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

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

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 curcuit. This diagnostic reports the DTC when this circut 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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System Control Module Communicati on Bus A Off	U0073	Description 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	Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run = 1 (1 indicates enabled) = Active > 11.00 Volts	Diagnostic runs in 12.5 ms loop	Type A, 1 Trips
					CAN hardware is bus OFF for	> 0.1625 seconds		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code U0100	Monitor Strategy Description	Malfunction Criteria Message is not received from controller for Message \$0BE Message \$0C9 Message \$18E Message \$1A1 Message \$1A3 Message \$1AA Message \$1BA Message \$1BA	<ul> <li>► Threshold Value</li> <li>≥ 0.50 seconds</li> <li>≥ 12.00 seconds</li> <li>≥ 0.50 seconds</li> <li>≥ 12.00 seconds</li> <li>≥ 12.00 seconds</li> <li>≥ 12.00 seconds</li> <li>≥ 12.00 seconds</li> <li>≥ 0.50 seconds</li> <li>≥ 0.50 seconds</li> </ul>	Secondary Parameters 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	Enable Conditions Not Active on Current Key Cycle Enabled Not Active Not Active > 6.41 Volts = run	Time Required Diagnostic runs in 12.5 ms loop	MIL IIIum. Type A, 1 Trips
			Message \$3D1 Message \$3E9 Message \$4C1 Message \$4D1 Message \$4F1 Message \$589	<ul> <li>≥ 12.00 seconds</li> </ul>	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	= 1 (1 indicates enabled) = Active > 11.00 Volts		

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

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	≤ -3.8500 g ≥ -3.8500 g (≤ 0.5 Ω 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	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= CeLATR_e_VoltageDirec tProp</li> <li>= FALSE</li> <li>= FALSE</li> </ul>	raw lateral acceleration signal stability time $\geq$ 30.0 seconds, fail time $\geq$ 75.0 seconds out of sample time $\geq$ 120.0 seconds, 50 millisecond update rate	Special Type C

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	≥ 3.8500 g ≤ 3.8500 g (≤ 0.5 Ω 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	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= CeLATR_e_VoltageDirec tProp</li> <li>= FALSE</li> <li>= FALSE</li> </ul>	raw lateral acceleration signal stability time $\geq$ 30.0 seconds, fail time $\geq$ 75.0 seconds out of sample time $\geq$ 120.0 seconds, 50 millisecond update rate	Special Type C

17 OBDG04 TCM Summary	/ Tables (T87A - 9 Sp	eed)
-----------------------	-----------------------	------

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	≥ 0.5300 g ≤ 3.8500 g	battery voltage run crank voltage diagnostic monitor enable update raw lateral acceleration signal stablity time: TOSS vehicle speed 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 P07C0 test 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	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>≥ 15.0 KPH</li> <li>= TRUE</li> <li>= TRUE</li> <li>= TRUE</li> <li>= FALSE</li> <li>= 1st thru 10th</li> <li>≤ 100.0 RPM</li> <li>&lt; 0.5300 g</li> <li>= FALSE</li> <li< td=""><td>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</td><td>Special Type C</td></li<></ul>	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

17 OBDG04 TCM Summa	ry Tables (T87A - 9 Speed)
---------------------	----------------------------

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	≤ -3.8500 g ≥ -3.8500 g (≤ 0.5 Ω 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	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= CeLATR_e_VoltageDirec tProp</li> <li>= FALSE</li> <li>= FALSE</li> </ul>	raw longitudinal acceleration signal stability time $\geq$ 30.0 seconds, fail time $\geq$ 75.0 seconds out of sample time $\geq$ 120.0 seconds, 50 millisecond update rate	Special Type C

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	≥ 3.8500 g ≤ 3.8500 g (≤ 0.5 Ω 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	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= CeLATR_e_VoltageDirec tProp</li> <li>= FALSE</li> <li>= FALSE</li> </ul>	raw longitudinal acceleration signal stability time $\geq$ 30.0 seconds, fail time $\geq$ 75.0 seconds out of sample time $\geq$ 120.0 seconds, 50 millisecond update rate	Special Type C

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Longitudinal Acceleration Sensor Performance	C1254	Controller specific analog circuit diagnoses the raw longitudinal acceleration signal rationalized against the TOSS vehicle speed acceleration. The diagnostic monitor can be designed to detect an invalid longitudinal acceleration signal based on the TOSS vehicle speed windows and TOSS vehicle speed acceleration, 4 windows can be enabled. The delta between the TOSS vehicle speed acceleration and longitudinal acceleration signal is taken within each window to verify the delta is small, no failure indicated, or the delta is large indicating the longitudinal acceleration signal is in error.	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 clutch high side drive 1 enable high side drive 2 enable diagnsotic fault sequence gear active P0716 fault active P0717 fault active P0717 test fail this key on P07BF tail tactive P07BF test fail this key on P07BF test fail this key on P07C0 fault active P07C0 test 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	≥ 11.00 volts ≥ 11.00 volts = 1 Boolean = 0 Boolean ≥ 15.0 KPH ≤ 0.5300 g = TRUE = TRUE = TRUE = FALSE = SALSE = FALSE = SALSE = SAL	raw lateral 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
					TOSS vehicle speed TOSS vehicle speed	≥ 0.0 KPH ≤ 0.0 KPH	update rate	

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	< 0.5300 g		
					U0073 fault active U0073 test fail this key on DTCs not fault active	= FALSE = FALSE VehicleSpeedSensor_FA VehicleSpeedSensorError		
			ABS(TOSS vehicle speed acceleration - raw longitudinal acceleration signal) update raw longitudinal acceleration signal region 3 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 stablity 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 P0717 fault active P0717 test fail this key on P07BF fault active P07BF test fail this key on P07C0 fault active	VehicleSpeedSensorError ≥ 11.00 volts = 1 Boolean = 0 Boolean ≥ 15.0 KPH ≤ 0.5300 g = TRUE = TRUE = TRUE = FALSE = FALSE	raw lateral longitudinal acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	
					P07C0test fail this key on attained gear attained gear slip ABS(raw longitudinal acceleration signal) AND ABS(raw longitudinal	= FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g		

17 OBDG04 TCM Summa	ry Tables (T87A - 9 Speed)
---------------------	----------------------------

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					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	<ul> <li>≤ 0.70 %</li> <li>≥ 80.0 Nm</li> <li>≤ 0.1000 g</li> <li>≥ 0.0 KPH</li> <li>&lt; 0.5300 g</li> <li>= FALSE</li> <li>= FALSE</li> <li>VehicleSpeedSensor_FA</li> <li>VehicleSpeedSensorError</li> </ul>	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 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 stablity 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 P0717 fault active P0717 test fail this key on P07BF fault active	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= 0 Boolean</li> <li>≥ 15.0 KPH</li> <li>≤ 0.5300 g</li> <li>= TRUE</li> <li>= TRUE</li> <li>= TRUE</li> <li>= FALSE</li> </ul>	raw lateral longitudinal acceleration signal stability time ≥ 30.0 seconds, fail time ≥ 75.0 seconds out of sample time ≥ 120.0 seconds, 50 millisecond update rate	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					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)	= FALSE = FALSE = FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g		
					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	<ul> <li>≤ 0.70 %</li> <li>≥ 80.0 Nm</li> <li>≥ 0.1500 g</li> <li>≥ 0.0 KPH</li> <li>≤ 0.0 KPH</li> <li>&lt; 0.5300 g</li> <li>= FALSE</li> <li>= FALSE</li> <li>VehicleSpeedSensor_FA</li> <li>VehicleSpeedSensorError</li> </ul>	region 2 fail time ≥ 75.0 seconds out of region 2 sample time ≥ 120.0 seconds, 50 millisecond update rate	
			ABS(TOSS vehicle speed acceleration - raw longitudinal acceleration signal) update raw longitudinal acceleration signal region 1 fail time, 50 millisecond update rate	≥ 0.5300 g	battery voltage run crank voltage diagnostic monitor enable region 1 specific enable update raw lateral longitudinal acceleration signal stablity time: TOSS vehicle speed TOSS vehicle speed acceleration automatic transmission is clutch to clutch OR dual	<ul> <li>≥ 11.00 volts</li> <li>≥ 11.00 volts</li> <li>= 1 Boolean</li> <li>= 0 Boolean</li> <li>≥ 15.0 KPH</li> <li>≤ 0.5300 g</li> <li>= TRUE</li> </ul>	raw lateral longitudinal acceleration signal stability time $\geq 30.0$ seconds, fail time $\geq 75.0$ seconds out of sample time $\geq 120.0$ seconds, 50 millisecond update rate	

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 attained gear slip ABS(raw longitudinal acceleration signal) AND ABS(raw longitudinal acceleration signal)	= TRUE = TRUE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = FALSE = 1st thru 10th ≤ 100.0 RPM ≥ 0.5300 g ≤ 3.8500 g		
					update region 1 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	<ul> <li>≤ 0.70 %</li> <li>≥ 80.0 Nm</li> <li>≥ 0.1500 g</li> <li>≥ 15.0 KPH</li> <li>≤ 200.0 KPH</li> <li>&lt; 0.5300 g</li> <li>= FALSE</li> <li>= FALSE</li> <li>VehicleSpeedSensor_FA</li> <li>VehicleSpeedSensorError</li> </ul>	region 1 fail time ≥ 75.0 seconds out of region 1 sample time ≥ 120.0 seconds, 50 millisecond update rate	

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	2601 This DTC will be stored if the calibration check sum 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				

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	603 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 ECC ROM Error Count >	3			Diagnostic runs at controller power up.	
			Perserved NVM region error detected during shut down.				Diagnostic runs at controller power down.	

17 OBDG04 TCM Summary Tables (T87A - 9 Speed)

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	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
		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 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.	

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)	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Internal TCM Processor Integrity Fault	nternal TCM Processor ntegrity Fault Fault Po606 Indicates that the Tu has detected an internal processor integrity fault. These include diagnostics done on the SPI Communication as as a host of diagnos for both the primary and secondary processsors.	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 processsors.	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 recieved		Run/Crank voltage >= 8.00 or Run/Crank voltage >= 11.00, else the failure will be reported for all conditions	In the primary processor, 159 / 399 counts intermittent or 39 counts continuous; 39 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 recieved			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	
		r r r	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	

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_ConfigRegTes tEnbld == 1 Value of KePISD_b_ConfigRegTes tEnbld 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_SO H_FItEnbld == 1 Value of KePISD_b_MainCPU_SO H_FItEnbld 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	

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 tEnbld == 1 Value of KePISD_b_ConfigRegTes tEnbld 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_CnvrtrTe stEnbld == 1 Value of KePISD_b_A2D_CnvrtrTe stEnbld 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 occured 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,	

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 occured 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_XferTest Enbld == 1 Value of KePISD_b_DMA_XferTest Enbld is: 0. (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: <b>P0606_Program</b> <b>Sequence Watch Enable</b> <b>f(Core, Loop Time)</b> (If 0, this Loop Time test is disabled)	Fail Table, f(Loop Time). See supporting tables: <b>P0606_PSW</b> 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	

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: <b>P0606_Last</b> Seed Timeout f (Loop Time)	

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

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.	Voltage measurement outside of controller specific acceptable range during driver on state indicates short to ground failure. Controller specific output driver circuit voltage thresholds are set to meet the following controller specification for a short to ground.	≤ 0.5 Ω impedance between signal and controller ground	diagnostic monitor enable high side drive ON service mode \$04 not active service fast learn not active P0658 fault active P0658 test fail this key on	= 1 Boolean = TRUE = FALSE = FALSE	fail count ≥ 6 counts out of sample count ≥ 2,395 counts 6.25 millisecond update rate	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Range (TR) Switch Circuit Low Voltage	P0707	Diagnoses the internal range sensor circuit A and wiring for a ground short circuit fault using controller specific PWM duty cycle measurement thresholds.	when PWM sensor type and PWM voltage direct conditional internal range sensor A PWM duty cycle when PWM sensor type and PWM voltage inverse conditional internal range sensor A PWM duty cycle Increment fail and sample time, update rate 25 milliseconds Controller specific PWM duty cycle thresholds are set to meet the following controller specification for a short to ground.	≤ 9.998 % duty cycle ≥ 9.998 % duty cycle ≤ 0.5 Ω impedance between signal and controller ground	diagnostic monitor enable battery voltage when sensor type is PWM duty cycle direct or inverse conditional for fail threshold is used conditional type check calibration	= 1 Boolean ≥ 9.00 volts = CeTRGD_e_VoltDirctPro p	fail time ≥ 1.000 seconds out of sample time ≥ 1.500 seconds battery voltage time ≥ 1.000 seconds	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Range (TR) Switch Circuit High Voltage	P0708	Diagnoses the internal range sensor circuit A and wiring for a short to voltage circuit fault using controller specific PWM duty cycle measurement thresholds.	<ul> <li>when PWM sensor type and PWM voltage direct conditional internal range sensor A PWM duty cycle</li> <li>when PWM sensor type and PWM voltage inverse conditional internal range sensor A PWM duty cycle</li> <li>Increment fail and sample time, update rate 25 milliseconds</li> <li>Controller specific PWM duty cycle thresholds are set to meet the following controller specification for a short to power.</li> </ul>	≥ 91.998 % duty cycle ≤ 91.998 % duty cycle ≤ 0.5 Ω impedance between signal and controller power	diagnostic monitor enable battery voltage when sensor type is PWM duty cycle direct or inverse conditional for fail threshold is used conditional type check calibration	= 1 Boolean ≥ 9.00 volts = CeTRGD_e_VoltDirctPro p	fail time ≥ 1.000 seconds out of sample time ≥ 1.500 seconds battery voltage time ≥ 1.000 seconds	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value ≤ 15.0 °C	Secondary Parameters diagnsotic 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 pdeal position engine torque engine speed vehicle speed engine coolant temperature engine coolant temperature	Enable Conditions = 1 Boolean ≥ 9.00 volts ≥ 9.00 volts = 1 Boolean veTFSR_b_TFT_RatlEnbl ≥ 5.0 % ≥ 50.0 Nm ≥ 50.0 RPM ≥ 10.0 KPH ≥ -40.0 °C ≤ 150.0 °C	Time Required transmission fluid temperature warm up time ≥ transmission fluid temperature warm up time seconds battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	MIL Illum. Type B, 2 Trips
					raw transmission fluid temperature raw transmission fluid	≥ -40.0 °C ≤ 150.0 °C		
					temperature P2818 fault active P2818 test fail this key on	= FALSE = FALSE		
					DTCs not fault active			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
						EngineTorqueEstInaccura te AcceleratorPedalFailure CrankSensor_FA ECT_Sensor_FA VehicleSpeedSensor_FA		
			current transmission fluid temperature string length = previous transmission fluid temperature transmission temperature string length + (raw transmission fluid temperature - previous raw transmission fluid temperature, update rate 100 milliseconds, increment sample count	≥ 80.0 °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 ≥	
					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	≤ 0.0000 °C			fail time ≥ 300.0 seconds	

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	= 1 Boolean ≥ 9.00 volts	battery voltage time ≥ 0.100 seconds	
					run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
					stuck in range test enable propulsion system active raw transmission fluid temperature raw transmission fluid temperature	= 1 Boolean = TRUE ≥ -40.0 °C ≤ 150.0 °C		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n 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	≤ 47.450 Ω	diagnostic monitor enable battery voltage run crank voltage run crank voltage in range time	= 1 Boolean ≥ 9.00 volts ≥ 9.00 volts	fail time $\ge 10.00$ seconds out of sample time $\ge$ 12.00 seconds 1 seconds update rate battery voltage in range time $\ge$ 0.100 seconds run crank voltage in range time $\ge$ 0.100 seconds	Type B, 2 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n 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	≥105,445.0 Ω	diagnostic monitor enable battery voltage run crank voltage run crank voltage in range time	= 1 Boolean ≥ 9.00 volts ≥ 9.00 volts	fail time $\ge 10.00$ seconds out of fail time $\ge 12.00$ seconds 1 seconds update rate battery voltage in range time $\ge$ 0.100 seconds run crank voltage in range time $\ge$ 0.100 seconds	Type B, 2 Trips

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	delta raw transmission input speed delta raw transmission input speed = raw transmission input speed - last valid raw transmission input speed, 25 millisecond update rate	≥ 850.0 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	= FALSE = 1 Boolean = FALSE = FALSE = FALSE	fail time $\ge 1.500$ seconds updated fail event count, fail event count $\ge$ 5 counts, 25 millisecond update rate raw transmission	Type A, 1 Trips
		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 accumualted indicating the raw transmission input speed has not recovered above a			Input speed OR valid raw transmission input speed (before drop event) last valid raw transmission input speed updates very 25 milliseconds when stablity time complete as long as (delta delta raw	≥ 160.0 RPM	input speed time ≥ 2.00 seconds	
		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 act begad on on			transmission input speed AND raw transmission input speed) raw transmission output speed accelerator pedal position engine torque engine torque	<ul> <li>≤ 320.0 RPM</li> <li>&gt; 160.0 RPM</li> <li>≥ 254.0 RPM</li> <li>≥ 5.0 %</li> <li>≤ 8,191.9 Nm</li> <li>≥ 30.0 Nm</li> <li>&gt; 400.0 RPM</li> </ul>	stability time ≥ 0.100 seconds	
		intermittent raw transmission input speed signal RPM.			engine speed	2 400.0 KMM	engine speed time ≥	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					DTCs not fault active	AcceleratorPedalFailure EngineTorqueEstInaccura te	engine speed time for transmission hydraulic pressure available see supporting tables	
							Tadoles	
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 ciruit 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 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 < 425.0 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 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 P0726 test fail this key on P07C0 test fail this key on accelerator pedal position engine torque engine torque (transmission current attained gear raw transmission output speed OR transmission current attained gear raw transmission output speed) P0717 fault active P0717 test fail this key on	<ul> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≥ 5.00 volts</li> <li>= FALSE</li> <li>≥ 9.00 volts</li> <li>= FALSE</li> <li>&gt; 5.0 %</li> <li>≥ 30.0 Nm</li> <li>≤ 8,191.9 Nm</li> <li>≤ CeCGSR_e_CR_Sevent h</li> <li>≥ CeCGSR_e_CR_First</li> <li>≥ 162.0 RPM</li> <li>≤ CeCGSR_e_CR_Tenth</li> <li>≥ CeCGSR_e_CR_Sevent h</li> </ul>	fail time ≥ 4.00 seconds run crank voltage time ≥ 25 milliseconds	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					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 transmission hydraulic pressure available: engine speed	≥ 162.0 RPM = FALSE = FALSE = 0 Boolean = 1 Boolean ≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting tables	
						EngineTorqueEstInaccura te		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System Output Speed Sensor Performance	Code P0721	Description 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 when direction is reverse OR on period when direction is reverse OR on period when direction is forward TOSS transitional period detected = TRUE when: on period on period	<ul> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≠ 0 counts</li> <li>= FALSE</li> <li>= FALSE</li> <li>≥ 0.3994 seconds</li> <li>≤ 0.3193 seconds</li> <li>&lt; 0.2080 seconds</li> <li>&gt; 0.1523 seconds</li> <li>&lt; 0.0518 seconds</li> <li>&gt; 0.0381 seconds</li> <li>&lt; 0.3994 seconds</li> <li>&gt; 0.3193 seconds</li> </ul>	fail time ≥ 3.500 seconds out of sample time ≥ 5.000 seconds	Illum. Type A, 1 Trips
					when direction unknown senor type is directional senor type cailbration	= CeTOSR_e_Directional		

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 ciruit 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 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_Four th	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	= FALSE = 1 Boolean $\neq$ COMPLETE = PARK = NEUTRAL $\neq$ no inhibt active ≥ 8,192.0 Nm ≥ 100.0 % $\geq$ CeCGSR_e_CR_First $\leq$ CeCGSR_e_CR_Tenth $\geq$ 50.0 Nm $\geq$ 5.0 % $\geq$ 3.0 % $\leq$ CeCGSR_e_CR_Fourth $\geq$ 50.0 Nm $\geq$ 50.0 Nm	fail time ≥ 5.00 seconds high gear OR fail time ≥ 3.50 seconds low gear	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					accelerator pedal position hysteresis high	≥ 8.0 %		
					accelerator pedal position hysteresis low)	> 5.0 %		
					TISS enable occurs when: (TISS speed select	= 1 Boolean		
					TISS/TOSS has single power supply calibration	= 0 Boolean		
					TISS	≤ 8,191.9 RPM		
					TISS) OR	≥ 425.0 RPM		
					(TISS speed select OR TISS/TOSS has single	≠ 1 Boolean		
					power supply calibration AND			
					TISS AND	≤ 8,191.9 RPM		
					P0716 test fail this key on	≥ 3,500.0 RPM		
					P0717 test fail this key on P07BF test fail this key on P07C0 test fail this key on	= FALSE = FALSE = FALSE		
					PTO check: PTO enable calibration is	≠ 1 Boolean		
					OR (PTO enable calibration is TRUE	= 1 Boolean		
					AND PTO active)	= TRUE		
					run crank voltage	≥ 5.00 volts	run crank voltage time ≥ 25 milliseconds	
					service fast learn active	= FALSE		

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	<ul> <li>≥ 9.00 volts</li> <li>≥ -40.00 °C</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>≥ 400.0 RPM</li> </ul> AcceleratorPedalFailure EngineTorqueEstInaccura te	engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting tables	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Output Speed Sensor Circuit Intermittent	P0723	Detects unrealistic drop in raw transmission output 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	4WD low fail threshold: delta raw transmission output speed OR NOT 4WD low fail threshold, update fail time, delta raw transmission output speed = raw	≥ 500.0 RPM ≥ 500.0 RPM	service mode \$04 active diagnostic monitor enable	= FALSE = 1 Boolean	fail time $\ge$ 1.500 seconds updated fail event count, fail event count $\ge$ 5 counts, 25 millisecond update rate	Type A, 1 Trips
		lower value. The raw transmission output speed must achieve a value high enough to record an unrealistic drop sample to sample. Once the drop threshold is met, fail time is accumualted indicating the raw	transmission output speed previous loop - raw transmission output speed, 25 millisecond update rate		transmission engaged state	≠ not engaged	transmission engaged state time ≥ <b>P0723</b> transmission engaged state time threshold see supporting tables	
		transmission output speed has not recovered above a threshold, allowing the			4WD low state	= 4WD low state previous loop, 25 millisecond update rate	4WD low change time ≥ 3.0 seconds	
		fail event count to increment. Multiple fail event counts must occur, but if the signal			PTO check: PTO enable calibration is FALSE OR	≠ 1 Boolean		
		remains low, no further deltas occur, the "Output Speed Sensor Circuit Low Voltage"			(PTO enable calibration is TRUE AND PTO active)	= 1 Boolean = TRUE		
		P0723, as P0723 is designed to set based on an intermittent raw			run crank voltage	≥ 5.00 volts	run crank voltage time ≥ 25 milliseconds	
		transmission output speed signal RPM.			service fast learn active run crank voltage P077C test fail this key on P077D test fail this key on	= FALSE ≥ 9.00 volts = FALSE = FALSE		
					when PRNDL is moved to			

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 PRNDL OR raw transmission output speed OR last valid raw transmission output 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		
					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)	≤ 4,095.9 RPM ≥ 160.0 RPM = 0 Boolean = 0.0 RPM	raw transmission input speed stability time ≥ 2.00 seconds no time required	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					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	= TRUE = TRUE		
					last valid raw transmission output speed OR valid raw transmission output speed (before drop event)	> 89.0 RPM > 89.0 RPM	raw transmission output speed time ≥ 2.00 seconds	
					last valid raw transmission output speed updates very 25 milliseconds when stablity time complete as long as (delta delta raw transmission output speed AND raw transmission output speed)	≤ 140.0 RPM ≥ 89.0 RPM	stability time ≥ 0.100 seconds	
					transmission hydraulic pressure available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting tables	
					DTCs not fault active	AcceleratorPedalFailure EngineTorqueEstInaccura te		

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. The GR10 diagnostic monitor detects	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 soleniod multiplexed to TCC hydraulic AND torque convert slip speed = ABS(engine speed - transmission input shaft speed) THEN increment fail count 25 millisecond update rate	<ul> <li>≥</li> <li>P0741 torque convert derivative slip speed fail threshold see supporting tables</li> <li>≤ 250.0 RPM</li> </ul>	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 P281E falut active P281E falut active P281E falut active P281E falut active P281E falut active	<ul> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>≥ 400.0 RPM</li> <li>≥ 400.0 RPM</li> <li>≥ 9.00 volts</li> <li>≥ 9.00 volts</li> <li>≥ 9.00 volts</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>≥ 400.0 RPM</li> </ul>	fail count $\geq 4$ counts 25 millisecond update rate engine speed time $\geq$ engine speed time for transmission hydraulic pressure available see supporting table battery voltage time $\geq 0.100$ seconds run crank voltage time $\geq 0.100$ seconds	Type A, 1 Trips

17 OBDG04 TCM Summary	<b>Tables</b>	(T87A - 9	Speed)
-----------------------	---------------	-----------	--------

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System	Code	Description			transmission fluid temperature accelerator pedal position accelerator pedal position 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 P0717 fault pending P0720 fault pending P0700 fault pending P0700 fault pending P0700 fault pending P0700 fault pending P0711 fault pending P0721 fault pending P0723 fault pending P0721 fault pending P0741 test fail this key on vehicle speed engine torque engine torque engine speed engine speed engine speed accelerator pedal position 4WD low state (driver shift mode active OR driver shift mode calibration) (misfire requests TCC off CR misfire TCC off calibration) (clucth control solenoid stuck on OR solenoid	$\leq 130.00 \ ^{\circ}C$ $\geq 0.00 \ \%$ $\leq 20.00 \ \%$ $\geq 0.0 \ KPH$ $= OFF$ $\neq disabled (clutch select valve transitioning)$ $= FALSE$ $= FALSE$ $= FALSE$ $= FALSE$ $= FALSE$ $= FALSE$ $= 1 \ Boolean$ $\geq 55.0 \ Nm$ $\leq 800.0 \ Nm$ $= FALSE$ $\leq 45.0 \ KPH$ $\geq 400.0 \ RPM$ $\leq 5,500.0 \ RPM$ $\leq 95.0 \ \%$ $= FALSE$ $= 0 \ Boolean$ $= 0 \ Boolean$ $= 0 \ Boolean$ $= FALSE$		Illum.
					stuck OFF intrusive shift active)			

17 OBDG04 TCM Summa	ry Tables (T87A - 9 Speed)
---------------------	----------------------------

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System	Code	Description			P0746 fault pending P0747 fault pending P0776 fault pending P0776 fault pending P0796 fault pending P0797 fault pending P2714 fault pending P2713 fault pending P2723 fault pending P2723 fault pending P2732 fault pending P2732 fault pending P2820 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,	<pre>= FALSE = FALSE ≤ 8.0 KPH ≥ 4.0 % &gt; 1.0 % = disabled (clutch select valve not transitioning) = complete (clutch select valve transition complete) = P0741 stuck on test time see supporting tables</pre>		IIIum.
					control valve test time must time down from calibration value to zero (0.0) seconds	P0741 control valve test time see supporting 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 EngineTorqueEstInaccura te P0716, P0717, P07BF, P07C0 P0722, P0723, P077C, P077D		

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	Itrol       C1 clutch slip speed, update fail time       ≥ 200.0 RPM         hile       a.25 milliscond update       ≥ 200.0 RPM         hile       use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage       = 1 Boolean         will near 'he son aver iring 'shaft       = 1 Boolean       = 1 Boolean	<ul> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> </ul>	fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 milliscond update battery voltage time ≥ 0.100 seconds	Type A, 1 Trips		
		output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control			AND run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		an automatic transmission shift occurs and has been considered shift complete, or, steady state gear is deemed			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled TCM output driver high	= TRUE Boolean = TRUE Boolean		
		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			side driver 2, clutch pressure control solenoid driver circuit enabled service fast learn active service solenoid cleaning procedure active hydraulic pressure	= FALSE Boolean = FALSE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C1 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		hydraulically on, while the solenoid is electrically functional, which must take priority			calculation accelerator pedal position engine speed	≥ 2.00 % ≥ 1,500.0 RPM		
		over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			diagnostic clutch test C1 set to HOLDING CLUTCH when: clutch solenoid test state	= NEUTRAL TEST		

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			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C1 clutch pressured map 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	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C1 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down	
		pressure control solenoid.			when range shift complete 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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on	<ul> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>	must time down to zero when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P0747	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C1 clutch slip speed OR shift type is not power down shift, C1 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\geq 0.800$ seconds, OR shift type is not power down shift, fail time $\geq 0.150$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		maintain torque capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	<ul> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE Boolean</li> </ul>	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

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			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		pressure control solenoid stuck on diagnostic monitor, the			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		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			hydraulic pressure available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available	
		due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional			transmission output shaft speed	≥ 89.0 RPM	see supporting table	
		All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage			set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request	= FALSE		
		must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or			startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid	= FALSE ≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD		
		performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure			test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of	= TRUE		

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 C1 CB123456, or, GR10 C1 CB123456R, clutch pressure control			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift OP	= 0 Boolean		
					shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP TEST			

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					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	<ul> <li>= TRUE</li> <li>= TEST WAITING</li> <li>= TIE UP TEST HOLD</li> <li>≠ range shift complete</li> <li>= TRUE</li> <li>= TRUE</li> </ul>		
					(clutch control solenoid test state OR clutch control solenoid test state) (see clutch control solenoid test state NOTE below) diagnostic clutch test (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	<ul> <li>= TIE UP TEST TEST STATE</li> <li>= TIE UP TEST HOLD</li> <li>= OFF GOING CLUTCH TEST</li> <li>= TRUE</li> <li>= 1 Boolean</li> <li>≤ 350.0 kPa</li> </ul>	for C1 off going clutch pressure time ≥ P0747 C1 clutch exhaust delay	
							<b>throttle lift foot</b> <b>up shift</b> OR	

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 open throttle power on up shift primary on coming clutch pressure OR	<ul> <li>≥ 8,191.8 Nm</li> <li>= TRUE</li> <li>≠ clutch fill phase</li> <li>≥ 690.0 kPa</li> <li>≥ 690.0 kPA</li> </ul>	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	
1					garage shift primary on	∠ / SU.U KPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 690.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 690.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 690.0 kPa		
					C1 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

17 OBDG04 TCM Summary	/ Tables (T87A - 9	Speed)
-----------------------	--------------------	--------

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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	C1 clutch slip speed, update fail time 6.25 milliscond update	≥ 200.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage use run crank voltage calibration is FALSE OR (use run crank voltage	<ul> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> </ul>	fail time ≥ 3.00 seconds, update fail count, fail count ≥ 3 counts 6.25 milliscond update battery voltage time ≥ 0.100 seconds	Type A, 1 Trips
		output shaft speed, and, one transmission intermediate shaft speed. The clutch pressure control			calibration is TRUE AND run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		an automatic transmission shift occurs and has been considered shift complete, or, steady			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		state gear is deemed active, range shift complete. When the automatic transmission shift is complete.			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line			service fast learn active service solenoid cleaning procedure active hydraulic pressure	= FALSE Boolean = FALSE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C2 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE > 2.00 %	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			diagnostic clutch test C2 set to HOLDING CLUTCH when: clutch solenoid test state	≥ 1,500.0 RPM		

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			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C2 clutch pressured map C2 clutch pressured map 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	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C2 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down to zero when range shift complete	
		CB128910R, clutch pressure control solenoid.			when range shift complete 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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on	<ul> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P0777	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C2 clutch slip speed OR shift type is not power down shift, C2 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\geq 0.800$ seconds, OR shift type is not power down shift, fail time $\geq 0.150$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		capacity during the capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	<ul> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE Boolean</li> </ul>	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

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			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		pressure control solenoid stuck on diagnostic monitor, the			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle			hydraulic pressure available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure	
		due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is			transmission output shaft speed	≥ 89.0 RPM	see supporting table	
		All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage			set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request	= FALSE		
		must be normal, all clutch pressure control solenoid driver circuits must be functional, no			startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid	= FALSE ≠ TIE UP TEST TEST		
		solenoid electrical or performance faults can be present, and no speed sensor electrical			clutch control solenoid test state (see clutch control solenoid test state NOTE below)	≠ TIE UP TEST HOLD		
		or performance faults can be present, or the a clutch pressure control solenoid stuck			initialize active clutch controller (clutch control processing in process of sequencing clutches on	= TRUE		

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 selenoid			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift	= 0 Boolean		
					shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP TEST			

17 OBDG04 TCM Summary	/ Tables	(T87A - 9	Speed)
-----------------------	----------	-----------	--------

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

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	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 800.0 kPa ≥ 800.0 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 negative torque up shift OR P0777 C2 clutch exhaust delay time open throttle power down shift see supporting tables	
					garage shift primary on	≥ 750.0 kPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 800.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 800.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 800.0 kPa		
					C2 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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			
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
----------------------	---------------	---------------------------------	----------------------	-----------------	---	-------------------	---------------	---------------
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 sesnor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts (≤ 0.5 Ω impedance between signal and controller ground)	service mode \$04 active diagnostic monitor enable P077D fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 16$ counts 12.5 millisecond update rate	Type A, 1 Trips
		voltage intesticites.			run crank voltage battery voltage P077C fault active	≥ 10.00 volts ≥ 10.00 volts = FALSE	run crank and battery voltage time ≥ 5.000 seconds	
					P077C test fail this key on	= FALSE		

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 sesnor raw voltage, update fail time, 12.5 millisecond update rate	≥ 4.7500 volts (≤ 0.5 Ω impedance between signal and controller power)	service mode \$04 active diagnostic monitor enable P077C fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 16$ counts 12.5 millisecond update rate	Type A, 1 Trips
		voltage intesnolus.			run crank voltage battery voltage P077D fault active P077D test fail this key on	≥ 10.00 volts ≥ 10.00 volts = FALSE = FALSE	run crank and battery voltage time ≥ 5.000 seconds	

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	C1 clutch slip speed, update fail time 6.25 milliscond update	≥ 200.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage use run crank voltage calibration is FALSE OR	= 1 Boolean = 1 Boolean ≥ 9.00 volts = 0 Boolean	fail time $\ge$ 3.00 seconds, update fail count, fail count $\ge$ 3 counts 6.25 milliscond update battery voltage time $\ge$ 0.100 seconds	Type A, 1 Trips
		speed, transmission output shaft speed, and, one transmission			(use run crank voltage calibration is TRUE AND	= 0 Boolean		
		intermediate shaft speed. The clutch pressure control solenoid is tested after			run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		an automatic transmission shift occurs and has been considered shift complete, or, steady			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		state gear is deemed active, range shift complete. When the automatic transmission shift is complete			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line			service fast learn active service solenoid cleaning procedure active hydraulic pressure	= FALSE Boolean = FALSE Boolean		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C3 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			accelerator pedal position engine speed diagnostic clutch test C3 set to HOLDING CLUTCH when: clutch solenoid test state	≥ 2.00 % ≥ 1,500.0 RPM		

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			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C3 clutch pressured map C3 clutch pressured map 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	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C3 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down	
		pressure control solenoid.			when range shift complete 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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on	<ul> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>	must time down to zero when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P0797	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C3 clutch slip speed OR shift type is not power down shift, C3 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\geq 0.800$ seconds, OR shift type is not power down shift, fail time $\geq 0.150$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	<ul> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE Boolean</li> </ul>	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

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

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 C3 CB38, or, GR10 C3 CB123456R, clutch pressure control			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift	= 0 Boolean		
					shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP TEST			

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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

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	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 500.0 kPa ≥ 500.0 kPA	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	
					garage shift primary on	≥ 750.0 kPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 500.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 500.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 500.0 kPa		
					C3 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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.			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 intput/turbine speed sesnor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts (≤ 0.5 Ω impedance between signal and controller ground)	service mode \$04 active diagnostic monitor enable P07C0 fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 16$ counts 12.5 millisecond update rate	Type A, 1 Trips	
				age thresholds.		run crank voltage battery voltage P07BF fault active P07BF test fail this key on	≥ 10.00 volts ≥ 10.00 volts = FALSE - FALSE	run crank and battery voltage time ≥ 5.000 seconds	

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 (≤ 0.5 Ω impedance between signal and controller power)	service mode \$04 active diagnostic monitor enable P07BF fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 16$ counts 12.5 millisecond update rate	Type A, 1 Trips
		voltage intesnolus.			run crank voltage battery voltage P07C0 fault active P07C0 test fail this key on	≥ 10.00 volts ≥ 10.00 volts = FALSE = FALSE	run crank and battery voltage time ≥ 5.000 seconds	

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	agnoses the state of e upshift switch cuit, stuck in the ate "tap up" (upshift) tive. e upshift switch ate "tap up" (upshift) tive. e upshift switch switch state update fail time 2 100 millisecond update rate	= tap up (upshift) state active	service mode \$04 active diagnostic monitor enable	= FALSE = 1 Boolean	fail time 2 ≥ 120.00 seconds	Special Type C
Circuit		state "tap up" (upshift) active.			run crank voltage	≥ 5.00 volts	run crank voltage time ≥ 25	
					P1761 fault active P0826 fault active P0826 test fail this key on P0826 fault pending (P0815 fault active OR D0915 fault active test fail	= FALSE = FALSE = FALSE = FALSE = FALSE = FALSE	milliseconds	
					this key on) PRNDL range change time	FALSE	≥ 1.00 seconds	
					PRNDL in range: D1 OR D2 OR D3 OR	= 1 Boolean = 1 Boolean = 1 Boolean		
					D4 OR D5 OR D6 OR	= 1 Boolean = 1 Boolean = 1 Boolean		
					D7 OR D8 OR D9 OR	= 1 Boolean = 1 Boolean = 1 Boolean		
					D10 OR NEUTRAL OR PARK OR REVERSE	= 0 Boolean = 0 Boolean = 0 Boolean = 0 Boolean		
					DTCs not fault pending	Transmission Shift Lever Position Validity		
			switch state update fail time 1 100 millisecond update= tap up (upshift) state activeservice mode \$04 active diagnostic monitor enable= FA = 1	= FALSE = 1 Boolean	fail time 1 ≥ 1.00 seconds			
			rate		run crank voltage	≥ 5.00 volts	run crank voltage time ≥ 25	
					run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on	≥ 9.00 volts = FALSE = FALSE = FALSE	milliseconds	

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	<ul> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= 1 Boolean</li> <li>= 0 Boolean</li> </ul>	≥ 1.00 seconds	

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	switch state update fail time 2 100 millisecond update	= tap down (downshift) state active	service mode \$04 active diagnostic monitor enable	= FALSE = 1 Boolean	fail time 2 ≥ 120.00 seconds	Special Type C
Chrodit		state "tap down" (downshift)	rate		run crank voltage	≥ 5.00 volts	run crank voltage time ≥ 25	
		active.			run crank voltage P1761 fault active P0826 fault active P0826 fault active 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 D4 OR D5 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE	<ul> <li>&gt; 9.00 volts</li> <li>= FALSE</li> </ul> = 1 Boolean <ul> <li>= 1 Boolean</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> </ul>	milliseconds ≥ 1.00 seconds	
						Position Validity		
			update fail time 1	state active	diagnostic monitor enable	= FALSE = 1 Boolean	fail time 1 ≥ 1.00 seconds run crank voltage time ≥ 25	
			rate		run crank voltage	≥ 5.00 volts		
					run crank voltage P1761 fault active P0826 fault active P0826 test fail this key on	≥ 9.00 volts = FALSE = FALSE = FALSE	milliseconds	

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 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 D4 OR D5 OR D6 OR D7 OR D8 OR D9 OR D10 OR NEUTRAL OR PARK OR REVERSE DTCs not fault pending	<ul> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= 1 Boolean</li> <li>= 0 Boolean</li> <li>= 1 Boolean</li> <li< td=""><td>≥ 1.00 seconds</td><td></td></li<></ul>	≥ 1.00 seconds	

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)	<ul> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≥ 5.00 volts</li> <li>≥ 9.00 volts</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> </ul>	fail time ≥ 60.00 seconds run crank voltage time ≥ 25 milliseconds	Special Type C

17 OBDG04 TCM Summary Tables (T87A - 9 Speed)

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM Summa	y Tables (T87A - 9 Speed)
---------------------	---------------------------

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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM Summary	y Tables	(T87A - 9	Speed)
-----------------------	----------	-----------	--------

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM	Summary Tables	(T87A - 9 Speed)
---------------	----------------	------------------

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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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 intermitent 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

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 intermitent and continuous invalid SPI messages. This is based on the detection of missing or invalid receive message within the main processor	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	39 / 399 counts continuous; 12.5 ms /count in the TCM main processor	Type A, 1 Trips
		message.	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	159 / 399 counts continuous; 12.5 ms /count in the TCM main processor	
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 Critera	= FALSE Boolean	Reduandant Memory Command Pressure Enable Calibraiton Not	= 1 Boolean	Single Event	Type A, 1 Trips
			Safety Monitor Enable Critera	= TRUE Boolean	Reduandant Memory Command Pressure Enable Calibraiton	= 0 Boolean	Single Event	
			AND					
			No traction event in progress	diffeerence between driven and non-driven wheel speeds: >= 50.00 pct			Single Event	
			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 Clutch Slip Sum</pct></brake>			Single Event	
			AND					
			Condition timer greater than threshold	= TRUE Boolean			>= 0.00 seconds	
			AND					
			Command clutch pressure	Thresholds for clutches				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			on released clutch greater than threshold	by gear: <= P2D2 Decel Pressure - C1 <= P2D2 Decel Pressure - C2 <= P2D2 Decel Pressure - C3 <= P2D2 Decel Pressure - C4 <= P2D2 Decel Pressure - C5 <= P2D2 Decel Pressure - C6 <= P2D2 Decel Pressure - C6 <= P2D2 Decel Pressure - C6 <= P2D2 Decel Pressure - C6 <=				
			AND *Monitor is disabled if Fault Active or codes for: Speeds Sensors 1/2/3, High Side Drivers 1/2 or service fast learn active. Brake Pedal is defaulted is FA Engine torque is defaulted					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			Safety Monitor Enable Critera	= FALSE Boolean	Reduandant Memory Command Gear Enable Calibraiton Not	=1 Boolean	Single Event	
			Safety Monitor Enable Critera	= TRUE Boolean	Reduandant Memory Command Gear Enable Calibraiton	= 0 Boolean		
			Command gear too low for present vehcle velocity and pedal position	Commanded Gear Threshold by vehicle velocity:				
				<= 1st FWD Thrshid <= 1st REV Thrshid <=2nd FWD Thrshid <=2nd REV Thrshid <=3rd FWD Thrshid <=4th FWD Thrshid <=5th FWD Thrshid <=6th FWD Thrshid <=7th FWD Thrshid <=8th FWD Thrshid <=9th FWD Thrshid <=9th FWD Thrshid (Negative Velocity)				
				<= REV Thrshld (Forward Velocity) *See Attached Supporting Tables:				
			*Monitor is diabled if: TISS FA or TOSS					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
			directional FA, SFL or HSD 1/2 are OFF					

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	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	= FALSE = 1 Boolean ≥ 356.0 RPM ≥ 356.0 RPM	fail time ≥ 8.000 seconds out of sample time ≥ 10.000 seconds 25 millisecond update rate	Type A, 1 Trips
		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 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			run crank voltage battery voltage	≥ 10.00 volts ≥ 10.00 volts	run crank and battery voltage time ≥ 5.000 seconds	

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.						

Component/ I 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	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	<ul> <li>= 1 Boolean</li> <li>= TRUE</li> <li>≥ 11.0 volts</li> <li>≥ 11.0 volts</li> <li>= 1 Boolean</li> <li>= TRUE</li> <li>≥ 11.0 volts</li> <li>≥ 11.0 volts</li> <li>= TRUE</li> <li>U0073</li> </ul>	alive rolling count errors ≥ 54 out of 9 sample counts 50 millisecond update rate checksum error time ≥ 54.00 seconds	Special Type C

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 date 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 diagnsotic alive rolling count data value, if the diagnsotic 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 arrary buffer, increment alive rolling count error counter	<ul> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE</li> <li>≠ frame alive rolling count data value</li> <li>= TRUE</li> <li>= TRUE</li> <li>= FALSE</li> </ul>	fail time ≥ 10.00 seconds run crank voltage time ≥ 0.100 seconds	Special Type C

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 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 faiil time 25 millisecond update rate	> 20.0 RPM P176B intermediate speed sensor fail RPM threshold see supporting tables	diagnostic monitor enable speed sesnor configuration calibration is single OR dual ratio calibration is function of command gear and intermediate speed sesnor when not REVERSE ratio calibration is function of command gear and intermediate speed sesnor when REVERSE 	<ul> <li>= 1 Boolean</li> <li>= CeTNSR_e_NSPD_Singl eSpdSnsr</li> <li>P176B ratio calibration</li> <li>= when not REVERSE see supporting tables</li> <li>P176B ratio calibration</li> <li>= when REVERSE see supporting tables</li> <li>&gt; P176B minimum estimated transmission intermediate speed to enable fail evaluation</li> </ul>	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	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					speed / ratio calibration) with transmission input speed	<ul> <li>≥</li> <li>P176B minimum transmission input speed to enable fail evaluation see supporting tables</li> </ul>	P176B delay to allow transmission input, intermediate and output speeds to stablize for fail evaluation see supporting tables	
					input speed sensor ready based on commaned gear and transmission intermediate speed sensor (state output must be FALSE to enable fail evaluation) with with attained gear	= P176B holding clutch states see supporting tables = REVERSE OR = 1st thru 10th		
					transmission input speed transmission output speed neutral idle mode range shift state P0716 fault active P0717 fault active P07BF fault active P07C0 fault active P0722 fault active P0723 fault active P077C fault active P077C fault active P176C fault active P176D fault active battery voltage	<ul> <li>≥ 172.0 RPM</li> <li>≥ 89.0 RPM</li> <li>= nuetral idle mode ON</li> <li>= range shift complete</li> <li>= FALSE</li> </ul>	battery voltage	

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	= FALSE ≥ 9.00 volts ≥ 400.0 RPM	seconds run crank voltage time ≥ 0.100 seconds engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting 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 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 sesnor raw voltage, update fail time, 12.5 millisecond update rate	≤ 0.2500 volts (≤ 0.5 Ω impedance between signal and controller ground)	service mode \$04 active diagnostic monitor enable P176D fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 40$ counts 12.5 millisecond update rate	Type A, 1 Trips
		voltage mesholds.			run crank voltage battery voltage P176C fault active P176C test fail this key on	≥ 10.00 volts ≥ 10.00 volts = FALSE = FALSE	run crank and battery voltage time ≥ 5.000 seconds	

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 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 sesnor raw voltage, update fail time, 12.5 millisecond update rate	≥ 4.7500 volts (≤ 0.5 Ω impedance between signal and controller power)	service mode \$04 active diagnostic monitor enable P176C fault active service fast learn	= FALSE = 1 Boolean = FALSE = FALSE	fail time $\ge 0.050$ seconds, update fail count 12.5 millisecond update rate fail count $\ge 40$ counts 12.5 millisecond update rate	Type A, 1 Trips
		voltage thresholds.			run crank voltage battery voltage P176D fault active P176D test fail this key on	≥ 10.00 volts ≥ 10.00 volts = FALSE = FALSE	run crank and battery voltage time ≥ 5.000 seconds	

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 sesnor raw direction when transitional period = FALSE AND intermediate speed sesnor raw direction when transitional period = FALSE OR intermediate speed sesnor raw when 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 intermediate speed sesnor count sample period P17D3 fault active OR P17D3 test fail this key on senor type cailbration (senor type is directional) transitional period detected = FALSE when: on period OR on period when direction unknown OR on period on period on period on period on period on period when direction is reverse OR on period on period when direction is forward transitional period detected = TRUE when: on period when direction unknown	<ul> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≠ 0 counts</li> <li>= FALSE</li> <li>= FALSE</li> <li>= CeTNSR_e_NSPD_SinglespdSnsr</li> <li>≥ 0.3994 seconds</li> <li>≤ 0.3193 seconds</li> <li>&lt; 0.2080 seconds</li> <li>&gt; 0.1523 seconds</li> <li>&gt; 0.0518 seconds</li> <li>&gt; 0.0381 seconds</li> <li>&gt; 0.3193 seconds</li> <li>&lt; 0.3994 seconds</li> <li>&gt; 0.3193 seconds</li> </ul>	fail time ≥ 3.500 seconds out of sample time ≥ 5.000 seconds	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range during driver on state indicates short to ground failure. Controller specific output driver circuit voltage thresholds are set to meet the following controller specification for a short to ground.	≤ ≤ 0.5 Ω impedance between signal and controller ground	diagnostic monitor enable high side drive 2 ON P2670 fault active P2670 test fail this key on	= 1 Boolean = TRUE = FALSE = FALSE	fail count ≥ 6 counts out of sample count ≥ 2,395 counts 6.25 millisecond update rate	Type A, 1 Trips

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	C1 clutch slip speed, update fail time 6.25 milliscond update	≥ 200.0 RPM	use battery voltage	= 1 Boolean	fail time $\geq 3.00$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		electrically functional. In the failure mode the			calibration is FALSE OR			
		clutch slip speed, and gear box gear slip, will be excessive not near			(use battery voltage calibration is TRUE AND	= 1 Boolean		
		or at zero RPM. The clutch slip speed is calculated based on			battery voltage	≥ 9.00 volts	battery voltage time ≥ 0.100	
		the transmission lever node design, requiring			use run crank voltage calibration is FALSE	= 0 Boolean	3000103	
		speed, transmission output shaft speed, and one transmission			(use run crank voltage calibration is TRUE	= 0 Boolean		
		intermediate shaft speed. The clutch pressure control			run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		an automatic transmission shift occurs and has been considered shift complete or steady			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		state gear is deemed active, range shift complete. When the automatic transmission			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		shift is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		transmission line			hydraulic pressure			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C4 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			accelerator pedal position engine speed diagnostic clutch test C4 set to HOLDING CLUTCH when: clutch solenoid test state	≥ 2.00 % ≥ 1,500.0 RPM = NEUTRAL TEST		

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			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C4 clutch pressured map C4 clutch pressured map clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift state, range shift complete time must time down to zero when	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C4 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down	
		solenoid.			range shift complete 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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on	<ul> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>	to zero when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P2715	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C4 clutch slip speed OR shift type is not power down shift, C4 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\ge 0.800$ seconds, OR shift type is not power down shift, fail time $\ge 0.150$ seconds, update fail count, fail count $\ge 3$ counts 6.25 milliscond update	Type A, 1 Trips
		capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	<ul> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE Boolean</li> </ul>	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

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

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 C4 C4, or, GR10 C4 C123467810R, 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	= 0 Boolean		
					shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP TEST			

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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

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 open throttle power on up shift primary on coming clutch pressure OR	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 850.0 kPa ≥ 850.0 kPA	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 negative torque up shift OR P2715 C4 clutch exhaust delay time open throttle power down shift see supporting tables	
1					garage shift primary on	≥ /50.0 kPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 850.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 850.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 850.0 kPa		
					C4 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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.			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

17 OBDG04 TCM Summary	/ Tables (T87A - 9	Speed)
-----------------------	--------------------	--------

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM Summa	y Tables (T87A - 9 Speed)
---------------------	---------------------------

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.	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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ s 0.500 econds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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	C1 clutch slip speed, update fail time 6.25 milliscond update	≥ 200.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE AND battery voltage use run crank voltage calibration is FALSE OR (use run crank voltage	= 1 Boolean = 1 Boolean ≥ 9.00 volts = 0 Boolean = 0 Boolean	fail time $\ge$ 3.00 seconds, update fail count, fail count $\ge$ 3 counts 6.25 milliscond update battery voltage time $\ge$ 0.100 seconds	Type A, 1 Trips
		output shaft speed, and, one transmission intermediate shaft			calibration is TRUE AND run crank voltage	≥ 9.00 volts	run crank voltage	
		pressure control solenoid is tested after					seconds	
		an automatic transmission shift occurs and has been considered shift complete, or, steady			I CM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		state gear is deemed active, range shift complete. When the automatic transmission shift is complete			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		stant is complete, steady state gear is considered, the clutch pressure control solenoid is mapped to transmission line			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
	I				nyulaulic plessule	II		

pressure control, which       available:       engine speed       engine speed         cutch to maintain full       trouge holding capacity       at the given engine       engine speed       engine speed       engine speed         ratio. When the dutch       pressure control       sciencid is failed       enable CS clutch slip       speed       engine speed       enable CS clutch slip         speed tail compare where       clutch does not       dagnostic clutch test CS       (Ist and the mitigation active       available         carakshaft torque, and       carakshaft torque, and       carakshaft torque, and       initial starter mitigation active       available         carakshaft torque, and       the clutch slip speed is       uncontrollable.       maintain nolding       erecurrent starter mitigation       erecurrent starter         outcomtrollable.       The clutch slip speed is       available       erecurrent starter       erecurrent starter         outcomtrollable.       The sele       The clutch slip speed is       uncontrollable.       erecurrent starter       erecurrent starter         outcomtrollable.       The clutch slip speed is       uncontrolable.       The clutch slip speed starter       erecure starter       erecure starter         uncontrollable.       The clutch slip speed starter       full pending nothuclin stragered       erecure starestar	Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All	Component/ System	Fault Code	Monitor Strategy Description 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,	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C5 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation accelerator pedal position	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE ≥ 2.00 %	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
			which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All			engine speed diagnostic clutch test C5 set to HOLDING CLUTCH when:	≥ 1,500.0 RPM		

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			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C5 clutch pressured map C5 clutch pressured map 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	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C5 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down	
					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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on	<ul> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>	when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P2724	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C5 clutch slip speed OR shift type is not power down shift, C5 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\geq 0.800$ seconds, OR shift type is not power down shift, fail time $\geq 0.150$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		maintain torque capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	≥ 9.00 volts = 0 Boolean = 0 Boolean ≥ 9.00 volts = TRUE Boolean	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	
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			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		pressure control solenoid stuck on diagnostic monitor, the			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		function executes when in steady state gear, no automatic transmission shift in progress. The safety startle mitigation function is triggered when a sudden vehicle			hydraulic pressure available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure	
		deceleration occurs due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is			transmission output shaft speed	≥ 89.0 RPM	available see supporting table	
		All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage			set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request	= FALSE		
		must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or			startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid	= FALSE ≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD		
		performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure control solepoid stuck			test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of sequencing clutches on	= TRUE		

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 C5 C57R, or, GR10 C5 C1356789, clutch pressure control			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift	= 0 Boolean		
					shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP_TEST			

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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

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 open throttle power on up shift primary on coming clutch pressure OR	≥ 8,191.8 Nm = TRUE ≠ clutch fill phase ≥ 703.0 kPa ≥ 703.0 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 negative torque up shift OR P2724 C5 clutch exhaust delay time open throttle power down shift see supporting tables	
					garage shift primary on	≥ 750.0 kPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 703.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 703.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 703.0 kPa		
					C5 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

17 OBDG04 TCM Summary	/ Tables (T87A - 9	Speed)
-----------------------	--------------------	--------

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

17 OBDG04	TCM Summary Tab	les (T87A - 9 Speed)	
Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Con

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

#### Component/ Fault Monitor Strategy **Malfunction Criteria Threshold Value** Secondary Parameters Enable Conditions **Time Required** System Code Description P2729 Pressure Controller specific $\leq 0.5 \Omega$ impedance Voltage measurement battery voltage $\geq$ 8.00 volts and $\geq$ 1.000 seconds Control (PC) circuit diagnoses 9 outside of controller between signal and ≤ 32.00 volts Solenoid E speed C57R or 10 specific acceptable range controller ground 25 milliseconds Control speed C1356789 clutch indicates a ground short run crank voltage $\geq$ 5.00 volts Circuit Low solenoid for a ground OR 12.5 milliseconds short circuit failure by Controller specific circuit accessory voltage active = TRUE comparing a voltage voltage thresholds are set measurement to to meet the following diagnostic monitor enable =1 Boolean controller specific controller specification for calibration voltage thresholds. a ground short fail time $\geq 0.300$ Increment fail time seconds out of sample time $\geq$ 0.500 seconds

#### 17 OBDG04 TCM Summary Tables (T87A - 9 Speed)

MIL

Illum.

Type A,

1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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	C1 clutch slip speed, update fail time 6.25 milliscond update	≥ 200.0 RPM	use battery voltage	= 1 Boolean	fail time $\ge$ 3.00 seconds, update fail count, fail count $\ge$ 3 counts 6.25 milliscond update	Type A, 1 Trips
		electrically functional. In the failure mode the clutch slip speed, and gear box gear slip will			calibration is FALSE OR (use battery voltage calibration is TRUF	= 1 Boolean		
		be excessive, not near or at zero RPM. The clutch slip speed is			AND battery voltage	≥ 9.00 volts	battery voltage time ≥ 0.100	
		calculated based on the transmission lever node design, requiring transmission input shaft			use run crank voltage calibration is FALSE OR	= 0 Boolean	seconds	
		speed, transmission output shaft speed, and, one transmission			(use run crank voltage calibration is TRUE AND	= 0 Boolean		
		intermediate shaft speed. The clutch pressure control			run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		an automatic transmission shift occurs and has been considered shift complete or steady			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		state gear is deemed active, range shift complete. When the automatic transmission			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		steady state gear is considered, the clutch pressure control solenoid is mapped to			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		transmission line			hydraulic pressure			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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	Malfunction Criteria	Threshold Value	Secondary Parameters available: engine speed 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 OR unintended deceleration fault pending OR unintended deceleration fault pending enable FASLE (startle mitigation) clutch steady state adaptive active transmission output shaft speed C6 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	Enable Conditions ≥ 400.0 RPM = HOLDING CLUTCH = FALSE = TRUE ≠ initial startle mitigation gear = FALSE = 0 Boolean = FALSE ≥ 100.0 RPM = TRUE	Time Required engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		electrically functional, which must take priority over any clutch pressure control solenoid stuck off diagnostic monitor. All clutch pressure control			accelerator pedal position engine speed diagnostic clutch test C6 set to HOLDING CLUTCH when: clutch solenoid test state	≥ 2.00 % ≥ 1,500.0 RPM = NEUTRAL TEST		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
System	Code	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.			((startle mitigation active OR (startle mitigation active AND startle mitigation gear)) (see startle mitigation active NOTE below) C6 clutch pressured map 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 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 NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure enable actored actored actored	<ul> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, C6 clutch pressure has transtioned from off-applying-applied</li> <li>= TRUE</li> <li>≠ range shift completed</li> <li>= 1 Boolean</li> <li>= forward gear</li> <li>= 0 Boolean</li> <li>= reverse gear</li> <li>= FALSE</li> <li>≠ NEUTRAL TEST</li> <li>= range shift completed</li> </ul>	initialize range shift complete time = 0.500 seconds, range shift complete time must time down to zero when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

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 On	P2733	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 pressure control solenoid is tested during an automatic transmission shift by monitoring the off going clutch slip speed. With the clutch pressure control solenoid failed on, still allowing hydraulic pressure to the clutch being commanded off, the intended off going clutch continues to	shift type is power down shift, C6 clutch slip speed OR shift type is not power down shift, C6 clutch slip speed update fail time 6.25 milliscond update	< 50.0 RPM	use battery voltage calibration is FALSE OR (use battery voltage calibration is TRUE	= 1 Boolean = 1 Boolean	shift type is power down shift, fail time $\geq 0.800$ seconds, OR shift type is not power down shift, fail time $\geq 0.150$ seconds, update fail count, fail count $\geq 3$ counts 6.25 milliscond update	Type A, 1 Trips
		capacity during the transmission automatic shift. In the failure mode, the off going clutch slip speed will remain near zero RPM when the clutch pressure control solenoid is commanded to an off pressure in the normal operation to release the holding clutch. The clutch slip speed is calculated based on the transmission lever node design, requiring			AND battery voltage calibration is FALSE OR (use run crank voltage calibration is TRUE AND run crank voltage TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	<ul> <li>≥ 9.00 volts</li> <li>= 0 Boolean</li> <li>= 0 Boolean</li> <li>≥ 9.00 volts</li> <li>= TRUE Boolean</li> </ul>	battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	

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			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled	= TRUE Boolean		
		pressure control solenoid stuck on diagnostic monitor, the			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		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			hydraulic pressure available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available	
		due to a clutch pressure control solenoid that has failed hydraulically on, while the solenoid is electrically functional			transmission output shaft speed	≥ 89.0 RPM	see supporting table	
		All clutch pressure control solenoid stuck on diagnostic monitors are emission MIL DTCs. System voltage			set solenoid stuck on test trigger to TRUE when: clutch pressure control solenoid stuck off stuck intrusive shift request	= FALSE		
		must be normal, all clutch pressure control solenoid driver circuits must be functional, no clutch pressure control solenoid electrical or			startle mitigation active (see startle mitigation active NOTE below) clutch control solenoid test state clutch control solenoid	= FALSE ≠ TIE UP TEST TEST STATE ≠ TIE UP TEST HOLD		
		performance faults can be present, and no speed sensor electrical or performance faults can be present, or the a clutch pressure			test state (see clutch control solenoid test state NOTE below) initialize active clutch controller (clutch control processing in process of	= TRUE		

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 C6 C6789/Selectable One Way Clutch (SOWC) CBR1, or, GR10 C6 C45678010P, clutch			and off for auto trans shift) (shift type enable for staged steady state shift - shift in process when new shift type occurs - interrupted shift	= 0 Boolean		
		pressure control solenoid.			shift type enable for garage shift OR	= 0 Boolean		
					shift type enable for negative torque up shift OR	= 1 Boolean		
					shift type enable for open throttle power on up shift OR	= 1 Boolean		
					shift type enable for closed throttle down shift OR	= 1 Boolean		
					shift type enable for open throttle power down shift OR	= 1 Boolean		
					shift type enable for closed throttle lift foot up shift ) OR	= 0 Boolean		
					clutch control solenoid test state clutch control solenoid test state (see clutch control solenoid test state NOTE below)	= TIE UP TEST TEST STATE = TIE UP TEST HOLD		
					transition clutch controller active clutch controller (staged steady sate shift - shift not in process, no new shift type occuring, no interrupted shift)	= TRUE ≠ staged steady state		
					set clutch control solenoid test state to TIE UP_TEST			

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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

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 open throttle power on up shift primary on coming clutch pressure OR	<ul> <li>≥ 8,191.8 Nm</li> <li>= TRUE</li> <li>≠ clutch fill phase</li> <li>≥ 655.0 kPa</li> <li>≥ 655.0 kPA</li> </ul>	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 negative torque up shift OR P2733 C6 clutch exhaust delay time open throttle power down shift see supporting tables	
1					garage shint primary on	2 7 SULU KPa		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					coming clutch pressure OR negative torque up shift primary on coming clutch pressure OR	≥ 655.0 kPa		
					open throttle power down shift primary on coming clutch pressure OR	≥ 655.0 kPa		
					closed throttle down shift primary on coming clutch	≥ 655.0 kPa		
					C6 clutch slip speed valid, all speed sesnors are functional for lever node clucth slip speed calculation	= TRUE		
					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.			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					That off going clutch pressure control solenoid stuck on diagnostic monitor currently executing passes, the corresponding clutch slip speed ≥ clutch slip speed fail threshold. 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: 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. OR The automatic transmission shift completes, range shift state = range shift complete.			
					NOTE: Startle mitigation is used to detect unintended vehicle deceleration due to a clutch pressure control			

17 OBDG04 TCM Summary	/ Tables (T87A - 9	Speed)
-----------------------	--------------------	--------

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

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	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

17 OBDG04 TCM Summary	<b>Tables</b>	(T87A - 9	Speed)
-----------------------	---------------	-----------	--------

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM	Summary Tables	(T87A - 9 Speed)
---------------	----------------	------------------

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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		execution of monitor occurs once per controller normal power event during the controller initialization before normal time loop execution	Type A, 1 Trips

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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
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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

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.	pressure control solenoid characterization data programming complete Matching is defined as pressure control solenoid characterization data corresponding to the transmission valve body assembly componentry. pressure control solenoid characterization data programming complete is set to FALSE when any of the following is present: 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	= FALSE	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. 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.		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

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.					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Transmissio n Range Sensor A/B Correlation	P2805	Internal range sensor A is wired independently to the TCM while internal range sensor B is wired independently to the ECM. The monitor diagnoses the internal range sensor A PWM duty cycle by comparing the raw	ABS((TCM internal range sesnor A + ECM internal range sesnor B raw adjusted for high or low time) - 100 %)) Increment fail and sample time, update rate 25 milliseconds	> 4.999 % duty cycle	diagnostic monitor enable P0707 fault active P0708 fault active U0100 fault active ECM internal range sesnor B available from ECM ECM internal range sesnor B fault active	= 1 Boolean = FALSE = FALSE = FALSE = TRUE = FALSE	PWM fail time ≥ 1.000 seconds out of sample time ≥ 1.000 seconds	Type A, 1 Trips
		the raw sensor B adjusted value, to verify signals are consistent,			battery voltage	≥ 9.00 volts	battery voltage time ≥ 1.000 seconds	
		internal range sensor A does not correlate to the ECM internal range sensor B. The ECM transmits internal range sensor B raw PWM to the TCM over the serial data bus.	ternal range sensor A bes not correlate to e ECM internal range ensor B. The ECM ansmits internal range ensor B raw PWM to e TCM over the serial ata bus.		ABS(TCM internal range sesnor A current loop value - TCM internal range sesnor A previous loop value), update TCM internal range sesnor A stablity time, update rate 25 milliseconds	< 4.999 % duty cycle	TCM internal range sesnor A stability time ≥ 1.000 seconds	
					ABS(ECM internal range sesnor B current loop value - ECM internal range sesnor B previous loop value), update ECM internal range sesnor B stablity time, update rate 25 milliseconds	< 4.999 % duty cycle	ECM internal range sesnor B stability time ≥ 1.000 seconds	
					TCM internal range sesnor A stability time met OR ECM internal range sesnor B stability time met			
					ECM internal range sesnor B raw adjusted for	= ABS(ECM internal range sesnor B raw -		

17 OBDG04 TCM S	Summary Tables	(T87A - 9 Speed)
-----------------	----------------	------------------

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					high or low time	100.000 %)		
1								
	1	1	1	1			1	

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

17 OBDG04 TCM Summary Tables (T	<sup>*</sup> 87A - 9 Speed)
---------------------------------	-----------------------------

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.	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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Pressure Control Solenoid H Performance /Stuck Off	P2817	817 The diagnostic monitor detects the transmission torque converter control valve solenoid failed hydraulically off. The monitor executes when the transmission torque converter is commanded to a "lock" mode during which the	if use TCC slip speed error OR TCC control mode TCC slip speed error = TCC slip speed - TCC comand slip speed else if TCC control mode torque convert slip =	<ul> <li>= 0 Boolean</li> <li>= ON mode (controlled slip mode)</li> <li>≥</li> <li>P2817 TCC stuck off fail TCC slip speed see supporting table</li> <li>= LOCK</li> <li>&gt; 130.0 PPM</li> </ul>	diagnostic monitor enable	= 1 Boolean ≥ 0.00 %	fail time $\ge 2.500$ seconds increment fail count fail count $\ge 3$ counts 25 millisecond update rate TCC command capacity time $\ge 0.00$ seconds	Type B, 2 Trips
		controlled to near zero (0.0) RPM slip speed, or, an "on" mode during which the torque converter will be controlled to target slip speed using slip speed error. The transmission torque converter control valve solenoid is considered failed hydraulically off when the "lock" mode slip speed is excessive, or, when the 'on" mode slip speed error is excessive.	engine speed - transmission input shaft speed then update fail time 25 millisecond update rate	2 130.0 KFW	TCC command pressure (TCC control mode previous TCC control mode previous TCC control mode previous) AND (TCC control mode current OR TCC control mode current) (TCC stuck off enable OR TCC stuck on enable) hydraulic pressure available:	<ul> <li>≥ 600.0 kPa</li> <li>≠ TCC control mode current</li> <li>≠ ON mode (controlled slip mode)</li> <li>≠ LOCK</li> <li>= ON mode (controlled slip mode)</li> <li>= LOCK</li> <li>= 1 Boolean</li> <li>= 1 Boolean</li> </ul>	TCC command pressure time ≥ 2.00 seconds	
					engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters service fast learn active battery voltage run crank voltage P281B falut active P281D falut active P281D falut active P0722 fault pending P0723 fault pending P0716 fault pending P0717 fault pending P07BF fault pending P07C0 fa	<ul> <li>Enable Conditions</li> <li>= FALSE</li> <li>≥ 9.00 volts</li> <li>≥ 9.00 volts</li> <li>= FALSE</li> <li>= 1 Boolean</li> <li>≥ 8.0 %</li> <li>≤ 100.0 %</li> </ul>	Time Required see supportinf table battery voltage time ≥ 0.100 seconds run crank voltage time ≥ 0.100 seconds	MIL Illum.
					transmission fluid temperature transmission fluid temperature 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	<ul> <li>≥ -6.66 °C</li> <li>≤ 130.0 °C</li> <li>≥ 50.0 Nm</li> <li>≤ 8,191.8 Nm</li> <li>= FALSE</li> <li>= ON mode (controlled slip mode)</li> <li>= LOCK</li> <li>= disabled (clutch select valve not transitioning)</li> <li>≥</li> <li>CeCGSR_e_CR_Second</li> <li>≤ 25.0 RPM</li> <li>AcceleratorPedalFailure EngineTorqueEstInaccura te</li> </ul>		

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		

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	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 soleniod 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	<ul> <li>≥</li> <li>P2818 torque convert derivative slip speed fail threshold see supporting table</li> <li>≤ 300.0 RPM</li> <li>≥ -50.0 RPM</li> <li>≥ 30.0 RPM</li> </ul>	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 P281B falut active P281E falut active P281E falut active P281E falut active P281E falut active	<ul> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>= 1 Boolean</li> <li>≥ 400.0 RPM</li> <li>≥ 400.0 RPM</li> <li>= FALSE</li> <li>≥ 9.00 volts</li> <li>≥ 9.00 volts</li> <li>≥ FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>= FALSE</li> <li>≥ NEUTRAL</li> <li>≠ REVERSE</li> <li>≥ -6.66 °C</li> </ul>	fail time $\ge$ 1.500 seconds increment fail count fail count $\ge$ 2 counts 25 millisecond update rate engine speed time $\ge$ engine speed time for transmission hydraulic pressure available see supportinf table battery voltage time $\ge$ 0.100 seconds run crank voltage time $\ge$ 0.100 seconds	Type A, 1 Trips
					transmission fluid	≤ 130.00 °C		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters temperature accelerator pedal position accelerator pedal position vehicle speed TCC command mode break latch state (clutch select valve solenoid) P0722 fault pending P0723 fault pending P0716 fault pending P0716 fault pending P0726 fault pending P0726 fault pending P0727 fault pending P0726 fault pending P0720 fault pending P0720 fault pending P0720 fault pending P0720 fault pending P0720 fault pending P0720 fault pending P0728 fault pending P078 faul	Enable Conditions $\geq 0.00 \%$ $\leq 20.00 \%$ $\geq 0.0 KPH$ $\leq 45.0 KPH$ $= OFF$ $\neq disabled (clutch select valve transitioning)$ $= FALSE$ $= 1 Boolean$ $\geq -6.66 °C$ $\leq 130.00 °C$ $\geq 55.0 Nm$ $\leq 800.0 Nm$ $= FALSE$ $\leq 45.0 KPH$ $\geq 400.0 RPM$ $\leq 5,500.0 RPM$ $\leq 5,500.0 RPM$ $\leq 5,500.0 RPM$ $\leq 95.0 \%$ $= FALSE$ $= 0 Boolean$ $= FALSE$ $= 0 Boolean$	Time Required	MIL Illum.
					calibration) (clucth control solenoid stuck on OR stuck OFF intrusive shift active)	= FALSE		
					P0746 fault pending P0747 fault pending P0776 fault pending	= FALSE = FALSE = FALSE		

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 P2820 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	<pre>= FALSE = FALSE ≤ 8.0 KPH ≥ 4.0 % &gt; 1.0 %</pre> = disabled (clutch select valve not transitioning) = complete (clutch select valve transition complete) =		
					begin time down, stuck on test time must time down from calibration value to zero (0.0) seconds	P2818 stuck on test time see supporting tables		
					break latch state (clutch select valve solenoid) AND	= clutch select valve solenoid mutliplexed to TCC hydraulic		
					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	<ul> <li>= disabled (clutch select valve not transitioning)</li> <li>=</li> <li>P2818 control valve test time see supporting tables</li> </ul>		

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

17 OBDG04 TCM Summary	<b>Tables</b>	(T87A - 9	Speed)
-----------------------	---------------	-----------	--------

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.	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	≥ 200 K Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type B, 2 Trips

17 OBDG04 TCM Summar	y Tables (T87A - 9 Speed)
----------------------	---------------------------

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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type B, 2 Trips

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	Each pressure control solenoid stuck off diagnostic monitor detects a clutch pressure control solenoid failed hydraulically off, while the solenoid is	gear ratio gear ratio OR C6 clutch slip speed, update fail time 6.25 milliscond update	≤ 1.700 ≥ 1.200 ≤ 20.0 RPM		- 1 Boolean	fail time $\geq 0.250$ seconds, update fail count, fail count $\geq 2$ counts 6.25 milliscond update	Type A, 1 Trips
		electrically functional. This diagnostic monitor			calibration is FALSE OR			
		detects the clutch select valve solenoid failed hydraulically off.			(use battery voltage calibration is TRUE AND	= 1 Boolean		
		The clutch select valve is used to route hydraulic fluid to, either,			battery voltage	≥ 9.00 volts	battery voltage time ≥ 0.100 seconds	
		the selectable one way clutch hydraulic circuit used to attain			use run crank voltage calibration is FALSE OR	= 0 Boolean		
		transmission 1st gear lock state, or, to the C6 - C6789 clutch			(use run crank voltage calibration is TRUE AND	= 0 Boolean		
		hydraulic circuit necessary for transmission higher gear states			run crank voltage	≥ 9.00 volts	run crank voltage time ≥ 0.100 seconds	
		When the clutch select valve is failed hydraulically off, and transmission is in 1st			TCM output driver high side driver 1, clutch pressure control solenoid driver circuit enabled	r high ch solenoid Jled		
		gear lock state, it is possible to measure low C6 - C6789 clutch slip speed as hydraulic fluid is routed to the			TCM output driver high side driver 2, clutch pressure control solenoid driver circuit enabled			
		clutch C6 - C6789, or, 6th gear transmission gear ratio, based on transmission lever			service fast learn active service solenoid cleaning procedure active	= FALSE Boolean = FALSE Boolean		
		node design, the			hydraulic pressure			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		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.			available: engine speed	≥ 400.0 RPM	engine speed time ≥ engine speed time for transmission hydraulic pressure available see supporting table	
		This diagnostic monitor is relative to the GF9 clutch select valve pressure control solenoid.			diagnostic monitor enabled transmission output shaft speed transmission fluid temperature transmission fluid temperature P2820 test fail this key on (command gear OR attained gear) DTCs not fault pending	<ul> <li>= 1 Booelan</li> <li>≥ 35.0 RPM</li> <li>≥ -7.00 °C</li> <li>≤ 130.0 °C</li> <li>= FALSE</li> <li>= 1st lock</li> <li>= 1st lock</li> <li>P0716 P0717 P0722</li> <li>P0723 P077C P077D</li> <li>P07BF P07C0</li> <li>P0707 P0708 P0746</li> </ul>		
					on	P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	AcceleratorPedalFailure CrankSensor_FA P0707 P0708 P0716 P0717 P07BF P07C0 P0722 P0723 P077C P077D P172A P172B P176B P176C P176D P17C5 P17CC P17CD		

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

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			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 $\geq$ 2 counts OR Clutch select stuck on test gear time $\geq$ 9.00 seconds 6.25 milliscond update	Type A, 1 Trips

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

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
Component/ System	Fault Code	Monitor Strategy Description 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 openio	Malfunction Criteria	Threshold Value	Secondary Parameters diagnostic monitor enable transmission fluid temperature transmission fluid temperature P2821 test fail this key on 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 clutch solenoid test state set to NEUTRAL TEST when: test trigger initialize range shift complete time, when range shift state, range shift state, range shift complete time must time down to zero when range shift complete	Enable Conditions = 1 Boolean ≥ -7.00 °C ≤ 130.0 °C = FALSE = 1 Boolean = forward gear = 0 Boolean = reverse gear = FALSE ≠ NEUTRAL TEST = range shift completed = TRUE ≠ range shift completed	Time Required engine speed time for transmission hydraulic pressure available see supporting table	MIL Illum.
		holding capacity at any engine crankshaft torque, and the clutch slip speed is uncontrollable			Cx indicates any one of		shift complete time = 0.500 seconds, range shift complete time	
		Uncontrollable. The clutch pressure control solenoid test is suspended if the higher level safety startle mitigation function is			CX indicates any one of the 4 clutches: C3 (CB38) OR C4 (C4) OR C5 (C57R) epable Cx clutch slip		complete time must time down to zero when range shift complete	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
		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			speed fail compare when: diagnostic clutch test Cx ((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 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 clucth slip speed	<ul> <li>= HOLDING CLUTCH</li> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= FALSE</li> <li>= 0 Boolean</li> <li>= FALSE</li> <li>≥ 100.0 RPM</li> </ul>		
		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 clutch select valve pressure control solenoid.			accelerator pedal position engine speed 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	<ul> <li>≥ 2.00 %</li> <li>≥ 1,500.0 RPM</li> <li>= NEUTRAL TEST</li> <li>= FALSE</li> <li>= TRUE</li> <li>≠ initial startle mitigation gear</li> <li>= mapped to line pressure, Cx clutch pressure has transtioned</li> </ul>		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
						from off-applying-applied		
					clutch select stuck on test active set to TRUE when: command gear clutch control solenoid test state any Cx clutch fail count	≠ REVERSE = NEUTRAL TEST		
					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 postion in normal operation, allowing hydraulic fluid to C3 (CB38) C4 (C4) and C5 (C57R) clutches	= complete		
					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	= TRUE = FALSE = CeCGSR_e_Fourth = CeCGSR_e_Fifth = CeCGSR_e_Fourth		
					NOTE: startle mitigation active is used to detect unintended deceleration due to clutch pressure control solenoid stuck on			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
					failure modes, the clutch pressure control solenoid stuck on DTCs being P0747 P0777 P0797 P2715 P2724 P2733 P2821			
					DTCs not fault pending	P0716 P0717 P0722 P0723 P077C P077D P07BF P07C0		
					DTCs not test fail this key on	P0707 P0708 P0746 P0747 P0776 P0777 P0796 P0797 P2714 P2715 P2723 P2724 P2732 P2733 P2820 P2821		
					DTCs not fault active	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		

17 OBDG04 TCM	Summary Tables	(T87A - 9 Speed)
---------------	----------------	------------------

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.	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	≤ 0.5 Ω impedance between signal and controller ground	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

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.	Voltage measurement outside of controller specific acceptable range indicates a short to voltage Controller specific circuit voltage thresholds are set to meet the following controller specification for a short to voltage Increment fail time	≤ 0.5 Ω impedance between signal and controller voltage source	battery voltage run crank voltage OR accessory voltage active diagnostic monitor enable calibration	<ul> <li>≥ 8.00 volts and</li> <li>≤ 32.00 volts</li> <li>≥ 5.00 volts</li> <li>= TRUE</li> <li>= 1 Boolean</li> </ul>	<ul> <li>≥ 1.000 seconds</li> <li>25 milliseconds</li> <li>12.5 milliseconds</li> <li>fail time ≥ 0.300 seconds out of sample time ≥ 0.500 seconds</li> </ul>	Type A, 1 Trips

# 17 OBDG04 TCM Summary Tables (Allison MW7)

Index and the second	Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Transmission full transmissing full transmissing full transmissing full transmi		Code	Description						Illum
P0/11 promotion fluid provide users provide users	Transmission Fluid Ter	nperature							
Temperature Secure Concentration between the property of the secure between the property of the sec	Transmission Fluid	P0711	This test detects	All 5 Cases					Type B,
Circuit Range / Minimation Mud Hampes in Hereformation Herefor	Temperature Sensor		performance of the			Not Test Failed This Key On	P0711		2 Trips
Performance Perfor	Circuit Range /		transmission fluid				P0716		
or comparing dramages intering and bitmess mathemess weights ambemins weights ambemins ambemins weights ambemins am	Performance		temperature sensor				P0717		
Indicates in the interpretation from the interp			by comparing				P0721		
Image: projecture from the server of a construction o			changes in				P0722		
istir up and between in survices abatension values.       istir up and between in survices or up about the survices in the survices or up about the survices			temperature from				P0742		
Image: semples to calculation values.       Image: semples to calculation values.       Image: semples to calculation values.       Image: semples to complex to the semplement values.       Image: semplement values.       Image: v			start up and between				P077C		
Image: Section values.       I			samples to				P077D		
Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds			calibration values.				POTRE		
Case 1 (Stuck sensor after cold start ur)       Start-up transmission flux sensor after cold start ur)       No Fault Pending DTCs for this dive cycle P0776 P0776 P0776 P0776       No Fault Pending DTCs for this dive cycle P0776 P0776         Case 1 (Stuck sensor after cold start ur)       No Fault Pending DTCs for this dive cycle P0776       No Fault Pending DTCs for this dive cycle P0776         Case 1 (Stuck sensor after cold start ur)       Start-up transmission flux between port of a time - 300 seconds       300 seconds         Case 1 (Stuck sensor after cold start ur)       No Fault Pending DTCs for this dive cycle P0776       300 seconds         Case 1 (Stuck sensor after cold start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after cold start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after cold start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after warm start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after warm start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after warm start ur)       Start-up transmission flux between port after - 200 seconds       300 seconds         Case 2 (Stuck sensor after warm start ur)       10 seconds       Start-up transmiss							P07C0		
Image: Second							10100		
Case 1 (Stuck itersor after cold start- wy)       Start-up transmission fluid emperature is available tora time = 100 seconds       Start-up transmission fluid emperature is available tora time = 200 seconds       Start-up transmission fluid emperature is available tora time = 200 seconds       Start-up transmission fluid emperature is available tora time = 100 seconds       Start-up transmission fluid emperature is available tora time = 200 seconds       Start-up transmission fluid tora time = 200 seconds       Start-up transmission fluid						No Foult Donding DTCo for this drive	D0740		
Image: Second						No Fault Pending DTCs for this drive	P0716		
Case 1 (Stuck sensor after value)       AND       No Pass DTCs for this drive cycle       P0710 P0700 P0700 P0700         No Pass DTCs for this drive cycle       P0711 No Fault Active DTC       P0711 P0700       No Pass DTCs for this drive cycle         AND       Start-up transmission fluid       Start-up transmission fluid       Start-up transmission fluid         Case 2 (Stuck sensor after value)       200 seconds       Start-up transmission fluid       Start-up transmission fluid         Case 2 (Stuck sensor after value)       Start-up transmission fluid       Start-up transmission fluid       Start-up transmission fluid       Start-up transmission fluid         Case 2 (Stuck sensor after value)       Start-up transmission fluid       Start-up transmisten fluid       Start-up transmissin fluid <td></td> <td></td> <td></td> <td></td> <td></td> <td>cycle</td> <td>P0/1/</td> <td></td> <td></td>						cycle	P0/1/		
Case 1 (Sluck sensor after cold start- ur)       Case 2 (Sluck sensor after cold start- ur)       Case 2 (Sluck sensor after cold start- ur)       Case 2 (Sluck sensor after cold start- ur)       Case 3 deg. C components processor AND       Slart-up transmission fluid attrap trap							P0721		
Image: Second							P0722		
Image: Seconds       Image: Seconds       Seconds       Seconds       Seconds         Image: Seconds       Image: Seconds       Seconds       Seconds       Seconds       Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Secon							P077C		
Case 1 (Stuck sensor after cold start- up)       Case 2 (Stuck sensor after wars start- for a time >= 300 seconds       Start-up transmission fluid engine coolant temperature 30 deg. C and 149 deg. C start-up transmission fluid engine coolant temperature 300 seconds       300 seconds         Case 2 (Stuck sensor after wars start- up)       Start-up temperature change <= 3 deg. C for a time >= 100 seconds       Start-up transmission fluid engine coolant temperature 30 deg. C and 149 deg. C between ECT is not defaultion       300 seconds         Case 2 (Stuck sensor after wars start- up)       Start-up temperature 200 RPM for a time >= 300 seconds       Start-up transmission fluid engine coolant temperature 30 deg. C and 149 deg. C between ECT is not defaultion       300 seconds         Case 2 (Stuck sensor after wars start- up)       Case 2 deg. C for a time >= 300 seconds       Start-up transmission fluid engine coolant temperature between to more the start- tor a time >= 100 seconds       300 seconds         Case 2 (Stuck sensor after wars start- up)       Start-up transmission fluid for a time >= 100 seconds       300 seconds         Case 2 (Stuck sensor after wars start- up)       Start-up temperature between to more start- tor a time >= 100 seconds       Start-up transmission fluid for a time >= 100 seconds       300 seconds							P077D		
Image: Seconds     POTO     POTO       Image: Seconds     POTO     POTO       Image: Seconds     Poto       Image: Poto     <							P07BF		
Image: Speed of the server of the seconds       No Pass DTCs for this drive or of the server of the server of the seconds         Image: Second of the server of the server of the server of the second of							P07C0		
No Pass DTCs for this drive cycle       P0711       P0711         No Fault Active DTC       P0711       P0711         No Fault Active DTC       P0711       P0711         Battory Voltage       >> 9 V         Battory Voltage       >> 9 V         Engine Speed betweet       200 RPM and 7500 RPM         Battory Voltage       >> 9 V         Case 1 (Stuck sensor after cold start-       Start-up transmission fluid temperature-         UP       Start-up temperature change       2 deg. C         Start-up temperature change       2 deg. C         Vehicle speed >= 8 KPH       for a time         If or a time       > 300 seconds         Vehicle speed >= 8 KPH       for a time         If or a time       > 300 seconds         Vehicle speed >= 8 KPH       for a time         If or a time       > 300 seconds         UP       Start-up temperature sharpe         Vehicle speed >= 8 KPH       for a time         If or a time       > 300 seconds         UP       Start-up temperature sharpe         Vehicle speed >= 8 KPH       for a time         If or a time       > 100 beconds         If or a time       > 100 seconds         If or a time       > 100 seconds									
Image: Case 1 (Stuck sensor after cold start:       No Fault Active DTC       P0711         Image: Case 1 (Stuck sensor after cold start:         Image: Voltage between to the sensor after cold start:       Image: Case 1 (Stuck						No Pass DTCs for this drive cycle	P0711		
No Fault Active DTC       P0711         No Fault Active DTC       P0711         Components powered       AND         Battery Voltage       > 9 V         Engine Speed betweer       200 RPM and 7500 RPM         Case 1 (Stuck sensor after cold start- up)       Image: Start-up transmission fluid temperature is available between       36 g. C and 148 deg. C         Start-up transmission fluid temperature is available up)       Start-up transmission fluid temperature is available person       300 seconds         Start-up temperature change (ra stime) = 100 seconds       Start-up transmission fluid temperature is available person       40 deg. C and 21 deg. C         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change Start-up temperature change Start-up temperature change (ra stime) = 300 seconds.       TCC Silp is a start-up temperature change is a start-up temperat									
Image: Seconds       No Fault Active DTC       P0711       P0711         Image: Seconds       Components powered Battery Voltage       >9 V       Seconds         Image: Seconds       Image: Seconds       Image: Seconds       Image: Seconds         Image: Seconds       Image: Seconds       Image: Seconds									
Case 1 (Stuck sensor after cold start- up)       Case 2 (deg. C tor a time) >= 100 seconds       Start-up transmission fluid temperature between tor a time) >= 300 seconds.       Start-up transmission fluid tor a time) >= 100 seconds.       Boil seconds temperature between tor a time) >= 100 seconds.       Boil seconds temperature between temperature between tor a time) >= 100 seconds.       Boil seconds temperature between temperature between tor a time) >= 100 seconds.       Boil seconds temperature between temperature between t						No Fault Active DTC	P0711		
Image: Components powered ADD Battery Voltage >= 9 V       ADD Battery Voltage >= 9 V         Image: Battery Voltage >= 9 V       Engine Speed betweer 200 RPM and 7500 RPM         Image: Battery Voltage Participation Speed betweer 200 RPM and 7500 RPM       Image: Battery Voltage Participation Speed betweer 200 RPM and 7500 RPM         Image: Battery Voltage Participation Speed betweer 200 RPM and 7500 RPM       Image: Battery Voltage Participation Speed betweer 200 RPM and 7500 RPM         Image: Battery Voltage Participation Speed betweer 200 RPM and 7500 RPM       Image: Battery Voltage Participation Speed Battery Voltage Participation Speed Participation									
Case 1 (Stuck sensor after cold start- up)       Case 1 (Stuck sensor after cold start- tor a sensor after cold start- up)       Start-up transmission fluid temperature is available Transmission fluid temperature ECT is not defaulted       300 seconds         Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid temperature is available Transmission fluid temperature ECT is not defaulted       300 seconds         Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid tor a time >= 100 seconds       Start-up transmission fluid temperature between ECT is not defaulted       300 seconds         Case 2 (Stuck sensor after cold start- up)       ND       TCC Silp >= 120 RPM for a time >= 300 seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid tor a time >= 300 seconds       engine coolant temperature between tor a time >= 300 seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid tor a time >= 100 seconds       Start-up transmission fluid tor a time >= 100 seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid tor a time >= 100 seconds       Start-up transmission fluid tor a time >= 100 seconds       300 seconds						Components powered			
Image: Case 1 (Stuck sensor after cold start- up)       Start-up temperature change s 2 deg. C.       Start-up temperature change s 2 deg. C.       Start-up temperature change s 2 deg. C.       Start-up temperature s 2 deg. C.       Start-up temperature s 2 deg. C.       Start-up						AND			
Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid sensor after cold start- up)       300 seconds         Case 1 (Stuck sensor after cold start- up)       Case 2 (Stuck sensor after cold start- up)       Start-up transmission fluid sensor after cold start- up)       300 seconds         Case 2 (Stuck sensor after cold start- up)       Case 2 (Stuck sensor after cold start- up)       Start-up temperature change sensor after cold start- up)       Start-up temperature change sensor after cold start- tor a time becode seconds       Start-up temperature change sensor after cold start- tor a time becode seconds       Start-up temperature change sensor after cold start- tor a time becode seconds       Start-up temperature change seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change seconds       Start-up temperature change seconds       Start-up temperature change seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change seconds       Start-up temperature change seconds       Start-up temperature change for a time becode seconds       Start-up temperature change for a time becode seconds       300 seconds         AND       TCC Sip be 120 RPM for a time becodes       Start-up temperature change seconds       Start-up temperature change seconds       Start-up temperature change seconds       Start-up temperature change seconds <td></td> <td></td> <td></td> <td></td> <td></td> <td>Battery Voltage</td> <td>&gt;= 9 V</td> <td></td> <td></td>						Battery Voltage	>= 9 V		
Image: Case 1 (Stuck sensor after cold start- up)       Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid temperature is available Transmission fluid temperature ECT is not defaulted       300 seconds         Image: Case 1 (Stuck sensor after cold start- up)       Start-up temperature is available to a time > 100 seconds       Start-up transmission fluid temperature between ECT is not defaulted       300 seconds         Image: Case 2 (Stuck sensor after cold start- up)       Start-up temperature change is not defaulted       Start-up transmission fluid temperature between p = 100 seconds       Start-up transmission fluid seconds       300 seconds         Image: Case 2 (Stuck sensor after warm start- up)       Start-up temperature change is not defaulted       > 10 seconds       engine coolant temperature from start-up >= 15 deg. C temperature between in start-up >= 15 deg. C       300 seconds         Image: Case 2 (Stuck sensor after warm start- up)       Start-up temperature change is not defaulted       > 15 deg. C is not start-up >= 15 deg. C       300 seconds         Image: Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid 115 deg. C and 150 deg. C. is not start-up is 300 seconds       300 seconds									
Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid temperature savalable Transmission fluid temperature savalable Transmission fluid 40 deg. C and 149 deg. C between       300 seconds         Case 1 (Stuck sensor after cold start- up)       Start-up transmission fluid 40 deg. C and 21 deg. C for a time >= 100 seconds       300 seconds         AND       TCC Slip >= 120 RPM for a time >= 300 seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change seconds       Start-up transmission fluid 40 deg. C and 21 deg. C temperature between       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid 50 seconds       Start-up transmission fluid 40 deg. C and 21 deg. C temperature between       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid from start-up s= 15 deg. C       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up transmission fluid for a time >= 100 seconds       Start-up transmission fluid from start-up s= 120 RPM for a time >= 120 RPM       300 seconds						Engine Speed between	200 RPM and 7500 RPM		
Image: Seconds       Image: Seconds       Start-up transmission fluid temperature is available transmissi									
Case 1 (Stuck sensor after cold start- up)     Start-up transmission fluid temperature 39 deg. C and 149 deg. C between ECT is not defaulted     300 seconds       Case 1 (Stuck sensor after cold start- up)     Start-up temperature change > 100 seconds     Start-up transmission fluid temperature between ECT is not defaulted     300 seconds       AND     TCC Slip for a time > 100 seconds     TCC Slip for a time > 300 seconds     300 seconds       Case 2 (Stuck sensor after warm start- up)     Start-up temperature change for a time > 300 seconds     300 seconds       Case 2 (Stuck sensor after warm start- up)     Start-up temperature change for a time > 100 seconds     Start-up transmission fluid temperature between from start-up >= 15 deg. C     300 seconds       Case 2 (Stuck sensor after warm start- up)     Start-up temperature change << 3 deg. C for a time > 100 seconds     Start-up transmission fluid temperature between from start-up >= 15 deg. C     300 seconds       AND     TCC Slip = 120 RPM for a time >= 100 seconds     Start-up transmission fluid temperature between for a time >= 100 seconds     Start-up transmission fluid temperature between for a time >= 100 seconds						for	5 seconds		
Start-up transmission fluid temperature is available Transmission fluid demperature between       300 seconds         Case 1 (Stuck sensor after cold start- up)       300 seconds         Start-up temperature change       2 deg. C tor a time         AND       TCC Slip tor a time         Vehicle speed       8 KPH for a time         engine coolant temperature up)       300 seconds         Vehicle speed       8 KPH for a time         case 2 (Stuck sensor after varm start- up)       a sob seconds         Vehicle speed       8 KPH for a time         case 2 (Stuck sensor after warm start- up)       a sob seconds         Start-up temperature change       a sob seconds         engine coolant temperature for a time       a sob seconds         Case 2 (Stuck sensor after warm start- up)       a sob seconds         Start-up temperature change       a sob seconds         for a time       = 100 seconds         AND       TCC slip for a time       = 15 deg. C         AND       TCC slip for a time       = 120 RPM for a time         a sob seconds       temperature between for a time       = 120 RPM for a time						101	0 00001100		
Case 1 (Stuck sensor after cold start- up)       Start-up temperature is available       300 seconds         Start-up temperature change       = 2 deg. C for a time >= 100 seconds       Start-up transmission fluid       40 deg. C and 21 deg. C temperature based       300 seconds         Vehicle speed       = 8 KPH for a time >= 300 seconds       TCC Slip >= 120 RPM for a time >= 300 seconds       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change <= 3 deg. C for a time >= 300 seconds       Start-up transmission fluid 115 deg. C       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change <= 3 deg. C for a time >= 100 seconds       Start-up transmission fluid 115 deg. C and 150 deg. C. temperature between       300 seconds         Case 2 (Stuck sensor after warm start- up)       Start-up temperature change <= 3 deg. C for a time >= 100 seconds       Start-up transmission fluid 115 deg. C and 150 deg. C. temperature between       300 seconds						Start-up transmission fluid			
Image: Construction of the integration is available is available is available is available.       Start-up temperature -39 deg. C and 149 deg. C between ECT is not defaulted         Case 1 (Stuck sensor after cold start-up)       Start-up temperature change <= 2 deg. C for a time >= 100 seconds       Start-up transmission fluid -40 deg. C and 21 deg. C temperature between          AND       AND       TCC Slip >= 120 RPM for a time >= 300 seconds       Start-up transmission fluid temperature >= 70 deg. C AND engine coolant temperature >= 70 deg. C AND engine coolant temperature >= 70 deg. C AND engine coolant temperature >= 15 deg. C       300 seconds         Case 2 (Stuck sensor after warm start-up)       Start-up transmission fluid 115 deg. C and 150 deg. C. and 150 deg. C. for a time >= 100 seconds       Start-up transmission fluid temperature between from start-up >= 15 deg. C         Mup       Start-up temperature change <= 3 deg. C for a time >= 100 seconds       Start-up transmission fluid 115 deg. C and 150 deg. C. for a time >= 100 seconds									
Case 1 (Stuck sensor after cold start-up)       Start-up temperature change <= 2 deg. C						Transmission fluid temperature	20 dag C and 140 dag C		
Image: Case 1 (Stuck sensor after cold start-up temperature change <= 2 deg. C						transmission nuid temperature	-39 deg. C and 149 deg. C		
Case 1 (Stuck sensor after cold start-up       300 seconds         up)       Start-up temperature change       > 100 seconds         for a time       > 100 seconds         Vehicle speed       > 8 KPH         tor a time       > 300 seconds         Vehicle speed       > 8 KPH         tor a time       > 300 seconds         Vehicle speed       > 8 KPH         tor a time       > 300 seconds         engine coolant temperature between       > 70 dg. C         AND       AND         Vehicle speed       > 8 KPH         for a time       > 300 seconds         engine coolant temperature > 70 dg. C         AND       AND         Vehicle speed       > 8 KPH         for a time       > 300 seconds         engine coolant temperature change       from start-up         from start-up       > 15 deg. C         AND       Start-up temperature change         for a time       > 100 seconds         AND       Start-up transmission fluid         Start-up temperature change       Start-up transmission fluid       115 deg. C and 150 deg. C.         for a time       > 100 seconds       TCC Slip       > 120 RPM         for a time       > 300 seconds									
Case 1 (Stuck sensor after coid start-up)       Start-up temperature change <= 2 deg. C						ECT is not defaulted		000	-
upp)       Start-up temperature change       <= 2 deg. C				Case 1 (Stuck sensor after cold start-				300 seconds	
Start-up temperature change < 2 deg. C				up) Otartur (		Otherst and the state of the state of the			
Image: construction of the speed set of the				Start-up temperature change	<= 2 deg. C	Start-up transmission fluid	-40 deg. C and 21 deg. C		
AND       AND       AND       TCC Slip       >= 120 RPM         Vehicle speed       >= 8 KPH       engine coolant temperature       >= 70 deg. C         AND       >= 300 seconds.       engine coolant temperature change       >= 70 deg. C         AND       AND       engine coolant temperature change       >= 15 deg. C         Case 2 (Stuck sensor after warm start-up)       Start-up temperature change       <= 3 deg. C				for a time	>= 100 seconds	temperature between	1		
AND       TCC Slip >= 120 RPM         Vehicle speed >= 8 KPH       for a time >= 300 seconds.         for a time >= 300 seconds.       engine coolant temperature >= 70 deg. C         AND       engine coolant temperature change         from start-up temperature change       from start-up >= 15 deg. C         Case 2 (Stuck sensor after warm start-up)       Start-up temperature change         Start-up temperature change       start-up transmission fluid         AND       Start-up transmission fluid         AND       TCC Slip >= 120 RPM         for a time >= 100 seconds       TCC Slip >= 120 RPM         for a time >= 300 seconds       TCC Slip >= 120 RPM									
Vehicle speed >= 8 KPH       engine coolant temperature >= 70 deg. C         for a time >= 300 seconds.       engine coolant temperature change         regine coolant temperature change       from start-up >= 15 deg. C         Case 2 (Stuck sensor after warm start-up)       Start-up temperature change         Start-up temperature change       start-up temperature change         for a time >= 100 seconds       temperature between         AND       TCC Slip >= 120 RPM         for a time >= 300 seconds       for a time >= 300 seconds				AND		TCC Slip	>= 120 RPM		
Vehicle speed >= 8 KPH       engine coolant temperature AND       >= 70 deg. C       AND         AND       engine coolant temperature change       >= 15 deg. C       300 seconds         Case 2 (Stuck sensor after warm start-up)       <= 3 deg. C						for a time	>= 300 seconds		
Image: start-up temperature change of a time perature change of a				Vehicle speed	>= 8 KPH				
Image: Start-up temperature change for a time perature change per a time per attraction for a time per attractraction for attraction for a time per attraction for				for a time	>= 300 seconds.	engine coolant temperature	>= 70 deg. C		
Image: space of the second						AND			
Image: start-up is start-						engine coolant temperature change			
Case 2 (Stuck sensor after warm start-up)       300 seconds         Start-up temperature change for a time >= 100 seconds       Start-up transmission fluid temperature between       115 deg. C and 150 deg. C.         AND       TCC Slip >= 120 RPM for a time >= 300 seconds       TCC Slip >= 120 RPM seconds						from start-up	>= 15 deg. C		
up)       Start-up temperature change       <= 3 deg. C				Case 2 (Stuck sensor after warm start-				300 seconds	1
Start-up temperature change <= 3 deg. C				up)					
for a time     >= 100 seconds     temperature between       AND     TCC Slip     >= 120 RPM       for a time     >= 300 seconds				Start-up temperature change	<= 3 deg. C	Start-up transmission fluid	115 deg. C and 150 deg. C.		
AND TCC Slip >= 120 RPM for a time >= 300 seconds				for a time	>= 100 seconds	temperature between			
AND TCC Slip >= 120 RPM for a time >= 300 seconds									
for a time >= 300 seconds				AND		TCC Slin	>= 120 RPM		
						for a time	>= 300 seconds		

# 17 OBDG04 TCM Summary Tables (Allison MW7)

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description				70.10		Illum
					engine coolant temperature	>= 70 deg. C		
			Vehicle speed	<- 8 КРН	AND engine coolant temperature change			
			for a time	>= 300 seconds	from start-up	>= 55 deg. C		
			Case 3 (Noisy sensor)		··········		7 seconds	
			Change from previous temperature	>= 20 deg. C				
			for	>= 14 events				
			in a time	< 7 seconds.				
			Case 4 (Doesn't warm up to at least 20				2200 seconds	
			deg. C)		net engine torque	>= 150 Nm		
			Time Enabled Criteria met AND		and	<= 1492 Nm		
			Transmission Fluid Temperature	< 20 deg. C	venicle speed	>= 22 KFH ~= 511 KPH		
				< 20 dog. 0.	%throttle	>= 10.0%		
			Time Enabled Criteria is determined by	250 seconds when start-up	and	<= 100%		
			a lookup table ranging from	temperature is >= 20 deg. C	engine speed	>= 500 RPM		
			to	2200 seconds when start-up	and	<= 6500 RPM		
				temperature is <= -40 deg. C.	engine coolant temperature	>= -39 deg. C		
					and	<= 149 deg. C		
			Case 5 (Reasonableness at start-up):				2 seconds	
			Engine Speed	500 PPM	Intake Air Temperature is not			
				> 500 KFW	deladited			
			Engine Coolant Temperature	> -39 deg. C				
			AND	< 50 deg. C				
			for	>= 2 seconds				
			AND					
			((ABS(IAT-ECT)	<= 6 deg. C				
			(IFI-ECI))	> 40 deg. C				
			(ABS(IAT-ECT)	> 6 deg. C				
			(I LEC(II II LECT) AND	- 0 dog. 0				
			(TFT-ECT)))	> 60 deg. C.				
				-				
Transmission Fluid	P0712	Out of range low.			Not Test Failed This Key On	P0711	2.5 seconds	Type B,
Temperature Sensor			transmission fluid temperature	>= 140 deg. C		P0712		2 Trips
Circuit Low Input								
			for a time	> 2.5 seconds.		P0713		
					Components powered			
					AND Battery Voltage	>- 9 V		
					Ballory Vollage			
					Engine Speed between	200 RPM and 7500 RPM		
					5 1			
					for	5 seconds		
Transmission Fluid	P0713	Out of range high.			Not Test Failed This Key On	P0711	2.5 seconds	Type B,
Circuit High Input			transmission fluid temperature	<= - 40 deg. C		P0712		2 Trips
Giroan Fright input								
			for a time	> 2.5 seconds		P0713		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					Engine Speed between	200 RPM and 7500 RPM		
					•			

# 17 OBDG04 TCM Summary Tables (Allison MW7)

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL	
	Code	Description			for	5 seconds		llium	
						0 00001100			
					IF Engine run time	<= 600 seconds			
					THEN				
					Engine Coolant Temperature	must be > 20 deg. C			
					not defaulted for a time	>= 20 seconds.			
Creard Concern		<u> </u>							
Input/Turbine Speed	P0716	This test detects	All cases		Not Test Failed This Key Or	P0716		Type A,	
Sensor Circuit		large changes in				P0717		1 Trip	
Range/Performance		Input Speed and							
		comparing to							
		calibration values.			No Fault Pending DTCs for this drive	P07BF			
					cycle.	P07C0			
					Not Low Voltage Disable				
			Case 1: (Unrealistically large changes				0.15 seconds	-	
			in input speed)						
			change of input Speed between samples	>= 800 RPM					
			for	>= 0.15 seconds					
			AND						
			NOT Low Voltage Response						
			Case 2: (Noisy Input Speed)				2 seconds	-	
			For sample size	80					
			THEN the Low Counter is incremented	<= -800 RPM					
				000 BBM					
			IF the change in Input Speed THEN the High Counter is incremented	>= 800 RPM					
			This test fails if both the Low Counter and the High Counter	>= 5					
			OR						
			Low Counter	>= 5					
			OR High Counter	>= 5					
				-				-	
Input/Turbine Speed	P0717	This test detects	Failure pending if transmission input		Not Test Failed This Key Or	P0717	1 second	Type A,	
Sensor Circuit No Signa		value of input/turbine	speed	< 61 RPM		P0729 P0731		1 I rip	
		speed or	This test fails if input speed	< 61 RPM		P0732			
		unrealistically large	AND	500 DDM		P0733			
		input/turbine speed.	output speed for a time	> 500 KPM > 1 second.		P0734 P0735			
			AND			P0736			
	1		NOT Low Voltage Response			P0721		1	
Code     Description     Illum       Image: Code     Description     Image: Code     P0722       P0716     P0716       P0720     P0700       P0700     P0700       P077D     P077D       P078F     P0700       P0722     P078F       P0700     P077D       P078F     P0700       P077D     P077D       P077D     P077D    <	-							I	I
--	-----------------------	-------	-----------------------	--	-----------------	--	--------------	--------------	--------------------
Porta		Code	Description						Illum
Image: Constraint of the second se							P0722		
Image: Sector							P0716		
No Fault Pending DTCs P077C P077D P0722 P0722 P078F P0720 P077C P0							P07BF		
Image: Constrained in the constrained i							P07C0		
No Fault Pending DTCs       P077D         No Fault Pending DTCs       P0721         P0722       P07BF         P077C0       P077C0         P077C0       P077C0         P077D       P077C0         P077D       P077C0         P077D       P077D         P077D       P077C         P077D       P077D							P077C		
No Fault Pending DTCs P0722 P07BF P07C0 P077C P077D P077D P077D							P077D		
No Fault Pending DTCs P0721 P0722 P07BF P07C0 P077C P077D P077D P077D P077D P077D P077D P077D									
P0722         P07BF         P07C0         P07TC         P07TD         NOT Low Voltage Disable         Engine is running         Reverse-to-Neutral shift not in         process         Shifting complete         Range attained is not neutral         Transmission fluid temperature> -25 deg. C						No Fault Pending DTCs	P0721		
Port       Port         Port							P0722		
P07C0       P077C         P077D       P077D         NOT Low Voltage Disable       Engine is running         Reverse-to-Neutral shift not in process       P0700         Shifting complete       Shifting complete         Range attained is not neutral       Transmission fluid temperatural > -25 deg. C							P07BF		
P077C       P077D         P077D       P077D         NOT Low Voltage Disable       NOT Low Voltage Disable         Engine is running       Engine is running         Reverse-to-Neutral shift not in process       Shifting complete         Shifting complete       Range attained is not neutral         Transmission fluid temperatural > -25 deg. C       C							P07C0		
NOT Low Voltage Disable       NOT Low Voltage Disable         Engine is running       Engine is running         Reverse-to-Neutral shift not in       process         Shifting complete       Shifting is not neutral         Transmission fluid temperatural       Transmission fluid temperatural							P077C		
NOT Low Voltage Disable  Engine is running Reverse-to-Neutral shift not in process Shifting complete Range attained is not neutral Transmission fluid temperatural> -25 deg. C							P077D		
Engine is running Reverse-to-Neutral shift not in process Shifting complete Range attained is not neutral Transmission fluid temperatura/> -25 deg. C						NOT Law Valtage Disable			
Engine is running Reverse-to-Neutral shift not in process Shifting complete Range attained is not neutral Transmission fluid temperatura/>-25 deg. C						NOT Low Voltage Disable			
Reverse-to-Neutral shift not in process Shifting complete Range attained is not neutral Transmission fluid temperatura/> -25 deg. C						Engine is running			
process Shifting complete Range attained is not neutral Transmission fluid temperature > -25 deg. C						Reverse-to-Neutral shift not in			
Shifting complete Range attained is not neutral Transmission fluid temperature > -25 deg. C						process			
Range attained is not neutral Transmission fluid temperature > -25 deg. C						Shifting complete			
Transmission fluid temperature > -25 deg. C						Range attained is not neutral			
						Transmission fluid temperature	> -25 deg. C		
Engine speed >= 400 RPM						Engine speed	>= 400 RPM		
Transmission output speed >= 150 RPM						Transmission output speed	>= 150 RPM		
Utaut Speed Speed - P0721 This test detects a Case 1: (Upraelistically Jarge change in	Output Speed Sensor	P0721	This test detects a	Case 1: (Uprealistically large change in				Case 1:	Type A
Value de censor i 1972 i marce de construit speed (autorit speed)	Circuit	10721	noisv output speed	output speed)		Not Test Failed This Key On	P0721	0 15 seconds	1 Trip
Range/Performance sensor or circuit by Change in output speed >= 500 RPM	Range/Performance		sensor or circuit by	Change in output speed	>= 500 RPM		P0722		
detecting large for a time >= 0.15 seconds	,		detecting large	for a time	>= 0.15 seconds				
changes in output AND			changes in output						
Speed. NOT Low Voltage Response			speed.	NOT Low Voltage Response					
Case 2: (Noisy output speed)				Case 2: (Noisy output speed)				Case 2:	
For sample size 80 No Fault Pending DTCs for this drive P077C 2 seconds				For sample size	80	No Fault Pending DTCs for this drive	P077C	2 seconds	
cycle P077D						cycle	P077D		
IF the change in output speed <= -500 RPM				IF the change in output speed	<= -500 RPM				
THEN the Low Counter is incremented. NOT Low Voltage Disable				THEN the Low Counter is incremented.		NOT Low Voltage Disable			
IF the change in output speed>= 500 RPM range attained NOT neutral				IF the change in output speed	>= 500 RPM	range attained NOT neutral			
THEN the High Counter is				THEN the High Counter is					
Test fails if both the Low Counter and				Test fails if both the Low Counter and					
$\sim = 5$				rest fails if both the Low Counter and	>= 5				
				OB					
the Low Counter>= 5				the Low Counter	>= 5				
OR				OR					
the High Counter>= 5				the High Counter	>= 5				
				Ű					
	Outrut On and One and	D0700	This to st close sta	All Cases					Turne A
Output Speed Sensor P0722 This test detects All Cases 1996 A, Circuit No Signal Unrealistically low Not Test Failed This Key On P0721 1770	Circuit No Signal	P0722	I his test detects	All Cases		All Cases Not Test Failed This Key On	P0721		1 ype A, 1 Trip
value of output speed	Subar No Olyriai	1	value of output speed				P0722		
		1	or unrealistically				P077C		
large change in PO77D		1	large change in				P077D		
output speed.			output speed.						

Component/System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	ooue	Description			No Fault Pending DTCs for this drive	P077C		
					···· · ····· ·························	P077D		
					NOT Low Voltage Disable			
			Case 1: (Unrealistically large change in		Test enabled when output speed		1 second	
			output speed)			>= 600 RPM		
			Failure pending if		for a time	>= 1 seconds		
			change in output speed	>= 600 RPM				
			Failure sets if range attained is Neutral		Test disabled when output speed			
						<= 600 RPM		
					for a time	> 1 seconds	4	
			Case 2: (Unrealistically low value of				4 seconds	
			College pending if output append	- 61 BDM	Not Tool Foiled This Key On	D0720		
			Failure sets if not monitoring for low		Not Test Failed This Key Of	P0729 P0731		
			speed neutral and output speed			P0732		
				< 61 RPM		P0733		
			AND			P0734		
			range is 3rd, 4th, 5th, or 6th			P0735		
			for a time	> 1 second		P0736		
			AND			P0716		
			NOT Low Voltage Response			P0717		
						P07BF		
						P07C0		
			Failure sets if not monitoring for low					
			speed neutral and output speed		No Fault Pending DTCs for this drive	P0716		
						P0/1/		
						P07BF		
				< 61 PDM		F07C0		
			((net engine torque	< -100 Nm	Engine is running			
			((net engine torque OR		Shift not in process			
			net engine torgue)	> 100 Nm	Range attained is not Neutra			
			OR		Reverse to Neutral shift not in			
			(turbine speed	> 1500 RPM	process			
			AND		Transmission fluid temperature	> -25 deg. C		
			range is 2nd))		Transmission input speed	>= 1050 RPM		
			for a time	>= 4 seconds.	Not waiting for Manual Selector Valve			
			AND		to attain forward range			
			NOT Low Voltage Response		PRNDL State is NOT D4, NOT			
					I ransitional D4			
Input/Turbing Speed	D07BE	This test detects	IE voltage	<- 0.25 volts	Not Test Failed This Key On	POZRE	0.8 500	
Sensor Ckt Voltage Low	I UI DI	either open or short	n voltage	<= 0.25 voits	OR	10761	0.0 360	1 Trip
concer en renage zen		to ground circuit	for	0.2 second	No Fault Active DTC	P07BF		1.1.15
		malfunctions.				-		
			THEN increment fail timer		No Fault Active DTC	P07C0		
			IF fail timer	>= 4 counts				
			AND		NOT Low Voltage Disable			
			Engine Speed	>= 20 rpm				
			AND					
			NOT Low Voltage Response					
			I HEN report malfunction					
Input/Turbing Speed		This test detects	IE voltogo	<u> </u>	Not Test Failed This Key On	P07C0	0.8.000	Tupo A
Sensor Ckt Voltage High	F07C0	either open or short	IF VOItage	>= 4.75		F07C0	0.8 Sec	1 Trin
Concor One Vonago Flight		to ground circuit			No Fault Active DTC	P07C0		p
1		J	1					

Ode         Peterinjbin         In 22 asord         No Faul Active DT P07D         Mail           All Display Speed         THEN increment Million         THEN increment Million         No Faul Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Faul Active DT P07D         S 8 acc         1 page 3.         S 9 state         No Faul Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Faul Active DT P07D         S 8 acc         1 page 3.         S 9 state         No Faul Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Faul Active DT P07D         S 8 acc         1 page 3.         No Faul Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Faul Active DT P07D         No Faul Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Tau Values Active Active DT P07D         No Tau Active DT P07D         No Tau Active DT P07D         S 8 acc         1 page 3.           Output Speed Speed         No Tau Active DT P07D         No Tau Active D	component/system	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Image: Normal Speed Stream         Nor 1 Sections		Code	Description			-			Illum
Note:     Porter     Field and the set of			malfunctions.	for	0.2 second				
Note of the set				THEN increment fail timer		No Fault Active DTC	P07BF		
AND THE Properties (A) Voltage Low         NOT Engle Speed (A) Voltage Low         NOT (A)				IF fail timer	>= 4 counts		-		
Engine Speed         Drug to the left detects         Engine Speed         Drug to the left detects				AND		Components powered			
Image: Number of the set of the				Engine Speed	>= 20 rpm	AND			
Output Speed Sensor Cat Values Low         Not Test Failed This Key ON V7C (b) V7C bit Market Sensor Cat Values Low         Not Test Failed This Key ON V7C (b) D2 wood         D S ecc         Tpp A. 1 Trp No Fail Active DTC (b) V7C (c) Values Cat (c) Values Cat				THEN report malfunction	- <u> </u>	Battery Voltage	>= 9 V		
Output Speed Sensor         P07C         In the test detects         If Valages = 0.25 volis         Not Test Failed This Key OR P07C         0.8 see         Type A           Cit Valage Low         If Valages = 0.25 volis         If Valages = 0.25 volis         Not Test Failed This Key OR P07C         0.8 see         Type A           Cit Valage Low         If Valages = 0.25 volis         If Valages = 0.25 volis         Not Test Failed This Key OR P07C         0.8 see         Type A           Output Speed Sensor         P07D         If test interment and inter						Dattory Voltage			
Ciel Vedege Low     No     and	Output Speed Sensor	P077C	This test detects	IF voltage	<= 0.25 volts	Not Test Failed This Key On	P077C	0.8 sec	Type A
In long allow     is grand drait     is grand drait     in order of 0.2 second     No Fault Acree DTC P077C     It is in order of 0.2 second       Uniput Systed Sensor     P0770     It is it is in order of 0.2 second     NOT Low Voltage Datable     NOT Low Voltage Datable       Output Systed Sensor     P0770     It is it is it is in order of 0.2 second     NOT Low Voltage Datable     NOT Low Voltage Datable       Output Systed Sensor     P0770     It is it is id detects     If P voltage > -4.75     Not Test Failed This Key Or P077D     0.3 sec     The P077C       Range Ventification     If P voltage > -4.75     Not Test Failed This Key Or P077D     0.3 sec     The P077C       Range Ventification     If P voltage > -4.75     Not Test Failed This Key Or P077D     0.3 sec     The P077C       Range Ventification     If P voltage > -4.76     Not Test Failed This Key Or P077D     0.3 sec     The P077C       Range Ventification     If P voltage > -4.078     Not Test Failed This Key Or P077C     0.3 sec     The P077C       Range Ventification     If P voltage > -4.078     Not Test Failed This Key Or P077C     0.3 sec     The P077C       Range Ventification     If P voltage > -4.078     NoT Test Failed This Key Or P077C     0.3 sec     The P077C       Range Ventification     If P voltage P0877     If P078     P077C     P077C       If If an in preserre	Ckt Voltage Low		either open or short	ii tonago		OR			1 Trip
Image: Participation of the partic	on vonago zon		to around circuit			No Fault Active DTC	P077C		p
THEN norment to item     THEN norment to item     Autor       Autor     Autor     Autor       Autor     Autor     Autor       Bit statistics     Filter spectration     NOT Low Voltage Deable       Output Speed Surson     P17/D     This statistics       Cut Voltage High     P17/D     This statistics       Bit statistics     Figure Spectration       Output Speed Surson     P17/D       THEN norment to item     Figure Spectration       Output Speed Surson     P17/D       The statistics     Figure Spectration       Output Speed Surson     P17/D       THEN norment to item     Figure Spectration       Scatistical One of the item     Figure Spectration       Bit statistics     Figure Spectration       Bit statistics     Figure Spectration       Bit statistics     Figure Spectration       Bit statistics     P17/D       Bit statistics     P17/D <td></td> <td></td> <td>malfunctions</td> <td>for</td> <td>0.2 second</td> <td></td> <td>1 011 0</td> <td></td> <td></td>			malfunctions	for	0.2 second		1 011 0		
Image: Sense in the set of				THEN increment fail timer	0.2 300010				
Range Verification     P0720     This test vertices     Product final finance of a status     NOT Low Voltage Planate     0.8 sec     Type A, Tripe A, Tripe A       Output Speed Service     P0720     This test vertices     If voltage > 4.75     Noi Test Failed This Key CM P077D     0.8 sec     Tripe A, Tripe A, Tripe A       Output Speed Service     P0720     This test vertices     If voltage > 4.75     Noi Test Failed This Key CM P077D     0.8 sec     Tripe A, Tripe A       Cit Voltage High     P0720     This test vertices     If end targe A     4 caunta     Components powered AND     No Fault Active DTC P077D     0.8 sec     Tripe A, Tripe A       Range Verification Operating ratio white vertices     Portage field     Per Advantage Service     2.20 mm     No Fault Active DTC P077D     0.8 sec     Tripe A       This test vertices     Per Advantage Service     2.0 mm     Second     No Fault Active DTC P077D     2.25 seconds     Tripe A       The Incomot Rais operating ratio white vertices     Per Advantage Service     Per Advantage Service     Per Advantage P0877     2.25 seconds     Tripe A       Time a counsisted event time is vertices     Per Advantage P0877     Not Fault Pending with ond gase P0877     Per Advantage P0877     Per Advantage P0877       Time a counsiste vertices     Portage P100 RPM     Not Test Failed This Key C0 P0721     Portage P0877     Portage P08				IF fail timer		No Fault Active DTC			
Legis Space Space CRIVIDAGE RESONANT LINE NOT Low Voltage Resonant THEN root mailured CRIVIDAGE Networks CRIVIDAGE Networks CRIVIDAGE Networks CRIVIDAGE Networks Under Space Space CRIVIDAGE Networks Under Space Net Failed This Key ON UNDER Net						No Fault Active DTO	1 0170		
Lugar Stand     Lugar Stand     Lugar Stand     NOT Low Young PLOAD     NOT Low				Engine Speed	s – 20 rom	NOT Low Voltage Disable			
Cutput Speed Sensor CH Voltage High         P0770 bit test edited either open or short bit granu dicut maffunctions.         If voltage High If voltage High         NOT Lest Failed This Key On P0777 OR No Fault Active DTC OR No Fault Active DTC No Fault Active DTC No Fault Active DTC No Fault Active DTC P0770 No Fault Active DTC P0770					>= 20 ipili	NOT LOW VOILage Disable			
Output Speed Samsur Ckt Voltage High         PVTD File test detects in ground circuit malfunctions.         File Veglage File voltage Data File test detects in ground circuit malfunctions.         IF voltage File voltage Data File test detects in ground circuit malfunctions.         IF voltage Data File voltage Data File test workfes         Not Test Failed This Key On (P077D No Fault Active DTC P077D         0.8 sec         Type A. 1 Trip           Range Verification Gear 1 Incoment Ratio Companies powered Companies powered Test Failed This Key On (Second File Test Failed This Key On (Second Fi				NOT Low Voltage Response					
Curry Species Sensor Cut Voltage High         P077D P077D         This first detects either open or abort either open or abort malfunctions.         IF voltage (b)         > 4.75         Not Test Failed This Key Or P077D No Fault Active DTQ P077D         0.8 sec         The Association (b)         The Association (c)         The Association (c)         Descent (c)         The Association (c)         Descent (c)         The Association (c)         Descent (c)         Descent (c) <thdescent (c)         Descent (c)         &lt;</thdescent 				THEN report molfunction					
Output Speed Sensor CRI Voltage High         P077D         This test duetation to ground circuit matunctions.         IF voltage > 4.75         Not Test Failed This Key OM 6077D         0.8 sec         Type A 1 Trp           CRI Voltage High         P077D         This test duetation to ground circuit matunctions.         IF voltage > 4.75         Not Test Failed This Key OM 6077D         0.8 sec         Type A 1 Trp           Range Verification Clear 1 Incorrect Rain to to the commanded ratio.         P0731         This set verifies to ground circuit matunctions.         Pending failure occurs whet accumulated event times to commanded by boo ratio to the commanded ratio.         Pending failure occurs whet accumulated event times to commanded ratio.         Pending failure occurs whet accumulated event times to commanded ratio.         Port Test Failed This Key On (excorp P0977 if dropout suspected poprating ratio white tare to the commanded ratio.         Pending failure accurs whet accumulated event times to the main pressure dropout is suspected ratio to the commanded ratio.         Port Test Failed This Key On (excorp P09777 if dropout suspected or detected pografs         Pografs         Pografs <td></td> <td></td> <td></td> <td>THEN report mairunction</td> <td></td> <td></td> <td></td> <td></td> <td></td>				THEN report mairunction					
Upply Setted     POTAL     Insites betted by output of page verification     In output of page verification <td>Output On and Onesan</td> <td></td> <td>This to st slate sta</td> <td>IC velte er</td> <td>4.75</td> <td>Net Test Feiled This Key Or</td> <td>00770</td> <td>0.0</td> <td>T</td>	Output On and Onesan		This to st slate sta	IC velte er	4.75	Net Test Feiled This Key Or	00770	0.0	T
CR: Vollage right       be infer open or short maturetions.       in a sound accur.	Output Speed Sensor	PUTTD	This test detects	IF voltage	>= 4.75	Not Test Failed This Key On	P077D	0.8 sec	Type A,
Image from a force of a control method in control of a control of	Ckt voltage High		eitner open or snort			UR NA FINAN DEC	D		ттр
Image: Note of D2 second     No Fault Active DTC     P077C       Barger Verification     Components powered NoP THEN increment all interest or accumulated event times 1st range is commanded ratio.     No Fault Active DTC     P077C       Components powered Barger Verification     These test verifies     Perioding failure occurs wheel accumulated event times >= 2 second     No Test Failed This Key On (except P0877 1if dropout suspected or detected) pograg     P0877       Commanded pratio     If main pressure dropout is suspected to the eommanded ratio.     P100 RPM     Not Fault Active with on gear pograg     P2877       The accumulated event time is pograg     > 100 RPM     Not Fault Active with on gear pograg     P0877     2.25 seconds     Tipe A.       The accumulated event time is pomparing is in torward or reverse range diagnostic response range is commanded ratio.     Not Fault Active with on gear pograg     P0877     2.25 seconds     1 Tipe pograg       The accumulated event time is port of the accumulated event time is is in torward or reverse range diagnostic response range is commanded     > 100 RPM     Not Fault Pending with ong gear P0877     P0877       Not Fault Active with on gear pograg     > 100 RPM     Not Test Failed This Key On P0721     P0722       In response to panding failure a diagnostic response range is commanded     > 20 RPM     Not Test Failed This Key On P0721     P0720       No Fault Pending DTC for this drive gov77 or opt of P0770     P0720     P0722     P0770 <td></td> <td></td> <td>to ground circuit</td> <td></td> <td></td> <td>No Fault Active DTC</td> <td>P077D</td> <td></td> <td></td>			to ground circuit			No Fault Active DTC	P077D		
Range Verification     POT31     This test verifies transmission all or provide to the commanded ratio.     Pending failure occurs when accumulated event timer bits in prossure dropout is suspected or praining dropouted commanded ratio.     Pending failure occurs when accumulated event timer bits argues to the commanded ratio.     Pending failure occurs when accumulated event timer bits argues to the commanded ratio.     Pending failure occurs when accumulated event timer bits argues to the commanded ratio.     Pending failure occurs when accumulated event timer bits argues to the commanded ratio.     Pending failure occurs when accumulated event timer bits argues to the commanded ratio.     Not Test Failed This Key On (except P0878     P0878     Yppe A, 1 Trip       If main pressure dropout is suspected comparing dropout allo to the commanded ratio.     Pending failure occurs when accumulated event timer is bits norward or reverse range to the commanded ratio.     Pending failure occurs when accumulated event timer is bits norward or reverse range is in forward or reverse range is norward or reverse range is norward reverse range is commanded.     Not Fault Active with ond gas P0877 Rev_Logic1 and RPS/PRNLD conflic P0722     P0772 P0720     P0722       P0776 P0770 P0770 P0770 P0770     P0722 P0770 P0770 P0770 P0770 P0770     P0772 P0770 P0770 P0770 P0770     P0772 P0770 P0770 P0770 P0770     P0772 P0770 P0770			mairunctions.	for	0.2 second				
Image Verification     P0731     This test verifies transmission operating ratio while strange is commanded by companing computed ratio to the commanded pice     Pending failure occurs when accurulated event timer be commanded by commanded by commanded pice     Pending failure occurs when accurulated event timer be commanded by commanded pice     Pending failure occurs when accurulated event timer be commanded by commanded pice     Pending failure occurs when accurulated event timer be commanded event timer be accurulated event timer be commanded pice     Pending failure occurs when accurulated event timer be accurulated pice     Pending failure, a accurulates when transmission accurulates event are accurulates when transmission accurulates event are accurulates event are a				THEN increment fail timer		No Fault Active DTC	P077C		
AND THEN report mailunction     AND Engine Speech = 20 rpm     Components powered MB     Components powered Battery Voltage = 9 V       Range Verification     Portification     Pending failure occurs when accumulated event time is = 2 second     Not Test Failed This Key On (except P0877 if dropout suspected or detected) P0878     P0877 P0878     2.25 seconds     Type A, 1 Trip       If main pressure dropout is suspected transmission operating ratio while 1st range is commanded ratio.     If main pressure dropout is suspected transmission     Not Test Failed This Key On (except P0877 if dropout suspected or detected) P0878     P0878     2.25 seconds     1 Trip       If main pressure dropout is suspected commanded ratio.     If main pressure dropout is detected THEN accumulated event time is >= 0.75 second     Not Fault Active with ond geat P0877     P0878       Rev_Logic1 and RPS/PRNDL conflic diagnostic response trape at commanded.     Time raccumulates that fails if Abs(Converter Filp) > 100 RPM     Not Fault Active with ond geat P0877     P0721       Not Fault Active with ond peat P0877     In response to pending failure, a diagnostic response range is commanded.     P0718     P0716       P0720     P0717     P0720     P0718     P0717     P0720       P0700     P0707     No Fault Pending DTC for this drive P0717 cycle P0720     P0770				IF fail timer	>= 4 counts				
Engine Speed >= 20 rpm     MAD Battery Voltage >= 9 V       Range Verification Gear 1 Incorrect Raito operating ratio while strange is commanded by comparing computer ratio to the commanded ratio.     Pending failure occurs wher accurulated event timer is >= 2 second     Not Test Failed This Key On (except P0877 if dropout suspected or detected THEN accurulated event timer is >= 0.75 second     225 seconds     Type A. 1Trijp       IF main pressure dropout is detected THEN accurulated event timer is >= 0.75 second     Not Test Failed This Key On (except P0877 if dropout suspected or detected THEN accurulated event timer is >= 0.75 second     Not Fault Pending with cmd geas P0878     225 seconds     1Trip       IF main pressure dropout is detected THEN accurulated event timer is sin forward or reverse range diagnostic response to pending failur commanded.     1 second     Not Fault Pending with cmd geas P0877     P0721     P0721       Not Fault Pending with cmd geas P0716     P0722     P0721     P0722     P0726     P0726     P0726       During this commanded.     During this commanded.     During this commanded.     P0716     P0720     P0726     P0770       Not Fault Pending DTC for this drive p0717 cycle.     P0726     P0770     P0726     P0770     P0720				AND		Components powered			
Range Verification     Battery Voltage>= 9 V       Gear 1 Incorrect Ratio     P0731     This test verifies       Gear 1 Incorrect Ratio     P0731     This test verifies       gear 10 porrect Ratio     P0731     This test verifies       gear 10 porrect Ratio     P0731     This test verifies       gear 11 porrect Ratio     P0731     This test verifies       gear 12 porrecting 2000     persting ratio while 15 main pressure dropout is suspected     P0778       rmmanded ratio.     THEN accumulated event timer is 15 main pressure dropout is detected 00.75 second     Not Test Failed This Key On (excop P0877 if dropout suspected or detected P0878     Not Fault Pending with cmd gead P0877       Rev_Logic1 and RPS/PRNDL conflice     Timer accumulates when transmission is in forward or reverse range 00.00 put speed     >> 100 RPM       AND     output speed     >> 100 RPM     Not Test Failed This Key On P0721       Not Test Failed This Key On P0721     P0776 P0770     P0772       In response to pending failure, a diagnostic response range is commanded. If Abs(Corverter Silp) >= 250 RPM for > 10 samples.     Not Fault Pending DTC for this drive P0717 cycle, P0756 P07C0				Engine Speed	>= 20 rpm	AND			
Range Verification         Initial control of the set verifies transmission operating ratio while is transmission comparing computed ratio to the commanded ratio.         Pending failure occurs whet accumulated event timer is >= 1 second         Not Test Failed This Key On (except P0877) if dropout suspected or detected) P0878         2.25 seconds         Trip Participation of the second point is detected point is detected the commanded at ratio.         Not Test Failed This Key On (except P0877) if dropout suspected or detected) P0878         Not Test Failed This Key On (except P0877) rid dopout suspected or detected) P0878         Not Fault Pending with cmd gear P0877         Rev_Logic1 and RPS/PRNDL conflice         Not Fault Active with cmd gear P0877         Rev_Logic1 and RPS/PRNDL conflice         Not Test Failed This Key On P0721         P0722         P0876         P0877         P0772         P0776         P07776         P0776         P0776				THEN report malfunction		Battery Voltage	>= 9 V		
Range Verification       This test verifies transmission operating ratio while 1st range is commanded by comparing computed rato to the commanded tratio.       Pending failure occurs wher accumulated event timer >= 2 second       Not Test Failed This Key On (except P0877 if dropout suspected or detected) P0878       2.25 seconds       Type A, 1 Trip         IF main pressure dropout is suspected rato to the commanded ratio.       IF main pressure dropout is detected THEN accumulated event timer is is in forward or reverse range (s) output speed >= 100 RPM AND gear silp > 100 RPM       Not Fault Active with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflic       Not Fault Active with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflic         In response to pending failure, a diagnostic response range is commanded.       In response to pending failure, a diagnostic response range is commanded.       Not Rev       Not Test Failed This Key On P0721 P0700       Not Test Failed This Key On P0721 P0700         No Fault Pending DTC for this drive P0717 cycled       P078F P0700       P078F P0700       P078F P0700									
Gear 1 Incorrect Ratio       P0731       This test verifies transmission operating ratio while 1st range is commanded by comparing counted ratio to the commanded ratio.       Pending failure occurs when accumulated event timer is >= 2 second       Not Test Failed This Key On (except P0877 if drapout suspected ratio to the commanded ratio.       P0878       2.25 seconds       1 Trip         IF main pressure dropout is detected ratio to the commanded ratio.       IF main pressure dropout is detected THEN accumulated event timer is >= 1 second       Not Test Failed This Key On (except P0877 rid drapout suspected or detected)       P0878       2.25 seconds       1 Trip         IF main pressure dropout is detected ratio to the commanded ratio.       IF main pressure dropout is detected THEN accumulated event timer is >= 1 second       Not Fault Pending with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflict       P0878         Timer accumulates when transmission is in forward or reverse range action gear slip > 100 RPM       Not Fault Active with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflict       Not Fault Active with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflict       P0721         In response to pending failure, a diagnostic response range is commanded.       During this commande, this test fails if Abs(Converter Slip) >= 250 RPM for > 10 samples.       P0716       P0721         No Fault Pending DTC for this drive P0717 cycle.       P0707 P0770       P0707       P0707	Range Verification								
Itransmission operating range is commanded by comparing computed ratio to the commanded ratio.       If main pressure dropout is suspected commanded traine is a 1 second       Not Test Failed This Key On (excep P0877 if dropout suspected or detected P0878       P0878         THEN accumulated event timer is commanded ratio.       IF main pressure dropout is detected if main pressure dropout is detected ratio to the commanded ratio.       Not Fault Pending with cmd geat P0877       P0878         THEN accumulated event timer is s= 0.75 second       Not Fault Pending with cmd geat P0877       Not Fault Pending with cmd geat P0877         Timer accumulated event timer is s= 0.75 second       Not Fault Active with cmd geat P0877       Not Fault Active with cmd geat P0877         Not Fault Pending with cmd geat P0877       Timer accumulates when transmission is in forward or reverse range a 100 RPM       Not Fault Active with cmd geat P0877       P0772         AND gear slip > 100 RPM       Not Test Failed This Key On P0721       P0722       P0716         During this command, this test fails if Abs(Corverters Fig) >= 250 RPM for       P0716       P0717         P077C P077C       P0770       P0772       P0772         No Fault Pending DTC for this drive P0717       P0726       P0776         P0770       P0770       P0776       P0776         P0770       P0770       P0777       P0776         P0770       P0770       P0770       P077	Gear 1 Incorrect Ratio	P0731	This test verifies	Pending failure occurs when				2.25 seconds	Type A,
operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.       IF main pressure dropout is suspected or HEN accumulated event timer is is an pressure dropout is datected the commanded ratio.       Not Test Failed This Key On (excep P0877 if dropout suspected or detected) p0878         Not Fault Pending with cmd gear P0877       Not Fault Pending with cmd gear P0877         THEN accumulated event timer is is in forward or reverse range is in forward or reverse range aND gear slip > 100 RPM       Not Fault Active with cmd gear P0877         AND gear slip > 100 RPM       AND gear slip > 100 RPM       Not Fault Active with cmd gear P0877         In response to pending failure, a diagnostic response range is commande, his test fails if Abs(Converter Slip) > 10 samples.       Not Test Failed This Key On P0721         During this command, this test fails if Abs(Converter Slip) > 10 samples.       P0716 P0770 P0770 P0770         Not Fault Pending DTC for this drive P0770 P0770       P0717 P0770 P0770			the second second	U					4 Tain
1 strange is commanded by comparing computed ratio.       IF main pressure dropout is suspected or detected or			transmission	accumulated event timer	>= 2 second				1 I rip
commanded by commanded ratio.       IF main pressure dropout is suspected THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is is in forward or reverse range is in forward or reverse range is in forward or reverse range AND output speed >= 100 RPM       Not Fault Active with cmd gear Not Fault Active with cmd gear P0877       P0878         Imain pressure dropout is detected rule accumulated event timer is is in forward or reverse range is in forward or reverse range aND output speed alignostic response range is diagnostic response range is diagnostic response range is adagnostic response range is commanded.       Not Fault Active with cmd gear Not Fault Active with cmd gear Not Fault Active with cmd gear P0877       P0877         Imain pressure dropout is detected is in forward or reverse range is in forward or reverse range output speed alignostic response range is diagnostic response range is adagnostic response range is portic       Not Test Failed This Key On P0772       P0722         Imain response to pending failure, a diagnostic response range is portic       > 250 RPM for > 100 samples.       No Fault Pending DTC for this drive Cord       P0717 Cord         No Fault Pending DTC for this drive Cord       P075F       P075F			operating ratio while	accumulated event timer	>= 2 second	Not Test Failed This Key On (except	P0877		ттр
comparing computed ratio to the commanded ratio.       THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is = 0.75 second       Not Fault Pending with cmd gear P0877 Rev_Logic1 and RPS/PRNDL conflict         Timer accumulates when transmission is in forward or reverse range gear slip       Not Fault Pending with cmd gear P0877       P0877 Rev_Logic1 and RPS/PRNDL conflict         Not Fault Active with ord gear year slip       > 100 RPM       Not Fault Active with ord gear P0877       P0877         Image: Slip       > 100 RPM       Not Fault Active with ord gear P072       P0721         Image: Slip       > 100 RPM       Not Test Failed This Key On P0717       P0722         Image: Slip       > 100 RPM       Not Test Failed This Key On P0717       P0728         P0716       P0770       P0716       P0770         P0770       P0770       P0770         Not Fault Pending DTC for this drive P0717       P0770         No Fault Pending DTC for this drive P0717       P0720         No Fault Pending DTC for this drive P0717       P0720			operating ratio while 1st range is	accumulated event timer	>= 2 second	Not Test Failed This Key On (except if dropout suspected or detected)	P0877		тпр
ratio to the commanded ratio. IF main pressure dropout is detected THEN accumulated event timer is = 0.75 second Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflic Timer accumulates when transmission is in forward or reverse range AND output speed = 100 RPM AND gear slip > 100 RPM In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) > 10 samples. Not Fault Pending with cmd gear Not Fault Active with cmd gear Not Fault Active with cmd gear Not Fault Active with cmd gear Not Test Failed This Key On P0721 P0726 P0770 P077D No Fault Pending DTC for this drive P0777 cycle P077BF P0770			operating ratio while 1st range is commanded by	accumulated event timer IF main pressure dropout is suspected	>= 2 second	Not Test Failed This Key On (except if dropout suspected or detected)	P0877 P0878		тпр
commanded ratio.       IF main pressure dropout is detected       Not Fault Pending with cmd geal P0877         THEN accumulated event timer is is in forward or reverse range AND gear slip       >= 0.75 second       Rev_Logic1 and RPS/PRNDL conflici         Not Fault Active with cmd geal P0877       P0877         Rev_Logic1 and RPS/PRNDL conflici       Not Fault Active with cmd geal P0877         AND gear slip       >= 100 RPM AND gear slip         During this command, this test fails if Abs(Converter Slip)       >= 250 RPM for         During this command, this test fails if Abs(Converter Slip)       >= 250 RPM for         No Fault Pending DTC for this drive P077D         No Fault Pending DTC for this drive P0770			operating ratio while 1st range is commanded by comparing computed	IF main pressure dropout is suspected	>= 2 second	Not Test Failed This Key On (except if dropout suspected or detected)	P0877 P0878		ттр
THEN accumulated event timer is >= 0.75 second       Rev_Logic1 and RPS/PRNDL conflict         Timer accumulates when transmission is in forward or reverse range output speed >= 100 RPM       Not Fault Active with cmd gear P0877         AND       output speed >= 100 RPM       Rev_Logic1 and RPS/PRNDL conflict         AND       gear slip       > 100 RPM         In response to pending failure, a diagnostic response range is commanded.       P0716         During this command, this test fails if Abs(Converter Slip)       >= 250 RPM         for       > 10 samples.			operating ratio while 1st range is commanded by comparing computed ratio to the	accumulated event timer IF main pressure dropout is suspected THEN accumulated event timer is	>= 2 second >= 1 second	Not Test Failed This Key On (except if dropout suspected or detected)	P0877 P0878		1 Trip
Timer accumulates when transmission is in forward or reverse range AND output speed >= 100 RPM       Not Fault Active with cmd gear       P0877         Not Fault Active with cmd gear       P0877       Not Fault Active with cmd gear       P0877         Not Fault Active with cmd gear       P0877       P0722       P0716         Not rest Failed This Key On P0721       P0722       P0716       P0717         During this commande, this test fails if Abs(Converter Slip) for       >= 250 RPM       P0720       P077D         No Fault Pending DTC for this drive P0717       P0727       P0717       P077D         No Fault Pending DTC for this drive P0717       P0727       P0727			operating ratio while 1st 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	>= 2 second >= 1 second	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear	P0877 P0878 P0877		1 Trip
Timer accumulates when transmission is in forward or reverse range       Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict       P0877         AND       >= 100 RPM       Rev_Logic1 and RPS/PRNDL conflict       P0721         In response to pending failure. a diagnostic response range is command. this test fails if Abs(Converter Slip)       >= 250 RPM       P0717         P077D       P077D       P077D         No Fault Pending DTC for this drive P0760       P0717         P077D       P077D         No Fault Pending DTC for this drive P0760       P0717			operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877 P0878 P0877		1 Trip
is in forward or reverse range       Not Fault Active with cmd gear       P0877         Rev_Logic1 and RPS/PRNDL conflict       Rev_Logic1 and RPS/PRNDL conflict         AND       >100 RPM         AND       gear slip         gear slip       > 100 RPM         AND       Not Test Failed This Key On P0721         P0722       P0716         P0717       P0717         diagnostic response to pending failure, a       P0716         diagnostic response to range is       P0716         During this command, this test fails if       P250 RPM         Abs(Converter Slip)       >= 250 RPM         for       > 10 samples.         No Fault Pending DTC for this drive       P0717         P0726       P0776         P0776       P0776         P0777       P0776         P0776       P0776         P0777       P0776         P0776       P0776         P0776       P0776         P0776       P0776			operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877 P0878 P0877		1 Inp
AND       Rev_Logic1 and RPS/PRNDL conflict         Output speed       >= 100 RPM         AND       AND         gear slip       > 100 RPM         In response to pending failure, a diagnostic response range is commanded.       P0722         During this command, this test fails if Abs(Converter Slip)       >= 250 RPM         You Fault Pending DTC for this drive P0717       P077D         No Fault Pending DTC for this drive P0717       P078F         P0770       P077D         P0700       P077D         P0700       P077D			transmission operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second	Not Test Failed This Key On (except if dropout suspected or detected) Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877 P0878 P0877		1 Trip
Image: Construction output speed AND gear slip     > 100 RPM     Not Test Failed This Key On P0721       Image: Construction of the speed spe			transmission operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second	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	P0877 P0878 P0877 P0877		1 Trip
AND       gear slip       > 100 RPM       Not Test Failed This Key On P0721         In response to pending failure, a diagnostic response range is commanded.       P0716         During this command, this test fails if Abs(Converter Slip) to r       > 250 RPM         In response to pending failure, a diagnostic response range is commanded.       P0716         No Fault Pending DTC for this drive P0717       P077D         No Fault Pending DTC for this drive P0717       P078F         P077D       P077D			comparing computed ratio to the 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	>= 2 second >= 1 second >= 0.75 second	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	P0877 P0878 P0877 P0877		1 Trip
AND gear slip P0722 P0722 P0716 P0716 P0717 P0717 P0776 P077C			transmission operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second	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	P0877 P0878 P0877 P0877		1 Trip
gear sip     > 100 RPM     Not rest failed this key On P0721       In response to pending failure, a diagnostic response range is commanded.     P0716       During this command, this test fails if Abs(Converter Slip)     P07BF       > 250 RPM     P077C       for     > 10 samples.			transmission operating ratio while 1st 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	>= 2 second >= 1 second >= 0.75 second >= 100 RPM	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	P0877 P0878 P0877 P0877		1 Trip
hr esponse to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for Hor Fault Pending DTC for this drive P077C P077D No Fault Pending DTC for this drive P078F P077C P077D P077D P077D P077D P077D			transmission operating ratio while 1st 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 AND	>= 2 second >= 1 second >= 0.75 second >= 100 RPM	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	P0877 P0878 P0877 P0877		1 Trip
In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for Abs(Converter Slip) - 250 RPM for - 10 samples. No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0 P07PD No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0			transmission operating ratio while 1st 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 AND gear slip	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721		1 Inp
In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for 10 samples. No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0 P077D			transmission operating ratio while 1st 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 AND gear slip	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0877 P0721 P0722		1 Inp
diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip) for burne for Abs(Converter Slip) for burne for burne fo			transmission operating ratio while 1st 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 AND gear slip	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722		1 Inp
commanded.       P07BF         During this command, this test fails if       P07C0         Abs(Converter Slip)       >= 250 RPM         for       > 10 samples.         No Fault Pending DTC for this drive       P0777         P077D       P0770         P0700       P0770			transmission operating ratio while 1st 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 AND gear slip	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716		1 Inp
During this command, this test fails if       P07C0         Abs(Converter Slip)       >= 250 RPM         for       > 10 samples.         No Fault Pending DTC for this drive       P0777         cycle.       P07BF         P07C0       P0770			transmission operating ratio while 1st 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 AND gear slip In response to pending failure, a diagnostic response range is	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717		1 Inp
During this command, this test fails if     P077C       Abs(Converter Slip)     >= 250 RPM       for     > 10 samples.   No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0			transmission operating ratio while 1st 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 AND gear slip In response to pending failure, a diagnostic response range is commanded.	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P078F		1 Inp
Abs(Converter Slip) for >10 samples. No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0			transmission operating ratio while 1st 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 AND gear slip In response to pending failure, a diagnostic response range is commanded.	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07BF P07C0		1 Inp
for > 10 samples. No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0			transmission operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.	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	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C		1 Inp
No Fault Pending DTC for this drive P0717 cycle. P07BF P07C0			transmission operating ratio while 1st 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 AND gear slip In response to pending failure, a diagnostic response range is commanded. During this command, this test fails if Abs(Converter Slip)	>= 2 second >= 1 second >= 0.75 second >= 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P077C P077D		1 Inp
cycle. P07BF P07C0			transmission operating ratio while 1st 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 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 > 100 RPM > 100 RPM	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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P07BF P07C0 P077C P077D		1 Inp
P07C0			transmission operating ratio while 1st 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 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 > 100 RPM >= 250 RPM > 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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P078F P0717 P077C P077D P0717		1 Inp
			transmission operating ratio while 1st range is commanded by comparing computed ratio to the commanded ratio.	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 > 100 RPM >= 250 RPM > 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	P0877 P0878 P0877 P0877 P0721 P0722 P0716 P0717 P078F P07C0 P077C P077D P078F		1 Inp

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
					NOT Low Voltage Disable			
					NOT LOW VOILage Disable			
					No range switch response active			
					Hydraulic System Pressurized			
					Shift complete			
					Output speed	>= 200 RPM		
					No hydraulic default conditior present			
					Normal powertrain shutdown not ir process			
					Normal powertrain initialization is complete			
Gear 2 Incorrect Ratio	P0732	This test verifies transmission operating ratio while	Pending failure occurs when accumulated event timer IF main pressure dropout is suspected	>= 2 second	Not Test Failed This Key On (except if dropout suspected or detected)	P0877 P0878	2.25 seconds	Type A, 1 Trip
		commanded by	THEN accumulated event timer is	4				
		comparing computed	IF main pressure dropout is detected	>= 1 second	Not Fault Pending with cmd gear	P0877		
		commanded ratio.	THEN accumulated event timer is	>= 0.75 second	Rev_Logic1 and RPS/PRNDL conflict			
			Timer accumulates when transmission is in forward or reverse range		Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			output speed	>= 100 RPM				
			AND		Not Test Failed This Key Or	P0721		
			gear slip	> 100 RPM		P0722		
			In reasons to pending failure			P0716		
			diagnostic response range is			P07BF		
			commanded.			P07C0		
						P077C		
			During this command, this test fails if Abs(Converter Slip)	250 DDM		P077D		
			for	> 10 samples.	No Fault Pending DTC for this drive	P0717		
					cycle.	P07BF		
						F07C0		
					NOT Low Voltage Disable			
					No range switch response active			
					Hydraulic System Pressurized			
					Shift complete			
					Output speed	>= 200 RPM		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			-		-	Illum
					No hydraulic default conditior present			
					Normal powertrain shutdown not ir process			
					Normal powertrain initialization is complete			
Gear 3 Incorrect Ratio	P0733	This test verifies transmission operating ratio while 3rd range is	Pending failure occurs when accumulated event timer IF main pressure dropout is suspected	>= 2 second	Not Test Failed This Key On (except if dropout suspect or detected)	P0877 P0878	2.25 seconds	Type A, 1 Trip
		commanded by comparing computed ratio to the commanded ratio.	THEN accumulated event timer is IF main pressure dropout is detected THEN accumulated event timer is	>= 1 second >= 0.75 second	Not Fault Pending with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			Timer accumulates when transmission is in forward or reverse range AND output speed	>= 100 RPM	Not Fault Active with cmd gear Rev_Logic1 and RPS/PRNDL conflict	P0877		
			AND gear slip	> 100 RPM	Not Test Failed This Key On	P0721 P0722		
			In response to pending failure, a diagnostic response range is commanded.			P0716 P0717 P07BF P07C0 P0720		
			Abs(Converter Slip) for	>= 250 RPM > 10 samples.	No Fault Pending DTC for this drive	P077D P0717		
					cycle.	P07BF P07C0		
					NOT Low Voltage Disable No range switch response active			
					Hydraulic System Pressurized			
					Shift complete			
					Output speed	>= 200 RPM		
					present			
					Normal powertrain shutdown not ir process			
					Normal powertrain initialization is complete			
Gear 4 Incorrect Ratio	P0734	This test verifies	Pending failure occurs when		1		2.25 seconds	Type A
		transmission	accumulated event timer	>= 2 second	Not Test Failed This Key On (except	P0877		1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
		operating ratio while	IF main pressure dropout is suspected		if dropout suspect or detected.)	P0878		
		4th range is	THEN accumulated event timer is	>= 1 second				
		commanded by	IF main pressure dropout is detected					
		comparing computed	THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gea	P0877		
		ratio to the			Rev_Logic1 and RPS/PRNDL conflic	l de la constante de		
		commanded ratio.	Timer accumulates when transmission					
			is in forward or reverse range					
			AND		Not Fault Active with cmd gear	P0877		
			output speed	>= 100 RPM	Rev_Logic1 and RPS/PRNDL conflic			
			AND		_ •			
			gear slip	> 100 RPM				
			3		Not Test Failed This Key Or	P0721		
			In response to pending failure, a			P0722		
			diagnostic response range is			P0716		
			commanded.			P0717		
						POZBE		
			During this command, this test fails if			P07C0		
			Abs(Converter Slip)	>= 250 RPM		P077C		
			for	> 10 samples		P077D		
				r io campion				
					No Fault Pending DTC for this drive	P0717		
					cvcle.	P07BE		
						P07C0		
					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 nowartrain initialization i			
					complete			
Gear 5 Incorrect Ratio	P0735	This test verifies	Pending failure occurs when				2.25 seconds	Type A.
		transmission	accumulated event timer	>= 2 second	Not Test Failed This Key On (except	P0877		1 Trip
		operating ratio while	IF main pressure dropout is suspected		if dropout suspect or detected.)	P0878		· ·
		5th range is	THEN accumulated event timer is	>= 1 second	,			
		commanded by	IF main pressure dropout is detected					
		comparing computed	THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gea	P0877		
		ratio to the			Rev_Logic1 and RPS/PRNDL conflic			
		commanded ratio.	Timer accumulates when transmission		_ •			
			is in forward or reverse range					
			AND		Not Fault Active with cmd dear	P0877		
			output speed	>= 100 RPM	Rev Logic1 and RPS/PRNDL conflic			
			near slin	> 100 RPM				
			gear sip					
			In response to pending failure		Not Tool Foiled This Key Or	P0721		
			diagnostic response range in		Not rest railed mis Key Or	P0721		
1	1	1	diagnostic response range is	1	1	1 0122		1

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
			commanded.			P0716		
						P0717		
			During this command, this test fails if			P07BF		
			Abs(Converter Slip)	>= 250 RPM		P07C0		
			for	> 10 samples.		P077C		
						P077D		
					No Fault Pending DTC for this drive	P0717		
					cycle.	P07BF		
						P07C0		
					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			
Reverse Incorrect Ratio	P0736	This test verifies				_	2 seconds	Type A,
		transmission range	Accumulated event timer	>= 2 seconds	Not Test Failed This Key On (except	P0877		1 Trip
		while reverse range	IF main pressure dropout is suspected		if dropout suspect or detected.)	P0878		
		is commanded by	THEN accumulated event timer is	>= 1 second				
		comparing computed	IF main pressure dropout is detected					
		ratio to the	THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gear	P0877		
		commanded ratio.			Rev_Logic1 and RPS/PRNDL conflict			
			Timer accumulates when transmission					
			in in forward or reverse range		Not Foult Active with and goor	D0977		
			is in forward of reverse range		Not Fault Active with child gear	P0077		
			AND		Nev_Edgic Fand NF S/FRNDE connici			
			output speed	>= 100 RPM				
			AND			5070 <i>/</i>		
			gear slip	> 100 RPM	Not Test Failed This Key On	P0721		
						P0722		
						P0716		
						P0717		
						P07BF		
						P07C0		
						P077C		
						P077D		
					No Fault Pending DTC for this drive	P0717		
					cycle.	P07BF		
						P07C0		
					NOT Low Voltage Disable			
					1		1	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			No range switch response active			llium
					Hvdraulic System Pressurized			
					Shift complete			
					Output speed	>= 200 RPM		
					No hydraulic default condition			
					present			
					Normal powertrain shutdown not ir process			
					Normal powertrain initialization is			
					complete			
Ones C. In compatibility	D0700	This test we side a	Dan dina failuna annun urban				0.05	Turne A
Gear 6 Incorrect Ratio	P0729	transmission range	accumulated event timer	>= 2 second	Not Test Failed This Key On (except	P0877	2.25 seconds	1 Trip
		while 6th range is	IF main pressure dropout is suspected		if dropout suspect or detect)	P0878		
		commanded by comparing computed	I HEN accumulated event timer is IF main pressure dropout is detected	>= 1 second				
		ratio to the	THEN accumulated event timer is	>= 0.75 second	Not Fault Pending with cmd gear	P0877		
		commanded ratio.	Timor accumulates when transmission		Rev_Logic1 and RPS/PRNDL conflict			
			is in forward or reverse range					
			AND		Not Fault Active with cmd gear	P0877		
			output speed	>= 100 RPM	Rev_Logic Fand RF 3/FRIDE connict			
			AND	- 100 DDM	Not Tool Foiled This Key On	00704		
			gear sip	> 100 RPM	Not rest Falled This Key Of	P0721 P0722		
			In response to pending failure, a			P0716		
			diagnostic response range is			P0717		
			commanded.			P07BF P07C0		
			During this command, this test fails if			P077C		
			Abs(Converter Slip)	>= 250 RPM		P077D		
			101	> 10 samples.	No Fault Pending DTC for this drive	P0717		
					cycle.	P07BF		
						P07C0		
					NOT Low Voltage Disable			
					No range switch response active			
					Hydraulic System Pressurized			
					Shift complete			
					Output speed	>= 200 RPM		
					No hydraulic default conditior present			
					Normal powertrain shutdown not ir process			

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
					normal powertrain Initialization is			
Torque Converter	-							
Torque Converter Clutch	P0741	This test detects the	700 0	00 0014		00704	15 seconds	Type B,
Stuck Off		torque converter	TCC SIP for a time	>= 80 RPM	Not Test Failed This Key On	P2761 P2763		2 Trips
		(unlocked).	ior a une			P2764		
		(				P0721		
						P0722		
						P0716		
						P0717		
						P077C		
						P077D P07BE		
						P07C0		
					No Fault Pending DTCs for this drive	P2761		
					cycle.	P2763		
						P2764		
						P0721 P0722		
						P0716		
						P0717		
						P077C		
						P077D		
						P07BF		
						P07C0		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					E sta Que llat			
					Engine Speed betweer	200 RPM and 7500 RPM		
					for	5 seconds		
					Must be in forward range			
					% Throttle	> 10 % and <= 90 %		
					Transmission fluid temperature	> 5 deg. C and < 130 deg. C		
					Time Since Range Change	>= 6 seconds		
					AND			
					TCC apply is complete			
						>= 1000 kPa		
						2 1000 Ki a		
Torque Converter Clutch	P0742	This test detects the						Type A,
Circuit Stuck On		torque converter	Case 1: (High Torque condition)		Not Test Failed This Key Or	P2761	Case 1:	1 Trip
		locked)	Set tault pending when throttle	>= / U%		P2764	2 Seconas	
			AND net engine torque	>= 275 Nm.		P0721	1	
						P0722		
			Report malfunction when fault pending			P0716		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description				_		Illum
			exists continuously			P0717		
			for a time	>= 2 seconds.		00100		
						P0/7C		
						POTE		
						P07C0		
			Case 2: (High Acceleration condition)		No Fault Pending DTCs for this drive	P2761	Case 2:	
					cycle.	P2763	5 Seconds	
			Set fault pending when output shaf			P2764		
			acceleration	>= 100 RPM/second		P0721		
						P0722		
			Report malfunction when fault pending			P0716		
			exists continuously	C accorde		P0717		
			for a time	>= 5 seconds.		00100		
						POZBE		
						P07C0		
					Components powered			
			Case 3: (Accel/Decel/Accel condition)		AND		Case 3:	
					Battery Voltage	>= 9 V	4 Seconds	
			Report malfunction when output		Engine Speed between	200 RPM and 7500 RPM		
			deceleration event and followed by			200 141 141 and 7 500 141 141		
			another output acceleration event. An		for	5 seconds		
			output acceleration event occurs when		Engine speed not defaulted			
			output shart acceleration		Must be in forward range			
			for a time	>= 40 RPIM/Second	TCC is commanded off			
					TCC Slip	>=-20 RPM and <= 20 RPM		
			An output deceleration event occurs					
			when output shaft acceleration is	<=-40 RPM/second				
			for a time	0.5 seconds	0/ Theoretic	05%		
			IOF a time	>= 2.5 seconds.	% Througe	>= 23%		
					Engine speed	<= 3500 RPM		
					Input speed	<= 3500 RPM		
					Output speed	>= 100 RPM		
Pressure Switches								_
Pressure Switch	P0842	This test compares	Pending failure occurs when PS1		C4 volvo io destruis d		80 ms	Type A,
Solenoia 1 Circuit LOW		valve position to the	pressure switch indicates stroked for a		51 valve is destroked			ттр
		PS1 pressure switch	une		NOT Cold initialization unless			
		feedback. (part of			transmission fluid temperature	> -25 deg C		
		S1 valve integrity				- 20 dog. 0		
		test)			NOT Low Voltage Disable			
			In response to the pending failure, S1		NOT Shutdown with Active Diac			
			valve is retried by triggering S1 valve		NOT SHURDOWN WITH ACTIVE DIag			
			command to stroked and back to		Hydraulic System Pressurized			
			destroked. If PS1 pressure switch		, .,			
			continues to indicate stroked, then one		NOT Hydraulic Default Cmd			
			of three malfunction cases exists:					
I	I	I	I	I	I	l	l	1

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	For Case 1 (electrical malfunction),					mum
			SS1 Circuit Low reports failure, also	P0072				
			SST Circuit Low reports failure, also.	10373				
			For Case 2 (mechanical malfunction),					
			Shift Solenoid 1 (SS1) Valve	P0752				
			Performance – Stuck On reports failure, also.					
			For Case 3 (intermittent malfunction),					
			SS1 valve retry attempted	15 times				
			PS1 pressure switch continues to					
			indicate stroked.					
Shift Solenoid 1 (SS1)	P0751	This test compares			S1 valve commanded from destroked		5 seconds	Type A,
Valve Performance – Stuck Off		the change of state of the valve	S1 valve is commanded from destroked to stroked and the PS1 pressure switch indication remains destroked for a time		NOT Low Voltage Disable	4		1 I rip
		change of state of		>= 5 seconds	NOT Shutdown with Active Diag			
		the PS1 pressure switch feedback.	WITH transmission fluid temperature	>= 0 deg. C	Hydraulic System Pressurized	1		
		timeout test)	(Time increases as temperature		NOT Hydraulic Default Cmo			
			decreases with maximum time	12 seconds				
			transmission fluid temperature)	<= -40 deg. C				
Shift Solenoid 1 (SS1)	P0752	This test compares					6.6 seconds	Type A,
Valve Performance – Stuck On		the change of state of the valve	S1 valve commanded from stroked to destroked and the PS1 pressure switch		S1 valve commanded from stroked to destroked			1 I rip
		command to the	indication remains stroked for a time					
		the PS1 pressure	WITH	> 6.2 seconds	NOT Low Voltage Disable			
		switch feedback. (part of the S1 valve	transmission fluid temperature	>= 0 deg. C.	NOT Shutdown with Active Diag			
		timeout test).	(Time increases as temperature	10 cocondo	Hydraulic System Pressurized	1		
			at	To seconds	NOT Hydraulic Default Cmo			
			transmission fluid temperature)	<= -40 deg. C				
Pressure Switch	P0843	This test compares	Pending failure occurs when PS1				70 ms	Type A,
Solenoid 1 Circuit High		the commanded valve position to the	pressure switch indicates destroked for a time	> 0.07 seconds	S1 valve is stroked			1 Trip
		PS1 pressure switch			NOT Cold initialization unless	5		
		feedback. (part of S1 valve integrity	IF a main pressure dropout is suspected then time limit increases to	5 seconds	transmission fluid temperature	e> -25 deg. C		
		test)			NOT Low Voltage Disable			
			In response to the pending failure, S1		NOT Shutdown with Active Diag	4		
			valve is retried by triggering S1 valve command to destroked and back to		Hydraulic System Pressurized			
			stroked. If the PS1 pressure switch			]		
			one of three malfunction cases exists.		NOT Hydraulic Default Cmc	1		
			1		1		1	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
			For Case 1 (electrical malfunction), SS1 Control Circuit Low reports failure, also. For Case 2 (mechanical malfunction), Shift Solenoid 1 (SS1) Valve Performance – Stuck Off reports failure, also. For Case 3 (intermittent malfunction), S1 valve retry attempted AND PS1 pressure switch continues for	P0973 P0751 15 times				
			indicate destroked.					
Duran O ital	D00.47	<b>T</b> 1					10	<b>T</b>
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).	Pending failure occurs when Psz pressure switch indicates stroked 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 stroked and back to destroked. If PS2 pressure switch continues to indicate stroked, then one of three malfunction cases exists. For Case 1 (electrical malfunction), SS2 Control Circuit Low reports failure, also. For Case 2 (mechanical malfunction),	> 0.04004 seconds 0.2998 seconds P0976	S2 valve is destroked 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	40 ms	1 Trip
			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	If the S2 valve is commanded from destroked to stroked and the PS2 pressure switch indication remains destroked for a time	>= 5 seconds	S2 valve commanded from destroked to stroked. NOT Low Voltage Disable		5 seconds	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
		the PS2 pressure	WITH					
		switch feedback (part	transmission fluid temperature	>= 0 deg. C.	NOT Shutdown with Active Diag			
		of the S2 valve	(Time increases as temperature		Hudroulia Sustem Drasouriza			
		timeout test).	(Time increases as temperature	12 accords	Hydraulic System Pressurized	1		
			decreases with maximum time		NOT Hydraulic Default Cmr			
			transmission fluid temperature		NOT Hydraulic Delault offic	1		
				<= -40 deg. 0.				
Shift Solenoid 2 Valve	P0757	This test compares	S2 valve commanded from stroked to				6.5 sec	Type A.
Performance – Stuck		the commanded	destroked and the PS2 pressure switch		S2 valve commanded from stroked to			1 Trip
On		valve position to the	does not indicate destroked for a time		destroked			
		PS2 pressure switch		>= 6.5 seconds				
		feedback (part of the	WITH		NOT Low Voltage Disable			
		S2 valve timeout	transmission fluid temperature	>= 0 deg. C.				
		test).		-	NOT Shutdown with Active Diag			
			(Time increases as temperature					
			decreases with maximum time	22 seconds	Hydraulic System Pressurized	4		
			at					
			transmission fluid temperature	<= -40 deg. C.	NOT Hydraulic Default Cmo	8		
Pressure Switch	P0848	This test compares	Pending failure occurs when PS2	2			300 ms	Туре А,
Solenoid 2 Circuit High		the commanded	pressure switch indicates destroked for		S2 valve is stroked			1 Trip
		valve position to the	a time	> 0.30 seconds				
		PS2 pressure switch			NOT Cold initialization unless			
		reedback (part of the	IF a main pressure dropout is		transmission fluid temperature	> -25 deg. C		
		52 valve integrity	suspected, THEN time limit increases	5 seconds				
		iesi).	to		NOT Low Voltage Disable	2		
			In reasonable to the pending failure of		NOT Shutdown with Active Dise			
			value is retried by triggering S2 value	1	NOT Shuldown with Active Diag			
			command to destroked and back to		Hydroulio System Brosouriza			
			stroked If PS2 pressure switch		Hydraulic System Fressurized			
			continues to indicate destroked ther		NOT Hydraulic Default Cmr			
			one of three malfunction cases exists					
			For Case 1 (electrical malfunction).					
			SS2 Control Circuit Low reports	P0976				
			failure, also.					
			For Case 2 (mechanical malfunction),					
			Shift Solenoid 2 Valve Performance -	P0756				
			Stuck Off reports failure, also.					
			For Case 3 (intermittent malfunction),					
			S2 valve retry attempted	2 times				
			AND					
			PS2 pressure switch continues to	1				
			Indicate destroked.					
Proceuro Switch	D0972	This test compares	Ponding foilure ecoure when DS	3	+		20 mg	
Pressure Switch	PU072	the commanded	Pending failure occurs when PS3		C2 volvo in destrokos		20 ms	1 ype A,
Colenoid 5 Circuit LOW		valve position to the	prossure switch indicates stroked for a	$\sim 0.0195$ seconds	55 valve is destroked			i ilip
		PS3 pressure switch	ume	- 0.0133 Seconds	NOT Cold initialization unless			
		feedback. (part of			transmission fluid temperature	> -25 deg. C		

Odds         Description (strugged)         Month         Month<	Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Image: Subset ingering         Status ingering         Not response interpreter in the pending failure. Site set interpreter in the pending failure. Site set interpreter		Code	Description	<u> </u>	<u> </u>	<u> </u>	<u> </u>		Illum
Bits         But with a statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in statistical program (S training fullier, S) where is contrained in the statistical program (S training fullier, S) where is contrained in the statistical program (S training fullier, S) where is contrained in the statistical program (S training fullier).         NOT by statistical program (S training fullier)         Seconds         NOT by statistical program (S training fullier).         Seconds         NOT by statistical program (S training fullier).         NOT by statistical program (S training fullier).         Seconds         NOT by statistical program (S training fullier).         Seconds         Program (S training fullier). <th< td=""><td></td><td></td><td>S3 valve integrity</td><td></td><td></td><td></td><td></td><td></td><td></td></th<>			S3 valve integrity						
Image: Second a View Profession of a View Profess			lesi)			NOT Low Voltage Disable			
Image: Second 3 Value     NVT     Image: Second 3 Value     NVT     NoT Hydraulic Default Circl     NoT Line Value     NoT Line Value     NoT Line Value     NoT Hydraulic Default Circl     NoT Line Value     NoT Hydraulic Default Circ     NoT Hydraulic Default Circ <td></td> <td></td> <td></td> <td>In recoonse to the pending failure</td> <td></td> <td>NOT Shutdown with Active Diac</td> <td>]</td> <td></td> <td></td>				In recoonse to the pending failure		NOT Shutdown with Active Diac	]		
Image: Solution 3 Value         PVID: Per Case 1 (electrical realismetrice) SSR Solution 3 Value (Signer Pressurities) Per Case 1 (electrical realismetrice) SSR Society Clouds (or reports Base 3 chemistry in the maintenent search of the chemistry in the search of the sear				valve is retried by triggering S3 valve			1		
Image: Second 3 Value         PV73         This test comparison of the second and the property of the				command to stroked and back to	,	Hvdraulic System Pressurized			
SNR Solenoid 3 Value Performance On         VTR1         Continues to indicate strated, then one international maturation, see Sole.         PO/TP Performance Port/2         PO/TP Performance Performance         PO/TP Performance Port/2         PO/TP Performance Performance         PO/TP Performance Performance         PO/TP Performance         PO/TP Performance         Port/2         Performance Performance         Port/2         Performance Performance         Port/2         Performance Performance         Port/2         Performance         Port/2         Performance         Port/2         Performance         Port/2         Performance         Pero				destroked. If PS3 pressure switch	1		]		
State         Process (inclusion consists)         Parage         Parage <td></td> <td></td> <td></td> <td>continues to indicate stroked, then one</td> <td>1</td> <td>NOT Hydraulic Default Cmd</td> <td></td> <td></td> <td></td>				continues to indicate stroked, then one	1	NOT Hydraulic Default Cmd			
Profession         Portage				of three malfunction cases exists.					
Pro-Case 1 (electrical multimusion), BSI: Control Crow proofs Buffer, sele. For Case 2 (indextincial multimusion), Error Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - PU762 Sturk. On reports failure, allow. For Case 3 (infermined - Sturk. On PU761 For Case 3 (infermined - Case)         S3 valve commanded from distributed to inficial stroked NOT Low Voltage Disable NOT Studeow with Active Dag Hydrautic System Pressures (infertion distributed on the PS) pressure stroked of corrases as temperature of c									
Production         Product				E Case 4 (electrical molfunction)					
Participance         State of control control composition in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance in the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the second of the PSS pressure which distance is the pressure at the second of the PSS pressure which distance is the pressure at the prestend at the PSS pressure				For Case T (electrical manufiction),					
Image: state				SS3 Control Circuit Low reports	P0979				
Image: Second State Seconds     For Case 2 (mechanical matuncion). Shift Second 3 Valve Petromance – P0782 MD PS3 presure witch continues to mode state of the valve of the va				failure, also.	1 0010				
Image: Shift Scienced 3 Value         Shift Science 3 Science 3 Value         Shift Scienced 3 Value         Shift Scienced 3 Value         Shift S				For Case 2 (mechanical malfunction),					
Image: Substitution of Vulve Performance - PUTR2         Image: Substitution of Performance - Putrace         Substitution of Vulve Performance - Putrace         Substitution of Performance - Putrace         Substitee Performance - Putrace									
Image: Shick Cit reports failure, also.     For Case 3 (ritermittent mafunction), S3 value netry attempted 2 times AND P53 pressues awitch continues to indicate stroked.     S3 value commanded from destroked to stroked.     Image: Sink Cit reports failure, also.     Image: Sink Cit reports fail reports failure, also.     <				Shift Solenoid 3 Valve Performance -	P0762				
Image: Shift Sciencid 3 Valve Performance - Stuck Off     PO761 This test compares the change of state of the valve commanded from destroked to a line pressure switch off     If the S3 valve is commanded from destroked to attored attored to stroked and the PS3 pressure witch off     S3 valve commanded from destroked to stroked of the valve commanded from destroked to stroked of the valve commanded from destroked to stroked of the valve commanded from destroked to stroked. If the S3 valve is commanded from destroked for a line adestroked to line ad				Stuck On reports failure, also.					
Image: Proceeding of the set of the se				For Case 2 (intermittent malfunction)					
Shift Sciencid 3 Valve Performance – Stuck Off         P073 His test compares the change of state off example         If the S3 valve is software attracted. Indicate statistical means the change of state off example         S3 valve commanded from the valve command to the destroked for a time switch fieldbook. (off the valve command to the performance – Stuck Off         P073 His test compares the change of state off example         If the S3 valve is software for destroked for destroked for destroked for destroked for the valve command to the destroked for a time switch fieldbook. (off the valve command to the switch fieldbook. (off the compares the commanded the switch destroked and the PS3 pressure switch does not indicate destroked for at the switch field temperature so 0 deg. C.         S3 valve commanded from stroked to NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic System Pressurized NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic Default Cred NOT Hydraulic System Pressurized NOT Hydraulic System Pressurized NOT				For Case 5 (intermittent manufactor),					
And PS3 presure switch officiate stroked.         And PS3 presure switch officiate stroked.         S3 valve commanded from destroked to stroked.         S5 seconds         Type A, 1 Trip           Shift Solenoid 3 Valve Off         POP1         This test compares to the change of state of the valve switch fieldscot.         If the S3 valve is commanded from destroked to stroked and the PS3 pressure switch indication remains of state of the valve switch fieldscot.         If the S3 valve is commanded from destroked to stroked and the PS3 pressure switch indication remains of destroked to stroked and the PS3 pressure switch of stroked with the PS3 pressure switch indicate destroked for a time destroked to stroked and the PS3 pressure switch of the commanded of the commanded pressure switch of the commanded the PS3 pressure switch of destroked and the PS3 pressure switch of strawbit indicate destroked for a time > 0.30 seconds         S3 valve is stroked NOT Hydraulic Destate Cms         6.6 seconds         Type A, 1 Trip           Pressure Switch S0 levold 3 Circuit High Pressu				S3 valve retry attempted	2 times				
Image: Shift Solenoid 3 Value Performance – Stuck Off         P0761 the change of state of the change of state of the change of state of the change of state of the pR3 pressure switch indicate stroked.         If the S3 value is commanded from destroked to stroked.         S3 value commanded from destroked to stroked.         5 seconds         Trip of the pR3 pressure switch indicates is the pressure switch indicate.         If the S3 value destroked to a time as a stroked of a time pressure switch indicate.         S3 value commanded from destroked to stroked.         5 seconds         Trip NOT Low Voltage Disable NOT Shutdown with Active Diag Hydraulic System Pressures         5 seconds         Trip NOT Hydraulic Default Cmd           Shift Solenoid 3 Value Crimeout test)         P0762         This test compared transmission fluid temperature destroked and the PS3 pressure switch destroked and the PS3 pressure switch destroked and the PS3 pressure switch feedback (part of the value position to the performance – Stuck Crimeout test)         S3 value commanded from stroked to s0 stroked to so stroked to so stroked to a time destroked and the PS3 pressure switch destroked and the PS3 pressure switch destroked and the PS3 pressure switch destroked and the PS3 pressure switch feedback (part of the value position to test compared destroked and the PS3 pressure switch destroked and the PS3 pressure switch feedback (part of the value position to test compared the commanded value position to the pressure switch Resp.         S3 value commanded from stroked to NOT Low Voltage Disable NOT Sudown with Active Diag         6.6 seconds         Type A, 1 Trip           Pressure switch S0 value (integrity)         P0873         This test compares the commanded value position to the pr				AND					
Shift Solenoid 3 Valve Parformance – Stuck Off         P0761 Let change of state of the valve command to the PS3 pressure switch indication remains destroked to stroked and the PS3 pressure switch indication remains destroked to stroked and the PS3 pressure switch indication remains destroked for a time at transmission fluid temperature parformance – Stuck On         S3 valve commanded from destroked to stroked to stroked to stroked in the PS3 pressure switch indication remains destroked for a time at transmission fluid temperature parformance – Stuck On         P0762 Pressure Switch te commanded to the S3 valve transmission fluid temperature destroked for a time at transmission fluid temperature destroked for a time at transmission fluid temperature parformance – Stuck On         P0762 Pressure Switch te commanded parformance – Stuck On         P0762 Pressure Switch te solution to stroked to parformance – Stuck On         P0762 Pressure Switch te solution te solutin te solutin te solution te solutin te solution te solution te so				PS3 pressure switch continues to	*				
Shift Solenoid 3 Valve Performance – Stuck Off         P0761 the valve command to the change of state of the valve command to the change of state of the PS3 pressure which fieldback. (part of the S3 valve timeout test)         If the S3 valve is commanded from destroked to stroked and the PS3 seconds         S3 valve commanded from distroked to stroked. NOT Low Voltage Disable NOT Shutdown with Active Diag         5 seconds         Type A, 1 Trip           Shift Solenoid 3 Valve Off         P0761         This test compares the commanded to stroked and the PS3 valve commanded from distroked the PS3 pressure decreases with maximum time decreases with maximum time to stroked and the PS3 valve commanded from stroked to destroked from stroked to destroked from stroked to destroked and the PS3 pressure at transmission fluid temperature S3 valve commanded from stroked to destroked and the PS3 pressure at transmission fluid temperature S3 valve commanded from stroked to destroked and the PS3 pressure the commanded valve position to the pressure switch itself.         S3 valve commanded from stroked to destroked from stroked to at transmission fluid temperature S3 valve to manded from stroked to test.         S3 valve commanded from stroked to NOT Low Voltage Disable NOT Low Voltage Disable NOT Hydraulic Default Cmd         6.6 seconds         Type A, 1 Trip           Pressure Switch Solenoid 3 Circuit High         P0873         This test compares the commanded valve position to the pressure switch PS3 test commanded valve position to the pressure swit				indicate stroked.					
Shift Solenoid 3 Varies       PO/61       If the sharp of state of the value commande to the charge of state of the value commande to the charge of state of the value commande to the PS3 pressure structh indication remains detected to structed and the PS3 pressure structh indication remains detected to structed and the PS3 pressure struct indicates detected to structed and the PS3 pressure struct indicates detected to structed and the PS3 pressure struct indicate detected to structed and the PS3 pressure struct indicate detected to structed and the PS3 pressure struct indicate detected to structed and the PS3 pressure structed to structed the pS3 pressure structed increases as temperature >= 0 deg. C.       NOT Low Voltage Disable       NOT Hydraulic Default Cmd       State Commande from structed to main the pS3 pressure structed at transmission fluid temperature >= 0 deg. C.       NOT Hydraulic Default Cmd       State Commande from structed to main the pS3 pressure structed at transmission fluid temperature >= 0 deg. C.       NOT Hydraulic Default Cmd       State commande from structed to main the pS3 pressure structed at transmission fluid temperature >= 0 deg. C.       State commande from structed to main the pS3 pressure structed destructed for a time >= 0.5 seconds       State commande from structed to main the pS3 pressure structed destructed for a time >= 0.5 seconds       State commande from structed to main the pS3 pressure structed destructed for a time at transmission fluid temperature >= 0 deg. C.       NOT Low Voltage Disable       NOT Low Voltage Disable       NOT Low Voltage Disable       NOT Mydraulic Default Cmd       State commande from structed to main the pS3 pressure structed at transmission fluid temperature >= 0 deg. C.       NOT Low Voltage Disable       NOT Low Voltage Disable	Chiff Colonaid 3 Value	00761	This test compares	If the S2 velve is commanded from		22 value commended from destroked		E accordo	Tupe A
Off       Output	Performance – Stuck	P0/01	the change of state	destroked to stroked and the PS3		to stroked		5 seconds	1 Trip
Image: State of the person pressure switch for a line of the person pressure switch register of the person pressure switch person pressure switch register of the register of the pressure switch register of the register of the pressure switch register of th	Off		of the valve	pressure switch indication remains	3				1.1.1%
Image: Seconds       NOT Shutdown with Active Diag         NOT Shutdown with Active Diag         With FeeS pressure switch feedback. (part of the S3 valve timeout test)       (Time increases as temperature decreases with maximum time decreases with maximum time transmission fluid temperature decreases with maximum time decreases with maximum time decreases with maximum time transmission fluid temperature e= -40 deg. C.       NOT Hydraulic System Pressurized NOT Hydraulic Default Cm       S6.6 seconds       Type A, 1 Trip         Shift Solenoid 3 Valve Performance – Stuck On       This test compares the commanded valve position to the PS3 pressure switch feedback (part of the S3 valve timeout test).       S3 valve commanded from stroked to des not indicate destroked for a time S3 valve commanded from stroked to test in transmission fluid temperature s3 valve timeout test).       S3 valve commanded from stroked to des not indicate destroked for a time S3 valve timeout test).       S3 valve commanded from stroked to des not indicate destroked for a time s3 valve timeout test).       S3 valve commanded from stroked to test in transmission fluid temperature s2 seconds       S3 valve commanded from stroked to NOT Low Voltage Disable       NOT Hydraulic System Pressurized NOT Hydraulic Default Cm       S00 ms       Type A, 1 Trip         Pressure switch Solenoid 3 Circuit High Valve position to the pressure switch Solenoid 3 Circuit High Valve position to the pressure switch pressure dropout is teedback. (part of S3 valve ingrity)       Pending failure occurs when PS3 test ownthe PS3 is uspected THEN time limit increases to suspected THEN			command to the	destroked for a time		NOT Low Voltage Disable	1 1		
Image: Second			change of state of		>= 5 seconds	-			
Image: Switch fleedback.       transmission fluid temperature >= 0 deg. C.       Hydraulic System Pressurized       Hydraulic System Pressurized       Hydraulic System Pressurized         Shift Solenoid 3 Valve       P0762       This test compares the commanded from stroked to destroked for a time > 2.5 seconds       S3 valve commanded from stroked to destroked for a time > 2.5 seconds       S3 valve commanded from stroked to destroked for a time > 2.5 seconds       NOT Hydraulic Default Cmd       6.6 seconds       Type A, 1 Trip         Sy alve timeout test)       S3 valve commanded from stroked to destroked for a time > 2.5 seconds       S3 valve commanded from stroked to NOT Low Voltage Disable NOT Low Voltage Disable       NOT Hydraulic System Pressurized NOT Shutdown with Active Diag       6.6 seconds       Type A, 1 Trip         Pressure Switch       S0 degr. C.       (Time increases as temperature decreases with maximum time a transmission fluid temperature >= 0 deg. C.       NOT Shutdown with Active Diag       8.6 seconds       Type A, 1 Trip         Pressure Switch       S0 degr. C.       (Time increases as temperature decreases with maximum time a transmission fluid temperature >= 0 deg. C.       NOT Hydraulic Default Cmd       300 ms       Type A, 1 Trip         Pressure Switch       P0873       This test compares the commanded tore time a time > 0.30 seconds       S3 valve is stroked for a time > 0.30 seconds       NOT Cold initialization unless transmission fluid temperature > -25 deg. C       300 ms       Trip         NOT Low Volta			the PS3 pressure	WITH		NOT Shutdown with Active Diag			
Image: Line of time out test)       Image: Line out test)       Image: Li			Switch reedback.	transmission fluid temperature	>= 0 deg. C.				
Image: Seconds of the comparison of the comparation of the comparating the comparation of the comparating the comparation of the compa			timeout test)	/Time increases as temperature		Hydraulic System Pressurized			
Image: Construct of the construction of the constructio			uniout toc.,	(Time increases as temperature decreases with maximum time	12 seconds	NOT Hydraulic Default Cmc	4		
Image: constraint of the commanded performance - StuckPO762This test compares the commanded from stroked to descroked and the PS3 pressure switch of case destroked for a time PS3 pressure switch feedback (part of the S3 valve timeout test).S3 valve commanded from stroked to descroked for a time decreases with maximum time decreases with a transmission fluid temperature decreases with a transmission fluid temperature decreases with maximum time decreases with maximum time decreases with maximum time decreases with a time decreases with maximum time decreases with a time decreases with a transmission fluid temperature decreases with a time decreases				at	12 00001100		1		
Solution       Solution <th< td=""><td></td><td></td><td></td><td>transmission fluid temperature)</td><td>&lt;= -40 deg. C.</td><td></td><td></td><td></td><td></td></th<>				transmission fluid temperature)	<= -40 deg. C.				
Shift Solenoid 3 Valve       P0762       This test compares the commanded from stroked to valve position to the PS3 pressure switch feedback (part of the S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve timeout test).       S3 valve commanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve timeout test).       S3 valve commanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to does not indicate destroked for a time S3 valve cammanded from stroked to NOT Low Voltage Disable       NOT Low Voltage Disable       6.6 seconds       1 Trip         Pressure Switch       S3 valve timeout       C       WITH +       NOT Shutdown with Active Diag       NOT Hydraulic System Pressurized       NOT Hydraulic Default Cmo       1 Trip         Pressure Switch       P0873       This test compares the commanded valve position to the pressure switch indicate destroked for a time S feedback. (part of S3 valve integrity test)       S valve cost of S3 valve is stroked for S3 valve is stroked for S3 valve integrity test)       S valve cost of S3 valve is stroked for S3 valve is stroked for S3 valve integrity test)       S valve cost of S3 valve is stroked for S3 valve is stroked for S3 valve integrity test)       S valve cost of S3 valve is stroked for S									
Performance – Stock       Intercommance       Stocked and the PSS pressure switch PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch feedback (part of the SS valve timeout test).       Stocked and the PSS pressure switch stocked at time at transmission fluid temperature decreases with maximum time at transmission fluid temperature solected access witch maximum time at transmission fluid temperature solected access witch maximum time at transmission fluid temperature solected THEN time limit increases to Stocked THEN time limit increases to Stocked THEN time limit increases to Stocked THEN time limit increases to test).       Stocked time PSS pressure switch NOT Low Voltage Disable       300 ms       Type A, 1 Trip	Shift Solenoid 3 Valve	P0762	This test compares	S3 valve commanded from stroked to				6.6 seconds	Type A,
On       PS3 pressure switch feedback (part of the S3 valve timeout test).       Odes Not Indicate destroked for a time PS3 pressure switch feedback (part of the S3 valve timeout test).       > 6.5 seconds       NOT Low Voltage Disable         VITH S3 valve timeout test).       (Time increases as temperature decreases with maximum time at transmission fluid temperature) >= -40 deg. C.       NOT Shutdown with Active Diag       NOT Shutdown with Active Diag         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 dropout is suspected THEN time limit increases to S5 seconds       Part a main pressure dropout is suspected THEN time limit increases to S5 seconds       S3 valve is stroked NOT Low Voltage Disable       300 ms       Type A, 1 Trip	Performance – Stuck		the commanded	destroked and the PS3 pressure switch		S3 valve commanded from stroked to			ттр
reedback (part of the S3 valve timeout test).       WITH S3 valve timeout test).       WITH S3 valve timeout test).       WITH S3 valve timeout test).       NOT Soutdown with Active Diag Hydraulic System Pressurized NOT Hydraulic Default Cmd         Pressure Switch Solenoid 3 Circuit High test)       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 dropout is suspected THEN time limit increases to S seconds       Post S3 valve is stroked NOT Cold initialization unless transmission fluid temperature > -25 deg. C       300 ms       Type A, 1 Trip	OII		PS3 pressure switch	does not indicate destroked for a time	> 6.5 seconds	NOT Low Voltage Disable			
S3 valve timeout test).       S3 valve timeout test).       transmission fluid temperature decreases as temperature decreases with maximum time at transmission fluid temperature) >= -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 IF a main pressure dropout is supected THEN time limit increases to S seconds       S3 valve is stroked NOT Cold initialization unless transmission fluid temperature supected THEN time limit increases to S seconds       S3 valve is stroked NOT Low Voltage Disable       300 ms       Type A, 1 Trip			feedback (part of the	WITH		No i zow volago zioabio			
Image: test).       (Time increases as temperature decreases with maximum time at transmission fluid temperature) >= -40 deg. C.       Hydraulic System Pressurized NOT Hydraulic Default Cmd       NOT Hydraulic Default Cmd         Pressure Switch Solenoid 3 Circuit High Solenoid 3 Circuit High Valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test).       Pending failure occurs when PS3 a time suspected THEN time limit increases to solenoid sol			S3 valve timeout	transmission fluid temperature	≠ >= 0 deg. C.	NOT Shutdown with Active Diac			
Image: 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 the commanded valve position to the pressure dropout is stroked to save integrity test)       NOT Hydraulic System Pressurized NOT Hydraulic Default Cmd       300 ms       Type A, 1 Trip         NOT Cold initialization unless transmission fluid temperature integrity test)       IF a main pressure dropout is stroked to pressure switch PS3 feedback. (part of S3 valve integrity test)       Seconds       NOT Low Voltage Disable       NOT Low Voltage Disable			test).						
Pressure Switch       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 destroked for a time 5 seconds       NOT Hydraulic Default Cmd       300 ms       Type A, 1 Trip         NOT Cold initialization unless transmission fluid temperature pressure switch PS3 feedback. (part of S3 valve integrity test)       IF a main pressure dropout is suspected THEN time limit increases to 5 seconds       S seconds       NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable       -25 deg. C				(Time increases as temperature	22 seconds	Hydraulic System Pressurized	4		
Pressure Switch       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       S0.30 seconds       S3 valve is stroked       S3 valve is stroked       S3 valve is stroked       S3 valve is stroked       NOT Cold initialization unless transmission fluid temperature       > -25 deg. C       S0 ms       Type A, 1 Trip				decreases with maximum time		NOT Hudroulia Default Cms			
Pressure Switch       P0873       This test compares the commanded valve position to the pressure switch indicates destroked for valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)       Pending failure occurs when PS3       300 ms       Type A, 1 Trip         NOT Cold initialization unless transmission fluid temperature       > -25 deg. C       NOT Cold initialization unless transmission fluid temperature       > -25 deg. C       1 Trip				transmission fluid temperature		NOT Hydraulic Delault Chid	1		
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 destroked for a time 0.30 seconds       S3 valve is stroked       300 ms       Type A, 1 Trip         NOT Cold initialization unless feedback. (part of S3 valve integrity test)       IF a main pressure dropout is suspected THEN time limit increases to 5 seconds       S conds       NOT Cold initialization unless transmission fluid temperature NOT Low Voltage Disable       -25 deg. C					>= 40 deg. 0.				
Solenoid 3 Circuit High       the commanded valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)       pressure switch indicates destroked for a time pressure switch PS3 feedback. (part of S3 valve integrity test)       0.30 seconds       NOT Cold initialization unless transmission fluid temperature 5 seconds       1 Trip	Pressure Switch	P0873	This test compares	Pending failure occurs when PS3		1	1	300 ms	Type A,
valve position to the pressure switch PS3 feedback. (part of S3 valve integrity test)     IF a main pressure dropout is supported THEN time limit increases to test)     NOT Cold initialization unless transmission fluid temperature transmission fluid temperature transmissi transmission fluid temperature transmission fluid temperature tr	Solenoid 3 Circuit High		the commanded	pressure switch indicates destroked for		S3 valve is stroked	i de la constante de		1 Trip
pressure switch PS3     IF a main pressure dropout is     NOT Cold initialization unless       feedback. (part of S3 valve integrity test)     IF a main pressure dropout is     transmission fluid temperature     -25 deg. C			valve position to the	a time	> 0.30 seconds				
S3 valve integrity suspected THEN time limit increases to 5 seconds test) NOT Low Voltage Disable			pressure switch PS3			NOT Cold initialization unless			
test) Suspected in the minimum cases to 5 seconds NOT Low Voltage Disable			S3 valve integrity	IF a main pressure dropout is	5 seconds	transmission fluid temperature	/> -25 deg. C		
			test)	suspected There and and and thereases to	3 3000103	NOT Low Voltage Disable	2		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
			In response to the pending failure, S3		NOT Shutdown with Active Diag			
			command to destroked and back to		Hydraulic System Pressurized			
			stroked. If PS3 pressure switch			1		
			continues to indicate destroked, then		NOT Hydraulic Default Cmc			
			one of the three malfunction cases					
			exists.					
			For Case 1 (electrical malfunction),					
			SS3 Control Circuit Low reports	P0979				
			failure, also.					
			For Case 2 (mechanical malfunction),					
			Shift Solenoid 3 Valve Performance	P0761				
			<ul> <li>Stuck Off reports failure, also.</li> </ul>					
			For Case 3 (intermittent malfunction),					
			S3 valve retry attempted	2 times				
			AND	2 0003				
			PS3 pressure switch continues to					
			indicate destroked.					
Pressure Switch	P0877	This test detects					5 seconds	
Reverse Circuit Low	1 00/7	Reverse Pressure	Case 1: (Forward range)		Not Test Failed This Key On	P0877	0.000103	1 Trip
		Switch closed	For a sample size	100 samples		P0878		· ·
		indication by	(if dropout suspected, NLT or N02			P0708		
		comparing the	cmded, use sample size)	255 samples				
		Reverse Pressure			No Fault Pending DTCs for this drive	P0708		
		PRNDL switch state.	PRNDL IS P, D1, D2, D3, D4, D5, D6, T8, or T4		cycle			
			AND		Engine had been cranking or			
			,		running this drive cycle			
			RPS indicates Reverse		Components powered AND			
			for a time	>= 1 seconds	Ignition Voltage between	19 V and 18 V		
			(if dropout suspected, NLT					
			or N02 cmded, use time)	30 seconds	Engine Speed between	200 RPM and 7500 RPM		
			Case 2: (Range indefinite)		for	5 seconds		
			For a sample size,	20 samples		0.00001100		
			net engine torque	>= 100 Nm	Transmission Fluid Temperature	>= 0 deg. C		
			AND					
			PRNDL is indefinitely D3 or another					
			forward range	. 1 accord	Hydraulic System Pressurized	1		
			lor a une	> i second	Reverse Pressure Switch State			
					indicates REVERSE			
Pressure Switch	P0878	This test detects the	All Cases		Not Test Failed This Key Or	P0877		Туре А,
Reverse Circuit High		Reverse Pressure				P0878		1 Trip
		the open position by				P0708		
		comparing to the			No Fault Pending DTC for this drive	P0708		
		PRNDL switch state			cycle.			
-	-	-	•	•	•	-	-	-

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
		and detects the						
		switch stuck open at			No range switch response active			
		shutdown						
		onataown.						
			Case 4. (DDC Chata and Case Datia da					
			Case 1: (RPS State and Gear Ratio do					
			not agree)		NOT Foult Active	P0878	1.5 seconds	
			IE Boy Coor, Potio and PDS indicator	not Royaraa	Ignition Voltage between	$P \cup O / O$	1.5 Seconds	
			for		First Pange Commanded			
			AND Engine Torque	>= 100 Nm	Shift Complete			
			for	>= 1 second	Output Speed	>= 100 rpm		
			report malfunction					
			For Case 2: (RPS Shutdown Test)				10 seconds	
			, , , , , , , , , , , , , , , , , , ,		Power Mode is NOT Off			
			If RPS indicates	not Reverse	Transmission Fluid Temperature	>= 0 deg. C		
			for a time	> 10 seconds		-		
			at transmission fluid temperature	0 deg. C.				
			during engine shutdown		Engine had been cranking or			
					running this drive cycle			
			This time varies with transmission fluid	3 seconds				
			at transmission fluid temperature	> 35 deg. C	Engine speed	< 50 RPM		
			to time	12 seconds	Turbine speed	< 50 RPM		
			at transmission fluid temperature	< -20 deg. C.	Output speed	< 50 RPM		
			report malfunction at Init					
On-coming/Off-going								
Pressure Control	P2723	This test determines	Pending failure occurs when		1		2 25 seconds	Type A
Solenoid 1 Controlled	. 2. 20	if the on-coming	accumulated event timer	>= 2 seconds	Not Test Failed This Key On	P0721	2.20 00001140	1 Trip
Clutch Stuck Off		clutch energized by	(For rough road conditions, use)	2 seconds		P0722		
		Pressure Control	(* ** * * * * * * * * * * * * * * * * *			P0716		
		Solenoid 1 engages	Timer accumulates when transmission			P0717		
		during a forward	is shifting,			P0877		
		range shift.	output speed	>= 60 RPM		P0878		
			AND commanded gear slip speed	> 75 RPM		P07BF		
			(For rough road conditions, use)	150 RPM.		P07C0		
						P077C		
						P077D		
			In response of pending failure, a					
			diagnostic response range is					
			commanded. During this command, this		Output Speed	>= 125 RPM		
			test fails if ABS(Converter slip)		Turbine Speed	>= 60 RPM		
				>= 250 RPM				
			for sample size	> 10 samples	Hydraulic System Pressurized			
					Normal powertrain shutdown not in	1		
					process			
					Nemeral a California a			
					initialization in constant			
					initialization is complete	1		
					No range switch response active		1	
					No range switch response active		1	
1		1	1		1	1	1	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			-		-	Illum
					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 VOItage Disable			
Pressure Control	P0776	This test determines	Pending failure occurs when				2.25 seconds	Type A,
Solenoid 2 Controlled		if the on-coming	accumulated event timer	>= 2 seconds	Not Test Failed This Key Or	P0721		1 Trip
Clutch Stuck Off		clutch energized by	(For rough road conditions, use)	2 seconds		P0722		
		Solenoid 2 engages	Timor accumulates when transmission			P0/16		
		during a forward	is shifting.			P0877		
		range shift.	output speed	>= 60 RPM		P0878		
			AND commanded gear slip speed			P07BF		
			(For rough road conditions, use)	> 75 RPM		P07C0		
			(For rough road conditions, use)	150 KFIM.		P077D		
			In response of pending failure, a					
			diagnostic response range is		Output Speed	>= 125 RPM		
			commanded. During this command, this		Turbine Speed	>= 60 RPM		
			test fails if ABS(Converter sip)	>= 250 RPM	Hydraulic System Pressurized			
			for sample size	> 10 samples				
					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			
					Tange NOT active			
					NOT Low Voltage Disable			
Proceuro Control	P2724	This test determines					2 0000000	
Solenoid 1 Controlled	PZ/24	if the off-going clutch	Accumulated fail timer	>= 0 2998 seconds	Not Test Failed This Key On	P0721	3 seconds	1 Trip
Clutch Stuck On		energized by	for forward range upshift;			P0722		· ·
		Pressure Control	OR accumulated fail timer	>= 3.0 seconds		P0716		
		solenoid 1 remains	for direction change shifts;		1	P0717	1	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
		engaged during a forward range shift.	OR accumulated fail timer for forward range closed throttle downshift; OR accumulated fail timer for forward downshifts above closed throttle.	>= 0.500 seconds >= 1.0 second		P0877 P0878 P07BF P07C0 P077C P077D		
			Fail timer accumulates during range to range shifts when attained gear slip speed	<= 25 RPM	Output Speed Turbine Speed Normal powertrain shutdown not ir 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 NOT Low Voltage Disable	>= 200 RPM >= 200 RPM		
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.	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. Fail timer accumulates during range to range shifts when attained gear slip speed	>= 0.2998 seconds >= 3.0 seconds >= 0.500 seconds >= 1.0 second	Not Test Failed This Key On Output Speed Turbine Speed Normal powertrain shutdown not ir 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 NOT Low Voltage Disable	P0721 P0722 P0716 P0717 P0877 P0878 P07BF P07C0 P077C P077D >= 200 RPM >= 200 RPM	3 seconds	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
PRNDL/IMS	-			-				
Transmission Range Sensor High Input	P0708	This test monitors the transmission range switch for	For Case 1 (No Information): Illegal electrical state for a time	>= 1 second	Components powerer ANE	d	Case 1: 1 second	Type A, 1 Trip
		invalid input conditions and parity	For Case 2 (Long-term Parity):		Battery Voltage	e>= 9 V	Case 2:	
		consecutive ignition cycles.	There are 3 counters for long-term parity. These counters are updated at the end of each drive cycle, immediately	t	Engine Speed betwee	n 200 RPM and 7500 RPM	5 <sup>th</sup> occurrence	
			prior to TCM shutdown.					
			For Counter 1, increment counter IF Parity Error Detected; decrement counter IF No Parity Error Detected AND No Motion Detected.					
			IF Counter 1	>= 15 counts				
			THEN report failure.					
			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.					
			IF Counter 2, THEN report failure.	>= 5 counts				
			For Counter 3, increment Counter 3 IF Parity Error Detected while in Reverse AND No Valid Reverse Detected AND					
			Motion Detected. Decrement Counter 3 IF No Parity Error Detected AND Valid Reverse Detected AND Motion	8				
			Detected.					
			IF Counter 3, THEN report failure.	>= 5 counts				
			Where Parity Error Detected is defined as a failure of the 4-bit PRNDL input such that the sum of those bits yields an odd					
			result for a time;	>= 30 seconds;				
			Motion Detected is defined as outpur speed for a time;	>= 200 RPM >= 10 seconds				
			Valid Drive Detected is defined as the 4 bit DL indicates Valid Drive for a time;					

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
			Valid Park Detected is defined as the 4-bit PRNDL indicates Valid Park for a time and output speed; Valid Reverse Detected is defined as the 4-bit PRNDL indicates Valid Reverse for a time; Valid Neutral Detected is defined as the 4-bit PRNDL indicates Valid Neutral for a time and output speed OR for a time.	>= 3 seconds >= 0.2 seconds <= 20 RPM >= 15 seconds; >= 0.2 seconds <= 20 RPM >= 3 seconds				
Transmission Range Sensor Circuit Range/Performance	P0706	This test monitors the transmission range switch inputs at engine start to determine that it is indicating a valid starting position (Park or Neutral).	For sample size, PRNDL C input is closed OR PRNDL P is NOT closed.	> 7 samples	Not Test Failed This Key On Ignition voltage between Powertrain State is READY or CRANKING Engine speed	P0706 9V and 18 V > 100 RPM and < 350 RPM.	200 ms	Type B, 2 Trips
Solenoid Electrical Main Modulation/Line Pressure Control Solenoid Control Circuit Open	P0960	This test detects 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 <= 0.01 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	P2669	125 ms	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description				D0070		Illum
						P2670		
			IF either hardware faults are present	>= 3 counts		P2671		
			THEN initiate intrusive test by opening					
			low side driver		Components powered			
			IF intrusive test indicates open for		AND			
			THEN report malfunction	>= 2 counts	Battery Voltage	>= 9 V		
					If Engine Cranking, then Crank Time	< 4 seconds		
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
					Tigh Side Driver 2 Linabled			
Main Modulation/Line	P0961	This test detects the					1000 ms	Type A,
Pressure Control		performance of the	IF delta(desired current - actual		Not Test Failed This Key Or	P2669		
Performance		comparing desired	current)	>= 0.5 amps				
i chomanoc		current to actual duty	FOR	>= 40 counts		P2670		
		cycle	For a sample size	< 80 samples		P2671		
						P0960		
			THEN report malfunction			P0961		
						P0962		
					No Fault Pending DTC for this drive	P0960		
					cycle.	P0962		
					Components powered			
					AND Battery Voltage	>= 9 V		
					Dattory voltage			
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND	40.14		
					Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
					Shift Complete			
					Lockup Apply Complete			
					OR			
					Lockup Release Complete			
		1	1		J	1		

Component/System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Main Modulation/Line Pressure Control Solenoid Control Circuit Low	P0962	This test detects solenoid electrical ground 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 ar 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	Type A, 1 Trip
			Fault pending is set on a single occurrence of hardware ground or open fault. IF either hardware faults are present THEN initiate intrusive test by opening low side driver IF intrusive test indicates grnd for THEN report malfunction	t>= 3 counts	Not Test Failed This Key Or Components powered AND Battery Voltage If Engine Cranking, ther Crank Time AND Battery Voltage Engine speed High Side Driver 2 Enabled	P2669 P2670 P2671 < 4 seconds > 10 V >= 20 RPM		
Main Modulation/Line Pressure Control Solenoid Control Circuit High	P0963	This test detects solenoid electrical short to power circuit malfunctions.		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.			75 ms	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			Not Test Failed This Key Or	P2669		Illum
			Short to power fault present for	> = 3 counts		P2670		
						P2671		
					Components powered	3		
					Battery Voltage	e>= 9 V		
					If Engine Cranking, ther	N		
					Crank Time	< 4 seconds		
					AND Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 2 Enabled			
					Flight olde Driver 2 Enabled	1		
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 THEN initiate intrusive test by opening low side driver IF intrusive test indicates open 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 ar open circuit condition when the driver is Off. There is 10 usec fault filter. The fault schecked for every 6.25 ms by application software.	Not Test Failed This Key Or Components powered AND Battery Voltage If Engine Cranking, ther Crank Time AND Battery Voltage Engine speed	P0657 P0658 P0659 >= 9 V < 4 seconds > 10 V >= 20 RPM	125 ms	Type A, 1 Trip
					Engine speed High Side Driver 1 Enabled	>= 20 RPM		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
Pressure Control	P0965	This test detects the					250ms	Type A,
Solenoid 2 Control		performance of the		0.5	Not Test Failed This Key Or	P0657		
Circuit Performance		comparing desired	current)	>= 0.5 amps		P0658		
		current to actual duty	FOR	>= 10 counts		P0059		
		cvcle	For a sample size	< 20 samples		P0965		
		.,		< 20 3dmpics		P0966		
			THEN report malfunction					
					No Fault Pending DTC for this drive	P0964		
					cycle.	P0966		
					Components powered	1		
					AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking, ther			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					, , , , , , , , , , , , , , , , , , , ,			
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
					Shift Complete	4		
					Lockup Apply Complete	2		
					Lockup Release Complete			
Pressure Control	P0066	This test detects		A ground short condition shall be			125 ms	Type A
Solenoid 2 Control	10300	solenoid electrical		detected if the circuit attached to			123 113	1 Trip
Circuit Low		ground circuit		the Controller external connection				1 mp
		malfunctions.		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				
				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				
				onm. The interface shall detect an				
				driver is Off There is 10 usec				
				fault filter. The fault is checked				
				for every 6.25 ms by application	1			
				software.				
			Fault pending is set on a single		Not Test Failed This Key Or	P0657		
I	I	I	occurrence or nardware ground or	l	I	10000	I	I

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			-		-	Illum
			open fault.			P0659		
			IF either hardware faults are present	>= 3 counts				
			THEN initiate intrusive test by opening					
			low side driver					
			IF intrusive test indicates grnd for	>= 2 counts				
			THEN report malfunction		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	P0967	This test detects		A power short condition shall be	1		75 ms	Type A,
Solenoid 2 Control		solenoid electrical		detected if the circuit attached to				1 Trip
Circuit High		short to power circuit		the Controller external connection				
		malfunctions.		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 used				
				for every 6.25 ms by application				
				software				
				soltwale.		D0057		
				0	Not Test Failed This Key On	P0657		
			Short to power fault present for	> = 3 counts		P0658		
						P0659		
						P0967		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine sneed	>= 20 RPM		
					High Side Driver 1 Enabled			
					High Side Driver 1 Enabled			

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
Draggura Control	Dozoz	Description		A ground abort condition aboll be			105 mg	Turne A
Pressure Control	P2/2/	This test detects		A ground short condition shall be			125 1115	1 Trip
Circuit Open				the Controller external connection				i inp
Circuit Open	exerce Control         Fault         Monitor Strategy (based by the control of the co							
				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 k ohm				
				and shall not be detected if the				
				circuit impedance is <= 9.6 k				
				ohm. The interface shall detect ar				
				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.				
			Fault pending is set on a single		Not Test Failed This Key Or	P2669		
			occurrence of hardware ground of	r		P2670		
			open fault.			P2671		
			IF either hardware faults are presen	t >= 3 counts				
			THEN initiate intrusive test by opening		Components powered	4		
			low side driver	r				
			IE intrusive test indicates open for		Batteny Voltage			
			THEN report molfunction		Ballery Vollage	= >= 9 V		
			THEN report manufaction		If Engine Cranking they			
					If Engine Cranking, ther			
					Crank Time	< 4 seconds		
					ANL			
					Battery Voltage	e > 10 V		
					Engine speed	i >= 20 RPM		
					High Side Driver 2 Enabled	1		
Pressure Control	P2728	This test detects the					250 ms	Type A,
Solenoid 1 Control		performance of the	current	>= 0.5  amps	Not Test Failed This Key Or	P2669		
Circuit Performance		solenoid by	FOR	>= 10  counts		P2670		
		comparing desired	For a sample size	< 20 samples		P2671		
		current to actual duty				P2727		
		cvcle	THEN report molfunction			D2728		
		0 y 0 l 0	THEN report manunction			F2720		
						P2729		
					No Fould Depiding DTO for this drive	D0707		
					No Fault Pending DTC for this drive	P2/2/		
					cycle	P2729		
	1				Components powered	1		
					AND			
	1				Battery Voltage	>= 9 V		
	1							
I	1	I	1	I	If Engine Cranking, ther	1	I	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			Cronk Time	< 4 seconds		Illum
					AND Battery Voltage	> 10 V		
					Engine speed	l>= 20 RPM		
					High Side Driver 2 Enabled			
					Shift Complete			
					Lockup Apply Complete OR	2		
					Lockup Release Complete	è		
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 THEN initiate intrusive test by opening low side driver IF intrusive test indicates gmd 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 k ohm. The interface shall detect ar 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 Or Components powered AND Battery Voltage If Engine Cranking, ther Crank Time AND Battery Voltage Engine speed High Side Driver 2 Enabled	P2669 P2670 P2671 >= 9 V < 4 seconds > 10 V >= 20 RPM	125 ms	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	ļ					Illum
Pressure Control	P2730	This test detects		A power short condition shall be			75 ms	Type A,
Solenoid 1 Control		solenoid electrical		detected if the circuit attached to				1 Trip
Circuit High		short to power circuit		the Controller external connection				
		maifunctions.		nas an impedance <= 1.16 onm				
				to a voltage source within the				
				Normal Operating Voltage Range				
				Donal 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 Or	P2669		
			Short to power fault present for	> = 3 counts		P2670		
						P2671		
						P2730		
					Components powered	. 2100		
					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 Salanaid 1 Control	D0072	This test datasts		A ground short condition shall be			250 mg	Turne A
Circuit Low/Open	F0973	solenoid electrical		detected if the circuit attached to			250 ms	1 Trin
Circuit Low/Open		around and open		the Controller external connection				1 mp
		circuit malfunctions		has an impedance $\leq 0.42$ obm				
				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	1			
				has an impedance >= 200 kohms				
				and shall not be detected if the				
				circuit impedance is <= 6 kohms.				
				The interface shall detect an oper	1			
				circuit condition when the driver is	5			
				UIT. The nominal filter time to				1
	1			diagnostic throughold is 240 me				
				ulaynosuc unresnola is 240 usec.				
	1		Fault pending is set on a single	1	Not Test Failed This Key Or	P0657		
			occurrence of hardware ground or	1		P0658		1
	1		open fault.	1		P0659		
	1	1	IF either hardware fault is present for	>= 10 counts	1	I		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	1		-			Illum
		1	THEN report malfunction	I	Components powered			
			1		AND			
			1		Battery Voltage	>= 9 V		
			1					
			1		If Engine Cranking, then			
			1		Crank Time	< 4 seconds		
			1		AND	40.)/		
			1		Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
Shift Solenoid 1 Control	P0974	This test detects		A power short condition shall be			75 ms	Type A,
Circuit High		solenoid electrical	1	detected if the circuit attached to				1 Trip
		short to power circuit	1	the Controller external connection				
		maifunctions.	1	has an impedance <= 0.39 onm				
			1	Normal Operating Voltage Range				
			1	or the High Operating Voltage				
			1	Range The interface shall detect				
			1	a power short condition when the				
			1	driver is On. The nominal filter				
			1	time to latch fault is 150 usec and				
			1	the diagnostic threshold is 240				
			1	usec.				
			1			00057		
				0	Not Test Failed This Key On	P0657		
			Short to power fault present for	> = 3 counts		P0030		
			1			P0039		
			1			1 0374		
			1		Components powered			
			1		AND			
			1		Battery Voltage	>= 9 V		
			1		, , ,			
			1		If Engine Cranking, then			
			1		Crank Time	< 4 seconds		
			1		AND			
		ļ	1		Battery Voltage	> 10 V		
					Engine speed	>= 20 RPM		
			1		High Side Driver 1 Enabled			
			1					
			1	1	1	I	1	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
Shift Solenoid 2 Control	P0976	This test detects		A ground short condition shall be		Ì	250 ms	Type A.
Circuit Low/Open		solenoid electrical		detected if the circuit attached to				1 Trip
		around or open		the Controller external connection				
		circuit malfunctions.		has an impedance <= 0.42 ohm				
				to a voltage source within the				
				Vehicle Ground Voltage Range				
				relative to PWPGND. The				
				interface shall detect a ground				
				chart condition when the driver is				
				Off. The neminal filter time to				
				laten laut is 200 used 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 oper	1			
				circuit condition when the driver is	5			
				Off. The nominal filter time to				
				latch fault is 200 usec and the				
				diagnostic threshold is 240 usec.				
			Fault pending is set on a single		Not Test Failed This Key Or	P0657		
			occurrence of hardware ground			P0658		
						P0659		
			IF either hardware fault is present for	>= 10 counts				
			THEN report malfunction					
					Components powered	4		
					Battery Voltage	~- 9 V		
					Dattery Voltage	/ / / /		
					If Engine Cranking ther			
					II Engine Cranking, ther	. A seconda		
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	e > 10 V		
					E			
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
Shift Solenoid 2 Control	P0977	This test detects	+	A power short condition shall be	1	1	75 ms	Type A
Circuit High	1 03/7	solenoid electrical		detected if the circuit attached to			73 113	1 Trin
Circuit riigh		short to power circuit		the Controller external connection				i inp
		short to power circuit		has an impedance to 0.20 abm				
		manuncuons.		has an impedance <= 0.39 onm				
				to a voltage source within the				
				Normal Operating Voltage Range				
				or the High Operating Voltage				
				Range. The interface shall detect				
	1			a power short condition when the				
	1			driver is On. The nominal filter				
	1			time to latch fault is 150 usec and				
	1			the diagnostic threshold is 240				
	1			usec.				
	1				Not Test Failed This Key Or	P0657		
	1		Short to power fault present for	> = 3 counts		P0658		
						P0659	1	I

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
						P0977		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND Battory Voltage	× 10 V		
					Ballery Vollage	> 10 V		
					Engine speed	>= 20 RPM		
					High Side Driver 1 Enabled			
Shift Solenoid 3 Control	P0979	This test detects		A ground short condition shall be			250 ms	Type A.
Circuit Low/Open		solenoid electrical		detected if the circuit attached to				1 Trip
		ground or open		the Controller external connection				
		circuit malfunctions.		has an impedance <= 0.22 ohm				
				to a voltage source within the				
				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.				
				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.				
			Fault pending is set on a single		Not Test Failed This Key On	P0657		
			occurrence of hardware ground or			P0658		
			open fault.			P0659		
			IF either hardware fault is present for	>= 10 counts		P0979		
			I HEN report malfunction		Company to a surrow of			
					Battery Voltage	>= 9 V		
					Dattory Voltage			
					IT Engine Granking, then	< 4 seconds		
					Battery Voltage	> 10 V		
					,			
					Engine speed	>= 20 RPM		
					Hign Side Driver 1 Enabled			

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						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. > = 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 1 Enabled	P0657 P0658 P0659 P0980 >= 9 V < 4 seconds > 10 V >= 20 RPM	75 ms	Type A, 1 Trip
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 If Engine Cranking, then Crank Time AND Battery Voltage Engine speed	P0657 >= 9 V < 4 seconds > 10 V >= 20 RPM	75 ms	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						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.		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.			75 ms	Type A, 1 Trip
			Report malfunction when short to		Not Test Failed This Key Or	1P0658		
			ground is detected for a number or events	>= 3 times	HSD1 is commanded ON	I		
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.	During initialization	n =>= 9V	18.75 ms	Type A, 1 Trip
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 or failure events A failure event occurs when the number of failed solenoids connected to HSD1	i >= 3    >= 2	Not Test Failed This Key On HSD2 is commanded ON Components powered AND Battery Voltage If Engine Cranking, ther Crank Time AND Battery Voltage Engine Speec	P2669	75 ms	Type A, 1 Trip

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	Type A, 1 Trip
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 malfunctior 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	>= 9	18.75 ms	Type A, 1 Trip

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			-			Illum
TCC Pressure Control	P2761	This test detects		A ground short condition shall be			125 ms	Type B,
Solenoid Control Circuit		torque converter		detected if the circuit attached to				2 Trips
Open		solenoid electrical		the Controller external connection				
-		open circuit		has an impedance <= 0.01 ohm				
		malfunctions.		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.				
			Fault pending is set on a single		Not Test Failed This Key On	P2669		
			occurrence of hardware ground or			P2670		
			open fault.			P2671		
			IF either hardware faults are present	>= 3 counts		-		
			THEN initiate intrusive test by opening		Components powered			
			low side driver					
			IF intrusive test indicates open for	> = 2 counts	Batten/ Voltage	>- 9.V		
			THEN report malfunction	>= 2 counts	Buildry Vollage			
			THEN TOPOT THAIR HOLD		If Engine Cranking, then			
					In Engine Granking, men	< 4 seconds		
						< 4 seconds		
					AND Detter i Valere	40.14		
					Battery voltage	> 10 V		
					Engine Organi	00		
					Engine Speed	>= 20 rpm		
					High Side Driver 2 Enabled			
TCC Pressure Control	D2762	This test detects the					1000 ms	Type B
Selencid Centrel Circuit	F2/02	norformance of the	ourrent	0.5	Not Test Failed This Key On	<b>D</b> 2660	1000 ms	2 Tripo
Borformanco		colonoid by	cullent)	>= 0.5 amps	Not rest Falled This Key Of	F2009		2 11105
Fenomance			FOR	>= 40 counts		P2070		
		companing desired	For a sample size	< 80 samples		P26/1		
		current to actual duty				P2761		
		cycle	THEN report malfunction			P2762		
						P2764		
					No Fault Pending DTC for this drive	P2761		
					cycle.	P2763		
					Components powered			
					AND			
					Battery Voltage	>= 9 V		
I			I	I	If Engine Cranking, then		1	I

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description			Crank Time	< 4 seconds		Illum
					oralik Time	< 4 3000hu3		
					AND			
					Battery Voltage	> 10 V		
					Engine Speed	>= 20 rpm		
					Engine Speed	20 ipin		
					High Side Driver 2 Enabled			
					Shift Complete			
					Lockup Apply Complete			
					OR			
					Lockup Release Complete			
TCC Pressure Control	P2763	This test detects		A power short condition shall be			75 ms	Type B,
Solenoid Control Circuit		solenoid electrical		detected if the circuit attached to				2 Trips
High		short to power circuit		the Controller external connection				
		manuncuons.		to a voltage source within the				
				Normal Operating Voltage Range				
				or the High Operating Voltage				
				Range. The interface shall detect				
				driver is On. There is 10 usec				
				fault filter. The fault is checked				
				for every 6.25 ms by application				
				sonware.				
					Not Test Failed This Key On	P2669		
			Short to power fault present for	> = 3 counts		P2670		
						P2671 P2763		
					Components powered	1 2100		
					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			
	1	1						
Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
--------------------------	-------	---------------------	---	-------------------------------------	--------------------------------------	-------------------	---------------	---------
	Code	Description						Illum
TCC Pressure Control	P2764	This test detects	1	A ground short condition shall be			125 ms	Type A,
Solenoid Control Circuit		solenoid electrical		detected if the circuit attached to				1 Trip
Low		around circuit		the Controller external connection				· ·
-		malfunctions.		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 uses fault filter				
				The fault is checked for every				
				6 25 mg by application coffware				
				An open circuit condition shall be				
				An open circuit condition shall be				
				detected if the circuit attached to				
				the Controller external connection				
				nas an impedance >= 173 konm				
				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.				
						Baaaa		
			Fault pending is set on a single		Not Test Failed This Key Or	P2669		
			occurrence of hardware ground or			P2670		
			open fault.			P2671		
			IF either hardware faults are present	>= 3 counts				
			THEN initiate intrusive test by opening		Components powered			
			low side driver		AND			
			IF intrusive test indicates grnd for	>= 2 counts	Battery Voltage	>= 9 V		
			THEN report malfunction					
					If Engine Cranking, then			
					Crank Time	< 4 seconds		
					AND			
					Battery Voltage	> 10 V		
					Engine Speed	>= 20 rpm		
				1	Engine opeed			1
					High Side Driver 2 Enabled			
						1		
				1				1
Miscellaneous		•	•	•	•	•	•	
4 Wheel Drive Low	P2771	This test detects	Case 1 (Stuck Off)		All Cases		0.5 second	Type B,
Switch Circuit		abnormal conditions	This test fails when, for number of	4	Not Test Failed This Key Or	P2771		2 Trips
Malfunction		for the four-wheel	occurrences,	>= 1		P0721		· ·
		drive indication	the transfer case 4WD switch indicates			P0722		
		switch input by	High range and the calculated transfer			P077C		
		comparing switch	case range is I ow range for a time	>= 0.5 second		P077D		
		state range to	sace range is how range for a line				1	1
		calculated range.		1		1	1	1
		3-		1	No Fault Active DTCs for this drive	P2771	1	1
				1	cvcle	P0721	1	1
					5,000	P0722		
						P077C		
						P077D		
				1			1	1
			Case 2 (Stuck On)	1	No Fault Pending DTCs for this drive	P0721	1	1
			This test fails when for number of		avela	P0722	1	1
1	I	1	This test fails when, for humber of	1	Cycle	1 0122	1	1

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
			occurrences,	>= 1		P077C		
						P077D		
			the transfer case 4WD switch indicates		NOT Tranfer Case failure suspec			
			I ow range and the calculated transfer		NOT Trailler Case failure suspec			
			case range is High range for a time	>= 0.5 second	Transfer Case is NOT Neutral or	-		
					defaulted	8		
					Transmission fluid temperature	> 20 deg. C and < 130 deg. C		
					Engine Speed between	200 RPM and 7500 RPM		
					for	5 seconds		
					Shift complete AND			
					range attained NOT Neutra	4		
	50004						0.075	
Transmission	P0894	This test detects the	For this ignition cycle, when the number	1	Componente pouvere		8075 ms	Type B,
Component Supping		slip events during the	events	- 3		2		z mps
		Neutral Locked	then report fail		Battery Voltage	>= 9 V		
		Turbine (NLT)	Where number of NLT Slip events for					
		request from engine	this ignition cycle = Number of		Engine Speed betweer	200 RPM and 7500 RPM		
		controller.	accumulated NLT Slip events - Number					
			of NLT Slip events from previous		for	5 seconds		
			ignition cycles.					
			And, where number of accumulated					
			commanded gear or attained gear is					
			NLT					
			AND					
			turbine speed	> 50 RPM				
			for a time	> 3 seconds.				
	_							
Ignition Switch Run/Start	P2534	Out of range low.		<b>5</b>		Doco (	5 seconds	Type A,
Circuit			Ignition voltage	< 5 VOITS	Not Test Failed This Key Or	P2534		ттр
			IF fail counter	>= 800 counts	Components powered	4		
			AND		AND			
			(BattChargeSysStable TRUE OR NOT		Battery Voltage	>= 9 V		
			P0882)					
					Engine Speed betweer	200 RPM and 7500 RPM		
			THEN report malfunction					
					for	5 seconds		
GMI AN Bus Reset	10073	This test detects if	CAN Hardware Circuitry Detects a Bus					Type B
Counter Overrun	00010	the GMLAN bus is off	f Voltage Error (CAN bus off)	= TRUE (Boolean)	>= 5 counts			2 Trips
		for a calibration						· ·
		duration.	Bus off delay time (use if Bus if Off from	>= 0.16 sec	>= 5 counts			
			Bus Indeterminate State)		all conditions A and (B or C) below			
					Bus Stabilization time	>= 5 seconds		
					A) Service mode \$04 active and end			
					of trip pocessing active	= FALSE (BOOlean)		
					A) normal serial data communication	= TRUE (Boolean)		
					A) LI0073 status po	= fault active		
					B) secured controller or emission	= CeCANR e OBDII Dsbl		
					critical then use ignition voltage	(Boolean)		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
					B) secured controller or emission critical Ignition Voltage B) Power Mode	>= 11 volts = Run		
					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	TCM Rx message missed frame		fail times are caculated based on Rx message enable calibration set to CeCANR e BusA ECM	Tx controller		Type B, 2 Trips
		GMLAN messages	TCM Rx frame message missed frame	= TRUE (Boolean)	TCM Rx frame calibration enabled	document) enumeration	>= 10 seconds	
		\$0C9,\$1A1, \$287, \$2C3, \$3B9, \$3D1,\$3E9, \$3F9, \$4C1, and \$4F1 from ECM.			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 pocessing active A) normal serial data communication enabled A) U0073 status no B) secured controller or emission critical then use ignition voltage B) secured controller or emission critical lgnition Voltage B) Power Mode	>= 0.4 seconds >= 5 seconds = FALSE (Boolean) = TRUE (Boolean) = fault active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run		
					C) ignition off enable C) Power Mode C) battery voltage U0100 fault status is not Not Test Failed This Key Or	= TRUE (Boolean) =accessory >11 volts = fault active U0073		
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	= TRUE (Boolean)	fail times are caculated based on Rx message enable calibration set to CeCANR_e_BusA_ABS TCM Rx frame calibration enabled 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 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	Tx controller ( see Table 1 in supporting document) enumeration >= 0.4 seconds = FALSE (Boolean) = TRUE (Boolean) = faut active = CeCANR_e_OBDII_Dsbl (Boolean) >= 11 volts = Run = TRUE (Boolean) = accessory > 11 volts	>= 10 seconds	Special Type C, No MIL

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description		l	LI0121 fault status is no	– fault active		Illum
					Not Test Failed This Key On	. U0073		
Lost Communication With Body Control Module	U0140	This test detects CAN (GMLAN) bus failures by detecting	TCM Rx message missed frame		fail times are caculated based on Rx message enable calibration set to CeCANR e BusA BCM	Tx controller		Special Type C, No MIL
		(SOH) failures in the following GMLAN messages \$0F1.	TCM Rx frame message missed frame	= TRUE (Boolean)	TCM Rx frame calibration enabled	( see Table 1 in supporting document) enumeration	>= 10 seconds	
		\$1E1, \$1F3, and \$3F1 from the Truck Body Computer (TBC) Control			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 lgnition voltage B) Power Mode C) ignition off enable C) power Mode C) battery voltage U0140 fault status is not Not Test Failed This Key Or	>= 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" Case 2: The number of vehicle decelerations with the brake switch "off"	>= 10 >= 10	All Cases NOT Test Failed This Key On No Fault Pending DTCs Not Fault Active Components powerec AND Battery Voltage Engine Speed betweer for	P0571 P0716 P0717 P07BF P07C0 P0721 P0722 P077C P077D P0703 * >= 9 V 200 RPM and 7500 RPM 5 seconds	10 Acceleration Events	Special Type C, No MIL
Brake Pedal Possition 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		Components powered AND Battery Voltage betweer	19 V and 18 V	15 seconds	Special Type C, No MIL

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	expected value					mum
				_	Engine Speed between	200 RPM and 7500 RPM		
			When the failure counter is for a time of	> 5 > 10 seconds	fo	5 seconds		
			Report Failure		-			
Upshift Switch Circuit	P0815	This test detects the upshift switch ON	When PRNDL state is N, P or R		Not Test Failed This Key Or	P0826	603 seconds	Special Type C,
			and has been unchanged for a time	>= 2.5 seconds		P0708		No MIL
			AND	2.0 3000103	Components powered	ł		
			upshift switch state is ON for a time	>= 3 seconds.	AND Battery Voltage	e>= 9 V		
			AND		Engine Speed between	200 RPM and 7500 RPM		
			When PRNDL state is a forward range			C		
			and has been unchanged for a time	>= 2.5 seconds	TO	5 seconds		
			AND					
			upsnift switch state is ON for a time	>= 600 seconds.				
Davina hift Quita h Qiaquit	Donac	This to st date staths						Onesial
Downsnift Switch Circuit	P0816	downshift switch ON.	When PRNDL state is N. P or R and		Not Test Failed This Key Or	P0826	603 Seconds	Type C,
			has been unchanged			P0708		No MIL
			for a time AND	>= 2.5 seconds	Components powered			
			downshift switch state is ON		AND			
			for a time.	>= 3 seconds.	Battery Voltage	e>= 9 V		
			AND		<b>E</b>			
			When PRNDL state is a forward range		Engine Speed betweer	200 RPM and 7500 RPM		
			and has been unchanged for a time	0.5	for	5 seconds		
			AND	>= 2.5 seconds				
			downshift switch state is ON					
			for a time	>= 600 seconds.				
Lip and Down Shift	P0826	This test detects					10 seconds	Special
Switch Circuit	1 0020	upshift/downshift	Switch state is ILLEGAL for a time		Not Test Failed This Key Or	P0826	10 3000103	Type C,
		switch circuit at an		>= 10 seconds.	Components powered	4		No MIL
		illegal state.			AND			
					Battery Voltage	e>= 9 V		
					Engine Speed between	200 RPM and 7500 RPM		
					fo	5 seconds		
Controller Memory	DOGOA	This test s - f-			Not Toot Failed This Key O	P0601		Tur - A
Only Memory (ROM)	P0601	check for ECC fault			Not Test Failed This Key Or	120601		1 ype A, 1 Trip
- , - , - ,		at controller					= 1 Fail Counts first pass after reset	
		intiaization and a	Incorrect program/calibrations	= TRUE (Boolean)			(background task continuous)	_
		areas of ROM code	checksum	\/			>= 5 Fail Counts after first pass (background task continuous)	
		using a CRC16 table						
		background.						
	I	-		I				

Component/System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	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)	
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.	fault condition exists that affects the validity of the copy of battery independent non-volatile data kept ir RAM.	= TRUE (Boolean)	Not Test Failed This Key On	P0603	every controller initialization	Type A, 1 Trip
			latest copy of the battery independent non-volatile data may have been lost.	= TRUE (Boolean)			>= 3 counts (controller initialization)	
					NVI_TestDiagEnbl	TRUE		
Control Module Random Access Memory (RAM)	P0604	RAM diagnostic	Test fails for any of following. secondary micro processor RAM error	= TRUE (Boolean)	Not Test Failed This Key On	P0604	1000 ms cont.	Type A, 1 Trip
			OR dual store RAM write time out error	= TRUE (Boolean)			<ul> <li>&gt; 175 ms ((interrupt driven based on calling functions)</li> </ul>	
			OR errors in the system RAM segment detected by the micro's hardware based fault detection	= TRUE (Boolean)			>= 254 counts (controller initialization)	
			OR parity errors in cache memory detected by the micro's hardware based fault detection	= TRUE (Boolean)			>= 3 counts (controller initialization )	
			OR signature faults detected in the TPU microcode by the micro's hardware based fault detection	= TRUE (Boolean)			>= 5 counts (controller initialization)	
			OR write attempt occurred during RAM lock	= TRUE (Boolean)	Service mode \$04 active or end of trip processing active	FALSE	<ul> <li>&gt; 655534 counts (background task continuous)</li> </ul>	
Control Module Internal Performance	P0606	Processor integrity test.			Not Test Failed This Key On	P0606		Type A, 1 Trip
			main processor RAM error detection circuit hardware failure	= TRUE (Boolean)	RAM diagnotic test enable	= 1 (Boolean)	>= 5 counts (controller initialization)	
			OR		hardware reset source is controller power up reset	= TRUE (Boolean)		
			main processor flash EPROM error detection circuit hardware failure	= TRUE (Boolean)	flash EPROM diagnotic test enable	= 1 (Boolean)	>= 5 counts (controller initialization)	

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description	l	i	hardware reset source is controller		l	Illum
		ľ		1	power up reset	= TRUE (Boolean)		
		ľ	OR	1		1		
			main processor memory stack failure	= TRUE (Boolean)	diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have completed their re-enable paths).	= TRUE (Boolean)	>= 5 counts (100 msec continuous)	
					main processor memory stack test enable	= 1 (Boolean)		
			OR secondary processor memory stack failure OR	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	two consecutive counts continuously upon receival from secondary(every 12.5 ms)	
			main processor ROM first test complete OR	= FALSE (Boolean)			>= 35 counts (controller power up 12.5 msec continuous)	
			no new seed from secondary processor to main processor seed	= TRUE (Boolean)	main processor to secondary processor serial peripheral interface error (main or 2dry detected)	= FALSE (Boolean)	for more than 0.45 seconds	
			OR		battery voltage ignition voltage	> 11 Volts >= 8 Volts		
			seed sequence error	≠ FALSE (Boolean)	main processor to secondary processor serial peripheral interface error (main or 2dry detected)	= FALSE (Boolean)	3 counts out of 17 (on the 12.5 msec loop)	
			OR		battery voltage ignition voltage	> 11 Volts >= 8 Volts		
			seed key fault received from 2ndry	= TRUE (Boolean)	Post code clear diagnostic disabled	= FALSE (Boolean)	two consecutive counts (on the 12.5 ms loop)	
			OR normalize 0-5 volt (absolute value (analog to digital test voltage commanded - actual analog to digital	> 9 percent	diagnostic system enabled (diagnostic code clear not in progress AND all of the diag loops have	= TRUE (Boolean)	5 out of 10 counts OR continuous for 0.15 sec. (50 ms)	
			voltage feedback))		completed their re-enable paths)		0.10 300 (30 113)	
		1			analog to digital voltage test enabled	= IRUE (Boolean)	1	
					ignition voltage analog to digital voltage channe enabled	>= 7 Volts TRUE (Boolean)		
					analog to digital test voltage command	5 Volts		
			OR arithmatic logic unit test pass	= FALSE (Boolean)	arithmatic logic unit test enable	= 1 (Boolean)	two consecutive counts at controller initialization, then two consecutive counts continuously every 12.5 ms	2
					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	= TRUE (Boolean)		

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
					B: ignition voltage	> 11 Volts		
					C: starter motor engaged time	> 15 sec		
			OB					
			acconden are accorden arithmetic legio				two consecutive counts continuously	
			secondary processor antimatic logic	= TRUE (Boolean)	Post code clear diagnostitc disabled	= FALSE (Boolean)	upon receival from secondary(every 12.5	5
							ms)	
			OB					
			OR				two consecutive counts at controller	
			clock test fail	= TRUE (Boolean)	clock test enable	= 1 (Boolean)	initialization, then two consecutive counts	9
				- (,		( )	continuously every 12.5 ms	
					diagnostic system enabled			
					(diagnostic code clear not in progress			
					AND all the diag loops have	=IRUE (Boolean)		
					completed their re-enable paths)			
					A and B and C must occur			
					A: starter motor engaged	= TRUE (Boolean)		
					B: ignition voltage	> 11 Volts		
					C: starter motor engaged time	> 15 sec		
			OB					
			OR				two consecutive counts at controller	
			configuration register test fail	= TRUE (Boolean)	configuration register test enable	= 1 (Boolean)	initialization, then two consecutive counts	9
					······g-······g······	. (,	continuously every 12.5 ms	
					diagnostic system enabled			
					(diagnostic code clear not in progress			
					AND all the diag loops have	= TRUE (Boolean)		
					completed their re-enable paths)			
					A and B and C must occur			
					A: starter motor engaged	= TRUE (Boolean)		
					B: ignition voltage	> 11 Volts		
					C: starter motor engaged time	> 15 sec		
			OB					
							two consecutive counts continuously	
			secondary processor configuration	= TRUE (Boolean)		= FALSE (Boolean)	upon receival from secondary(every 12.5	5
					Post code clear diagnostitc disabled		ms)	
			OB					
			OR					
							two consecutive counts continuously	
			main SOH discrete fault	= TRUE (Boolean)		= FALSE (Boolean)	upon receival from secondary(every 12.5	5
					Post code clear diagnostitc disabled		ms)	
			OR					
					diagnostic system anablad			
					diagnostic code clear not in progress		8 counts, out of 16 (on the 6.25 msec	
			SPI bus fault(i)	= TRUE (Boolean)	AND all the diag loops have	=TRUE (Boolean)		
					completed their re-enable paths)			
					A and B must occur		1	
					A: run/crank voltage in range	>= 11 Volts		
					OR		1	
					battery voltage in range	> 11 Volts	1	
					B: Startup/Restart time	>= 0.125 sec	1	
							1	
1	•	•			1		•	•

Component/System	Fault	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL
	Code	Description						Illum
Control Module Long	P062F	Tests non volatile			Not Test Failed This Key On	P062F		Type A,
Term Memory		memory long term	TOMAN				and the state of t	1 Trip
Performance		performance.	error (every controller intialization).	= TRUE (Boolean)			every controller initialization	
			assembly calibration integrity (every controller initialization)	= TRUE (Boolean)			every controller intialization	-
					NVM write error diagnotic 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	= TRUE (Boolean)				Type A, 1 Trip
			secondary micro processor hardware serial peripheral device fault active previous loop	= TRUE (Boolean)	Service mode \$04 active and end of trip pocessing active	= FALSE(Boolean)		
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	= FALSE (Boolean)		fail count	>= 39 counts (12.5 ms) cont	Type A, 1 Trip
			OR secondary micro processor serial			out of sample count	>= 399 counts (12.5 ms) cont	
			peripheral device message valid detected by primary micro processor after controller initialization	= FALSE (Boolean)		fail count	>= 39 counts (12.5 ms) cont	
			OR			out of sample count	>= 399 counts (12.5 ms) cont	
			peripheral device message valid detected by primary micro processor	= FALSE(Boolean)		fail count	>= 159 counts (12.5 ms) NON continuous	
			arter controller initialization			out of sample count	>= 399 counts (12.5 ms) NON continuous	
					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			

#### 17 OBDG04 TCM Diagnostic Summary Table - Allison MW7

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

## 17 OBDG04 Initial Supporting table - 1st FWD Thrshld

Description: Max Vehcile Velocity Allowed For 1st Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal Y Units: KPH

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	60	60	60	60	60	60	60	79	85	88	100	100	100	100	100	105	120

#### 17 OBDG04 Initial Supporting table -1st REV Thrshld

Description: Max Vehcile Velocity Allowed For 1st Gear - Reverse Velocity (if using directional speed sensor)

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	-12	-12	-12	-53	-59	-65	-72	-79	-85	-88	-100	-100	-100	-100	-100	-105	-120

## 17 OBDG04 Initial Supporting table - 2nd FWD Thrshld

Description: Max Vehcile Velocity Allowed For 2nd Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	70	72	72	73	79	85	93	99	105	108	110	113	123	147	169	172	200

#### 17 OBDG04 Initial Supporting table - 2nd REV Thrshld

Description: Max Vehcile Velocity Allowed For 2nd Gear - Reverse Velocity (if using directional speed sensor)

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	-85	-86	-88	-89	-90	-98	-105	-115	-125	-135	-148	-160	-181	-201	-221	-240	-250

## 17 OBDG04 Initial Supporting table - 3rd FWD Thrshld

Description: Max Vehcile Velocity Allowed For 3rd Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	105	106	107	108	110	114	120	127	145	150	160	170	180	200	240	280	300

## 17 OBDG04 Initial Supporting table - 4th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 4th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	105	106	107	108	110	114	120	127	145	150	160	170	180	200	240	280	300

## 17 OBDG04 Initial Supporting table - 5th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 5th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	135	136	137	138	140	142	150	157	165	193	300	300	300	300	300	300	300

## 17 OBDG04 Initial Supporting table - 6th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 6th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300

## 17 OBDG04 Initial Supporting table - 7th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 7th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300

## 17 OBDG04 Initial Supporting table - 8th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 8th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300

## 17 OBDG04 Initial Supporting table - 9th FWD Thrshld

Description: Max Vehcile Velocity Allowed For 9th Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300

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

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

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"

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"

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"

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

	17 OBDG04							
	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 sec	luence.				
Value Units: Max Time X Unit: Operating Loo	e for Last Seed Timeout p Sequence (enum)	(ms)						
P0606_Last Seed Tin	neout f(Loop Time) - Pa	art 1						
y/x	CePISR_e_5msSeq	CePISR_e_6p25msSe	CePISR_e_10msSeq	CePISR_e_12p5msSe	CePISR_e_20msSeq	CePISR_e_25msSeq	CePISR_e_40msSeq	
		q		q				
1	200.000	200.000	200.000	200.000	200.000	200.000	200.000	
P0606_Last Seed Tin	neout f(Loop Time) - Pa	art 2						
y/x	CePISR_e_50msSeq	CePISR_e_80msSeq	CePISR_e_100msSeq	CePISR_e_EventA_S	CePISR_e_EventB_S	CePISR_e_EventC_S		
				eq	eq	eq		
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

# 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_6p25msSe	CePISR_e_10msSeq	CePISR_e_12p5msSe	CePISR_e_20msSeq	CePISR_e_25msSeq	CePISR_e_40msSeq		
		q		q					
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_S	CePISR_e_EventB_S	CePISR_e_EventC_S			
				eq	eq	eq			
1	3	3	3	3	3	3			

#### 17 OBDG04 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)

1										
	P0606_PSW Sequence Sample f(Loop Time) - Part 1									
	y/x	CePISR_e_5msSeq	CePISR e 6p25msSe	CePISR e 10msSeq	CePISR e 12p5msSe	CePISR e 20msSeq	CePISR_e_25msSeq	CePISR e 40msSeq		
	·		q		q					
	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_S	CePISR_e_EventB_S	CePISR_e_EventC_S			
					eq	eq	eq			
	1	4	4	4	4	4	4			

#### Initial Supporting table - P0723 transmission engaged state time threshold

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

y/x	-40.000	0.000	40.000
1	5.000	5.000	5.000

#### Initial Supporting table - P0741 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

y/x	-7.00	10.00	40.00
1	0.350	0.350	0.350

## 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

y/x	-7.00	10.00	40.00
1	1.500	1.250	1.000

## Initial Supporting table - P0741 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

y/x	-7.00	10.00	40.00
1	500.0	500.0	500.0

## 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

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

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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.269	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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.200	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

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

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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.262	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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.200	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

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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.256	0.256

# Initial Supporting table - P0797 C3clutch exhaust delay time garage shift

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

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 - 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

# Initial Supporting table - P176B holding clutch states

<b>Description:</b> inditaces evaluation while clutch	when the clutch states les not holding will allow	allow transmission interr	mediate speed sensor e	valuation, when rotating	components can trigge	r speed sesnor, holding	clutches will not allow
Value Units: TRUE or X Unit: commanded g Y Units: intermediate	FALSE ear speed sensor select						
P176B holding clutch	states - Part 1						
y/x	CeCGSR_e_CR_NullF orSched	CeCGSR_e_CR_Neut ral	CeCGSR_e_CR_Park	CeCGSR_e_CR_Reve rse	CeCGSR_e_CR_First	CeCGSR_e_CR_Seco nd	CeCGSR_e_CR_Third
CeTSRR_e_C2C_Clc hSpdSnsr1	1	1	1	0	0	0	1
CeTSRR_e_C2C_Clc hSpdSnsr2	1	1	1	1	1	1	1
P176B holding clutch	n states - Part 2						
y/x	CeCGSR_e_CR_Fourt h	CeCGSR_e_CR_Fifth	CeCGSR_e_CR_Sixth	CeCGSR_e_CR_Seve nth	CeCGSR_e_CR_Eight h	CeCGSR_e_CR_Ninth	CeCGSR_e_CR_Tent h
CeTSRR_e_C2C_Clc hSpdSnsr1	0	0	0	0	1	0	1
CeTSRR_e_C2C_Clc hSpdSnsr2	1	1	1	1	1	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:** P176B intermediate speed sensor fail RPM speed threshold

#### Value Units: RPM

X Unit: intermediate speed sensor select

y/x	CeTSRR_e_C2C_ClchSpdSnsr1	CeTSRR_e_C2C_ClchSpdSnsr2
1	20.0	20.0

# 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	160.0	160.0

## 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	160.0	160.0

# 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_Ge									
	ar1	ar2	ar3	ar4	ar5	ar6	ar7	ar8	ar9	ar10
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 - 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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.225	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

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

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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.300	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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.337	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

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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.163	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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.406	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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.350	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

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

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

y/x	-40.00	-20.00	0.00	30.00	110.00
1	1.600	1.100	0.950	0.131	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

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

### 17 OBDG04 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 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

y/x	-7.00	10.00	40.00
1	0.350	0.350	0.350

# 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

y/x	-7.00	10.00	40.00
1	1.500	1.250	1.000

# 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

y/x	-7.00	10.00	40.00
1	-2,000.0	-2,000.0	-2,000.0

### 17 OBDG04 Initial Supporting table - P2D2 Clutch Slip Sum

	Initial Supporting table - P2D2 Clutch Slip Sum									
Description:										
X Unit: Brake Pe Y Units: dn rpm	dal %									
y/x	0	13	25	38	50	63	75	88	100	
1	-1	-6	-12	-17	-23	-28	-33	-39	-44	

### **Description:**

P2D2 Decel Pressure	e - C1 - Part 1										
y/x	CeCGSR_e_NullForS ched	CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4				
1	186	186	186	186	186	186	186				
P2D2 Decel Pressure	P2D2 Decel Pressure - C1 - Part 2										
y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5				
1	186	186	186	186	186	186	186				
P2D2 Decel Pressure	e - C1 - Part 3										
y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park				
1	186	186	186	186	186	186	186				
P2D2 Decel Pressure	e - C1 - Part 4										
y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth				
1	186	99,999	99,999	186	186	186	186				
P2D2 Decel Pressure	e - C1 - Part 5										
y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth					
1	186	99,999	99,999	99,999	99,999	186					

### **Description:**

P2D2 Decel Pressure - C2 - Part 1     y/x   CeCGSR_e_NullForS ched   CeCGSR_e_Neutral OClutch   CeCGSR_e_Neutral CeCGSR_e_Neutral CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral CeCGSR_e_Neutral S58   CeCGSR_e_Neutral S58   CeCGSR_e								
y/xCeCGSR_e_NullFors ChedCeCGSR_e_Neutral OClutchCeCGSR_e_NeutralN OClutchCeCGSR_e_NeutralC 1CeCGSR_e_NeutralC 2CeCGSR_e_NeutralC 3CeCGSR_e_NeutralC 4CeCGSR_e_NeutralC 4CeCGSR_e_NeutralC 4CeCGSR_e_NeutralC 4CeCGSR_e_NeutralC 2CeCGSR_e_NeutralC <br< th=""><th>P2D2 Decel Pressure</th><th>- C2 - Part 1</th><th></th><th></th><th></th><th></th><th></th><th></th></br<>	P2D2 Decel Pressure	- C2 - Part 1						
1   358   202 Occl SR_e_NeutralC 5   CeCGSR_e_NeutralC 6   CeCGSR_e_NeutralC 7   CeCGSR_e_NeutralC 1C2   CeCGSR_e_NeutralC 2C3   CeCGSR_e_NeutralC 2C4   CeCGSR_e_NeutralC 2C5   CeCGSR_e_NeutralC 2C4   CeCGSR_e_NeutralC 2C5   CeCGSR_e_NeutralC 2C4   CeCGSR_e_NeutralC 2C5   CeCGSR_e_NeutralC 2C4   CeCGSR_	y/x	CeCGSR_e_NullForS ched	CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4
P2D2 Decel Pressure - C2 - Part 2y/xCeCGSR_e_NeutralC 5CeCGSR_e_NeutralC 6CeCGSR_e_NeutralC 7CeCGSR_e_NeutralC 1C2CeCGSR_e_NeutralC 2C3CeCGSR_e_NeutralC 2C4CeCGSR_e_NeutralC 2C4CeCGSR_e_NeutralC 2C51358358358358358358358358P2D2 Decel Pressure - C2 - Part 3y/xCeCGSR_e_NeutralC 2C6CeCGSR_e_NeutralC 3C4CeCGSR_e_NeutralC 3C5CeCGSR_e_NeutralC 3C6CeCGSR_e_NeutralC 4C5CeCGSR_e_NeutralC 4C6 <td>1</td> <td>358</td> <td>358</td> <td>358</td> <td>358</td> <td>358</td> <td>358</td> <td>358</td>	1	358	358	358	358	358	358	358
y/xCeCGSR_e_NeutralC 5CeCGSR_e_NeutralC 6CeCGSR_e_NeutralC 7CeCGSR_e_NeutralC 1C2CeCGSR_e_NeutralC 2C3CeCGSR_e_NeutralC 2C4CeCGSR_e_NeutralC 2C51358358358358358358358358358P2D2 Decel Pressure - C2 - Part 3y/xCeCGSR_e_NeutralC 2C6CeCGSR_e_NeutralC 3C4CeCGSR_e_NeutralC 3C5CeCGSR_e_NeutralC 3C6CeCGSR_e_NeutralC 4C5CeCGSR_e_NeutralC 4C6CeCGSR_e_Ne	P2D2 Decel Pressure	e - C2 - Part 2						
1358358358358358358358358P2D2 Decel Pressure - C2 - Part 3y/xCeCGSR_e_NeutralC 2C6CeCGSR_e_NeutralC 3C4CeCGSR_e_NeutralC 3C5CeCGSR_e_NeutralC 3C6CeCGSR_e_NeutralC 4C5CeCGSR_e_NeutralC 4C6CeCG	y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5
P2D2 Decel Pressure - C2 - Part 3   y/x CeCGSR_e_NeutralC 2C6 CeCGSR_e_NeutralC 3C4 CeCGSR_e_NeutralC 3C5 CeCGSR_e_NeutralC 3C6 CeCGSR_e_NeutralC 4C5 CeCGSR_e_NeutralC 4C6	1	358	358	358	358	358	358	358
y/x CeCGSR_e_NeutralC CeCGSR_e_Neutral	P2D2 Decel Pressure	e - C2 - Part 3						
1   358   358   358   358   358   358   358     P2D2 Decel Pressure - C2 - Part 4     y/x   CeCGSR_e_Reverse   CeCGSR_e_FirstLckd   CeCGSR_e_FirstFW   CeCGSR_e_SecondL   CeCGSR_e_SecondF   CeCGSR_e_Third   CeCGSR_e_For	y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park
P2D2 Decel Pressure - C2 - Part 4   y/x CeCGSR_e_Reverse CeCGSR_e_FirstLckd CeCGSR_e_FirstFW CeCGSR_e_SecondL CeCGSR_e_SecondF CeCGSR_e_Third CeCGSR_e_Fo	1	358	358	358	358	358	358	358
y/x CeCGSR_e_Reverse CeCGSR_e_FirstLckd CeCGSR_e_FirstFW CeCGSR_e_SecondL CeCGSR_e_SecondF CeCGSR_e_Third CeCGSR_e_Fo	P2D2 Decel Pressure	e - C2 - Part 4						
ckd W	y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth
1   358   358   99,999   99,999   358   358	1	358	358	358	99,999	99,999	358	358
P2D2 Decel Pressure - C2 - Part 5	P2D2 Decel Pressure	e - C2 - Part 5						
y/x CeCGSR_e_Fifth CeCGSR_e_Sixth CeCGSR_e_Seventh CeCGSR_e_Eighth CeCGSR_e_Ninth CeCGSR_e_Tenth	y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
1   358   99,999   358   358   358   99,999	1	358	99,999	358	358	358	99,999	

### **Description:**

P2D2 Decel Pressure	e - C3 - Part 1						
y/x	CeCGSR_e_NullForS ched	CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4
1	443	443	443	443	443	443	443
P2D2 Decel Pressure	e - C3 - Part 2						
y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5
1	443	443	443	443	443	443	443
P2D2 Decel Pressure	e - C3 - Part 3						
y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park
1	443	443	443	443	443	443	443
P2D2 Decel Pressure	e - C3 - Part 4						
y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth
1	443	443	443	443	443	99,999	443
P2D2 Decel Pressure	e - C3 - Part 5						
y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
1	443	443	99,999	443	443	99,999	

### **Description:**

P2D2 Decel Pressure	e - C4 - Part 1						
y/x	CeCGSR_e_NullForS ched	CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4
1	373	373	373	373	373	373	373
P2D2 Decel Pressure	e - C4 - Part 2						
y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5
1	373	373	373	373	373	373	373
P2D2 Decel Pressure	e - C4 - Part 3						
y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park
1	373	373	373	373	373	373	373
P2D2 Decel Pressure	e - C4 - Part 4						
y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth
1	373	373	373	373	373	373	99,999
P2D2 Decel Pressure	e - C4 - Part 5						
y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
1	373	373	373	99,999	373	373	

### **Description:**

P2D2 Decel Pressure	e - C5 - Part 1						
y/x	CeCGSR_e_NullForS ched	CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4
1	315	315	315	315	315	315	315
P2D2 Decel Pressure	e - C5 - Part 2						
y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5
1	315	315	315	315	315	315	315
P2D2 Decel Pressure	e - C5 - Part 3						
y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park
1	315	315	315	315	315	315	315
P2D2 Decel Pressure	e - C5 - Part 4						
y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth
1	315	315	315	315	315	315	315
P2D2 Decel Pressure	e - C5 - Part 5						
y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth	
1	99,999	315	315	315	99,999	315	

### **Description:**

P2D2 Decel Pressure	e - C6 - Part 1							
y/x CeCGSR_e_NullForS ched		CeCGSR_e_Neutral	CeCGSR_e_NeutralN oClutch	CeCGSR_e_NeutralC 1	CeCGSR_e_NeutralC 2	CeCGSR_e_NeutralC 3	CeCGSR_e_NeutralC 4 315 CeCGSR_e_NeutralC 2C5 315 CeCGSR_e_Park 315 CeCGSR_e_Fourth 315	
1	315	315	315	315	315	315	315	
P2D2 Decel Pressure	e - C6 - Part 2							
y/x	CeCGSR_e_NeutralC 5	CeCGSR_e_NeutralC 6	CeCGSR_e_NeutralC 7	CeCGSR_e_NeutralC 1C2	CeCGSR_e_NeutralC 2C3	CeCGSR_e_NeutralC 2C4	CeCGSR_e_NeutralC 2C5	
1	315	315	315	315	315	315	315	
P2D2 Decel Pressure	e - C6 - Part 3							
y/x	CeCGSR_e_NeutralC 2C6	CeCGSR_e_NeutralC 3C4	CeCGSR_e_NeutralC 3C5	CeCGSR_e_NeutralC 3C6	CeCGSR_e_NeutralC 4C5	CeCGSR_e_NeutralC 4C6	CeCGSR_e_Park	
1	315	315	315	315	315	315	315	
P2D2 Decel Pressure	e - C6 - Part 4							
y/x	CeCGSR_e_Reverse	CeCGSR_e_FirstLckd	CeCGSR_e_FirstFW	CeCGSR_e_SecondL ckd	CeCGSR_e_SecondF W	CeCGSR_e_Third	CeCGSR_e_Fourth	
1	315	315	315	315	315	315	315	
P2D2 Decel Pressure	e - C6 - Part 5							
y/x	CeCGSR_e_Fifth	CeCGSR_e_Sixth	CeCGSR_e_Seventh	CeCGSR_e_Eighth	CeCGSR_e_Ninth	CeCGSR_e_Tenth		
1	9,999	315	315	315	9,999	315		

# Initial Supporting table - P2D2 Decel Pressure - C7

#### Description: Value Units: Kpa X Unit: Cmnd Gear Y Units: Kpa P2D2 Decel Pressure - C7 - Part 1 CeCGSR e NeutralN CeCGSR e NeutralC CeCGSR e NeutralC CeCGSR e NeutralC y/x CeCGSR\_e\_NullForS CeCGSR e Neutral oClutch ched 2 0 0 0 0 0 0 0 P2D2 Decel Pressure - C7 - Part 2 y/x CeCGSR e NeutralC 2C3 6 1C2 2C4 2C5 0 0 0 0 0 0 I٨ P2D2 Decel Pressure - C7 - Part 3 CeCGSR\_e\_NeutralC CeCGSR\_e\_NeutralC CeCGSR\_e\_NeutralC CeCGSR\_e\_Park y/x CeCGSR\_e\_NeutralC CeCGSR\_e\_NeutralC CeCGSR\_e\_NeutralC 2C6 3C4 3C5 3C6 4C5 4C6 0 0 0 0 0 0 I٨ P2D2 Decel Pressure - C7 - Part 4 y/x CeCGSR e Reverse CeCGSR e FirstLckd CeCGSR e FirstFW CeCGSR e SecondL CeCGSR e SecondF CeCGSR e Third CeCGSR e Fourth ckd W 0 9,999 0 0 0 0 9,999 P2D2 Decel Pressure - C7 - Part 5 CeCGSR\_e\_Fifth CeCGSR\_e\_Sixth CeCGSR\_e\_Seventh CeCGSR\_e\_Eighth CeCGSR\_e\_Ninth CeCGSR\_e\_Tenth y/x 0 0 0 0 0 0

# 17 OBDG04 Initial Supporting table - REV Thrshld (Forward Velocity)

Description: Max Vehcile Velocity Allowed For Reverse Gear - Forward Velocity

Value Units: KPH X Unit: % Pedal

Y Units: KPH

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

# 17 OBDG04 Initial Supporting table - REV Thrshld (Negative Velocity)

Description: Max Vehcile Velocity Allowed For Reverse Gear - Reverse Velocity (if using directional speed sensor)

Value Units: KPH X Unit: % Pedal

Y Units: KPH

y/x	0	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100
1	-57	-57	-57	-57	-57	-57	-72	-79	-85	-88	-100	-100	-100	-100	-100	-105	-120

# 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

Bundle Name: AcceleratorPedalFailure

P2122, P2123, P2127, P2128, P2138, P0697, P06A3

Bundle Name: CrankSensor\_FA

P0335, P0336

Bundle Name: ECT\_Sensor\_FA

P0116, P0117, P0118, P0119, P0128, P111E

Bundle Name: EngineTorqueEstInaccurate

EngineMisfireDetected\_FA, FueIInjedtorCircuit\_FA, FueIInjedtorCircuit\_TFTKO, FueITrimSystemB1\_FA, FueITrimSystemB2\_FA, MAF\_SensorTFTKO, MAP\_SensorTFTKO, EGRValvePerformance\_FA, P16F3

EngineTorqueEstInaccurate - Other Definitions:

P16F3 with GetXOYR\_b\_SecurityFlt (CeXOYR\_e\_MAPR\_AfterThrotPresFlt, CeXOYR\_e\_MAPR\_EngineVacuumFlt, CeXOYR\_e\_MAPR\_IntkMnfdPresFlt, CeXOYR\_e\_MAFR\_Ahead1vs2FinalFlt)

Bundle Name: Transmission Shift Lever Position Validity

P1824, P182A, P182B, P182C, P182D, P182E, P182F, P1838, P1839, P1840, P1841, P18B5, P18B6, P18B7, P18B8, P18B9, P18BA, P18BB, P18BC, P18BD, P18BE, P18BE, P18BE, P18BF, P18C0, P18C1, P18C2, P18C3, P1915

Bundle Name: VehicleSpeedSensor\_FA

P0502, P0503, P0722, P0723

Bundle Name: VehicleSpeedSensorError

P0502, P0503, P0722, P0723