

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Transmission Fluid Temperature								
	P0711	This test detects performance of the transmission fluid temperature sensor by comparing changes in temperature from start up and between samples to calibration values.	All 5 Cases		<p>Not Test Failed This Key On</p> <p>No Fault Pending DTCs for this drive cycle</p> <p>No Pass DTCs for this drive cycle</p> <p>No Fault Active DTC</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>Engine Speed between 200 RPM and 7500 RPM for 5 seconds</p> <p>Start-up transmission fluid temperature is available Transmission fluid temperature between -39 deg. C and 149 deg. C ECT is not defaulted</p>	<p>P0711 P0716 P0717 P0721 P0722 P0742 P077C P077D P07BF P07C0</p> <p>P0716 P0717 P0721 P0722 P077C P077D P07BF P07C0</p> <p>P0711</p> <p>P0711</p>		B
			Case 1 (Stuck sensor after cold start-up)	<p>Start-up temperature change ≤ 2 deg. C for a time ≥ 100 seconds</p> <p>AND</p> <p>Vehicle speed ≥ 8 KPH for a time ≥ 300 seconds.</p>	<p>Start-up transmission fluid temperature between</p> <p>TCC Slip ≥ 120 RPM for a time ≥ 300 seconds</p> <p>engine coolant temperature ≥ 70 deg. C AND engine coolant temperature change from start-up ≥ 15 deg. C</p>		300 seconds	
			Case 2 (Stuck sensor after warm start-up)	<p>Start-up temperature change ≤ 3 deg. C for a time ≥ 100 seconds</p> <p>AND</p>	<p>Start-up transmission fluid temperature between</p> <p>TCC Slip ≥ 120 RPM for a time ≥ 300 seconds</p> <p>engine coolant temperature ≥ 70 deg. C</p>	<p>115 deg. C and 150 deg. C.</p>	300 seconds	

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			Vehicle speed ≥ 8 KPH for a time ≥ 300 seconds.		AND engine coolant temperature change from start-up ≥ 55 deg. C			
			Case 3 (Noisy sensor) Change from previous temperature ≥ 20 deg. C for ≥ 14 events in a time < 7 seconds.				7 seconds	
			Case 4 (Doesn't warm up to at least 20 deg. C) Time Enabled Criteria met AND AND Transmission Fluid Temperature < 20 deg. C. Time Enabled Criteria is determined by a lookup table ranging from temperature is ≥ 20 deg. C to 2200 seconds when start-up temperature is ≤ -40 deg. C.		net engine torque ≥ 150 Nm and ≤ 1492 Nm vehicle speed ≥ 22 KPH and ≤ 511 KPH %throttle $\geq 10.0\%$ and $\leq 100\%$ engine speed ≥ 500 RPM and ≤ 6500 RPM engine coolant temperature ≥ -39 deg. C and ≤ 149 deg. C		2200 seconds	
			Case 5 (Reasonableness at start-up): Engine Speed > 500 RPM AND Engine Coolant Temperature > -39 deg. C AND < 50 deg. C for ≥ 2 seconds AND ((ABS(IAT-ECT) ≤ 6 deg. C AND (TFT-ECT)) > 40 deg. C OR (ABS(IAT-ECT) > 6 deg. C AND (TFT-ECT))) > 60 deg. C.		Intake Air Temperature is not defaulted		2 seconds	
Transmission Fluid Temperature Sensor Circuit Low Input	P0712	Out of range low.	transmission fluid temperature ≥ 140 deg. C for a time > 2.5 seconds.		Not Test Failed This Key On Components powered AND Battery Voltage ≥ 9 V Engine Speed between 200 RPM and 7500 RPM for 5 seconds	P0711 P0712 P0713	2.5 seconds	B
Transmission Fluid Temperature Sensor Circuit High Input	P0713	Out of range high.	transmission fluid temperature ≤ -40 deg. C for a time > 2.5 seconds		Not Test Failed This Key On Components powered AND Battery Voltage ≥ 9 V Engine Speed between 200 RPM and 7500 RPM for 5 seconds	P0711 P0712 P0713	2.5 seconds	B

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					IF Engine run time THEN Engine Coolant Temperature AND not defaulted for a time	<= 600 seconds must be > 20 deg. C >= 20 seconds.		
Speed Sensors								
Input/Turbine Speed Sensor Circuit Range/Performance	P0716	This test detects large changes in Input Speed and noisy Input Speed by comparing to calibration values.	All cases		Not Test Failed This Key On No Fault Pending DTCs for this drive cycle. Not Low Voltage Disable	P0716 P0717 P07BF P07C0		A
			Case 1: (Unrealistically large changes in input speed) Change of Input Speed between samples for AND NOT Low Voltage Response	>= 800 RPM >= 0.15 seconds			0.15 seconds	
			Case 2: (Noisy Input Speed) For sample size 80 IF the change in Input Speed THEN the Low Counter is incremented IF the change in Input Speed THEN the High Counter is incremented This test fails if both the Low Counter and the High Counter OR Low Counter OR High Counter	<= -800 RPM >= 800 RPM >= 5 >= 5 >= 5			2 seconds	
Input/Turbine Speed Sensor Circuit No Signal	P0717	This test detects unrealistically low value of input/turbine speed or unrealistically large changes in input/turbine speed.	Failure pending if transmission input speed This test fails if input speed AND output speed for a time AND NOT Low Voltage Response	< 61 RPM < 61 RPM > 500 RPM > 1 second.	Not Test Failed This Key On	P0717 P0729 P0731 P0732 P0733 P0734 P0735 P0736 P0721 P0722 P0716 P07BF	1 second	A

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					<p>No Fault Pending DTCs</p> <p>NOT Low Voltage Disable</p> <p>Engine is running Reverse-to-Neutral shift not in process</p> <p>Shifting complete Range attained is not neutral Transmission fluid temperature > -25 deg. C Engine speed >= 400 RPM Transmission output speed >= 150 RPM</p>	<p>P07C0 P077C P077D</p> <p>P0721 P0722 P07BF P07C0 P077C P077D</p>		
Output Speed Sensor Circuit Range/Performance	P0721	This test detects a noisy output speed sensor or circuit by detecting large changes in output speed.	<p>Case 1: (Unrealistically large change in output speed)</p> <p>Change in output speed >= 500 RPM for a time >= 0.15 seconds AND NOT Low Voltage Response</p> <p>Case 2: (Noisy output speed)</p> <p>For sample size 80</p> <p>IF the change in output speed <= -500 RPM THEN the Low Counter is incremented.</p> <p>IF the change in output speed >= 500 RPM THEN the High Counter is incremented.</p> <p>Test fails if both the Low Counter and >= 5 OR the Low Counter >= 5 OR the High Counter >= 5</p>		<p>All Cases</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTCs for this drive cycle</p> <p>NOT Low Voltage Disable</p> <p>range attained NOT neutral</p>	<p>P0721 P0722</p> <p>P077C P077D</p>	<p>Case 1: 0.15 seconds</p> <p>Case 2: 2 seconds</p>	A
Output Speed Sensor Circuit No Signal	P0722	This test detects unrealistically low value of output speed or unrealistically large change in output speed.	All Cases		<p>All Cases</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTCs for this drive cycle</p>	<p>P0721 P0722 P077C P077D</p> <p>P077C P077D</p>		A

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					NOT Low Voltage Disable			
			Case 1: (Unrealistically large change in output speed) Failure pending if change in output speed Failure sets if range attained is Neutral	≥ 600 RPM	Test enabled when output speed Test disabled when output speed	≥ 600 RPM for a time ≥ 1 seconds ≤ 600 RPM for a time > 1 seconds	1 second	
			Case 2: (Unrealistically low value of output speed) Failure pending if output speed Failure sets if not monitoring for low speed neutral and output speed AND range is 3rd, 4th, 5th, or 6th for a time AND NOT Low Voltage Response Failure sets if not monitoring for low speed neutral and output speed AND ((net engine torque OR net engine torque) OR (turbine speed AND range is 2nd)) for a time AND NOT Low Voltage Response	< 61 RPM < 61 RPM > 1 second < 61 RPM OR > 100 Nm OR > 1500 RPM AND ≥ 4 seconds. AND NOT Low Voltage Response	Not Test Failed This Key On No Fault Pending DTCs for this drive Engine is running Shift not in process Range attained is not Neutral Reverse to Neutral shift not in process Transmission fluid temperature Transmission input speed Not waiting for Manual Selector Valve to attain forward range PRNDL State is NOT D4, NOT Transitional D4	P0729 P0731 P0732 P0733 P0734 P0735 P0736 P0716 P0717 P07BF P07C0 P0716 P0717 P07BF P07C0 > -25 deg. C ≥ 1050 RPM	4 seconds	
Input/Turbine Speed Sensor Ckt Voltage Low	P07BF	This test detects either open or short to ground circuit malfunctions.	IF voltage for THEN increment fail timer IF fail timer AND Engine Speed AND NOT Low Voltage Response THEN report malfunction	≤ 0.25 volts 0.2 second ≥ 4 counts AND ≥ 20 rpm AND NOT Low Voltage Response	Not Test Failed This Key On OR No Fault Active DTC No Fault Active DTC NOT Low Voltage Disable	P07BF OR P07BF P07C0	0.8 sec	A
Input/Turbine Speed Sensor Ckt Voltage High	P07C0	This test detects either open or short to ground circuit malfunctions.	IF voltage for THEN increment fail timer IF fail timer AND Engine Speed	≥ 4.75 0.2 second ≥ 4 counts AND ≥ 20 rpm	Not Test Failed This Key On OR No Fault Active DTC No Fault Active DTC Components powered AND	P07C0 OR P07C0 P07BF	0.8 sec	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN report malfunction		Battery Voltage	>= 9 V		
Output Speed Sensor Ckt Voltage Low	P077C	This test detects either open or short to ground circuit malfunctions.	IF voltage for THEN increment fail timer IF fail timer AND Engine Speed AND NOT Low Voltage Response THEN report malfunction	<= 0.25 volts 0.2 second >= 4 counts >= 20 rpm 	Not Test Failed This Key On OR No Fault Active DTC No Fault Active DTC NOT Low Voltage Disable	P077C OR P077C P077D	0.8 sec	A
Output Speed Sensor Ckt Voltage High	P077D	This test detects either open or short to ground circuit malfunctions.	IF voltage for THEN increment fail timer IF fail timer AND Engine Speed THEN report malfunction	>= 4.75 0.2 second >= 4 counts >= 20 rpm 	Not Test Failed This Key On OR No Fault Active DTC No Fault Active DTC Components powered AND Battery Voltage	P077D OR P077D P077C >= 9 V	0.8 sec	A
Range Verification								
Gear 1 Incorrect Ratio	P0731	This test verifies transmission operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.	Pending failure occurs when accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for	>= 2 second >= 1 second >= 0.75 second >= 100 RPM AND > 100 RPM >= 250 RPM for > 10 samples.	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable No range switch response active Hydraulic System Pressurized	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0	2.25 seconds	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Shift complete Output speed >= 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete			
Gear 2 Incorrect Ratio	P0732	This test verifies transmission operating ratio while 2nd range is commanded by comparing computed ratio to the commanded ratio.	<p>Pending failure occurs when accumulated event timer IF main pressure dropout is suspected</p> <p>THEN accumulated event timer is</p> <p>IF main pressure dropout is detected THEN accumulated event timer is</p> <p>Timer accumulates when transmission is in forward or reverse range</p> <p>AND output speed >= 100 RPM</p> <p>AND gear slip > 100 RPM</p> <p>In response to pending failure, a diagnostic response range is commanded.</p> <p>During this command, this test fails if Abs(Converter Slip) > 250 RPM for > 10 samples.</p>	<p>>= 2 second</p> <p>>= 1 second</p> <p>>= 0.75 second</p>	<p>Not Test Failed This Key On (except if dropout suspected or detected)</p> <p>Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle.</p> <p>NOT Low Voltage Disable</p> <p>No range switch response active</p> <p>Hydraulic System Pressurized</p> <p>Shift complete</p> <p>Output speed >= 200 RPM</p> <p>No hydraulic default condition present</p> <p>Normal powertrain shutdown not in process</p>	<p>P0877 P0878</p> <p>P0877</p> <p>P0877</p> <p>P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D</p> <p>P0717 P07BF P07C0</p>	2.25 seconds	A

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					Normal powertrain initialization is complete			
Gear 3 Incorrect Ratio	P0733	This test verifies transmission operating ratio while 3rd range is commanded by comparing computed ratio to the commanded ratio.	<p>Pending failure occurs when accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is</p> <p>Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip</p> <p>In response to pending failure, a diagnostic response range is commanded.</p> <p>During this command, this test fails if Abs(Converter Slip) for</p>	<p>≥ 2 second</p> <p>≥ 1 second</p> <p>≥ 0.75 second</p> <p>≥ 100 RPM</p> <p>> 100 RPM</p> <p>≥ 250 RPM > 10 samples.</p>	<p>Not Test Failed This Key On (except if dropout suspect or detected)</p> <p>Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle.</p> <p>NOT Low Voltage Disable</p> <p>No range switch response active</p> <p>Hydraulic System Pressurized</p> <p>Shift complete</p> <p>Output speed ≥ 200 RPM</p> <p>No hydraulic default condition present</p> <p>Normal powertrain shutdown not in process</p> <p>Normal powertrain initialization is complete</p>	<p>P0877 P0878</p> <p>P0877</p> <p>P0877</p> <p>P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D</p> <p>P0717 P07BF P07C0</p>	2.25 seconds	A
Gear 4 Incorrect Ratio	P0734	This test verifies transmission operating ratio while 4th range is commanded by comparing computed ratio to the commanded ratio.	<p>Pending failure occurs when accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is</p> <p>Timer accumulates when transmission is in forward or reverse range AND</p>	<p>≥ 2 second</p> <p>≥ 1 second</p> <p>≥ 0.75 second</p>	<p>Not Test Failed This Key On (except if dropout suspect or detected.)</p> <p>Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Fault Active with cmd gear</p>	<p>P0877 P0878</p> <p>P0877</p> <p>P0877</p>	2.25 seconds	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			<p>output speed AND gear slip</p> <p>In response to pending failure, a diagnostic response range is commanded.</p> <p>During this command, this test fails if Abs(Converter Slip) for</p>	<p>>= 100 RPM > 100 RPM</p> <p>>= 250 RPM for > 10 samples.</p>	<p>Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle.</p> <p>NOT Low Voltage Disable</p> <p>No range switch response active</p> <p>Hydraulic System Pressurized</p> <p>Shift complete</p> <p>Output speed</p> <p>No hydraulic default condition present</p> <p>Normal powertrain shutdown not in process</p> <p>Normal powertrain initialization is complete</p>	<p>P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D</p> <p>P0717 P07BF P07C0</p> <p>>= 200 RPM</p>		
Gear 5 Incorrect Ratio	P0735	This test verifies transmission operating ratio while 5th range is commanded by comparing computed ratio to the commanded ratio.	<p>Pending failure occurs when accumulated event timer</p> <p>IF main pressure dropout is suspected THEN accumulated event timer is</p> <p>IF main pressure dropout is detected THEN accumulated event timer is</p> <p>Timer accumulates when transmission is in forward or reverse range AND</p> <p>output speed gear slip</p> <p>In response to pending failure, a diagnostic response range is commanded.</p> <p>During this command, this test fails if Abs(Converter Slip) for</p>	<p>>= 2 second</p> <p>>= 1 second</p> <p>>= 0.75 second</p> <p>>= 100 RPM > 100 RPM</p> <p>>= 250 RPM for > 10 samples.</p>	<p>Not Test Failed This Key On (except if dropout suspect or detected.)</p> <p>Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle.</p>	<p>P0877 P0878</p> <p>P0877</p> <p>P0877</p> <p>P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D</p> <p>P0717 P07BF</p>	2.25 seconds	A

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					NOT Low Voltage Disable No range switch response active Hydraulic System Pressurized Shift complete Output speed ≥ 200 RPM No hydraulic default condition present Normal powertrain shutdown not in process Normal powertrain initialization is complete	P07C0		
Reverse Incorrect Ratio	P0736	This test verifies transmission range while reverse range is commanded by comparing computed ratio to the commanded ratio.	Accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is Timer accumulates when transmission is in forward or reverse range AND output speed ≥ 100 RPM AND gear slip > 100 RPM	≥ 2 seconds ≥ 1 second ≥ 0.75 second	Not Test Failed This Key On (except if dropout suspect or detected.) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict Not Test Failed This Key On No Fault Pending DTC for this drive cycle. NOT Low Voltage Disable No range switch response active Hydraulic System Pressurized Shift complete Output speed ≥ 200 RPM No hydraulic default condition	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D P0717 P07BF P07C0	2 seconds	A

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					present Normal powertrain shutdown not in process Normal powertrain initialization is complete			
Gear 6 Incorrect Ratio	P0729	This test verifies transmission range while 6th range is commanded by comparing computed ratio to the commanded ratio.	<p>Pending failure occurs when accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is</p> <p>Timer accumulates when transmission is in forward or reverse range AND output speed AND gear slip</p> <p>In response to pending failure, a diagnostic response range is commanded.</p> <p>During this command, this test fails if Abs(Converter Slip) for</p>	<p>≥ 2 second</p> <p>≥ 1 second</p> <p>≥ 0.75 second</p> <p>≥ 100 RPM</p> <p>AND > 100 RPM</p> <p>≥ 250 RPM for > 10 samples.</p>	<p>Not Test Failed This Key On (except if dropout suspect or detect)</p> <p>Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict</p> <p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle.</p> <p>NOT Low Voltage Disable</p> <p>No range switch response active</p> <p>Hydraulic System Pressurized</p> <p>Shift complete</p> <p>Output speed</p> <p>No hydraulic default condition present</p> <p>Normal powertrain shutdown not in process</p> <p>Normal powertrain initialization is complete</p>	<p>P0877 P0878</p> <p>P0877</p> <p>P0877</p> <p>P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D</p> <p>P0717 P07BF P07C0</p> <p>≥ 200 RPM</p>	2.25 seconds	A
Torque Converter								
Torque Converter Clutch Circuit Performance or Stuck Off	P0741	This test detects the torque converter being stuck off (unlocked).	TCC Slip for a time	≥ 80 RPM ≥ 15 seconds.	Not Test Failed This Key On	P2761 P2763 P2764 P0721 P0722	15 seconds	B

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					<p>No Fault Pending DTCs for this drive cycle.</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>Engine Speed between 200 RPM and 7500 RPM for 5 seconds</p> <p>Must be in forward range % Throttle $> 10\%$ and $\leq 90\%$</p> <p>Transmission fluid temperature > 5 deg. C and < 130 deg. C</p> <p>Time Since Range Change AND TCC apply is complete AND TCC pressure ≥ 1000 kPa</p>	<p>P0716 P0717 P077C P077D P07BF P07C0</p> <p>P2761 P2763 P2764 P0721 P0722 P0716 P0717 P077C P077D P07BF P07C0</p>		
Torque Converter Clutch Circuit Stuck On	P0742	This test detects the torque converter being stuck on (locked).	<p>Case 1: (High Torque condition) Set fault pending when throttle $\geq 70\%$ AND net engine torque ≥ 275 Nm.</p> <p>Report malfunction when fault pending exists continuously for a time ≥ 2 seconds.</p>		Not Test Failed This Key On	<p>P2761 P2763 P2764 P0721 P0722 P0716 P0717 U0100 P077C P077D P07BF P07C0</p>	Case 1: 2 Seconds	A
			<p>Case 2: (High Acceleration condition) Set fault pending when output shaft acceleration ≥ 100 RPM/second</p>		No Fault Pending DTCs for this drive cycle.	<p>P2761 P2763 P2764 P0721 P0722</p>	Case 2: 5 Seconds	

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			<p>AND S2 valve is NOT stroked for a time (S2_Vlv_DO = True) OR S2 logic valve timeout test pending AND S1 valve is NOT stroked for a time (S2_Vlv_TO_DO = True) OR S3 logic valve integrity test pending AND S3 valve is NOT stroked for a time (S3_Vlv_DO = True) OR S3 logic valve timeout test pending AND S3 valve is NOT stroked for a time (S3_Vlv_TO_DO = True) OR RPS state is NOT REVERSE and PRNDL indicates a valid REVERSE for a time (RPS_DO = True)</p> <p>Report fail (If sny below True):</p> <p>Commanded Gear N5N or N0N:</p> <p>S1_Vlv_Dropout_from_1_N and (S2_Vlv_DO or S3_Vlv_DO or RPS_DO) OR S1_Vlv_DO and (S2_Vlv_DO or S3_Vlv_DO or RPS_DO) OR S2_Vlv_DO and (S1_Vlv_DO or S3_Vlv_DO or RPS_DO) OR S3_Vlv_DO and (S1_Vlv_DO or S2_Vlv_DO or RPS_DO) OR RPS_DO and (S1_Vlv_DO or S2_Vlv_DO or RPS_DO) OR S1_Vlv_TO_DO and S2_Vlv_TO_DO or S3_Vlv_TO_DO or RPS_DO OR S2_Vlv_TO_DO and (S1_Vlv_TO_DO or S3_Vlv_TO_DO or RPS_DO) OR S3_Vlv_TO_DO and (S1_Vlv_TO_DO or S2_Vlv_TO_DO or RPS_DO) OR RPS_DO and (S1_Vlv_TO_DO or S2_Vlv_TO_DO or S3_Vlv_TO_DO)</p> <p>OR</p> <p>Commanded Gear 1_N:</p> <p>S1_Vlv_DO and (S2_Vlv_DO or S3_Vlv_DO or RPS_DO) OR S2_Vlv_DO and (S1_Vlv_DO or S3_Vlv_DO or RPS_DO) OR S3_Vlv_DO and (S1_Vlv_DO or S2_Vlv_DO or RPS_DO)</p> <p>Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p>					

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			<p>Commanded Gear 1_1: (S2_Vlv_DO or S2_Vlv_TO_DO) = TRUE (Boolean) RPS_DO = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear 1_H: S1_Vlv_DO and (S2_Vlv_DO or RPS_DO) = TRUE (Boolean) OR S2_Vlv_DO and (S1_Vlv_DO or RPS_DO) = TRUE (Boolean) OR RPS_DO and (S1_Vlv_DO or S2_Vlv_DO) = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear R_N: S1_Vlv_DO and (S2_Vlv_DO or S3_Vlv_DO) = TRUE (Boolean) OR S2_Vlv_DO and (S1_Vlv_DO or S3_Vlv_DO) = TRUE (Boolean) OR S3_Vlv_DO and (S1_Vlv_DO or S2_Vlv_DO) = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear R_Trim: S2_Vlv_DO and S3_Vlv_DO = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear NLT: Attained Gear is NLT for time > 1 sec RPS_DO = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear N03: S1_Vlv_DO and RPS_DO = TRUE (Boolean)</p> <p>OR</p> <p>Commanded Gear R_H: S1_Vlv_DO and S2_Vlv_DO = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear R_1: S2_Vlv_DO = TRUE (Boolean) Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>OR</p> <p>Commanded Gear N51: S2_Vlv_DO and RPS_DO = TRUE (Boolean)</p> <p>OR</p> <p>Commanded Gear 2_1: S2_Vlv_DO and RPS_DO = TRUE (Boolean)</p>					

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			<p>Turbine Speed > 400 rpm Output Speed < 600 rpm</p> <p>3. Loss of Cooler Line</p> <p>Loss of Cooler Line Dropout Status is Suspected when any of following conditions are TRUE.</p> <p>SS1_Integ_Destr AND SS1_Integ_Destr AND = TRUE (Boolean) (SS2_Integ_Destr OR = TRUE (Boolean) SS3_Integ_Destr OR = TRUE (Boolean) SS2_Timeout_Failed_Stroking OR = TRUE (Boolean) SS3_Timeout_Failed_Stroking OR = TRUE (Boolean) RPS_Exh_Pending OR = TRUE (Boolean) RPS_Exh_Failed OR (Pending_RVT AND (CNT_SS1_Integ_Dstrk >= thresh) OR (CNT_Pending_RVT >= thresh)) >= 2 counts >= 2 counts</p> <p>OR</p> <p>SS2_Integ_Destr AND = TRUE (Boolean) (SS1_Integ_Destr OR SS3_Integ_Destr OR SS1_Timeout_Failed_Stroking OR SS3_Timeout_Failed_Stroking OR RPS_Exh_Pending OR RPS_Exh_Failed) = TRUE (Boolean)</p> <p>OR</p> <p>SS3_Integ_Destr AND = TRUE (Boolean) (SS1_Integ_Destr OR = TRUE (Boolean) SS2_Integ_Destr OR = TRUE (Boolean) SS1_Timeout_Failed_Stroking OR = TRUE (Boolean) SS2_Timeout_Failed_Stroking OR = TRUE (Boolean) RPS_Exh_Pending OR = TRUE (Boolean) RPS_Exh_Failed) = TRUE (Boolean)</p> <p>OR</p> <p>SS1_Timeout_Failed_Stroking AND = TRUE (Boolean) (SS2_Integ_Destr OR = TRUE (Boolean) SS3_Integ_Destr OR = TRUE (Boolean) SS2_Timeout_Failed_Stroking OR = TRUE (Boolean) SS3_Timeout_Failed_Stroking OR = TRUE (Boolean) RPS_Exh_Pending OR = TRUE (Boolean) RPS_Exh_Failed)</p> <p>OR</p> <p>SS2_Timeout_Failed_Stroking AND = TRUE (Boolean) (SS1_Integ_Destr OR = TRUE (Boolean) SS3_Integ_Destr OR = TRUE (Boolean) SS1_Timeout_Failed_Stroking OR = TRUE (Boolean) SS3_Timeout_Failed_Stroking OR = TRUE (Boolean) RPS_Exh_Pending OR = TRUE (Boolean) RPS_Exh_Failed) = TRUE (Boolean)</p> <p>OR</p> <p>SS3_Timeout_Failed_Stroking AND = TRUE (Boolean)</p>		<p>Loss_of_Cooler_Line_Detect_Enbl = TRUE (Boolean)</p> <p>Seq_Diag_OvrRide_Mode Rng_Verif_Grp OR Seq_Diag_OvrRide_Mode Rev_Press_Switch_Grp AND TFTKO PS4_Ckt_Low OR Monitor_Loss_Cooler_Line_Logic_Valve_Timeout_Diag OR Monitor_Loss_Cooler_Line_Logic_Valve_Integrity_Diag</p>	<p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p>	1.75 sec (with Ratio faults)	

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			(SS1_Integ_Destr OR SS2_Integ_Destr OR SS1_Timeout_Failed_Stroking OR SS2_Timeout_Failed_Stroking OR RPS_Exh_Pending OR RPS_Exh_Failed) OR RVT_DFG AND (RPS_Exh_Pending OR RPS_Exh_Failed OR SS1_Integ_Destr OR SS2_Integ_Destr OR SS3_Integ_Destr OR SS1_Timeout_Failed_Stroking OR SS2_Timeout_Failed_Stroking OR SS3_Timeout_Failed_Stroking) OR RPS_Exh_Failed AND (SS1_Integ_Destr OR SS2_Integ_Destr OR SS3_Integ_Destr OR SS1_Timeout_Failed_Stroking OR SS2_Timeout_Failed_Stroking OR SS3_Timeout_Failed_Stroking) Loss of Cooler Line Dropout Status goes from Suspected to Detected when the following conditions are TRUE. RVT_for_Loss_of_Cooler_Line AND (Diag_OvrRide_Mode = Logic_Vlv_Int_Grp AND (Seq_Diag_OvrRideType == S1_Int_Failed_Destroyed OR S2_Int_Failed_Destroyed OR S3_Int_Failed_Destroyed)) OR (Diag_OvrRide_Mode = Logic_Vlv_TO_Grp) OR (Seq_Diag_OvrRide_Mode = Rev_Press_Switch_Grp) OR (Seq_Diag_OvrRide_Mode = Rng_Verif_Grp) AND (((Seq_Diag_OvrRide_Type = 1st) AND TFTKO(1st)) OR ((Seq_Diag_OvrRide_Type = 2nd) AND TFTKO(2nd)) OR ((Seq_Diag_OvrRide_Type = 3rd) AND TFTKO(3rd)) OR ((Seq_Diag_OvrRide_Type = 4th) AND TFTKO(4th)) OR ((Seq_Diag_OvrRide_Type = 5th) AND TFTKO(5th)) OR ((Seq_Diag_OvrRide_Type = 6th) AND TFTKO(6th)) OR ((Seq_Diag_OvrRide_Type = Rvrs) AND TFTKO(Rvrs)))	= TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean) = TRUE (Boolean)				

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Solenoid 1 Circuit Low	P0842	This test compares the commanded valve position to the PS1 pressure switch feedback. (part of S1 valve integrity test)	<p>Pending failure occurs when PS1 pressure switch indicates stroked for a time</p> <p>In response to the pending failure, S1 valve is retried by triggering S1 valve command to stroked and back to destroyed. If PS1 pressure switch continues to indicate stroked, then one of three malfunction cases exists:</p> <p>For Case 1 (electrical malfunction),</p> <p>SS1 Circuit Low reports failure, also.</p> <p>For Case 2 (mechanical malfunction),</p> <p>Shift Solenoid 1 (SS1) Valve Performance – Stuck On reports failure, also.</p> <p>For Case 3 (intermittent malfunction),</p> <p>SS1 valve retry attempted AND PS1 pressure switch continues to indicate stroked.</p>	<p>> 0.08 seconds</p> <p>P0973</p> <p>P0752</p> <p>15 times</p>	<p>S1 valve is destroyed</p> <p>NOT Cold initialization unless transmission fluid temperature > -25 deg. C</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		80 ms	A
Shift Solenoid 1 (SS1) Valve Performance – Stuck Off	P0751	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test)	<p>S1 valve is commanded from destroyed to stroked and the PS1 pressure switch indication remains destroyed for a time</p> <p>WITH transmission fluid temperature</p> <p>(Time increases as temperature decreases with maximum time at transmission fluid temperature)</p>	<p>>= 5 seconds</p> <p>>= 0 deg. C</p> <p>12 seconds</p> <p><= -40 deg. C</p>	<p>S1 valve commanded from destroyed</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		5 seconds	A
Shift Solenoid 1 (SS1) Valve Performance – Stuck On	P0752	This test compares the change of state of the valve command to the change of state of the PS1 pressure switch feedback. (part of the S1 valve timeout test).	<p>S1 valve commanded from stroked to destroyed and the PS1 pressure switch indication remains stroked for a time</p> <p>WITH transmission fluid temperature</p> <p>(Time increases as temperature decreases with maximum time at transmission fluid temperature)</p>	<p>> 6.2 seconds</p> <p>>= 0 deg. C.</p> <p>10 seconds</p> <p><= -40 deg. C</p>	<p>S1 valve commanded from stroked to destroyed</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		6.6 seconds	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Switch Solenoid 1 Circuit High	P0843	This test compares the commanded valve position to the PS1 pressure switch feedback. (part of S1 valve integrity test)	<p>Pending failure occurs when PS1 pressure switch indicates destroyed for a time > 0.07 seconds</p> <p>IF a main pressure dropout is suspected then time limit increases to 5 seconds</p> <p>In response to the pending failure, S1 valve is retried by triggering S1 valve command to destroyed and back to stroked. If the PS1 pressure switch continues to indicate destroyed, then one of three malfunction cases exists.</p> <p>For Case 1 (electrical malfunction),</p> <p>SS1 Control Circuit Low reports failure, also.</p> <p>For Case 2 (mechanical malfunction),</p> <p>Shift Solenoid 1 (SS1) Valve Performance – Stuck Off reports failure, also.</p> <p>For Case 3 (intermittent malfunction),</p> <p>S1 valve retry attempted 15 times AND PS1 pressure switch continues to indicate destroyed.</p>	<p>P0973</p> <p>P0751</p>	<p>S1 valve is stroked</p> <p>NOT Cold initialization unless transmission fluid temperature > -25 deg. C</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		70 ms	A
Pressure Switch Solenoid 2 Circuit Low	P0847	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve integrity test).	<p>Pending failure occurs when PS2 pressure switch indicates stroked for a time > 0.04004 seconds</p> <p>IF a main pressure dropout is suspected then time limit increases to 0.2998 seconds</p> <p>In response to the pending failure, S2 valve is retried by triggering S2 valve command to stroked and back to destroyed. If PS2 pressure switch continues to indicate stroked, then one of three malfunction cases exists.</p> <p>For Case 1 (electrical malfunction),</p> <p>SS2 Control Circuit Low reports failure, also.</p> <p>For Case 2 (mechanical malfunction),</p>	<p>P0976</p>	<p>S2 valve is destroyed</p> <p>NOT Cold initialization unless transmission fluid temperature > -25 deg. C</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		40 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			Shift Solenoid 2 Valve Performance – Stuck On reports failure, also. For Case 3 (intermittent malfunction), S2 valve retry attempted AND PS2 pressure switch continues to indicate stroked.	P0757 2 times				
Shift Solenoid 2 Valve Performance – Stuck Off	P0756	This test compares the change of state of the valve command to the change of state of the PS2 pressure switch feedback (part of the S2 valve timeout test).	If the S2 valve is commanded from destroyed to stroked and the PS2 pressure switch indication remains destroyed for a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 5 seconds >= 0 deg. C. 12 seconds <= -40 deg. C.	S2 valve commanded from destroyed to stroked. NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		5 seconds	A
Shift Solenoid 2 Valve Performance – Stuck On	P0757	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve timeout test).	S2 valve commanded from stroked to destroyed and the PS2 pressure switch does not indicate destroyed for a time WITH transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 6.5 seconds >= 0 deg. C. 22 seconds <= -40 deg. C.	S2 valve commanded from stroked to destroyed NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd		6.5 sec	A
Pressure Switch Solenoid 2 Circuit High	P0848	This test compares the commanded valve position to the PS2 pressure switch feedback (part of the S2 valve integrity test).	Pending failure occurs when PS2 pressure switch indicates destroyed for a time IF a main pressure dropout is suspected, THEN time limit increases to In response to the pending failure, S2 valve is retried by triggering S2 valve command to destroyed and back to stroked. If PS2 pressure switch continues to indicate destroyed, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS2 Control Circuit Low reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 2 Valve Performance –	> 0.30 seconds 5 seconds P0976 P0756	S2 valve is stroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -25 deg. C	300 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			<p>Stuck Off reports failure, also.</p> <p>For Case 3 (intermittent malfunction),</p> <p style="text-align: center;">S2 valve retry attempted 2 times AND PS2 pressure switch continues to indicate destroyed.</p>					
Pressure Switch Solenoid 3 Circuit Low	P0872	This test compares the commanded valve position to the PS3 pressure switch feedback. (part of S3 valve integrity test)	<p>Pending failure occurs when PS3 pressure switch indicates stroked for a time</p> <p>In response to the pending failure, S3 valve is retried by triggering S3 valve command to stroked and back to destroyed. If PS3 pressure switch continues to indicate stroked, then one of three malfunction cases exists.</p> <p>For Case 1 (electrical malfunction),</p> <p style="text-align: center;">SS3 Control Circuit Low reports failure, also. P0979</p> <p>For Case 2 (mechanical malfunction),</p> <p style="text-align: center;">Shift Solenoid 3 Valve Performance – Stuck On reports failure, also. P0762</p> <p>For Case 3 (intermittent malfunction),</p> <p style="text-align: center;">S3 valve retry attempted 2 times AND PS3 pressure switch continues to indicate stroked.</p>	<p>> 0.0195 seconds</p>	<p>S3 valve is destroyed</p> <p>NOT Cold initialization unless transmission fluid temperature > -25 deg. C</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		20 ms	A
Shift Solenoid 3 Valve Performance – Stuck Off	P0761	This test compares the change of state of the valve command to the change of state of the PS3 pressure switch feedback. (part of the S3 valve timeout test)	<p>If the S3 valve is commanded from destroyed to stroked and the PS3 pressure switch indication remains destroyed for a time</p> <p style="text-align: center;">WITH transmission fluid temperature</p> <p>(Time increases as temperature decreases with maximum time at transmission fluid temperature)</p>	<p>>= 5 seconds</p> <p>>= 0 deg. C.</p> <p>12 seconds</p> <p><= -40 deg. C.</p>	<p>S3 valve commanded from destroyed to stroked.</p> <p>NOT Low Voltage Disable</p> <p>NOT Shutdown with Active Diag</p> <p>Hydraulic System Pressurized</p> <p>NOT Hydraulic Default Cmd</p>		5 seconds	A
Shift Solenoid 3 Valve Performance – Stuck On	P0762	This test compares the commanded valve position to the PS3 pressure switch feedback (part of the	<p>S3 valve commanded from stroked to destroyed and the PS3 pressure switch does not indicate destroyed for a time</p> <p style="text-align: center;">WITH</p>	<p>> 6.5 seconds</p>	<p>S3 valve commanded from stroked to</p> <p>NOT Low Voltage Disable</p>		6.6 seconds	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
		S3 valve timeout test).	transmission fluid temperature (Time increases as temperature decreases with maximum time at transmission fluid temperature)	>= 0 deg. C. 22 seconds >= -40 deg. C.	NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd			
Pressure Switch Solenoid 3 Circuit High	P0873	This test compares the commanded valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)	Pending failure occurs when PS3 pressure switch indicates destroyed for a time IF a main pressure dropout is suspected THEN time limit increases to In response to the pending failure, S3 valve is retried by triggering S3 valve command to destroyed and back to stroked. If PS3 pressure switch continues to indicate destroyed, then one of the three malfunction cases exists. For Case 1 (electrical malfunction), SS3 Control Circuit Low reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 3 Valve Performance – Stuck Off reports failure, also. For Case 3 (intermittent malfunction), S3 valve retry attempted AND PS3 pressure switch continues to indicate destroyed.	> 0.30 seconds 5 seconds P0979 P0761 2 times AND 30 seconds	S3 valve is stroked NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd	> -25 deg. C	300 ms	A
Pressure Switch Reverse Circuit Low	P0877	This test detects Reverse Pressure Switch closed indication by comparing the Reverse Pressure Switch state to the PRNDL switch state.	Case 1: (Forward range) For a sample size (if dropout suspected, NLT or N02 cmded, use sample size) PRNDL is P, D1, D2, D3, D4, D5, D6, T8, or T4 AND RPS indicates Reverse for a time (if dropout suspected, NLT or N02 cmded, use time) Case 2: (Range indefinite) For a sample size, net engine torque	100 samples 255 samples 20 samples >= 100 Nm	All Cases Not Test Failed This Key On No Fault Pending DTCs for this drive cycle Engine had been cranking or running this drive cycle Components powered AND Ignition Voltage between Engine Speed between for Transmission Fluid Temperature	P0877 P0878 P0708 P0708 cycle 9 V and 18 V 200 RPM and 7500 RPM 5 seconds >= 0 deg. C	5 seconds	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			PRNDL is indefinitely D3 or another forward range for a time > 1 second		Hydraulic System Pressurized Reverse Pressure Switch State indicates REVERSE			
Pressure Switch Reverse Circuit High	P0878	This test detects the Reverse Pressure switch being stuck in the open position by comparing to the PRNDL switch state and detects the Reverse Pressure switch stuck open at shutdown.	All Cases		Not Test Failed This Key On	P0877 P0878 P0708		A
					No Fault Pending DTC for this drive cycle. No range switch response active	P0708		
			Case 1: (RPS State and Gear Ratio do not agree) IF Rev Gear Ratio and RPS indicates not Reverse for >= 0.5 second AND Engine Torque >= 100 Nm for >= 1 second report malfunction		NOT Fault Active Ignition Voltage between 9 V and 18 V First Range Commanded Shift Complete Output Speed >= 100 rpm	P0878	1.5 seconds	
			For Case 2: (RPS Shutdown Test) If RPS indicates not Reverse for a time > 10 seconds at transmission fluid temperature 0 deg. C. This time varies with transmission fluid at transmission fluid temperature > 35 deg. C to time 12 seconds at transmission fluid temperature < -20 deg. C. report malfunction at Init		Power Mode is NOT Off Transmission Fluid Temperature >= 0 deg. C Engine had been cranking or running this drive cycle Engine speed < 50 RPM Turbine speed < 50 RPM Output speed < 50 RPM	>= 0 deg. C	10 seconds	
On-coming/Off-going								
Pressure Control Solenoid 1 Controlled Clutch Stuck Off	P2723	This test determines if the on-coming clutch energized by Pressure Control Solenoid 1 engages during a forward range shift.	Pending failure occurs when accumulated event timer >= 2 seconds (For rough road conditions, use) 2 seconds Timer accumulates when transmission is shifting, output speed >= 60 RPM AND commanded gear slip speed > 75 RPM (For rough road conditions, use) 150 RPM. In response of pending failure, a diagnostic response range is commanded. During this command, this		Not Test Failed This Key On	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D	2.25 seconds	A
					Output Speed >= 125 RPM			

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			test fails if ABS(Converter slip) for sample size	>= 250 RPM > 10 samples	Turbine Speed Hydraulic System Pressurized Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active No Cold Mode operation No abusive garage shift to 1st range detected On-coming clutch control enabled Power downshift abort to previous range NOT active NOT Low Voltage Disable	>= 60 RPM		
Pressure Control Solenoid 2 Controlled Clutch Stuck Off	P0776	This test determines if the on-coming clutch energized by Pressure Control Solenoid 2 engages during a forward range shift.	Pending failure occurs when accumulated event timer (For rough road conditions, use) Timer accumulates when transmission is shifting, output speed AND commanded gear slip speed (For rough road conditions, use) In response of pending failure, a diagnostic response range is commanded. During this command, this test fails if ABS(Converter slip) for sample size	>= 2 seconds 2 seconds >= 60 RPM > 75 RPM 150 RPM. >= 250 RPM > 10 samples	Not Test Failed This Key On Output Speed Turbine Speed Hydraulic System Pressurized Normal powertrain shutdown not in process Normal or Cold powertrain initialization is complete No range switch response active No Cold Mode operation No abusive garage shift to 1st range detected On-coming clutch control enabled	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 125 RPM >= 60 RPM	2.25 seconds	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Power downshift abort to previous range NOT active NOT Low Voltage Disable			
Pressure Control Solenoid 1 Controlled Clutch Stuck On	P2724	This test determines if the off-going clutch energized by Pressure Control solenoid 1 remains engaged during a forward range shift.	<p>Accumulated fail timer for forward range upshift; OR accumulated fail timer for direction change shifts; OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed throttle.</p> <p>Fail timer accumulates during range to range shifts when attained gear slip speed</p>	<p>>= 0.2998 seconds >= 3.0 seconds >= 0.500 seconds >= 1.0 second =< 25 RPM</p>	<p>Not Test Failed This Key On</p> <p>Output Speed Turbine Speed</p> <p>Normal powertrain shutdown not in process</p> <p>Normal or Cold powertrain initialization is complete</p> <p>No range switch response active</p> <p>No Cold Mode operation</p> <p>No abusive garage shift to 1st range detected</p> <p>NOT Low Voltage Disable</p>	<p>P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D</p> <p>>= 200 RPM >= 200 RPM</p>	3 seconds	A
Pressure Control Solenoid 2 Controlled Clutch Stuck On	P0777	This test determines if the off-going clutch energized by Pressure Control solenoid 2 remains engaged during a forward range shift.	<p>Accumulated fail timer for forward range upshift; OR accumulated fail timer for direction change shifts; OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed throttle.</p> <p>Fail timer accumulates during range to range shifts when attained gear slip speed</p>	<p>>= 0.2998 seconds >= 3.0 seconds >= 0.500 seconds >= 1.0 second =< 25 RPM</p>	<p>Not Test Failed This Key On</p> <p>Output Speed Turbine Speed</p> <p>Normal powertrain shutdown not in process</p> <p>Normal or Cold powertrain initialization is complete</p> <p>No range switch response active</p>	<p>P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D</p> <p>>= 200 RPM >= 200 RPM</p>	3 seconds	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					No Cold Mode operation No abusive garage shift to 1st range detected NOT Low Voltage Disable			
PRNDL/IMS								
Transmission Range Sensor High Input	P0708	This test monitors the transmission range switch for invalid input conditions and parity errors occurring over consecutive ignition cycles.	<p>For Case 1 (No Information): Illegal electrical state for a time</p> <p>For Case 2 (Long-term Parity): There are 3 counters for long-term parity. These counters are updated at the end of each drive cycle, immediately prior to TCM shutdown.</p> <p>For Counter 1, increment counter IF Parity Error Detected; decrement counter IF No Parity Error Detected AND No Motion Detected.</p> <p>IF Counter 1 THEN report failure.</p> <p>For Counter 2, increment counter IF Parity Error Detected AND (No Valid Drive Detected OR No Valid Park/Neutral Detected) AND Motion Detected; decrement counter IF No Parity Error Detected AND Valid Park/Neutral Detected AND Valid Drive Detected AND Motion Detected.</p> <p>IF Counter 2, THEN report failure.</p> <p>For Counter 3, increment Counter 3 IF Parity Error Detected while in Reverse AND No Valid Reverse Detected AND Motion Detected. Decrement Counter 3 IF No Parity Error Detected AND Valid Reverse Detected AND Motion Detected.</p> <p>IF Counter 3, THEN report failure.</p> <p>Where Parity Error Detected is defined as a failure of the 4-bit PRNDL input such that the sum of those bits yields an odd result for a time;</p>	<p>>= 1 second</p> <p>>= 15 counts</p> <p>>= 5 counts</p> <p>>= 5 counts</p> <p>>= 30 seconds;</p>	<p>Components powered AND Battery Voltage Engine Speed between for</p>	<p>>= 9 V</p> <p>200 RPM and 7500 RPM 5 seconds</p>	<p>Case 1: 1 second</p> <p>Case 2: 5th occurrence</p>	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			<p>Motion Detected is defined as output speed ≥ 200 RPM for a time; ≥ 10 seconds</p> <p>Valid Drive Detected is defined as the 4-bit DL indicates Valid Drive for a time; ≥ 3 seconds</p> <p>Valid Park Detected is defined as the 4-bit PRNDL indicates Valid Park for a time ≥ 0.2 seconds and output speed; ≤ 20 RPM</p> <p>Valid Reverse Detected is defined as the 4-bit PRNDL indicates Valid Reverse for a time; ≥ 15 seconds;</p> <p>Valid Neutral Detected is defined as the 4-bit PRNDL indicates Valid Neutral for a time ≥ 0.2 seconds and output speed ≤ 20 RPM OR for a time; ≥ 3 seconds</p>					
Transmission Range Sensor Circuit Range/Performance	P0706	This test monitors the transmission range switch inputs at engine start to determine that it is indicating a valid starting position (Park or Neutral).	<p>For sample size, PRNDL C input is closed OR PRNDL P is NOT closed.</p>	> 7 samples	<p>Not Test Failed This Key On</p> <p>Ignition voltage between</p> <p>Powertrain State is READY or CRANKING</p> <p>Engine speed > 100 RPM and < 350 RPM.</p>	P0706 9V and 18 V	200 ms	B
Solenoid Electrical								

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Main Modulation/Line Pressure Control Solenoid Control Circuit Open	P0960	This test detects solenoid electrical open circuit malfunctions.	<p>Fault pending is set on a single occurrence of hardware ground or open fault.</p> <p>IF either hardware faults are present for THEN initiate intrusive test by opening low side driver</p> <p>IF intrusive test indicates open for THEN report malfunction</p>	<p>A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.</p> <p>≥ 3 counts</p> <p>≥ 2 counts</p>	<p>Not Test Failed This Key On</p> <p>Components powered</p> <p>AND</p> <p>Battery Voltage</p> <p>If Engine Cranking, then Crank Time AND Battery Voltage</p> <p>Engine speed</p> <p>High Side Driver 2 Enabled</p>	<p>P2669</p> <p>P2670</p> <p>P2671</p> <p>≥ 9 V</p> <p>< 4 seconds</p> <p>> 10 V</p> <p>≥ 20 RPM</p>	125 ms	A
Main Modulation/Line Pressure Control Solenoid Control Circuit Performance	P0961	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	<p>IF delta(desired current - actual current) FOR For a sample size THEN report malfunction</p>	<p>≥ 0.5 amps</p> <p>FOR ≥ 40 counts</p> <p>< 80 samples</p>	<p>Not Test Failed This Key On</p> <p>No Fault Pending DTC for this drive cycle,</p> <p>Components powered</p> <p>AND</p> <p>Battery Voltage</p>	<p>P2669</p> <p>P2670</p> <p>P2671</p> <p>P0960</p> <p>P0961</p> <p>P0962</p> <p>P0960</p> <p>P0962</p> <p>≥ 9 V</p>	1000 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed >= 20 RPM High Side Driver 2 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete			
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present for THEN initiate intrusive test by opening low side driver IF intrusive test indicates grnd for THEN report malfunction	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.	Not Test Failed This Key On Components powered AND Battery Voltage >= 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed >= 20 RPM High Side Driver 2 Enabled	P2669 P2670 P2671	125 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Main Modulation/Line Pressure Control Solenoid Control Circuit High	P0963	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.	Not Test Failed This Key On Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM High Side Driver 2 Enabled	P2669 P2670 P2671	75 ms	A
Pressure Control Solenoid 2 Control Circuit Open	P0964	This test detects solenoid electrical open circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present for	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.	Not Test Failed This Key On	P0657 P0658 P0659	125 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			THEN initiate intrusive test by opening low side driver IF intrusive test indicates open for THEN report malfunction	≥ 2 counts	Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM High Side Driver 1 Enabled			
Pressure Control Solenoid 2 Control Circuit Performance	P0965	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	IF delta(desired current - actual current) FOR For a sample size THEN report malfunction	≥ 0.5 amps ≥ 10 counts < 20 samples	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM High Side Driver 1 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	P0657 P0658 P0659 P0964 P0965 P0966 P0964 P0966	250ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Pressure Control Solenoid 2 Control Circuit Low	P0966	This test detects solenoid electrical ground circuit malfunctions.	<p>Fault pending is set on a single occurrence of hardware ground or open fault.</p> <p>IF either hardware faults are present for THEN initiate intrusive test by opening low side driver</p> <p>IF intrusive test indicates grnd for THEN report malfunction</p>	<p>A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.</p>	<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage</p> <p>If Engine Cranking, then Crank Time AND Battery Voltage</p> <p>Engine speed</p> <p>High Side Driver 1 Enabled</p>	<p>P0657 P0658 P0659</p> <p>≥ 9 V</p> <p>< 4 seconds</p> <p>> 10 V</p> <p>≥ 20 RPM</p>	125 ms	A
Pressure Control Solenoid 2 Control Circuit High	P0967	This test detects solenoid electrical short to power circuit malfunctions.	<p>Short to power fault present for</p>	<p>A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.</p>	<p>Not Test Failed This Key On</p>	<p>P0657 P0658 P0659 P0967</p>	75 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					<p>Components powered AND Battery Voltage ≥ 9 V</p> <p>If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V</p> <p>Engine speed ≥ 20 RPM</p> <p>High Side Driver 1 Enabled High Side Driver 1 Enabled</p>			
Pressure Control Solenoid 1 Control Circuit Open	P2727	This test detects solenoid electrical open circuit malfunctions.		<p>A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.</p> <p>Fault pending is set on a single occurrence of hardware ground or open fault.</p> <p>IF either hardware faults are present for THEN initiate intrusive test by opening low side driver ≥ 3 counts</p> <p>IF intrusive test indicates open for THEN report malfunction ≥ 2 counts</p>			125 ms	A
					<p>Not Test Failed This Key On P2669 P2670 P2671</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V</p> <p>Engine speed ≥ 20 RPM</p> <p>High Side Driver 2 Enabled</p>			
Pressure Control Solenoid 1 Control Circuit Performance	P2728	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	<p>IF delta(desired current - actual current) ≥ 0.5 amps FOR ≥ 10 counts For a sample size < 20 samples THEN report malfunction</p>		<p>Not Test Failed This Key On P2669 P2670 P2671 P2727 P2728</p>		250 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					No Fault Pending DTC for this drive cycle. Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM High Side Driver 2 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete	P2729 P2727 P2729		
Pressure Control Solenoid 1 Control Circuit Low	P2729	This test detects solenoid electrical ground circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present for THEN initiate intrusive test by opening low side driver IF intrusive test indicates grnd for THEN report malfunction	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.	Not Test Failed This Key On Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V	P2669 P2670 P2671	125 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Engine speed High Side Driver 2 Enabled	>= 20 RPM		
Pressure Control Solenoid 1 Control Circuit High	P2730	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. > = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine speed High Side Driver 2 Enabled	P2669 P2670 P2671 P2730 >= 9 V < 4 seconds > 10 V >= 20 RPM	75 ms	A
Shift Solenoid 1 Control Circuit Low/Open	P0973	This test detects solenoid electrical ground and open circuit malfunctions.	Fault pending is set on a single occurrence of hardware ground or open fault.	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.42 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 200 kohms and shall not be detected if the circuit impedance is <= 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.	Not Test Failed This Key On	P0657 P0658 P0659	250 ms	A

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			IF either hardware fault is present for THEN report malfunction	>= 10 counts	<p>Components powered AND Battery Voltage >= 9 V</p> <p>If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V</p> <p>Engine speed >= 20 RPM</p> <p>High Side Driver 1 Enabled</p>			
Shift Solenoid 1 Control Circuit High	P0974	This test detects solenoid electrical short to power circuit malfunctions.		<p>A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240 usec.</p>	<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage >= 9 V</p> <p>If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V</p> <p>Engine speed >= 20 RPM</p> <p>High Side Driver 1 Enabled</p>	<p>P0657 P0658 P0659 P0974</p>	75 ms	A
			Short to power fault present for	> = 3 counts				

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Shift Solenoid 2 Control Circuit Low/Open	P0976	This test detects solenoid electrical ground or open circuit malfunctions.	<p>Fault pending is set on a single occurrence of hardware ground</p> <p>IF either hardware fault is present for THEN report malfunction</p>	<p>A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.42 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.</p> <p>An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 200 kohms and shall not be detected if the circuit impedance is ≤ 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.</p>	<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage</p> <p>If Engine Cranking, then Crank Time AND Battery Voltage</p> <p>Engine speed</p> <p>High Side Driver 1 Enabled</p>	<p>P0657 P0658 P0659</p> <p>≥ 9 V</p> <p>< 4 seconds</p> <p>> 10 V</p> <p>≥ 20 RPM</p>	250 ms	A
Shift Solenoid 2 Control Circuit High	P0977	This test detects solenoid electrical short to power circuit malfunctions.	<p>Short to power fault present for</p>	<p>A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240 usec.</p>	<p>Not Test Failed This Key On</p> <p>Components powered</p>	<p>P0657 P0658 P0659 P0977</p>	75 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					AND Battery Voltage >= 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed >= 20 RPM High Side Driver 1 Enabled			
Shift Solenoid 3 Control Circuit Low/Open	P0979	This test detects solenoid electrical ground or open circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.22 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off . The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 200 kohms and shall not be detected if the circuit impedance is <= 6 kohms. The interface shall detect an open circuit condition when the driver is Off. The nominal filter time to latch fault is 200 usec and the diagnostic threshold is 240 usec.			250 ms	A
			Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware fault is present for THEN report malfunction	>= 10 counts	Not Test Failed This Key On Components powered AND Battery Voltage >= 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed >= 20 RPM High Side Driver 1 Enabled	P0657 P0658 P0659 P0979		

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Shift Solenoid 3 Control Circuit High	P0980	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.39 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. The nominal filter time to latch fault is 150 usec and the diagnostic threshold is 240 usec.	Not Test Failed This Key On Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM High Side Driver 1 Enabled	P0657 P0658 P0659 P0980	75 ms	A
Actuator Supply 1 (HSD1) Voltage Open	P0657	This test detects if the voltage measured at the HSD1 detection circuit shows that multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	IF HSD1 fault is indeterminate THEN initiate intrusive test Command intrusive gear. Override pressure control solenoid 2 THEN exit intrusive test after Report malfunction when the number of failure events A failure event occurs when the number of failed solenoids connected to HSD1	≥ 0.075 sec > 0.050 sec ≥ 3 ≥ 2	Not Test Failed This Key On HSD1 is commanded ON Components powered AND Battery Voltage ≥ 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine speed ≥ 20 RPM	P0657	75 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Actuator Supply 1 (HSD1) Voltage Low	P0658	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when short to ground is detected for a number of events	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.43 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is On. Ground short is read every 10 us (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5 to flag a short. ≥ 3 times	Not Test Failed This Key On HSD1 is commanded ON	P0658	75 ms	A
Actuator Supply 1 (HSD1) Voltage High	P0659	This test detects if the voltage measured at the HSD 1 detection circuit indicates high during initialization (when the circuit is off)	During initialization, report malfunction when the number of failure events	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.5 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is Off. Power short is read every 10 us after power up reset (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5. ≥ 3 times	During initialization Battery Voltage $\geq 9V$		18.75 ms	A
Actuator Supply2 (HSD2) Voltage Open	P2669	This test detects if the voltage measured at the HSD2 detection circuit shows that multiple low side detection circuits indicate open, but the high side detection circuit indicates high voltage.	Report malfunction when the number of failure events ≥ 3 A failure event occurs when the number of failed solenoids connected to HSD1 ≥ 2	≥ 3 ≥ 2	Not Test Failed This Key On HSD2 is commanded ON Components powered AND Battery Voltage $\geq 9 V$ If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage $> 10 V$ Engine Speed ≥ 20 rpm	P2669	75 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Actuator Supply2 (HSD2) Voltage Low	P2670	This test detects low voltage when high voltage is expected indicating a short to ground at the circuit.	Report malfunction when short to ground is detected for a number of events	A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.43 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is On. Ground short is read every 10 us (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5 to flag a short.	Not Test Failed This Key On HSD2 is commanded ON	P2670	75 ms	A
Actuator Supply 2 (HSD2) Voltage High	P2671	This test detects if the voltage measured at the HSD 2 detection circuit indicates high during initialization (when the circuit is off)	During initialization, report malfunction when the number of failure events	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.5 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is Off. Power short is read every 10 us after power up reset (fault filtering). Diagnostic time is 50 usec - every 50us (5 readings) with a minimum of 3 readings out of 5.	During initialization Battery Voltage	≥ 9	18.75 ms	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
TCC Pressure Control Solenoid Control Circuit Open	P2761	This test detects torque converter solenoid electrical open circuit malfunctions.		A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance >= 173 kohm and shall not be detected if the circuit impedance is <= 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.			125 ms	B
			Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present for THEN initiate intrusive test by opening low side driver IF intrusive test indicates open for THEN report malfunction	>= 3 counts >= 2 counts	Not Test Failed This Key On Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND Battery Voltage Engine Speed High Side Driver 2 Enabled	P2669 P2670 P2671 >= 9 V < 4 seconds AND > 10 V >= 20 rpm		
TCC Pressure Control Solenoid Control Circuit Performance	P2762	This test detects the performance of the solenoid by comparing desired current to actual duty cycle	IF delta(desired current - actual current) FOR For a sample size THEN report malfunction	>= 0.5 amps FOR >= 40 counts < 80 samples	Not Test Failed This Key On No Fault Pending DTC for this drive cycle. Components powered AND Battery Voltage If Engine Cranking, then Crank Time AND	P2669 P2670 P2671 P2761 P2762 P2764 P2761 P2763 >= 9 V < 4 seconds AND	1000 ms	B

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					Battery Voltage > 10 V Engine Speed >= 20 rpm High Side Driver 2 Enabled Shift Complete Lockup Apply Complete OR Lockup Release Complete			
TCC Pressure Control Solenoid Control Circuit High	P2763	This test detects solenoid electrical short to power circuit malfunctions.	Short to power fault present for	A power short condition shall be detected if the circuit attached to the Controller external connection has an impedance <= 1.16 ohm to a voltage source within the Normal Operating Voltage Range or the High Operating Voltage Range. The interface shall detect a power short condition when the driver is On. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. > = 3 counts	Not Test Failed This Key On Components powered AND Battery Voltage >= 9 V If Engine Cranking, then Crank Time < 4 seconds AND Battery Voltage > 10 V Engine Speed >= 20 rpm High Side Driver 2 Enabled	P2669 P2670 P2671 P2763	75 ms	B

18 OBDG04 TCM 6 Speed T87A Summary Tables

Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
TCC Pressure Control Solenoid Control Circuit Low	P2764	This test detects solenoid electrical ground circuit malfunctions.	<p>Fault pending is set on a single occurrence of hardware ground or open fault.</p> <p>IF either hardware faults are present for THEN initiate intrusive test by opening low side driver</p> <p>IF intrusive test indicates grnd for THEN report malfunction</p>	<p>A ground short condition shall be detected if the circuit attached to the Controller external connection has an impedance ≤ 0.01 ohm to a voltage source within the Vehicle Ground Voltage Range relative to PWRGND. The interface shall detect a ground short condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software. An open circuit condition shall be detected if the circuit attached to the Controller external connection has an impedance ≥ 173 kohm and shall not be detected if the circuit impedance is ≤ 9.6 k ohm. The interface shall detect an open circuit condition when the driver is Off. There is 10 usec fault filter. The fault is checked for every 6.25 ms by application software.</p>	<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage</p> <p>If Engine Cranking, then Crank Time AND Battery Voltage</p> <p>Engine Speed</p> <p>High Side Driver 2 Enabled</p>	<p>P2669 P2670 P2671</p> <p>≥ 9 V</p> <p>< 4 seconds</p> <p>> 10 V</p> <p>≥ 20 rpm</p>	125 ms	B A
Miscellaneous								
4 Wheel Drive Low Switch Circuit Malfunction	P2771	This test detects abnormal conditions for the four-wheel drive indication switch input by comparing switch state range to calculated range.	<p>Case 1 (Stuck Off)</p> <p>This test fails when, for number of occurrences, ≥ 1</p> <p>the transfer case 4WD switch indicates High range and the calculated transfer case range is Low range for a time ≥ 0.5 second</p> <p>Case 2 (Stuck On)</p> <p>This test fails when, for number of occurrences, ≥ 1</p>	<p>All Cases</p>	<p>Not Test Failed This Key On</p> <p>No Fault Active DTCs for this drive cycle</p> <p>No Fault Pending DTCs for this drive cycle</p>	<p>P2771 P0721 P0722 P077C P077D</p> <p>P2771 P0721 P0722 P077C P077D</p> <p>P0721 P0722 P077C P077D</p>	0.5 second	B

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			the transfer case 4WD switch indicates Low range and the calculated transfer case range is High range for a time	>= 0.5 second	NOT Tranfer Case failure suspect Transfer Case is NOT Neutral or defaulted Transmission fluid temperature Engine Speed between for Shift complete AND range attained NOT Neutral	> 20 deg. C and < 130 deg. C 200 RPM and 7500 RPM 5 seconds		
Transmission Component Slipping	P0894	This test detects the number of turbine slip events during the Neutral Locked Turbine (NLT) request from engine controller.	For this ignition cycle, when the number of Neutral Locked Turbine (NLT) Slip events, then report fail Where number of NLT Slip events for this ignition cycle = Number of accumulated NLT Slip events – Number of NLT Slip events from previous ignition cycles. And, where number of accumulated NLT Slip events is incremented when commanded gear or attained gear is NLT AND turbine speed for a time	>= 3 50 RPM 3 seconds.	Components powered AND Battery Voltage Engine Speed between for	>= 9 V 200 RPM and 7500 RPM 5 seconds	8075 ms	B
Ignition Switch Run/Start Circuit	P2534	Out of range low.	Ignition voltage THEN increment fail counter IF fail counter AND (BattChargeSysStable TRUE OR NOT P0882) THEN report malfunction	< 5 volts 800 counts	Not Test Failed This Key On Components powered AND Battery Voltage Engine Speed between for	P2534 9 V 200 RPM and 7500 RPM 5 seconds	5 seconds	A
GMLAN Bus Reset Counter Overrun	U0073	This test detects if the GMLAN bus is off for a calibration duration.	CAN Hardware Circuitry Detects a Bus Voltage Error (CAN bus off) Bus off delay time (use if Bus off from Bus Indeterminate State)	= TRUE (Boolean) 0.16 sec	>= 5 counts 5 counts all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode \$04 active and end of trip pocessing active A) normal serial data communication enabled A) U0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode	>= 5 seconds FALSE (Boolean) TRUE (Boolean) fault active = CeCANR_e_OBDII_Dsbl (Boolean) 11 volts Run		B

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					C) ignition off enable C) Power Mode C) battery voltage	= TRUE (Boolean) = accessory >11 volts		
GMLAN ECM Controller State of Health Failure	U0100	This test detects GMLANbus failures by detecting State of Health failures in GMLAN messages \$191, \$0BE, \$0C9,\$1A1, \$287, \$2C3, \$3B9, \$3D1,\$3E9, \$3F9, \$4C1, and \$4F1 from ECM.	TCM Rx message missed frame		fail times are caculated based on Rx message enable calibration set to CeCANR_e_BusA_ECM	Tx controller (see Table 1 in supporting document) enumeration	>= 10 seconds	B
			TCM Rx frame message missed frame	= TRUE (Boolean)	TCM Rx frame calibration enabled	>= 0.4 seconds all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode \$04 active and end of trip pocessing active A) normal serial data communication enabled A) U0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0100 fault status is not Not Test Failed This Key On		
Lost Communication with GMLAN ABS Control Module	U0121	This test detects CAN (GMLAN) bus failures by detecting State of Health (SOH) failures in the following GMLAN messages \$0C1, \$0C5, \$0D0, \$1E9, and \$2F9 from Antilock Brake System (ABS) Control Module_	TCM Rx message missed frame		fail times are caculated based on Rx message enable calibration set to CeCANR_e_BusA_ABS	Tx controller (see Table 1 in supporting document) enumeration	>= 10 seconds	C
			TCM Rx frame message missed frame	= TRUE (Boolean)	TCM Rx frame calibration enabled	>= 0.4 seconds all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode \$04 active and end of trip pocessing active A) normal serial data communication enabled A) P0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0121 fault status is not Not Test Failed This Key On		

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Lost Communication With Body Control Module	U0140	This test detects CAN (GMLAN) bus failures by detecting State of Health (SOH) failures in the following GMLAN messages \$0F1, \$1E1, \$1F3, and \$3F1 from the Truck Body Computer (TBC) Control	TCM Rx message missed frame		fail times are calculated based on Rx message enable calibration set to CeCANR_e_BusA_BCM	Tx controller		C
			TCM Rx frame message missed frame = TRUE (Boolean)		TCM Rx frame calibration enabled	(see Table 1 in supporting document) enumeration	>= 10 seconds	
					Frame recovery stabilization delay all conditions A and (B or C) below must occur for stabilization time Bus Stabilization time A) Service mode \$04 active and end of trip processing active A) normal serial data communication enabled A) P0073 status not B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical Ignition Voltage B) Power Mode C) ignition off enable C) Power Mode C) battery voltage U0140 fault status is not Not Test Failed This Key On	>= 0.4 seconds >= 5 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) =accessory >11 volts = fault active U0073		
Brake Switch Circuit	P0571	This test counts how many vehicle acceleration events occur while the brake switch indicates "ON" or the number of vehicle deceleration events while the brake switch indicates "OFF"	Case1: The number of vehicle accelerations with the brake switch "on"	>= 10	All Cases NOT Test Failed This Key On	P0571 P0716 P0717 P07BF P07C0	10 Acceleration Events	C
			Case 2: The number of vehicle decelerations with the brake switch "off"	>= 10	No Fault Pending DTCs Not Fault Active Components powered AND Battery Voltage Engine Speed between for	P0721 P0722 P077C P077D P0703 >= 9 V 200 RPM and 7500 RPM 5 seconds	10 Deceleration Events	
Brake Pedal Position Switch Signal Rolling Count	P0703	This test detects rolling count failures for the Brake Switch GMLAN Message	The failure count increments when the GMLAN message is not received or the rolling counter does not agree with the expected value When the failure counter is for a time of Report Failure	> 5 > 10 seconds	Components powered AND Battery Voltage between Engine Speed between for	9 V and 18 V 200 RPM and 7500 RPM 5 seconds	15 seconds	C

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Upshift Switch Circuit	P0815	This test detects the upshift switch ON	<p>When PRNDL state is N, P or R and has been unchanged for a time ≥ 2.5 seconds AND upshift switch state is ON for a time ≥ 3 seconds.</p> <p>AND</p> <p>When PRNDL state is a forward range and has been unchanged for a time ≥ 2.5 seconds AND upshift switch state is ON for a time ≥ 600 seconds.</p>		<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>Engine Speed between 200 RPM and 7500 RPM for 5 seconds</p>	<p>P0826 P0708</p> <p>≥ 9 V</p> <p>200 RPM and 7500 RPM</p>	603 seconds	C
Downshift Switch Circuit	P0816	This test detects the downshift switch ON.	<p>When PRNDL state is N, P or R and has been unchanged for a time ≥ 2.5 seconds AND downshift switch state is ON for a time ≥ 3 seconds.</p> <p>AND</p> <p>When PRNDL state is a forward range and has been unchanged for a time ≥ 2.5 seconds AND downshift switch state is ON for a time ≥ 600 seconds.</p>		<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>Engine Speed between 200 RPM and 7500 RPM for 5 seconds</p>	<p>P0826 P0708</p> <p>≥ 9 V</p> <p>200 RPM and 7500 RPM</p>	603 Seconds	C
Up and Down Shift Switch Circuit	P0826	This test detects upshift/downshift switch circuit at an illegal state.	Switch state is ILLEGAL for a time ≥ 10 seconds.		<p>Not Test Failed This Key On</p> <p>Components powered AND Battery Voltage ≥ 9 V</p> <p>Engine Speed between 200 RPM and 7500 RPM for 5 seconds</p>	<p>P0826</p> <p>≥ 9 V</p> <p>200 RPM and 7500 RPM</p>	10 seconds	C
Controller Memory								
Control Module Read Only Memory (ROM)	P0601	This test performs a check for ECC fault at controller initialization and a checksum test of all areas of ROM code using a CRC16 table driven method in background.	Incorrect program/calibrations checksum	= TRUE (Boolean)	Not Test Failed This Key On	P0601	= 1 Fail Counts first pass after reset	A
							≥ 5 Fail Counts after first pass (background task continuous)	
			Errors in the software and calibration segments in the flash, detected by the micro's hardware based fault detection	= TRUE Boolean			≥ 254 counts (Controller Initialization)	

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
Control Module Long Term Memory Reset	P0603	This function tests for error flags from the NVDP and logs a code if an error was detected.	<p>fault condition exists that affects the validity of the copy of battery independent non-volatile data kept in RAM.</p> <p>latest copy of the battery independent non-volatile data may have been lost.</p>	<p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p>	<p>Not Test Failed This Key On</p> <p>NVI TestDiagEnbl</p>	<p>P0603</p> <p>TRUE</p>	<p>every controller initialization</p> <p>>= 3 counts (controller initialization)</p>	A
Control Module Random Access Memory (RAM)	P0604	RAM diagnostic	<p>Test fails for any of following.</p> <p>secondary micro processor RAM error</p> <p>OR</p> <p>dual store RAM write time out error</p> <p>OR</p> <p>errors in the system RAM segment detected by the micro's hardware based fault detection</p> <p>OR</p> <p>parity errors in cache memory detected by the micro's hardware based fault detection</p> <p>OR</p> <p>signature faults detected in the TPU microcode by the micro's hardware based fault detection</p> <p>OR</p> <p>write attempt occurred during RAM lock</p>	<p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p>	<p>Not Test Failed This Key On</p> <p>Service mode \$04 active or end of trip processing active</p>	<p>P0604</p> <p>FALSE</p>	<p>1000 ms cont.</p> <p>> 175 ms ((interrupt driven based on calling</p> <p>>= 254 counts (controller initialization)</p> <p>>= 3 counts (controller initialization)</p> <p>>= 5 counts (controller initialization)</p> <p>> 655534 counts (background task</p>	A
Control Module Internal Performance	P0606	Processor integrity test.	<p>main processor RAM error detection circuit hardware failure</p> <p>OR</p> <p>main processor flash EPROM error detection circuit hardware failure</p> <p>OR</p> <p>main processor memory stack failure</p>	<p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p>	<p>Not Test Failed This Key On</p> <p>RAM diagnostic test enable</p> <p>hardware reset source is controller power up reset</p> <p>flash EPROM diagnostic test enable</p> <p>hardware reset source is controller power up reset</p> <p>diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have completed their re enable paths).</p>	<p>P0606</p> <p>= 1 (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= 1 (Boolean)</p> <p>= TRUE (Boolean)</p> <p>= TRUE (Boolean)</p>	<p>>= 5 counts (controller initialization)</p> <p>>= 5 counts (controller initialization)</p> <p>>= 5 counts (100 msec continuous)</p>	A

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			OR secondary processor memory stack failure OR main processor ROM first test complete OR no new seed from secondary processor to main processor seed OR seed sequence error OR seed key fault received from 2ndry OR normalize 0-5 volt (absolute value (analog to digital test voltage commanded - actual analog to digital voltage feedback)) OR arithmetic logic unit test pass OR secondary processor arithmetic logic unit fault OR	= TRUE (Boolean) = FALSE (Boolean) = TRUE (Boolean) ≠ FALSE (Boolean) = TRUE (Boolean) > 9 percent = FALSE (Boolean) = TRUE (Boolean)	main processor memory stack test enable Post code clear diagnostic disabled main processor to secondary processor serial peripheral interface error (main or 2dry detected) battery voltage > 11 Volts ignition voltage ≥ 8 Volts main processor to secondary processor serial peripheral interface error (main or 2dry detected) battery voltage > 11 Volts ignition voltage ≥ 8 Volts Post code clear diagnostic disabled diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have completed their re-enable paths) analog to digital voltage test enabled ignition voltage ≥ 7 Volts analog to digital voltage channel enabled analog to digital test voltage command arithmetic logic unit test enable diagnostic system enabled-(diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths) A and B and C must occur A: starter motor engaged B: ignition voltage > 11 Volts C: starter motor engaged time > 15 sec Post code clear diagnostic disabled	= 1 (Boolean) = FALSE (Boolean) = FALSE (Boolean) = FALSE (Boolean) = FALSE (Boolean) = TRUE (Boolean) = TRUE (Boolean) TRUE (Boolean) 5 Volts = 1 (Boolean) = TRUE (Boolean) = TRUE (Boolean) > 11 Volts > 15 sec = FALSE (Boolean)	two consecutive counts continuously upon receipt from ≥ 35 counts (controller power up 12.5 msec) for more than 0.45 seconds 3 counts out of 17 (on the 12.5 msec loop) two consecutive counts (on the 12.5 ms loop) 5 out of 10 counts OR continuous for 0.15 sec (50 ms) two consecutive counts at controller initialization, then two two consecutive counts continuously upon receipt from	

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
			clock test fail	= TRUE (Boolean)	clock test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two	
					diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	= TRUE (Boolean)		
					A and B and C must occur A: starter motor engaged B: ignition voltage C: starter motor engaged time	= TRUE (Boolean) > 11 Volts > 15 sec		
			OR					
			configuration register test fail	= TRUE (Boolean)	configuration register test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two	
					diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	= TRUE (Boolean)		
					A and B and C must occur A: starter motor engaged B: ignition voltage C: starter motor engaged time	= TRUE (Boolean) > 11 Volts > 15 sec		
			OR					
			secondary processor configuration register fault	= TRUE (Boolean)	Post code clear diagnostic disabled	= FALSE (Boolean)	two consecutive counts continuously upon receipt from	
			OR					
			main SOH discrete fault	= TRUE (Boolean)	Post code clear diagnostic disabled	= FALSE (Boolean)	two consecutive counts continuously upon receipt from	
			OR					
			SPI bus fault(i)	= TRUE (Boolean)	diagnostic system enabled (diagnostic code clear not in progress AND all the diag loops have completed their re-enable paths)	= TRUE (Boolean)	8 counts out of 16 (on the 6.25 msec loop)	
					A and B must occur A: run/crank voltage in range OR battery voltage in range B: Startup/Restart time	>= 11 Volts OR > 11 Volts >= 0.125 sec		
Control Module Long Term Memory Performance	P062F	Tests non volatile memory long term performance.			Not Test Failed This Key On	P062F		A
			TCM Non-Volatile Memory read or write error (every controller initialization).	= TRUE (Boolean)			every controller initialization	
			assembly calibration integrity (every controller initialization)	= TRUE (Boolean)			every controller initialization	

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Component/System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum
					NVM write error diagnostic enable	TRUE		
Control Module Serial Peripheral Interface Bus 2	P16E9	Serial peripheral hardware fault detected by secondary processor.	secondary micro processor hardware serial peripheral device fault active secondary micro processor hardware serial peripheral device fault active previous loop	= TRUE (Boolean) = TRUE (Boolean)	Service mode \$04 active and end of trip processing active	= FALSE(Boolean)		A
Control Module Serial Peripheral Interface Bus 1	P16F0	Secondary processor message error detected by main processor.	secondary micro processor serial peripheral device message valid detected by primary micro processor since controller initialization OR secondary micro processor serial peripheral device message valid detected by primary micro processor after controller initialization OR secondary micro processor serial peripheral device message valid detected by primary micro processor after controller initialization	= FALSE (Boolean) = FALSE (Boolean) = FALSE(Boolean)	NOT in low voltage engine crank condition defined by A or B below during, for low voltage mode time low voltage mode time >= 0.025 seconds A) low voltage mode hysteresis time <= 0.1 seconds B) ignition voltage, set low voltage mode <= 6.4092 volts	fail count out of sample count fail count out of sample count fail count out of sample count	>= 39 counts (12.5 ms) cont >= 399 counts (12.5 ms) cont >= 39 counts (12.5 ms) cont >= 399 counts (12.5 ms) >= 159 counts (12.5 ms) NON continuous >= 399 counts (12.5 ms) NON continuous	A

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Backup Transmissio n Range Command Message Counter Incorrect	C1201	This DTC monitors for an error in communication with the Backup Transmission Range Command Message Counter	Communication of the Alive Rolling Count or Protection Value from the Backup Transmission Range Command Message Counter over LIN bus is incorrect for out of total samples	 >= 10.00 counts >= 10.00 counts	All the following conditions are met for Power Mode Battery Voltage	>= 300.00 milliseconds = Run >= 11.00 Volts	Executes in 250ms loop.	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Backup Transmissio n Range Command Message Counter Incorrect	C1201	This DTC monitors for an error in communication with the Backup Transmission Range Command Message Counter	Communication of the Alive Rolling Count or Protection Value from the Backup Transmission Range Command Message Counter over LIN bus is incorrect for out of total samples	 >= 10.00 counts >= 10.00 counts	All the following conditions are met for Power Mode Battery Voltage	>= 300.00 milliseconds = Run >= 11.00 Volts	Executes in 250ms loop.	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System Voltage Performance	P0561	Detects a low performing 12V battery system. This diagnostic reports the DTC when the absolute value of the difference between the battery voltage and the run/ crank voltage exceeds a calibrated value.	Run Crank voltage low and high	ABS(Battery voltage - Run Crank voltage) > 3.00	Battery voltage B+ line present = TRUE Battery voltage low and high diag enable = TRUE Run Crank voltage	1.00 1.00 Voltage ≥ 5.00 volts	40 failures out of 50 samples 100 ms / sample	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
ETRS GMLAN Command Signal Message Incorrect	P1775	This DTC monitors for an error in communication with the ETRS General Status Signal	Communication of the Alive Rolling Count or Protection Value from the ETRS GMLAN Command Signal over CAN bus is incorrect for out of total samples	 >= 10 counts >= 10.00 counts	All the following conditions are met for Power Mode Run/Crank Ignition Voltage	 >= 300.00 milliseconds = Run >= 11.00 Volts	Executes in 250ms loop.	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
ETRS GMLAN Command Signal Message Incorrect	P1775	This DTC monitors for an error in communication with the ETRS General Status Signal	Communication of the Alive Rolling Count or Protection Value from the ETRS GMLAN Command Signal over CAN bus is incorrect for out of total samples	 >= 10 counts >= 10.00 counts	All the following conditions are met for Power Mode Run/Crank Ignition Voltage	 >= 300.00 milliseconds = Run >= 11.00 Volts	Executes in 250ms loop.	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Ignition Switch Run/ Start Position Circuit Low	P2534	Detects a low ignition switch run/start position curcuit. This diagnostic reports the DTC when this circut is low. Monitoring occurs when the ECM run/ crank is active.	Ignition switch Run/Start position circuit low	Run / Crank = FALSE	Ignition switch Run/Start position circuit low diag enable and Run / Crank active ECM	= 1.00 = TRUE	280 failures out of 280 samples 25 ms / sample	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Ignition Switch Run/ Start Position Circuit High	P2535	Detects a high ignition switch run/start position circuit. This diagnostic reports the DTC when this circuit is high. Monitoring occurs when the ECM run/crank is NOT active.	Ignition switch Run/Start position circuit high	Run / Crank = TRUE	Ignition switch Run/Start position circuit low diag enable and Run / Crank active ECM	= 1.00 = FALSE	280 failures out of 280 samples 25 ms / sample	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Communicati on Bus A Off	U0073	This DTC monitors for a BUS A off condition	Bus off failures exceeds before the sample time of is reached	5 counts (equivalent to 0.06 seconds) 0.81 seconds	General Enable Criteria: U0073 Normal CAN transmission on Bus A Device Control High Voltage Virtual Network Management Ignition Voltage Criteria: Run/Crank Ignition voltage Power Mode Off Cycle Enable Criteria: KeCAND_b_OffKeyCycle DiagEnbl Ignition Accessory Line and Battery Voltage General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds CAN hardware is bus OFF for	Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run = 1 (1 indicates enabled) = Active > 11.00 Volts > 0.1625 seconds	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With ECM	U0100	This DTC monitors for a loss of communication with the engine control module	Message is not received from controller for		General Enable Criteria: U0073	Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run = 1 (1 indicates enabled) = Active > 11.00 Volts General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips
			Message \$0BE	≥ 0.50 seconds	Normal CAN transmission on Bus A			
			Message \$0C9	≥ 0.50 seconds	Device Control			
			Message \$18E	≥ 0.50 seconds	High Voltage Virtual Network Management			
			Message \$1A1	≥ 0.50 seconds	Ignition Voltage Criteria:			
			Message \$1A3	≥ 12.00 seconds	Run/Crank Ignition voltage			
			Message \$1AA	≥ 12.00 seconds	Power Mode			
			Message \$1BA	≥ 12.00 seconds	Off Cycle Enable Criteria:			
			Message \$287	≥ 0.50 seconds	KeCAND_b_OffKeyCycle DiagEnbl			
			Message \$3D1	≥ 12.00 seconds	Ignition Accessory Line and Battery Voltage			
			Message \$3E9	≥ 12.00 seconds				
			Message \$4C1	≥ 12.00 seconds				
			Message \$4C7	≥ 12.00 seconds				
			Message \$4D1	≥ 12.00 seconds				
			Message \$4F1	≥ 12.00 seconds				
			Message \$589	≥ 12.00 seconds				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					not active for U0100 ECM	> 0.4000 seconds Not Active on Current Key Cycle is present on the bus		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With ECM	U0100	This DTC monitors for a loss of communication with the engine control module	Message is not received from controller for		General Enable Criteria: U0073	Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run = 1 (1 indicates enabled) = Active > 11.00 Volts General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips
			Message \$0BE	≥ 0.50 seconds	Normal CAN transmission on Bus A			
			Message \$0C9	≥ 0.50 seconds	Device Control			
			Message \$18E	≥ 0.50 seconds	High Voltage Virtual Network Management			
			Message \$1A1	≥ 0.50 seconds	Ignition Voltage Criteria:			
			Message \$1A3	≥ 12.00 seconds	Run/Crank Ignition voltage			
			Message \$1AA	≥ 12.00 seconds	Power Mode			
			Message \$1BA	≥ 12.00 seconds	Off Cycle Enable Criteria:			
			Message \$287	≥ 0.50 seconds	KeCAND_b_OffKeyCycle DiagEnbl			
			Message \$3D1	≥ 12.00 seconds	Ignition Accessory Line and Battery Voltage			
			Message \$3E9	≥ 12.00 seconds				
			Message \$4C1	≥ 12.00 seconds				
			Message \$4C7	≥ 12.00 seconds				
			Message \$4D1	≥ 12.00 seconds				
			Message \$4F1	≥ 12.00 seconds				
			Message \$589	≥ 12.00 seconds				

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					not active for U0100 ECM	> 0.4000 seconds Not Active on Current Key Cycle is present on the bus		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With Chassis Control Module A	U012A	This DTC monitors for a loss of communication with the Chassis Control Module A.	Message is not received from controller for Message \$4DF Message \$1F7	 ≥ 12.00 seconds ≥ 0.50 seconds	General Enable Criteria: U0073 Normal CAN transmission on Bus A Device Control High Voltage Virtual Network Management Ignition Voltage Criteria: Run/Crank Ignition voltage Power Mode Off Cycle Enable Criteria: KeCAND_b_OffKeyCycle DiagEnbl Ignition Accessory Line and Battery Voltage General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is not active for	 Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run = 1 (1 indicates enabled) = Active > 11.00 Volts > 0.4000 seconds	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					U012A CHCM A	Not Active on Current Key Cycle is present on the bus		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With Chassis Control Module A	U012A	This DTC monitors for a loss of communication with the Chassis Control Module A.	<p>Message is not received from controller for</p> <p>Message \$4DF</p> <p>Message \$1F7</p>	<p>≥ 12.00 seconds</p> <p>≥ 0.50 seconds</p>	<p>General Enable Criteria:</p> <p>U0073</p> <p>Normal CAN transmission on Bus A</p> <p>Device Control</p> <p>High Voltage Virtual Network Management</p> <p>Ignition Voltage Criteria:</p> <p>Run/Crank Ignition voltage</p> <p>Power Mode</p> <p>Off Cycle Enable Criteria:</p> <p>KeCAND_b_OffKeyCycle DiagEnbl</p> <p>Ignition Accessory Line and Battery Voltage</p> <p>General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is not active for</p>	<p>Not Active on Current Key Cycle</p> <p>Enabled</p> <p>Not Active</p> <p>Not Active</p> <p>> 6.41 Volts</p> <p>= run</p> <p>= 1 (1 indicates enabled)</p> <p>= Active</p> <p>> 11.00 Volts</p> <p>> 0.4000 seconds</p>	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					U012A CHCM A	Not Active on Current Key Cycle is present on the bus		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With Hybrid Powertrain Control Module	U0293	This DTC monitors for a loss of communication with the Hybrid Powertrain Control Module.	<p>Message is not received from controller for</p> <p>Message \$1DF</p> <p>Message \$1A5</p>	<p>≥ 12.0 seconds</p> <p>≥ 12.00 seconds</p>	<p>General Enable Criteria:</p> <p>U0073</p> <p>Normal CAN transmission on Bus A</p> <p>Device Control</p> <p>High Voltage Virtual Network Management</p> <p>Ignition Voltage Criteria:</p> <p>Run/Crank Ignition voltage</p> <p>Power Mode</p> <p>Off Cycle Enable Criteria:</p> <p>KeCAND_b_OffKeyCycle DiagEnbl</p> <p>Ignition Accessory Line and Battery Voltage</p> <p>General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds</p> <p>Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is</p>	<p>Not Active on Current Key Cycle</p> <p>Enabled</p> <p>Not Active</p> <p>Not Active</p> <p>> 6.41 Volts</p> <p>= run</p> <p>= 1 (1 indicates enabled)</p> <p>= Active</p> <p>> 11.00 Volts</p>	Diagnostic runs in 12.5 ms loop	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					not active for U0293 Hybrid Powertrain Control Module	> 0.4000 seconds Not Active on Current Key Cycle is present on the bus		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lost Communicati on With Hybrid Powertrain Control Module	U0293	This DTC monitors for a loss of communication with the Hybrid Powertrain Control Module.	<p>Message is not received from controller for</p> <p>Message \$1DF</p> <p>Message \$1A5</p>	<p>≥ 12.0 seconds</p> <p>≥ 12.00 seconds</p>	<p>General Enable Criteria:</p> <p>U0073</p> <p>Normal CAN transmission on Bus A</p> <p>Device Control</p> <p>High Voltage Virtual Network Management</p> <p>Ignition Voltage Criteria:</p> <p>Run/Crank Ignition voltage</p> <p>Power Mode</p> <p>Off Cycle Enable Criteria:</p> <p>KeCAND_b_OffKeyCycle DiagEnbl</p> <p>Ignition Accessory Line and Battery Voltage</p> <p>General Enable Criteria and either Ignition Voltage Criteria or Off Cycle Enable Criteria met for > 5.0000 seconds</p> <p>Power Mode is in accessory or run or crank and High Voltage Virtual Network Management is</p>	<p>Not Active on Current Key Cycle</p> <p>Enabled</p> <p>Not Active</p> <p>Not Active</p> <p>> 6.41 Volts</p> <p>= run</p> <p>= 1 (1 indicates enabled)</p> <p>= Active</p> <p>> 11.00 Volts</p>	Diagnostic runs in 12.5 ms loop	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					not active for U0293 Hybrid Powertrain Control Module	> 0.4000 seconds Not Active on Current Key Cycle is present on the bus		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lateral Acceleration Sensor Circuit Low	C124F	Controller specific analog circuit diagnoses the raw lateral acceleration signal for a short to ground or open fault by comparing raw signal value to fail thresholds.	raw lateral acceleration signal when sensor type is directly proportional OR raw lateral acceleration signal when sensor type is inversely proportional update raw lateral acceleration signal stability time, fail and sample time, 50 millisecond update rate	$\leq -3.8500 \text{ g}$ $\geq -3.8500 \text{ g}$ ($\leq 0.5 \Omega$ impedance between signal and controller ground)	battery voltage run crank voltage diagnostic monitor enable sensor type is either directly proportional or inversely proportional U0073 fault active U0073 test fail this key on	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ $= 1 \text{ Boolean}$ $=$ CeLATR_e_VoltageDirectProp $= \text{FALSE}$ $= \text{FALSE}$	raw lateral acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lateral Acceleration Sensor Circuit High	C1250	Controller specific analog circuit diagnoses the raw lateral acceleration signal for a short to power or open fault by comparing raw signal value to fail thresholds.	raw lateral acceleration signal when sensor type is directly proportional OR raw lateral acceleration signal when sensor type is inversely proportional update raw lateral acceleration signal stability time, fail and sample time, 50 millisecond update rate	$\geq 3.8500 \text{ g}$ $\leq 3.8500 \text{ g}$ ($\leq 0.5 \Omega$ impedance between signal and controller power)	battery voltage run crank voltage diagnostic monitor enable sensor type is either directly proportional or inversely proportional U0073 fault active U0073 test fail this key on	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ = 1 Boolean = CeLATR_e_VoltageDirectProp = FALSE = FALSE	raw lateral acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Lateral Acceleration Sensor Performance	C1251	Controller specific analog circuit diagnoses the raw lateral acceleration signal for a signal value that is stuck in a valid range by comparing raw signal value to fail thresholds.	ABS(raw lateral acceleration signal) AND ABS(raw lateral acceleration signal) update raw lateral acceleration signal fail, 50 millisecond update rate	$\geq 0.5300 \text{ g}$ $\leq 3.8500 \text{ g}$	battery voltage run crank voltage diagnostic monitor enable update raw lateral acceleration signal stability time: TOSS vehicle speed automatic transmission is clutch to clutch OR dual clutch high side drive 1 enable high side drive 2 enable diagnotic fault sequence gear active P0716 fault active P0716 test fail this key on P0717 fault active P0717 test fail this key on P07BF fault active P07BF test fail this key on P07C0 fault active P07C0test fail this key on attained gear attained gear slip ABS(raw lateral acceleration signal) update sample time U0073 fault active U0073 test fail this key on DTCs not fault active	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ $= 1 \text{ Boolean}$ $\geq 15.0 \text{ KPH}$ $= \text{TRUE}$ $= \text{TRUE}$ $= \text{TRUE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= 1\text{st thru } 10\text{th}$ $\leq 100.0 \text{ RPM}$ $< 0.5300 \text{ g}$ $= \text{FALSE}$ $= \text{FALSE}$ VehicleSpeedSensor_FA	raw lateral acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Longitudinal Acceleration Sensor Circuit Low	C1252	Controller specific analog circuit diagnoses the raw longitudinal acceleration signal for a short to ground or open fault by comparing raw signal value to fail thresholds.	raw longitudinal acceleration signal when sensor type is directly proportional OR raw longitudinal acceleration signal when sensor type is inversely proportional update raw longitudinal acceleration signal stability time, fail and sample time, 50 millisecond update rate	$\leq -3.8500 \text{ g}$ $\geq -3.8500 \text{ g}$ ($\leq 0.5 \Omega$ impedance between signal and controller ground)	battery voltage run crank voltage diagnostic monitor enable sensor type is either directly proportional or inversely proportional U0073 fault active U0073 test fail this key on	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ $= 1 \text{ Boolean}$ $=$ CeLATR_e_VoltageDirec tProp $= \text{FALSE}$ $= \text{FALSE}$	raw longitudinal acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Longitudinal Acceleration Sensor Circuit High	C1253	Controller specific analog circuit diagnoses the raw longitudinal acceleration signal for a short to power or open fault by comparing raw signal value to fail thresholds.	raw longitudinal acceleration signal when sensor type is directly proportional OR raw longitudinal acceleration signal when sensor type is inversely proportional update raw longitudinal acceleration signal stability time, fail and sample time, 50 millisecond update rate	$\geq 3.8500 \text{ g}$ $\leq 3.8500 \text{ g}$ ($\leq 0.5 \Omega$ impedance between signal and controller power)	battery voltage run crank voltage diagnostic monitor enable sensor type is either directly proportional or inversely proportional U0073 fault active U0073 test fail this key on	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ = 1 Boolean = CeLATR_e_VoltageDirec tProp = FALSE = FALSE	raw longitudinal acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					ABS(raw longitudinal acceleration signal) update sample time U0073 fault active U0073 test fail this key on DTCs not fault active	< 0.5300 g = FALSE = FALSE VehicleSpeedSensor_FA VehicleSpeedSensorError		
			ABS(TOSS vehicle speed acceleration - raw longitudinal acceleration signal) update raw longitudinal acceleration signal region 2 fail time, 50 millisecond update rate	≥ 0.0000 g	battery voltage run crank voltage diagnostic monitor enable region 2 specific enable update raw lateral longitudinal acceleration signal stability time: TOSS vehicle speed TOSS vehicle speed acceleration automatic transmission is clutch to clutch OR dual clutch high side drive 1 enable high side drive 2 enable diagnsotic fault sequence gear active P0716 fault active P0716 test fail this key on P0717 fault active P0717 test fail this key on P07BF fault active P07BF test fail this key on P07C0 fault active P07C0test fail this key on attained gear attained gear slip ABS(raw longitudinal acceleration signal) AND ABS(raw longitudinal	≥ 11.00 volts ≥ 11.00 volts = 1 Boolean = 0 Boolean ≥ 15.0 KPH ≤ 0.5300 g = TRUE = TRUE = TRUE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g	raw lateral longitudinal acceleration signal stability time ≥ 10.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					acceleration signal) update region 2 sample time: brake pedal position engine torque TOSS vehicle speed acceleration TOSS vehicle speed TOSS vehicle speed ABS(raw longitudinal acceleration signal) update sample time U0073 fault active U0073 test fail this key on DTCs not fault active	 $\leq 0.70 \%$ $\geq 80.0 \text{ Nm}$ $\geq 0.1500 \text{ g}$ $\geq 0.0 \text{ KPH}$ $\leq 0.0 \text{ KPH}$ $< 0.5300 \text{ g}$ $= \text{FALSE}$ $= \text{FALSE}$ VehicleSpeedSensor_FA VehicleSpeedSensorError	region 2 fail time $\geq 75.0 \text{ seconds}$ out of region 2 sample time $\geq 120.0 \text{ seconds}$, 50 millisecond update rate	
			ABS(TOSS vehicle speed acceleration - raw longitudinal acceleration signal) update raw longitudinal acceleration signal region 3 fail time, 50 millisecond update rate	$\geq 0.0000 \text{ g}$	battery voltage run crank voltage diagnostic monitor enable region 3 specific enable update raw lateral longitudinal acceleration signal stability time: TOSS vehicle speed TOSS vehicle speed acceleration automatic transmission is clutch to clutch OR dual clutch high side drive 1 enable high side drive 2 enable diagnosis fault sequence gear active P0716 fault active P0716 test fail this key on P0717 fault active P0717 test fail this key on	$\geq 11.00 \text{ volts}$ $\geq 11.00 \text{ volts}$ $= 1 \text{ Boolean}$ $= 0 \text{ Boolean}$ $\geq 15.0 \text{ KPH}$ $\leq 0.5300 \text{ g}$ $= \text{TRUE}$ $= \text{TRUE}$ $= \text{TRUE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$ $= \text{FALSE}$	raw lateral longitudinal acceleration signal stability time $\geq 10.0 \text{ seconds}$, fail time $\geq 75.0 \text{ seconds}$ out of sample time $\geq 120.0 \text{ seconds}$, 50 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P07BF fault active P07BF test fail this key on P07C0 fault active P07C0test fail this key on attained gear attained gear slip ABS(raw longitudinal acceleration signal) AND ABS(raw longitudinal acceleration signal) update region 3 sample time: brake pedal position engine torque ABS(TOSS vehicle speed acceleration) TOSS vehicle speed ABS(raw longitudinal acceleration signal) update sample time U0073 fault active U0073 test fail this key on DTCs not fault active	= FALSE = FALSE = FALSE = FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g ≤ 0.70 % ≥ 80.0 Nm ≤ 0.1000 g ≥ 0.0 KPH < 0.5300 g = FALSE = FALSE VehicleSpeedSensor_FA VehicleSpeedSensorError	region 3 fail time ≥ 75.0 seconds out of region 3 sample time ≥ 120.0 seconds, 50 millisecond update rate	
			ABS(TOSS vehicle speed acceleration - raw longitudinal acceleration signal) update raw longitudinal acceleration signal region 4 fail time, 50 millisecond update rate	≥ 0.0000 g	battery voltage run crank voltage diagnostic monitor enable region 3 specific enable update raw lateral longitudinal acceleration signal stability time: TOSS vehicle speed TOSS vehicle speed acceleration automatic transmission is clutch to clutch OR dual	≥ 11.00 volts ≥ 11.00 volts = 1 Boolean = 0 Boolean ≥ 15.0 KPH ≤ 0.5300 g = TRUE	raw lateral longitudinal acceleration signal stability time ≥ 10.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					clutch high side drive 1 enable high side drive 2 enable diagnsotic fault sequence gear active P0716 fault active P0716 test fail this key on P0717 fault active P0717 test fail this key on P07BF fault active P07BF test fail this key on P07C0 fault active P07C0test fail this key on attained gear attained gear slip ABS(raw longitudinal acceleration signal) AND ABS(raw longitudinal acceleration signal) update region 4 sample time: brake pedal position engine torque TOSS vehicle speed acceleration TOSS vehicle speed TOSS vehicle speed ABS(raw longitudinal acceleration signal) update sample time U0073 fault active U0073 test fail this key on DTCs not fault active	= TRUE = TRUE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g ≤ 0.70 % ≤ 80.0 Nm ≤ 0.1500 g ≥ 0.0 KPH ≤ 0.0 KPH < 0.5300 g = FALSE = FALSE VehicleSpeedSensor_FA VehicleSpeedSensorError	region 4 fail time ≥ 75.0 seconds out of region 4 sample time ≥ 120.0 seconds, 50 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if the calibration checksum is incorrect or the flash memory detects an uncorrectable error via the Error Correcting Code.	The Primary Processor's calculated checksum does not match the stored checksum value. Covers all software and calibrations.	1 failure if the fault is detected during the first pass. 5.00 failures if the fault occurs after the first pass is complete.			Diagnostic runs continuously in the background.	Type A, 1 Trips
			The Primary Processor's Error Correcting Code hardware in the flash memory detects an error. Covers all software and calibrations.	254 failures detected via Error Correcting Code			Diagnostic runs continuously via the flash hardware.	
			The Primary Processor's calculated checksum does not match the stored checksum value for a selected subset of the calibrations.	2 consecutive failures detected or 5 total failures detected.			Diagnostic runs continuously. Will report a detected fault within 200 ms.	
			The Secondary Processor's calculated checksum does not match the stored checksum value. Covers all software and calibrations.	1 failure if the fault is detected during the first pass. 5 failures if the fault occurs after the first pass is complete.			Diagnostic runs continuously in the background.	
				In all cases, the failure count is cleared when controller shuts down				

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
TCM Long Term Memory Reset	P0603	This DTC detects an invalid NVM which includes a Static NVM, Perserved NVM, ECC ROM in NVM Flash Region, and Perserved NVM during shut down.	Static NVM region error detected during initialization				Diagnostic runs at controller power up.	Type A, 1 Trips
			Perserved NVM region error detected during initialization				Diagnostic runs at controller power up.	
			ECC ROM fault detected in NVM Flash region				Diagnostic runs at controller power up.	
			ECC ROM Error Count >	3				
			Perserved NVM region error detected during shut down.				Diagnostic runs at controller power down.	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
TCM RAM Failure	P0604	Indicates that the TCM has detected a RAM fault. This includes Primary Processor System RAM Fault, Primary Processor Cache RAM Fault, Primary Processor TPU RAM Fault, Primary Processor Update Dual Store RAM Fault, Primary Processor Write Protected RAM Fault, and Secondary Processor RAM Fault. This diagnostic runs continuously.	Indicates that the primary processor is unable to correctly read data from or write data to system RAM. Detects data read does not match data written >=	254 counts			Will finish first memory scan within 30 seconds at all engine conditions - diagnostic runs continuously (background loop)	Type A, 1 Trips
			Indicates that the primary processor is unable to correctly read data from or write data to cached RAM. Detects data read does not match data written >=	3 counts			Will finish first memory scan within 30 seconds at all engine conditions - diagnostic runs continuously (background loop)	
			Indicates that the primary processor is unable to correctly read data from or write data to TPU RAM. Detects data read does not match data written >=	5 counts			Will finish first memory scan within 30 seconds at all engine conditions - diagnostic runs continuously (background loop)	
			Indicates that the primary processor detects a mismatch between the data and dual data is found during RAM updates. Detects a mismatch in data and dual data updates >	400.00 s			When dual store updates occur.	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			Indicates that the primary processor detects an illegal write attempt to protected RAM. Number of illegal writes are >	65,534 counts			Diagnostic runs continuously (background loop)	
			Indicates that the secondary processor is unable to correctly read data from or write data to system RAM. Detects data read does not match data written >=	5 counts			Will finish first memory scan within 30 seconds at all engine conditions - diagnostic runs continuously (background loop)	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Internal TCM Processor Integrity Fault	P0606	Indicates that the TCM has detected an internal processor integrity fault. These include diagnostics done on the SPI Communication as well as a host of diagnostics for both the primary and secondary processors.	Loss or invalid message of SPI communication from the Secondary Processor at initialization detected by the Primary Processor or loss or invalid message of SPI communication from the Secondary Processor after a valid message was received by the Primary Processor	Loss or invalid message at initialization detected or loss or invalid message after a valid message was received		Run/Crank voltage >= 8.00 or Run/Crank voltage >= 11.00 , else the failure will be reported for all conditions	In the primary processor, 8 / 16 counts intermittent or 10 counts continuous; 100 counts continuous @ initialization. 12.5 ms /count in the TCM main processor	Type A, 1 Trips
			Loss or invalid message of SPI communication from the Primary Processor at initialization detected by the Secondary Processor or loss or invalid message of SPI communication from the Primary Processor after a valid message was received by the Secondary Processor	Loss or invalid message at initialization detected or loss or invalid message after a valid message was received			In the secondary processor, 64 / 161 counts intermittent or 0.1875 s continuous; 0.4875 s continuous @ initialization. 12.5 ms /count in the TCM secondary processor	
			Checks for stack over or underflow in secondary processor by looking for corruption of known pattern at stack boundaries. Checks number of stack over/ under flow since last powerup reset >=	5		KeMEMD_b_StackLimitTe stEnbl == 1 Value of KeMEMD_b_StackLimitTe stEnbl is: 1 . (If 0, this test is disabled)	variable, depends on length of time to corrupt stack	
			MAIN processor is verified by responding to a seed sent from the secondary with a key response to secondary. Checks number of incorrect keys	2 incorrect seeds within 8 messages, 0.2000 seconds		ignition in Run or Crank	150 ms for one seed continually failing	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			received > or Secondary processor has not received a new within time limit					
			Time new seed not received exceeded			always running	0.450 seconds	
			MAIN processor receives seed in wrong order			always running	3 / 17 counts intermittent. 50 ms/count in the TCM main processor	
			2 fails in a row in the Secondary processor's ALU check			KePISD_b_ALU_TestEnbl d == 1 Value of KePISD_b_ALU_TestEnbl d is: 1. (If 0, this test is disabled)	25 ms	
			2 fails in a row in the Secondary processor's configuration register masks versus known good data			KePISD_b_ConfigRegTestEnbl == 1 Value of KePISD_b_ConfigRegTestEnbl is: 1. (If 0, this test is disabled)	12.5 to 25 ms	
			Secondary processor detects an error in the toggling of a hardware discrete line controlled by the MAIN processor: number of discrete changes > = or < = over time window(50ms)	7 17		KePISD_b_MainCPU_SOH_FltEnbl == 1 Value of KePISD_b_MainCPU_SOH_FltEnbl is: 1. (If 0, this test is disabled) time from initialization >= 0.5000 seconds	50 ms	
			Software background task first pass time to complete exceeds			Run/Crank voltage > 6.41	35.000 seconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			2 fails in a row in the MAIN processor's ALU check			KePISD_b_ALU_TestEnbl d == 1 Value of KePISD_b_ALU_TestEnbl d is: 1 . (If 0, this test is disabled)	25 ms	
			2 fails in a row in the MAIN processor's configuration register masks versus known good data			KePISD_b_ConfigRegTes tEnbl == 1 Value of KePISD_b_ConfigRegTes tEnbl is: 1 . (If 0, this test is disabled)	12.5 to 25 ms	
			Checks number of stack over/under flow since last powerup reset >=	5		KeMEMD_b_StackLimitTe stEnbl == 1 Value of KeMEMD_b_StackLimitTe stEnbl is: 1 . (If 0, this test is disabled)	variable, depends on length of time to corrupt stack	
			Voltage deviation >	9.00		KePISD_b_A2D_CnvtrTe stEnbl == 1 Value of KePISD_b_A2D_CnvtrTe stEnbl is: 1 . (If 0, this test is disabled)	5 / 10 counts or 0.150 seconds continuous; 50 ms/count in the TCM main processor	
			Checks for ECC (error correcting code) circuit test errors reported by the hardware for flash memory. Increments counter during controller initialization if ECC error occurred since last controller initialization. Counter >=	3 (results in MIL), 5 (results in MIL and remedial action)		KeMEMD_b_FlashECC_ CktTestEnbl == 1 Value of KeMEMD_b_FlashECC_ CktTestEnbl is: 1 . (If 0, this test is disabled)	variable, depends on length of time to access flash with corrupted memory	
			Checks for ECC (error	3 (results in MIL),		KeMEMD_b_RAM_ECC_	variable,	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			correcting code) circuit test errors reported by the hardware for RAM memory circuit. Increments counter during controller initialization if ECC error occurred since last controller initialization. Counter >=	5 (results in MIL and remedial action)		CktTestEnbl == 1 Value of KeMEMD_b_RAM_ECC_CktTestEnbl is: 1. (If 0, this test is disabled)	depends on length of time to write flash to RAMvariable, depends on length of time to write flash to RAM	
			MAIN processor DMA transfer from Flash to RAM has 1 failure			KePISD_b_DMA_XferTestEnbl == 1 Value of KePISD_b_DMA_XferTestEnbl is: 1. (If 0, this test is disabled)	variable, depends on length of time to write flash to RAM	
			Safety critical software is not executed in proper order.	>= 1 incorrect sequence.		Table, f(Core, Loop Time). See supporting tables: P0606_Program Sequence Watch Enable f(Core, Loop Time) (If 0, this Loop Time test is disabled)	Fail Table, f(Loop Time). See supporting tables: P0606_PSW Sequence Fail f(Loop Time) / Sample Table, f(Loop Time)See supporting tables: P0606_PSW Sequence Sample f(Loop Time) counts 50 ms/count in the TCM main processor	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			MAIN processor determines a seed has not changed within a specified time period within the 50ms task.	Previous seed value equals current seed value.		KePISD_b_SeedUpdKey StorFltEnbl == 1 Value of KePISD_b_SeedUpdKey StorFltEnbl is: 1. (If 0, this test is disabled)	Table, f(Loop Time). See supporting tables: P0606_Last Seed Timeout f (Loop Time)	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Powertrain Internal Control Module EEPROM Error	P062F	This DTC detects a NVM long term performance. There are two types of diagnostics that run during controller power up. One for HWIO reports that writing to NVM (at shutdown) will not succeed, and the other HWIO reports the assembly calibration integrity check has failed.	HWIO reports that writing to NVM (at shutdown) will not succeed				Diagnostic runs at controller power up.	Type A, 1 Trips
			HWIO reports the assembly calibration integrity check has failed				Diagnostic runs at controller power up.	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Actuator Supply Voltage Circuit Low	P0658	Controller specific output driver circuit diagnoses the high sided driver circuit for a short to ground failure when the output is powered on by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range during driver on state indicates short to ground failure.</p> <p>Controller specific output driver circuit voltage thresholds are set to meet the following controller specification for a short to ground.</p>	$\leq 0.5 \Omega$ impedance between signal and controller ground	<p>diagnostic monitor enable</p> <p>high side drive ON</p> <p>service mode \$04 not active</p> <p>service fast learn not active</p> <p>P0658 fault active</p> <p>P0658 test fail this key on</p>	<p>= 1 Boolean</p> <p>= TRUE</p> <p>= FALSE</p> <p>= FALSE</p>	<p>fail count ≥ 6 counts</p> <p>out of sample count $\geq 2,400$ counts</p> <p>6.25 millisecond update rate</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Fluid Temperature (TFT) Sensor Performance	P0711	The diagnostic monitor will verify the time to transmission fluid temperature warm up based on the raw transmission fluid temperature sensor, any intermittent signal that causes multiple unrealistic delta changes (intermittent faults) based on the raw transmission fluid temperature sensor, and, raw transmission fluid temperature sensor signal stuck in valid range.	raw transmission fluid temperature and the transmission fluid temperature warm up time has elapsed	$\leq 15.0\text{ }^{\circ}\text{C}$	diagnostic monitor enable P0712 NOT fault active P0713 NOT fault active battery voltage run crank voltage warm up test enable TFT rationality diagnostic monitor enabled driver accelerator pedal position engine torque engine speed vehicle speed engine coolant temperature engine coolant temperature raw transmission fluid temperature raw transmission fluid temperature P2818 fault active P2818 test fail this key on DTCs not fault active	= 1 Boolean $\geq 9.00\text{ volts}$ $\geq 9.00\text{ volts}$ = 1 Boolean = VeTFSR_b_TFT_RatlEnbl $\geq 5.0\%$ $\geq 50.0\text{ Nm}$ $\geq 500.0\text{ RPM}$ $\geq 10.0\text{ KPH}$ $\geq -40.0\text{ }^{\circ}\text{C}$ $\leq 150.0\text{ }^{\circ}\text{C}$ $\geq -40.0\text{ }^{\circ}\text{C}$ $\leq 150.0\text{ }^{\circ}\text{C}$ = FALSE = FALSE	transmission fluid temperature warm up time \geq transmission fluid temperature warm up time seconds battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
						EngineTorqueEstInaccurate AcceleratorPedalFailure CrankSensor_FA ECT_Sensor_FA VehicleSpeedSensor_FA		
			current transmission fluid temperature string length = previous transmission fluid temperature string length + (raw transmission fluid temperature - previous raw transmission fluid temperature, update rate 100 milliseconds, increment sample count	$\geq 80.0\text{ }^{\circ}\text{C}$			sample count ≥ 10 counts evaluate fail temperature threshold, 100 millisecond update rate, if transmission fluid temperature string length above fail threshold increment fail time fail time ≥ 8.0 seconds out of sample time ≥ 12.0 seconds	
					diagnsotic monitor enable P0712 NOT fault active P0713 NOT fault active battery voltage	= 1 Boolean ≥ 9.00 volts	battery voltage time ≥ 0.100 seconds	
					run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
					intermittent test enable propulsion system active	= 1 Boolean = TRUE		
			raw transmission fluid temperature - previous	$\leq 0.0000\text{ }^{\circ}\text{C}$			fail time ≥ 300.0 seconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			raw transmission fluid temperature, update rate 100 milliseconds, update fail time		diagnsotic monitor enable P0712 NOT fault active P0713 NOT fault active battery voltage run crank voltage stuck in range test enable propulsion system active raw transmission fluid temperature raw transmission fluid temperature	= 1 Boolean ≥ 9.00 volts ≥ 9.00 volts = 1 Boolean = TRUE ≥ -40.0 °C ≤ 150.0 °C	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Fluid Temperature Sensor Circuit Low Voltage	P0712	Controller specific analog circuit diagnoses the transmission fluid temperature sensor and wiring for a short to ground fault by comparing a voltage measurement to controller specific voltage thresholds, converted to a resistance value.	circuit resistance update fail time 1 seconds update rate	$\leq 13.500 \Omega$	diagnostic monitor enable battery voltage run crank voltage run crank voltage in range time	= 1 Boolean ≥ 9.00 volts ≥ 9.00 volts	fail time ≥ 5.00 seconds out of sample time ≥ 6.00 seconds 1 seconds update rate battery voltage in range time ≥ 0.100 seconds run crank voltage in range time ≥ 0.100 seconds	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Fluid Temperature Sensor Circuit Low Voltage	P0713	Controller specific analog circuit diagnoses the transmission fluid temperature sensor and wiring for an open circuit or short to voltage failure by comparing a voltage measurement to controller specific voltage thresholds, converted to a resistance value.	circuit resistance update fail time 1 seconds update rate	$\geq 49,411,396.0 \ \Omega$	<div>diagnostic monitor enable</div> <div>battery voltage</div> <div>run crank voltage run crank voltage in range time</div>	<div>= 1 Boolean</div> <div>≥ 9.00 volts</div> <div>≥ 9.00 volts</div>	<div>fail time ≥ 5.00 seconds out of fail time ≥ 6.00 seconds 1 seconds update rate</div> <div>battery voltage in range time \geq 0.100 seconds</div> <div>run crank voltage in range time \geq 0.100 seconds</div>	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Input Speed Sensor Performance	P0716	Detects unrealistic drop in raw transmission input speed signal RPM. Drop events are counted up to fail threshold. A drop event is defined by a sudden delta change in RPM from one value to a lower value. The raw transmission input speed must achieve a value high enough to record an unrealistic drop sample to sample. Once the drop threshold is met, fail time is accumulated indicating the raw transmission input speed has not recovered above a threshold, allowing the fail event count to increment. Multiple fail event counts must occur, but if the signal remains low, no further deltas occur, the "Input Speed Sensor Circuit Low Voltage" DTC will set before P0716, as P0716 is designed to set based on an intermittent raw transmission input speed signal RPM.	delta raw transmission input speed delta raw transmission input speed = raw transmission input speed - last valid raw transmission input speed, 25 millisecond update rate	≥ 2,000.0 RPM	service mode \$04 active diagnostic monitor enable P0717 test fail this key on P07BF test fail this key on P07C0 test fail this key on last valid raw transmission input speed OR valid raw transmission input speed (before drop event) last valid raw transmission input speed updates very 25 milliseconds when stability time complete as long as (delta delta raw transmission input speed AND raw transmission input speed) raw transmission output speed accelerator pedal position engine torque engine torque transmission hydraulic pressure available: engine speed	= FALSE = 1 Boolean = FALSE = FALSE = FALSE ≥ 160.0 RPM ≥ 160.0 RPM ≤ 320.0 RPM > 160.0 RPM ≥ 254.0 RPM ≥ 5.0 % ≤ 8,191.9 Nm ≥ 30.0 Nm ≥ 400.0 RPM	fail time ≥ 1.500 seconds updated fail event count, fail event count ≥ 5 counts, 25 millisecond update rate raw transmission input speed time ≥ 2.000 seconds stability time ≥ 0.100 seconds engine speed time ≥	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					DTCs not fault active	AcceleratorPedalFailure EngineTorqueEstInaccurate	engine speed time for transmission hydraulic pressure available	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Input Speed Sensor Circuit Low Voltage	P0717	Detects no activity in raw transmission input speed signal RPM due to open circuit electrical failure mode or sensor internal faults, or, controller internal failure modes. The raw transmission input speed signal RPM is rationalized against vehicle conditions in which the powertrain is producing torque available at the drive wheels, but raw transmission input speed signal RPM remains low. After a sudden drop in raw transmission input speed signal RPM, a race condition can occur between P0717 and "Input Speed Sensor Performance" depending on the true nature of the failure.	raw transmission input speed OR TISS/TOSS fault (single power supply to TISS and TOSS) = TRUE, update fail time 25 millisecond update rate	≤ 100.0 RPM < 475.0 RPM	service mode \$04 active diagnostic monitor enable run crank voltage service fast learn active run crank voltage P0722 fault active P0723 fault active P077C fault active P077D fault active brake pedal position sesnor must be OBDII to use brake pedal conditional brake pedal position sesnor type brake pedal position P0716 test fail this key on P07BF test fail this key on P07C0 test fail this key on accelerator pedal position engine torque engine torque (transmission current attained gear transmission current attained gear raw transmission output speed OR transmission current attained gear transmission current attained gear raw transmission output speed) P0717 fault active P0717 test fail this key on	= FALSE = 1 Boolean ≥ 5.00 volts = FALSE ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = CeBRKR_e_OBD < 70.0 % = FALSE = FALSE = FALSE ≥ 5.0 % ≥ 30.0 Nm ≤ 8,191.9 Nm ≤ CeCGSR_e_CR_Seventh ≥ CeCGSR_e_CR_First ≥ 162.0 RPM ≤ CeCGSR_e_CR_Tenth ≥ CeCGSR_e_CR_Seventh	fail time ≥ 4.00 seconds run crank voltage time ≥ 25 milliseconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TISS/TOSS fault (single power supply to TISS and TOSS) = TRUE occurs when: (P0722 fail time high gear exceeds fail threshold OR P0722 fail time low gear exceeds fail threshold) TISS/TOSS has single power supply calibration TISS/TOSS single power supply test enabled</p> <p>transmission hydraulic pressure available: engine speed</p> <p>DTCs not fault active</p>	<p>≥ 162.0 RPM</p> <p>= FALSE = FALSE</p> <p>= 0 Boolean = 1 Boolean</p> <p>≥ 400.0 RPM</p> <p>EngineTorqueEstInaccuracy</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Output Speed Sensor Performance	P0721	The diagnostic monitor determines if the direction TOSS value is coherent based on the on period time of the directional sensor and TOSS raw. When the on period time indicates a transitional state, the direction must also be transitional as measured by very slow TOSS raw RPM. When the on period time indicates a non-transitional state, forward or reverse, the direction must also be transition, not forward and not reverse.	TOSS raw direction when TOSS transitional period = FALSE AND TOSS raw direction when TOSS transitional period = FALSE OR TOSS raw when TOSS transitional period = TRUE update fail and sample time 6.26 millisecond update rate	≠ FORWARD ≠ REVERSE ≥ 25.0 RPM	service mode \$04 active diagnostic monitor enable TOSS count sample period P0721 fault active P0721 test fail this key on TOSS transitional period detected = FALSE when: on period on period when direction unknown OR on period on period when direction is reverse OR on period on period when direction is forward TOSS transitional period detected = TRUE when: on period on period when direction unknown senor type is directional senor type calibration	= FALSE = 1 Boolean ≠ 0 counts = FALSE = FALSE ≥ 0.3994 seconds ≤ 0.3193 seconds < 0.2363 seconds > 0.1240 seconds < 0.0811 seconds > 0.0088 seconds < 0.3994 seconds > 0.3193 seconds = CeTOSR_e_Directional	fail time ≥ 3.500 seconds out of sample time ≥ 5.000 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Output Speed Sensor Circuit Low Voltage	P0722	Detects no activity in raw transmission output speed signal RPM due to open circuit electrical failure mode or sensor internal faults, or, controller internal failure modes. The raw transmission output speed signal RPM is rationalized against vehicle conditions in which the powertrain is producing torque, but raw transmission output speed signal RPM remains low. After a sudden drop in raw transmission output speed signal RPM, a race condition can occur between P0722 and "Output Speed Sensor Circuit Intermittent" depending on the true nature of the failure.	raw transmission output speed, update fail time 6.25 millisecond update rate when: attained gear attained gear AND attained gear use high gear fail time threshold ELSE use low gear fail time threshold	≤ 30.0 RPM ≥ CeCGSR_e_CR_First ≤ CeCGSR_e_CR_Tenth >> CeCGSR_e_CR_Fourth	service mode \$04 active diagnostic monitor enable when neutral range occurs: (garage shift OR PRNDL OR PRNDL OR range inhibit state) AND (engine torque accelerator pedal position) when not neutral range occurs: attained gear attained gear (attained gear engine torque hysteresis high engine torque hysteresis low accelerator pedal position hysteresis high accelerator pedal position hysteresis low) when not neutral range occurs: (attained gear engine torque hysteresis high engine torque hysteresis low	= FALSE = 1 Boolean ≠ COMPLETE = PARK = NEUTRAL ≠ no inhibit active ≥ 8,192.0 Nm ≥ 100.0 % ≥ CeCGSR_e_CR_First ≤ CeCGSR_e_CR_Tenth > CeCGSR_e_CR_Fourth ≥ 50.0 Nm > 30.0 Nm ≥ 5.0 % > 3.0 % ≤ CeCGSR_e_CR_Fourth ≥ 80.0 Nm > 50.0 Nm	fail time ≥ 5.00 seconds high gear OR fail time ≥ 3.50 seconds low gear	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					accelerator pedal position hysteresis high accelerator pedal position hysteresis low) TISS enable occurs when: (TISS speed select OR TISS/TOSS has single power supply calibration AND TISS AND TISS) OR (TISS speed select OR TISS/TOSS has single power supply calibration AND TISS AND TISS) P0716 test fail this key on P0717 test fail this key on P07BF test fail this key on P07C0 test fail this key on PTO check: PTO enable calibration is FALSE OR (PTO enable calibration is TRUE AND PTO active) run crank voltage service fast learn active	≥ 8.0 % > 5.0 % = 1 Boolean = 0 Boolean ≤ 8,191.9 RPM ≥ 475.0 RPM ≠ 1 Boolean = 0 Boolean ≤ 8,191.9 RPM ≥ 4,200.0 RPM = FALSE = FALSE = FALSE = FALSE ≠ 1 Boolean = 1 Boolean = TRUE ≥ 5.00 volts = FALSE	run crank voltage time ≥ 25 milliseconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					run crank voltage transmission fluid temperature P0723 test fail this key on P077C test fail this key on P077D test fail this key on P0722 fault active P0722 test fail this key on transmission hydraulic pressure available: engine speed DTCs not fault active	≥ 9.00 volts ≥ -40.00 °C = FALSE = FALSE = FALSE = FALSE = FALSE ≥ 400.0 RPM AcceleratorPedalFailure EngineTorqueEstInaccurate	engine speed time \geq engine speed time for transmission hydraulic pressure available	

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					NEUTRAL allow transmission engaged state time before enabling fail evaluation, or, if raw raw transmission output speed is active in NEUTRAL enable fail evaluation: PRNDL OR PRNDL OR PRNDL OR raw transmission output speed OR last valid raw transmission output speed determine if raw transmission input speed is stable: (raw transmission input speed - raw transmission input speed previous, 25 millisecond update AND raw transmission input speed) OR (TISS/TOSS has single power supply calibration AND raw transmission input speed)	= CeTRGR_e_PRNDL_Neu tral = CeTRGR_e_PRNDL_Tra nsitional1 N-D transitional = CeTRGR_e_PRNDL_Tra nsitional4 R-N transitional ≥ 250.0 RPM ≥ 250.0 RPM ≤ 4,095.9 RPM ≥ 160.0 RPM = 0 Boolean = 0.0 RPM	raw transmission input speed stability time ≥ 2.00 seconds no time required	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>select delta RPM fail theshold: (4WD low state AND \$WD low valid) select P0723 4WD TOSS delta fail threshold otherwise use P0723 TOSS delta fail threshold</p> <p>last valid raw transmission output speed OR valid raw transmission output speed (before drop event)</p> <p>last valid raw transmission output speed updates very 25 milliseconds when stability time complete as long as (delta delta raw transmission output speed AND raw transmission output speed)</p> <p>transmission hydraulic pressure available: engine speed</p> <p>DTCs not fault active</p>	<p>= TRUE = TRUE</p> <p>> 89.0 RPM</p> <p>> 89.0 RPM</p> <p>≤ 140.0 RPM</p> <p>≥ 89.0 RPM</p> <p>≥ 400.0 RPM</p> <p>AcceleratorPedalFailure EngineTorqueEstInaccura te</p>	<p>raw transmission output speed time ≥ 2.00 seconds</p> <p>stability time ≥ 0.100 seconds</p> <p>engine speed time ≥ engine speed time for transmission hydraulic pressure available</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Torque Converter Clutch (TCC) System Performance - GF9 specific	P0741	The GF9 diagnostic monitor detects the transmission torque converter control valve failed hydraulically on. The torque converter hydraulic control circuit is multiplexed with the transmission clutch select valve hydraulic control circuit, allowing for the torque converter control valve stuck on test to execute when the clutch select valve solenoid is commanded ON. When the clutch select valve solenoid is commanded ON as the vehicle speed decreases toward zero KPH, and, if the torque converter control valve is stuck on, the torque converter slip speed rate of change will have a large slope while decreasing toward zero RPM, and the torque converter slip speed will remain low near zero RPM.	while control valve test time timing down: rate of change of torque convert slip speed = (ABS (current loop value torque convert slip speed - previous loop value torque convert slip speed) / 25 milliseconds) when clutch select valve solenoid multiplexed to TCC hydraulic AND torque convert slip speed = ABS(engine speed - transmission input shaft speed) THEN increment fail time 25 millisecond update rate	\geq P0741 (GF9 specific) torque convert derivative slip speed fail threshold see supporting tables \leq P0741 (GF9 specific) TCC slip speed crash RPM	diagnostic monitor enable (TCC stuck off enable OR TCC stuck on enable) hydraulic pressure available: engine speed service fast learn active battery voltage run crank voltage P281B falut active P281D falut active P281E falut active PRNDL PRNDL PRNDL transmission fluid temperature	= 1 Boolean = 1 Boolean = 1 Boolean ≥ 400.0 RPM = FALSE ≥ 9.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE \neq PARK \neq NEUTRAL \neq REVERSE ≥ -6.66 °C	fault ime ≥ 0.250 seconds, increment fail count fail count ≥ 4 counts 25 millisecond update rate engine speed time \geq engine speed time for transmission hydraulic pressure available see supporting table battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					transmission fluid temperature accelerator pedal position accelerator pedal position vehicle speed vehicle speed TCC command mode break latch state (clutch select valve solenoid control) P0722 fault pending P0723 fault pending P0716 fault pending P0717 fault pending P07BF fault pending P07C0 fault pending (PTO active OR PTO disable calibration) transmission fluid temperature transmission fluid temperature engine torque engine torque P0741 test fail this key on vehicle speed engine speed engine speed accelerator pedal position 4WD low state (driver shift mode active OR driver shift mode calibration) (misfire requests TCC off OR misfire TCC off calibration) (clutch control solenoid stuck on OR solenoid stuck OFF intrusive shift active)	≤ 130.00 °C ≥ 0.00 % ≤ 1.00 % ≥ 3.0 KPH ≤ 9.5 KPH = OFF ≠ disabled (clutch select valve transitioning) = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean ≥ -6.66 °C ≤ 130.00 °C ≥ 55.0 Nm ≤ 800.0 Nm = FALSE ≤ 45.0 KPH ≥ 400.0 RPM ≤ 5,500.0 RPM ≤ 95.0 % = FALSE = FALSE = 0 Boolean = 0 Boolean = FALSE		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P0746 fault pending P0747 fault pending P0776 fault pending P0777 fault pending P0796 fault pending P0797 fault pending P2714 fault pending P2715 fault pending P2723 fault pending P2724 fault pending P2732 fault pending P2733 fault pending P2820 fault pending P2821 fault pending vehicle speed accelerator pedal position hysteresis when: break latch state (clutch select valve solenoid) previous break latch state (clutch select valve solenoid) set stuck on test time and begin time down, stuck on test time must time down from calibration value to zero (0.0) seconds break latch state AND previous break latch state THEN initialize control valve test time, control valve test time must time down from calibration value to zero (0.0) seconds	= FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE ≤ 8.0 KPH ≥ 4.0 % > 1.0 % = disabled (clutch select valve not transitioning) = complete (clutch select valve transition complete) = P0741 stuck on test time see supporting tables = clutch select valve solenoid multiplexed to TCC hydraulic = disabled (clutch select valve not transitioning) = 2.50 seconds		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					DTCs not fault active	AcceleratorPedalFailure EngineTorqueEstInaccurate P0716, P0717, P07BF, P07C0 P0722, P0723, P077C, P077D		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid A Stuck Off	P0746	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C1 clutch slip speed fail compare when: diagnostic clutch test C1 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C1 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C1 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 89.0 RPM = TRUE ≥ 2.00 % ≥ 1,500.0 RPM = NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C1 CB123456, or, GR10 C1 CB123456R, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C1 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C1 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

[illegible]

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C1 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C1 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C1 off going clutch pressure time ≥ P0747 C1 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 690.0 kPa OR ≥ 2,100.0 kPa OR ≥ 750.0 kPa	P0747 C1 clutch exhaust delay time open throttle power on up shift OR P0747 C1 clutch exhaust delay time garage shift OR P0747 C1 clutch exhaust delay time closed throttle down shift OR P0747 C1 clutch exhaust delay time negative torque up shift OR P0747 C1 clutch exhaust delay time open throttle power down shift see supporting tables	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C1 clutch slip speed valid, all speed sesnors are functional for lever node clutch slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 690.0 kPa</p> <p>≥ 400.0 kPa</p> <p>≥ 690.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid B Stuck Off	P0776	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C2 clutch slip speed fail compare when: diagnostic clutch test C2 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C2 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C2 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 89.0 RPM = TRUE ≥ 2.00 % ≥ 1,500.0 RPM = NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C2 CB29 or GR10 C2 CB128910R, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C2 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C2 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		on test is disabled. This diagnostic monitor is relative to the GF9 C2 CB29 or GR10 C2 CB128910R, clutch pressure control solenoid.			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift OR shift type enable for garage shift OR shift type enable for negative torque up shift OR shift type enable for open throttle power on up shift OR shift type enable for closed throttle down shift OR shift type enable for open throttle power down shift OR shift type enable for closed throttle lift foot up shift) OR clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occurring, no interrupted shift) set clutch control solenoid test state to TIE UP TEST	= 0 Boolean = 0 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = TIE UP TEST TEST STATE = TIE UP TEST HOLD = TRUE ≠ staged steady state		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C2 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C2 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C2 off going clutch pressure time ≥ P0777 C2 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 800.0 kPa OR ≥ 800.0 kPa OR ≥ 750.0 kPa	P0777 C2 clutch exhaust delay time open throttle power on up shift OR P0777 C2 clutch exhaust delay time garage shift OR P0777 C2 clutch exhaust delay time closed throttle down shift OR P0777 C2 clutch exhaust delay time negative torque up shift OR P0777 C2 clutch exhaust delay time open throttle power down shift see supporting tables	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C2 clutch slip speed valid, all speed sesnors are functional for lever node cluth slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 800.0 kPa</p> <p>≥ 800.0 kPa</p> <p>≥ 800.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Output Speed Sensor Circuit Low	P077C	Controller specific analog circuit diagnoses the transmission output speed sensor and wiring for a short to ground fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission output speed sensor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts ($\leq 0.5 \Omega$ impedance between signal and controller ground)	<p>service mode \$04 active diagnostic monitor enable P077D fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P077C fault active P077C test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 16 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Output Speed Sensor Circuit High	P077D	Controller specific analog circuit diagnoses the transmission output speed sensor and wiring for a short to voltage fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission output speed sensor raw voltage, update fail time, 12.5 millisecond update rate	≥ 4.7500 volts ($\leq 0.5 \Omega$ impedance between signal and controller power)	<p>service mode \$04 active diagnostic monitor enable P077C fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P077D fault active P077D test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 16 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid C Stuck Off	P0796	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C3 clutch slip speed fail compare when: diagnostic clutch test C3 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C3 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C3 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= FALSE</p> <p>= 0 Boolean</p> <p>= FALSE</p> <p>≥ 89.0 RPM</p> <p>= TRUE</p> <p>≥ 2.00 % ≥ 1,500.0 RPM</p> <p>= NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C3 CB38, or, GR10 C3 CB123456R, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND (startle mitigation gear)) (see startle mitigation active NOTE below) C3 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C3 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

[illegible]

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C3 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C3 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C3 off going clutch pressure time ≥ P0797 C3 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on</p>	<p>≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 500.0 kPa OR ≥ 500.0 kPa ≥ 750.0 kPa</p>	<p>P0797 C3 clutch exhaust delay time open throttle power on up shift OR P0797 C3clutch exhaust delay time garage shift OR P0797 C3 clutch exhaust delay time closed throttle down shift OR P0797 C3 clutch exhaust delay time negative torque up shift OR P0797 C3 clutch exhaust delay time open throttle power down shift see supporting tables</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C3 clutch slip speed valid, all speed sesnors are functional for lever node cluth slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 500.0 kPa</p> <p>≥ 500.0 kPa</p> <p>≥ 500.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Input/Turbine Speed Sensor A Circuit Low	P07BF	Controller specific analog circuit diagnoses the transmission input/ turbine speed sensor and wiring for a short to ground fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission input/turbine speed sensor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts ($\leq 0.5 \Omega$ impedance between signal and controller ground)	<p>service mode \$04 active diagnostic monitor enable P07C0 fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P07BF fault active P07BF test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 16 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Input/Turbine Speed Sensor A Circuit High	P07C0	Controller specific analog circuit diagnoses the transmission input/turbine speed sensor and wiring for a short to voltage fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission input/turbine speed sesnor raw voltage, update fail time, 12.5 millisecond update rate	≥ 4.7500 volts ($\leq 0.5 \Omega$ impedance between signal and controller power)	<p>service mode \$04 active diagnostic monitor enable P07BF fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P07C0 fault active P07C0 test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 16 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Upshift Switch Circuit	P0815	Diagnoses the state of the upshift switch circuit, stuck in the state "tap up" (upshift) active.	switch state update fail time 1 100 millisecond update rate	= tap up (upshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on P0826 fault pending (P0815 fault active OR P0815 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = 1 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	fail time 1 ≥ 1.00 seconds run crank voltage time ≥ 25 milliseconds ≥ 1.00 seconds	Special Type C
			switch state update fail time 2 100 millisecond update rate	= tap up (upshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on	= FALSE = 1 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE	fail time 2 ≥ 120.00 seconds run crank voltage time ≥ 25 milliseconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P0826 fault pending (P0815 fault active OR P0815 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	≥ 1.00 seconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Downshift Switch Circuit	P0816	Diagnoses the state of the downshift switch circuit, stuck in the state "tap down" (downshift) active.	switch state update fail time 1 100 millisecond update rate	= tap down (downshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on P0826 fault pending (P0816 fault active OR P0816 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = 1 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	fail time 1 ≥ 1.00 seconds run crank voltage time ≥ 25 milliseconds ≥ 1.00 seconds	Special Type C
			switch state update fail time 2 100 millisecond update rate	= tap down (downshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on	= FALSE = 1 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE	fail time 2 ≥ 120.00 seconds run crank voltage time ≥ 25 milliseconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P0826 fault pending (P0816 fault active OR P0816 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	≥ 1.00 seconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Up and Down Shift Switch Circuit	P0826	Diagnoses the state of the upshift/downshift switch circuit at an illegal voltage, voltage out of range.	switch state update fail time 100 millisecond update rate	= illegal (voltage out of range)	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active (P0826 fault active OR P0826 fault active test fail this key on)	= FALSE = 1 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE	fail time ≥ 60.00 seconds run crank voltage time ≥ 25 milliseconds	Special Type C

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid A Control Circuit Open	P0960	Controller specific circuit diagnoses 9 speed CB123456 or 10 speed CB123456R clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid A Control Circuit Low Voltage	P0962	Controller specific circuit diagnoses 9 speed CB123456 or 10 speed CB123456R clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates a ground short Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short Increment fail time	$\leq 0.5 \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid A Control Circuit High Voltage	P0963	Controller specific circuit diagnoses 9 speed CB123456 or 10 speed CB123456R clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid B Control Circuit Open	P0964	Controller specific circuit diagnoses 9 speed CB29 or 10 speed CB128910R clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid B Control Circuit Low Voltage	P0966	Controller specific circuit diagnoses 9 speed CB123456 or 10 speed CB123456R clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates a ground short Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short Increment fail time	$\leq 0.5 \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid B Control Circuit High Voltage	P0967	Controller specific circuit diagnoses 9 speed CB123456 or 10 speed CB123456R clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid C Control Circuit Open	P0968	Controller specific circuit diagnoses 9 speed CB38 or 10 speed C23457910 clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid C Control Circuit Low Voltage	P0970	Controller specific circuit diagnoses 9 speed CB38 or 10 speed C23457910 clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates a ground short Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short Increment fail time	$\leq 0.5 \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid C Control Circuit High Voltage	P0971	Controller specific circuit diagnoses 9 speed CB38 or 10 speed C23457910 clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Serial Peripheral Interface Bus 2	P16E9	This DTC detects intermittent and continuous invalid SPI messages. This is based on the detection of missing or invalid receive message within the main processor before receiving a valid message.	This function detects a serial communications fault based upon the detection of missing or invalid (receive) message within the secondary processor before and after receiving a valid message.			Run/Crank voltage > 6.41	Number of invalid messages > 64.00 OR Amount of time before first message received since initialization > 0.19 counts continuous; 12.5 ms /count in the TCM secondary processor	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Serial Peripheral Interface Bus 1	P16F0	This DTC detects intermittent and continuous invalid SPI messages. This is based on the detection of missing or invalid receive message within the main processor before receiving a valid message.	This function detects a serial communications fault based upon the detection of missing or invalid (receive) message within the main processor before receiving a valid message.			Run/Crank voltage > 6.41	100 / 16 counts continuous; 12.5 ms /count in the TCM main processor	Type A, 1 Trips
			This function detects a serial communications fault based upon the detection of missing or invalid (receive) message within the main processor after receiving a valid message.			Run/Crank voltage > 6.41	8 / 16 counts continuous; 12.5 ms /count in the TCM main processor	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Internal Control Module Redundant Memory Performance	P16F3	Transmission Control Module	Safety Monitor Enable Criteria	= FALSE Boolean	Reduandant Memory Command Pressure Enable Calibraton Not	= 0 Boolean	Single Event	Type A, 1 Trips
			Safety Monitor Enable Criteria	= TRUE Boolean	Reduandant Memory Command Pressure Enable Calibraton	= 1 Boolean	Single Event	
			AND					
			No traction event in progress	diffeerence between driven and non-driven wheel speeds: >= 0.00 pct				
			AND					
			Change in vehicle velocity output speed greater than threshold measure by slip speed across all nodes.	Threshold function: TOSS measured with 25ms running delta sampled 6.25ms > (<brake gain> 0.75 * <pct>brake pedal) index : P2D2 Cltch Slip Sum* *See Attached Supporting Table				
			AND					
			Condition timer greater than threshold	>= 0.05 seconds				
			AND					
			Fill factor is grather than thrshold by clch:	Fill factor is >= 1.00 Clch 1 1.00 Clch 2				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			<p>Command clutch pressure on released clutch greater than threshold</p> <p>AND</p> <p>AND</p>	<p>1.00 Clch 3 1.00 Clch 4 1.00 Clch 5 1.00 Clch 6 1.00 Clch 7</p> <p>Calucualte clutch press by clutch: (PCS cmnd pressure - 0.00 pressure offset) * (1.00 C1 reg gain, 1.00 C2 reg gain, 1.51 C3 reg gain, 2.25 C4 reg gain, 1.00 C5 reg gain, 1.00 C6 reg gain, 1.00 C7 reg gain)</p> <p>Subtract return spring : adapt value from ABOVE PCS pressure --> value 1</p> <p>Compare Thresholds for clutches by gear: <= P2D2 Decel Pressure - C1 <= P2D2 Decel Pressure - C2 <= P2D2 Decel Pressure - C3 <= P2D2 Decel Pressure - C4 <=</p>				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			<p>P2D2 Decel Pressure - C5 <= P2D2 Decel Pressure - C6 <= P2D2 Decel Pressure - C7 *See Attached Supporting Tables</p> <p>AND</p> <p>Check Min # of clutches by attained gear and by comanded gear take lower of the 2 values.</p> <p>AND</p> <p>Confirmation of tie up capacity clutches. - This is done by taking value 1 above and subtracting return spring and confirming fill factor above table value --> add up # of clutches calucualted as ON.</p> <p>*Monitor is disabled if Fault Active or codes for: Speeds Sensors 1/2/3, High Side Drivers 1/2 or service fast learn active.</p>	<p>P2D2 Decel Pressure - C5 <= P2D2 Decel Pressure - C6 <= P2D2 Decel Pressure - C7 *See Attached Supporting Tables</p> <p><= NumClchTieUp</p>				
					Reduandant Memory		Single Event	

18 OBDG04 TCM 9 Speed T87A Summary Tables

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			*Monitor is disabled if: TISS FA or TOSS FA, SFL or HSD 1 or HSD 2 are OFF	*See Attached Supporting Tables:				
			Remedial Action Enable Criteria AND Remedial Action Disable Criteria AND Wheel Speed Enable Criteria AND Wheel Speed Disable Criteria AND Vehicle Speed AND Change in Output Shaft speed AND Service Brake Pedal	= FALSE Boolean = TRUE Boolean = FALSE Boolean = TRUE Boolean Vehcile Speed > 10.00 Kph -150.00 < dn output shaft < -75.00 Pct Brake Pedal < 40.00 Pct OR	Reduandant Memory DDM Enable Calibraiton Not Reduandant Memory DDM Enable Calibraiton Reduandant Memory DDM Enable Calibraiton NotEnable Calibraiton Reduandant Memory DDM Enable Calibraiton Enable Calibraiton Enable Condition Enable Condition Increment Timer Condition	= 0.00 Boolean = 1.00 Boolean = 0.00 Boolean = 1.00 Boolean	Single Event	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			<p>AND</p> <p>Fail Timer Percentage</p> <p>**Note: This monitor is only active in development and is disabled in production.</p>	<p>Pedal Pct < 20.00 Pct for 0.50 seconds</p> <p>= 100.00 Pct</p>	Decrement Timer Condition			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Internal Control Module Redundant Memory Performance	P16F3	<p>The diagnostic monitor is a rationalization of command values: command clutch pressures and command gear. The monitor is broken up into two fault detection routines, command pressure (tie up) fault detection and command gear/shift fault detection.</p> <p>The command pressure (tie up) fault detection is designed to verify the number of clutches applied in a given gear state is limited, in order to prevent a transmission internal mechanical tie-up condition. A condition which could lead to a vehicle deceleration above the design safety metric. If commanded clutch pressures are above a threshold which would allow multiple clutches to carry torque, the clutch is considered applied, otherwise the clutch is considered released. If there are more clutches applied, via the commanded clutch pressures, in a given gear state than is rational, one or more of</p>	<p>command pressure (tie up) fault detection</p> <p>minimum # of clutches ON by attained gear and by comanded gear, take lower of the 2 values, where attained gear is the current operating gear and command gear is the targetted value to transtion toward</p> <p>see 9 speed transmission clutch definition and gear state to clutch map and 10 speed transmission clutch definition and gear state to clutch map attached supporting tables for clutch 1 through clutch 7 definition and gear state to clutch map</p>	\leq NumClchTieUp See Attached Supporting Tables	<p>Reduandant Memory Command Pressure Enable Calibraton Not</p> <p>Reduandant Memory Command Pressure Enable Calibraton</p> <p>No traction event in progress: $\text{ABS}((\text{driven wheel speed} - \text{non-drive wheel speed}) / \text{driven wheel speed})$</p> <p>25 millisecond derivative TOSS RPM, (TOSS delta 25 millisecond loop to 25 milisecond loop) / 25 millisecond for time</p> <p>Clutch 1 hydraulic volume fill factor</p> <p>Clutch 2 hydraulic volume fill factor</p> <p>Clutch 3 hydraulic volume fill factor</p> <p>Clutch 4 hydraulic volume fill factor</p> <p>Clutch 5 hydraulic volume fill factor</p> <p>Clutch 6 hydraulic volume fill factor</p> <p>Clutch 7 hydraulic volume fill factor</p> <p>when clutch is off going (releasing) clutch the commanded clutch pressure equation = ((pressure control solenoid command</p>	<p>= 0 Boolean</p> <p>= 1 Boolean</p> <p>$\geq 0.00 \%$</p> <p>$< 0.750 *$ P2D2 Cltch Slip Sum see attached supporting Table</p> <p>≥ 0.0500 seconds</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p> <p>≥ 1.000 unitless</p>	<p>single event</p> <p>6.25 millisecond update rate</p>	<p>Type A, 1 Trips</p>

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		<p>the clutch pressure command values are in error. Given rate of change of transmission output shaft speed, command gear state clutches and clutch hydraulic fill volumes, those clutches in transition from the hydraulic released state to the hydraulic applied state and from the hydraulic applied state to the hydraulic released state, the rationality detects any number of command clutch pressures above a threshold, that are simultaneously active to cause a vehicle deceleration above the design safety metric.</p> <p>The command gear/shift fault detection is designed to verify the commanded gear will not induce a downshift resulting in a gear state that is erroneous given vehicle operating conditions. The detection rationalizes the command gear against a minimum gear, highest gear ratio, for given vehicle speed and driver accelerator position.</p>			<p>pressure - pressure offset) * regulator valve gain) - regulator valve return spring pressure adaptive</p> <p>when clutch 1 is off going clutch: clutch 1 command pressure</p> <p>clutch 1 state is OFF when: clutch 1 command pressure, else clutch is ON and count clutch 1 toward minimum # of clutches ON</p> <p>when clutch 2 is off going clutch: clutch 2 command pressure</p> <p>clutch 2 state is OFF when: clutch 2 command pressure, else clutch is ON and count clutch 2 toward minimum # of clutches ON</p> <p>when clutch 3 is off going clutch: clutch 3 command pressure</p>	<p>= ((clutch 1 pressure control solenoid command pressure - 0.00) * 1.00) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C1 see attached supporting tables</p> <p>= ((clutch 2 pressure control solenoid command pressure - 0.00) * 1.00) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C2 see attached supporting tables</p> <p>= ((clutch 3 pressure</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>clutch 3 state is OFF when: clutch 3 command pressure, else clutch is ON and count clutch 3 toward minimum # of clutches ON</p> <p>when clutch 4 is off going clutch: clutch 4 command pressure</p> <p>clutch 4 state is OFF when: clutch 4 command pressure, else clutch is ON and count clutch 4 toward minimum # of clutches ON</p> <p>when clutch 5 is off going clutch: clutch 5 command pressure</p> <p>clutch 5 state is OFF when: clutch 5 command pressure,</p>	<p>control solenoid command pressure - 177.00) * 1.51) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C3 see attached supporting tables</p> <p>= ((clutch 4 pressure control solenoid command pressure - 160.00) * 2.25) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C4 see attached supporting tables</p> <p>= ((clutch 5 pressure control solenoid command pressure - 0.00) * 1.00) - regulator valve return spring pressure adaptive, kPa</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>else clutch is ON and count clutch 5 toward minimum # of clutches ON</p> <p>when clutch 6 is off going clutch: clutch 6 command pressure</p> <p>clutch 6 state is OFF when: clutch 6 command pressure, else clutch is ON and count clutch 6 toward minimum # of clutches ON</p> <p>when clutch 7 is off going clutch: clutch 7 command pressure</p> <p>clutch 7 state is OFF when: clutch 7 command pressure, else clutch is ON and count clutch 7 toward minimum # of clutches ON</p> <p>service fast learn not active</p>	<p>P2D2 Decel Pressure - ≤ C5 see attached supporting tables</p> <p>= ((clutch 6 pressure control solenoid command pressure - 0.00) * 1.00) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C6 see attached supporting tables</p> <p>= ((clutch 7 pressure control solenoid command pressure - 0.00) * 1.00) - regulator valve return spring pressure adaptive, kPa</p> <p>P2D2 Decel Pressure - ≤ C7 see attached supporting tables</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					no speed sensor DTCs fault active: P0716, P0717, P0721, P0722, P0723, P077C, P077D, P07BF, P07C0, P172A, P172B, P176B, P176C, P176D, P1783, P178F, P17C4, P17C5, P17C6, P17CC, P17CD, P17CE, P17D3, P17D6 no high side driver DTCs fault active: P0658, P2670			
			command gear/shift fault detection 1st gear commanded and vehicle seed OR 2nd gear commanded and vehicle seed OR 3rd gear commanded and vehicle seed OR 4th gear commanded and vehicle seed OR 5th gear commanded and vehicle seed OR 6th gear commanded and vehicle seed OR 7th gear commanded and vehicle seed OR 8th gear commanded and	> 71.00 KPH > 100.70 KPH > 110.52 KPH > 136.10 KPH > 173.11 KPH > 230.22 KPH > 332.90 KPH	Reduandant Memory Command Gear Enable Calibraiton Not Reduandant Memory Command Gear Enable Calibraiton service fast learn not active no speed sensor DTCs fault active: P0716, P0717, P0721, P0722, P0723, P077C, P077D, P07BF, P07C0, P172A, P172B, P176B, P176C, P176D, P1783, P178F, P17C4, P17C5, P17C6, P17CC, P17CD, P17CE, P17D3, P17D6 no high side driver DTCs fault active:	= 0 Boolean = 1 Boolean	command gear fail event count ≥ 3 counts 6.25 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			vehicle seed OR 9th gear commanded and vehicle seed OR 10th gear commanded and vehicle seed THEN increment command gear fail event count and abort commanded gear and delay for time before next fail evaluation	> 445.65 KPH > 539.54 KPH > 539.54 KPH > 5.00 seconds	P0658, P2670			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Control Module Speed Signal Analog to Digital Converter Performance	P16FB	The diagnostic monitor validates the controller calculated transmission output speed sensor data parameters, calculated in multiple paths/subroutines and at different rates. There are multiple transmission output speed sensor data parameters, calculated at rates of 6.25 milliseconds, 12.5 milliseconds and 25 milliseconds. While the same subroutine, a generic “calculate TOSS” is called from different time loops, each call stores that current value of the calculated TOSS to a different memory location. For example, a 12.5 millisecond loop calling “calculate TOSS” stores the calculated TOSS value to a “12.5 millisecond TOSS calculated” data parameter in memory, while a 25 millisecond loop calling “calculate TOSS” stores the calculated TOSS value to a “25 millisecond TOSS calculated” data parameter in memory. The raw transmission output speed sensor	ABS(raw transmission output speed, 6.25 millisecond data parameter - raw transmission output speed, 25 millisecond data parameter) update fail and sample time 25 millisecond update rate	≥ 60.0 RPM	service mode \$04 active diagnsotic monitor enable raw transmission output speed, 25 millisecond data parameter raw transmission output speed, 6.25 millisecond data parameter run crank voltage battery voltage	= FALSE = 1 Boolean ≥ 356.0 RPM ≥ 356.0 RPM ≥ 10.00 volts ≥ 10.00 volts	fail time ≥ 8.000 seconds out of sample time ≥ 10.000 seconds 25 millisecond update rate run crank and battery voltage time ≥ 5.000 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		signal is diagnosed independently electrically and for performance of this DTC. The transmission output speed sensor data parameters that are calculated at different rates must always be within a negligible difference of each other.						

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Surge Accumulator System Performance	P171D	Detects when the surge accumulator system, used to provide transmission hydraulic pressure, is not capable of supplying adequate hydraulic pressure during an engine auto-start. The transmission holding clutch pressures are commanded to meet the engine crank shaft torque output, to prevent clutch slip to those holding clutches, during the engine auto-start. The diagnostic monitors transmission input shaft speed during the auto-start event as the primary malfunction criteria. Measured input shaft speed that is excessive is an indication the holding clutches are slipping due to inadequate hydraulic pressure, as a result of a failed surge accumulator system.	Transmission turbine speed is greater than predicted turbine speed during autostart event, update initial fail count	P171D predicted ≥ turbine speed error Refer to "Transmission Supporting Tables" for details	PRNDL state defaulted Transmission shift lever position Propulsion system active Ignition voltage Ignition voltage Transmission fluid temp Transmission fluid temp Hybrid state AutoStop duration min During autostop Engine speed was ***** If above conditions are met then the following must occur: Turbine speed Engine speed Hydraulic pressure delay time If above conditions are met then increment time-out timer. Time-out timer Note: The initial fail	= False = Forward range A = True > 9.00 volts < 31.99 volts > 0.00 °C < 110.00 °C = Engine off ≥ 1.200 seconds < 5.0 RPM ≥ 80.0 RPM ≥ 450.0 RPM P171D hydraulic ≥ pressure delay Refer to "Transmission Supporting Tables" for details ≤ 0.38 seconds	≥ 12 counts (initial fail count) Frequency =12.5ms Once the above counts are achieved then increment the final fail counter once. The final fail counter can only increment once per autostart event ≥ 3 counts (final fail counter) If above counter is greater than threshold then report DTC failed. Frequency = 12.5ms	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>counter must achieve it's fail threshold in less than the time-out time.</p> <p>*****</p> <p>If vehicle is launched then:</p> <p>Transmission gear ratio</p> <p>Trans 1st gear ratio</p> <p>Trans 1st gear ratio</p> <p>Trans gear ratio not 1st gear</p> <p>Trans gear ratio not 1st gear</p> <p>Valid transmission gear ratio achieved time</p> <p>OR</p> <p>If vehicle is not launched but autostart occurs then:</p> <p>Turbine speed</p> <p>Turbine speed less then above threshold for</p> <p>Note: During an autostart event the lack of hydraulic pressure will result in momentary clutch slip in</p>	<p>= 4.689 1st gear ratio</p> <p>= 3.306 2nd gear ratio</p> <p>= 3.012 3rd gear ratio</p> <p>= 2.446 4th gear ratio</p> <p>= 1.923 5th gear ratio</p> <p>= 1.446 6th gear ratio</p> <p>≤ 1.120 % of 1st gear ratio</p> <p>≥ 0.880 % of 1st gear ratio</p> <p>≤ 1.070 % of gear ratio</p> <p>≥ 0.930 % of gear ratio</p> <p>≥ 0.500 seconds</p> <p>≤ 5.00 RPM</p> <p>≥ 0.500 seconds</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>the C1234 clutch. After the clutch slip event, the main transmission pump and clutch will gain capacity, clutch slip will go to zero. If the vehicle is launching (moving) then a valid transmission ratio can be achieved. Or if the brake is continually applied and an autostart occurs naturally, then no ratio can be measured. In this case turbine speed will return to near zero rpm.</p> <p>*****</p> <p>DTCs not fault active</p>	<p>CrankSensor_FA Transmission Output Shaft Angular Velocity Validity Transmission Turbine Angular Velocity Validity Transmission Oil Temperature Validity P171A P171B P171C U0101 P182E P1915</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Acceleration Sensor Signal Message Counter Incorrect	P175F	The diagnostic monitor detects an alive rolling count error or checksum error in the CAN frame containing the lateral acceleration signal value and longitudinal acceleration sensor signal value.	rolling count value received from EBCM and expected TCM calculated value not equal OR checksum lateral and longitudinal acceleration CAN frame message value error 50 millisecond update rate	= TRUE = TRUE	enable alive rolling count error detection: diagnostic monitor enable lateral and longitudinal acceleration CAN frame message received battery voltage run crank voltage enable checksum error detection: diagnostic monitor enable lateral and longitudinal acceleration CAN frame message received normal CAN battery voltage run crank voltage communication enabled DTCs not fault active	= 1 Boolean = TRUE ≥ 11.0 volts ≥ 11.0 volts = 1 Boolean = TRUE ≥ 11.0 volts ≥ 11.0 volts = TRUE U0073	alive rolling count errors ≥ 54 out of 9 sample counts 50 millisecond update rate checksum error time ≥ 54.00 seconds	Special Type C

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Up and Down Shift Switch Signal Circuit	P1761	The alive rolling count normally cycles 0, 1, 2, and 3 as a serial data periodic frame is processed normally. The diagnostic monitor counts the number of times an alive rolling count error occurs over a period of time. The TCM receives a serial data frame at a periodic rate, during which, the receive data is processed the comparing the current value of the alive rolling count in the frame data to the incremented value of the diagnostic alive rolling count. When the two values of the alive rolling count do not agree, an alive rolling count error has occurred. The error indicator is saved in an array buffer, and when the number of error indicators in the buffer exceed the fail threshold the fail time is allowed to time up.	alive rolling count error counter update fail time 100 millisecond update rate	≥ 3 counts	service mode \$04 active diagnostic monitor enable run crank voltage up and down shift serial data frame receive occurred when up and down shift serial data frame receive occurred: increment the diagnosis alive rolling count data value, if the diagnosis alive rolling count data value, set alive rolling count error to TRUE, when alive rolling count error AND previous alive rolling count error in 10 element array buffer, increment alive rolling count error counter	= FALSE = 1 Boolean ≥ 9.00 volts = TRUE ≠ frame alive rolling count data value = TRUE = FALSE	fail time ≥ 10.00 seconds run crank voltage time ≥ 0.100 seconds	Special Type C

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Upshift Switch Circuit 2	P1765	Diagnoses the state of the upshift switch circuit, stuck in the state "tap up" (upshift) active.	switch state update fail time 1 100 millisecond update rate	= tap up (upshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P1767 fault active P1767 test fail this key on P1767 fault pending (P1765 fault active OR P1765 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = 0 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	fail time 1 ≥ 1.00 seconds run crank voltage time ≥ 25 milliseconds ≥ 1.00 seconds	Special Type C
			switch state update fail time 2 100 millisecond update rate	= tap up (upshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P1767 fault active P1767 test fail this key on	= FALSE = 0 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE	fail time 2 ≥ 120.00 seconds run crank voltage time ≥ 25 milliseconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P1767 fault pending (P1765 fault active OR P1765 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	≥ 1.00 seconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Downshift Switch Circuit 2	P1766	Diagnoses the state of the downshift switch circuit, stuck in the state "tap down" (downshift) active.	switch state update fail time 1 100 millisecond update rate	= tap down (downshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P1767 fault active P1767 test fail this key on P1767 fault pending (P1766 fault active OR P1766 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = 0 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	fail time 1 ≥ 1.00 seconds run crank voltage time ≥ 25 milliseconds ≥ 1.00 seconds	Special Type C
			switch state update fail time 2 100 millisecond update rate	= tap down (downshift) state active	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage P1761 fault active P1767 fault active P1767 test fail this key on	= FALSE = 0 Boolean ≥ 5.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE	fail time 2 ≥ 120.00 seconds run crank voltage time ≥ 25 milliseconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P1767 fault pending (P1766 fault active OR P1766 fault active test fail this key on) PRNDL range change time PRNDL in range: D1 OR D2 OR D3 OR D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	= FALSE = FALSE = FALSE = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 1 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean Transmission Shift Lever Position Validity	≥ 1.00 seconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Up and Down Shift Switch Circuit 2	P1767	Diagnoses the state of the upshift/downshift switch circuit at an illegal voltage, voltage out of range.	switch state update fail time 100 millisecond update rate	= illegal (voltage out of range)	service mode \$04 active diagnostic monitor enable run crank voltage run crank voltage time run crank voltage P1761 fault active P1767 fault active	= FALSE = 0 Boolean ≥ 5.00 volts ≥ 25 milliseconds ≥ 9.00 volts = FALSE = FALSE	fail time ≥ 60.00 seconds	Special Type C

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Planetary Gearset Ring Gear Speed Sensor Circuit Range/ Performance	P176B	The diagnostic monitor rationalizes the transmission intermediate shaft speed sensor by using the transmission output shaft output speed sensor and the known ratio between the transmission intermediate shaft speed and the transmission output shaft output speed based on the commanded gear and the transmission lever node design. The estimated transmission intermediate shaft speed is equal to the gear ratio times the transmission output shaft output speed. The absolute value of the delta between the measured transmission intermediate shaft speed and the estimated transmission intermediate shaft speed is used to determine if the measured transmission intermediate shaft speed is rational.	delta1 = ABS (transmission input speed - (transmission output speed * gear ratio commanded)) AND delta2 = ABS (transmission input speed - (transmission intermediate speed * ratio calibration)) update fail time 25 millisecond update rate	> 10.0 RPM P176B intermediate speed sensor fail > RPM threshold see supporting tables	diagnostic monitor enable speed sensor configuration calibration is single OR dual ratio calibration is function of command gear and intermediate speed sensor when not REVERSE ratio calibration is function of command gear and intermediate speed sensor when REVERSE ***** delay time updates when: estimated transmission intermediate speed (transmission input	= 1 Boolean = CeTNSR_e_NSPD_Singl eSpdSnsr P176B ratio calibration = when not REVERSE see supporting tables P176B ratio calibration = when REVERSE see supporting tables ***** ≥ P176B minimum estimated transmission intermediate speed to enable fail evaluation	fail time ≥ P176B intermediate speed sensor fail time threshold see supporting tables fail time threshold met increments fail count, fail count ≥ P176B intermediate speed sensor fail count threshold see supporting tables ***** delay time ≥	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					service fast learn active run crank voltage transmission hydraulic pressure available: engine speed	≥ 9.00 volts ≥ 400 RPM	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting tables	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Planetary Gearset Ring Gear Speed Sensor Circuit Low	P176C	Controller specific analog circuit diagnoses the transmission intermediate speed sensor and wiring for a short to ground fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission intermediate speed sensor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts ($\leq 0.5 \Omega$ impedance between signal and controller ground)	<p>service mode \$04 active diagnostic monitor enable P176D fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P176C fault active P176C test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 40 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Planetary Gearset Ring Gear Speed Sensor Circuit High	P176D	Controller specific analog circuit diagnoses the transmission intermediate speed sensor and wiring for a short to voltage fault by comparing a voltage measurement to controller specific voltage thresholds.	transmission intermediate speed sensor raw voltage, update fail time, 12.5 millisecond update rate	≥ 4.7500 volts ($\leq 0.5 \Omega$ impedance between signal and controller power)	<p>service mode \$04 active diagnostic monitor enable P176C fault active service fast learn</p> <p>run crank voltage battery voltage</p> <p>P176D fault active P176D test fail this key on</p>	<p>= FALSE = 1 Boolean = FALSE = FALSE</p> <p>≥ 10.00 volts ≥ 10.00 volts</p> <p>= FALSE = FALSE</p>	<p>fail time ≥ 0.050 seconds, update fail count 12.5 millisecond update rate</p> <p>fail count ≥ 40 counts 12.5 millisecond update rate</p> <p>run crank and battery voltage time ≥ 5.000 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Intermediate Speed Sensor 1 Direction Error	P17D3	The diagnostic monitor determines if the direction transmission intermediate speed sensor value is coherent based on the on period time of the directional sensor and raw speed sensor value. When the on period time indicates a transitional state, the direction must also be transitional as measured by very slow raw signal RPM. When the on period time indicates a non-transitional state, forward or reverse, the direction must also be transition, not forward and not reverse.	intermediate speed senor raw direction when transitional period = FALSE AND intermediate speed senor raw direction when transitional period = FALSE OR intermediate speed senor raw when transitional period = TRUE update fail and sample time 6.26 millisecond update rate	≠ FORWARD ≠ REVERSE P17C5 P17D3 intermediate speed ≥ sensor RPM	service mode \$04 active diagnostic monitor enable intermediate speed senor count sample period P17D3 fault active OR P17D3 test fail this key on senor type calibration (senor type is directional) transitional period detected = FALSE when: on period OR on period when direction unknown OR on period on period when direction is reverse OR on period on period when direction is forward transitional period detected = TRUE when: on period on period when direction unknown	= FALSE = 1 Boolean ≠ 0 counts = FALSE = FALSE = CeTNSR_e_NSPD_Singl eSpdSnsr ≥ 0.4434 seconds ≤ 0.2773 seconds < 0.2363 seconds > 0.1240 seconds < 0.0811 seconds > 0.0088 seconds < 0.4434 seconds > 0.2773 seconds	fail time ≥ 3.500 seconds out of sample time ≥ 5.000 seconds	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Park Valve Position Sensor/ Switch A Circuit/Open	P17F5	The diagnostic monitor detects an illegal voltage on the park valve position sensor circuit.	raw sensor voltage raw sensor voltage	> 1.263 volts < 1.504 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETR S = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Position Sensor/ Switch A Circuit Low	P17F6	The diagnostic monitor detects a ground short or open circuit fault in the park valve position sensor circuit.	raw sensor voltage	< 0.414 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips
			sensor voltage direct proportion	= CePSCD_e_VoltDirct Prop	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is PWM sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	1.000 seconds in 1.500 second sample 6.25 millisecond update rate	
			raw sensor % duty cycle	≤ 9.998 % duty cycle				
			sensor voltage indirect proportion	= CePSCD_e_VoltDirct Prop				
			raw sensor % duty cycle	≥ 9.998 % duty cycle				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Position Sensor/ Switch A Circuit High	P17F7	The diagnostic monitor detects a short to voltage circuit fault in the park valve position sensor circuit.	raw sensor voltage	> 2.538 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips
			sensor voltage direct proportion	= CePSCD_e_VoltDirct Prop	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is PWMsensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	1.000 seconds in 1.500 second sample 6.25 millisecond update rate	
			raw sensor % duty cycle	≥ 91.998 % duty cycle				
			sensor voltage indirect proportion	= CePSCD_e_VoltDirct Prop				
			raw sensor % duty cycle	≤ 91.998 % duty cycle				

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Park Valve Position Sensor/ Switch B Circuit/Open	P17FA	The diagnostic monitor detects an illegal voltage on the park valve position sensor circuit.	raw sensor voltage raw sensor voltage	> 1.263 volts < 1.504 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETR S = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Position Sensor/ Switch B Circuit Low	P17FB	The diagnostic monitor detects a ground short or open circuit fault in the park valve position sensor circuit.	raw sensor voltage	< 0.414 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips
			sensor voltage direct proportion	= CePSCD_e_VoltDirct Prop	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is PWM sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	1.000 seconds in 1.500 second sample 6.25 millisecond update rate	
			raw sensor % duty cycle	≤ 9.998 % duty cycle				
			sensor voltage indirect proportion	= CePSCD_e_VoltDirct Prop				
			raw sensor % duty cycle	≥ 9.998 % duty cycle				

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Position Sensor/ Switch B Circuit High	P17FC	The diagnostic monitor detects a short to voltage circuit fault in the park valve position sensor circuit.	raw sensor voltage	> 2.538 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips
			sensor voltage direct proportion	= CePSCD_e_VoltDirct Prop	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is PWMsensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	1.000 seconds in 1.500 second sample 6.25 millisecond update rate	
			raw sensor % duty cycle	≥ 91.998 % duty cycle				
			sensor voltage indirect proportion	= CePSCD_e_VoltDirct Prop				
			raw sensor % duty cycle	≤ 91.998 % duty cycle				

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Up and Down Shift Switch Performance	P1876	This diagnostic monitor rationalizes the PRNDL, transmission shift lever position, against the state for the tap-up-tap-down (TUTD) enable switch or the manual-up-manual-down (MUMD) enable switch. The switch circuit is considered failing when the PRNDL is in park, reverse or neutral, and the switch circuit is indicating the switch in in the enable, or TUTD/MUMD function request state. The switch can only be in the enable state when the PRNDL is in the appropriate drive range, for example D9, D8 or D7, but not in park, reverse or neutral.	(PRNDL OR PRNDL OR PRNDL) AND (shift lever range calibration is tap-up-tap-down (TUTD) OR shift lever range calibration is manual-up-manual-down (MUMD)) AND TUTD/MUMD enable request (switch state) update fail time 100 millisecond update rate	= NEUTRAL = REVERSE = PARK = CeTUDR_e_TUTD_ModeOnly = TRUE	service mode \$04 active diagnostic monitor enable (P1876 test fail this key on OR P1876 fault active) PRNDL OR PRNDL OR PRNDL DTCs not test fail this key on DTCs not fault active	= FALSE = 0 Boolean = FALSE = FALSE = NEUTRAL = REVERSE = PARK P0815, P0816, P0826 Transmission Shift Lever Position Validity U0100, P0815, P0816, P0826, P1761, P0707, P0708	fail time ≥ 3.00 seconds, update fail count fail count ≥ 5 counts 100 millisecond update rate	Special Type C

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Stuck On	P187D	This diagnostic monitor rationalizes the driver ETRS command direction of "out of PARK" against the actual park valve position, as the park valve position is measured by the park valve position sensor A or B.	when: (Park Valve Position Sensor A OR Park Valve Position Sensor B) AND (out of park state calculated OR out of park state calculated) update delay time when: delay time increment fail count	= PARK = PARK = UNKNOWN = PARK ≥ KtPSDR_t_ParkVlvStkOn_DlyLim	park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time diagnostic monitor enable park state transtion is TRUE when: (out of park state calculated OR out of park state calculated) AND P187D, P187E Test Fail This Key On AND ((ETRS command direction AND out of park state) OR (ETRS command direction AND out of park state)) otherwise park state transition is FALSE park state transition AND (P17F5, P17F6, P17F7 Fault Active OR P17FA, P17FB, P17FC Fault Active) AND P187D, P187E Fault Active park servo stuck on available is TRUE when: ETRS command direction ((ETRS command direction AND P18AB Test Fail This Key On) OR	= 1 Boolean = CeTRGR_e_InternalETRS ≥ 9.00 volts ≥ 1.000 seconds = 1 Boolean = PARK = OUT OF PARK = FALSE = PARK ≠ PARK ≠ PARK ≠ OUT OF PARK = TRUE = FALSE = FALSE = FALSE ≠ PARK = DRIVE	fail count ≥ 2 counts update rate 6.25 milliseconds	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					(ETRS command direction AND P18A8 Test Fail This Key On) OR (ETRS command direction AND P18AD Test Fail This Key On) OR ((ETRS command direction AND (P18AB Test Fail This Key On OR P18AD Test Fail This Key On)) OR (ETRS command direction AND P18AB Test Fail This Key On)) otherwise park servo stuck on available is FALSE hydraulic pressure available = TRUE when: engine speed for engine speed time otherwise hydraulic pressure available = FALSE hydraulic pressure available park servo stuck on available (mode valve A state attained OR P18AA Test Fail This Key On OR P27EC Test Fail This Key On OR P27EC Fault Pending)	= FALSE = NEUTRAL LOW = FALSE = NEUTRAL HIGH = FALSE = NEUTRAL SHIFT = FALSE = FALSE = REVERSE = FALSE ≥ 400.0 RPM ≥ KtTMDc_t_EngOnHydPr esThrsh = TRUE = TRUE = TRUE = TRUE = TRUE		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					AND (mode valve B state attained OR P18AC Test Fail This Key On OR P27F0 Test Fail This Key On OR P27F0 Fault Pending)	= TRUE = TRUE = TRUE = TRUE = TRUE		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Valve Stuck Off	P187E	This diagnostic monitor rationalizes the driver ETRS command direction of "PARK" against the actual park valve position, as the park valve position is measured by the mode valve position sensor A and B.	<p>when: ETRS command direction out of park state mode valve A position mode valve B position update delay time</p> <p>when: delay time</p> <p>increment fail time</p>	<p>= PARK ≠ PARK = mode valve low = mode valve low</p> <p>≥ KtPSDR_t_ParkServo_EngOff_Lim</p>	<p>park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time engine mode run</p> <p>hydraulic pressure available is TRUE when: engine speed for engine speed time otherwise hydraulic pressure available is FALSE</p> <p>hydraulic pressure available surge accumulator on/off request engine off diagnostic enabled</p> <p>P187D, P187E Test Fail This Key On</p>	<p>= 1 Boolean = CeTRGR_e_InternalETRS S</p> <p>≥ 9.00 volts ≥ 1.000 seconds = FALSE</p> <p>≥ 400.0 RPM ≥ KtTMDC_t_EngOnHydPresThrsh</p> <p>= FALSE = FALSE = 1 Boolean = FALSE</p>	<p>fail time ≥ KtPSDR_t_ParkServo_EngOff_Lim seconds</p> <p>update rate 6.25 milliseconds</p>	Type A, 1 Trips
			<p>when: (Park Valve Position Sensor A OR Park Valve Position Sensor B) AND (out of park state calculated OR out of park state calculated) update delay time</p> <p>when: delay time</p>	<p>= OUT OF PARK = OUT OF PARK = UNKNOWN = OUT OF PARK</p> <p>≥ KtPSDR_t_ParkVlvStkOff_DlyLim</p>	<p>park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time diagnostic monitor enable</p> <p>park state transtion is TRUE when: (out of park state calculated OR out of park state calculated) AND P187D, P187E Test Fail This Key On AND</p>	<p>= 1 Boolean = CeTRGR_e_InternalETRS S</p> <p>≥ 9.00 volts ≥ 1.000 seconds = 1 Boolean</p> <p>= PARK = OUT OF PARK = FALSE</p>	<p>fail count ≥ 2 counts</p> <p>update rate 6.25 milliseconds</p>	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					(mode valve B state attained OR P18AC Test Fail This Key On OR P27F0 Test Fail This Key On OR P27F0 Fault Pending OR ETRS mode enable valve state)	= TRUE = TRUE = TRUE = TRUE = TRUE = ETRS zero limit (hydraulic cicruit exhausted)		

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Command Message Performance	P189C	Detects error on ARC reported by GEN1: CHCM LIN \$00 GEN2: ECM LIN \$80	The current alive rolling count value does not equal the previous alive rolling count value incremented by 1	Current ARC \neq Previous ARC +1	Run Crank Active	True for > 300 msec	10 failures out of 10 samples at 25ms message periodic interval	DTC Type B Two Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Inhibit Actuator Control Circuit Low	P18A2	Controller specific circuit diagnoses internal ETRS park solenoid for an ground short or open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates an open circuit Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit Increment fail time	$\geq 200\text{ K } \Omega$ impedance between signal and controller ground OR $\leq 0.5\text{ } \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Park Inhibit Actuator Control Circuit High	P18A4	Controller specific circuit diagnoses internal ETRS park solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Park Inhibit Solenoid Stuck Off	P18A8	This diagnostic monitor rationalizes the park inhibit solenoid based on the driver ETRS command direction and mode valve states.	when: mode valve A position mode valve B position update fail time	= mode valve low = mode valve low	park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time hydraulic pressure available = TRUE when: engine speed for engine speed time otherwise hydraulic pressure available = FALSE engine mode run hydraulic pressure available surge accumulator on/off request engine off diagnostic enable (ETRS command direction OR ETRS command direction OR ETRS command direction OR ETRS command direction) P18A8 Test Fail This Key On out of park state	= 1 Boolean = CeTRGR_e_InternalETRS S ≥ 9.00 volts ≥ 1.000 seconds ≥ 400.0 RPM ≥ KtTMDC_t_EngOnHydPresThrsh = FALSE = FALSE = FALSE = 1 Boolean = DRIVE = REVERSE = NEUTRAL LOW = NEUTRAL HIGH = NEUTRAL SHIFT = FALSE ≠ OUT OF PARK	fail time ≥ KtPSDR_t_PISA_EngOff_Lim update rate 6.25 milliseconds	Type A, 1 Trips
			when: ETRS command direction P18A8 Test Fail This Key On diagnostic park state	= NEUTRAL LOW = FALSE = OUT OF PARK	park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time	= 1 Boolean = CeTRGR_e_InternalETRS S	fail time ≥ KtPSDR_t_PISA_EngOff_Lim update rate 6.25	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			mode valve A position mode valve B position out of park state update fail time	= mode valve low = mode valve low ≠ OUT OF PARK	ignition inputs power mode hydraulic pressure available = TRUE when: engine speed for engine speed time otherwise hydraulic pressure available = FALSE hydraulic pressure available ((out of park state OR out of park state) AND P187D, P187E Test Fail This Key On) ETRS command direction	≥ 9.00 volts ≥ 1.000 seconds ≠ power mode off ≥ 400.0 RPM ≥ KtTMDC_t_EngOnHydPr esThrsh = TRUE = PARK = OUT OF PARK = FALSE ≠ PARK	milliseconds	

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control A Position Sensor/ Switch Circuit Stuck On	P18AA	This diagnostic monitor detects a Mode Valve A Position Sensor State in the "on" or "high" state, which is in error, when hydraulic pressure in the circuit used to move the mode valve is not sufficient to overcome the mode valve return spring force, leaving the mode valve mechanically in the "off" or "low" state.	Mode Valve A Position Sensor State	≠ Mode Valve Low	diagnostic monitor enable ETRS system configuration is internal ERTS battery voltage battery voltage time engine run mode hydraulic system pressure available surge accumulator on/off request GF9 engine off diagnostic enable P18AA Test Fail This Key On Mode Valve A Position Sensor State Mode Valve A delay time	= 1 Boolean = CeTRGR_e_InternalETRS ≥ 9.00 volts ≥ 1.00 seconds = FALSE = FALSE = FALSE = 1 Boolean = FALSE ≠ Mode Valve Low (updates Mode Valve A delay time) ≥ KtPSDR_t_ModeVlvA_EngOff_Lim	KtPSDR_t_ModeVlvA_EngOff_Lim update rate 6.25 milliseconds	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control B Position Sensor/ Switch Circuit Stuck On	P18AC	This diagnostic monitor detects a Mode Valve B Position Sensor State in the "on" or "high" state, which is in error, when hydraulic pressure in the circuit used to move the mode valve is not sufficient to overcome the mode valve return spring force, leaving the mode valve mechanically in the "off" or "low" state.	Mode Valve B Position Sensor State	≠ Mode Valve Low	diagnostic monitor enable ETRS system configuration is internal ERTS battery voltage battery voltage time engine run mode hydraulic system pressure available surge accumulator on/off request GF9 engine off diagnostic enable P18A Test Fail This Key On Mode Valve A Position Sensor State Mode Valve A delay time	= 1 Boolean = CeTRGR_e_InternalETRS ≥ 9.00 volts ≥ 1.00 seconds = FALSE = FALSE = FALSE = 1 Boolean = FALSE ≠ Mode Valve Low (updates Mode Valve B delay time) ≥ KtPSDR_t_ModeVlvB_EngOff_Lim	KtPSDR_t_ModeVlvB_EngOff_Lim update rate 6.25 milliseconds	Type A, 1 Trips

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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Actuator Supply Voltage B Circuit Low	P2670	Controller specific output driver circuit diagnoses the high sided driver circuit for a short to ground failure when the output is powered on by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range during driver on state indicates short to ground failure.</p> <p>Controller specific output driver circuit voltage thresholds are set to meet the following controller specification for a short to ground.</p>	$\leq \leq 0.5 \Omega$ impedance between signal and controller ground	<p>diagnostic monitor enable</p> <p>high side drive 2 ON</p> <p>P2670 fault active</p> <p>P2670 test fail this key on</p>	<p>= 1 Boolean</p> <p>= TRUE</p> <p>= FALSE</p> <p>= FALSE</p>	<p>fail count ≥ 6 counts</p> <p>out of sample count $\geq 2,400$ counts</p> <p>6.25 millisecond update rate</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid D Stuck Off	P2714	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C4 clutch slip speed fail compare when: diagnostic clutch test C4 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C4 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C4 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= FALSE</p> <p>= 0 Boolean</p> <p>= FALSE</p> <p>≥ 89.0 RPM</p> <p>= TRUE</p> <p>≥ 2.00 % ≥ 1,500.0 RPM</p> <p>= NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C4 C4, or, GR10 C4 C123467810R, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND (startle mitigation gear)) (see startle mitigation active NOTE below) C4 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C4 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

[illegible]

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C4 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C4 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C4 off going clutch pressure time ≥ P2715 C4 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on</p>	<p>≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 850.0 kPa OR ≥ 850.0 kPa ≥ 750.0 kPa</p>	<p>P2715 C4 clutch exhaust delay time open throttle power on up shift OR P2715 C4 clutch exhaust delay time garage shift OR P2715 C4 clutch exhaust delay time closed throttle down shift OR P2715 C4 clutch exhaust delay time negative torque up shift OR P2715 C4 clutch exhaust delay time open throttle power down shift see supporting tables</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C4 clutch slip speed valid, all speed sesnors are functional for lever node cluth slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 850.0 kPa</p> <p>≥ 850.0 kPa</p> <p>≥ 850.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid D Control Circuit Open	P2718	Controller specific circuit diagnoses 9 speed C4 or 10 speed C123467810R clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates an open circuit Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit Increment fail time	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid D Control Circuit Low	P2720	Controller specific circuit diagnoses 9 speed C4 or 10 speed C123467810R clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a ground short</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid D Control Circuit High	P2721	Controller specific circuit diagnoses 9 speed C4 or 10 speed C123467810R clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid E Stuck Off	P2723	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C5 clutch slip speed fail compare when: diagnostic clutch test C5 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C5 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C5 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= FALSE</p> <p>= 0 Boolean</p> <p>= FALSE</p> <p>≥ 89.0 RPM</p> <p>= TRUE</p> <p>≥ 2.00 % ≥ 1,500.0 RPM</p> <p>= NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C5 C57R, or, GR10 C5 C1356789, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND (startle mitigation gear)) (see startle mitigation active NOTE below) C5 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C5 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

[illegible]

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C5 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C5 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C5 off going clutch pressure time ≥ P2724 C5 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on	$\geq 8,191.8 \text{ Nm}$ = TRUE \neq clutch fill phase $\geq 703.0 \text{ kPa}$ OR $\geq 703.0 \text{ kPa}$ OR $\geq 750.0 \text{ kPa}$	P2724 C5 clutch exhaust delay time open throttle power on up shift OR P2724 C5 clutch exhaust delay time garage shift OR P2724 C5 clutch exhaust delay time closed throttle down shift OR P2724 C5 clutch exhaust delay time negative torque up shift OR P2724 C5 clutch exhaust delay time open throttle power down shift see supporting tables	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C5 clutch slip speed valid, all speed sesnors are functional for lever node clutch slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 703.0 kPa</p> <p>≥ 703.0 kPa</p> <p>≥ 703.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					DTCs not test fail this key on DTCs not fault active	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821 AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid E Control Circuit Open	P2727	Controller specific circuit diagnoses 9 speed C57R or 10 speed C1356789 clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid E Control Circuit Low	P2729	Controller specific circuit diagnoses 9 speed C57R or 10 speed C1356789 clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a ground short</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid E Control Circuit High	P2730	Controller specific circuit diagnoses 9 speed C57R or 10 speed C1356789 clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid F Stuck Off	P2732	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. In the failure mode the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM. The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line	C1 clutch slip speed, update fail time 6.25 millisecond update	≥ 200.0 RPM	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch pressure control solenoid is failed hydraulically off, the clutch does not maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed in the opposite sense, clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			<p>available: engine speed</p> <p>enable C6 clutch slip speed fail compare when: diagnostic clutch test C6 ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FALSE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C6 clutch slip speed valid, all speed sensors are functional for lever node clutch slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test C6 set to HOLDING CLUTCH when: clutch solenoid test state</p>	<p>≥ 400.0 RPM</p> <p>= HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 89.0 RPM = TRUE ≥ 2.00 % ≥ 1,500.0 RPM = NEUTRAL TEST</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled. This diagnostic monitor is relative to the GF9 C6 C6789/Selectable One Way Clutch (SOWC) CBR1, or, GR10 C6 C45678910R, clutch pressure control solenoid.			<p>((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C6 clutch pressured map</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on</p>	<p>= FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, C6 clutch pressure has transtioned from off-applying-applied</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p>	<p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. As part of the pressure control solenoid stuck on diagnostic monitor, the safety startle mitigation function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional. All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck			<p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p> <p>transmission output shaft speed</p> <p>set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on</p>	<p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p> <p>≥ 89.0 RPM</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD</p> <p>= TRUE</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>TEST STATE when: solenoid stuck on test trigger current loop clutch control solenoid test state OR current loop clutch control solenoid test state (see clutch control solenoid test state NOTE below) range shift state solenoid stuck on test trigger additional off going clutch occured</p> <p>(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test</p> <p>(C6 off going clutch pressure control ramp time out complete AND off going clutch pressure ramp control ramp time out enable) OR C6 off going clutch pressure</p>	<p>= TRUE</p> <p>= TEST WAITING</p> <p>= TIE UP TEST HOLD</p> <p>≠ range shift complete = TRUE</p> <p>= TRUE</p> <p>= TIE UP TEST TEST STATE = TIE UP TEST HOLD</p> <p>= OFF GOING CLUTCH TEST = TRUE</p> <p>= 1 Boolean</p> <p>≤ 350.0 kPa</p>	<p>for C6 off going clutch pressure time ≥ P2733 C6 clutch exhaust delay time closed throttle lift foot up shift OR</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					engine torque primary on coming clutch active primary on coming control state closed throttle lift foot up shift primary on coming clutch pressure OR open throttle power on up shift primary on coming clutch pressure OR garage shift primary on	$\geq 8,191.8 \text{ Nm}$ = TRUE \neq clutch fill phase $\geq 655.0 \text{ kPa}$ OR $\geq 655.0 \text{ kPa}$ OR $\geq 750.0 \text{ kPa}$	P2733 C6 clutch exhaust delay time open throttle power on up shift OR P2733 C6 clutch exhaust delay time garage shift OR P2733 C6 clutch exhaust delay time closed throttle down shift OR P2733 C6 clutch exhaust delay time negative torque up shift OR P2733 C6 clutch exhaust delay time open throttle power down shift see supporting tables	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR open throttle power down shift primary on coming clutch pressure OR closed throttle down shift primary on coming clutch pressure C6 clutch slip speed valid, all speed sesnors are functional for lever node clutch slip speed calculation</p> <p>NOTE: Clutch control solenoid test state TIE UP TEST HOLD is necessary, as it is possible to have multiple off going clutches during one automatic transmission shift. Clutch control solenoid test state is set to TIE UP TEST HOLD during an automatic transmission shift due to two conditions: Current value of clutch control solenoid test state is TIE UP TEST TEST STATE, when one off going clutch pressure control solenoid stuck on diagnostic monitor is currently executing. AND</p>	<p>≥ 655.0 kPa</p> <p>≥ 655.0 kPa</p> <p>≥ 655.0 kPa</p> <p>= TRUE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed \geq clutch slip speed fail threshold.</p> <p>Once clutch control solenoid test state is set to TIE UP TEST HOLD, it remains TIE UP TEST HOLD during the automatic transmission shift, until:</p> <p>An additional off going clutch occurs, as indicated by solenoid stuck on test trigger = TRUE, subsequently clutch control solenoid test state is reset to TIE UP TEST TEST STATE, to allow the additional corresponding off going clutch pressure control solenoid stuck on diagnostic monitor to execute.</p> <p>OR</p> <p>The automatic transmission shift completes, range shift state = range shift complete.</p> <p>NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control</p>			

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>solenoid stuck on failure mode that occurs during steady state gear, not during an automatic transmission shift. The startle mitigation active then forces the transmission clutch pressure control system to a safe gear or neutral state, based on the active and inactive clutches, when the unintended vehicle deceleration occurred. Once a safe vehicle gear state is attained, the gear and clutch pressure control system allows transitions of the clutches on and off, to sequence automatic transmission shifts, single step shifts. As each single step automatic transmission shift occurs the normal pressure control solenoid stuck on diagnostic monitors execute to verify which clutch pressure control solenoid is in the stuck on failure mode, allowing one of the clutch pressure control solenoid stuck on DTCs to set P0747, P0777, P0797, P2715, P2724, P2733, P2821.</p> <p>DTCs not fault pending</p>	<p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid F Control Circuit Open	P2736	Controller specific circuit diagnoses 9 speed C6789 or 10 speed C45678910R clutch solenoid for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid F Control Circuit Low	P2738	Controller specific circuit diagnoses 9 speed C6789 or 10 speed C45678910R clutch solenoid for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates a ground short Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short Increment fail time	$\leq 0.5 \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid F Control Circuit High	P2739	Controller specific circuit diagnoses 9 speed C6789 or 10 speed C45678910R clutch solenoid for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid A Calibration Incorrect	P27A7	The diagnostic monitor verifies that the pressure control solenoid A (GF9 line pressure or GR10 C1 C123456R clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid A electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid B Calibration Incorrect	P27A8	The diagnostic monitor verifies that the pressure control solenoid B (GF9 TCC pressure or GR10 C2 C128910R clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid B electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power event during the controller initialization before normal time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid C Calibration Incorrect	P27A9	The diagnostic monitor verifies that the pressure control solenoid C (GF9 C1 CB123456 clutch or GR10 C3 C23457910 clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid C electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid D Calibration Incorrect	P27AA	The diagnostic monitor verifies that the pressure control solenoid D (GF9 C2 CB29 clutch or GR10 C5 C1356789 clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid D electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid E Calibration Incorrect	P27AB	The diagnostic monitor verifies that the pressure control solenoid E (GF9 C3 CB38 clutch or GR10 C4 C23467810R clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid E electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid F Calibration Incorrect	P27AC	The diagnostic monitor verifies that the pressure control solenoid F (GF9 C4 C4 clutch or GR10 C6 C45678910R clutch) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid F electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid G Calibration Incorrect	P27AD	The diagnostic monitor verifies that the pressure control solenoid G (GF9 C5 C57R clutch or GR10 line pressure) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid G electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid H Calibration Incorrect	P27AE	The diagnostic monitor verifies that the pressure control solenoid H (GF9 C6 C6789 clutch or GR10 TCC) characterization data is programmed correctly into the TCM EEPROM to match the pressure control solenoid H electrical characteristics of the device currently installed in the transmission valve body assembly.	<p>pressure control solenoid characterization data programming complete</p> <p>Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry.</p> <p>pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present:</p> <p>Solenoid data is not programmed or incomplete data fault - occurs when a new or service TCM is installed. OR Solenoid class programming fault – the characterization data indicates a different type of device than the TCM calibration data OR Checksum mismatch – the checksum that was calculated from the programmed pressure control solenoid characterization data region does not match the calculated valve at the time of programming. OR Axis data fault – pressure</p>	= FALSE	<p>Pressure control solenoid characterization data is programmed originally at vehicle plant assembly based on transmission valve body assembly part number associated to the unit installed in vehicle.</p> <p>When valve body is serviced, dealership performs reprogramming of TCM with pressure control solenoid characterization data based on the associated transmission valve body part number installed.</p>		execution of monitor occurs once per controller normal power up event during the controller initialization before normal controller time loop execution	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			control solenoid characterization data has one or more points that are less than the previous match point, axis data must be greater than or equal to previous data values.					

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control A Position Sensor/Switch Circuit Range/Performance	P27EC	Sensor signal fails to transition to PARK, DRIVE or REVERSE state when solenoid mode valve control commands to PARK, DRIVE or REVERSE occur.	<p>when:</p> <p>(ETRS command direction mode valve delay time</p> <p>out of park state)</p> <p>OR</p> <p>(ETRS command direction mode valve delay time</p> <p>out of park state mode valve steady state fail</p> <p>turbine speed)</p> <p>OR</p> <p>(ETRS command direction mode valve delay time</p> <p>out of park state mode valve steady state fail</p> <p>turbine speed)</p> <p>OR</p> <p>(ETRS command direction mode valve delay time</p>	<p>= PARK</p> <p>≥</p> <p>KtPSDR_t_ParkStatDIyLim</p> <p>= PARK</p> <p>= DRIVE</p> <p>≥</p> <p>KtPSDR_t_ParkStatDIyLim</p> <p>= OUT OF PARK</p> <p>≥</p> <p>KtPSDR_t_ModeVlvA_TurbDlyLim</p> <p>≤ 500.0 RPM</p> <p>= REVERSE</p> <p>≥</p> <p>KtPSDR_t_ParkStatDIyLim</p> <p>= OUT OF PARK</p> <p>≥</p> <p>KtPSDR_t_ModeVlvA_TurbDlyLim</p> <p>≤ 500.0 RPM</p> <p>= REVERSE</p> <p>≥</p> <p>KtPSDR_t_ParkStatDIyLim</p>	<p>park servo enable</p> <p>ETRS system type is internal ETRS</p> <p>battery voltage for battery voltage time (engine mode run OR hydraulic pressure available)</p> <p>auto stop active</p> <p>diagnostic monitor enable</p> <p>hydraulic pressure available = TRUE when: engine speed for engine speed time otherwise hydraulic pressure available = FALSE</p> <p>hydraulic pressure available</p> <p>ETRS diagnostic range</p> <p>P0968, P0970, P0971, P27EB, P27ED, P27EE Fault Active</p> <p>P18AA, P18AB, P27EC Test Fail This Key On mode valve A state</p> <p>set mode valve delay time enable = TRUE when none of the following occur: [ETRS mode enable valve state OR</p> <p>(C3 clutch pressure AND</p>	<p>= 1 Boolean</p> <p>=</p> <p>CeTRGR_e_InternalETRS</p> <p>≥ 9.00 volts</p> <p>≥ 1.000 seconds</p> <p>= TRUE</p> <p>= TRUE</p> <p>= FALSE</p> <p>= 1 Boolean</p> <p>≥ 400.0 RPM</p> <p>≥</p> <p>KtTMDC_t_EngOnHydPr</p> <p>esThrsh</p> <p>= TRUE</p> <p>= ETRS command direction</p> <p>= FALSE</p> <p>= FALSE</p> <p>≠</p> <p>KaPSDR_e_GFX_ModeVlvA_StFnI</p> <p>= ETRS zero limit (hydraulic circuit</p>	<p>set sensor fault = TRUE, set DTC fault active</p> <p>update rate 6.25 milliseconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			out of park state) set sensor fault to TRUE otherwise set sensor fault to FALSE	≠ OUT OF PARK	ETRS drive latch present) AND (ETRS command direction OR ETRS command direction]) OR [(ETRS command direction OR ETRS command direction OR ETRS command direction OR ETRS command direction) AND C3 clutch pressure] update mode valve delay time when mode valve delay time enable update mode valve steady state fail when: mode valve delay time enable mode valve delay time	exhausted) < 200.0 kPa = FALSE = DRIVE = NEUTRAL SHIFT = PARK = REVERSE = NEUTRAL LO = NEUTRAL HI > 25.0 kPa = TRUE = TRUE ≥ KtPSDR_t_ParkStatDlyL im		
			when: (ETRS command direction ETRS mode enable valve state out of park state) OR (ETRS command direction	= PARK ≠ ETRS zero limit (hydraulic circuit exhausted) = PARK = DRIVE	park servo enable ETRS system type is internal ETRS battery voltage for battery voltage time (engine mode run OR hydraulic pressure available) auto stop active diagnostic monitor enable	= 1 Boolean = CeTRGR_e_InternalETRS ≥ 9.00 volts ≥ 1.000 seconds = TRUE = TRUE	set sensor fault = TRUE, set DTC fault active update rate 6.25 milliseconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			<p>ETRS diagnostic range out of park state)</p> <p>set sensor fault to TRUE</p> <p>otherwise set sensor fault to FALSE</p>	<p>= PARK</p> <p>= OUT OF PARK</p>	<p>hydraulic pressure available = TRUE when: engine speed for engine speed time otherwise hydraulic pressure available = FALSE</p> <p>*****</p> <p>ETRS diagnostic range</p> <p>(range command actuator AND park not available)</p> <p>OR</p> <p>(range command actuator OR range command actuator OR range command actuator OR range command actuator) out of park not available</p> <p>*****</p> <p>set mode valve stuck on test to TRUE when: ETRS command direction ETRS diagnostic range diagnostic monitor enable transmission fluid temperature transmission fluid temperature P0962, P0968, P0970, P0971, P2718, P2720, P2721, P2812, P2815, P2738 Fault Active P27EC, P27F0 Fault Pending P18AA, P18AB, P18AE,</p>	<p>= FALSE</p> <p>= 1 Boolean</p> <p>≥ 400.0 RPM</p> <p>≥</p> <p>KtTMDC_t_EngOnHydPr esThrsh</p> <p>*****</p> <p>≠ ETRS command direction</p> <p>= PARK</p> <p>= FALSE</p> <p>= DRIVE</p> <p>= NEUTRAL</p> <p>= MANUAL</p> <p>= REVERSE</p> <p>= FALSE</p> <p>*****</p> <p>= PARK</p> <p>= DRIVE</p> <p>= 1 boolean</p> <p>≥ 0.00 degrees Celsius</p> <p>≤ 120.00 degrees Celsius</p> <p>= FALSE</p> <p>= FALSE</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P27EC Test Fail This Key On P27EB, P27ED, P27EE Fault Active otherwise set mode valve stuck on test to FALSE (mode valve stuck on test P0968, P0970, P0971, P27EB, P27ED, P27EE, Fault Active P18AA, P18AB, P18AF, P27EC Test Fail This Key On) ***** hydraulic pressure available ETRS command direction mode valve A state attained mode valve A transition ((ETRS diagnostic range OR mode valve B transition OR mode valve B state attained) OR (ETRS mode enable valve state AND ETRS diagnostic range)) ***** (mode valve A transition mode valve A garage shift transition delay) OR	= FALSE = FALSE = FALSE = FALSE = FALSE ***** = TRUE = ETRS command direction previous = FALSE = FALSE = NEUTRAL SHIFT = TRUE = TRUE = ETRS zero limit (hydraulic cicruit exhausted) = DRIVE ***** = FALSE ≥ KaPSDR_t_GFX_ModeVI vA_TrnstnDly[ETRS attained range, ETRS		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					mode valve A garage shift transition delay	command range] see supporting tables > 0.0 seconds		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control A Position Sensor/ Switch Circuit Low	P27ED	The diagnostic monitor detects a ground short or open circuit fault on the mode valve A position sensor circuit.	raw sensor voltage	< 0.414 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control A Position Sensor/Switch Circuit High	P27EE	The diagnostic monitor detects a short to voltage on the mode valve A position sensor circuit.	raw sensor voltage	> 2.538 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control B Position Sensor/Switch Circuit/Open	P27EF	The diagnostic monitor detects an illegal voltage on the mode valve B position sensor circuit.	raw sensor voltage raw sensor voltage	> 1.263 volts < 1.504 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control B Position Sensor/Switch Circuit Low	P27F1	The diagnostic monitor detects a ground short or open circuit fault on the mode valve B position sensor circuit.	raw sensor voltage	> 0.414 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmission Range Control B Position Sensor/Switch Circuit High	P27F2	The diagnostic monitor detects a short to voltage on the mode valve B position sensor circuit.	raw sensor voltage	> 2.538 volts	diagnostic monitor enable battery voltage battery voltage time ETRS system configuration is internal ERTS park sensor configuration type is hall sensor	= 1 Boolean ≥ 9.00 volts ≥ 1.00 seconds = CeTRGR_e_InternalETRS = CePSCR_e_HallSns	0.100 seconds in 0.163 second sample 6.25 millisecond update rate	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid G Control Circuit Open	P2812	Controller specific circuit diagnoses 9 speed Line Pressure Control Circuit or 10 speed Line Pressure Control Circuit for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid G Control Circuit Low	P2814	Controller specific circuit diagnoses 9 speed Line Pressure Circuit or 10 speed Line Pressure Circuit for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a ground short</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid G Control Circuit High	P2815	Controller specific circuit diagnoses 9 speed Line Pressure Circuit or 10 speed Line Pressure Circuit for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

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18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					service fast learn active battery voltage run crank voltage P281B falut active P281D falut active P281E falut active P0722 fault pending P0723 fault pending P0716 fault pending P0717 fault pending P07BF fault pending P07C0 fault pending (PTO active OR PTO disable calibration) accelerator pedal position accelerator pedal position range shift state transmission fluid temperature transmission fluid temperature engine torque engine torque P2817 test fail this key on (TCC control mode OR TCC control mode) break latch state (clutch select valve solenoid) attained gear attained gear slip DTCs not fault active	= FALSE ≥ 9.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean ≥ 8.0 % ≤ 100.0 % = range shift complete ≥ -6.66 °C ≤ 130.0 °C ≥ 50.0 Nm ≤ 8,191.8 Nm = FALSE = ON mode (controlled slip mode) = LOCK = disabled (clutch select valve not transitioning) ≥ CeCGSR_e_CR_Third ≤ 25 RPM AcceleratorPedalFailure EngineTorqueEstInaccura te	see supportinf table battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
						P0716, P0717, P07BF, P07C0 P0722, P0723, P077C, P077D		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid H Stuck On - GF9 specific	P2818	The diagnostic monitor detects the transmission torque converter control valve solenoid failed hydraulically on. The torque converter hydraulic control circuit is multiplexed with the transmission clutch select valve hydraulic control circuit, allowing for the torque converter control valve solenoid stuck on test to execute when the clutch select valve solenoid is commanded ON. When the clutch select valve solenoid is commanded ON as the vehicle speed decreases toward zero KPH, and, if the torque converter control valve solenoid is stuck on, the torque converter slip speed rate of change will have a large slope while decreasing toward zero RPM, and the torque converter slip speed will remain low near zero RPM.	while control valve test time timing down: rate of change of torque convert slip speed = (ABS (current loop value torque convert slip speed - previous loop value torque convert slip speed) / 25 milliseconds) when clutch select valve solenoid multiplexed to TCC hydraulic AND torque convert slip speed = ABS(engine speed - transmission input shaft speed) AND torque convert slip speed = engine speed - transmission input shaft speed torque convert slip speed torque convert slip speed THEN increment fail time 25 millisecond update rate	\geq P2818 torque convert derivative slip speed fail threshold see supporting table \leq P0741 (GF9 specific) TCC slip speed crash RPM ≥ -50.0 RPM ≤ 30.0 RPM	diagnostic monitor enable (TCC stuck off enable OR TCC stuck on enable) hydraulic pressure available: engine speed service fast learn active battery voltage run crank voltage P281B falut active P281D falut active P281E falut active PRNDL PRNDL transmission fluid temperature transmission fluid	= 1 Boolean = 1 Boolean = 1 Boolean ≥ 400.0 RPM = FALSE ≥ 9.00 volts ≥ 9.00 volts = FALSE = FALSE = FALSE \neq NEUTRAL \neq REVERSE ≥ -6.66 °C ≤ 130.00 °C	fail time ≥ 1.500 seconds increment fail count fail count ≥ 4 counts 25 millisecond update rate engine speed time \geq engine speed time for transmission hydraulic pressure available see supportinf table battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					temperature accelerator pedal position accelerator pedal position vehicle speed vehicle speed TCC command mode break latch state (clutch select valve solenoid) P0722 fault pending P0723 fault pending P0716 fault pending P0717 fault pending P07BF fault pending P07C0 fault pending (PTO active OR PTO disable calibration) transmission fluid temperature transmission fluid temperature engine torque engine torque P2818 test fail this key on vehicle speed engine speed engine speed accelerator pedal position 4WD low state (driver shift mode active OR driver shift mode calibration) (misfire requests TCC off OR misfire TCC off calibration) (clutch control solenoid stuck on OR stuck OFF intrusive shift active) P0746 fault pending P0747 fault pending P0776 fault pending	≥ 0.00 % ≤ 1.00 % ≥ 3.0 KPH ≤ 9.5 KPH = OFF ≠ disabled (clutch select valve transitioning) = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1 Boolean ≥ -6.66 °C ≤ 130.00 °C ≥ 55.0 Nm ≤ 800.0 Nm = FALSE ≤ 45.0 KPH ≥ 400.0 RPM ≤ 5,500.0 RPM ≤ 95.0 % = FALSE = FALSE = 0 Boolean = FALSE = 0 Boolean = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P0777 fault pending P0796 fault pending P0797 fault pending P2714 fault pending P2715 fault pending P2723 fault pending P2724 fault pending P2732 fault pending P2733 fault pending P2820 fault pending P2821 fault pending vehicle speed accelerator pedal position hysteresis when: break latch state (clutch select valve solenoid) previous break latch state (clutch select valve solenoid) set stuck on test time and begin time down, stuck on test time must time down from calibration value to zero (0.0) seconds break latch state (clutch select valve solenoid) AND previous break latch state (clutch select valve solenoid) THEN initialize control valve test time, control valve test time must time down from calibration value to zero (0.0) seconds	= FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE ≤ 8.0 KPH ≥ 4.0 % > 1.0 % = disabled (clutch select valve not transitioning) = complete (clutch select valve transition complete) = P2818 stuck on test time see supporting tables = clutch select valve solenoid multiplexed to TCC hydraulic = disabled (clutch select valve not transitioning) = P2818 (GF9 specific) control valve test time see supporting tables		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					DTCs not fault active	AcceleratorPedalFailure EngineTorqueEstInaccu rate P0716, P0717, P07BF, P07C0 P0722, P0723, P077C, P077D		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid H Control Circuit/Open	P281B	Controller specific circuit diagnoses 9 speed TCC Control Circuit or 10 speed TCC Control Circuit for an open circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates an open circuit</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for an open circuit</p> <p>Increment fail time</p>	$\geq 200 \text{ K } \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid H Control Circuit Low	P281D	Controller specific circuit diagnoses 9 speed TCC Pressure Control Circuit or 10 speed TCC Control Circuit for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	Voltage measurement outside of controller specific acceptable range indicates a ground short Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short Increment fail time	$\leq 0.5 \Omega$ impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	≥ 9.00 volts and ≤ 32.00 volts ≥ 5.00 volts = TRUE = 1 Boolean	≥ 1.000 seconds 25 milliseconds 12.5 milliseconds fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid H Control Circuit High	P281E	Controller specific circuit diagnoses 9 speed TCC Pressure Control Circuit or 10 speed TCC Control Circuit for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type B, 2 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control (PC) Solenoid J Stuck Off	P2820	<p>Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is electrically functional. This diagnostic monitor detects the clutch select valve solenoid failed hydraulically off. The clutch select valve is used to route hydraulic fluid to, either, the selectable one way clutch hydraulic circuit used to attain transmission 1st gear lock state, or, to the C6 - C6789 clutch hydraulic circuit necessary for transmission higher gear states.</p> <p>When the clutch select valve is failed hydraulically off, and transmission is in 1st gear lock state, it is possible to measure low C6 - C6789 clutch slip speed as hydraulic fluid is routed to the clutch C6 - C6789, or, 6th gear transmission gear ratio, based on transmission lever node design, the</p>	<p>gear ratio gear ratio OR C6 clutch slip speed, update fail time 6.25 millisecond update</p>	<p>≤ 1.700 ≥ 1.200 ≤ 20.0 RPM</p>	<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure</p>	<p>= 1 Boolean = 1 Boolean ≥ 9.00 volts = 0 Boolean = 0 Boolean ≥ 9.00 volts = TRUE Boolean = TRUE Boolean = FALSE Boolean = FALSE Boolean</p>	<p>fail time ≥ 0.250 seconds, update fail count, fail count ≥ 3 counts 6.25 millisecond update</p> <p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		<p>transmission input shaft speed, the transmission output shaft speed, and one transmission intermediate shaft speed, while not commanding 6th-9th gear, as the indication of the failure mode.</p> <p>This diagnostic monitor is relative to the GF9 clutch select valve pressure control solenoid.</p>			<p>available: engine speed</p> <p>diagnostic monitor enabled</p> <p>transmission output shaft speed</p> <p>transmission fluid temperature</p> <p>transmission fluid temperature</p> <p>P2820 test fail this key on (command gear OR attained gear)</p> <p>DTCs not fault pending</p> <p>DTCs not test fail this key on</p> <p>DTCs not fault active</p>	<p>≥ 400.0 RPM</p> <p>= 1 Boolean</p> <p>≥ 35 RPM</p> <p>≥ -256.00 °C</p> <p>≤ 130.0 °C</p> <p>= FALSE</p> <p>= 1st lock</p> <p>= 1st lock</p> <p>P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0</p> <p>P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821</p> <p>AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD</p>	<p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
						P17CE P17D3 P17D6 P2805		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid J Stuck On	P2821	Each pressure control solenoid stuck on diagnostic monitor detects a clutch pressure control solenoid failed hydraulically on, while the solenoid is electrically functional. The clutch select pressure control solenoid must be hydraulically off and the clutch select valve in the off state, to allow hydraulic fluid supply to the C3 (CB38) or C4 (C4) or C5 (C57R) clutches, such that when activated, commanded gear 3rd or 4th or 5th can be attained. With the clutch select valve pressure control solenoid failed hydraulically on, commanded gear 3rd or 4th or 5th cannot be attained. In the failure mode, the clutch slip speed, and gear box gear slip, will be excessive, not near or at zero RPM, when commanding 3rd or 4th or 5th gear, but due to the clutch select pressure control solenoid failed hydraulically on and not	Cx clutch slip speed fail compare C3 (CB38) OR C4 (C4) OR C5 (C57R) update Cx clutch slip speed fail time 6.25 milliscond update once intrusive gear is commanded and clutch select stuck on test active remains and Cx clutch fail count limit occurs, increment clutch select valve solenoid stuck on fail count and time up clutch select stuck on test gear time 6.25 milliscond update	≥ 200.0 RPM ≥ 200.0 RPM ≥ 200.0 RPM = TRUE			Cx clutch slip speed fail time \geq C3 (CB38) 3.00 seconds OR C4 (C4) 3.00 seconds OR C5 (C57R) 3.00 seconds update Cx fail count, Cx fail count \geq C3 (CB38) 3 counts OR C4 (C4) 3 counts OR C5 (C57R) 3 counts, Cx clutch fail count limit occurs 6.25 milliscond update clutch select valve solenoid stuck on fail count ≥ 2 counts OR clutch select stuck on test gear time ≥ 9.00 seconds 6.25 milliscond update	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		<p>individual clutch control faults. It is thus necessary, when individual clutch slip occurs in 3rd or 4th or 5th gear and counted toward the clutch pressure control solenoid stuck on failure, for an intrusive gear commanded from 3rd or 4th or 5th to verify the clutch slip in the remaining gear states. The individual clutch slip that occurs in those intrusive gears, 3rd or 4th or 5th, is also counted toward the clutch pressure control solenoid stuck on failure. As individual clutch slip is accumulated in each commanded gear 3rd or 4th or 5th, that failure time is the verification of the clutch pressure control solenoid failed hydraulically on.</p> <p>The clutch slip speed is calculated based on the transmission lever node design, requiring transmission input shaft speed, transmission output shaft speed, and, one transmission intermediate shaft speed. The clutch</p>			<p>use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage</p> <p>use run crank voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage</p> <p>TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled</p> <p>TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled</p> <p>service fast learn active service solenoid cleaning procedure active</p> <p>hydraulic pressure available: engine speed</p>	<p>= 1 Boolean</p> <p>= 1 Boolean</p> <p>≥ 9.00 volts</p> <p>= 0 Boolean</p> <p>= 0 Boolean</p> <p>≥ 9.00 volts</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>= FALSE Boolean = FALSE Boolean</p> <p>≥ 400.0 RPM</p>	<p>battery voltage time ≥ 0.100 seconds</p> <p>run crank voltage time ≥ 0.100 seconds</p> <p>engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		<p>pressure control solenoid is tested after an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed active, range shift complete. When the automatic transmission shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line pressure control, which normally allows the clutch to maintain full torque holding capacity at the given engine crankshaft torque, to maintain true gear ratio. When the clutch select pressure control solenoid is failed hydraulically on, C3 (CB38) or C4 (C4) or C5 (C57R) clutches cannot maintain holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable.</p> <p>The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is</p>			<p>diagnostic monitor enable</p> <p>P2821 test fail this key on</p> <p>test trigger set to TRUE: enable forward gear AND direction request OR enable reverse gear AND direction request current loop test trigger clutch control solenoid test state range shift state</p> <p>clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift complete time must time down to zero when range shift complete</p> <p>Cx indicates any one of the 4 clutches: C3 (CB38) OR C4 (C4) OR C5 (C57R)</p> <p>enable Cx clutch slip speed fail compare when: diagnostic clutch test Cx (startle mitigation active</p>	<p>= 1 Boolean</p> <p>= FALSE</p> <p>= 1 Boolean = forward gear</p> <p>= 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST</p> <p>= range shift completed</p> <p>= TRUE</p> <p>≠ range shift completed</p> <p>= HOLDING CLUTCH = FALSE</p>	<p>table</p> <p>initialize range shift complete time = 1.000 seconds, range shift complete time must time down to zero when range shift complete</p>	

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		<p>active. The safety startle mitigation function is triggered when a sudden vehicle deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional, which, must take priority over this clutch select pressure control solenoid stuck off diagnostic monitor. All clutch pressure control solenoid stuck on/off diagnostic monitors are emission MIL DTCs. System voltage must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solenoid stuck off test is disabled.</p> <p>This diagnostic monitor is relative to the GF9 clutch select valve pressure control solenoid.</p>			<p>OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) unintended deceleration fault pending OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed Cx clutch slip speed valid, all speed sesnors are functional for lever node cluth slip speed calculation</p> <p>accelerator pedal position engine speed</p> <p>diagnostic clutch test Cx set to HOLDING CLUTCH when: clutch solenoid test state ((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) Cx clutch pressured map</p> <p>clutch select stuck on test</p>	<p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= FALSE</p> <p>= 0 Boolean</p> <p>= FALSE</p> <p>≥ 89.0 RPM</p> <p>≥ 2.00 % ≥ 1,500.0 RPM</p> <p>= NEUTRAL TEST = FALSE</p> <p>= TRUE</p> <p>≠ initial startle mitigation gear</p> <p>= mapped to line pressure, Cx clutch pressure has transtioned from off-applying-applied</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					<p>active set to TRUE when: command gear clutch control solenoid test state any Cx clutch fail count limit occurs break latch state, clutch select valve hydraulic latch fluid is applied, hydraulic latch fluid force balance acts with clutch select valve return spring, to force the clutch select valve to the off position in normal operation, allowing hydraulic fluid to C3 (CB38) C4 (C4) and C5 (C57R) clutches</p> <p>clutch select stuck on test active driver direction (PRNDL) change request, select intrusive gear to verify clutch select valve solenoid when HOLDING CLUTCH: C3 (CB38) C4 (C4) C5 (C57R) enable clutch select stuck on test gear time</p> <p>NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on failure modes, the clutch pressure control solenoid stuck on DTCs being</p>	<p>≠ REVERSE = NEUTRAL TEST</p> <p>= complete</p> <p>= TRUE</p> <p>= FALSE</p> <p>= CeCGSR_e_Fourth = CeCGSR_e_Fifth = CeCGSR_e_Fourth</p>		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					P0747 P0777 P0797 P2715 P2724 P2733 P2821 DTCs not fault pending DTCs not test fail this key on DTCs not fault active	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0 P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821 AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD P17CE P17D3 P17D6 P2805		

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid J Control Circuit Low	P2826	Controller specific circuit diagnoses 9 speed Clutch Select Valve Control Circuit or 10 speed PISA Valve Control Circuit for a ground short circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a ground short</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a ground short</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller ground	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 9 Speed T87A Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid J Control Circuit High	P2827	Controller specific circuit diagnoses 9 speed Clutch Valve Control Circuit or 10 speed PISA Valve Control Circuit for a short to voltage circuit failure by comparing a voltage measurement to controller specific voltage thresholds.	<p>Voltage measurement outside of controller specific acceptable range indicates a short to voltage</p> <p>Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage</p> <p>Increment fail time</p>	$\leq 0.5 \Omega$ impedance between signal and controller voltage source	<p>battery voltage</p> <p>run crank voltage OR accessory voltage active</p> <p>diagnostic monitor enable calibration</p>	<p>≥ 9.00 volts and ≤ 32.00 volts</p> <p>≥ 5.00 volts</p> <p>= TRUE</p> <p>= 1 Boolean</p>	<p>≥ 1.000 seconds</p> <p>25 milliseconds</p> <p>12.5 milliseconds</p> <p>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</p>	Type A, 1 Trips

18 OBDG04 TCM 6 Speed T43 Summary Tables

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	Disable Conditions:	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	Disable Conditions:	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	Disable Conditions:	MIL not Illuminated for DTC's: TCM: P0604 ECM: None	>= 5 Fail Counts = 16 Sample Counts	One Trip
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	Disable Conditions:	MIL not Illuminated for DTC's: TCM: P062F ECM: None	Runs Continuously	One Trip
Transmission Control Module (TCM)	P0634	Transmission Electro-Hydraulic Control Module Internal Temperature Too High	<u>Fail Case 1</u> Substrate Temperature	>= 146.296875 °C			>= 5 Fail Time (Sec)	One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<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 >= 8.5996094 Volts Ignition Voltage Hi <= 31.990234 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 MIL not Illuminated for DTC's: TCM: None ECM: None			
					Disable Conditions:			
High Side Driver 1	P0658	Actuator Supply Voltage Circuit Low	The HWIO reports a low voltage (open or ground short) error flag	= TRUE Boolean			>= 4 Fail Counts out of 6 Sample Counts	One Trip
					P0658 Status is not	= Test Failed This Key On or Fault Active		
					High Side Driver 1 On	= True Boolean		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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		
Transmission Control Module (TCM)	P0667	TCM Internal Temp (substrate) Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	> 19 in °C supporting documents				Two Trips
			If TCM substrate temp to power up temp Δ	> 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)	
					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 <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
					Below describes the brake torque entry criteria Engine Torque	>= 90 N*m		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Throttle Transmission Input Speed Vehicle Speed Transmission Range Transmission Range PTO Set Brake Torque Active TRUE if above conditions are met for:	>= 30.000305 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: P0667 Status is	= Not Met ≠ Hydraulic Air Purge Event = CeTFTD_e _C3_RatlE nbl >= 600 kpa >= 20 Sec ≠ Test Failed This Key On or Fault Active		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Transmission Control Module (TCM)	P0668	TCM internal temperature (substrate) thermistor failed at a low voltage	Type of Sensor Used	CeTFTI_e_Vol = tageDirectPro p				Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp	<= -249 °C				
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	>= -249 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0668 Status is	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Control Module (TCM)	P0669	TCM internal temperature (substrate) thermistor failed at a high voltage	Type of Sensor Used	CeTFTI_e_Vol = tageDirectPro p				Two Trips
			If TCM Substrate Temperature Sensor = Direct Proportional and Temp	>= 249 °C				
			If TCM Substrate Temperature Sensor = Indirect Proportional and Temp	<= 249 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Timer (Sec)	
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for P0669 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 Disable Conditions:	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active => 0 kW => 0 Sec = FALSE = FALSE 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	Refer to Table 20 in supporting documents > °C				Two Trips

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If transmission oil temp to power up temp Δ	> 18 in °C Refer to Table 18 in 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 Out of 3750 Fail Counts (100ms loop) Sample Counts (100ms loop)	
			Non-continuous (intermittent) fail conditions will delay resetting fail counter until				>= 700 Out of 875 Pass Counts (100ms loop) 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 <= 31.990234 Volts >= 400 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 PTO Set Brake Torque Active TRUE if above conditions are met for	>= 90 N*m >= 30.000305 Pct <= 200 RPM <= 8 Kph ≠ Park ≠ Neutral = Not Active >= 7 sec		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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_RatE_nbl >= 600 kpa >= 20 Sec ≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
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	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 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	>= 5 Sec ≠ Test Failed This Key On or Fault Active >= 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)	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 P06AE Status is	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Transmission Fluid Temperature Sensor (TFT)	P0711	Trans Fluid Temp Sensor Circuit Range/Performance	If transmission oil temp to substrate temp Δ	> 19 in °C supporting documents				Two Trips
			If transmission oil temp to power up temp Δ	> 18 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) 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 <= 31.990234 Volts >= 400 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 PTO	>= 90 N*m >= 30.000305 Pct <= 200 RPM <= 8 Kph ≠ Park ≠ Neutral = Not Active		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Set Brake Torque Active TRUE if above conditions are met for:	>= 7 sec		
					Below describes the brake torque exit criteria Brake torque entry criteria	= Not Met Clutch Hydraulic Air Purge Event CeTFTD_e _C3_RatlE nbl		
					Clutch hydraulic pressure	≠		
					Clutch used to exit brake torque active	=		
					The above clutch pressure is greater than this value for one loop	>= 600 kpa		
					Set Brake Torque Active FALSE if above conditions are met for:	>= 20 Sec		
					P0711 Status is	≠ Test Failed This Key On or Fault Active		
					Disable Conditions: MIL not Illuminated for DTC's:	TCM: P0658, P0668, P0669, P06AD, P06AE, P0716, P0712, P0713, P0717, P0722, P0723, P0962, P0963, P0966, P0967, P0970, P0971, P215C, P2720, P2721, P2729, P2730 ECM: P0101, P0102, P0103, P0106, P0107, P0108, P0171, P0172, P0174, P0175, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307, P0308, P0401, P042E		
Transmission Fluid Temperature Sensor (TFT)	P0712	Transmission fluid temperature thermistor failed at a low voltage	Type of Sensor Used	CeTFTL_e_VoltageDirectPro				Two Trips

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	<= -74 °C				
			If Transmission Fluid Temperature Sensor = Indirect Proportional and Temp	>= -74 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Time (Sec)	
					Ignition Voltage Lo >= 8.5996094 Volts Ignition Voltage Hi <= 31.990234 Volts Engine Speed Lo >= 400 RPM Engine Speed Hi <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec P0712 Status is ≠ Test Failed This Key On or Fault Active For Hybrids, below conditions must also be met Estimated Motor Power Loss >= 0 kW Estimated Motor Power Loss greater than limit for time >= 0 Sec Lost Communication with Hybrid Processor Control Module = FALSE Estimated Motor Power Loss Fault = FALSE Disable Conditions: 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_VoltageDirectPro If Transmission Fluid Temperature Sensor = Direct Proportional and Temp	>= 174 °C				Two Trips

18 OBDG04 TCM 6 Speed T43 Summary Tables

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	<= 174 °C				
			Either condition above will satisfy the fail conditions				>= 60 Fail Time (Sec)	
							Ignition Voltage Lo >= 8.5996094 Volts Ignition Voltage Hi <= 31.990234 Volts Engine Speed Lo >= 400 RPM Engine Speed Hi <= 7500 RPM Engine Speed is within the allowable limits for >= 5 Sec P0713 Status is ≠ Test Failed This Key On or Fault Active Disable Conditions: 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 >= 0 N*m Engine Torque is <= 8191.875 N*m Engine Speed >= 400 RPM 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			

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					<p>The previous requirement has been satisfied for</p> <p>Throttle Position Signal Valid</p> <p>Engine Torque Signal Valid</p> <p>Ignition Voltage</p> <p>Ignition Voltage</p> <p>P0716 Status is not</p> <p>Disable Conditions:</p> <p>MIL not Illuminated for DTC's:</p>	<p>>= 0 Sec</p> <p>= TRUE Boolean</p> <p>= TRUE Boolean</p> <p>>= 8.5996094 Volts</p> <p><= 31.990234 Volts</p> <p>Test Failed</p> <p>This Key</p> <p>On or Fault</p> <p>Active</p> <p>=</p> <p>TCM: P0717, P0752, P0973, P0974</p> <p>ECM: P0101, P0102, P0103, P0121, P0122, P0123</p>		
Transmission Input Speed Sensor (TISS)	P0717	Input Speed Sensor Circuit Low Voltage	<u>Fail Case 1</u> Transmission Input Speed is	< 33 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		
					<p>Engine Torque is</p> <p>Engine Torque is</p> <p>Vehicle Speed</p> <p>Engine Torque Signal Valid</p> <p>Ignition Voltage</p> <p>Ignition Voltage</p> <p>Engine Speed</p> <p>Engine Speed</p> <p>Engine Speed is within the allowable limits for</p> <p>P0717 Status is not</p>	<p>>= 50 N*m</p> <p><= 8191.875 N*m</p> <p>>= 16 Kph</p> <p>= TRUE Boolean</p> <p>>= 8.5996094 Volts</p> <p><= 31.990234 Volts</p> <p>>= 400 RPM</p> <p><= 7500 RPM</p> <p>>= 5 Sec</p> <p>Test Failed</p> <p>This Key</p> <p>On or Fault</p> <p>Active</p> <p>=</p>		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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: P0722, P0723 ECM: P0101, P0102, P0103		
Mode Switch	P071A	Transmission Mode Switch A Circuit	Tow Haul Mode Switch state	= TRUE Boolean			>= 600 Fail Time (Sec)	Special No MIL
					Ignition Voltage Lo Ignition Voltage Hi Engine Speed Lo Engine Speed Hi Engine Speed is within the allowable limits for	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: P1762 ECM: None		
Transmission Output Speed Sensor (TOSS)	P0722	Output Speed Sensor Circuit Low Voltage	Transmission Output Speed Sensor Raw Speed	<= 35 RPM			>= 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 Engine Speed is Engine Speed is within the allowable limits for	= 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 <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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

18 OBDG04 TCM 6 Speed T43 Summary Tables

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			>= 0.2 Enable Time (Sec)	One Trip
			Output Speed Delta	<= 8191 RPM			>= 0 Enable Time (Sec)	
			Output Speed Drop	> 650 RPM			>= 1.5 Output Speed Drop Recovery Fail Time (Sec)	
			AND Transmission Range is	= Driven range (R,D)				
					Range_Disable OR	= FALSE See Below		
					Neutral_Range_Enable And	= TRUE See Below		
					Neutral_Speed_Enable are TRUE concurrently	= TRUE See Below		
					Transmission_Range_Enable	= TRUE See Below		
					Transmission_Input_Speed_En able	= TRUE See Below		
					No Change in Transfer Case Range (High <-> Low) for	>= 5 Seconds		
					P0723 Status is not	= Test Failed This Key On or Fault Active		
					Disable this DTC if the PTO is active	= 1 Boolean		
					Ignition Voltage is	>= 8.5996094 Volts		
					Ignition Voltage is	<= 31.990234 Volts		
					Engine Speed is	>= 400 RPM		
					Engine Speed is	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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_En able is TRUE when either TIS Condition 1 or TIS Condition 2 is TRUE:			
					TIS Condition 1 is TRUE when both of the following conditions are satisfied for Input Speed Delta Raw Input Speed	>= 0 Enable Time (Sec) <= 4095 RPM >= 500 RPM		
					TIS Condition 2 is TRUE when ALL of the next two conditions are satisfied Input Speed A Single Power Supply is used for all speed sensors -----	= 0 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/N eutral Transitonal	ENUM	
					Transmission Range is And when a drop occurs Loop to Loop Drop of Transmission Output Speed is -----	= Neutral/Dri ve Transitona l	ENUM	
					Range_Disable is TRUE when any of the next three conditions are TRUE Transmission Range is	> 650 RPM		
					Range_Disable is TRUE when any of the next three conditions are TRUE Transmission Range is	= Park ENUM		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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 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_Enable is TRUE when one of the next six conditions is TRUE Transmission Range is	= Neutral 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		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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	>= 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	>= 750 Kpa			>= 2 Enable Time (Sec)	Two Trips
			(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	Refer to Table 1 in Supporting Documents 130 RPM			>= 5 Fail Time (Sec) >= 5 Fail Time (Sec) >= 2 TCC Stuck Off Fail Counter	
					TCC Mode	= On or Lock		
					Ignition Voltage Lo	>= 8.5996094 Volts		
					Ignition Voltage Hi	<= 31.990234 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	>= 2.6710205 Ratio		
					2nd Gear Ratio High	<= 3.072998 Ratio		
					3rd Gear Ratio Lo	>= 1.7130127 Ratio		
					3rd Gear Ratio High	<= 1.9709473 Ratio		
					4th Gear Ratio Lo	>= 1.3150635 Ratio		
					4th Gear Ratio High	<= 1.5129395 Ratio		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					5th Gear Ratio Lo 5th Gear Ratio Hi 6th Gear Ratio Lo 6th Gear Ratio High Transmission Fluid Temperature Lo Transmission Fluid Temperature Hi PTO Not Active Engine Torque Signal Valid Throttle Position Signal Valid Dynamic Mode P0741 Status is MIL not Illuminated for Conditions:	>= 0.9300537 Ratio <= 1.0699463 Ratio >= 0.6900635 Ratio <= 0.7939453 Ratio >= -6.664063 °C <= 130 °C = TRUE Boolean = TRUE Boolean = TRUE Boolean = FALSE Boolean 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		
Torque Converter Clutch (TCC)	P0742	TCC System Stuck ON	TCC Slip Speed	>= -50 RPM				One Trip
			TCC Slip Speed	<= 13 RPM			>= 2 Fail Time (Sec) >= 6 Fail Counter	
			If Above Conditions Have been Met, and Fail Timer Expired, Increment Fail Counter		TCC Mode Enable test if Cmnd Gear = 1stFW and value true Enable test if Cmnd Gear = 2nd and value true Engine Speed Hi	= Off = 1 Boolean = 0 Boolean <= 6000 RPM		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					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		
					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	<= 31.990234 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		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Throttle Position Signal Valid P0742 Status is Disable Conditions:	= TRUE Boolean ≠ Test Failed This Key On or Fault Active 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 ≤ 1.484985352 ≥ 1.343017578			>= 0.3 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 Transmission Fluid Temperature Range Shift State	>= 8.5996094 Volts ≤ 31.990234 Volts ≥ 400 RPM ≤ 7500 RPM ≥ 5 Sec ≥ -6.65625 °C = Range Shift Completed ENUM		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					TPS OR Output Speed Throttle Position Signal Valid from ECM Engine Torque Signal Valid from ECM, High side driver is enabled High-Side Driver is Enabled Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 0.5004883 % >= 36 RPM = TRUE Boolean = 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 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 Command 4th Gear once Output Shaft Speed If Gear Ratio And Gear Ratio	>= 400 RPM = 3rd Gear = TRUE Boolean <= 800 RPM >= 4.259765625 <= 4.708251953			Please Refer >= to Table 16 in Supporting Neutral Timer Documents (Sec)	One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
							>= 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 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 Disable Conditions:	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= 36 RPM >= 0.5004883 % Range Shift = Shift Completed ENUM >= -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	
Mode 2 Multiplex Valve	P0756	Shift Solenoid Valve B Stuck Off	<u>Fail Case 1</u> Commanded Gear	= 1st Locked				One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			Gear Box Slip Intrusive Shift to 2nd Commanded Gear Previous Gear Ratio Gear Ratio If the above parameters are true	>= 400 RPM = 1st Locked Gear <= 3.015991211 >= 2.728027344			Please Refer to Table 5 in Supporting Documents Neutral Timer (Sec) >= 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 <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= 36 RPM >= 0.5004883 % = Range Shift Completed ENUM >= -6.65625 °C = TRUE Boolean = TRUE Boolean = FALSE Boolean = FALSE Boolean = TRUE		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Case 1</u> Case: Steady State 3rd Gear					One Trip
			Commanded Gear = 3rd Gear Gearbox Slip >= 400 RPM				Please Refer to Table 16 in Supporting Documents Neutral Timer (Sec) >= 3 Fail Timer (Sec) >= 3 3rd Gear Fail Counts or >= 14 3-5R Clutch Fail Counts	
			Command 4th Gear once Output Shaft Speed <= 800 RPM If Gear Ratio >= 1.343261719 And Gear Ratio <= 1.484741211 If the above conditiations are true, Increment 3rd gear fail counter and C35R Fail counter					
			<u>Fail Case 2</u> Case: Steady 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					

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If attained Gear=6th gear Time >= Shift Time (Sec)	Please refer to Table 3 in supporting documents			>= 3 5th Gear Fail Counts or >= 14 3-5R Clutch Fail Counts	
			It the above conditiations are true, Increment 5th gear fail counter and C35R Fail counter					

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Stuck On [C35R] (Steady State)	<u>Fail Case 1</u> Case: Steady State 1st Attained Gear slip >= 400 RPM Table Based Time Please Refer to Table Enable Time If the Above is True for Time >= 4 in (Sec) supporting documents Intrusive test: (CBR1 clutch exhausted) Gear Ratio <= 1.933959961 Gear Ratio >= 1.75 If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 2 Fail Count in 1st Gear or >= 3 Total Fail Counts	One Trip
			<u>Fail Case 2</u> Case: Steady State 2nd gear Max Delta Output Speed Hysteresis >= 22 in rpm/sec supporting documents					

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Table 23 in rpm/sec supporting documents Table Based Time Please Refer to Table 17 in Sec supporting documents				
			If the Above is True for Time					
			Intrusive test: (CB26 clutch exhausted)					
			Gear Ratio	<= 1.933959961				
			Gear Ratio	>= 1.75				
			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	Table Based value Please Refer to Table 22 in rpm/sec supporting documents Table Based value Please Refer to Table 23 in rpm/sec supporting documents				
			Min Delta Output Speed Hysteresis					

18 OBDG04 TCM 6 Speed T43 Summary Tables

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) Gear Ratio</p> <p>If the above parameters are true</p>	<p>Table Based Time Please Refer to Table</p> <p>\geq 17 in Sec supporting documents</p> <p>\leq 1.050048828 \geq 0.949951172</p>			<p>\geq 1.1 Fail Timer (Sec)</p> <p>\geq 3 Fail Count in 4th Gear or Total Fail Counts</p>	
			<p><u>Fail Case 4</u> Case: Steady State 6th gear</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: (CB26 clutch exhausted) Gear Ratio</p> <p>Gear Ratio</p>	<p>Table Based value Please Refer to Table</p> <p>\geq 22 in rpm/sec supporting documents</p> <p>Table Based value Please Refer to Table</p> <p>\geq 23 in rpm/sec supporting documents</p> <p>Table Based Time Please Refer to Table</p> <p>\geq 17 in Sec supporting documents</p> <p>\leq 1.050048828 \geq 0.949951172</p>			<p>\geq 1.1 Fail Timer (Sec)</p> <p>\geq 3 counts</p>	

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Total Fail Counts >= 3	
							PRNDL State defaulted = FALSE Boolean inhibit RVT = FALSE Boolean IMS fault pending indication = FALSE Boolean output speed >= 0 RPM TPS validity flag = TRUE Boolean HSD Enabled = TRUE Boolean Hydraulic_System_Pressurized = TRUE Boolean A OR B (A) Output speed enable >= 36 Nm (B) Accelerator Pedal enable >= 0.5004883 Nm Ignition Voltage Lo >= 8.5996094 Volts Ignition Voltage Hi <= 31.990234 Volts Engine Speed Lo >= 400 RPM Engine Speed Hi <= 7500 RPM Engine Speed is within the allowable limits for if Attained Gear=1st FW >= 5.0003052 Pct Accelerator Pedal enable >= 20 Nm if Attained Gear=1st FW Engine Torque Enable <= 8191.875 Nm if Attained Gear=1st FW Engine Torque Enable >= -6.65625 °C Transmission Fluid Temperature Input Speed Sensor fault = FALSE Boolean Output Speed Sensor fault = FALSE Boolean	

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Delay Timers) Primary Oncoming Clutch Pressure Command Status Primary Offgoing Clutch Pressure Command Status Range Shift Status Attained Gear Slip If the above conditions are true run appropriate Fail 1 Timers Below:	= TRUE Boolean = Maximum pressurized Clutch exhaust command ≠ Initial Clutch Control ≤ 40 RPM ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec) ≥ 0.5 Fail Time (Sec)				One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

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)	>= 0.5 Fail Time (Sec)			Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2	
			fail timer 1 (5-3 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-4 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Throttle)	>= 0.5 Fail Time (Sec)				
			fail timer 1 (5-6 shifting with Closed Throttle)	>= 0.5 Fail Time (Sec)				
			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					
			3rd gear fail counter				>= 3 3rd gear fail counts	
			5th gear fail counter				>= 5 5th gear fail counts	
			Total fail counter				>= 5 total fail counts	
					TUT Enable temperature	>= -6.65625 °C		
					Input Speed Sensor fault	= FALSE Boolean		
					Output Speed Sensor fault	= FALSE Boolean		
					Command / Attained Gear	≠ 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		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Default Gear Option is not present Disable Conditions: MIL not Illuminated for	= FALSE Boolean = FALSE Boolean = TRUE 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)	P0796	Pressure Control (PC) Solenoid C Stuck Off [C456] (Steady State)	<u>Fail Case 1</u> Case: Steady State 4th Gear Gear slip >= 400 RPM 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				Please See Table 5 For Neutral Timer Cal >= Neutral Timer (Sec) >= 3 4th Gear Fail Count OR C456 Fail Counts >= 14	One Trip
			<u>Fail Case 2</u> Case: Steady State 5th Gear Gear slip >= 400 RPM				Please See Table 5 For Neutral Timer Cal >= Neutral Timer (Sec)	

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
			Intrusive test: commanded 6th gear	Please Refer to Table 3 in Supporting Documents					
			If attained Gear \neq 6th for time \geq						
			if the above conditions have been met						
			Increment 5th Gear Fail Counter						
			and C456 Fail Counters						
			<u>Fail Case 3</u> Case: Steady State 6th Gear				Please See Table 5 For Neutral Time Cal		Neutral Timer (Sec)
			Gear slip \geq 400 RPM						
			Intrusive test: commanded 5th gear						
			If attained Gear \neq 5th for time \geq						
			if the above conditions have been met						
Increment 6th Gear Fail Counter and C456 Fail Counter					6th Gear Fail Count OR C456 Fail Counts				
and C456 Fail Counter									
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	\geq	36	RPM						
A OR B									
(A) Output speed enable	\geq	36	RPM						
(B) Accelerator Pedal enable	\geq	0.5004883	Pct						
Common Enable Criteria									

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault OutputSpeed Sensor fault Default Gear Option is not present	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 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)	P0797	Pressure Control (PC) Solenoid C Stuck On [C456] (Steady State)	<u>Fail Case 1</u> 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 Enable Time >= 4 in (Sec) supporting documents <= 1.484985352 >= 1.343017578				One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required			Mil Illum.
							>=	1.1	Fail Timer (Sec)	
							>=	2	Fail Count in 1st Gear or Total Fail Counts	
							>=	3		
			Fail Case 2 Case Steady State 2nd							
			Max Delta Output Speed Hysteresis	>=	Table Based value Please Refer to Table 22 in supporting documents rpm/sec					
			Min Delta Output Speed Hysteresis	>=	Table Based value Please Refer to Table 23 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	<=	1.484985352					
			Gear Ratio	>=	1.343017578					
			If the above parameters are true							
							>=	1.1	Fail Timer (Sec)	
							>=	3	Fail Count in 2nd Gear or Total fail counts	
							>=	3		
			Fail Case 3 Case Steady State 3rd							

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Table 22 in rpm/sec supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to Table 23 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 Gear Ratio If the above parameters are true	<= 1.484985352 >= 1.343017578				
							>= 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	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean = TRUE Boolean = TRUE Boolean >= 36 Nm >= 0.5004883 Nm >= 8.5996094 Volts		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	<= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= 5.0003052 Pct >= 20 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) 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

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 appropriate Fail 1</p> <p>Timers Below:</p> <p>fail timer 1 (4-1 shifting with throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (4-1 shifting without throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (4-2 shifting with throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (4-2 shifting without throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (4-3 shifting with throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (4-3 shifting without throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (5-3 shifting with throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (5-3 shifting without throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (6-2 shifting with throttle) >= 0.5 Fail Time (Sec)</p> <p>fail timer 1 (6-2 shifting without throttle) >= 0.5 Fail Time (Sec)</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>4th gear fail counter</p>				<p>Total Fail Time = (Fail 1 + Fail 2) See Enable Timers for Fail Timer 1, and Reference Supporting Table 15 for Fail Timer 2</p> <p>>= sec</p> <p>>= 3 Fail Counter From 4th Gear OR</p>	

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.	
			5th gear fail counter				>= 3	Fail Counter From 5th Gear OR	
			6th gear fail counter				>= 3	Fail Counter From 6th Gear OR	
			Total fail counter				>= 5	Total Fail Counter	
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.65625 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 200 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 1</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 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 = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean				Special No MIL	

18 OBDG04 TCM 6 Speed T43 Summary Tables

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			>= 1 Fail Time (Sec)						
			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									
			<u>Fail Case 2</u>	Tap Up Switch Stuck in the Up Position in Range 1 Enabled			= 1 Boolean		>= 600 Fail Time (Sec)				
			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									
			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										

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 P0815 Status is MIL not Illuminated for Disable Conditions:	>= 1 Enable Time (Sec) >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active 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 Tap Down Switch Stuck in the Down Position in Range 6 Enabled Tap Down Switch Stuck in the Down Position in Range Neutral Enabled	= 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean = 1 Boolean				Special No MIL

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Park Enabled	= 1 Boolean			>= 1 sec			
			Tap Down Switch Stuck in the Down Position in Range Reverse Enabled	= 0 Boolean						
			Tap Down Switch ON	= TRUE Boolean						
			<u>Fail Case 2</u>	Tap Down Switch Stuck in the Down Position in Range 1 Enabled	= 1 Boolean				>= 600 sec	
			Tap Down Switch Stuck in the Down Position in Range 2 Enabled	= 1 Boolean						
			Tap Down Switch Stuck in the Down Position in Range 3 Enabled	= 1 Boolean						
			Tap Down Switch Stuck in the Down Position in Range 4 Enabled	= 1 Boolean						
			Tap Down Switch Stuck in the Down Position in Range 5 Enabled	= 1 Boolean						
			Tap Down Switch Stuck in the Down Position in Range 6 Enabled	= 1 Boolean						
			Tap Down Switch Stuck in the Down Position in Neutral Enabled	= 0 Boolean						
			Tap Down Switch Stuck in the Down Position in Park Enabled	= 0 Boolean						
			Tap Down Switch Stuck in the Down Position in Reverse Enabled	= 0 Boolean						
			Tap Down Switch ON NOTE: Both Failcase1 and Failcase 2 Must Be Met	= TRUE Boolean						

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active MIL not Illuminated for DTC's: 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 <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec ≠ Test Failed This Key On or Fault Active		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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: 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 >= 8.5996094 Volts Ignition Voltage <= 31.990234 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)	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
					Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.990234 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			

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Variable Bleed Solenoid (VBS)	P0963	Pressure Control (PC) Solenoid A Control Circuit High Voltage (Line Pressure VBS)	The HWIO reports a high voltage (open or power short) error flag	= TRUE Boolean			<div>>= 4.4 Fail Time (Sec)</div> <div>out of 5 Sample Time (Sec)</div>	Two Trips
					<div>Ignition Voltage >= 8.5996094 Volts</div> <div>Ignition Voltage <= 31.990234 Volts</div> <div>Engine Speed >= 400 RPM</div> <div>Engine Speed <= 7500 RPM</div> <div>Engine Speed is within the allowable limits for >= 5 Sec</div> <div>Disable Conditions: MIL not Illuminated for DTC's: TCM: None ECM: None</div>			
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			<div>>= 0.3 Fail Time (Sec)</div> <div>out of 0.375 Sample Time (Sec)</div>	One Trip
					<div>Ignition Voltage >= 8.5996094 Volts</div> <div>Ignition Voltage <= 31.990234 Volts</div> <div>Engine Speed >= 400 RPM</div> <div>Engine Speed <= 7500 RPM</div> <div>Engine Speed is within the allowable limits for >= 5 Sec</div> <div>P0966 Status is not = Test Failed This Key On or Fault Active</div>			

18 OBDG04 TCM 6 Speed T43 Summary Tables

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		
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 Disable Conditions:	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec Test Failed This Key On or Fault Active	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 Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for	= Test Failed This Key On or Fault Active >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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		
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
					P0971 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 >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
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
					P0973 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed	= Test Failed This Key On or Fault Active >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Disable Conditions: MIL not Illuminated for DTC's: ECM: None	>= 5 Sec TCM: None ECM: None		
Shift Solenoid	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 Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for Disable Conditions: MIL not Illuminated for DTC's: ECM: None	= Test Failed This Key On or Fault Active >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec 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 out of 1.5 Sec	One Trip
					P0977 Status is not Ignition Voltage Ignition Voltage	= Test Failed This Key On or Fault Active >= 8.5996094 Volts <= 31.990234 Volts		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Disable Conditions:	>= 400 RPM <= 7500 RPM >= 5 Sec 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 Disable Conditions:	= TRUE Boolean >= 400 RPM <= 7500 RPM >= 5 Sec MIL not Illuminated for DTC's: TCM: None 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		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 1</u>	Current range = Transition 1 (bit state Range 1110) Previous range ≠ CeTRGR_e_P Range RNDL_Drive6 Previous range ≠ CeTRGR_e_P Range RNDL_Drive4 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 If Fail Timer has Expired then Increment Fail Counter			≥ 1 Fail Seconds ≥ 5 Fail Counts	One Trip
			<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				

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			PRNDL state = Transition 1 (bit state 1110) Range					
			Above sequencing occurs in Neutral Idle Mode <= 1 Sec					
			If all conditions above are met Increment delay Timer					
			If the below two conditions are met Increment Fail Timer delay timer >= 1 Sec					
			Input Speed >= 400 Sec					
			If Fail Timer has Expired then Increment Fail Counter				>= 3 Fail Seconds	
							>= 2 Fail Counts	
			<u>Fail Case 3</u>	Transition 13 (bit state 0010) Range	Previous range	CeTRGR_e_PRNDL_Drive4 ≠		
			Current range =		Previous range	CeTRGR_e_PRNDL_Drive1 ≠		
			Engine Torque >= -8192 Nm			= 0 Boolean		
			Engine Torque <= 8191.75 Nm		IMS is 7 position configuration in the IMS 7 position binary = 1 then the "previous range" criteria above must also be satisfied when the "current range" "Transition 12"		>= 0.225 Seconds	
			If the above conditions are met then, Increment Fail Timer				>= 15 Fail Counts	
			If Fail Timer has Expired then Increment Fail Counter					
			<u>Fail Case 4</u>	Transition 8 (bit state 0111) Range	Disable Fail Case 4 if last positive range was Drive 6 and current range is transition 8			
			Current range =		Set inhibit bit true if PRNDL = 1100 (rev) or 0100 (Rev-Neu transition 11)			
			Inhibit bit (see definition) = FALSE		Set inhibit bit false if PRNDL = 1001 (park)			
			Steady State Engine Torque >= 100 Nm				>= 0.225 Seconds	
			Steady State Engine Torque <= 8191.75 Nm				>= 15 Fail Counts	
			If the above conditions are met then Increment Fail Timer					
			If the above Conditions have been met, Increment Fail Counter					

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<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 Transition 11 PRNDL State = (bit state 0100) Range Transition 11 PRNDL State = Neutral (bit state 0101) Range Transition 11 PRNDL State = (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 >= 8.000183105 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) 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 Previous transition state ≠ Transition 8 (bit state 0111) Fail case 5 delay timer = 0 sec			

18 OBDG04 TCM 6 Speed T43 Summary Tables

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	
			<u>Fail Case 7</u> Current PRNDL State = PRNDL circuit Range and ABCP = 1101 Previous PRNDL state = PRNDL circuit Range ABCP = 1111 Input Speed >= 150 RPM Reverse Trans Ratio <= 2.678344727 ratio Reverse Trans Ratio >= 3.081542969 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 >= 8.5996094 Volts Ignition Voltage Hi <= 31.990234 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		
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

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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	>= 100 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		
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

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 ECM run/crank active status	= TRUE Boolean = 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 ECM run/crank active status	= TRUE Boolean = 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 1</u> Case: Steady State 2nd Gear Gear slip Intrusive test: commanded 3rd gear If attained Gear = 3rd for Time	>= 400 RPM Table Based Time Please see Table 2 in Supporting Documents Enable Time (Sec)			>= Please See Table 5 For Neutral Time Cal Neutral Timer (Sec)	One Trip		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 2nd gear fail count				>= 3	2nd Gear Fail Count or CB26 Fail Count
			and CB26 Fail Count				>= 14	
			<u>Fail Case 2</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	Table Based Time Please see Table 2 in Supporting Documents			>=	Enable Time (Sec)
			If Above Conditions have been met, Increment 5th gear fail counter				>= 3	5th Gear Fail Count or CB26 Fail Count
			and CB26 Fail Count				>= 14	
					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	>= 0.5004883 Pct		
					Common Enable Criteria			
					Ignition Voltage Lo	>= 8.5996094 Volts		
					Ignition Voltage Hi	<= 31.990234 Volts		
					Engine Speed Lo	>= 400 RPM		
					Engine Speed Hi	<= 7500 RPM		
					Engine Speed is within the allowable limits for	>= 5 Sec		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Throttle Position Signal valid HSD Enabled Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present Disable Conditions:	= TRUE Boolean = 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)	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 If above coditons are true, increment appropriate Fail 1 Timers Below: fail timer 1 (2-1 shifting with throttle) fail timer 1 (2-1 shifting without throttle)	= TRUE Boolean = Maximum pressurized = Clutch exhaust command ≠ Initial Clutch Control <= 40 RPM => 0.5 Fail Time (Sec) => 0.5 Fail Time (Sec)				One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			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)			
			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 1, and Reference Supporting Table 15 for Fail Timer 2	>= 1 sec
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter					
			2nd gear fail counter				>= 3	Fail Counter From 2nd Gear OR
			6th gear fail counter				>= 3	Fail Counter From 6th Gear OR
			total fail counter				>= 5	Total Fail Counter

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	= FALSE Boolean ≠ 1st Boolean = TRUE Boolean ≥ 100 RPM ≥ 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		
				Disable Conditions:	MIL not Illuminated for	TCM: P0716, P0717, P0722, P0723, DTC's: 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 1</u> 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 Enable Time ≥ 4 in (Sec) supporting documents ≤ 3.015991211 ≥ 2.728027344			≥ 1.1 Fail Timer (Sec) ≥ 5 Fail Count in 1st Gear or ≥ 5 Total Fail Counts	One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail Case 2</u> Case: Steady State 3rd Gear	Table Based value Please Refer to Table 22 in rpm/sec supporting documents				
			Max Delta Output Speed Hysteresis	>=				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to Table 23 in rpm/sec supporting documents				
			If the Above is True for Time	>=				
			Intrusive test: (C35R clutch exhausted) Gear Ratio	Table Based Time Please Refer to Table 17 in Sec supporting documents				
			Gear Ratio	<= 3.015991211 >= 2.728027344				
			If the above parameters are true					
			<u>Fail Case 3</u> Case: Steady State 4rd Gear	Table Based value Please Refer to Table 22 in rpm/sec supporting documents				
			Max Delta Output Speed Hysteresis	>=				

>= 1.1 Fail Timer (Sec)
>= 3 Fail Count in 3rd Gear or Total Fail Counts
>= 5

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Table 23 in rpm/sec supporting documents Table Based Time Please Refer to Table 17 in Sec supporting documents				
			If the Above is True for Time					
			Intrusive test: (C1234 clutch exhausted)					
			Gear Ratio	<= 0.779052734				
			Gear Ratio	>= 0.704956055				
			If the above parameters are true				>= 1.1 Fail Timer (Sec) >= 3 Fail Count in 4th Gear or >= 5 Total Fail Counts	
			<u>Fail Case 4</u> Case: Steady State 5th Gear					
			Max Delta Output Speed Hysteresis	Table Based value Please Refer to Table 22 in rpm/sec supporting documents				
			Min Delta Output Speed Hysteresis	Table Based value Please Refer to Table 23 in rpm/sec supporting documents				

18 OBDG04 TCM 6 Speed T43 Summary Tables

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</p> <p>If the above parameters are true</p>	<p>Table Based Time Please Refer to Table</p> <p>17 in supporting documents</p> <p><= 0.779052734</p> <p>>= 0.704956055</p>			<p>>= 1.1 Fail Timer (Sec)</p> <p>>= 3 Fail Count in 5th Gear or Total Fail Counts</p> <p>>= 5</p>	
					<p>PRNDL State defaulted inhibit RVT</p> <p>IMS fault pending indication output speed</p> <p>TPS validity flag</p> <p>HSD Enabled</p> <p>Hydraulic_System_Pressurized</p> <p>A OR B</p> <p>(A) Output speed enable</p> <p>(B) Accelerator Pedal enable</p> <p>Ignition Voltage Lo</p> <p>Ignition Voltage Hi</p> <p>Engine Speed Lo</p> <p>Engine Speed Hi</p> <p>Engine Speed is within the allowable limits for</p> <p>if Attained Gear=1st FW</p> <p>Accelerator Pedal enable</p> <p>if Attained Gear=1st FW</p> <p>Engine Torque Enable</p> <p>if Attained Gear=1st FW</p> <p>Engine Torque Enable</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> <p>= TRUE Boolean</p> <p>>= 36 Nm</p> <p>>= 0.5004883 Nm</p> <p>>= 8.5996094 Volts</p> <p><= 31.990234 Volts</p> <p>>= 400 RPM</p> <p><= 7500 RPM</p> <p>>= 5 Sec</p> <p>>= 5.0003052 Pct</p> <p>>= 20 Nm</p> <p><= 8191.875 Nm</p>		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= -6.65625 °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)	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 = >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: None ECM: None		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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
					P2721 Status is not Ignition Voltage >= 8.5996094 Volts Ignition Voltage <= 31.990234 Volts Engine Speed >= 400 RPM Engine Speed <= 7500 RPM Engine Speed is within the allowable limits for Disable Conditions: MIL not Illuminated for DTC's: TCM: None ECM: None			
Variable Bleed Solenoid (VBS)	P2723	Pressure Control (PC) Solenoid E Stuck Off	<u>Fail Case 1</u> Case: Steady State 1st Gear				>= Please See Table 5 For Neutral Timer Cal (Sec) 3 1st Gear Fail Count or 14 C1234 Clutch Fail Count	One Trip
			Gear slip >= 400 RPM Intrusive test: commanded 2nd gear If attained Gear ≠ 2nd for Time >= Please refer to Table 3 in Supporting Documents Shift Time (Sec) If Above Conditions have been met, Increment 1st gear fail counter and C1234 fail counter					
			<u>Fail Case 2</u> Case: Steady State 2nd Gear					

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Time Cal	Neutral Timer (Sec)							
			Intrusive test: commanded 3rd gear	Please refer to Table 3 in Supporting Documents			>=	3	2nd Gear Fail Count						
			If attained Gear ≠ 3rd for Time												
			If Above Conditions have been met, Increment 2nd gear fail counter												
			and C1234 fail counter												
			<u>Fail Case 3</u>	Case: Steady State 3rd Gear			>=	14	or C1234 Clutch Fail Count						
			Gear slip	>= 400 RPM						Please refer to Table 3 in Supporting Documents	>=	3	3rd Gear Fail Count		
			Intrusive test: commanded 4th gear												
			If attained Gear ≠ 4th for time												
			If Above Conditions have been met, Increment 3rd gear fail counter												
				and C1234 fail counter			>=	14	or C1234 Clutch Fail Count						
			<u>Fail Case 4</u>	Case: Steady State 4th Gear						>=	400 RPM	Please refer to Table 3 in Supporting Documents	>=	3	3rd Gear Fail Count
			Gear slip												
			Intrusive test: commanded 5th gear												

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			If attained Gear = 5th For Time	Please refer to Table 3 in Supporting Documents			3	4th Gear Fail Count
			If Above Conditions have been met, Increment 4th gear fail counter					
			and C1234 fail counter		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 Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	= FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean = TRUE Boolean >= 0 RPM >= 36 RPM >= 0.5004883 Pct >= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean = TRUE Boolean >= -6.65625 °C = FALSE Boolean = FALSE Boolean = TRUE	14	or C1234 Clutch Fail Count

18 OBDG04 TCM 6 Speed T43 Summary Tables

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)	Primary Offgoing Clutch is exhausted (See Table 10 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 If the above conditions are true increment appropriate Fail 1 Timers Below: fail timer 1 (2-6 shifting with throttle) fail timer 1 (2-6 shifting without throttle) fail timer 1 (3-5 shifting with throttle) fail timer 1 (3-5 shifting without throttle) fail timer 1 (4-5 shifting with throttle) fail timer 1 (4-5 shifting without throttle) fail timer 1 (4-6 shifting with throttle) fail timer 1 (4-6 shifting without throttle)	= TRUE Boolean = Maximum pressurized Clutch exhaust command Initial Clutch Control ≠ 40 RPM >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec >= 0.5 sec				One Trip

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 1, and Reference Supporting Table 15 for Fail Timer 2	
			If fail timer is greater than threshold increment corresponding gear fail counter and total fail counter				>= 3 sec	
			2nd gear fail counter				>= 3	Fail Counter From 2nd Gear
			3rd gear fail counter				>= 3	Fail Counter From 3rd Gear
			4th gear fail counter				>= 3	Fail Counter From 4th Gear
			total fail counter				>= 5	Total Fail Counter
					TUT Enable temperature Input Speed Sensor fault Output Speed Sensor fault Command / Attained Gear High Side Driver ON output speed limit for TUT input speed limit for TUT PRNDL state defaulted IMS Fault Pending Service Fast Learn Mode HSD Enabled	>= -6.65625 °C = FALSE Boolean = FALSE Boolean ≠ 1st Boolean = TRUE Boolean >= 100 RPM >= 200 RPM = FALSE Boolean = FALSE Boolean = FALSE Boolean = TRUE Boolean		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Case 1</u> Case: 5th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis If the Above is True for Time Intrusive test: (C35R clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	Table Based value Please Refer to Table 22 in supporting documents Table Based value Please Refer to Table 23 in supporting documents Table Based Time Please Refer to Table 17 in supporting documents Intrusive test: (C35R clutch exhausted) Gear Ratio <= 1.484985352 Gear Ratio >= 1.343017578			>= 1.1 >= 3 >= 3	Fail Timer (Sec) Fail Count in 5th Gear OR Total Fail Counts

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
			<u>Fail Case 2</u> Case: 6th Gear Max Delta Output Speed Hysteresis Min Delta Output Speed Hysteresis If the Above is True for Time Intrusive test: (CB26 clutch exhausted) Gear Ratio Gear Ratio If the above parameters are true	Table Based value Please Refer to Table 22 in rpm/sec supporting documents Table Based value Please Refer to Table 23 in rpm/sec supporting documents Table Based Time Please Refer to Table 17 in Sec supporting documents 1.484985352 1.343017578			>= 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	= FALSE Boolean = FALSE Boolean = FALSE Boolean >= 0 RPM = TRUE Boolean = TRUE Boolean = TRUE Boolean >= 36 Nm >= 0.5004883 Nm		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 if Attained Gear=1st FW Accelerator Pedal enable if Attained Gear=1st FW Engine Torque Enable if Attained Gear=1st FW Engine Torque Enable Transmission Fluid Temperature Input Speed Sensor fault Output Speed Sensor fault Default Gear Option is not present	>= 8.5996094 Volts <= 31.990234 Volts >= 400 RPM <= 7500 RPM >= 5 Sec >= 5.0003052 Pct >= 20 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)	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 Ignition Voltage	= Test Failed This Key On or Fault Active >= 8.5996094 Volt		

18 OBDG04 TCM 6 Speed T43 Summary Tables

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 Disable Conditions: MIL not Illuminated for DTC's:	<= 31.990234 Volt >= 400 RPM <= 7500 RPM >= 5 Sec 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 Disable Conditions: MIL not Illuminated for DTC's:	= Test Failed This Key On or Fault Active >= 8.5996094 Volt <= 31.990234 Volt >= 400 RPM <= 7500 RPM >= 5 Sec TCM: None ECM: None		
Variable Bleed Solenoid (VBS)	P2763	Torque Converter Clutch Pressure High	The HWIO reports a low pressure/high voltage (open or power short) error flag	= TRUE Boolean			>= 4.4 Fail Time (Sec) out of 5 Sample Time (Sec)	Two Trips

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					P2763 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled Disable Conditions:	Test Failed This Key On or Fault Active >= 8.5996094 Volt <= 31.990234 Volt >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean MIL not Illuminated for DTC's:		
Variable Bleed Solenoid (VBS)	P2764	Torque Converter Clutch Pressure Control Solenoid Control Circuit Low	The HWIO reports a high pressure/low voltage (ground short) error flag	= TRUE Boolean			>= 4.4 Fail Time (Sec) out of 5 Sample Time (Sec)	One Trip
					P2764 Status is not Ignition Voltage Ignition Voltage Engine Speed Engine Speed Engine Speed is within the allowable limits for High Side Driver Enabled Disable Conditions:	Test Failed This Key On or Fault Active >= 8.5996094 Volt <= 31.990234 Volt >= 400 RPM <= 7500 RPM >= 5 Sec = TRUE Boolean MIL not Illuminated for DTC's:		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
Communication	U0073	Controller Area Network Bus Communication Error	CAN Hardware Circuitry Detects a Low Voltage Error	= TRUE Boolean			>= 62 Fail counts (≈ 10 seconds)	One Trip
			Delay timer	>= 0.1125 sec			Out of 70 Sample Counts (≈ 11 seconds)	
					Stabilization delay Ignition Voltage Ignition Voltage Power Mode	>= 3 sec >= 8.5996094 Volt <= 31.990234 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 >= 8.5996094 Volt <= 31.990234 Volt = Run		
				Disable Conditions:	MIL not Illuminated for DTC's:	TCM: U0073 ECM: None		
Transmission Control Module (TCM)	C1251	The lateral acceleration signal is stuck at a high magnitude in range	absolute value (lateral acceleration)	>= 0.529999971 g's	absolute value (lateral acceleration) for stability	>= 0.53 g's	>= 75 Sec	Special No MIL
			absolute value (lateral acceleration)	<= 3.849999905 g's	absolute value (lateral acceleration) for stability stability time	<= 3.8499999 g's >= 30 Sec		
					Diagnostic shifting override command	= FALSE Boolean		
					Attained Gear State	= 1st through 8th		
					Attained Gear Slip	<= 100 RPM		
					Transmission Type	= Clutch to Clutch Transmissi on		
					High Side Drivers enabled	= TRUE Boolean		

18 OBDG04 TCM 6 Speed T43 Summary Tables

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Malfunction	Enable Conditions	Time Required	Mil Illum.
					Vehicle Speed Lateral acceleration stuck in range diagnostic enable calibration Battery Voltage Battery Voltage Battery voltage is within the allowable limits for Ignition Voltage Ignition Voltage Service Fast Learn (SFL) Mode VBS Failsafe Ignition voltage and SFL conditions met for Disable Conditions:	>= 15 kph = 1 <= 31.999023 Volts >= 9 Volts >= 0.1 Sec <= 31.999023 Volts >= 9 Volts = FALSE Boolean >= 0.1 Sec MIL not Illuminated for DTC's: ECM: None		

DIAGNOSTIC SUPPORTING TABLE--TCM 6 Speed T87A

Table 1

KaCANG_RxDeviceIndx KaCANG_RxDeviceIndx	Axis	CeCANG_e_RcvMsg_0BE_BusA	CeCANG_e_RcvMsg_0C1_BusA	CeCANG_e_RcvMsg_0C5_BusA	CeCANG_e_RcvMsg_0C9_BusA	frame
	Curve	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_0D0_BusA	CeCANG_e_RcvMsg_0F1_BusA	CeCANG_e_RcvMsg_191_BusA	CeCANG_e_RcvMsg_1A1_BusA	frame
	Curve	CeCANR_e_BusA_ABS	CeCANR_e_BusA_BCM	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_1CF_BusA	CeCANG_e_RcvMsg_1E1_BusA	CeCANG_e_RcvMsg_1E9_BusA	CeCANG_e_RcvMsg_1F3_BusA	frame
	Curve	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_BCM	CeCANR_e_BusA_ABS	CeCANR_e_BusA_BCM	enable or invalid
	Axis	CeCANG_e_RcvMsg_1F9_BusA	CeCANG_e_RcvMsg_1FC_BusA	CeCANG_e_RcvMsg_287_BusA	CeCANG_e_RcvMsg_2C3_BusA	frame
	Curve	CeCANR_e_BusA_PTO	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_2D1_BusA	CeCANG_e_RcvMsg_2F9_BusA	CeCANG_e_RcvMsg_3B9_BusA	CeCANG_e_RcvMsg_3D1_BusA	frame
	Curve	CeCANR_e_InvalidRxDevice	CeCANR_e_BusA_ABS	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_3E9_BusA	CeCANG_e_RcvMsg_3F1_BusA	CeCANG_e_RcvMsg_3F9_BusA	CeCANG_e_RcvMsg_4C1_BusA	frame
	Curve	CeCANR_e_BusA_ECM	CeCANR_e_BusA_BCM	CeCANR_e_BusA_ECM	CeCANR_e_BusA_ECM	enable or invalid
	Axis	CeCANG_e_RcvMsg_4F1_BusA	frame			
	Curve	CeCANR_e_BusA_ECM	enable or invalid			

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - 10 speed transmission clutch definition and gear state to clutch map

Description: indicates clutch definition and gear state verses applied and released clutches for 10 speed transmission

Value Units: applied or released

X Unit: clutch

Y Units: gear index Y axis, actual gear column 1

y/x	1	2	3	4	5	6	7	8
1		C1 = C123456R	C2 = C1289-10R	C3 = C234579-10	C4 = C234678-10R	C5 = C1356789	C6 = C456789-10R	C7 = OWC12
2	1st gear braking	applied	applied	released	released	applied	released	applied
3	1st gear free wheel	applied	applied	released	released	applied	released	released
4	2nd gear braking	applied	applied	applied	applied	released	released	applied
5	2nd gear free wheel	applied	applied	applied	applied	released	released	released
6	3rd gear	applied	released	applied	applied	applied	released	released
7	4th gear	applied	released	applied	applied	released	applied	released
8	5th gear	applied	released	applied	released	applied	applied	released
9	6th gear	applied	released	released	released	applied	applied	released
10	7th gear	released	released	applied	applied	applied	applied	released
11	8th gear	released	applied	released	applied	applied	applied	released
12	9th gear	released	applied	applied	released	applied	applied	released
13	10th gear	released	applied	applied	applied	released	applied	released
14	reverse gear	applied	applied	released	applied	released	released	released

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - 9 speed transmission clutch definition and gear state to clutch map

Description: indicates clutch definition and gear state verses applied and released clutches for 9 speed transmission

Value Units: applied or released

X Unit: clutch

Y Units: gear index Y axis, actual gear column 1

y/x	1	2	3	4	5	6	7	8
1		C1 = CB123456	C2 = C6789	C3 = CB1R	C4 = CB29	C5 = CB38	C6 = C4	C7 = C57R
2	1st gear braking	applied	released	applied	released	released	released	released
3	1st gear free wheel	applied	released	released	released	released	released	released
4	2nd gear	applied	released	released	applied	released	released	released
5	3rd gear	applied	released	released	released	applied	released	released
6	4th gear	applied	released	released	released	released	applied	released
7	5th gear	applied	released	released	released	released	released	applied
8	6th gear	applied	applied	released	released	released	released	released
9	7th gear	released	applied	released	released	released	released	applied
10	8th gear	released	applied	released	released	applied	released	released
11	9th gear	released	applied	released	applied	released	released	released
12	reverse gear	released	released	applied	released	released	released	applied

Initial Supporting table - engine speed time for transmission hydraulic pressure available

Description: time needed for engine speed to trigger "transmission hydraulic pressure available"

Value Units: seconds
X Unit: °C

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - engine speed time for transmission hydraulic pressure available

Description: time needed for engine speed to trigger "transmission hydraulic pressure available"

Value Units: seconds
X Unit: °C

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - engine speed time for transmission hydraulic pressure available

Description: time needed for engine speed to trigger "transmission hydraulic pressure available"

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - engine speed time for transmission hydraulic pressure available

Description: time needed for engine speed to trigger "transmission hydraulic pressure available"

Value Units: seconds
X Unit: °C

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - KtPSDR_t_ModeVlvA_EngOff_Lim

Description: used for both engine off mode valve A stability delay time required to enable fail time update and fail time threshold

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40	-20	0	20	130
1	0.650	0.650	0.650	0.650	0.650

Initial Supporting table - KtPSDR_t_ModeVlvA_TurbDlyLim

Description: mode valve A transtion delay

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40	-20	0	20	130
1	1.500	1.000	0.750	0.500	0.300

Initial Supporting table - KtPSDR_t_ModeVlvB_EngOff_Lim

Description: used for both engine off mode valve B stability delay time required to enable fail time update and fail time threshold

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius

y/x	-40	-20	0	20	130
1	0.250	0.250	0.250	0.250	0.250

Initial Supporting table - KtPSDR_t_ParkServo_EngOff_Lim

Description: P187E time engine must be not running to enable fail time update

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.250	0.250	0.250	0.250	0.250

Initial Supporting table - KtPSDR_t_ParkStatDlyLim

Description: fail delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - KtPSDR_t_ParkVlvStkOff_DlyLim

Description: P187E Transmission Park Valve Stuck Off fail enable delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	1.250	1.250	1.250	1.250	1.250

Initial Supporting table - KtPSDR_t_ParkVlvStkOn_DlyLim

Description: P187D Transmission Park Valve Stuck On fail enable delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1.00	1.250	1.250	1.250	1.250	1.250

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - KtPSDR_t_PISA_EngOff_Lim

Description: P18A8 fail time, engine not running

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.800	0.600	0.400	0.200	0.150

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - KtTMDC_t_EngOnHydPresThrsh

Description: hydraulic system pressure is available when engine speed is above engine speed threshold for this amount of time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr1

Description: MaxSpdGr1	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	71

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr1

Description: MaxSpdGr1	
Value Units: KPH X Unit: command gear Y Units: unitless	
y/x	1
1	71

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr10

Description: MaxSpdGr10	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	540

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr10

Description: MaxSpdGr10	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	540

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr2

Description: MaxSpdGr2	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	101

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr2

Description: MaxSpdGr2	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	101

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr3

Description: MaxSpdGr3	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	111

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr3

Description: MaxSpdGr3	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	111

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr4

Description: MaxSpdGr4	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	136

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr4

Description: MaxSpdGr4	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	136

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr5

Description: MaxSpdGr5	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	173

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr5

Description: MaxSpdGr5	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	173

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr6

Description: MaxSpdGr6	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	230

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr6

Description: MaxSpdGr6	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	230

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr7

Description: MaxSpdGr7	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	333

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr7

Description: MaxSpdGr7	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	333

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr8

Description: MaxSpdGr8	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	446

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr8

Description: MaxSpdGr8	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	446

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr9

Description: MaxSpdGr9	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	540

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MaxSpdGr9

Description: MaxSpdGr9	
Value Units: Kph X Unit: Cmnd Gear Y Units: Kph	
y/x	1
1	540

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

Description:

Value Units: Gear
X Unit: Vehicle Speed
Y Units: Accel Pedal Pct

MinGearAllowed - Part 1

y/x	0
0	CeCGSR_e_SecondLckd
1	CeCGSR_e_SecondLckd
2	CeCGSR_e_SecondLckd
3	CeCGSR_e_SecondLckd
4	CeCGSR_e_SecondLckd
5	CeCGSR_e_SecondLckd
6	CeCGSR_e_SecondLckd
7	CeCGSR_e_SecondLckd
8	CeCGSR_e_SecondLckd
9	CeCGSR_e_SecondLckd
10	CeCGSR_e_SecondLckd
11	CeCGSR_e_SecondLckd
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd

MinGearAllowed - Part 2

y/x	1
0	CeCGSR_e_Third
1	CeCGSR_e_Third
2	CeCGSR_e_Third
3	CeCGSR_e_Third
4	CeCGSR_e_Third
5	CeCGSR_e_SecondLckd
6	CeCGSR_e_SecondLckd
7	CeCGSR_e_SecondLckd
8	CeCGSR_e_SecondLckd
9	CeCGSR_e_SecondLckd
10	CeCGSR_e_SecondLckd

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

11	CeCGSR_e_SecondLckd
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 3	
y/x	2
0	CeCGSR_e_Fourth
1	CeCGSR_e_Fourth
2	CeCGSR_e_Fourth
3	CeCGSR_e_Fourth
4	CeCGSR_e_Fourth
5	CeCGSR_e_Fourth
6	CeCGSR_e_SecondLckd
7	CeCGSR_e_SecondLckd
8	CeCGSR_e_SecondLckd
9	CeCGSR_e_SecondLckd
10	CeCGSR_e_SecondLckd
11	CeCGSR_e_SecondLckd
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 4	
y/x	3
0	CeCGSR_e_Fifth
1	CeCGSR_e_Fifth
2	CeCGSR_e_Fifth
3	CeCGSR_e_Fifth
4	CeCGSR_e_Fifth
5	CeCGSR_e_Fifth
6	CeCGSR_e_Fourth
7	CeCGSR_e_Fourth
8	CeCGSR_e_SecondLckd
9	CeCGSR_e_SecondLckd

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

10	CeCGSR_e_SecondLckd
11	CeCGSR_e_SecondLckd
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 5	
y/x	4
0	CeCGSR_e_Sixth
1	CeCGSR_e_Sixth
2	CeCGSR_e_Sixth
3	CeCGSR_e_Sixth
4	CeCGSR_e_Sixth
5	CeCGSR_e_Sixth
6	CeCGSR_e_Fifth
7	CeCGSR_e_Fourth
8	CeCGSR_e_Fourth
9	CeCGSR_e_Fourth
10	CeCGSR_e_SecondLckd
11	CeCGSR_e_SecondLckd
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 6	
y/x	5
0	CeCGSR_e_Seventh
1	CeCGSR_e_Seventh
2	CeCGSR_e_Seventh
3	CeCGSR_e_Seventh
4	CeCGSR_e_Seventh
5	CeCGSR_e_Sixth
6	CeCGSR_e_Sixth
7	CeCGSR_e_Fifth
8	CeCGSR_e_Fifth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

9	CeCGSR_e_Fourth
10	CeCGSR_e_Fourth
11	CeCGSR_e_Fourth
12	CeCGSR_e_SecondLckd
13	CeCGSR_e_SecondLckd
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 7	
y/x	6
0	CeCGSR_e_Seventh
1	CeCGSR_e_Seventh
2	CeCGSR_e_Seventh
3	CeCGSR_e_Seventh
4	CeCGSR_e_Seventh
5	CeCGSR_e_Seventh
6	CeCGSR_e_Sixth
7	CeCGSR_e_Sixth
8	CeCGSR_e_Fifth
9	CeCGSR_e_Fifth
10	CeCGSR_e_Fourth
11	CeCGSR_e_Fourth
12	CeCGSR_e_Fourth
13	CeCGSR_e_Fourth
14	CeCGSR_e_SecondLckd
15	CeCGSR_e_SecondLckd
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 8	
y/x	7
0	CeCGSR_e_Eighth
1	CeCGSR_e_Eighth
2	CeCGSR_e_Eighth
3	CeCGSR_e_Eighth
4	CeCGSR_e_Eighth
5	CeCGSR_e_Seventh
6	CeCGSR_e_Seventh
7	CeCGSR_e_Sixth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

8	CeCGSR_e_Fifth
9	CeCGSR_e_Fifth
10	CeCGSR_e_Fifth
11	CeCGSR_e_Fourth
12	CeCGSR_e_Fourth
13	CeCGSR_e_Fourth
14	CeCGSR_e_Fourth
15	CeCGSR_e_Fourth
16	CeCGSR_e_SecondLckd
MinGearAllowed - Part 9	
y/x	8
0	CeCGSR_e_Eighth
1	CeCGSR_e_Eighth
2	CeCGSR_e_Eighth
3	CeCGSR_e_Eighth
4	CeCGSR_e_Eighth
5	CeCGSR_e_Eighth
6	CeCGSR_e_Seventh
7	CeCGSR_e_Seventh
8	CeCGSR_e_Sixth
9	CeCGSR_e_Sixth
10	CeCGSR_e_Fifth
11	CeCGSR_e_Fifth
12	CeCGSR_e_Fifth
13	CeCGSR_e_Fourth
14	CeCGSR_e_Fourth
15	CeCGSR_e_Fourth
16	CeCGSR_e_Fourth
MinGearAllowed - Part 10	
y/x	9
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Eighth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

7	CeCGSR_e_Seventh
8	CeCGSR_e_Sixth
9	CeCGSR_e_Sixth
10	CeCGSR_e_Sixth
11	CeCGSR_e_Fifth
12	CeCGSR_e_Fifth
13	CeCGSR_e_Fifth
14	CeCGSR_e_Fifth
15	CeCGSR_e_Fifth
16	CeCGSR_e_Fourth
MinGearAllowed - Part 11	
y/x	10
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Eighth
7	CeCGSR_e_Seventh
8	CeCGSR_e_Seventh
9	CeCGSR_e_Sixth
10	CeCGSR_e_Sixth
11	CeCGSR_e_Sixth
12	CeCGSR_e_Fifth
13	CeCGSR_e_Fifth
14	CeCGSR_e_Fifth
15	CeCGSR_e_Fifth
16	CeCGSR_e_Fourth
MinGearAllowed - Part 12	
y/x	11
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

6	CeCGSR_e_Eighth
7	CeCGSR_e_Eighth
8	CeCGSR_e_Seventh
9	CeCGSR_e_Seventh
10	CeCGSR_e_Sixth
11	CeCGSR_e_Sixth
12	CeCGSR_e_Sixth
13	CeCGSR_e_Fifth
14	CeCGSR_e_Fifth
15	CeCGSR_e_Fifth
16	CeCGSR_e_Fifth
MinGearAllowed - Part 13	
y/x	12
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Ninth
7	CeCGSR_e_Eighth
8	CeCGSR_e_Seventh
9	CeCGSR_e_Seventh
10	CeCGSR_e_Seventh
11	CeCGSR_e_Sixth
12	CeCGSR_e_Sixth
13	CeCGSR_e_Sixth
14	CeCGSR_e_Sixth
15	CeCGSR_e_Sixth
16	CeCGSR_e_Fifth
MinGearAllowed - Part 14	
y/x	13
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

5	CeCGSR_e_Ninth
6	CeCGSR_e_Ninth
7	CeCGSR_e_Eighth
8	CeCGSR_e_Eighth
9	CeCGSR_e_Seventh
10	CeCGSR_e_Seventh
11	CeCGSR_e_Sixth
12	CeCGSR_e_Sixth
13	CeCGSR_e_Sixth
14	CeCGSR_e_Sixth
15	CeCGSR_e_Sixth
16	CeCGSR_e_Fifth
MinGearAllowed - Part 15	
y/x	14
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Ninth
7	CeCGSR_e_Eighth
8	CeCGSR_e_Eighth
9	CeCGSR_e_Eighth
10	CeCGSR_e_Seventh
11	CeCGSR_e_Seventh
12	CeCGSR_e_Sixth
13	CeCGSR_e_Sixth
14	CeCGSR_e_Sixth
15	CeCGSR_e_Sixth
16	CeCGSR_e_Sixth
MinGearAllowed - Part 16	
y/x	15
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Ninth
7	CeCGSR_e_Ninth
8	CeCGSR_e_Eighth
9	CeCGSR_e_Eighth
10	CeCGSR_e_Seventh
11	CeCGSR_e_Seventh
12	CeCGSR_e_Seventh
13	CeCGSR_e_Sixth
14	CeCGSR_e_Sixth
15	CeCGSR_e_Sixth
16	CeCGSR_e_Sixth
MinGearAllowed - Part 17	
y/x	16
0	CeCGSR_e_Ninth
1	CeCGSR_e_Ninth
2	CeCGSR_e_Ninth
3	CeCGSR_e_Ninth
4	CeCGSR_e_Ninth
5	CeCGSR_e_Ninth
6	CeCGSR_e_Ninth
7	CeCGSR_e_Ninth
8	CeCGSR_e_Eighth
9	CeCGSR_e_Eighth
10	CeCGSR_e_Eighth
11	CeCGSR_e_Seventh
12	CeCGSR_e_Seventh
13	CeCGSR_e_Sixth
14	CeCGSR_e_Sixth
15	CeCGSR_e_Sixth
16	CeCGSR_e_Sixth
MinGearAllowed - Part 18	
y/x	
0	
1	
2	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
MinGearAllowed - Part 19	
y/x	
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
MinGearAllowed - Part 20	
y/x	
0	
1	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - MinGearAllowed

Initial Supporting table - MinGearAllowed	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - NumClchTieUp

Description: NumClchTieUp

Value Units: # of clutches

X Unit: Cmnd Gr

Y Units: # of clutches

NumClchTieUp - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5
1	2	3	2	2	2	2	2

NumClchTieUp - Part 2

y/x	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3
1	2	2	1	1	1	1	1

NumClchTieUp - Part 3

y/x	CeCGSR_e_NeutralC2C4	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6	CeCGSR_e_NeutralC4C5
1	1	1	1	1	1	1	1

NumClchTieUp - Part 4

y/x	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4
1	1	1	3	2	2	2	2

NumClchTieUp - Part 5

y/x	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	2	2	2	1	1	1	1

NumClchTieUp - Part 6

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5
1	1	1	1	1	1	1	1

NumClchTieUp - Part 7

y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth
1	1	1	2	1	1	1	1

NumClchTieUp - Part 8

y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
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Initial Supporting table - NumClchTieUp							
1	1	1	1	1	1	1	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - NumClchTieUp

Description: NumClchTieUp

Value Units: minimum # of clutches

X Unit: command gear or attained gear

Y Units: not applicable, no units, single row table f(gear)

NumClchTieUp - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5
1	2	3	2	2	2	2	2

NumClchTieUp - Part 2

y/x	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3
1	2	2	1	1	1	1	1

NumClchTieUp - Part 3

y/x	CeCGSR_e_NeutralC2C4	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6	CeCGSR_e_NeutralC4C5
1	1	1	1	1	1	1	1

NumClchTieUp - Part 4

y/x	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4
1	1	1	3	2	2	2	2

NumClchTieUp - Part 5

y/x	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	2	2	2	1	1	1	1

NumClchTieUp - Part 6

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5
1	1	1	1	1	1	1	1

NumClchTieUp - Part 7

y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth
1	1	1	2	1	1	1	1

NumClchTieUp - Part 8

y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
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Initial Supporting table - NumClchTieUp							
1	1	1	1	1	1	1	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P0606_Last Seed Timeout f(Loop Time)

Description: The max time for the Last Seed Timeout as a function of operating loop time sequence.

Value Units: Max Time for Last Seed Timeout (ms)

X Unit: Operating Loop Sequence (enum)

P0606_Last Seed Timeout f(Loop Time) - Part 1

y/x	CePISR_e_5msSeq	CePISR_e_6p25msSeq	CePISR_e_10msSeq	CePISR_e_12p5msSeq	CePISR_e_20msSeq	CePISR_e_25msSeq	CePISR_e_40msSeq
1	200.000	200.000	200.000	200.000	200.000	200.000	200.000

P0606_Last Seed Timeout f(Loop Time) - Part 2

y/x	CePISR_e_50msSeq	CePISR_e_80msSeq	CePISR_e_100msSeq	CePISR_e_EventA_Seq	CePISR_e_EventB_Seq	CePISR_e_EventC_Seq	
1	200.000	200.000	200.000	8,191.875	8,191.875	8,191.875	

Initial Supporting table - P0606_Program Sequence Watch Enable f(Core, Loop Time)

Description: The enabling flags for the program sequence watch as a function of processor core and operating loop time sequence.

Value Units: PSW enable flag (boolean)

X Unit: Processor Core (enum)

Y Units: Operating Loop Time Sequence (enum)

y/x	CeTSKR_e_CPU	CeTSKR_e_CPU2	CeTSKR_e_CPU3	CeTSKR_e_CPU4
CePISR_e_5msSeq	0	0	0	0
CePISR_e_6p25msSeq	1	0	0	0
CePISR_e_10msSeq	0	0	0	0
CePISR_e_12p5msSeq	1	0	0	0
CePISR_e_20msSeq	0	0	0	0
CePISR_e_25msSeq	1	0	0	0
CePISR_e_40msSeq	0	0	0	0
CePISR_e_50msSeq	0	0	0	0
CePISR_e_80msSeq	0	0	0	0
CePISR_e_100msSeq	0	0	0	0
CePISR_e_EventA_Seq	0	0	0	0
CePISR_e_EventB_Seq	0	0	0	0
CePISR_e_EventC_Seq	0	0	0	0

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P0606_PSW Sequence Fail f(Loop Time)

Description: Fail threshold for PSW per operating loop.

Value Units: Fail threshold for PSW (count)

X Unit: Operating Loop (enum)

P0606_PSW Sequence Fail f(Loop Time) - Part 1

y/x	CePISR_e_5msSeq	CePISR_e_6p25msSeq	CePISR_e_10msSeq	CePISR_e_12p5msSeq	CePISR_e_20msSeq	CePISR_e_25msSeq	CePISR_e_40msSeq
1	3	3	3	3	3	3	3

P0606_PSW Sequence Fail f(Loop Time) - Part 2

y/x	CePISR_e_50msSeq	CePISR_e_80msSeq	CePISR_e_100msSeq	CePISR_e_EventA_Seq	CePISR_e_EventB_Seq	CePISR_e_EventC_Seq	
1	3	3	3	3	3	3	

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P0606_PSW Sequence Sample f(Loop Time)

Description: Sample threshold for PSW per operating loop.

Value Units: Sample threshold for PSW (count)

X Unit: Operating Loop (enum)

P0606_PSW Sequence Sample f(Loop Time) - Part 1

y/x	CePISR_e_5msSeq	CePISR_e_6p25msSeq	CePISR_e_10msSeq	CePISR_e_12p5msSeq	CePISR_e_20msSeq	CePISR_e_25msSeq	CePISR_e_40msSeq
1	4	4	4	4	4	4	4

P0606_PSW Sequence Sample f(Loop Time) - Part 2

y/x	CePISR_e_50msSeq	CePISR_e_80msSeq	CePISR_e_100msSeq	CePISR_e_EventA_Seq	CePISR_e_EventB_Seq	CePISR_e_EventC_Seq	
1	4	4	4	4	4	4	

Initial Supporting table - P0723 transmission engaged state time threshold

Description: time necessary after transmission engaged state indicates transmsision engaged to allow P0723 enable

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.000	0.000	40.000
1	5.000	3.000	1.000

Initial Supporting table - P0741 stuck on test time			
Description: Value to initialize the TCC Stuck On test time to after transition of clutch select valve allowing TCC hydraulic circuit connectivity. Window is a time down window from the calibration value to zero (0.0) seconds.			
Value Units: seconds X Unit: transmission fluid temperature °C			
y/x	-7.00	10.00	40.00
1	1.500	1.250	1.000

Initial Supporting table - P0747 C1 clutch exhaust delay time closed throttle down shift					
Description: P0747 C1 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0747 C1 clutch exhaust delay time closed throttle lift foot up shift

Description: P0747 C1 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0747 C1 clutch exhaust delay time garage shift

Description: P0747 C1 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0747 C1 clutch exhaust delay time negative torque up shift

Description: P0747 C1 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P0747 C1 clutch exhaust delay time open throttle power down shift

Description: P0747 C1 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0747 C1 clutch exhaust delay time open throttle power on up shift					
Description: P0747 C1 clutch hydraulic circuit exhaust time in open throttle power on up shift					
Value Units: seconds					
X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	2.000	1.100	0.813	0.500	0.269

Initial Supporting table - P0777 C2 clutch exhaust delay time closed throttle down shift					
Description: P0777 C2 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds					
X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.350	0.200

Initial Supporting table - P0777 C2 clutch exhaust delay time closed throttle lift foot up shift

Description: P0777 C2 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0777 C2 clutch exhaust delay time garage shift

Description: P0777 C2 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0777 C2 clutch exhaust delay time negative torque up shift

Description: P0777 C2 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P0777 C2 clutch exhaust delay time open throttle power down shift

Description: P0777 C2 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.212	0.212

Initial Supporting table - P0777 C2 clutch exhaust delay time open throttle power on up shift

Description: P0777 C2 clutch hydraulic circuit exhaust time in open throttle power on up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	3.100	0.900	0.800	0.700	0.262

Initial Supporting table - P0797 C3 clutch exhaust delay time closed throttle down shift					
Description: P0797 C3 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.300	1.000	0.950	0.469	0.200

Initial Supporting table - P0797 C3 clutch exhaust delay time closed throttle lift foot up shift

Description: P0797 C3 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P0797 C3 clutch exhaust delay time negative torque up shift

Description: P0797 C3 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P0797 C3 clutch exhaust delay time open throttle power down shift

Description: P0797 C3 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.387	0.144

Initial Supporting table - P0797 C3 clutch exhaust delay time open throttle power on up shift

Description: P0797 C3 clutch hydraulic circuit exhaust time in open throttle power on up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.900	0.800	0.750	0.650	0.256

Initial Supporting table - P0797 C3clutch exhaust delay time garage shift

Description: P0797 C3 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P171D hydraulic pressure delay

Description: Time to delay the initial x of y counter due to hydraulic transients. Thresholds are a function of transmission fluid temperature. Horizontal axis is transmission fluid temperature (DegC) and table output is delay time (seconds).

Value Units: delay time seconds
X Unit: transmission fluid temperature DegC

y/x	-40	0	20	30	40	50	60
1	0.090	0.090	0.080	0.075	0.075	0.075	0.075

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Initial Supporting table - P171D predicted turbine speed error

Description: Predicted turbine speed vs actual turbine speed error. Thresholds are a function of engine speed and transmission fluid temperature. Diagnostic is considered failing above these values. Table vertical axis is engine speed (RPM), horizontal axis is transmission fluid temperature (DegC) and table output is predicted turbine speed error (RPM).

Value Units: turbine speed RPM error
X Unit: transmission fluid temperature DegC
Y Units: engine speed RPM

y/x	-40	0	10	20	40
0	350	350	350	350	350
500	350	350	350	350	350
1,100	350	350	350	350	350
1,500	350	350	350	350	350
2,500	350	350	350	350	350

Initial Supporting table - P176B delay to allow transmission input, intermediate and output speeds to stablize for fail evaluation		
Description: delay to allow transmission input, intermediate and output speeds to stablize for fail evaluation		
Value Units: seconds X Unit: intermediate speed sensor select		
y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	1.000	1.000

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Initial Supporting table - P176B holding clutch states

Description: inditaces when the clutch states allow transmission intermediate speed sensor evaluation, when rotating components can trigger speed sesnor, holding clutches will not allow evaluation while clutches not holding will allow evaluation

Value Units: TRUE or FALSE

X Unit: intermediate speed sensor select

Y Units: commanded gear

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
CeCGSR_e_CR_NullForSched	1	1
CeCGSR_e_CR_Neutral	1	1
CeCGSR_e_CR_Park	1	1
CeCGSR_e_CR_Reverse	0	1
CeCGSR_e_CR_First	0	1
CeCGSR_e_CR_Second	0	1
CeCGSR_e_CR_Third	1	1
CeCGSR_e_CR_Fourth	0	1
CeCGSR_e_CR_Fifth	0	1
CeCGSR_e_CR_Sixth	0	1
CeCGSR_e_CR_Seventh	0	1
CeCGSR_e_CR_Eighth	1	1
CeCGSR_e_CR_Ninth	0	1
CeCGSR_e_CR_Tenth	1	1

Initial Supporting table - P176B intermediate speed sensor fail count threshold

Description: P176B intermediate speed sensor fail count threshold

Value Units: fail counts
X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	4	4

Initial Supporting table - P176B intermediate speed sensor fail RPM threshold

Description:

Value Units: RPM

X Unit: command gear

Y Units: intermediate speed sensor select

y/x	CeTGRR_e_Gear1	CeTGRR_e_Gear2	CeTGRR_e_Gear3	CeTGRR_e_Gear4	CeTGRR_e_Gear5	CeTGRR_e_Gear6	CeTGRR_e_Gear7	CeTGRR_e_Gear8	CeTGRR_e_Gear9	CeTGRR_e_Gear10
CeTSRR_e_C2 C_ClchSpdSnsr 1	251	382	10,000	248	50	133	50	10,000	121	10,000
CeTSRR_e_C2 C_ClchSpdSnsr 2	0	0	0	0	0	0	0	0	0	0

Initial Supporting table - P176B intermediate speed sensor fail time threshold

Description: P176B intermediate speed sensor fail time threshold

Value Units: seconds
X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	2.000	2.000

Initial Supporting table - P176B minimum estimated transmission intermediate speed to enable fail evaluation		
Description: minimum estimated transmission intermediate speed to enable fail evaluation, where estimate is based on transmission input speed / ratio calibration, where ratio calibration is either P176B ratio calibration when REVERSE or P176B ratio calibration when not REVERSE		
Value Units: estimated transmission intermediate speed RPM X Unit: intermediate speed sensor select		
y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	172.0	172.0

Initial Supporting table - P176B minimum transmission input speed to enable fail evaluation

Description: minimum transmission input speed to enable fail evaluation

Value Units: transmission input speed RPM

X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	172.0	172.0

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Initial Supporting table - P176B ratio calibration when not REVERSE

Description: used to estimate transmission input speed based on transmission intermediate speed when range is not REVERSE

Value Units: ratio

X Unit: commanded gear

Y Units: intermediate speed sensor select

y/x	CeTGRR_e_Gear1	CeTGRR_e_Gear2	CeTGRR_e_Gear3	CeTGRR_e_Gear4	CeTGRR_e_Gear5	CeTGRR_e_Gear6	CeTGRR_e_Gear7	CeTGRR_e_Gear8	CeTGRR_e_Gear9	CeTGRR_e_Gear10
CeTSRR_e_C2 C_ClchSpdSnsr 1	1.5848	6.3694	1.0000	2.4450	1.0000	0.5227	1.0000	1.0000	1.1905	1.0000
CeTSRR_e_C2 C_ClchSpdSnsr 2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Initial Supporting table - P176B ratio calibration when REVERSE

Description: used to estimate transmission input speed based on transmission intermediate speed when range is REVERSE

Value Units: ratio
X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	1.0000	1.0000

Initial Supporting table - P17C5 P17D3 intermediate speed sensor RPM

Description: P17C5 P17D3 intermediate speed sensor RPM at signal period transtion to enable fail time update

Value Units: intermediate speed sensor RPM

X Unit: intermediate speed sensor 1 or 2

y/x	0	1
1	25	25

Initial Supporting table - P2715 C4 clutch exhaust delay time closed throttle down shift					
Description: P2715 C4 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.400	0.750	0.700	0.663	0.225

Initial Supporting table - P2715 C4 clutch exhaust delay time closed throttle lift foot up shift

Description: P2715 C4 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P2715 C4 clutch exhaust delay time garage shift

Description: P2715 C4 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P2715 C4 clutch exhaust delay time negative torque up shift

Description: P2715 C4 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P2715 C4 clutch exhaust delay time open throttle power down shift

Description: P2715 C4 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.119	0.119

Initial Supporting table - P2715 C4 clutch exhaust delay time open throttle power on up shift

Description: P2715 C4 clutch hydraulic circuit exhaust time in open throttle power on up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.900	0.650	0.600	0.550	0.300

Initial Supporting table - P2724 C5 clutch exhaust delay time closed throttle down shift					
Description: P2724 C5 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.700	1.369	1.100	0.650	0.337

Initial Supporting table - P2724 C5 clutch exhaust delay time closed throttle lift foot up shift

Description: P2724 C5 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P2724 C5 clutch exhaust delay time garage shift

Description: P2724 C5 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40	-20	0	30	110
1	2	1	1	1	1

Initial Supporting table - P2724 C5 clutch exhaust delay time negative torque up shift

Description: P0747 C1 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P2724 C5 clutch exhaust delay time open throttle power down shift

Description: P2724 C5 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.900	0.613	0.450	0.300	0.163

Initial Supporting table - P2724 C5 clutch exhaust delay time open throttle power on up shift					
Description: P2724 C5 clutch hydraulic circuit exhaust time in open throttle power on up shift					
Value Units: seconds					
X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	2.900	1.350	1.100	0.850	0.406

Initial Supporting table - P2733 C6 clutch exhaust delay time closed throttle down shift					
Description: P2733 C6 clutch hydraulic circuit exhaust time in closed throttle down shift					
Value Units: seconds X Unit: transmission fluid temperature °C					
y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.400	1.100	0.719	0.400	0.350

Initial Supporting table - P2733 C6 clutch exhaust delay time closed throttle lift foot up shift

Description: P2733 C6 clutch hydraulic circuit exhaust time in closed throttle lift foot up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P2733 C6 clutch exhaust delay time garage shift

Description: P2733 C6 clutch hydraulic circuit exhaust time in garage shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.850	0.850

Initial Supporting table - P2733 C6 clutch exhaust delay time negative torque up shift

Description: P2733 C6 clutch hydraulic circuit exhaust time in negative torque up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - P2733 C6 clutch exhaust delay time open throttle power down shift

Description: P2733 C6 clutch hydraulic circuit exhaust time in open throttle power down shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	0.850	0.350	0.300	0.238	0.131

Initial Supporting table - P2733 C6 clutch exhaust delay time open throttle power on up shift

Description: P2733 C6 clutch hydraulic circuit exhaust time in open throttle power on up shift

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.600	0.600

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2817 TCC stuck off fail TCC slip speed

Description: TCC stuck off slip speed fail threshold when TCC is in ON mode (controlled slip mode)

Value Units: RPM

X Unit: engine torque Nm

y/x	0.00	64.00	128.00	192.00	256.00	320.00	384.00	448.00	512.00
1	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0

Initial Supporting table - P2818 stuck on test time

Description: Value to initialize the TCC Stuck On test time to after transition of clutch select valve allowing TCC hydraulic circuit connectivity. Window is a time down window from the calibration value to zero (0.0) seconds.

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-7.00	10.00	40.00
1	1.500	1.250	1.000

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Initial Supporting table - P2818 torque convert derivative slip speed fail threshold

Description: The fail threshold, rate of change of torque converter slip speed, at which the torque convert clutch is considered stuck on.

Value Units: RPM/second

X Unit: transmission fluid temperature °C

y/x	-7.00	10.00	40.00
0	-600.0	-600.0	-600.0
15	-600.0	-600.0	-600.0
25	-900.0	-900.0	-900.0
50	-1,200.0	-1,200.0	-1,200.0
75	-1,500.0	-1,500.0	-1,500.0

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Cltch Slip Sum

Description:

Value Units: dn output rpm

X Unit: <brake gain> * brake pedal %

Y Units: dn output speed threshold

y/x	0	15	20	30	35	50	75	88	100
1	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Cltch Slip Sum

Description:

Value Units: rate of change of output rpm (dn) per 25 milliseconds
X Unit: % brake pedal position
Y Units: not applicable, no units, single row table f(brake pedal position)

y/x	0	15	20	30	35	50	75	88	100
1	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192	-8,192

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C1

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C1 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	251	251	9,999	251	251

P2D2 Decel Pressure - C1 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	251	251	251	251	9,999

P2D2 Decel Pressure - C1 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	9,999	9,999	9,999	251	251

P2D2 Decel Pressure - C1 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	251	251	251	251	251

P2D2 Decel Pressure - C1 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	251	251	251	251	9,999

P2D2 Decel Pressure - C1 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	251	251	251	251	251

P2D2 Decel Pressure - C1 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	251	9,999	251	251	251

P2D2 Decel Pressure - C1 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	251	251	251	251	251

P2D2 Decel Pressure - C1 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	251	251	216	9,999	9,999

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C1

P2D2 Decel Pressure - C1 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	9,999	9,999	9,999	9,999	9,999
P2D2 Decel Pressure - C1 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	9,999	1,056	671	564	251
P2D2 Decel Pressure - C1 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C1

Description: clutch 1 command pressure threshold below which clutch 1 is considered released, such that, clutch 1 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C1 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	250.9	250.9	9,999.0	250.9	250.9

P2D2 Decel Pressure - C1 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	250.9	250.9	250.9	250.9	9,999.0

P2D2 Decel Pressure - C1 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	9,999.0	9,999.0	9,999.0	250.9	250.9

P2D2 Decel Pressure - C1 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	250.9	250.9	250.9	250.9	250.9

P2D2 Decel Pressure - C1 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	250.9	250.9	250.9	250.9	9,999.0

P2D2 Decel Pressure - C1 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	250.9	250.9	250.9	250.9	250.9

P2D2 Decel Pressure - C1 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	250.9	9,999.0	250.9	250.9	250.9

P2D2 Decel Pressure - C1 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	250.9	250.9	250.9	250.9	250.9

P2D2 Decel Pressure - C1 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C1

1	250.9	250.9	215.8	9,999.0	9,999.0
P2D2 Decel Pressure - C1 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	9,999.0	9,999.0	9,999.0	9,999.0	9,999.0
P2D2 Decel Pressure - C1 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	9,999.0	1,055.9	671.3	564.3	250.9
P2D2 Decel Pressure - C1 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C2

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C2 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	403	403	403	9,999	403

P2D2 Decel Pressure - C2 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	403	403	403	403	9,999

P2D2 Decel Pressure - C2 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	403	403	403	9,999	9,999

P2D2 Decel Pressure - C2 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	9,999	9,999	403	403	403

P2D2 Decel Pressure - C2 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	403	403	9,999	403	403

P2D2 Decel Pressure - C2 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	9,999	403	403	403	403

P2D2 Decel Pressure - C2 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	403	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C2 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	403	403	403	403

P2D2 Decel Pressure - C2 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	403	9,999	216	251	251

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C2

P2D2 Decel Pressure - C2 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	9,999	9,999	471	721	1,648
P2D2 Decel Pressure - C2 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	671	9,999	403
P2D2 Decel Pressure - C2 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C2

Description: clutch 2 command pressure threshold below which clutch 2 is considered released, such that, clutch 2 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C2 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	403	403	403	9,999	403

P2D2 Decel Pressure - C2 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	403	403	403	403	9,999

P2D2 Decel Pressure - C2 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	403	403	403	9,999	9,999

P2D2 Decel Pressure - C2 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	9,999	9,999	403	403	403

P2D2 Decel Pressure - C2 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	403	403	9,999	403	403

P2D2 Decel Pressure - C2 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	9,999	403	403	403	403

P2D2 Decel Pressure - C2 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	403	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C2 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	403	403	403	403

P2D2 Decel Pressure - C2 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C2

1	403	9,999	216	251	251
P2D2 Decel Pressure - C2 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	9,999	9,999	471	721	1,648
P2D2 Decel Pressure - C2 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	671	9,999	403
P2D2 Decel Pressure - C2 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C3

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C3 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	471	471	471	471	9,999

P2D2 Decel Pressure - C3 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	471	471	471	2,500	471

P2D2 Decel Pressure - C3 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	9,999	471	471	9,999	471

P2D2 Decel Pressure - C3 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	471	471	9,999	9,999	9,999

P2D2 Decel Pressure - C3 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	471	471	9,999	471	471

P2D2 Decel Pressure - C3 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	471	9,999	471	471	471

P2D2 Decel Pressure - C3 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	471	471	9,999	471	471

P2D2 Decel Pressure - C3 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	471	9,999	9,999	9,999	471

P2D2 Decel Pressure - C3 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	471	9,999	216	251	251

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C3

P2D2 Decel Pressure - C3 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	9,999	721	1,648
P2D2 Decel Pressure - C3 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	9,999	564	1,082
P2D2 Decel Pressure - C3 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C3

Description: clutch 3 command pressure threshold below which clutch 3 is considered released, such that, clutch 3 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C3 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	471	471	471	471	9,999

P2D2 Decel Pressure - C3 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	471	471	471	2,500	471

P2D2 Decel Pressure - C3 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	9,999	471	471	9,999	471

P2D2 Decel Pressure - C3 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	471	471	9,999	9,999	9,999

P2D2 Decel Pressure - C3 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	471	471	9,999	471	471

P2D2 Decel Pressure - C3 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	471	9,999	471	471	471

P2D2 Decel Pressure - C3 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	471	471	9,999	471	471

P2D2 Decel Pressure - C3 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	471	9,999	9,999	9,999	471

P2D2 Decel Pressure - C3 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C3

1	471	9,999	216	251	251
P2D2 Decel Pressure - C3 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	9,999	721	1,648
P2D2 Decel Pressure - C3 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	9,999	564	1,082
P2D2 Decel Pressure - C3 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C4

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C4 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	721	721	721	721	721

P2D2 Decel Pressure - C4 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	9,999	721	721	721	721

P2D2 Decel Pressure - C4 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	721	9,999	721	721	9,999

P2D2 Decel Pressure - C4 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	721	721	9,999	721	721

P2D2 Decel Pressure - C4 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	9,999	9,999	9,999	721	721

P2D2 Decel Pressure - C4 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	721	721	9,999	721	721

P2D2 Decel Pressure - C4 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	721	721	721	9,999	721

P2D2 Decel Pressure - C4 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	721	9,999	721	721	9,999

P2D2 Decel Pressure - C4 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	9,999	9,999	216	251	251

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C4

P2D2 Decel Pressure - C4 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	9,999	1,648
P2D2 Decel Pressure - C4 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	671	564	721
P2D2 Decel Pressure - C4 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C4

Description: clutch 4 command pressure threshold below which clutch 4 is considered released, such that, clutch 4 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C4 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	721	721	721	721	721

P2D2 Decel Pressure - C4 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	9,999	721	721	721	721

P2D2 Decel Pressure - C4 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	721	9,999	721	721	9,999

P2D2 Decel Pressure - C4 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	721	721	9,999	721	721

P2D2 Decel Pressure - C4 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	9,999	9,999	9,999	721	721

P2D2 Decel Pressure - C4 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	721	721	9,999	721	721

P2D2 Decel Pressure - C4 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	721	721	721	9,999	721

P2D2 Decel Pressure - C4 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	721	9,999	721	721	9,999

P2D2 Decel Pressure - C4 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C4

1	9,999	9,999	216	251	251
P2D2 Decel Pressure - C4 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	9,999	1,648
P2D2 Decel Pressure - C4 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	1,056	671	564	721
P2D2 Decel Pressure - C4 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C5

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C5 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	719	719	719	719	719

P2D2 Decel Pressure - C5 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	719	9,999	719	719	719

P2D2 Decel Pressure - C5 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	719	719	9,999	719	719

P2D2 Decel Pressure - C5 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	9,999	719	719	9,999	719

P2D2 Decel Pressure - C5 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	9,999	719	9,999	719	719

P2D2 Decel Pressure - C5 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	719	719	719	9,999	719

P2D2 Decel Pressure - C5 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	719	719	719	719	9,999

P2D2 Decel Pressure - C5 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	719	719	9,999	719	9,999

P2D2 Decel Pressure - C5 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	719	9,999	9,999	251	251

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C5

P2D2 Decel Pressure - C5 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	721	9,999
P2D2 Decel Pressure - C5 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	9,999	671	564	719
P2D2 Decel Pressure - C5 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C5

Description: clutch 5 command pressure threshold below which clutch 5 is considered released, such that, clutch 5 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C5 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	719	719	719	719	719

P2D2 Decel Pressure - C5 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	719	9,999	719	719	719

P2D2 Decel Pressure - C5 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	719	719	9,999	719	719

P2D2 Decel Pressure - C5 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	9,999	719	719	9,999	719

P2D2 Decel Pressure - C5 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	9,999	719	9,999	719	719

P2D2 Decel Pressure - C5 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	719	719	719	9,999	719

P2D2 Decel Pressure - C5 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	719	719	719	719	9,999

P2D2 Decel Pressure - C5 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	719	719	9,999	719	9,999

P2D2 Decel Pressure - C5 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
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18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C5

1	719	9,999	9,999	251	251
P2D2 Decel Pressure - C5 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	721	9,999
P2D2 Decel Pressure - C5 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	719	9,999	671	564	719
P2D2 Decel Pressure - C5 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C6

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C6 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	494	494	9,999	9,999	494

P2D2 Decel Pressure - C6 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	494	9,999	494	494	9,999

P2D2 Decel Pressure - C6 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	494	9,999	494	494	494

P2D2 Decel Pressure - C6 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	494	494	494	494	9,999

P2D2 Decel Pressure - C6 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	494	494	9,999	494

P2D2 Decel Pressure - C6 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	9,999	494	9,999	251	251

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C6

P2D2 Decel Pressure - C6 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	721	1,648
P2D2 Decel Pressure - C6 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	9,999	9,999	9,999	9,999	494
P2D2 Decel Pressure - C6 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C6

Description: clutch 6 command pressure threshold below which clutch 6 is considered released, such that, clutch 6 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C6 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	494	494	9,999	9,999	494

P2D2 Decel Pressure - C6 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	494	9,999	494	494	9,999

P2D2 Decel Pressure - C6 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	494	9,999	494	494	494

P2D2 Decel Pressure - C6 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	494	494	494	494	9,999

P2D2 Decel Pressure - C6 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	494	494	494	494	494

P2D2 Decel Pressure - C6 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	494	494	9,999	494

P2D2 Decel Pressure - C6 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C6

1	9,999	494	9,999	251	251
P2D2 Decel Pressure - C6 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	403	403	471	721	1,648
P2D2 Decel Pressure - C6 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	9,999	9,999	9,999	9,999	494
P2D2 Decel Pressure - C6 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C7

Description:

Value Units: Kpa
X Unit: Cmnd Gear
Y Units: Kpa

P2D2 Decel Pressure - C7 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	50	9,999	50	50	50

P2D2 Decel Pressure - C7 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	50	50	50	9,999	50

P2D2 Decel Pressure - C7 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	50	50	50	50	50

P2D2 Decel Pressure - C7 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	50	50	50	50	50

P2D2 Decel Pressure - C7 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	50	50	50	9,999	9,999

P2D2 Decel Pressure - C7 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW
1	9,999	9,999	9,999	9,999	50

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C7

P2D2 Decel Pressure - C7 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	50	50	50	50	50
P2D2 Decel Pressure - C7 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	50	50	50	50	50
P2D2 Decel Pressure - C7 - Part 12					
y/x					
1					

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C7

Description: clutch 7 command pressure threshold below which clutch 7 is considered released, such that, clutch 7 cannot carry enough clutch torque that would induce a vehicle deceleration above the design safety metric

Value Units: kPa

X Unit: command gear

Y Units: not applicable, no units, single row table f(command gear)

P2D2 Decel Pressure - C7 - Part 1

y/x	CeCGSR_e_NullForSched	CeCGSR_e_NeutralNoClutch	CeCGSR_e_NeutralC1	CeCGSR_e_NeutralC2	CeCGSR_e_NeutralC3
1	50	9,999	50	50	50

P2D2 Decel Pressure - C7 - Part 2

y/x	CeCGSR_e_NeutralC4	CeCGSR_e_NeutralC5	CeCGSR_e_NeutralC6	CeCGSR_e_NeutralC7	CeCGSR_e_NeutralC1C2
1	50	50	50	9,999	50

P2D2 Decel Pressure - C7 - Part 3

y/x	CeCGSR_e_NeutralC1C3	CeCGSR_e_NeutralC1C4	CeCGSR_e_NeutralC1C5	CeCGSR_e_NeutralC2C3	CeCGSR_e_NeutralC2C4
1	50	50	50	50	50

P2D2 Decel Pressure - C7 - Part 4

y/x	CeCGSR_e_NeutralC2C5	CeCGSR_e_NeutralC2C6	CeCGSR_e_NeutralC3C4	CeCGSR_e_NeutralC3C5	CeCGSR_e_NeutralC3C6
1	50	50	50	50	50

P2D2 Decel Pressure - C7 - Part 5

y/x	CeCGSR_e_NeutralC4C5	CeCGSR_e_NeutralC4C6	CeCGSR_e_NeutralC2C3C4C5	CeCGSR_e_Park_wNC	CeCGSR_e_Park_wNC1
1	50	50	50	9,999	9,999

P2D2 Decel Pressure - C7 - Part 6

y/x	CeCGSR_e_Park_wNC2	CeCGSR_e_Park_wNC3	CeCGSR_e_Park_wNC4	CeCGSR_e_Park_wNC5	CeCGSR_e_Park_wNC6
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 7

y/x	CeCGSR_e_Park_wNC7	CeCGSR_e_Park_wNC1C2	CeCGSR_e_Park_wNC2C3	CeCGSR_e_Park_wNC2C4	CeCGSR_e_Park_wNC2C5
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 8

y/x	CeCGSR_e_Park_wNC2C6	CeCGSR_e_Park_wNC3C4	CeCGSR_e_Park_wNC3C5	CeCGSR_e_Park_wNC3C6	CeCGSR_e_Park_wNC4C5
1	9,999	9,999	9,999	9,999	9,999

P2D2 Decel Pressure - C7 - Part 9

y/x	CeCGSR_e_Park_wNC4C6	CeCGSR_e_Park_wNC2C3C4C5	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P2D2 Decel Pressure - C7

1	9,999	9,999	9,999	9,999	50
P2D2 Decel Pressure - C7 - Part 10					
y/x	CeCGSR_e_SecondLckd	CeCGSR_e_SecondFW	CeCGSR_e_Third	CeCGSR_e_Fourth	CeCGSR_e_Fifth
1	50	50	50	50	50
P2D2 Decel Pressure - C7 - Part 11					
y/x	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth
1	50	50	50	50	50
P2D2 Decel Pressure - C7 - Part 12					
y/x					
1					

Initial Supporting table - transmission fluid temperature warm up time

Description:

Value Units: transmission fluid temperature normal warn up time, seconds
X Unit: transmission fluid temperature at controller power up, °C

y/x	-40.00	-30.00	-20.00	0.00	20.00
1	1,800.0	1,500.0	1,200.0	600.0	60.0

Initial Supporting table - engine speed time for transmission hydraulic pressure available

Description: ime needed for engine speed to trigger "transmission hydraulic pressure available"

Value Units: seconds
X Unit: transmission fluid temperature °C

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - KtPSDR_t_ModeVlvA_EngOff_Lim

Description: used for both engine off mode valve A stability delay time required to enable fail time update and fail time threshold

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40	-20	0	20	130
1	0.650	0.650	0.650	0.650	0.650

Initial Supporting table - KtPSDR_t_ModeVlvA_TurbDlyLim

Description: mode valve A transtion delay

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40	-20	0	20	130
1	1.500	1.000	0.750	0.500	0.300

Initial Supporting table - KtPSDR_t_ModeVlvB_EngOff_Lim

Description: used for both engine off mode valve B stability delay time required to enable fail time update and fail time threshold

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius

y/x	-40	-20	0	20	130
1	0.250	0.250	0.250	0.250	0.250

Initial Supporting table - KtPSDR_t_ParkServo_EngOff_Lim

Description: P187E time engine must be not running to enable fail time update

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.250	0.250	0.250	0.250	0.250

Initial Supporting table - KtPSDR_t_ParkStatDlyLim

Description: fail delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.500	0.500	0.500	0.500	0.500

Initial Supporting table - KtPSDR_t_ParkVlvStkOff_DlyLim

Description: P187E Transmission Park Valve Stuck Off fail enable delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	1.250	1.250	1.250	1.250	1.250

Initial Supporting table - KtPSDR_t_ParkVlvStkOn_DlyLim

Description: P187D Transmission Park Valve Stuck On fail enable delay time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1.00	1.250	1.250	1.250	1.250	1.250

Initial Supporting table - KtPSDR_t_PISA_EngOff_Lim

Description: P18A8 fail time, engine not running

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-20.00	0.00	20.00	130.00
1	0.800	0.600	0.400	0.200	0.150

Initial Supporting table - KtTMDC_t_EngOnHydPresThrsh

Description: hydraulic system pressure is available when engine speed is above engine speed threshold for this amount of time

Value Units: seconds
X Unit: transmission fluid temperature, degrees Celsius
Y Units: unitless

y/x	-40.00	-30.00	-20.00	0.00	40.00
1	0.300	0.300	0.275	0.200	0.100

Initial Supporting table - P0723 transmission engaged state time threshold			
Description: time necessary after transmission engaged state indicates transmsision engaged to allow P0723 enable			
Value Units: seconds X Unit: transmission fluid temperature °C			
y/x	-40.000	0.000	40.000
1	5.000	3.000	1.000

Initial Supporting table - P0741 (GF9 specific) TCC slip speed crash RPM

Description: RPM limit used to establish slip crashed when TCC oil became available

Value Units: RPM
X Unit: % accelerator position

y/x	0.00	15.00	25.00	50.00	75.00
1	100	100	160	233	300

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P0741 (GF9 specific) torque convert derivative slip speed fail threshold

Description: he fail threshold, rate of change of torque converter slip speed, at which the torque convert clutch is considered stuck on.

Value Units: RPM/second

X Unit: transmission fluid temperature °C

y/x	-7.00	10.00	40.00
0	-600	-600	-600
15	-600	-600	-600
25	-900	-900	-900
50	-1,200	-1,200	-1,200
75	-1,500	-1,500	-1,500

Initial Supporting table - P176B delay to allow transmission input, intermediate and output speeds to stablize for fail evaluation		
Description: delay to allow transmission input, intermediate and output speeds to stablize for fail evaluation		
Value Units: seconds X Unit: intermediate speed sensor select		
y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	1.000	1.000

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P176B holding clutch states

Description: inditaces when the clutch states allow transmission intermediate speed sensor evaluation, when rotating components can trigger speed sesnor, holding clutches will not allow evaluation while clutches not holding will allow evaluation

Value Units: TRUE or FALSE

X Unit: intermediate speed sensor select

Y Units: commanded gear

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
CeCGSR_e_CR_NullForSched	1	1
CeCGSR_e_CR_Neutral	1	1
CeCGSR_e_CR_Park	1	1
CeCGSR_e_CR_Reverse	0	1
CeCGSR_e_CR_First	0	1
CeCGSR_e_CR_Second	0	1
CeCGSR_e_CR_Third	1	1
CeCGSR_e_CR_Fourth	0	1
CeCGSR_e_CR_Fifth	0	1
CeCGSR_e_CR_Sixth	0	1
CeCGSR_e_CR_Seventh	0	1
CeCGSR_e_CR_Eighth	1	1
CeCGSR_e_CR_Ninth	0	1
CeCGSR_e_CR_Tenth	1	1

Initial Supporting table - P176B intermediate speed sensor fail count threshold

Description: P176B intermediate speed sensor fail count threshold

Value Units: fail counts
X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	4	4

Initial Supporting table - P176B intermediate speed sensor fail RPM threshold

Description:

Value Units: RPM

X Unit: command gear

Y Units: intermediate speed sensor select

y/x	CeTGRR_e_Gear1	CeTGRR_e_Gear2	CeTGRR_e_Gear3	CeTGRR_e_Gear4	CeTGRR_e_Gear5	CeTGRR_e_Gear6	CeTGRR_e_Gear7	CeTGRR_e_Gear8	CeTGRR_e_Gear9	CeTGRR_e_Gear10
CeTSRR_e_C2 C_ClchSpdSnsr1	251	382	10,000	248	50	133	50	10,000	121	10,000
CeTSRR_e_C2 C_ClchSpdSnsr2	0	0	0	0	0	0	0	0	0	0

Initial Supporting table - P176B intermediate speed sensor fail time threshold		
Description: P176B intermediate speed sensor fail time threshold		
Value Units: seconds X Unit: intermediate speed sensor select		
y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	2.000	2.000

Initial Supporting table - P176B minimum estimated transmission intermediate speed to enable fail evaluation		
Description: minimum estimated transmission intermediate speed to enable fail evaluation, where estimate is based on transmission input speed / ratio calibration, where ratio calibration is either P176B ratio calibration when REVERSE or P176B ratio calibration when not REVERSE		
Value Units: estimated transmission intermediate speed RPM X Unit: intermediate speed sensor select		
y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	172.0	172.0

Initial Supporting table - P176B minimum transmission input speed to enable fail evaluation

Description: minimum transmission input speed to enable fail evaluation

Value Units: transmission input speed RPM

X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	172.0	172.0

18 OBDG04 TCM 9 Speed T87A Supporting Tables

Initial Supporting table - P176B ratio calibration when not REVERSE

Description: used to estimate transmission input speed based on transmission intermediate speed when range is not REVERSE

Value Units: ratio

X Unit: commanded gear

Y Units: intermediate speed sensor select

y/x	CeTGRR_e_Gear1	CeTGRR_e_Gear2	CeTGRR_e_Gear3	CeTGRR_e_Gear4	CeTGRR_e_Gear5	CeTGRR_e_Gear6	CeTGRR_e_Gear7	CeTGRR_e_Gear8	CeTGRR_e_Gear9	CeTGRR_e_Gear10
CeTSRR_e_C2 C_ClchSpdSnsr 1	1.5848	6.3694	1.0000	2.4450	1.0000	0.5227	1.0000	1.0000	1.1905	1.0000
CeTSRR_e_C2 C_ClchSpdSnsr 2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Initial Supporting table - P176B ratio calibration when REVERSE

Description: used to estimate transmission input speed based on transmission intermediate speed when range is REVERSE

Value Units: ratio
X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	1.0000	1.0000

Initial Supporting table - P17C5 P17D3 intermediate speed sensor RPM

Description: P17C5 P17D3 intermediate speed sensor RPM at signal period transtion to enable fail time update

Value Units: intermediate speed sensor RPM

X Unit: intermediate speed sensor 1 or 2

y/x	0	1
1	25	25

18 OBDG04 TCM 6 Speed T43 Supporting Tables

Initial Supporting table - P2818 (GF9 specific) control valve test time

Description: Value to initialize the torque converter clutch control valve test time to after clutch select valve solenoid is turned on, window of time in which the torque converter clutch slip speed and derivative slip speed must be evaluated for failure. Window is a time down window from the calibration value to zero (0.0) seconds.

Value Units: seconds

X Unit: transmission fluid temperature °C

y/x	-7.00	10.00	40.00
1	0.600	0.300	0.100

2D Supporting Tables T43

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

2D Supporting Tables T43

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

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	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	3.10	1.90	1.10	0.80	0.60	Sec

Table 11

Axis	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	1.80	1.20	0.60	0.40	0.30	Sec

Table 12

Axis	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	2.20	1.40	0.90	0.70	0.40	Sec

2D Supporting Tables T43

Table 13

Axis	-6.67	-6.66	40.00	80.00	120.00	°C
Curve	2.60	1.00	0.50	0.30	0.20	Sec

Table 14

Axis	-6.67	-6.66	40.00	80.00	120.00	°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	2.50	2.50	Sec

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

2D Supporting Tables T43

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

Table 22

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

Table 23

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