE Boolean		
					Ignition Voltage Lo	>= 6 V		
					Ignition Voltage Hi	<= 31.999 V		
					Ignition Voltage Hyst High (enables above this value)	>= 5 V		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Hyst Low (disabled below this value) Transmission Output Speed P1915 Status is	<= 2 V <= 90 rpm Test Failed This Key On or Fault Active		
					Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: None	
Transmission Control Module (TCM)	P2534	Ignition Switch Run/Start Position Circuit Low	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this value) Ignition Voltage Low Hyst (run crank goes false when below this value)	= FALSE Boolean 5 Volts 2 Volts			>= 280 Fail Counts (25ms loop) Out of 280 Sample Counts (25ms loop)	One Trip
					ECM run/crank active status available	= TRUE Boolean		
					ECM run/crank active status	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated 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 loop)		
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2 Volts		Out of 280 Sample Counts (25ms loop)		
					ECM run/crank active status available = TRUE Boolean ECM run/crank active status = FALSE Boolean			
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>Fail</u> Case: Steady <u>Case</u> State 2nd 1 Gear					One Trip

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	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Time Cal	
			Intrusive test: commanded 3rd gear					
			If attained Gear = 3rd for Time	>= Table Based Time Enable Please see Time Table 2 in (Sec) Supporting Documents				
			If Above Conditions have been met					
			Increment 2nd gear fail count				>= 3	2nd Gear Fail Count or CB26
			and CB26 Fail Count				>= 14	Fail Count
			<u>Fail Case</u> 2 Case: Steady State 6th Gear					

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	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Time Cal	
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	>= Table Based Time Enable Please see Table 2 in Supporting Documents (Sec)				
			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	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	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	>= 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		
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: 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 Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip	= TRUE Boolean = Maximum pressurize d = Clutch exhaust command ≠ Initial Clutch Control <= 40 RPM				One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>fail timer 1 (6-5 shifting without throttle)</p> <p>If Attained Gear Slip is Less than Above Cal Increment Fail Timers</p> <p>If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter</p>	<p>>= 0.5</p> <p>Fail Time (Sec)</p>			<p>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</p>	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			2nd gear fail counter				>= 3	Fail Counter From 2nd Gear
			6th gear fail counter				>= 3	OR Fail Counter From 6th Gear
			total fail counter				>= 5	OR Total Fail Counter
					TUT Enable temperature	>= -6.6563 °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	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: 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> 1 Case: Steady State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM Table Based Time Enable Please Refer to Table 4 in supporting documents (Sec) <= 3.0159912 >= 2.7280273			>= 1.1 Fail Timer (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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	>= Please Refer to Table 17 in supporting documents Sec			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear or >= 3 Total Fail Counts	
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio Gear Ratio If the above parameters are true	<= 3.0159912 >= 2.7280273				
			<u>Fail</u> <u>Case</u> 3 Case: Steady State 4rd Gear					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch exhausted)					
			Gear Ratio	<= 0.7790527				
			Gear Ratio	>= 0.7049561				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			Fail Case 4 Case: Steady State 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec >= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C35R clutch exhausted)</p> <p>Gear Ratio <= 0.7790527 Gear Ratio >= 0.7049561 If the above parameters are true</p>	<p>>=</p> <p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>Sec</p>			<p>>= 1.1</p> <p>>= 3</p> <p>>= 3</p>	<p>Fail Timer (Sec)</p> <p>Fail Count in 5th Gear or</p> <p>Total Fail Counts</p>
					<p>PRNDL State defaulted</p> <p>inhibit RVT</p> <p>IMS fault pending indication</p> <p>output speed</p> <p>TPS validity flag</p>	<p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>>= 0 RPM</p> <p>= TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized A OR B	= TRUE Boolean		
					(A) Output speed enable	>= 36 Nm		
					(B) Accelerator Pedal enable	>= 0.50049 Nm		
					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		
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: 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)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 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	Test Failed = This Key On or Fault Active >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: MIL not illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
						P2721 Status is not = Test Failed This Key On or Fault Active Ignition Voltage >= 8.59961 Volts Ignition Voltage <= 31.9902 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail</u> <u>Case</u> 1 Case: Steady State 1st Gear					One Trip

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	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Neutral Time Cal	
			Intrusive test: commanded 2nd gear					
			If attained Gear ≠ 2nd for Time	>= Please refer to Table 3 in Shift Time Supporting Documents (Sec)				
			If Above Conditions have been met, Increment 1st gear fail counter				>= 3	1st Gear Fail Count
			and C1234 fail counter				>= 14	or C1234 Clutch Fail Count
			<u>Fail Case 2</u> Case: Steady State 2nd Gear					
			Gear slip	>= 400 RPM			Please See Table 5 Neutral For Timer (Sec) Neutral Time Cal	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 MIL not Illuminated for DTC's:	>= -6.6563 °C = 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, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

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	<= 40 RPM					
			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					

12 OBDG05B Transmission Diagnostics

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				

12 OBDG05B Transmission Diagnostics

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				Fail Counte r From 2nd Gear >= 3	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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	>= -6.6563 °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	>= 200 RPM		
					PRNDL state defaulted	= FALSE Boolean		
					IMS Fault Pending	= FALSE Boolean		
					Service Fast Learn Mode	= FALSE Boolean		
					HSD Enabled	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C35R clutch exhausted)</p> <p>Gear Ratio <= 1.4849854 Gear Ratio >= 1.3430176 If the above parameters are true</p>	<p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>>= Sec</p> <p><= 1.4849854 >= 1.3430176</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 5th Gear OR</p> <p>>= 3 Total Fail Counts</p>	
			<p>Fail Case 2</p> <p>Case: 6th Gear</p>					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.4849854				
			Gear Ratio	>= 1.3430176				
			If the above parameters are true					

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 20 Nm <= 8191.88 Nm >= -6.6563 °C = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Condi tions:	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)	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) out of 0.375 Sample Time (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P2729 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	Test Failed = This Key On or Fault Active >= 8.59961 Volt <= 31.9902 Volt >= 400 RPM <= 7500 RPM >= 5 Sec		
					Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	P2730	Pressure Control (PC) Solenoid E Control Circuit High (C1234 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
					P2730 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	Test Failed = This Key On or Fault Active >= 8.59961 Volt <= 31.9902 Volt >= 400 RPM <= 7500 RPM >= 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.	
					MIL not Illuminated for DTC's:	TCM: None ECM: None			
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE Boolean			>= 4.4 out of 5	Fail Time (Sec) Sample Time (Sec)	Two Trips
						P2763 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled	= This Key On or Fault Active >= 8.59961 Volt <= 31.9902 Volt >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean		
					MIL not Illuminated for DTC's:	TCM: P0658, P0659 ECM: None			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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	
						Test Failed = This Key On or Fault Active Ignition Voltage >= 8.59961 Volt Ignition Voltage <= 31.9902 Volt Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec High Side Driver Enabled = TRUE Boolean		
					Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: P0658, P0659 ECM: None	
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	= TRUE Boolean			>= 62 Fail counts (≈ 10 second s)	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics
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	Sec

Table 3

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	4.00	4.00	Sec

Table 4

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

Table 5

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	3.00	3.00	Sec

Table 6

Axis	-6.66	-6.66	40.00	80.00	120.00	°C
Curve	409.00	3.60	1.60	1.40	1.40	Sec

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	Sec

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	Sec

12 OBDG05B Transmission Diagnostics
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

Table 10

Axis	-40.00	-20.00	0.00	30.00	110.00	°C
Curve	3.10	1.90	1.10	0.80	0.60	Sec

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

Table 12

Axis	-40.00	-20.00	0.00	30.00	110.00	°C
Curve	2.20	1.40	0.90	0.70	0.40	Sec

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

Table 14

Axis	-40.00	-20.00	0.00	30.00	110.00	°C
Curve	3.00	0.90	0.50	0.30	0.20	Sec

Table 15

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

Table 16

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	1.50	1.50	Sec

12 OBDG05B Transmission Diagnostics
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	°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	149.10	°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	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
Table Calibration	RPM/Sec

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

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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	<u>Fail</u> <u>Case</u> <u>1</u>	Current range = 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 ≤ Sixth					
			Attained Gear ≥ First					
			Throttle Position Available = TRUE					
			Throttle Position ≥ 8.000183105 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 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				≥ 5 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>2</u>	Output 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					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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 <= 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 >= 1 Sec					
			Input Speed >= 400 Sec					
			If Fail Timer has Expired then Increment Fail Counter				>= 2	Fail Counts
			<u>Fail Case 3</u>					
			Current range = Transition 13 (bit state 0010) Range		Previous range	≠ CeTRGR_e_PRNDL_Drive3		
			Engine Torque >= -8192 Nm		Previous range	≠ CeTRGR_e_PRNDL_Drive1		
			Engine Torque <= 8191.75 Nm		IMS is 7 position configuration	= 0 Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the above conditions are met then, Increment Fail Timer</p> <p>If Fail Timer has Expired then Increment Fail Counter</p>		<p>If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"</p>		<p>>= 0.23 Seconds</p> <p>>= 15 Fail Counts</p>	
			<p><u>Fail Case 4</u></p> <p>Current range = Transition 8 (bit state 0111) Range</p> <p>Inhibit bit (see definition) = FALSE</p> <p>Steady State Engine Torque >= 100 Nm</p> <p>Steady State Engine Torque <= 8191.75 Nm</p> <p>If the above conditions are met then Increment Fail Timer</p> <p>If the above Conditions have been met, Increment Fail Counter</p>		<p>Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8</p> <p>Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11) Set inhibit bit false if PRNDL = 1001 (park)</p>		<p>>= 0.23 Seconds</p> <p>>= 15 Fail Counts</p>	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail Case 5</u></p> <p>Throttle Position Available = TRUE Boolean</p> <p>The following PRNDL sequence events occur in this exact order:</p> <p>PRNDL State = Reverse (bit state 1100) Range</p> <p>PRNDL State = Transition 11 (bit state 0100) Range</p> <p>PRNDL State = Neutral (bit state 0101) Range</p> <p>PRNDL State = Transition 11 (bit state 0100) Range</p> <p>Above sequencing occurs in <= 1 Sec</p> <p>Then delay timer increments Delay timer >= 5 sec</p> <p>Range Shift State = Range Shift Complete</p> <p>Absolute Attained Gear Slip <= 50 rpm</p> <p>Attained Gear <= Sixth</p> <p>Attained Gear >= First</p> <p>Throttle Position >= 8.000183105 pct</p> <p>Output Speed >= 200 rpm</p> <p>If the above conditions are met Increment Fail Timer</p>				>= 20 Seconds	
			<p><u>Fail Case 6</u></p> <p>Current range = Illegal (bit state 0000 or 1000 or 0001)</p>		A Open Circuit Definition (flag set false if the following conditions are met):			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and A Open Circuit (See Definition)	= FALSE Boolean	Current Range Last positive state Previous transition state Fail case 5 delay timer	≠ Transition 11 (bit state 0100) ≠ Neutral (bit state 0101) ≠ Transition 8 (bit state 0111) = 0 sec	>= 6.25 Seconds	
			<u>Fail Case 7</u> Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Conditions are met then, Increment Fail timer	= PRNDL circuit ABCP = 1101 Range = PRNDL circuit ABCP = 1111 Range Input Speed >= 150 RPM Reverse Trans <= 2.678344727 ratio Reverse Trans >= 3.081542969 ratio			>= 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.
			<p>P182E will report test fail when any of the above 7 fail cases are met</p>		<p>Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid</p>	<p>>= 8.599609 Volts <= 31.99023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean</p>		
				<p>Disable Condi ons:</p>	<p>MIL not Illuminated for DTC's:</p>	<p>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</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Mode Switch	P071D	Transmission Mode Switch B Circuit	Sport Mode Switch state	= TRUE Boolean			Fail Time (Sec) >= 600	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	TCM: P1762 ECM: None	
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	<u>Fail Case 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				

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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 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)
			<u>Fail</u> <u>Case</u> <u>2</u> Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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	

12 OBDG05B Transmission Diagnostics

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 P0815 Status is	<= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	<u>Fail Case 1</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled Tap Down Switch Stuck in the Down Position in Range 2 Enabled Tap Down Switch Stuck in the Down Position in Range 3 Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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	
			<u>Fail</u> <u>Case</u> <u>2</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1 Boolean				

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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 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	= 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 P0816 Status is	<= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		
				Disable Conditions: = TRUE Boolean	MIL not Illuminated for DTC's: 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 > 10 Sample Timer (Sec)	Special No MIL
					Pattern Switch Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= TRUE Boolean >= 400 RPM <= 7500 RPM >= 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.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail Case</u> 1	Current range = Transition 1 (bit state 1110) Range				One Trip
				Previous range ≠ CeTRG R_e_P RNDL_ Drive6 Range				
				Previous range ≠ CeTRG R_e_P RNDL_ Drive5 Range				
				Range Shift State = Range Shift Completed ENUM				
				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				

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If all conditions above are met Increment delay Timer</p> <p>If the below two conditions are met Increment Fail Timer</p> <p>delay timer >= 1 Sec</p> <p>Input Speed >= 400 Sec</p> <p>If Fail Timer has Expired then Increment Fail Counter</p>				<p>>= 3 Fail Seconds</p> <p>>= 2 Fail Counts</p>	
			<p><u>Fail Case 3</u></p> <p>Current range = Transition 13 (bit state 0010) Range</p> <p>Engine Torque >= -8192 Nm</p> <p>Engine Torque <= 8191.8 Nm</p> <p>If the above conditions are met then, Increment Fail Timer</p>	<p>Transition 13 (bit state 0010) Range</p> <p>-8192 Nm</p> <p>8191.8 Nm</p>	<p>Previous range ≠</p> <p>Previous range ≠</p> <p>IMS is 7 position configuration =</p> <p>If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"</p>	<p>CeTRGR_e_PRND_L_Drive5 ≠</p> <p>CeTRGR_e_PRND_L_Drive5 ≠</p> <p>0 Boolean =</p>	<p>>= 0.225 Seconds</p>	

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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 has Expired then Increment Fail Counter				>= 15 Fail Counts	
			<p><u>Fail Case 4</u></p> <p>Current range</p> <p>Inhibit bit (see definition)</p> <p>Steady State Engine Torque</p> <p>Steady State Engine Torque</p> <p>If the above conditions are met then Increment Fail Timer</p> <p>If the above Conditions have been met, Increment Fail Counter</p>	<p>= Transition on 8 (bit Range state 0111)</p> <p>= FALSE</p> <p>>= 30 Nm</p> <p><= 8191.8 Nm</p>	<p>Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8</p> <p>Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev Neu transition 11)</p> <p>Set inhibit bit false if PRNDL = 1001 (park)</p>		<p>>= 0.225 Seconds</p> <p>>= 15 Fail Counts</p>	
			<p><u>Fail Case 5</u></p> <p>Throttle Position Available</p> <p>The following PRNDL sequence events occur in this exact order:</p> <p>PRNDL State</p>	<p>= TRUE Boolean</p> <p>= Reverse (bit state 1100) Range</p>				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL State	= Transition 11 (bit state 0100) Range				
			PRNDL State	= Neutral (bit state 0101) Range				
			PRNDL State	= Transition 11 (bit state 0100) Range				
			Above sequencing occurs in Then delay timer increments	<= 1 Sec				
			Delay timer	>= 5 sec				
			Range Shift State	= Range Shift Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position	>= 8.0002 pct				
			Output Speed	>= 200 rpm				
			If the above conditions are met Increment Fail Timer				>= 20 Seconds	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail Case 6</u></p> <p>Current range = Illegal (bit state 0000 or 1000 or 0001)</p> <p>and</p> <p>A Open Circuit (See Definition) = FALSE Boolean</p> <p>If the above Conditions are met then, Increment Fail timer</p>		<p>A Open Circuit Definition (flag set false if the following conditions are met):</p> <p>Current Range ≠ Transition 11 (bit state 0100)</p> <p>or</p> <p>Last positive state ≠ Neutral (bit state 0101)</p> <p>or</p> <p>Previous transition state ≠ Transition 8 (bit state 0111)</p> <p>Fail case 5 delay timer = 0 sec</p>		<p>≥ 6.25 Seconds</p>	
			<p><u>Fail Case 7</u></p> <p>Current PRNDL State = PRNDL circuit ABCP = Range 1101</p> <p>and</p> <p>Previous PRNDL state = PRNDL circuit ABCP = Range 1111</p> <p>Input Speed ≥ 150 RPM</p>					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Reverse Trans Ratio	<= 2.6783 ratio				
			Reverse Trans Ratio	>= 3.0815 ratio				
			If the above Conditions 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	>= 8.599609 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		
					Engine Torque Signal Valid	= TRUE Boolean		
				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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Tap Up Tap Down Switch (TUTD)	P1876	Tap Up and Down Enable Switch Circuit	Current range	= Park or Reverse or Neutral Range State				Special No MIL
			TUTD Enable Switch is Active	= TRUE Boolean				
					Ignition Voltage Lo	>= 8.599609 Volts		
					Ignition Voltage Hi	<= 31.99023 Volts		
					Vehicle Speed Lo	<= 511 KPH		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					P1876 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None		
							>= 3 >= 5	Fail Time (Sec) Fail Counts

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
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 > 10 Sample Timer (Sec)	Special No MIL
					Pattern Switch Message Health = TRUE Boolean 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: TCM: None ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch Invalid Range	<u>Fail</u> <u>Case</u> 1 Current range	= Transition 1 (bit state Range 1110)				One Trip
			Previous range	≠ CeTRGR_ e_PRNDL_ Range Drive6				
			Previous range	≠ CeTRGR_ e_PRNDL_ Range Drive4				
			Range Shift State	= Range Shift ENUM Completed				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				

12 OBDG05B Transmission Diagnostics

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 >= 200 rpm					
			Engine Torque >= 50 Nm					
			Engine Torque <= 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 Case 2</u>					
			Output 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 = Transition 1 (bit state 1110) Range					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Above sequencing occurs in Neutral Idle Mode If all conditions above are met Increment delay Timer If the below two conditions are met Increment Fail Timer delay timer Input Speed If Fail Timer has Expired then Increment Fail Counter	<= 1 Sec = Inactive >= 1 Sec >= 400 Sec			>= 3 Fail Seconds >= 2 Fail Counts	
			<u>Fail Case 3</u> Current range Engine Torque Engine Torque If the above conditions are met then, Increment Fail Timer If Fail Timer has Expired then Increment Fail Counter	= Transition 13 (bit Range state 0010) >= -8192 Nm =< 8191.75 Nm	Previous range Previous range IMS is 7 position configuration If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"	CeTR GR_e_PRND L_Drive3 CeTR GR_e_PRND L_Drive2 = 0 Boolean	>= 0.225 Seconds >= 15 Fail Counts	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail Case 4</u></p> <p>Current range</p> <p>Inhibit bit (see definition)</p> <p>Steady State Engine Torque</p> <p>Steady State Engine Torque</p> <p>If the above conditions are met then Increment Fail Timer</p> <p>If the above Conditions have been met, Increment Fail Counter</p>	<p>= Transition 8 (bit state Range 0111)</p> <p>= FALSE</p> <p>>= 100 Nm</p> <p><= 8191.75 Nm</p>	<p>Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8</p> <p>Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11)</p> <p>Set inhibit bit false if PRNDL = 1001 (park)</p>		<p>>= 0.225 Seconds</p> <p>>= 15 Fail Counts</p>	
			<p><u>Fail Case 5</u></p> <p>Throttle Position Available</p> <p>The following PRNDL sequence events occur in this exact order:</p> <p>PRNDL State</p> <p>PRNDL State</p>	<p>= TRUE Boolean</p> <p>= Reverse (bit state Range 1100)</p> <p>= Transition 11 (bit Range state 0100)</p>				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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	>= 5 sec				
			Range Shift State = Range Shift Complete					
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				
			Attained Gear	>= First				
			Throttle Position	>= 8.0001831 pct				
			Output Speed	>= 200 rpm				
			If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			<u>Fail Case 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			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Last positive state or Previous transition state Fail case 5 delay timer	≠ Neutral (bit state 0101) ≠ Transition 8 (bit state 0111) = 0 sec	>= 6.25 Seconds	
			If the above Conditions are met then, Increment Fail timer					
			<u>Fail Case Z</u> Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Conditions are met then, Increment Fail timer	= PRNDL circuit ABCP = 1101 Range = PRNDL circuit ABCP = 1111 Range >= 150 RPM <= 2.6783447 ratio >= 3.081543 ratio			>= 6.25 Seconds	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			P182E will report test fail when any of the above 7 fail cases are met		Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	>= 8.6 Volts <= 31.99 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean		
				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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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 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				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Case 2 Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 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				>= 600	Fail Time (Sec)

12 OBDG05B Transmission Diagnostics

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 Time (Sec) 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 P0815 Status is ≠ Test Failed This Key On or Fault Active		
				Disable Conditions: MIL not Illuminated for DTC's:		TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	<u>Fail Case</u> 1 Tap Down Switch Stuck in the Down Position in Range 1 Enabled Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean = 1 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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	
			<u>Fail</u> Tap Down Switch <u>Case</u> Stuck in the Down <u>2</u> Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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	= TRUE Boolean				
			NOTE: Both Failcase1 and Failcase 2 Must Be Met				>= 600 sec	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is	>= 1 Enable Time (Sec) >= 8.5996 Volts <= 31.99 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated 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 Case</u> 1	Current range = Transition on 1 (bit state 1110) Range Previous range ≠ CeTRG R_e_P RNDL_Drive6 Range Previous range ≠ CeTRG R_e_P RNDL_Drive4 Range				One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL state = Drive 6 (bit state 0110) Range					
			PRNDL state = Transition 1 (bit state 1110) Range					
			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	>= 1 Sec				
			Input Speed	>= 400 Sec				
			If Fail Timer has Expired then Increment Fail Counter				>= 2 Fail Counts	
			<u>Fail Case 3</u>					
			Current range = Transition 13 (bit state 0010) Range		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	= 0 Boolean		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>The following PRNDL sequence events occur in this exact order:</p> <p>PRNDL State = Reverse (bit state 1100) Range</p> <p>PRNDL State = Transition on 11 (bit state 0100) Range</p> <p>PRNDL State = Neutral (bit state 0101) Range</p> <p>PRNDL State = Transition on 11 (bit state 0100) Range</p> <p>Above sequencing occurs in <= 1 Sec</p> <p>Then delay timer increments Delay timer >= 5 sec</p> <p>Range Shift State = Range Shift Complete</p> <p>Absolute Attained Gear Slip <= 50 rpm</p> <p>Attained Gear <= Sixth</p> <p>Attained Gear >= First</p> <p>Throttle Position >= 8.0002 pct</p> <p>Output Speed >= 200 rpm</p> <p>If the above conditions are met Increment Fail Timer</p>				<p>>= 20 Seconds</p>	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail Case 6</u></p> <p>Current range = Illegal (bit state 0000 or 1000 or 0001)</p> <p>and</p> <p>A Open Circuit (See Definition) = FALSE Boolean</p> <p>If the above Conditions are met then, Increment Fail timer</p>		<p>A Open Circuit Definition (flag set false if the following conditions are met):</p> <p>Current Range ≠ Transition 11 (bit state 0100)</p> <p>or</p> <p>Last positive state ≠ Neutral (bit state 0101)</p> <p>or</p> <p>Previous transition state ≠ Transition 8 (bit state 0111)</p> <p>Fail case 5 delay timer = 0 sec</p>		>= 6.25 Seconds	
			<p><u>Fail Case Z</u></p> <p>Current PRNDL State = PRNDL circuit ABCP = Range 1101</p> <p>and</p>					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Previous PRNDL state = circuit ABCP =1111 Input Speed >= 150 RPM Reverse Trans Ratio <= 2.6783 ratio Reverse Trans Ratio >= 3.0815 ratio If the above Conditions 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 >= 8.5996 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				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 = TUTD Enable Switch is Active =	Park or Reverse Range State or Neutral TRUE Boolean			>= 3 Fail Time (Sec) >= 5 Fail Counts	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P1876 Status is	>= 8.5996 Volts <= 31.99 Volts <= 511 KPH >= 400 RPM <= 7500 RPM >= 5 Sec 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.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100 ECM: None		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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 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				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Case 2 Tap Up Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 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				>= 600 Fail Time (Sec)	

12 OBDG05B Transmission Diagnostics

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 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 P0815 Status is ≠ Test Failed This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	<u>Fail Case</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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	
			<u>Fail</u> Tap Down Switch <u>Case</u> Stuck in the Down <u>2</u> Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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	= TRUE Boolean				
			NOTE: Both Failcase1 and Failcase 2 Must Be Met				>= 600 sec	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is	>= 1 Enable Time (Sec) >= 8.59961 Volts <= 31.9902 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated 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 Case</u> 1 Current range Previous range	= Transition on 1 (bit state 1110) Range ≠ CeTRG R_e_P RNDL_Drive6 Range				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Previous range	≠ CeTRG R_e_P RNDL_ Drive4 Range				
			Range Shift State	= Range Shift Comple ted ENUM				
			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				
			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 Case 2</u>					
			Output 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				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL state	= Transition on 8 (bit state 0111) Range				
			PRNDL state	= Drive 6 (bit state 0110) Range				
			PRNDL state	= Transition on 1 (bit state 1110) Range				
			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	>= 1 Sec				
			Input Speed	>= 400 Sec				
			If Fail Timer has Expired then Increment Fail Counter				>= 2	Fail Counts
			<u>Fail Case 3</u>					
			Current range	= Transition on 13 (bit state 0010) Range	Previous range	≠ CeTRGR_e_PRN_DL_Drive_5		
			Engine Torque	>= -8192 Nm	Previous range	≠ CeTRGR_e_PRN_DL_Drive_5		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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 satisfied when the "current range" = "Transition 13"		>= 0.225 Seconds	
			If Fail Timer has Expired then Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail Case 4</u>					
			Current range	= Transition 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	>= 30 Nm				
			Steady State Engine Torque	<= 8191.8 Nm				
			If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If the above Conditions have been met, Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail Case 5</u> Throttle Position 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) Range				
			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	>= 5 sec				
			Range Shift State	= Range Shift Complete				
			Absolute Attained Gear Slip	<= 50 rpm				
			Attained Gear	<= Sixth				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Attained Gear Throttle Position Output Speed If the above conditions are met Increment Fail Timer	>= First >= 8.0002 pct >= 200 rpm			>= 20 Seconds	
			<u>Fail</u> <u>Case</u> <u>6</u> Current range and A Open Circuit (See Definition)	Illegal (bit state = 0000 or 1000 or 0001) = FALSE Boolean	A Open Circuit Definition (flag set false if the following conditions are met): Current Range Last positive state or Previous transition state Fail case 5 delay timer	Transition n 11 (bit state 0100) ≠ Neutral (bit state 0101) ≠ Transition n 8 (bit state 0111) = 0 sec	>= 6.25 Seconds	
			If the above Conditions are met then, Increment Fail timer					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>Fail Case 7</p> <p>Current PRNDL State = PRNDL circuit ABCP = 1101 Range</p> <p>and</p> <p>Previous PRNDL state = PRNDL circuit ABCP = 1111 Range</p> <p>Input Speed >= 150 RPM</p> <p>Reverse Trans Ratio <= 2.6783 ratio</p> <p>Reverse Trans Ratio >= 3.0815 ratio</p> <p>If the above Conditions are met then, Increment Fail timer</p>				>= 6.25 Seconds	
			P182E will report test fail when any of the above 7 fail cases are met					
						<p>Ignition Voltage Lo >= 8.59961 Volts</p> <p>Ignition Voltage Hi <= 31.9902 Volts</p> <p>Engine Speed Lo >= 400 RPM</p> <p>Engine Speed Hi <= 7500 RPM</p> <p>Engine Speed is within the allowable limits for >= 5 Sec</p> <p>Engine Torque Signal Valid = TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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 TUTD Enable Switch is Active	= Park or Reverse or Neutral Range State = TRUE Boolean			>= 3 Fail Time (Sec) >= 5 Fail Counts	Special No MIL
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					<p>Engine Speed is within the allowable limits for</p> <p>P1876 Status is</p> <p>MIL not Illuminated for DTC's:</p>	<p>>= 5 Sec</p> <p>Test Failed This Key On or Fault Active</p> <p>TCM: P0815, P0816, P0826, P1761, P1825, P1877, P1915, U0100</p> <p>ECM: None</p>		
				<p>Disable Conditions:</p>				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.		
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	<u>Fail Case</u> 1	Substrate Temperature	>= 142.10156 °C			>= 5 Fail Time (Sec)	One Trip	
			<u>Fail Case</u> 2	Substrate Temperature	>= 50 °C			>= 2 Fail Time (Sec)		
				Ignition Voltage	>= 18 Volts					
				Note: either fail case can set the DTC						
					Ignition Voltage Lo >= 8.5996094 Volts Ignition Voltage Hi <= 31.999023 Volts Substrate Temp Lo >= 0 °C Substrate Temp Hi <= 170 °C Substrate Temp Between Temp Range for Time >= 0.25 Sec P0634 Status is ≠ Test Failed This Key On or Fault Active					
			Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None					
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 >= 0 N*m Engine Torque is <= 8191.875 N*m Engine Speed >= 400 RPM					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Vehicle Speed is	>= 10 Kph		
					Throttle Position is	>= 0 Pct		

					Transmission Input Speed is	>= 0 RPM		
					The previous requirement has been satisfied for	>= 0 Sec		

					The change (loop to loop) in transmission input speed is	< 8191.875 RPM/Loop		
					The previous requirement has been satisfied for	>= 0 Sec		
					Throttle Position Signal Valid	= TRUE Boolean		
					Engine Torque Signal Valid	= TRUE Boolean		
					Ignition Voltage	>= 8.5996094 Volts		
					Ignition Voltage	<= 31.999023 Volts		
					P0716 Status is not	= Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0717, P0752, P0973, P0974 ECM: P0101, P0102, P0103, P0121, P0122, P0123		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	<u>Fail Case 1</u> Transmission Input Speed is	< 67 RPM			>= 4.5 Fail Time (Sec)	One Trip
			<u>Fail Case 2</u> When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 653.125 RPM	Controller uses a single power supply for the speed sensors	= 1 Boolean		
					Engine Torque is >= 50 N*m Engine Torque is <= 8191.875 N*m Vehicle Speed >= 16 Kph Engine Torque Signal Valid = TRUE Boolean Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.999023 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 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: MIL not Illuminated for DTC's: TCM: P0722, P0723 ECM: P0101, P0102, P0103			
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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					OR Transmission Range is Engine Torque is Engine Torque is Engine Torque Condition 2 Engine Torque is Engine Torque is -----	= Park or Neutral >= 8191.75 N*m <= 8191.75 N*m >= 50 N*m <= 8191.75 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 Transmission Input Speed 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 Valid	>= 653.125 RPM <= 5350 RPM >= 3200 RPM >= 3200 RPM <= 8191.875 RPM = 1 Boolean = TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0723 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
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 Drop	> 650 RPM			>= 1.5 Output Speed Drop Recover y Fail Time (Sec)	
			AND Transmission Range is	= Driven range (R,D)				
					----- Range_Disable OR ----- Neutral_Range_Enable And Neutral_Speed_Enable are TRUE concurrently -----	= FALSE See Below = TRUE See Below = TRUE See Below		
					Transmission_Range_Enabled Transmission_Input_Speed_Enable	= TRUE See Below = TRUE See Below		

12 OBDG05B Transmission Diagnostics

Component/ System	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		
					Disable this DTC if the PTO is active	= 1 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			
					Transmission_Input_Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:			
					TIS Condition 1 is TRUE when both of the following conditions are satisfied for	>= 0 Enable Time (Sec)		
					Input Speed Delta	<= 4095.875 RPM		
					Raw Input Speed	>= 500 RPM		
					TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 satisfied 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_Enable is TRUE when one of the next six conditions is TRUE			
					Transmission Range is	= Neutral ENUM		
					Transmission Range is	= Reverse/Neutral Transitional ENUM		
					Transmission Range is	= Neutral/Drive Transitional ENUM		
					Time since a driven range (R,D) has been selected	>= Table Based Time Please Refer to Table 21 in supporting documents Sec		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Output Speed Sensor Raw Speed Output Speed when a fault was detected	>= 500 RPM >= 500 RPM		
				Disable Conditions:	MIL not Illuminated 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 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 Fail Counter	>= 750 Kpa >= Refer to Table 1 in Supporting Documents RPM >= 130 RPM			>= 2 Enable Time (Sec) >= 6 Fail Time (Sec) >= 6 Fail Time (Sec) >= 2 TCC Stuck Off Fail Counter	Two Trips
					TCC Mode Ignition Voltage Lo	= On or Lock >= 8.5996094 Volts		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Hi	<= 31.999023 Volts		
					Engine Speed	>= 400 RPM		
					Engine Speed	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Engine Torque Lo	>= 50 N*m		
					Engine Torque Hi	<= 8191.875 N*m		
					Throttle Position Lo	>= 8.0001831 Pct		
					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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	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 Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter				>= 1.5 Fail Time (Sec)	
							>= 6 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		
					Engine Speed Hi	<= 6000 RPM		
					Engine Speed Lo	>= 500 RPM		
					Vehicle Speed HI	<= 511 KPH		
					Vehicle Speed Lo	>= 1 KPH		
					Engine Torque Hi	<= 8191.875 Nm		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Torque Lo Current Range	>= 80 Nm		
					Current Range	≠ Neutral Range		
					Current Range	≠ Reverse Range		
					Transmission Sump Temperature	<= 130 °C		
					Transmission Sump Temperature	>= 18 °C		
					Throttle Position Hyst High AND	>= 5.0003052 Pct		
					Max Vehicle Speed to Meet Throttle Enable	<= 8 KPH		
					Once Hyst High has been met, the enable will remain while Throttle Position	>= 2.0004272 Pct		
					Disable for Throttle Position	>= 75 Pct		
					Disable if PTO active and value true	= 1 Boolean		
					Disable if in D1 and value true	= 1 Boolean		
					Disable if in D2 and value true	= 1 Boolean		
					Disable if in D3 and value true	= 1 Boolean		
					Disable if in D4 and value true	= 1 Boolean		
					Disable if in D5 and value true	= 1 Boolean		
					Disable if in MUMD and value true	= 1 Boolean		
					Disable if in TUTD and value true	= 1 Boolean		
					4 Wheel Drive Low Active	= FALSE Boolean		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated 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	Commaned Gear Slip Commanded Gear Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM = 1st Lock rpm <= 1.2095947 >= 1.0943604			>= 0.2 Fail Tmr = 5 Fail Counts ≠ 0 Neutral Timer (Sec) >= 0.3 Fail Timer (Sec) >= 8 Counts	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		

12 OBDG05B Transmission Diagnostics

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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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		
Mode 2 Multiplex Valve	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip Commanded Gear Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded On If the above parameters are true	>= 400 RPM = 3rd Gear = TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

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:	>= -6.65625 °C = 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, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail Case</u> 1 Commanded Gear	= 1st Locked				One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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	= TRUE Boolean		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, 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]	<u>Fail Case</u> 1 Case: Steady State 3rd Gear Commanded Gear Gearbox Slip	= 3rd Gear >= 400 RPM				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>Command 4th Gear once Output Shaft Speed</p> <p>If Gear Ratio >= 1.0943604</p> <p>And Gear Ratio <= 1.2095947</p> <p>It the above condiations are true, Increment 3rd gear fail counter</p> <p>and C35R Fail counter</p>	<p><= 400 RPM</p> <p>>= 1.0943604</p> <p><= 1.2095947</p>			<p>Please Refer to Table Neutral 16 in Timer (Sec) Supporting Documents</p> <p>>= 3 Fail Timer (Sec)</p> <p>>= 3 3rd Gear Fail Counts</p> <p>or 3-5R Clutch Fail Counts</p> <p>>= 14</p>	
			<p><u>Fail Case 2</u></p> <p>Case: Steady State 5th Gear Commanded Gear</p>	<p>= 5th Gear</p>				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gearbox Slip	>= 400 Rpm			Please Refer to Table 5 Neutral Timer (Sec) in Supporting Documents	
			Intrusive Test: Command 6th Gear					
			If attained Gear=6th gear Time	>= Please refer to Table 3 in supporting documents Shift Time (Sec)				
			It the above condiations are true, Increment 5th gear fail counter				>= 3 5th Gear Fail Counts	
			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		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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) Solinoid B Stuck On [C35R] (Steady State)	<p><u>Fail</u> <u>Case</u> 1</p> <p>Case: Steady State 1st</p> <p>Attained Gear slip</p> <p>If the Above is True for Time</p> <p>Intrusive test: (CBR1 clutch exhausted)</p> <p>Gear Ratio</p> <p>Gear Ratio</p> <p>If the above parameters are true</p>	<p>>= 400 RPM</p> <p>Table Based Time</p> <p>>= Please Enable Time Refer to (Sec) Table 4 in supporting documents</p> <p><= 1.6086426</p> <p>>= 1.4554443</p>			<p>>= 1.1</p> <p>Fail Timer (Sec)</p>	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (CB26 clutch exhausted)</p> <p>Gear Ratio</p> <p>Gear Ratio</p> <p>If the above parameters are true</p>	<p>Table Based Time</p> <p>>= Please Refer to Table 17 in supporting documents Sec</p> <p><= 1.6086426</p> <p>>= 1.4554443</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 2nd Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
			<p><u>Fail Case</u> 3</p> <p>Case: Steady State 4th gear</p>					

12 OBDG05B Transmission Diagnostics

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 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				
			If the Above is True for Time	Table Based Time Please Refer to Sec Table 17 in supporting documents				
			Intrusive test: (C1234 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 0.8946533 >= 0.8094482				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Fail Timer (Sec) >= 1.1 Fail Count in 4th Gear or Total Fail Counts >= 3	
			<u>Fail Case 4</u> Case: Steady State 6th gear	Table Based value Please Refer to rpm/sec 3D Table 1 in supporting documents Max Delta Output Speed Hysteresis >=				
			Min Delta Output Speed Hysteresis >=	Table Based value Please Refer to rpm/sec 3D Table 2 in supporting documents				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (CB26 clutch exhausted)</p> <p>Gear Ratio</p> <p>Gear Ratio If the above parameters are true</p>	<p>Table Based Time</p> <p>>= Please Refer to Table 17 in supporting documents Sec</p> <p><= 0.8946533</p> <p>>= 0.8094482</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 counts</p> <p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 6th Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
					<p>PRNDL State defaulted</p> <p>inhibit RVT</p> <p>IMS fault pending indication</p> <p>output speed</p> <p>TPS validity flag</p>	<p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>>= 0 RPM</p> <p>= TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	<p>Primary Offgoing Clutch is exhausted (See Table 12 in Supporting Documents for Exhaust Delay Timers)</p> <p>Primary Oncoming Clutch Pressure Command Status</p> <p>Primary Offgoing Clutch Pressure Command Status</p> <p>Range Shift Status</p> <p>Attained Gear Slip</p>	<p>= TRUE Boolean</p> <p>= Maximum pressurize d</p> <p>= Clutch exhaust command</p> <p>≠ Initial Clutch Control</p> <p><= 40 RPM</p>				One Trip

12 OBDG05B Transmission Diagnostics

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 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)				

12 OBDG05B Transmission Diagnostics

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 Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.2998047 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)	>= 0.2998047 Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail >= Timer sec 1, and Refere nce Support ing Table 15 for Fail Timer 2	

12 OBDG05B Transmission Diagnostics

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 3rd gear fail counter 5th gear fail counter Total fail counter				>= 3 3rd gear fail counts OR >= 3 5th gear fail counts OR >= 5 total fail counts	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode	>= -6.65625 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled Default Gear Option is not present Disable Conditions:	= TRUE Boolean = TRUE 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> <u>Case</u> 1 Case: Steady State 4th Gear Gear slip Intrusive test: commanded 5th gear	>= 400 RPM			Please See Table 5 Neutral >= For Timer Neutral (Sec) Time Cal	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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 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		
					OutputSpeed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> <u>Case</u> 1 Case: Steady State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM Table Based Time >= Please Enable Time Refer to (Sec) Table 4 in supporting documents <= 1.2095947 >= 1.0943604			>= 1.1 Fail Timer (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Fail Count in 1st Gear or Total Fail Counts >= 2 >= 3	
			<u>Fail Case 2</u> Case Steady State 2nd	Table Based value Please Refer to rpm/sec 3D Table 1 in supporting documents				
			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				

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 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				
			If the Above is True for Time	Table Based Time Please Refer to Sec Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.2095947 >= 1.0943604				

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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	<= 8191.875 Nm >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

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 pressurized					
			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:						
			fail timer 1 (4-1 shifting with throttle) ≥	0.2998047	Fail Time (Sec)				
			fail timer 1 (4-1 shifting without throttle) ≥	0.5	Fail Time (Sec)				
			fail timer 1 (4-2 shifting with throttle) ≥	0.2998047	Fail Time (Sec)				
			fail timer 1 (4-2 shifting without throttle) ≥	0.5	Fail Time (Sec)				
			fail timer 1 (4-3 shifting with throttle) ≥	0.2998047	Fail Time (Sec)				

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	<u>Fail Case</u> Tap Up Switch Stuck in the Up Position in Range 1 Enabled Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boolean = 1 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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)	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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	= 1 Boolean = TRUE Boolean			>= 600 Fail Time (Sec)	
					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 P0815 Status is	>= 1 Enable Time (Sec) >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0816, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0816	Downshift Switch Circuit	<u>Fail</u> <u>Case</u> 1 Tap Down Switch Stuck in the Down Position in Range 1 Enabled Tap Down Switch Stuck in the Down Position in Range 2 Enabled Tap Down Switch Stuck in the Down Position in Range 3 Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled Tap Down Switch Stuck in the Down Position in Range 5 Enabled Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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	
			<u>Fail</u> <u>Case</u> 2 Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 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	= TRUE Boolean				
			NOTE: Both Failcase1 and Failcase 2 Must Be Met				>= 600 sec	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Time Since Last Range Change Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0816 Status is Disable Conditions:	>= 1 Enable Time (Sec) >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active MIL not Illuminated for DTC's:		
						TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			>= 60 Fail Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM		

12 OBDG05B Transmission Diagnostics

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		
					P0826 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P1765	Upshift Switch Circuit #2	<u>Fail Case</u> 1 Tap Up Switch Stuck in the Up Position in Range 1 Enabled Tap Up Switch Stuck in the Up Position in Range 2 Enabled Tap Up Switch Stuck in the Up Position in Range 3 Enabled Tap Up Switch Stuck in the Up Position in Range 4 Enabled Tap Up Switch Stuck in the Up Position in Range 5 Enabled	= 0 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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)
			<u>Fail</u> Tap Up Switch <u>Case</u> 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				

12 OBDG05B Transmission Diagnostics

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 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	= TRUE Boolean				
			NOTE: Both Failcase1 and Failcase 2 Must Be Met				>= 600	Fail Time (Sec)
					Time Since Last Range Change	>= 1	Enable Time (Sec)	
					Ignition Voltage Lo	>= 8.5996094	Volts	
					Ignition Voltage Hi	<= 31.999023	Volts	
					Engine Speed Lo	>= 400	RPM	
					Engine Speed Hi	<= 7500	RPM	

12 OBDG05B Transmission Diagnostics

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		
					P1765 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1767, P1761, P182E, P1915 ECM: None		
Tap Up Tap Down Switch (TUTD)	P1766	Downshift Switch Circuit #2	<u>Fail Case</u> 1 Tap Down Switch Stuck in the Down Position in Range 1 Enabled Tap Down Switch Stuck in the Down Position in Range 2 Enabled Tap Down Switch Stuck in the Down Position in Range 3 Enabled Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 0 Boolean				Special No MIL

12 OBDG05B Transmission Diagnostics

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 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	
			<u>Fail</u> <u>Case</u> <u>2</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	= 0 Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0 Boolean				

12 OBDG05B Transmission Diagnostics

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 Reverse Enabled Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	= 0 Boolean = TRUE Boolean			>= 600 sec	
					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 P1766 Status is	>= 1 Sec >= 8.5996094 Volts <= 18 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P1767, P1761, P182E, P1915 ECM: None		
Tap Up Tap Down Switch (TUTD)	P1767	Up and Down Shift Switch Circuit #2	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			>= 60 Fail Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi	>= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM		

12 OBDG05B Transmission Diagnostics

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		
					P1767 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1761 ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail Case 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 =	Range Shift ENUM Completed				
			Absolute Attained Gear Slip <=	50 rpm				
			Attained Gear <=	Sixth				
			Attained Gear >=	First				
			Throttle Position Available =	TRUE				
			Throttle Position >=	8.0001831 pct				
			Output Speed >=	200 rpm				

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold 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	>= 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 Conditions have been met, Increment Fail Counter				>= 15 Fail Counts	
			<u>Fail Case 5</u> Throttle Position Available	= TRUE Boolean				
			The following PRNDL sequence events occur in this exact order:					
			PRNDL State	= Reverse (bit state 1100) Range				
			PRNDL State	= 11 (bit state 0100) Range				
			PRNDL State	= Neutral (bit state 0101) Range				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL State = Transition 11 (bit Range state 0100) Above sequencing <= 1 Sec occurs in Then delay timer increments Delay timer >= 5 sec Range Shift State = Range Shift Complete Absolute Attained Gear <= 50 rpm Slip Attained Gear <= Sixth Attained Gear >= First Throttle Position >= 8.0001831 pct Output Speed >= 200 rpm If the above conditions are met Increment Fail Timer				>= 20 Seconds	
			<u>Fail</u> <u>Case</u> 6 Current range = Illegal (bit state 0000 or 1000 or 0001) and A Open Circuit (See Definition) = FALSE Boolean		A Open Circuit Definition (flag set false if the following conditions are met): Current Range ≠ Transition 11 (bit state 0100) or Last positive state ≠ Neutral (bit state 0101) or			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the above Conditions are met then, Increment Fail timer</p>		<p>Previous transition state</p> <p>Fail case 5 delay timer</p>	<p>≠ Transition 8 (bit state 0111)</p> <p>= 0 sec</p>	<p>>= 6.25 Seconds</p>	
			<p><u>Fail</u> <u>Case</u> <u>7</u></p> <p>Current PRNDL State</p> <p>and</p> <p>Previous PRNDL state</p> <p>Input Speed</p> <p>Reverse Trans Ratio</p> <p>Reverse Trans Ratio</p> <p>If the above Conditions are met then, Increment Fail timer</p>	<p>= PRNDL circuit ABCP = 1101 Range</p> <p>= PRNDL circuit ABCP =1111 Range</p> <p>>= 150 RPM</p> <p><= 2.9759521 ratio</p> <p>>= 3.4239502 ratio</p>			<p>>= 6.25 Seconds</p>	
			<p>P182E will report test fail when any of the above 7 fail cases are met</p>					
					<p>Ignition Voltage Lo</p> <p>Ignition Voltage Hi</p> <p>Engine Speed Lo</p>	<p>>= 8.5996094 Volts</p> <p><= 31.999023 Volts</p> <p>>= 400 RPM</p>		

12 OBDG05B Transmission Diagnostics

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	<= 7500 RPM >= 5 Sec = TRUE Boolean		
				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 TUTD Enable Switch is Active	Park or Reverse or Range State Neutral = TRUE Boolean			>= 3 Fail Time (Sec) >= 5 Fail Counts	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts <= 511 KPH >= 400 RPM <= 7500 RPM >= 5 Sec		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P1876 Status is	≠ Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated 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 Enumeration				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				
			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)	
					DTC has Ran this Key Cycle?	= FALSE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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:	TCM: P0722, P0723 ECM: None		
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>Fail Case</u> 1 Case: Steady 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			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If attained Gear = 5th For Time</p> <p>If Above Conditions have been met, Increment 5th gear fail counter</p> <p>and CB26 Fail Count</p>	<p>Table Based Time Enable Time</p> <p>>= Please see Table 2 in Supporting Documents (Sec)</p>			<p>>= 3 5th Gear Fail Count</p> <p>>= 14 or CB26 Fail Count</p>	
					<p>PRNDL State defaulted = FALSE Boolean</p> <p>inhibit RVT = FALSE Boolean</p> <p>IMS fault pending indication = FALSE Boolean</p> <p>TPS validity flag = TRUE Boolean</p> <p>Hydraulic System Pressurized = TRUE Boolean</p> <p>Minimum output speed for RVT >= 0 RPM</p> <p>A OR B (A) Output speed enable >= 67 RPM</p> <p>(B) Accelerator Pedal enable >= 0.5004883 Pct</p> <p>Common Enable Criteria</p> <p>Ignition Voltage Lo >= 8.5996094 Volts</p> <p>Ignition Voltage Hi <= 31.999023 Volts</p> <p>Engine Speed Lo >= 400 RPM</p>			

12 OBDG05B Transmission Diagnostics

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 Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	<= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	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

12 OBDG05B Transmission Diagnostics

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 pressurized					
			Primary Offgoing Clutch Pressure Command Status =	Clutch exhaust command					
			Range Shift Status ≠	Initial Clutch Control					
			Attained Gear Slip ≤	40 RPM					
			If above conditions are true, increment appropriate Fail 1 Timers Below:						
			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)				
			fail timer 1 (2-3 shifting 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)				

12 OBDG05B Transmission Diagnostics

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	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)			
			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	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter</p> <p>2nd gear fail counter</p> <p>6th gear fail counter</p> <p>total fail counter</p>				<p>Fail Counter From 2nd Gear OR</p> <p>Fail Counter From 6th Gear OR</p> <p>Total Fail Counter</p> <p>>= 3</p> <p>>= 3</p> <p>>= 5</p>	
					<p>TUT Enable temperature</p> <p>Input Speed Sensor fault</p> <p>Output Speed Sensor fault</p> <p>Command / Attained Gear</p> <p>High Side Driver ON</p> <p>output speed limit for TUT</p> <p>input speed limit for TUT</p> <p>PRNDL state defaulted</p>	<p>>= -6.65625 °C</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>≠ 1st Boolean</p> <p>= TRUE Boolean</p> <p>>= 100 RPM</p> <p>>= 150 RPM</p> <p>= FALSE Boolean</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					IMS Fault Pending Service Fast Learn Mode HSD Enabled	= FALSE Boolean = FALSE Boolean = TRUE Boolean		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	<u>Fail Case</u> 1 Case: Steady State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted) Gear Ratio	>= 400 RPM Table Based Time >= Please Refer to Table 4 in supporting documents Enable Time (Sec) <= 2.4821777				One Trip

12 OBDG05B Transmission Diagnostics

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 3D Table 2 in supporting documents				
			If the Above is True for Time	Table Based Time Please Refer to Sec Table 17 in supporting documents				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 2.4821777 >= 2.2458496				
							>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 3rd Gear or
							>= 3	Total Fail Counts

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail Case 3</u> Case: Steady State 4rd Gear	Table Based value Max Delta Output Speed Hysteresis >= Refer to 3D Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	Table Based value >= Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	Table Based Time >= Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch exhausted)	Gear Ratio <= 0.7003174 Gear Ratio >= 0.633667				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			<u>Fail Case 4</u> Case: Steady State 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	Table Based value Please Refer to rpm/sec 3D Table 1 in supporting documents Table Based value Please Refer to rpm/sec 3D Table 2 in supporting documents				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C35R clutch exhausted) Gear Ratio <= 0.7003174 Gear Ratio >= 0.633667 If the above parameters are true</p>	<p>Table Based Time</p> <p>>= Please Refer to Table 17 in supporting documents Sec</p> <p><= 0.7003174</p> <p>>= 0.633667</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 5th Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
					<p>PRNDL State defaulted</p> <p>inhibit RVT</p> <p>IMS fault pending indication</p> <p>output speed</p> <p>TPS validity flag</p> <p>HSD Enabled</p>	<p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>>= 0 RPM</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and C1234 fail counter				>= 14 or C1234 Clutch Fail Count	
			<u>Fail Case 2</u> Case: Steady State 2nd Gear					
			Gear slip	>= 400 RPM			>=	Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)
			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				>= 3	2nd Gear Fail Count
			and C1234 fail counter				>= 14	or C1234 Clutch Fail Count
			<u>Fail Case 3</u> Case: Steady State 3rd Gear					

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	>= 400 RPM			Please See Table 5 For Neutral Timer 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				>= 3	3rd Gear Fail Count
			and C1234 fail counter				>= 14	or C1234 Clutch Fail Count
			<u>Fail</u> <u>Case</u> <u>4</u> Case: Steady State 4th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer Time Cal	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Throttle Position Signal valid	= TRUE Boolean		
					HSD Enabled	= TRUE Boolean		
					Transmission Fluid Temperature	>= -6.65625 °C		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	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		

12 OBDG05B Transmission Diagnostics

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)	<p>Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)</p> <p>Primary Oncoming Clutch Pressure Command Status</p> <p>Primary Offgoing Clutch Pressure Command Status</p> <p>Range Shift Status</p> <p>Attained Gear Slip</p> <p>If the above conditions are true increment appropriate Fail 1 Timers Below:</p> <p>fail timer 1 (2-6 shifting with throttle)</p> <p>fail timer 1 (2-6 shifting without throttle)</p> <p>fail timer 1 (3-5 shifting with throttle)</p>	<p>= TRUE Boolean</p> <p>= Maximum pressurized</p> <p>= Clutch exhaust command</p> <p>≠ Initial Clutch Control</p> <p><= 40 RPM</p> <p>>= 0.2998047 sec</p> <p>>= 0.5 sec</p> <p>>= 0.2998047 sec</p>				One Trip

12 OBDG05B Transmission Diagnostics

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)	>= 0.2998047 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 1, and Reference Supporting Table 15 for Fail Timer 2	

12 OBDG05B Transmission Diagnostics

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					
			2nd gear fail counter				>= 3	Fail Counter From 2nd Gear
			3rd gear fail counter				>= 3	Fail Counter From 3rd Gear
			4th gear fail counter				>= 3	Fail Counter From 4th Gear
			total fail counter				>= 5	Total Fail Counter
					TUT Enable temperature	>= -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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	<u>Fail Case</u> 1 Case: 5th Gear					One Trip

12 OBDG05B Transmission Diagnostics

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 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 >=				
			If the Above is True for Time	Table Based Time Please Refer to Sec Table 17 in supporting documents >=				
			Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.2095947 >= 1.0943604				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							>= 1.1 Fail Timer (Sec)	
							>= 3 Fail Count in 5th Gear	
							>= 3 OR Total Fail Counts	
			<u>Fail Case</u> 2 Case: 6th Gear	Table Based value Please Refer to rpm/sec 3D Table 1 in supporting documents				
			Max Delta Output Speed Hysteresis	>= 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				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (CB26 clutch exhausted) Gear Ratio <= 1.2095947 Gear Ratio >= 1.0943604 If the above parameters are true</p>	<p>Table Based Time</p> <p>>= Please Refer to Table 17 in supporting documents Sec</p> <p><= 1.2095947</p> <p>>= 1.0943604</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 6th Gear</p> <p>OR</p> <p>>= 3 Total Fail Counts</p>	
					<p>PRNDL State defaulted</p> <p>inhibit RVT</p> <p>IMS fault pending indication</p> <p>output speed</p> <p>TPS validity flag</p> <p>HSD Enabled</p>	<p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>>= 0 RPM</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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		

12 OBDG05B Transmission Diagnostics
RWD1 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

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	Sec

Table 4

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

Table 5

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	3.00	3.00	Sec

Table 6

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

Table 7

Axis	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	409.00	3.40	1.40	1.30	1.20	Sec

Table 8

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

12 OBDG05B Transmission Diagnostics
RWD1 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

Table 10

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

Table 11

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

Table 12

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

Table 13

Axis	-40.00	-20.00	0.00	30.00	110.00	°C
Curve	2.51	0.95	0.50	0.29	0.13	Sec

Table 14

Axis	-40.00	-20.00	0.00	30.00	110.00	°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	40.00	°C
Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sec

Table 16

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

12 OBDG05B Transmission Diagnostics
RWD1 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	°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	149.10	°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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	<u>Fail Case</u> 1	Substrate Temperature	>= 142.10156 °C			>= 5 Fail Time (Sec)	One Trip
			<u>Fail Case</u> 2	Substrate Temperature	>= 50 °C			>= 2 Fail Time (Sec)	
				Ignition Voltage	>= 18 Volts				
				Note: either fail case can set the DTC					
					Ignition Voltage Lo Ignition Voltage Hi Substrate Temp Lo Substrate Temp Hi	>= 8.5996094 Volts <= 31.999023 Volts >= 0 °C <= 170 °C			
					Substrate Temp Between Temp Range for Time	>= 0.25 Sec			
					P0634 Status is	≠ Test Failed This Key On or Fault Active			
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None			
Transmission Input Speed 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 N*m <= 8191.875 N*m >= 400 RPM <= 7500 RPM		

12 OBDG05B Transmission Diagnostics

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 Vehicle Speed is Throttle Position is ----- Transmission Input Speed is The previous requirement has been satisfied for ----- The change (loop to loop) in transmission input speed is The previous requirement has been satisfied for Throttle Position Signal Valid Engine Torque Signal Valid Ignition Voltage Ignition Voltage P0716 Status is not	>= 5 Sec >= 10 Kph >= 0 Pct ----- >= 0 RPM >= 0 Sec ----- < 8191.875 RPM/Loop >= 0 Sec = TRUE Boolean = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated 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 Case</u> 1 Transmission Input Speed is	< 67 RPM			>= 4.5 Fail Time (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Case 2 When P0722 DTC Status equal to Test Failed and Transmission Input 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 Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for P0717 Status is not	>= 50 N*m <= 8191.875 N*m >= 16 Kph = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0722, P0723 ECM: P0101, P0102, P0103		
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 Transmission Input Speed Check Engine Torque Check Throttle Position Transmission Fluid Temperature	= Test Failed This Key On or Fault Active = TRUE Boolean = TRUE Boolean >= 8.0001831 Pct >= -40 °C		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable this DTC if the PTO is active Engine Torque Signal Valid Throttle Position Signal Valid Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	= 1 Boolean = TRUE Boolean = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 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 OR Transmission Range is Engine Torque is Engine Torque is Engine Torque Condition 2 Engine Torque is Engine Torque is -----	≠ Range shift completed ENUM = Park or Neutral >= 8191.75 N*m <= 8191.75 N*m >= 50 N*m <= 8191.75 N*m		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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 \geq 653.125 RPM Transmission Input Speed is \leq 5350 RPM TIS Check Condition 2 Engine Speed without the brake applied is \geq 3200 RPM Engine Speed with the brake applied is \geq 3200 RPM Engine Speed is \leq 8191.875 RPM Controller uses a single power supply for the speed sensors = 1 Boolean Powertrain Brake Pedal is Valid = TRUE Boolean			
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0716, P0717, P0723 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw	\geq 105 RPM			\geq 0 Enable Time (Sec)	One Trip
			Output Speed Delta	\leq 8192 RPM			\geq 0 Enable Time (Sec)	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Output Speed Drop AND Transmission Range is	> 650 RPM = Driven range (R,D)			Output Speed Drop Recovery Fail Time (Sec) => 1.5	
					----- Range_Disable OR ----- Neutral_Range_Enable And Neutral_Speed_Enable are TRUE concurrently -----	= FALSE See Below = TRUE See Below = TRUE See Below		
					Transmission_Range_En able Transmission_Input_Spee d_Enable No Change in Transfer Case Range (High <-> Low) for P0723 Status is not Disable this DTC if the PTO is active Ignition Voltage is Ignition Voltage is Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	= TRUE See Below = TRUE See Below => 5 Seconds = Test Failed This Key On or Fault Active = 1 Boolean => 8.5996094 Volts <= 31.999023 Volts => 400 RPM <= 7500 RPM => 5 Sec		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Enable_Flags Defined Below			
					Transmission_Input_Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE: TIS Condition 1 is TRUE when both of the following conditions are satisfied for Input Speed Delta <= 4095.875 RPM Raw Input Speed >= 500 RPM TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed = 0 RPM A Single Power Supply is used for all speed sensors = TRUE Boolean -----	>= 0 Enable Time (Sec) <= 4095.875 RPM >= 500 RPM = 0 RPM = TRUE Boolean		
					Neutral_Range_Enable is TRUE when any of the next 3 conditions are TRUE Transmission Range is = Neutral ENUM Transmission Range is = Reverse/Neutral Transitional ENUM Transmission Range is = Neutral/Drive Transitional ENUM And when a drop occurs	= Neutral ENUM = Reverse/Neutral Transitional ENUM = Neutral/Drive Transitional ENUM		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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 Transmission Range is Input Clutch is not -----	= Park ENUM = Park/Reverse Transitional ENUM = ON (Fully Applied) ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satisfied for Transmission Output Speed The loop to loop change of the Transmission Output Speed is The loop to loop change of the Transmission Output Speed is -----	> 1.5 Seconds > 130 RPM < 20 RPM > -10 RPM		
					Transmission_Range_En able is TRUE when one of the next six conditions is TRUE Transmission Range is Transmission Range is	= Neutral ENUM = Reverse/Neutral Transitional ENUM		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Range is	= Neutral/Drive 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		
				Disable Conditions:	MIL not Illuminated 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 be Met (A) TCC Slip Error @ TCC On Mode (B) TCC Slip @ Lock On Mode	>= 750 Kpa Refer to Table 1 in Supporting Documents RPM 130 RPM			>= 2 Enable Time (Sec) >= 6 Fail Time (Sec) >= 6 Fail Time (Sec)	Two Trips

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Above Conditions Have been Met, and Fail Timer Expired, Increment				>= 2 TCC Stuck Off Fail Counter	
					TCC Mode = On or Lock			
					Ignition Voltage Lo >= 8.5996094 Volts			
					Ignition Voltage Hi <= 31.999023 Volts			
					Engine Speed >= 400 RPM			
					Engine Speed <= 7500 RPM			
					Engine Speed is within the allowable limits for >= 5 Sec			
					Engine Torque Lo >= 50 N*m			
					Engine Torque Hi <= 8191.875 N*m			
					Throttle Position Lo >= 8.0001831 Pct			
					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			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P0741 Status is	≠ Test Failed This Key On or Fault Active 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		
					Disable Conditions:	MIL not Illuminated for DTC's:		
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed TCC Slip Speed If Above Conditions Have been Met, and Fail Timer Expired, Increment	>= -50 RPM <= 13 RPM			>= 1.5 Fail Time (Sec) >= 6 Fail Counter	One Trip
					TCC Mode	= Off		
					Enable test if Cmnd Gear = 1stFW and value true	= 1 Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Enable test if Cmnd Gear = 2nd and value true	= 0 Boolean		
					Engine Speed Hi	<= 6000 RPM		
					Engine Speed Lo	>= 500 RPM		
					Vehicle Speed Hi	<= 511 KPH		
					Vehicle Speed Lo	>= 1 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 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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	>= 8.5996094 V		
					Ignition Voltage	<= 31.999023 V		
					Vehicle Speed	<= 511 KPH		
					Engine Speed	>= 400 RPM		
					Engine Speed	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Engine Torque Signal Valid	= TRUE Boolean		
					Throttle Position Signal Valid	= TRUE Boolean		
					P0742 Status is	≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Mode 2 Multiplex Valve	P0751	Shift Solenoid Valve A Stuck Off	Commaned Gear Slip	>= 400 RPM				Two Trips
			Commaned 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 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		
					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		

12 OBDG05B Transmission Diagnostics

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 Disable Conditions:	= FALSE Boolean = FALSE Boolean = TRUE 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	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip Commanded Gear Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded ^ If the above parameters are true	>= 400 RPM = 3rd Gear = TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	<= 400 RPM >= 3.8256836 <= 4.2283936			Please Refer to Table Neutral >= 16 in Timer Supporting (Sec) Documents >= 1.5 Fail Timer (Sec) >= 5 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 High-Side Driver is Enabled = TRUE Boolean Throttle Position Signal Valid from ECM = TRUE Boolean Output Speed >= 67 RPM OR TPS >= 0.5004883 % Range Shift State = Range Shift Completed ENUM Transmission Fluid Temperature >= -6.65625 °C Input Speed Sensor fault = FALSE Boolean			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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				>= 1 sec >= 3 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	<u>Fail</u> Case: Steady <u>Case</u> State 3rd 1 Gear Commanded Gear = 3rd Gear Gearbox Slip >= 400 RPM Command 4th Gear once Output Shaft Speed <= 400 RPM If Gear Ratio >= 1.0943604 And Gear Ratio <= 1.2095947				Please Refer to Table Neutral >= 16 in Timer Supporting Documents Fail Timer (Sec) >= 3	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the above conditions are true, Increment 3rd gear fail counter</p> <p>and C35R Fail counter</p>				<p>>= 3 3rd Gear Fail Counts</p> <p>>= 14 or 3-5R Clutch Fail Counts</p>	
			<p><u>Fail Case 2</u> Case: Steady State 5th Gear Commanded Gear</p>	= 5th Gear				
			Gearbox Slip	>= 400 Rpm			<p>>= 5 in Neutral Timer (Sec) Supporting Documents</p>	
			Intrusive Test: Command					
			If attained Gear=6th gear Time	>= Please refer to Table 3 in supporting documents Shift Time (Sec)				

12 OBDG05B Transmission Diagnostics

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, Increment 5th gear fail counter and C35R Fail counter				>= 3 5th Gear Fail Counts or >= 14 3-5R Clutch Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication TPS validity flag Hydraulic System Pressurized Minimum output speed for RVT A OR B (A) Output speed enable (B) Accelerator Pedal enable Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature	= FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean = TRUE Boolean >= 0 RPM >= 67 RPM >= 0.5004883 Pct >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.65625 °C		

12 OBDG05B Transmission Diagnostics

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 Disable Conditions:	= FALSE Boolean = FALSE Boolean = TRUE 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) Solinoid B Stuck On [C35R] (Steady State)	<u>Fail Case</u> 1 Case: Steady State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted)	>= 400 RPM >= Please Refer to Table 4 in supporting documents Enable Time (Sec)				One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time	>= Table Based Time Please Refer to Sec Table 17 in supporting documents				
			Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	<= 1.6086426 >= 1.4554443			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 2nd Gear or >= 3 Total Fail Counts	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Case: Steady Case State 4th 3 gear	<p>Table Based value Please Refer to 3D rpm/sec Table 1 in supporting documents</p> <p>Max Delta Output Speed Hysteresis >=</p>				
			Min Delta Output Speed Hysteresis	<p>Table Based value Please Refer to 3D rpm/sec Table 2 in supporting documents</p> <p>>=</p>				
			If the Above is True for Time	<p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>>= Sec</p>				
			Intrusive test: (C1234 clutch Gear Ratio	<p><= 0.8946533</p>				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gear Ratio If the above parameters are true	>= 0.8094482			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			Fail Case: Steady Case State 6th 4 gear	Max Delta Output Speed Hysteresis >= Table Based value Please Refer to 3D rpm/sec Table 1 in supporting documents Min Delta Output Speed Hysteresis >= Table Based value Please Refer to 3D rpm/sec Table 2 in supporting documents				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (CB26 clutch exhausted)</p> <p>Gear Ratio</p> <p>Gear Ratio</p> <p>If the above parameters are true</p>	<p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>>= Sec</p> <p><= 0.8946533</p> <p>>= 0.8094482</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 counts</p> <p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 6th Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
					<p>PRNDL State defaulted</p> <p>inhibit RVT</p> <p>IMS fault pending indication</p> <p>output speed</p> <p>TPS validity flag</p>	<p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>= FALSE Boolean</p> <p>>= 0 RPM</p> <p>= TRUE Boolean</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled	= TRUE Boolean		
					Hydraulic_System_Pressurized 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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 Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip	= TRUE Boolean = Maximum pressurized = Clutch exhaust command ≠ Initial Clutch Control <= 40 RPM				One Trip

12 OBDG05B Transmission Diagnostics

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 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)			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (5-4 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Throttle)	>= 0.2998047 Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enabl e Timers for Fail >= Timer sec 1, and Refere nce Suppo rting Table 15 for Fail Timer 2	

12 OBDG05B Transmission Diagnostics

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 3rd gear fail counter 5th gear fail counter Total fail counter				>= 3 3rd gear fail counts OR >= 3 5th gear fail counts OR >= 5 total fail counts	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode	>= -6.65625 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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	>= 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		
					OutputSpeed Sensor fault	= FALSE Boolean		
					Default Gear Option is not present	= TRUE		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> <u>Case</u> Case: Steady 1 State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM Table Based Time >= Please Refer to Table 4 in supporting documents <= 1.2095947 >= 1.0943604				One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C35R clutch Gear Ratio	<= 1.2095947				
			Gear Ratio	>= 1.0943604				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 3rd Gear OR >= 3 Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized A OR B (A) Output speed enable (B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for if Attained Gear=1st FW Accelerator Pedal enable	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean = TRUE Boolean = TRUE Boolean >= 67 Nm >= 0.5004883 Nm >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= 5.0003052 Pct		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 5 Nm <= 8191.875 Nm >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Conditions:	MIL not illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E	
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers)	= TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

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 pressurized				
			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					
			fail timer 1 (4-1 shifting with throttle)	>= 0.2998047	Fail Time (Sec)			
			fail timer 1 (4-1 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-2 shifting with throttle)	>= 0.2998047	Fail Time (Sec)			
			fail timer 1 (4-2 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (4-3 shifting with throttle)	>= 0.2998047	Fail Time (Sec)			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			4th gear fail counter				>= 3	Fail Counter From 4th Gear
								OR
			5th gear fail counter				>= 3	Fail Counter From 5th Gear
								OR
			6th gear fail counter				>= 3	Fail Counter From 6th Gear
								OR
			Total fail counter				>= 5	Total Fail Counter
					TUT Enable temperature	>= -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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= 100 RPM >= 150 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
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 > 10 Sample Timer (Sec)	Specia l No MIL
					Tap Up Tap Down Message Health Engine Speed Lo	= TRUE Boolean >= 400 RPM		

12 OBDG05B Transmission Diagnostics

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	<= 7500 RPM >= 5 Sec		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Internal Mode Switch (IMS)	P182E	Internal Mode Switch - Invalid Range	<u>Fail Case</u> 1	Current range = Transition 1 (bit state Range 1110)				One Trip
				Previous range ≠ CeTRGR_e _PRNDL_D Range rive6				
				Previous range ≠ CeTRGR_e _PRNDL_D Range rive4				
				Range Shift State = Range Shift Completed ENUM				
				Absolute Attained <= 50 rpm				
				Gear Slip Attained <= Sixth				
				Attained >= First				
				Throttle Position = TRUE				
				Available Throttle Position >= 8.0001831 pct				
				Output Engine >= 200 rpm				
				>= 50 Nm				
				Engine Torque <= 8191.75 Nm				

12 OBDG05B Transmission Diagnostics

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 Fail Timer has Expired then Increment				>= 1 Fail Seconds >= 5 Fail Counts	
			<u>Fail Case 2</u> Output Speed 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 = Inactive	<= 70 rpm				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If all conditions above are met</p> <p>If the below two conditions are met Increment</p> <p>delay timer ≥ 1 Sec</p> <p>Input Speed ≥ 400 Sec</p> <p>If Fail Timer has Expired then Increment</p>				<p>≥ 3 Fail Seconds</p> <p>≥ 2 Fail Counts</p>	
			<p><u>Fail Case 3</u></p> <p>Current range = Transition 13 (bit state Range 0010)</p> <p>Engine Torque ≥ -8192 Nm</p> <p>Engine Torque ≤ 8191.75 Nm</p> <p>If the above conditions are met then, Increment Fail Timer</p> <p>If Fail Timer has Expired then Increment</p>		<p>Previous range \neq CeTRGR_e_PRNDL_Drive4</p> <p>Previous range \neq CeTRGR_e_PRNDL_Drive4</p> <p>IMS is 7 position configuration = 0 Boolean</p> <p>If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"</p>		<p>≥ 0.225 Seconds</p> <p>≥ 15 Fail Counts</p>	
			<p><u>Fail Case 4</u></p> <p>Current range = Transition 8 (bit state Range 0111)</p>		<p>Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8</p>			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold 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	>= 100 Nm				
			Steady State Engine	<= 8191.75 Nm				
			If the above conditions are met then Increment Fail Timer				>= 0.225 Seconds	
			If the above Conditions have been met, Increment				>= 15 Fail Counts	
			<u>Fail</u> <u>Case</u> <u>5</u> Throttle Position Available The following PRNDL sequence events occur in this exact order:	= TRUE Boolean				
			PRNDL State	= Reverse (bit state 1100) Range				
			PRNDL State	= Transition 11 (bit state 0100) Range				
			PRNDL State	= Neutral (bit state 0101) Range				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL State	= 11 (bit state Range 0100)				
			Above sequencing occurs in Then delay timer increments Delay timer	<= 1 Sec >= 5 sec				
			Range Shift State	= Range Shift Complete				
			Absolute Attained Gear Slip Attained Attained Throttle Position Output	<= 50 rpm <= Sixth >= First >= 8.0001831 pct >= 200 rpm				
			If the above conditions are met Increment				>= 20 Seconds	
			<u>Fail Case 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			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the above Conditions are met then, Increment Fail timer</p>		<p>Last positive state or Previous transition state Fail case 5 delay timer</p>	<p>≠ Neutral (bit state 0101) ≠ Transition 8 (bit state 0111) = 0 sec</p>	<p>>= 6.25 Seconds</p>	
			<p><u>Fail Case 7</u> Current PRNDL State and Previous PRNDL state Input Speed Reverse Trans Ratio Reverse Trans Ratio If the above Conditions are met then, Increment Fail timer</p>	<p>= PRNDL circuit ABCP = 1101 Range = PRNDL circuit ABCP = 1111 Range >= 150 RPM <= 2.8458252 ratio >= 3.2741699 ratio</p>			<p>>= 6.25 Seconds</p>	
			<p>P182E will report test fail when any of the above 7 fail cases</p>					
					<p>Ignition Voltage Lo</p>	<p>>= 8.5996094 Volts</p>		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Engine Torque Signal Valid	<= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean		
				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		
Internal Mode Switch (IMS)	P1915	Internal Mode Switch Does Not Indicate Park/Neutral (P/N) During Start	PRNDL State is The following events must occur Sequentially Initial Engine speed	≠ Park or Neutral Enumeration <= 50 RPM			>= 0.25 Enable Time (Sec)	One Trip
			Then Engine Speed Between Engine Speed Lo	>= 50 RPM				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil 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?	= FALSE Boolean		
					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:	TCM: P0722, P0723 ECM: None		
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>Fail Case</u> 1 Case: Steady State 2nd Gear					One Trip

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	>= 400 RPM			Please See Table Neutral >= 5 For Timer Neutra (Sec) l Time Cal	
			Intrusive test: commanded 3rd gear					
			If attained Gear = 3rd for Time	>= Table Based Time Please see Table 2 in Supporting Documents Enable Time (Sec)				
			If Above Conditions have been					
			Increment 2nd gear fail count				>= 3 2nd Gear Fail Count	
			and CB26 Fail Count				>= 14 or CB26 Fail Count	
			<u>Fail</u> <u>Case</u> <u>2</u> Case: Steady State 6th Gear					

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	>= 400 RPM			Please See Table Neutral 5 For Timer (Sec)	
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	>= Please see Table 2 in Supporting Documents	Table Based Time Enable Time (Sec)			
			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	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		
					Hydraulic System Pressurized	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 13 in Supporting Documents for Exhaust Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip	= TRUE Boolean = Maximum pressurized = Clutch exhaust command ≠ Initial Clutch Control <= 40 RPM				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If above coditons are true, increment appropriate Fail 1 Timers 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)			
			fail timer 1 (2-3 shifting 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)			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If Attained Gear Slip is Less than Above Cal Increment Fail Timers</p>				<p>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</p>	
			<p>If fail timer is greater than threshold increment correspon ding gear fail counter and total fail counter</p>				<p>Fail Counter From 2nd Gear >= 3</p>	
			<p>2nd gear fail counter</p>				<p>OR</p>	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			6th gear fail counter				>= 3	Fail Counter From 6th 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	<u>Fail</u> <u>Case</u> 1 Case: Steady State 1st Attained Gear slip If the Above is True for Time Intrusive test: (CBR1 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM Table Based Time Please Refer to Table 4 in supporting documents <= 2.4821777 >= 2.2458496			>= 1.1 Fail Timer (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C35R clutch Gear Ratio</p> <p>Gear Ratio</p> <p>If the above parameters are true</p>	<p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>>= Sec</p> <p><= 2.4821777</p> <p>>= 2.2458496</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 3rd Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
			<p><u>Fail Case</u> 3 Case: Steady State 4rd Gear</p>					

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch Gear Ratio	<= 0.7003174				
			Gear Ratio	>= 0.633667				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			<u>Fail Case 4</u> Case: Steady State 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis	Table Based value Please Refer to 3D rpm/sec Table 1 in supporting documents Table Based value Please Refer to 3D rpm/sec Table 2 in supporting documents				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the Above is True for Time</p> <p>Intrusive test: (C35R clutch Gear Ratio Gear Ratio If the above parameters are true</p>	<p>Table Based Time Please Refer to Table 17 in supporting documents</p> <p>>= Sec</p> <p><= 0.7003174</p> <p>>= 0.633667</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 5th Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	
					<p>PRNDL State defaulted = FALSE Boolean</p> <p>inhibit RVT = FALSE Boolean</p> <p>IMS fault pending indication = FALSE Boolean</p> <p>output speed >= 0 RPM</p> <p>TPS validity flag = TRUE Boolean</p> <p>HSD Enabled = TRUE Boolean</p>			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail</u> Case: Steady <u>Case</u> State 1st 1 Gear	Gear slip >= 400 RPM Intrusive test: commanded 2nd gear If attained Gear ≠ 2nd for Time >=			Please See Table Neutral >= 5 For Timer Neutra (Sec) l Time Cal	One Trip
				Please refer to Table 3 in Supporting Documents				

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and C1234 fail counter				>= 14 C1234 Clutch Fail Count	
			<u>Fail</u> Case: Steady <u>Case</u> State 3rd <u>3</u> Gear					
			Gear slip	>= 400 RPM			>= 5 Please See Table 5 For Neutra l Time Cal Neutral Timer (Sec)	
			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				>= 3 3rd Gear Fail Count	
			and C1234 fail counter				>= 14 or C1234 Clutch Fail Count	
			<u>Fail</u> Case: Steady <u>Case</u> State 4th <u>4</u> Gear					

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	>= 400 RPM			Please See Table 3 For Neutral Timer (Sec)	
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	>= Please refer to Table 3 in Supporting Documents Shift Time (Sec)				
			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		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	<p>Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust - .</p> <p>Primary Oncoming Clutch Pressure Command Status =</p> <p>Primary Offgoing Clutch Pressure Command Status =</p> <p>Range Shift Status ≠</p> <p>Attained Gear Slip ≤</p>	<p>TRUE Boolean</p> <p>Maximum pressurized</p> <p>Clutch exhaust command</p> <p>Initial Clutch Control</p> <p>40 RPM</p>				One Trip

12 OBDG05B Transmission Diagnostics

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 increment appropriate Fail 1 Timers					
			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				
			fail timer 1 (3-5 shifting without throttle)	>= 0.5 sec				
			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				

12 OBDG05B Transmission Diagnostics

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 correspon ding gear fail counter and total fail counter				>= 3 Fail Counter From 2nd Gear	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	<u>Fail</u> <u>Case</u> 1 Case: 5th Gear					One Trip
					Max Delta Output Speed Hysteresis >=	Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec		
					Min Delta Output Speed Hysteresis >=	Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.2095947				
			Gear Ratio	>= 1.0943604				

12 OBDG05B Transmission Diagnostics

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				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 6th Gear OR >= 3 Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pressurized A OR B (A) Output speed enable (B) Accelerator Pedal enable Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for if Attained Gear=1st FW Accelerator Pedal enable	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean = TRUE Boolean = TRUE Boolean >= 67 Nm >= 0.5004883 Nm >= 8.5996094 Volts <= 31.999023 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= 5.0003052 Pct		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 5 Nm <= 8191.875 Nm >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		

12 OBDG05B Transmission Diagnostics
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

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	Sec

Table 4

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

Table 5

Axis	-6.67	-6.66	40.00	°C
Curve	409.59	3.00	3.00	Sec

Table 6

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

Table 7

Axis	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	409.00	3.40	1.40	1.30	1.20	Sec

Table 8

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

12 OBDG05B Transmission Diagnostics
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

Table 10

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

Table 11

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

Table 12

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

Table 13

Axis	-40.00	-20.00	0.00	30.00	110.00	°C
Curve	2.51	0.95	0.50	0.29	0.13	Sec

Table 14

Axis	-40.00	-20.00	0.00	30.00	110.00	°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	40.00	°C
Curve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sec

Table 16

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

12 OBDG05B Transmission Diagnostics
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	°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	149.10	°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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0634	Transmission Electro- Hydraulic Control Module Internal Temperature Too High	Fail Case 1 Substrate Temperature	>= 142.101563 °C			>= 5 Fail Time (Sec)	One Trip
			Fail Case 2 Substrate Temperature	>= 50 °C			>= 2 Fail Time (Sec)	
			Ignition Voltage	>= 18 Volts				
			Note: either fail case can set the DTC					
					Ignition Voltage Lo >= 8.5996094 Volts Ignition Voltage Hi <= 31.999023 Volts Substrate Temp Lo >= 0 °C Substrate Temp Hi <= 170 °C Substrate Temp Between Temp Range for Time >= 0.25 Sec P0634 Status is ≠ Test Failed This Key On or Fault Active Disable Condi tions: 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	> Refer to Table 19 in supporting documents °C				Two Trips

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If TCM substrate temp to power up temp Δ	> Refer to Table 20 in supporting documents °C				
			Both conditions above required to increment fail counter Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				>= 3000 Fail Counts (100ms loop) 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Accelerator Position Signal Valid	= TRUE Boolean		
					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		
					Brake torque active	= FALSE		
					Below describes the brake torque entry criteria			
					Engine Torque	>= 90 N*m		
					Throttle	>= 30.000305 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 Hydraulic Air Purge Event		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					<p>Clutch used to exit brake torque active</p> <p>The above clutch pressure is greater than this value for one loop</p> <p>Set Brake Torque Active FALSE if above conditions are met for:</p> <p>P0667 Status is</p>	<p>CeTFTD_e = _C3_RatlE nbl</p> <p>>= 600 kpa</p> <p>>= 20 Sec</p> <p>≠ Test Failed This Key On or Fault Active</p>		
					<p>Disable Condi ons:</p>	<p>MIL not Illuminated for DTC's:</p> <p>TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730</p> <p>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</p>		

12 OBDG05B Transmission Diagnostics

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 =	<= -249 °C				
			Direct Proportional and Temp					
			If TCM Substrate Temperature Sensor =	>= -249 °C				
			Indirect Proportional and Temp					
			Either condition above will satisfy the fail conditions				>= 60	Fail Timer (Sec)
					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		
					P0668 Status is	≠ Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not illuminated for DTC's:	TCM: None ECM: None	
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used =	CeTFTI_e_V oltageDirect Prop				Two Trips
			If TCM Substrate Temperature Sensor =	>= 249 °C				
			If TCM Substrate Temperature Sensor =	<= 249 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
					P0669 Status is	≠ Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

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 Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss Fault	>= 0 kW >= 0 Sec = FALSE = FALSE		
					Disable Conditions:	MIL not Illuminated 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 If transmission oil temp to power up temp Δ	> Refer to Table 20 in supporting documents °C > Refer to Table 18 in supporting documents °C				Two Trips
			Both conditions above required to increment fail counter				>= 3000	Fail Counts (100ms loop)

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Below describes the brake torque entry criteria			
					Engine Torque	>= 90 N*m		
					Throttle	>= 30.000305 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 Hydraulic Air Purge Event		
					Clutch used to exit brake torque active	= CeTFTD_e_C3_RatIEnbl		
					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		

12 OBDG05B Transmission Diagnostics

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 Condi tions:	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 Control Module (TCM)	P06AD	TCM power-up thermistor circuit voltage low	Power Up Temp	<= -59 °C			>= 60	Fail Time (Sec)	Two Trips
					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			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
					P06AD Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss Fault	≠ Test Failed This Key On or Fault Active >= 0 kW >= 0 Sec = FALSE = FALSE			
					Disable Condi tions: MIL not illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None			
Transmission Control Module (TCM)	P06AE	TCM power-up thermistor circuit voltage high	Power Up Temp	>= 164 °C			>= 60	Fail Time (Sec)	Two Trips
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec			

12 OBDG05B Transmission Diagnostics

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 Condi- tions:	TCM: None ECM: None		
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	> Refer to Table 19 in supporting documents °C				Two Trips
			If transmission oil temp to power up temp Δ	> Refer to Table 18 in supporting documents °C				
			Both conditions above required to increment fail counter				>= 3000 Fail Counts (100ms loop)	
			Note: table reference temp = to the median temp of trans oil temp, substrate temp and power up temp.				Out of 3750 Sample Counts (100ms loop)	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 >= 7 sec		
					Below describes the brake torque exit criteria Brake torque entry criteria Clutch hydraulic pressure Clutch used to exit brake torque active The above clutch pressure is greater than this value for one loop Set Brake Torque Active FALSE if above conditions are met for:	= Not Met ≠ Clutch Hydraulic Air Purge Event = CeTFTD_e _C3_RatIE nbl >= 600 kpa >= 20 Sec		
					P0711 Status is	≠ Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Condi 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 If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	CeTFTI_e_V oltageDirect Prop =<= -74 °C >= -74 °C				Two Trips

12 OBDG05B Transmission Diagnostics

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				>= 60 Fail Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0712 Status is For Hybrids, below conditions must also be met Estimated Motor Power Loss Estimated Motor Power Loss greater than limit for time Lost Communication with Hybrid Processor Control Module Estimated Motor Power Loss Fault	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active ≠ = FALSE = FALSE		
				Disable Condi ons:	MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723 ECM: None		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Fluid Temperature Sensor (TFT)	P0713	Transmission fluid temperature thermistor failed at a high voltage	Type of Sensor Used	= CeTFTI_e_V oltageDirect Prop				Two Trips
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	>= 174 °C				
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	<= 174 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Time (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
					P0713 Status is	≠ Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's:	TCM: P0713, P0716, P0717, P0722, P0723 ECM: None	
Transmission Input Speed Sensor (TISS)	P0716	Input Speed Sensor Performance	Transmission Input Speed Sensor Drops	>= 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 limits for Vehicle Speed is Throttle Position is ----- Transmission Input Speed is The previous requirement has been satisfied for ----- The change (loop to loop) in transmission input speed is The previous requirement has been satisfied for Throttle Position Signal Valid Engine Torque Signal Valid Ignition Voltage	>= 0 N*m <= 8191.875 N*m >= 350 RPM <= 7500 RPM >= 5 Sec >= 0 Kph >= 0 Pct >= 0 RPM >= 0 Sec < 8191.875 RPM/Loop >= 0 Sec = TRUE Boolean = TRUE Boolean >= 8.5996094 Volts		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
					Ignition Voltage P0716 Status is not MIL not Illuminated for DTC's:	<= 31.999023 Volts = Test Failed This Key On or Fault Active 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>Case 1</u> Transmission Input Speed is	< 32.625 RPM			>= 4.5	Fail Time (Sec)	One Trip
			<u>Fail</u> <u>Case 2</u> When P0722 DTC Status equal to Test Failed and Transmission Input Speed is	< 653.125 RPM	Controller uses a single power supply for the speed sensors	= 1 Boolean			
					Engine Torque is Engine Torque is Vehicle Speed Engine Torque Signal Valid Ignition Voltage Ignition Voltage Engine Speed Engine Speed	>= 50 N*m <= 8191.875 N*m >= 16 Kph = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM			

12 OBDG05B Transmission Diagnostics

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 P0717 Status is not Disable Conditions: MIL not Illuminated for DTC's:	>= 5 Sec = Test Failed This Key On or Fault Active TCM: P0722, P0723 ECM: P0101, P0102, P0103		
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 35 RPM			>= 4.5 Fail Time (Sec)	One Trip
					P0722 Status is not Transmission Input Speed Check Engine Torque Check Throttle Position Transmission Fluid Temperature Disable this DTC if the PTO is active Engine Torque Signal Valid Throttle Position Signal Valid Ignition Voltage is Ignition Voltage is	= Test Failed This Key On or Fault Active = TRUE Boolean = TRUE Boolean >= 8.0001831 Pct >= -40 °C = 1 Boolean = TRUE Boolean = TRUE Boolean >= 8.5996094 Volts <= 31.999023 Volts		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	>= 350 RPM <= 7500 RPM >= 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 OR Transmission Range is = Park or Neutral Engine Torque is >= 8191.75 N*m Engine Torque is <= 8191.75 N*m Engine Torque Condition 2 Engine Torque is >= 50 N*m Engine Torque is <= 8191.75 N*m -----		
					The Transmission Input Speed (TIS) Check is TRUE, if either of the two following conditions are TRUE TIS Check Condition 1			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Input Speed is Transmission Input Speed 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 Valid	>= 653.125 RPM <= 5350 RPM >= 3200 RPM >= 3200 RPM <= 8191.875 RPM = 1 Boolean = TRUE Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0716, P0717, P0723 ECM: P0101, P0102, P0103, P0121, P0122, P0123		
Transmission Output Speed Sensor (TOSS)	P0723	Output Speed Sensor Circuit Intermittent	Transmission Output Speed Sensor Raw Speed Output Speed Delta	>= 105 RPM <= 8192 RPM			>= 0 Enable Time (Sec) >= 0 Enable Time (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Output Speed Drop AND Transmission Range is	> 650 RPM = Driven range (R,D)			= 1.5 Output Speed Drop Recover y Fail Time (Sec)	
					----- Range_Disable OR ----- Neutral_Range_Enabl e And Neutral_Speed_Enabl e are TRUE concurrently -----	= FALSE See Below = TRUE See Below = TRUE See Below		
					Transmission_Range _Enable Transmission_Input_ Speed_Enable No Change in Transfer Case Range (High <-> Low) for P0723 Status is not Disable this DTC if the PTO is active Ignition Voltage is Ignition Voltage is	= TRUE See Below = TRUE See Below >= 5 Seconds = Test Failed This Key On or Fault Active = 1 Boolean => 8.5996094 Volts <= 31.999023 Volts		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Engine Speed is Engine Speed is Engine Speed is within the allowable limits for	>= 350 RPM <= 7500 RPM >= 5 Sec		
					Enable_Flags Defined Below			
					Transmission_Input_ Speed_Enable is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE: TIS Condition 1 is TRUE when both of the following conditions are satsified for Input Speed Delta Raw Input Speed 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 Enable Time (Sec) <= 4095.875 RPM >= 500 RPM = 0 RPM = TRUE Boolean		
					Neutral_Range_Enabl e is TRUE when any of the next 3 conditions are TRUE Transmission Range is	= Neutral ENUM		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Range is	= Reverse/Neutral Transitional ENUM		
					Transmission Range is	= Neutral/Drive Transitional ENUM		
					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/Reverse Transitional ENUM		
					Input Clutch is not	= ON (Fully Applied) ENUM		
					Neutral_Speed_Enable is TRUE when All of the next three conditions are satisfied for	> 1.5 Seconds		
					Transmission Output Speed	> 0 RPM		
					The loop to loop change of the Transmission Output Speed is	< 20 RPM		

12 OBDG05B Transmission Diagnostics

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	> -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/Neutral Transitional ENUM		
					Transmission Range is	= Neutral/Drive 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
					Disable Condi- tions:	MIL not Illuminated 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 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 Fail Counter	>= 750 Kpa			>= 2	Enable Time (Sec)	Two Trips
				>= Refer to Table 1 in Supporting Documents RPM			>= 6	Fail Time (Sec)	
				>= 130 RPM			>= 6	Fail Time (Sec)	
							>= 2	TCC Stuck Off Fail Counter	
					TCC Mode	= On or Lock			
					Ignition Voltage Lo	>= 8.5996094 Volts			
					Ignition Voltage Hi	<= 31.999023 Volts			
					Engine Speed	>= 350 RPM			
					Engine Speed	<= 7500 RPM			
					Engine Speed is within the allowable limits for	>= 5 Sec			
					Engine Torque Lo	>= 50 N*m			
					Engine Torque Hi	<= 8191.875 N*m			
					Throttle Position Lo	>= 8.0001831 Pct			

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not illuminated for DTC's: 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		
			TCC Slip Speed	<=	13	RPM		
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter				>= 2.5 Fail Time (Sec)	
					TCC Mode	= Off		
					Enable test if Cmd Gear = 1stFW and value true	= 1 Boolean		
					Enable test if Cmd Gear = 2nd and value true	= 0 Boolean		
					Engine Speed Hi	<= 6000 RPM		
					Engine Speed Lo	>= 500 RPM		
							>= 6 Fail Counter	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Vehicle Speed HI	<= 511 KPH		
					Vehicle Speed Lo	>= 1 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 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable if Air Purge active and value false RVT Diagnostic Active Ignition Voltage Ignition Voltage Vehicle Speed Engine Speed Engine Speed Engine Speed is within the allowable limits for Engine Torque Signal Valid Throttle Position Signal Valid P0742 Status is	= 0 Boolean = FALSE Boolean >= 8.5996094 V <= 31.999023 V <= 511 KPH >= 350 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean ≠ Test Failed This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated 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	Commaned Gear Slip	>= 400 RPM				Two Trips

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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)
							>= 0.3	Fail Timer (Sec)
							>= 8	Counts
					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		
					Transmission Fluid Temperature	>= -6.65625 °C		
					Range Shift State	= Range Shift Completed ENUM		
					TPS	>= 0.5004883 %		
					OR			
					Output Speed	>= 16 RPM		
					Throttle Position Signal Valid from ECM	= TRUE Boolean		
					Engine Torque Signal Valid from ECM, High side driver is enabled	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					High-Side Driver is Enabled Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present Disable Conditions:	= TRUE Boolean = FALSE Boolean = FALSE Boolean = TRUE 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	P0752	Shift Solenoid Valve A Stuck On	Gear Box Slip Commanded Gear Commanded Gear has Achieved 1st Locked OR 1st Free-Wheel OR 2nd with Mode 2 Sol. Commanded On	>= 400 RPM = 3rd Gear = TRUE Boolean				One Trip

12 OBDG05B Transmission Diagnostics

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				Please Refer to Neutral Timer (Sec) >= Table 16 in Supporting Documents	
			Command 4th Gear once Output Shaft Speed	<= 400 RPM				
			If Gear Ratio	>= 3.82568359				
			And Gear Ratio	<= 4.22839355			>= 1.5 Fail Timer (Sec)	
							>= 5 Counts	
					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		
					High-Side Driver is Enabled	= TRUE Boolean		
					Throttle Position Signal Valid from ECM	= TRUE Boolean		
					Output Speed	>= 16 RPM		
					OR TPS	>= 0.5004883 %		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Range Shift State Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present Disable Conditions:	= Range Shift Completed ENUM >= -6.65625 °C = 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, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Failure 1</u> Commanded Gear Gear Box Slip	= 1st Locked >= 400 RPM			Please Refer to Neutral Timer (Sec) >= Table 5 in Supporting Documents	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio Gear Ratio If the above parameters are true	= 1st Locked Gear <= 2.48217773 >= 2.24584961			>= 1 sec >= 3 counts	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Output Speed OR TPS Range Shift State Transmission Fluid Temperature High-Side Driver is Enabled Throttle Position Signal Valid from ECM Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec >= 16 RPM >= 0.5004883 % = Range Shift Completed ENUM >= -6.65625 °C = TRUE Boolean = TRUE Boolean = FALSE Boolean = FALSE Boolean = TRUE		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi 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)	P0776	Pressure Control (PC) Solenoid B Stuck Off [C35R]	Fail Case e 1 Case: Steady State 3rd Gear Commanded Gear = 3rd Gear Gearbox Slip >= 400 RPM Command 4th Gear once Output Shaft Speed <= 400 RPM If Gear Ratio >= 1.09436035				Please Refer to Neutral >= Table 16 in Timer Supporting (Sec) Documents	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			And Gear Ratio	<= 1.20959473			>= 3	Fail Timer (Sec)
			It the above condiations are true, Increment 3rd gear fail counter				>= 3	3rd Gear Fail Counts
			and C35R Fail counter				>= 14	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 Table 5 in Supporting Documents Neutral Timer (Sec)
			Intrusive Test: Command 6th Gear					
			If attained Gear=6th gear Time	>=	Please refer to Table 3 in supporting documents			Shift Time (Sec)

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 Disable Conditions:	= FALSE Boolean = FALSE Boolean = TRUE 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) Solinoid B Stuck On [C35R] (Steady State)	<u>Fail Case 1</u> Case: Steady State 1st Attained Gear slip If the Above is True for Time	>= 400 RPM >= Enable Time (Sec) Table Based Time Please Refer to Table 4 in supporting documents				One Trip

12 OBDG05B Transmission Diagnostics

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 Gear Ratio >= 1.45544434 If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 2 Fail Count in 1st Gear or >= 3 Total Fail Counts	
			<u>Fail</u> <u>Case</u> <u>2</u> Case: Steady State 2nd gear Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents >= rpm/sec				

12 OBDG05B Transmission Diagnostics

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 3D Table 2 in rpm/sec supporting documents				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in Sec supporting documents				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.60864258				
			Gear Ratio	>= 1.45544434				
			If the above parameters are true				>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 2nd Gear or
							>= 3	Total Fail Counts

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail</u> <u>Case 3</u> Case: Steady State 4th gear	Table Based value Please Refer to 3D rpm/sec Table 1 in supporting documents Max Delta Output Speed Hysteresis >=				
			Min Delta Output Speed Hysteresis >=	Table Based value Please Refer to 3D rpm/sec Table 2 in supporting documents				
			If the Above is True for Time >=	Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch exhausted)	Gear Ratio <= 0.89465332 Gear Ratio >= 0.80944824				
			If the above parameters are true					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			<u>Fail</u> <u>Case 4</u> Case: Steady State 6th gear	Max Delta Output Speed Hysteresis >= Table Based value Please Refer to 3D Table 1 in rpm/sec supporting documents				
				Min Delta Output Speed Hysteresis >= Table Based value Please Refer to 3D Table 2 in rpm/sec supporting documents				
			If the Above is True for Time >=	Table Based Time Please Refer to Table 17 in Sec supporting documents				

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 0.89465332			>= 1.1	Fail Timer (Sec)
			Gear Ratio	>= 0.80944824			>= 3	counts
			If the above parameters are true				>= 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	= TRUE Boolean		
					HSD Enabled	= TRUE 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	>= 8.5996094 Volts		
					Ignition Voltage Hi	<= 31.999023 Volts		
					Engine Speed Lo	>= 350 RPM		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
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) 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 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)	= TRUE Boolean = Maximum pressurized = Clutch exhaust command ≠ Initial Clutch Control ≤ 40 RPM ≥ 0.5 Fail Time (Sec)				One Trip

12 OBDG05B Transmission Diagnostics

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	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)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (3-4shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (3-5 shifting with Throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (3-5 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (5-3 shifting with Throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (5-3 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (5-4 shifting with Throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (5-4 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			fail timer 1 (5-6 shifting with Throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5	Fail Time (Sec)			
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				>=	Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for 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				>=	3
			3rd gear fail counter					3rd gear fail counts OR
			5th gear fail counter				>=	3
								5th gear fail counts

12 OBDG05B Transmission Diagnostics

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	>= -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		
					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		

12 OBDG05B Transmission Diagnostics

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> <u>Case 1</u> Case: Steady State 4th Gear	Gear slip >= 400 RPM			Please See >= Table 5 For Neutral Time Cal Timer (Sec)	One Trip
			Intrusive test: commanded 5th gear If attained Gear #5th >= for time Please refer to Table 3 in Supporting Documents Shift Time (Sec) if the above conditions have been met Increment 4th Gear Fail Counter and C456 Fail Counters			>= 3 4th Gear Fail Count OR >= 14 C456 Fail Counts		
			<u>Fail</u> <u>Case 2</u> Case: Steady State 5th Gear	Gear slip >= 400 RPM			Please See >= Table 5 For Neutral Time Cal Timer (Sec)	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present Disable Condi tions:	= TRUE Boolean >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE MIL not Illuminated for DTC's: TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail</u> <u>Case</u> <u>e 1</u> Case: Steady State 1st	Attained Gear slip >= 400 RPM If the Above is True for Time >= Table Based Time Please Refer to Table 4 in supporting documents Enable Time (Sec)				One Trip

12 OBDG05B Transmission Diagnostics

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 <= 1.20959473 Gear Ratio >= 1.09436035 If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 2 Fail Count in 1st Gear or >= 3 Total Fail Counts	
			<u>Fail</u> <u>Cas</u> <u>e 2</u> Case Steady State 2nd Max Delta Output Speed Hysteresis	Table Based value Please Refer to 3D Table 1 in supporting documents >= rpm/sec				

12 OBDG05B Transmission Diagnostics

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 3D Table 2 in rpm/sec supporting documents				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in Sec supporting documents				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.20959473				
			Gear Ratio	>= 1.09436035				
			If the above parameters are true				>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 2nd Gear
							>= 3	or Total fail counts

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail</u> <u>Cas</u> <u>e 3</u> Case Steady State 3rd</p> <p>Max Delta Output Speed Hysteresis >=</p> <p>Min Delta Output Speed Hysteresis >=</p> <p>If the Above is True for Time >=</p> <p>Intrusive test: (C35R clutch exhausted)</p> <p>Gear Ratio <= 1.20959473</p> <p>Gear Ratio >= 1.09436035</p> <p>If the above parameters are true</p>	<p>Table Based value Please Refer to 3D rpm/sec</p> <p>Table 1 in supporting documents</p> <p>Table Based value Please Refer to 3D rpm/sec</p> <p>Table 2 in supporting documents</p> <p>Table Based Time Please Refer to Table 17 in supporting documents Sec</p>				
							<p>>= 1.1</p> <p>Fail Timer (Sec)</p>	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							>= 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_Pr 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 <= 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			

12 OBDG05B Transmission Diagnostics

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 Disable Conditions: MIL not Illuminated for DTC's:	= 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, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Variable Bleed Solenoid (VBS)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Dynamic)	Primary Offgoing Clutch is exhausted (See Table 11 in Supporting Documents for Exhaust Delay Timers) Primary Oncoming Clutch Pressure Command Status	= TRUE Boolean = Maximum pressurized				One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
			Primary Offgoing Clutch Pressure Command Status = 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:						
			fail timer 1 (4-1 shifting with throttle) ≥ 0.29980469	Fail Time (Sec)					
			fail timer 1 (4-1 shifting without throttle) ≥ 0.5	Fail Time (Sec)					
			fail timer 1 (4-2 shifting with throttle) ≥ 0.29980469	Fail Time (Sec)					
			fail timer 1 (4-2 shifting without throttle) ≥ 0.5	Fail Time (Sec)					
			fail timer 1 (4-3 shifting with throttle) ≥ 0.29980469	Fail Time (Sec)					
			fail timer 1 (4-3 shifting without throttle) ≥ 0.5	Fail Time (Sec)					

12 OBDG05B Transmission Diagnostics

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 throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (5-3 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (6-2 shifting with throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (6-2 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			If Attained Gear Slip is Less than Above Cal Increment Fail Timers				Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for >= Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2	sec
			If fail timer is greater than threshold increment correspondin g gear fail counter and total fail counter					

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			4th gear fail counter				>= 3	Fail Counter From 4th Gear
								OR
			5th gear fail counter				>= 3	Fail Counter From 5th Gear
								OR
			6th gear fail counter				>= 3	Fail Counter From 6th Gear
								OR
			Total fail counter				>= 5	Total Fail Counter
					TUT Enable temperature	>= -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		

12 OBDG05B Transmission Diagnostics

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 = TRUE Boolean		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0716, P0717, P0722, P0723, P182E ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Tap Up Tap Down Switch (TUTD)	P0815	Upshift Switch Circuit	<u>Failure 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				

12 OBDG05B Transmission Diagnostics

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 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)

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Tap Up Case 2 Switch Stuck in the Up Position in Range 1 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 2 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 3 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 4 Enabled	= 1 Boolean				
			Tap Up Switch Stuck in the Up Position in Range 5 Enabled	= 1 Boolean				
			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				

12 OBDG05B Transmission Diagnostics

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 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	

12 OBDG05B Transmission Diagnostics

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 2</u> Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1 Boolean				
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1 Boolean				

12 OBDG05B Transmission Diagnostics

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 Neutral Enabled	= 0 Boolean				
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0 Boolean				
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	= 0 Boolean				
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	= TRUE Boolean			>= 600 sec	
						Time Since Last Range Change	>= 1 Enable Time (Sec)	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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 Test Failed This Key On or Fault Active ≠		
					Disable Condi tions:	MIL not Illuminated for DTC's: TCM: P0815, P0826, P182E, P1876, P1877, P1915, P1761 ECM: None		
Tap Up Tap Down Switch (TUTD)	P0826	Up and Down Shift Switch Circuit	TUTD Circuit Reads Invalid Voltage	= TRUE Boolean			>= 60 Fail Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0826 Status is	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active ≠		

12 OBDG05B Transmission Diagnostics

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 Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	P0963	Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 4.4 Fail Time (Sec)	Two Trips
							out of 5 Sample Time (Sec)	
					Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.999023 Volts Engine Speed >= 350 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec			
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	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 >= 8.5996094 Volts			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for P0966 Status is not	<= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec = Test Failed This Key On or Fault Active		
					Disable Condi tions:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Variable Bleed Solenoid (VBS)	P0967	Pressure Control (PC) Solenoid B Control Circuit High Voltage (C35R VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
					Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for P0967 Status is not	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec = Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P0970	Pressure Control (PC) Solenoid C Control Circuit Low Voltage (C456/CBR1 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
						P0970 Status is not = Test Failed This Key On or Fault Active Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.999023 Volts Engine Speed >= 350 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec		
Variable Bleed Solenoid (VBS)	P0971	Pressure Control (PC) Solenoid C Control Circuit High Voltage (C456/CBR1 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							out of 0.375 Sample Time (Sec)	
					P0971 Status is not	= Test Failed This Key On or Fault Active		
					Ignition Voltage	>= 8.5996094 Volts		
					Ignition Voltage	<= 31.999023 Volts		
					Engine Speed	>= 350 RPM		
					Engine Speed	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		
Shift Solinoid	P0973	Shift Solenoid A Control Circuit Low (Mode 2 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 1.2 Fail Time (Sec)	One Trip
							out of 1.5 Sample Time (Sec)	
					P0973 Status is not	= Test Failed This Key On or Fault Active		
					Ignition Voltage	>= 8.5996094 Volts		
					Ignition Voltage	<= 31.999023 Volts		
					Engine Speed	>= 350 RPM		
					Engine Speed	<= 7500 RPM		

12 OBDG05B Transmission Diagnostics

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 Conditions: MIL not Illuminated for DTC's:	TCM: None ECM: None		
Shift Solinoid	P0974	Shift Solenoid A Control Circuit High (Mode 2 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 1.2 Fail Time (Sec) out of 1.5 Sample Time (Sec)	Two Trips
					P0974 Status is not	= Test Failed This Key On or Fault Active		
					Ignition Voltage	>= 8.5996094 Volts		
					Ignition Voltage	<= 31.999023 Volts		
					Engine Speed	>= 350 RPM		
					Engine Speed	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: None ECM: None		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Mode 3 Multiplex Valve	P0976	Shift Solenoid BControl Circuit Low (Mode 3 Solenoid)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 1.2 Sec	Two Trips
							out of 1.5 Sec	
						P0976 Status is not Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.999023 Volts Engine Speed >= 350 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec		
					Disable Condi tions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Mode 3 Multiplex Valve	P0977	Shift Solenoid B Control Circuit High (Mode 3 Solenoid)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 1.2 Sec	One Trip
							out of 1.5 Sec	
						P0977 Status is not Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

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 Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec		
					Disable Condi ons:	MIL not Illuminated for DTC's:	TCM: None ECM: None	
Tap Up Tap Down Switch (TUTD)	P1761	Tap Up and Down switch signal circuit (rolling count)	Rolling count value received from BCM does not match expected value	= TRUE Boolean			>= 3 Fail Counter > 10 Sample Timer (Sec)	Special No MIL
					Tap Up Tap Down Message Health Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	= TRUE Boolean >= 350 RPM <= 7500 RPM >= 5 Sec		
					Disable Condi ons:	MIL not Illuminated for DTC's:	TCM: None ECM: None	

12 OBDG05B Transmission Diagnostics

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 Case 1	Current range =	Transition 1 (bit state 1110) Range			One Trip
				Previous range ≠	CeTRGR_e_ PRNDL_Driv Range e6			
				Previous range ≠	CeTRGR_e_ PRNDL_Driv Range e5			
				Range Shift State =	Range Shift Completed ENUM			
				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 Seconds	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p>If the below two conditions are met Increment Fail Timer</p> <p>delay timer \geq 1 Sec</p> <p>Input Speed \geq 400 Sec</p> <p>If Fail Timer has Expired then Increment Fail Counter</p>				<p>\geq 3 Fail Seconds</p> <p>\geq 2 Fail Counts</p>	
			<p><u>Fail Case 3</u></p> <p>Current range = Transition 13 (bit state 0010) Range</p> <p>Engine Torque \geq -8192 Nm</p> <p>Engine Torque \leq 8191.75 Nm</p> <p>If the above conditions are met then, Increment Fail Timer</p> <p>If Fail Timer has Expired then Increment Fail Counter</p>		<p>Previous range</p> <p>Previous range</p> <p>IMS is 7 position configuration</p> <p>If the "IMS 7 Position config" = 1 then the "previous range" criteria above must also be satisfied when the "current range" = "Transition 13"</p>	<p>\neq CeTRGR_e_PRNDL_Drive5</p> <p>\neq CeTRGR_e_PRNDL_Drive5</p> <p>= 0 Boolean</p>	<p>\geq 0.225 Seconds</p> <p>\geq 15 Fail Counts</p>	

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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 0100) Range				
			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	>= 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				

12 OBDG05B Transmission Diagnostics

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 Case 6</u> Current range and A Open Circuit (See Definition) If the above Conditions are met then, Increment Fail timer	Illegal (bit state 0000 or 1000 or 0001) = FALSE Boolean = 0 sec	A Open Circuit Definition (flag set false if the following conditions are met): Current Range Last positive state Previous transition state Fail case 5 delay timer	Transition 11 (bit state 0100) ≠ Neutral (bit state 0101) Transition 8 (bit state 0111)	>= 6.25 Seconds	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<p><u>Fail Case 7</u></p> <p>Current PRNDL State = PRNDL circuit ABCP Range = 1101</p> <p>and</p> <p>Previous PRNDL state = PRNDL circuit ABCP Range =1111</p> <p>Input Speed >= 150 RPM</p> <p>Reverse Trans Ratio <= 2.97595215 ratio</p> <p>Reverse Trans Ratio >= 3.4239502 ratio</p> <p>If the above Conditions are met then, Increment Fail timer</p>				<p>>= 6.25 Seconds</p>	
			<p>P182E will report test fail when any of the above 7 fail cases are met</p>		<p>Ignition Voltage Lo >= 8.5996094 Volts</p> <p>Ignition Voltage Hi <= 31.999023 Volts</p> <p>Engine Speed Lo >= 350 RPM</p> <p>Engine Speed Hi <= 7500 RPM</p> <p>Engine Speed is within the allowable limits for >= 5 Sec</p> <p>Engine Torque Signal Valid = TRUE Boolean</p>			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				Disable Condi- tions:	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 TUTD Enable Switch is Active	= Park or Reverse or Neutral Range State = TRUE Boolean			>= 3 Fail Time (Sec) >= 5 Fail Counts	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Vehicle Speed Lo Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P1876 Status is	>= 8.5996094 Volts <= 31.999023 Volts <= 511 KPH >= 350 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.		
					Disable Condi tions:	MIL not Illuminated 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							
Engine 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)			

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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 P1915 Status is	= FALSE Boolean >= 6 V <= 31.999023 V >= 5 V <= 2 V <= 90 rpm ≠ Test Failed This Key On or Fault Active		
					Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0722, P0723 ECM: None	
Transmission Control Module (TCM)	P2534	Ignition Switch Run/Start Position Circuit Low	TCM Run crank active (based on voltage thresholds below) Ignition Voltage High Hyst (run crank goes true when above this value)	= FALSE Boolean 5 Volts			>= 280 Fail Counts (25ms loop)	One Trip

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	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	= TRUE Boolean		
					ECM run/crank active status	= TRUE Boolean		
					Disable Conditions:	MIL not Illuminated 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 loop)	
			Ignition Voltage Low Hyst (run crank goes false when below this value)	2 Volts			Out of 280 Sample Counts (25ms loop)	
					ECM run/crank active status available	= TRUE Boolean		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					ECM run/crank active status	= FALSE Boolean		
					Disable Conditions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2714	Pressure Control (PC) Solenoid D Stuck Off [CB26]	<u>Fail Case</u> Case: Steady State 2nd Gear <u>e 1</u>					One Trip
			Gear slip	>= 400 RPM			>= Please See Table 5 For Neutral Time Cal	Neutral Timer (Sec)
			Intrusive test: commanded 3rd gear					
			If attained Gear = 3rd for Time	>= Table Based Time Please see Table 2 in Supporting Documents				
			If Above Conditions have been met					
			Increment 2nd gear fail count				>= 3	2nd Gear Fail Count
			and CB26 Fail Count				>= 14	or CB26 Fail Count

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Fail Case: Steady State 6th Gear					
			Gear slip	>= 400 RPM			Please See Table 5 For Neutral Timer (Sec)	Neutral Timer (Sec)
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	Table Based Time Please Enable >= see Table 2 Time in Supporting (Sec) Documents				
			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	= 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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					A OR B (A) Output speed enable (B) Accelerator Pedal enable Common Enable Criteria Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 16 RPM >= 0.5004883 Pct >= 8.5996094 Volts <= 31.999023 Volts >= 350 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE		
					Disable Condi 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		

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (2-3 shifting with throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (2-3 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (2-4 shifting with throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (2-4 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (6-4 shifting with throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (6-4 shifting without throttle)	>= 0.5	Fail Time (Sec)			
			fail timer 1 (6-5 shifting with throttle)	>= 0.29980469	Fail Time (Sec)			
			fail timer 1 (6-5 shifting without throttle)	>= 0.5	Fail Time (Sec)			

12 OBDG05B Transmission Diagnostics

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				>= 3 Fail Counter From 2nd Gear	
			2nd gear fail counter				OR	
			6th gear fail counter				>= 3 Fail Counter From 6th Gear	
							OR	

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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		
				Disable Condi tions:	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		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P2715	Pressure Control (PC) Solenoid D Stuck On [CB26] (Steady State)	<p><u>Fail Case 1</u> Case: Steady State 1st</p> <p>Attained Gear slip</p> <p>If the Above is True for Time</p> <p>Intrusive test: (CBR1 clutch exhausted)</p> <p>Gear Ratio <= 2.48217773 Gear Ratio >= 2.24584961 If the above parameters are true</p> <p><u>Fail Case 2</u> Case: Steady State 3rd Gear</p>	<p>>= 400 RPM</p> <p>Table Based Time Please Refer to Table 4 in supporting documents</p> <p>>= Enable Time (Sec)</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 2 Fail Count in 1st Gear</p> <p>or</p> <p>>= 3 Total Fail Counts</p>	One Trip

12 OBDG05B Transmission Diagnostics

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 Table 1 in rpm/sec supporting documents				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in rpm/sec supporting documents				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in Sec supporting documents				
			Intrusive test: (C35R clutch exhausted)					
			Gear Ratio	<= 2.48217773				
			Gear Ratio	>= 2.24584961				
			If the above parameters are true				>= 1.1	Fail Timer (Sec)
							>= 3	Fail Count in 3rd Gear
								or

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							Total Fail Counts >= 3	
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 3</u> State 4rd Gear	Max Delta Output Speed >= Hysteresis Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed >= Hysteresis	Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time >=	Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (C1234 clutch exhausted)					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gear Ratio Gear Ratio If the above parameters are true	<= 0.70031738 >= 0.63366699			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 3 Total Fail Counts	
			<u>Fail</u> <u>Case</u> Case: Steady <u>e 4</u> State 5th Gear	Max Delta Output Speed Hysteresis >= Table Based value Please Refer to 3D Table 1 in supporting documents rpm/sec				
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				

12 OBDG05B Transmission Diagnostics

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 Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	Table Based Time Please Refer to Table 17 in supporting documents >= Sec <= 0.70031738 >= 0.63366699			>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 5th Gear or >= 3 Total Fail Counts	
					PRNDL State defaulted inhibit RVT IMS fault pending indication output speed TPS validity flag HSD Enabled Hydraulic_System_Pr essurized A OR B	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean = TRUE Boolean = TRUE Boolean		

12 OBDG05B Transmission Diagnostics

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi 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)	P2720	Pressure Control (PC) Solenoid D Control Circuit Low (CB26 VBS)	The HWIO reports a low voltage (ground short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
						P2770 Status is not = Test Failed This Key On or Fault Active Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.999023 Volts Engine Speed >= 350 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec		
					Disable Condi ons: MIL not Illuminated for DTC's:	TCM: None ECM: None		

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P2721	Pressure Control (PC) Solenoid D Control Circuit High (CB26 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3 Fail Time (Sec) out of 0.375 Sample Time (Sec)	One Trip
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail Case</u> : Steady State 1st Gear Gear slip	>= 400 RPM			Please See Table 5 For Neutral Time Cal >= Neutral Timer (Sec)	One Trip

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

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

12 OBDG05B Transmission Diagnostics

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			and C1234 fail counter				>= 14	C1234 Clutch Fail Count
			<u>Fail</u> <u>Cas</u> Case: Steady <u>e 4</u> State 4th Gear					
			Gear slip	>= 400 RPM			>=	Please See Table 5 For Neutral Timer (Sec)
			Intrusive test: commanded 5th gear					
			If attained Gear = 5th For Time	>=	Please refer to Table 3 in Supporting Documents			Shift Time (Sec)
			If Above Conditions have been met, Increment 4th gear fail counter				>= 3	4th Gear Fail Count
			and C1234 fail counter				>= 14	or C1234 Clutch Fail Count
					PRNDL State defaulted	= FALSE Boolean		
					inhibit RVT	= FALSE Boolean		
					IMS fault pending indication	= FALSE Boolean		
					TPS validity flag	= TRUE Boolean		

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
				<p style="text-align: center;">Disable Condi tions:</p>	<p style="text-align: center;">MIL not illuminated for DTC's:</p>	<p>TCM: P0716, P0717, P0722, P0723, P182E</p> <p>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</p>		
Variable Bleed Solenoid (VBS)	P2724	Pressure Control (PC) Solenoid E Stuck On (Dynamic)	<p>Primary Offgoing Clutch is exhausted (See Table 10 in Supporting Documents for Exhaust Delay Timers)</p> <p>Primary Oncoming Clutch Pressure Command Status =</p> <p>Primary Offgoing Clutch Pressure Command Status =</p>	<p>TRUE Boolean</p> <p>Maximum pressurized</p> <p>Clutch exhaust command</p>				One Trip

12 OBDG05B Transmission Diagnostics

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 ≤ 40 RPM					
			If the above conditions are true increment appropriate Fail 1 Timers Below:					
			fail timer 1 (2-6 shifting with throttle) ≥ 0.29980469 sec					
			fail timer 1 (2-6 shifting without throttle) ≥ 0.5 sec					
			fail timer 1 (3-5 shifting with throttle) ≥ 0.29980469 sec					
			fail timer 1 (3-5 shifting without throttle) ≥ 0.5 sec					
			fail timer 1 (4-5 shifting with throttle) ≥ 0.29980469 sec					
			fail timer 1 (4-5 shifting without throttle) ≥ 0.5 sec					
			fail timer 1 (4-6 shifting with throttle) ≥ 0.29980469 sec					
			fail timer 1 (4-6 shifting without throttle) ≥ 0.5 sec					

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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				>= 3 Fail Counter From 2nd Gear	
			3rd gear fail counter				>= 3 Fail Counter From 3rd Gear	

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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi 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)	P2724	Pressure Control (PC) Solenoid E Stuck On (Steady State)	<u>Fail</u> <u>Case</u> <u>1</u> Case: 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis If the Above is True for Time	>= Table Based value Please Refer to 3D Table 1 in rpm/sec supporting documents >= Table Based value Please Refer to 3D Table 2 in rpm/sec supporting documents >= Table Based Time Please Refer to Table 17 in Sec supporting documents				One Trip

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Intrusive test: (C35R clutch exhausted) Gear Ratio <= 1.20959473 Gear Ratio >= 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	Table Based value Please >= Refer to 3D rpm/sec Table 1 in 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.
			Min Delta Output Speed Hysteresis	>= Table Based value Please Refer to 3D Table 2 in supporting documents rpm/sec				
			If the Above is True for Time	>= Table Based Time Please Refer to Table 17 in supporting documents Sec				
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.20959473				
			Gear Ratio	>= 1.09436035				
			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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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 if Attained Gear=1st	>= 5 Sec		
					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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Default Gear Option is not present	= TRUE		
					Disable Conditions:	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)	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) out of 0.375 Sample Time (Sec)	One Trip
					P2729 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		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi tions: MIL not Illuminated for DTC's:	TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2730	Pressure Control (PC) Solenoid E Control Circuit High (C1234 VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			>= 0.3	Fail Time (Sec)
							out of 0.375	Sample Time (Sec)
					Disable Condi tions: MIL not Illuminated for DTC's:	TCM: None ECM: None		One Trip
					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		

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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) out of 5 Sample Time (Sec)	Two Trips
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

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	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 Condi tions:	MIL not illuminated for DTC's:	TCM: P0658, P0659 ECM: None			
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	= TRUE Boolean			>= 62 Out of 70	Fail counts (≈ 10 seconds) Sample Counts (≈ 11 seconds)	One Trip
			Delay timer	>= 0.1125 sec					
					Stabilization delay	>= 3 sec			
					Ignition Voltage	>= 8.5996094 Volt			
					Ignition Voltage	<= 31.999023 Volt			
					Power Mode	= Run			

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: None ECM: None		
Communication	U0100	Lost Communications with ECM (Engine Control Module)	CAN messages from ECM are not received by the TCM	= TRUE Boolean			>= 12 sec	One Trip
					Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= 3 sec >= 8.5996094 Volt <= 31.999023 Volt = Run		
					Disable Condi- tions:	MIL not Illuminated for DTC's: TCM: U0073 ECM: None		