Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Intake Camshaft Actuator Solenoid Circuit – Bank 1	P0010	Detects a VVT system error by monitoring the circuit for electrical integrity	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		System supply voltage is within limits Output driver is commanded on, Ignition switch is in crank or run position	> 11 Volts, and < 32 Volts	250 ms /sample,	Trips 2 B Type
Intake Camshaft System Performance – Bank 1	P0011	Detects a VVT system error by comparing the desired and actual cam positions when VVT is activated	Camshaft position error [absolute value of (desired position - actual position)] is compared to thresholds to determine if excessive	(Intake cam Bank 1)Cam Position Error > KtPHSD_phi_CamPosErrorLimlc1 Deg (see Supporting Table)	The following DTC's are NOT active: P0010 IntkCMP B1 Circuit P0340, P0341, Intake B1 Cam sensors P0335, P0336, Crank sensors P0016, P0017, P0018, P0019 Cam to crank rationality	System Voltage > 11 Volts, and System Voltage < 32 Volts Desired cam position cannot vary more than 7.5 Cam Deg for at least KtPHSD_t_StablePositionTimelc1 seconds (see Supporting Table)	continuous 200 failures out of 1000 samples	Trips 2 B Type
					Engine is running VVT is enabled Desired camshaft position > 0 Power Take Off (PTO) not active		100 ms /sample	
Crankshaft Position (CKP)-Camshaft Position (CMP) Correlation Bank 1 Sensor A	P0016	Detects cam to crank misalignment by monitoring if cam sensor pulse for bank 1 sensor A occurs during the incorrect crank position	4 cam sensor pulses more than 11 crank degrees before or 11 crank degrees after nominal position in one cam revolution.		Engine Speed Crankshaft and camshaft position signals are synchronized	< 1200	4 failures out of 5 samples if the engine is being assisted by the starter	, ,
					Cam phaser is in "parked" position		24 failures out of 30	
					No Active DTCs:	P0335, P0336 P0340, P0341 5VoltReferenceA_FA	samples if the engine is running without	
					No Pending DTCs:	5VoltReferenceB_FA P0341	assistance from the	
							One sample per cam rotation	
O2S Heater Control Circuit Bank 1 Sensor 1	P0030	This DTC checks the Heater Output Driver circuit for electrical integrity.	Voltage low during driver open state (indicates short-to-ground or open circuit) or voltage high during driver closed state (indicates short to voltage).		Ign Switch position	= Crank or Run position 11.0 volts < Ign Voltage < 32.0 volts	20 failures out of 25 samples	2 trips Type B
					Engine Speed	> 400 RPM	250 ms /sample	
							Continuous	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Supercharger Bypass Valve Control Circuit	P0033	Electrical Integrity of Supercharger Bypass Valve Control Circuitry	ECM detects that commanded and actual states of output driver do not match		Ignition Voltage Ignition Voltage Engine Speed	>= 11.00 Volts <= 32.00 Volts > 0	999 failures out of 0 samples	Type B 2 trips
							1 sample every 250 msec	
O2S Heater Control Circuit Bank 1 Sensor 2	P0036	This DTC checks the Heater Output Driver circuit for electrical integrity.	Voltage low during driver open state (indicates short-to-ground or open circuit) or voltage high during driver closed state (indicates short to voltage).		Ign Switch position	= Crank or Run position 11.0 volts < Ign Voltage < 32.0 volts	20 failures out of 25 samples	2 trips Type B
					Engine Speed	> 400 RPM	250 ms /sample	
							Continuous	
O2S Heater Control Circuit Bank 2 Sensor 1	P0050	This DTC checks the Heater Output Driver circuit for electrical integrity.	Voltage low during driver open state (indicates short-to-ground or open circuit) or voltage high during driver closed state (indicates short to voltage).		Ign Switch position	= Crank or Run position 11.0 volts < Ign Voltage < 32.0 volts	20 failures out of 25 samples	2 trips Type B
					Engine Speed	> 400 RPM	250 ms /sample	
							Continuous	
HO2S Heater Resistance Bank 1 Sensor 1	P0053	Detects an oxygen sensor heater having an incorrect or out of range resistance value.	Learned Heater Resistance.	Calculated Heater Resistance < 2.8 ohms -OR- Calculated Heater Resistance > 9.5 ohms	Coolant – IAT	-30.0 °C ≤ Coolant ≤ 45.0 °C < 32.0 volts > 28800 seconds	Once per valid cold start	2 trips Type B
HO2S Heater Resistance Bank 1 Sensor 2	P0054	Detects an oxygen sensor heater having an incorrect or out of range resistance value.	Learned Heater Resistance.	Calculated Heater Resistance < 4.1 ohms -OR- Calculated Heater Resistance > 10.8 ohms	Coolant – IAT	-30.0 °C ≤ Coolant ≤ 45.0 °C < 32.0 volts > 28800 seconds	Once per valid cold start	2 trips Type B
O2S Heater Control Circuit Bank 2 Sensor 2	P0056	This DTC checks the Heater Output Driver circuit for electrical integrity.	Voltage low during driver open state (indicates short-to-ground or open circuit) or voltage high during driver closed state (indicates short to voltage).		Ign Switch position	= Crank or Run position 11.0 volts < Ign Voltage < 32.0 volts	20 failures out of 25 samples	2 trips Type B
					Engine Speed	> 400 RPM	250 ms /sample	
							Continuous	
HO2S Heater Resistance Bank 2 Sensor 1	P0059	Detects an oxygen sensor heater having an incorrect or out of range resistance value.	Learned Heater Resistance.	Calculated Heater Resistance < 2.8 ohms -OR- Calculated Heater Resistance > 9.5 ohms	Coolant – IAT	ECT_Sensor_FA P2610 IAT_SensorFA < 8.0 °C -30.0 °C ≤ Coolant ≤ 45.0 °C	Once per valid cold start	2 trips Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Oystem	Code	Description	Onena	value	Ignition Voltage Engine Soak Time Engine Run Time	< 32.0 volts > 28800 seconds	Required	muni.
HO2S Heater Resistance Bank 2 Sensor 2	P0060	Detects an oxygen sensor heater having an incorrect or out of range resistance value.		Calculated Heater Resistance < 4.1 ohms -OR- Calculated Heater Resistance > 10.8 ohms	Coolant – IAT	-30.0 °C ≤ Coolant ≤ 45.0 °C < 32.0 volts > 28800 seconds	Once per valid cold start	2 trips Type B
MAP / MAF / Throttle Position Correlation		do not match estimated engine airflow as established by the TPS	Difference between measured MAP and estimated MAP exceeds threshold (KPa), or P0651 (5 Volt Ref), or P0107 (MAP circuit low), or P0108 (MAP circuit high) have failed this key cycle, then MAP portion of diagnostic fails	Table, f(TPS). See supporting tables		> 800 RPM Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	Continuously fail MAP and MAF portions of diagnostic for 0.1875 sec Continuous in primary processor	Trips: 1 Type: A MIL: YES
			2) Absolute difference between MAF and estimated MAF exceed threshold (grams/sec), or P0102 (MAF circuit low), or P0103 (MAF circuit hi) have failed this key cycle, or maximum MAF versus RPM (Table) is greater than or equal to maximum MAF versus battery voltage, then MAF portion of diagnostic fails	Table, f(TPS). See supporting tables Table, f(RPM). See supporting tables				
				Table, f(Volts). See supporting tables				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Barometric Pressure (BARO) - Supercharger Inlet Pressure Correlation (supercharged application)	P006D	Compares baro sensor to the calculated baro estimate (part throttle calculation or unthrottled Supercharger Inlet Pressure)	Difference between baro sensor reading and estimated baro when distance since last estimated baro update	> 15.0 kPa <= 0.01 miles	No Active DTCs:	AmbientAirPressCktFA ECT_Sensor_Ckt_FA IAT_SensorFA MAF_SensorFA AfterThrottlePressureFA_SC TPS_FA TPS_Performance_FA VehicleSpeedSensor_FA	20 failures out of 25 samples 1 sample every 250	Type B 2 trips
			OR Difference between baro sensor reading and estimated baro					
			when distance since last estimated baro update	> 25.0 kPa				
Intake Air Temperature Sensor 2 Circuit Performance	P0096	Detects an IAT2 sensor that has stuck in range by comparing to IAT and engine coolant temperature at startup	ABS(Power Up IAT - Power Up IAT2) AND ABS(Power Up ECT - Power Up IAT2) > ABS(Power Up ECT - Power Up IAT)	> 0.01 miles > 20 deg C	Time between current ignition cycle and the last time the engine was running No Active DTCs:	> 28800 seconds ECT_Sensor_FA ECT Sensor Ckt FA	Executes once at the beginning of each ignition cycle if enable conditions are met	Type B 2 trips
			AND P0116 is passing			IAT_SensorFA IAT2_SensorFA P0116 Test Aborted = FALSE P0116 Test Complete = TRUE		
Intake Air Temperature Sensor 2 Circuit Low (High Temperature)	P0097	Detects a continuous short to ground in the IAT 2 signal circuit or the IAT 2 sensor	Raw IAT 2 Input	< 45 Ohms (~150 deg C)	Engine Run Time Coolant Temp Vehicle Speed No Active DTCs:	> 0.0 seconds < 150 deg C >= 0.00 MPH ECT_Sensor_Ckt_FA ECT_Sensor_Ckt_FP VehicleSpeedSensorError	50 failures out of 63 samples 1 sample every 100 msec	Type B 2 trips
Intake Air Temperature Sensor 2 Circuit High (Low Temperature)	P0098	Detects a continuous open circuit in the IAT 2 signal circuit or the IAT 2 sensor	Raw IAT 2 Input	> 420000 Ohms (~-60 deg C)	Engine Run Time Coolant Temp Vehicle Speed Engine Air Flow No Active DTCs:	> 0.0 seconds > -40 deg C <= 318.00 MPH >= 512 gm/sec ECT_Sensor_Ckt_FA ECT_Sensor_Ckt_FP VehicleSpeedSensorError MAF_SensorFA MAF_SensorFF MAF SensorTFTKO	50 failures out of 63 samples 1 sample every 100 msec	Type B 2 trips
Radiator Coolant Temp Sensor Circuit Low Voltage	P00B3	This DTC detects a short to ground in the RCT signal circuit or the RCT sensor.	RCT Resistance (@ 150°C)	< 55 Ohms	Or	> 0.0 seconds	5 failures out of 25 samples	2 trips Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
							1 sec /sample Continuous	
Radiator Coolant Temp Sensor Circuit High Voltage	P00B4	Circuit Continuity This DTC detects a short to high or open in the RCT signal circuit or the RCT sensor.	RCT Resistance (@ -60°C)	> 160500 Ohms	Or	> 10.0 seconds ≥ -7.0 °C	5 failures out of 25 samples 1 sec /sample Continuous	2 trips Type B
Radiator Coolant Temp - Engine Coolant Temp (ECT) Correlation	P00B6	This DTC detects a difference between ECT and RCT after a soak condition.	A failure will be reported if any of the following occur: 1) Absolute difference between ECT at power up & RCT at power up is ≥ an IAT based threshold table lookup value(fast fail). 2) Absolute difference between ECT at power up & RCT at power up is > by 19.3 C and a block heater has not been detected. 3) ECT at power up > IAT at power up by 19.3 C and the time spent cranking the engine without starting is greater than 10.0 seconds with the LowFuelConditionDiag	See "P00B6: Fail if power up ECT exceeds RCT by these values" in the Supporting tables section = False	Engine Off Soak Time Non-volatile memory initization Test complete this trip Test aborted this trip IAT LowFuelCondition	= Not occurred = False = False ≥ -7 °C = False ion is enabled llowing occurs: > 19.3 °C	1 failure 500 msec /sample Once per valid cold start	2 trips Type B

Component/ Fault System Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
				1d) IAT drops from power up IAT 2a) ECT drops from power up ECT 2b) Engine run time 3) Engine run time with vehicle speed	d when 1) or 2) s aborted when curs: > 400 Seconds with > 14.9 MPH and 0.00 times the seconds with vehicle speed below 1b ≥ 3.3 °C ≥ 1 °C Within < 30 Seconds > 1800 Seconds		
Mass Air Flow System Performance (naturally aspirated)	Determines if the MAF sensor is stuck within the normal operating range	Filtered Throttle Model Error AND ABS(Measured Flow – Modeled Air Flow) Filtered AND ABS(Measured MAP – MAP Model 2) Filtered	<= 300 kPa*(g/s) > 12 grams/sec > 15.0 kPa	Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together) No Active DTCs:	>= 450 RPM >= 5200 RPM > -7 Deg C < 129 Deg C > -20 Deg C > -20 Deg C > -125 Deg C >>= 0.00 Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor based on RPM and IMF Residual Weight Factor based on RPM and IMF Residual Weight Factor based on RPM MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM See table "IFRD Residual Weighting Factors". MAP_SensorCircuitFA EGRValve_FP EGRValve_FP EGRValve_FP EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FF EGRValve_FC	Continuous Calculation are performed every 12.5 msec	Type B 2 trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Mass Air Flow System Performance (supercharged)	P0101	Determines if the MAF sensor is stuck within the normal operating range	See table "Supercharger Intake Flow Rationality Diagnostic Failure Matrix" for combinations of model failures that can set this DTC.		Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5800 RPM > -7 Deg C < 129 Deg C > -20 Deg C < 125 Deg C	Calculation are performed every 12.5 msec	Type B 2 trips
			TPS model fails when			>= 0.00 RPM		
			Filtered Throttle Model Error	> 400 kPa*(g/s)		Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM		
			MAF model fails when			54554 5111W III		
			ABS(Measured Flow – Modeled Air Flow) Filtered	> 21 grams/sec		Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor Based on MAF		
			MAP1 model fails when			Estimate		
			ABS(Measured MAP – MAP Model 1) Filtered	> 22.0 kPa		MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM and Boost Residual Weight		
			MAP2 model fails when			Factor based on % of Boost		
			ABS(Measured MAP – MAP Model 2) Filtered	> 22.0 kPa		MAP Model 2 multiplied by MAP2 Residual Weight Factor based on		
			SCIAP1 model fails when			RPM and Boost Residual Weight Factor based on % of Boost		
			ABS(Measured SCIAP – SCIAP Model 1) Filtered	> 14.0 kPa		actor based on 70 or boost		
			SCIAP2 model fails when			SCIAP Model 1 multiplied by SCIAP1 Residual Weight Factor		
			ABS(Measured SCIAP – SCIAP Model 2) Filtered > 14.0 kPa			based on RPM and Boost Residual Weight Factor based on % of Boost		
					SCIAP Model 2 multiplied by SCIAP2 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost			
						See table "IFRD Residual Weighting Factors".		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					No Active DTCs:	MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensor_FA ECT_Sensor_FA ECT_Sensor_Ckt_FA IAT_SensorFA IAT_SensorFP CylDeacSystemTFTKO IAT2_SensorFA IAT2_SensorCircuitFP SCIAP_SensorCircuitFA SCIAP_SensorCircuitFP		
Anna Air E'	D0400	Data ata a santi	NAA E Outrot	4050 11-	Facility Day Time	AmbientAirDefault_SC	400 6-11	T 5
Mass Air Flow Sensor Circuit Low Frequency	P0102	Detects a continuous short to low or a open in either the signal circuit or the MAF sensor	IMAF Output	<= 1650 Hz (~ 1.28 gm/sec)	Engine Run Time Engine Speed Ignition Voltage Above criteria present for a period of time	> 1.0 seconds >= 300 RPM >= 8.0 Volts	out of 500 samples 1 sample every	Type B 2 trips
						>= 1.0 seconds	cylinder firing	
Mass Air Flow	P0103	Detects a high frequency	MAF Output	>= 14500 Hz	Engine Run Time		event 400 failures	Type B
Sensor Circuit High Frequency	10103	output from the MAF sensor	iniai Guipat	(~ 342.75 gm/sec)	Engine Speed Ignition Voltage Above criteria present for a period of time	> 1.0 seconds >= 300 RPM >= 8.0 Volts	out of 500 samples 1 sample every cylinder firing	2 trips
						7- 1.0 seconds	event	
Manifold Absolute Pressure Sensor Performance naturally aspirated)	P0106	Determines if the MAP sensor is stuck within the normal operating range	Filtered Throttle Model Error AND ABS(Measured MAP – MAP Model 1) Filtered AND ABS(Measured MAP – MAP Model 2) Filtered	<= 300 kPa*(g/s) > 15.0 kPa	Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5200 RPM > -7 Deg C < 129 Deg C > -20 Deg C < 125 Deg C	Continuous	Type B 2 trips
				> 15.0 kPa				
						>= 0.00 Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM		
						MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM		
						MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
•						See table "IFRD Residual Weighting Factors".		
					No Active DTCs:	MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA		
						MAF_SensorCircuitFA CrankSensorFA		
						ECT_sensor_FA ECT_Sensor_FP IAT_SensorFA		
						IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO		
fanifold Absolute	P0106	Determines if the MAP	See table "Supercharger Intake Flow		Engine Speed	>= 450 RPM	Continuous	Type B
ressure Sensor		sensor is stuck within the	Rationality Diagnostic Failure Matrix" for		Engine Speed	<= 5800 RPM		2 trips
erformance		normal operating range	combinations of model failures that can		Coolant Temp	> -7 Deg C	Calculation	
supercharged)		normal operating range	set this DTC.		Coolant Temp	< 129 Deg C	are	
uperchargeu)			Set this DTC.		Intake Air Temp	> -20 Deg C	performed	
	1				Intake Air Temp	< 125 Deg C		
					Minimum total weight factor (all factors	1.202090	every 12.5	
					multiplied together)		msec	
			TPS model fails when			>= 0.00		
			Filtered Throttle Model Error	> 400 kPa*(g/s)		Filtered Throttle Model multiplied		
			MAF model fails when			by TPS Residual Weight Factor based on RPM		
			ABS(Measured Flow – Modeled Air Flow) Filtered			Modeled Air Flow multiplied by		
			MAP1 model fails when	> 21 grams/sec		MAF Residual Weight Factor based on RPM and MAF Residual		
			ABS(Measured MAP – MAP Model 1)			Weight Factor Based on MAF Estimate		
			Filtered					
				> 22.0 kPa		MAP Model 1 multiplied by MAP1 Residual Weight Factor based on		
			MAP2 model fails when			RPM and Boost Residual Weight Factor based on % of Boost		
			ABS(Measured MAP – MAP Model 2) Filtered	00.015				
				> 22.0 kPa		MAP Model 2 multiplied by MAP2		
			SCIAP1 model fails when			Residual Weight Factor based on RPM and Boost Residual Weight		
			ABS(Measured SCIAP – SCIAP Model 1) Filtered			Factor based on % of Boost		
				> 14.0 kPa				
	SCIAP2 model f	SCIAP2 model fails when			SCIAP Model 1 multiplied by SCIAP1 Residual Weight Factor based on RPM and Boost			
			ABS(Measured SCIAP – SCIAP Model 2) Filtered			Residual Weight Factor based on % of Boost		
				> 14.0 kPa				
						SCIAP Model 2 multiplied by SCIAP2 Residual Weight Factor		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
						based on RPM and Boost Residual Weight Factor based on % of Boost		
						See table "IFRD Residual Weighting Factors".		
					No Active DTCs:	MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensorFA ECT_sensor_FA ECT_Sensor_FP IAT_SensorGrA IAT_SensorCircuitFP CylDeacSystemTFTKO IAT2_SensorFA IAT2_SensorCircuitFP SCIAP_SensorCircuitFP SCIAP_SensorCircuitFP AmbientAirDefault_SC		
Manifold Absolute Pressure Sensor Circuit Low	P0107	Detects a continuous short to low or open in either the signal circuit or the MAP sensor.	MAP Voltage	< 3.0 % of 5 Volt Range (0.2 Volts = 3.5 kPa)	Continuous		320 failures out of 400 samples 1 sample every 12.5 msec	Type B 2 trips
Manifold Absolute Pressure Sensor Circuit High	P0108	Detects an open sensor ground or continuous short to high in either the signal circuit or the MAP sensor.	MAP Voltage	> 90.0 % of 5 Volt Range (4.5 Volts = 115.1 kPa)	Continuous		320 failures out of 400 samples 1 sample every 12.5 msec	Type B 2 trips
Intake Air Temperature Sensor Circuit Performance	P0111	has stuck in range by comparing to IAT2 and engine coolant temperature at startup	ABS(Power Up IAT - Power Up IAT2) AND ABS(Power Up ECT - Power Up IAT) > ABS(Power Up ECT - Power Up IAT2) AND AND P0116 is failing	> 20 deg C	Time between current ignition cycle and the last time the engine was running No Active DTCs:	> 28800 seconds ECTSensor_FA ECT_Sensor_Ckt_FA IAT_SensorCircuitFA IAT2_SensorCircuitFA P0116 Test Aborted = FALSE P0116 Test Complete = TRUE	Executes once at the beginning of each ignition cycle if enable conditions are met	Type B 2 trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Intake Air Temperature Sensor Circuit Low (High Temperature)	P0112	Detects a continuous short to ground in the IAT signal circuit or the IAT sensor	Raw IAT Input	< 45 Ohms (~150 deg C)	Engine Run Time Coolant Temp Vehicle Speed No Active DTCs:	> 0.0 seconds < 150 deg C >= 0.00 MPH ECT_Sensor_Ckt_FA ECT_Sensor_Ckt_FP VehicleSpeedSensorError	50 failures out of 63 samples 1 sample every 100 msec	Type B 2 trips
Intake Air Temperature Sensor Circuit High (Low Temperature)	P0113	Detects a continuous open circuit in the IAT signal circuit or the IAT sensor	Raw IAT Input	> 420000 Ohms (~-60 deg C)	Engine Run Time Coolant Temp Vehicle Speed Engine Air Flow No Active DTCs:	> 0.0 seconds > -40 deg C <= 318.00 MPH <= 511 gm/sec ECT_Sensor_Ckt_FA ECT_Sensor_Ckt_FP VehicleSpeedSensorError MAF_SensorFA MAF_SensorFP MAF_SensorTFTKO	50 failures out of 63 samples 1 sample every 100 msec	Type B 2 trips
Engine Coolant Temperature (ECT) Sensor Performance	P0116	This DTC detects ECT temp sensor stuck in mid range.	A failure will be reported if any of the following occur: 1) ECT at power up > IAT at power up by an IAT based table lookup value after a minimum 28800 second soak (fast fail). 2) ECT at power up > IAT at power up by 19.3 C after a minimum 28800 second soak and a block heater has not been detected. 3) ECT at power up > IAT at power up by 19.3 C after a minimum 28800 seconds soak and the time spent cranking the engine without starting is greater than 10.0 seconds with the LowFuelConditionDian	See "P0116: Fail if power up ECT exceeds IAT by these values" in the Supporting tables section. = False	Non-volatile memory initization Test complete this trip Test aborted this trip	= False = False ≥ -7 °C = False ion is enabled llowing occurs: > 19.3 °C	1 failure 500 msec /sample Once per valid cold start	2 trips Type B
					Block Heater is d diagnostic is aborte occurs. Diagnostic is 3) or 4) oc	d when 1) or 2) s aborted when		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Engine Coolant Temp Sensor Circuit Low	P0117	This DTC detects a short to ground in the ECT signal circuit or the ECT sensor.	FCT Resistance	Value	1a) Vehicle drive time 1b) Vehicle speed 1c) Additional Vehicle drive time is provided to 1a when Vehicle speed is below 1b as follows 1d) IAT drops from power up IAT 2a) ECT drops from power up ECT 2b) Engine run time 3) Engine run time	> 400 Seconds with > 14.9 MPH 0.00 times the seconds with vehicle speed below 1b ≥ 3.3 °C > 1 °C Within ≤ 30 Seconds > 1800 Seconds	Fequired 5 failures out of 6 samples 1 sec /sample Continuous	
Engine Coolant Temp Sensor Circuit High	P0118	Circuit Continuity This DTC detects a short to high or open in the ECT signal circuit or the ECT sensor.	ECT Resistance (@ -60°C)	> 419000 Ohms	Or	> 10.0 seconds ≥ -7.0 °C	5 failures out of 6 samples 1 sec /sample Continuous	2 trips Type B
TPS1 Circuit	P0120	Detects a continuous or intermittent short or open in TPS1 circuit on the secondary processor but sensor is in range on the primary processor	or Secondary TPS1 Voltage >	0.325 4.75		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary processor	Trips: 1 Type: A MIL: YES
Throttle Position Sensor Performance (naturally aspirated)	P0121	Determines if the Throttle Position Sensor input is stuck within the normal operating range	AND ABS(Measured Flow – Modeled Air Flow) Filtered	> 300 kPa*(g/s) > 12 grams/sec	Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5200 RPM > -7 Deg C < 129 Deg C > -20 Deg C < 125 Deg C	Continuous Calculation are performed every 12.5 msec	Type B 2 trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	value	rarameters	Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM	Required	mum.
						Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor Based on MAF Estimate		
						See table "IFRD Residual Weighting Factors".		
					No Active DTCs:	MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensorFA ECT_sensor_FA ECT_Sensor_FP IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO		
Fhrottle Position Sensor Performance supercharged)	P0121	Determines if the Throttle Position Sensor input is stuck within the normal operating range	See table "Supercharger Intake Flow Rationality Diagnostic Failure Matrix" for combinations of model failures that can set this DTC.		Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5800 RPM >= 7 Deg C < 129 Deg C >= 20 Deg C < 125 Deg C	Calculation are performed every 12.5 msec	Type B 2 trips
			TPS model fails when			>= 0.00		
			Filtered Throttle Model Error	> 400 kPa*(g/s)		Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM		
			MAF model fails when ABS(Measured Flow – Modeled Air Flow) Filtered	> 21 grams/sec		Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual		
			MAP1 model fails when			Weight Factor Based on MAF Estimate		
			ABS(Measured MAP – MAP Model 1) Filtered	> 22.0 kPa		MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM and Boost Residual Weight		
			MAP2 model fails when ABS(Measured MAP – MAP Model 2) Filtered			Factor based on % of Boost		
			SCIAP1 model fails when	> 22.0 kPa		MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM and Boost Residual Weight		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
- Oystoni			Filtered SCIAP2 model fails when ABS(Measured SCIAP – SCIAP Model 2) Filtered	> 14.0 kPa	No Active DTCs:	SCIAP Model 1 multiplied by SCIAP1 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost SCIAP Model 2 multiplied by SCIAP2 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost See table "IFRD Residual Weighting Factors". MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CTankSensorFA ECT_sensor_FP IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO IAT2_SensorFA IAT2_SensorForcircuitFP SCIAP_SensorCircuitFP SCIAP_SensorCircuitFP	roquired	
TPS1 Circuit Low	P0122	Detects a continuous or intermittent short or open in TPS1 circuit on both processors or just the primary processor	Primary TPS1 Voltage < Secondary TPS1 Voltage <	0.325		AmbientAirDefault_SC Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	79 / 159 counts; 57 counts continuous; 3.125 ms /count in the primary processor 19 / 39 counts or 14 counts continuous;	Trips: 1 Type: A MIL: YES
							12.5 ms/count in the secondary	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
TPS1 Circuit High	P0123	Detects a continuous or intermittent short in TPS1 circuit on both processors or just the primary processor	Primary TPS1 Voltage > Secondary TPS1 Voltage >			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	79 / 159 counts; 57 counts; 57 counts continuous; 3.125 ms /count in the primary 19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary	Trips: 1 Type: A MIL: YES
Engine Coolant Temperature Below Stat Regulating Temperature	P0128	This DTC detects if the engine coolant temperature rises too slowly due to an ECT or Cooling system fault	Actual accumulated airflow is > predicted	the Supporting tables section.	Engine not run time Engine run time		30 failures to set DTC 1 sec /sample Once per ignition key	2 trips Type B
			Range #2 (Alternate) ECT reaches 55.0 °C when IAT min is < 10.0°C and ≥ -7.0°C.		Range #1 (Primary) Test ECT at start run Average Airflow Vehicle speed			
			10.0 G and £ 77.0 G.		Range #2 (Alternate) Test ECT at start run Average Airflow Vehicle speed			
					Accumulated Airflow Adjustments 1) Max. airflow amount added when accumulating airflow is			
					Zero Airflow accumulated when airflow is With AFM active Airflow added to acculmulated is multiplyed by			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					4) With Decel Fuel Cut Off active, acculmulated airflow is reduced by multiplying actual airflow by	50.00%		
						1.00 times		
Engine Coolant Temperature Below Stat Regulating Temperature (For applications with a two coolant sensors)	P0128	This DTC detects if the engine coolant temperature rises too slowly due to an ECT or Cooling system fault	Engine run time is accumulated when airflow is ≥ 25 grams per sec during Range #1 or #2: Range #1 (Primary) ECT reaches target temperature of 75.0 °C	See "P0128: Maximum Accumulated Time for IAT and Start-up ECT conditions" in the Supporting tables section.	No Active DTC's	MAF_SensorFA IAT_SensorFA THMR_RCT_Sensor_Ckt_FA THMR_ECT_Sensor_Ckt_FA	1 failure to set DTC 1 sec /sample Once per	2 trips Type B
Scrisors			when IAT min is < 54.5°C and ≥ 10.0°C. Range #2 (Alternate) ECT reaches target temperature of 65.0		run time	10 ≤ Eng Run Tme ≤ 1600 seconds	ignition key cycle	
			°C when IAT min is < 10.0°C and ≥ -7.0°C.		Range #1 (Primary) Test	Ethanol ≤ 87% -7.0 ≤ ECT ≤ 70.0 °C ≥ 25.0 gps		
					Range #2 (Alternate) Test ECT at start run Average Airflow	-7.0 ≤ ECT ≤ 60.0 °C ≥ 25.0 gps		
Supercharger Inlet Absolute Pressure (SCIAP) Sensor Performance	P012B	Determines if the Supercharger Inlet Absolute Pressure Sensor input is stuck within the normal operating range	See table "Supercharger Intake Flow Rationality Diagnostic Failure Matrix" for combinations of model failures that can set this DTC.		Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5800 RPM > -7 Deg C < 129 Deg C > -20 Deg C < 125 Deg C	Continuous Calculation are performed every 12.5 msec	Type B 2 trips
			TPS model fails when Filtered Throttle Model Error MAF model fails when	> 400 kPa*(g/s)		>= 0.00 Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
		,	ABS(Measured Flow – Modeled Air Flow) Filtered	> 21 grams/sec		Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor Based on MAF Estimate	,	-
			ABS(Measured MAP – MAP Model 1) Filtered MAP2 model fails when	> 22.0 kPa		MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost		
			ABS(Measured MAP – MAP Model 2) Filtered SCIAP1 model fails when ABS(Measured SCIAP – SCIAP Model 1)	> 22.0 kPa		MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost		
			SCIAP2 model fails when ABS(Measured SCIAP – SCIAP Model 2) Filtered	> 14.0 kPa > 14.0 kPa		SCIAP Model 1 multiplied by SCIAP1 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost		
				2 14.0 M G		SCIAP Model 2 multiplied by SCIAP2 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost		
						See table "IFRD Residual Weighting Factors".		
					No Active DTCs:	MAP_SensorCircuitFA EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensorFA ECT_sensor_FA ECT_Sensor_FP IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO IAT2_SensorFA IAT2_SensorCircuitFP SCIAP_SensorCircuitFP SCIAP_SensorCircuitFP SCIAP_SensorCircuitFP AmbientAirDefault_SC		
Supercharger Inlet Absolute Pressure (SCIAP) Sensor Circuit Low	P012C	Detects a continuous short to low or open in either the signal circuit or the SCIAP sensor.	SCIAP Voltage	< 3.0 % of 5 Volt Range (0.2 Volts = 3.5 kPa)	Continuous		320 failures out of 400 samples	Type B 2 trips
Silicuit LOW		SELISOI.					1 sample every 12.5 msec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Supercharger Inlet Absolute Pressure (SCIAP) Sensor Circuit High	P012D	Detects an open sensor ground or continuous short to high in either the signal circuit or the SCIAP sensor.	SCIAP Voltage	> 90.0 % of 5 Volt Range (4.5 Volts = 115.0 kPa)	Continuous		320 failures out of 400 samples	Type B 2 trips
							1 sample every 12.5 msec	
O2S Circuit Low Voltage Bank 1 Sensor 1	/oltage Bank 1 O2 sensor circuit is shorted		Measure Oxygen Sensor Signal.	Oxygen Sensor signal is < 40 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAP_SensorFA AIR System FA	285 failures out of 350 samples Frequency:	2 trips Type B
					Throttle Position Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel Condition	= Not active = Not active = Not active 10.0 volts < system voltage< 32.0 volts = Not active = Not active = Not active = Not active = False 0.9922 ≤ equiv. ratio ≤ 1.0137 3 % <= Throttle <= 70 % = Closed Loop = TRUE Enabled (On) Ethanol <= 87%	Continuous in 100 milli- second loop	
						DFCO not active	1	
					All of the above	> 5.0 seconds	1	
O2S Circuit High Voltage Bank 1 Sensor 1	P0132	This DTC determines if the O2 sensor circuit is shorted to high.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is > 1050 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted	100 failures out of 125 samples	2 trips Type B
						MAP_SensorFA MAF_SensorFA	Frequency: Continuous in 100 milli -	
						EvapPurgeSolenoidCircuit_FA EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA EvapEmissionSystem_FA FuelTankPressureSnsrCkt_FA FuelInjectorCircuit_FA	second loop	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					Parameters AIR intrusive test Fuel intrusive test Idle intrusive test Idle intrusive test EGR intrusive test System Voltage EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag Equivalence Ratio Throttle Position Fuel Control State Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel State	Conditions = Not active = Not active = Not active = Not active 10.0 volts < system voltage< 32.0 volts = Not active = False 0.9922 ≤ equiv. ratio ≤ 1.0137 0.0 % <= Throttle <= 70.0 % = Closed Loop not = Power Enrichment = TRUE Enabled (On) DFCO not active		
					Fuel Condition	Ethanol <= 87%		
				l l	All of the above	e met for		
					Time	> 2 seconds		
O2S Slow Response Bank 1 Sensor 1	P0133	This DTC determines if the O2 sensor response time is degraded.	over the test time, and compared to the threshold. Or	Refer to "P0133 - O2S Slow Response Bank 1 Sensor 1" Pass/Fail Threshold table in the Supporting Tables tab. S/T L/R switches < 3, or S/T R/L switches < 3 The test averages the signal response time over 60.0 seconds when the signal is transitioning between 600 mvolts and 300 mvolts. An average rich to lean and lean to rich time are each calculated separately.	Bank 1 Sensor 1 DTC's not active System Voltage EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag Green O2S Condition O2 Heater on for Learned Htr resistance Engine Coolant	10.0 volts < system voltage< 32.0 volts = Not active = Not active = Not active = Not active = False = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S1, B2S1) in Supporting Tables tab. = 40 seconds = Valid > 50 °C > -40 °C > 120 seconds > 0.0 seconds > 0.0 seconds	Sample time is 60 seconds Frequency: Once per trip	2 trips Type

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	Value	Time since Purge Off to On change Purge duty cycle Engine airflow Engine speed Fuel Baro Throttle Position Low Fuel Condition Diag Fuel Control State Closed Loop Active LTM fuel cell Transient Fuel Mass Baro Fuel Control State Fuel State Commanded Proportional Gain	> 0.0 seconds >= 0 % duty cycle 20 gps <= engine airflow <= 55 gps 1200 <= RPM <= 3000 < 87 % Ethanol > 70 kpa >= 5 % = False = Closed Loop = TRUE = Enabled <= 100.0 mgrams = Not Defaulted not = Power Enrichment DFCO not active >= 0.0 %	Required	illum.
					All of the above]	
					Time	> 3.5 seconds		
O2S Circuit Insufficient Activity Bank 1 Sensor 1	P0134	This DTC determines if the O2 sensor circuit is open.	Measure Oxygen Sensor Signal.	350 mvolts < Oxygen Sensor signal < 550 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAF_SensorFA	400 failures out of 500 samples.	2 trips Type B
						EthanolCompositionSensor_FA	Minimum of 0 delta TPS changes required to report fail. Delta TPS is incremented when the TPS %	
					System Voltage AFM Status	10.0 volts < system voltage< 32.0 volts = All Cylinders active	change >= 0.0 %	
					Heater Warm-up delay Predicted Exhaust Temp (by location)	= Complete	Frequency: Continuous	
					Engine Run Time Fuel	> 300 seconds <= 87 % Ethanol	100msec loop	
O2S Heater Performance Bank 1 Sensor 1	P0135	This DTC determines if the O2 sensor heater is functioning properly by	Measured Heater Current.	Measured Heater current < 0.3 amps -OR-	No Active DTC's	ECT_Sensor_FA 10.0 volts < system voltage< 32.0	8 failures out of 10 samples	2 trips Type B
		monitoring the current through the heater circuit.		Measured Heater current > 3.1 amps	System Voltage Heater Warm-up delay	volts	Frequency: 1 tests per trip 5 seconds delay	
					B1S1 O2S Heater Duty Cycle	> zero	between tests and 1 second execution rate	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
- Cyclo		2000	J.110.110	74.40	O2S Heater device contro		required	
					All of the abov		-	
					Time	> 120 seconds		
O2S Circuit Low Voltage Bank 1 Sensor 2	P0137	This DTC determines if the O2 sensor circuit is shorted to low.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is < 50 mvolts	AIR intrusive tes Fuel intrusive tes Idle intrusive tes Idle intrusive tes EGR intrusive tes System Voltage EGR Device Contro Idle Device Contro Fuel Device Contro AIR Device Contro Low Fuel Condition Diag Equivalence Ratic Throttle Positior Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel Conditior Fuel Conditior	= Not active t = Not active t = Not active 10.0 volts < system voltage< 32.0 volts = Not active l = False 0.9922 ≤ equiv. ratio ≤ 1.0137 3 % <= Throttle <= 70 % c = Closed Loop = TRUE Enabled (On) Ethanol <= 87% DFCO not active	320 failures out of 400 samples Frequency: Continuous in 100 milli- second loop	2 trips Type B
					All of the abov]	
					Time	> 5.0 seconds		
O2S Circuit High Voltage Bank 1 Sensor 2	P0138	This DTC determines if the O2 sensor circuit is shorted to high.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is > 1050 mvolts	No Active DTC's AIR intrusive tes Fuel intrusive tes Idle intrusive tes	t = Not active	100 failures out of 125 samples Frequency: Frequency: continuous in 100 milli- second loop	2 trips Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	Value	EGR intrusive test System Voltage EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag Equivalence Ratio Throttle Position Fuel Control State Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel State Fuel Condition	= Not active 10.0 volts < system voltage< 32.0 volts = Not active = False 0.9922 ≤ equiv. ratio ≤ 1.0137 3.0 % <= Throttle <= 70.0 % = Closed Loop not = Power Enrichment = TRUE Enabled (On) DFCO not active Ethanol <= 87%	Required	illum.
					All of the above	e met for	1	
					Time	> 2 seconds		
O2 Sensor Slow Response Rich to Lean Bank 1 Sensor 2	P013A	This DTC determines if the post catalyst O2 sensor has Slow Response in a predefined Rich to Lean voltages range during Rich to Lean transition. The diagnostic is an intrusive test which runs in a DFCO mode to achieve the required response.	OR The Accumulated mass air flow monitored	(upper threshold is 450 mvolts and	No Active DTC's	TPS_ThrottleAuthorityDefaulted ECT_Sensor_FA IAT_SensorFA	Frequency: Once per trip Note: if NaPOPD_b_ ResetFastRe spFunc= FALSE for the given Fuel Bank OR NaPOPD_b_ RapidRespo nseActive = TRUE, multiple tests	1 trips Type A EWMA
					B1S2 Failed this key cycle System Voltage Learned heater resistance ICAT MAT Burnoff delay Green O2S Condition Low Fuel Condition Diag Post fuel cell DTC's Passed	10.0 volts < system voltage< 32.0 volts = Valid = Not Valid = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. = False = enabled = P2270 (and P2272 (if	per trip are allowed	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	value	DTC's Passed	= P013E (and P014A (if	Required	illum.
					After above conditi DFCO mode is (wo driver initiated	continued		
O2 Sensor Slow Response Lean to Rich Bank 1 Sensor 2	P013B	to Rich transition. The diagnostic is an intrusive test which increases the	The Accumulated mass air flow monitored	(lower threshold is 350 mvolts and	B1S2 Failed this key cycle System Voltage Learned heater resistance ICAT MAT Burnoff delay	TPS_ThrottleAuthorityDefaulted ECT_Sensor_FA IAT_SensorFA MAP_SensorFA IAT_SensorFA MAP_SensorFA AIR System FA FuelTrimSystemB1_FA FuelTrimSystemB2_FA EngineMisfireDetected_FA EthanolCompositionSensor_FA P013A, P013E, P013F, P2270 or P2271 10.0 volts < system voltage< 32.0 volts = Valid = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. is Not Valid, System is not valid until accumulated airflow is greater than 720000.0 grams. Airflow accumulation is only enabled when estimated Cat temperature is above 600 Deg C. (Note: This feature is only enabled when the	Frequency: Once per trip Note: if NaPOPD_b_ ResetFastRe spetFastRe spetFastRe FALSE for the given Fuel Bank OR NaPOPD_b_ RapidRespo nseActive = TRUE, multiple tests per trip are allowed	1 trips Type A EWMA
					Green Cat System Condition Low Fuel Condition Diag Post fuel cell DTC's Passed	vehicle is new and cannot be enabled in service.) = False = enabled = P2270 (and P2272 (if applicable))		
					DTC's Passed DTC's Passed	= P013A (and P013C (if		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					DTC's Passed	= P2271 (and P2273 (if applicable)) = P013F (and P014B (if		
					After above conditi Fuel Enrich mode			
					During test: Fuel EQR must stay between:	0.95 <= EQR <= 1.10		
O2 Sensor Slow Response Rich to Lean Bank 2 Sensor 2	P013C		The EWMA of the Post O2 sensor normalized integral value is greater than the threshold. OR The Accumulated mass air flow monitored during the Slow Response Test (between the upper and lower voltage thresholds) is greater than the airflow threshold.	(upper threshold is 450 mvolts and	No Active DTC's	TPS_ThrottleAuthorityDefaulted ECT_Sensor_FA IAT_SensorFA	Frequency: Once per trip Note: if NaPOPD_b_ ResetFastRe spFunc= FALSE for the given Fuel Bank OR NaPOPD_b_ RapidRespo nseActive = TRUE, multiple tests	1 trips Type A EWMA
					B2S2 Failed this key cycle System Voltage Learned heater resistance ICAT MAT Burnoff delay Green O2S Condition Low Fuel Condition Diag Post fuel cell DTC's Passed	10.0 volts < system voltage< 32.0 volts = Valid = Not Valid = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. = False = enabled = P2270 (and P2272 (if applicable)) = P013E (and P014A (if	per trip are allowed	
					After above conditi DFCO mode is (wo driver initiated	continued		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
O2 Sensor Slow	P013D	This DTC determines if the	The EWMA of the Post O2 sensor	1) B1S2 EWMA normalized	No Active DTC's	Conditions	Frequency:	1 trips Type
Response Lean to	FUISD	post catalyst O2 sensor has	normalized integral value is greater than	integral value > 8.0 units	No Active DTC s		Once per trip	A A
Rich Bank 2	ĺ	Slow Response in a	the threshold.	integral value > 0.0 units		TPS_ThrottleAuthorityDefaulted	Once per unp	EWMA
Sensor 2	ĺ	predefined Lean to Rich		OR			Note: if	1
CONSON 2	ĺ		OR	O.C.			NaPOPD_b_	ł
	ĺ	to Rich transition. The		2) Accumulated air flow during			ResetFastRe	ł
	ĺ		The Accumulated mass air flow monitored				spFunc=	ł
!	ĺ	which increases the		(lower threshold is 350 mvolts and			FALSE for	ł
!	ĺ		the lower and upper voltage thresholds) is				the given	ł
ļ	ĺ	the required rich threshold.	greater than the airflow threshold.	1,1,1		ECT_Sensor_FA	Fuel Bank	ł
	l .					IAT_SensorFA	OR	i
	l .						NaPOPD_b_	i
ļ	ĺ						RapidRespo	ł
ļ ,	l .						nseActive =	i
ļ ,	l .						TRUE,	i
ļ ,	l .						multiple tests	i
ļ ,	l .					MAE ConsorEA	per trip are	i
	1					MAF_SensorFA MAP_SensorFA	allowed	1
1	1					AIR System FA	1 '	ı
!	1					FuelInjectorCircuit_FA	1 '	1
!	1					FuelTrimSystemB1 FA	1 '	ı
!	1					FuelTrimSystemB2_FA	1 '	1
	l .					EngineMisfireDetected FA	'	i
ļ	ĺ					EthanolCompositionSensor_FA	1 '	ł
						P013C, P014A, P014B, P2272 or	1 '	ł
	l .				B2S2 Failed this key cycle	P2273	'	i
	l .					10.0 volts < system voltage< 32.0	'	i
	l .				System Voltage		'	i
	l .				Learned heater resistance		'	ł
	l .				ICAT MAT Burnoff delay		'	ł
	l .					= Not Valid, See definition of	'	ł
	l .					Multiple DTC Use_Green	'	ł
	l .					Sensor Delay Criteria (B1S2,	'	ł
	l .				Green 028 Condition	B2S2) in Supporting Tables tab.	'	ł
	l .					is Not Valid, System is not valid	'	ł
ļ	ĺ					until accumulated airflow is greater	1 '	ł
ļ ,	l .					than 720000.0 grams. Airflow	'	ł
l	i .					accumulation is only enabled	'	i
ŀ	1					when estimated Cat temperature	1 '	1
ŀ	ĺ					is above 600 Deg C. (Note: This	1 '	1
ŀ	ĺ					feature is only enabled when the	1 '	ı
l '	1					vehicle is new and cannot be	1 '	1
 	ĺ				Green Cat System Condition		1 '	ı
ŀ	1				Low Fuel Condition Diag		1 '	1
ŀ	1				Post fuel cell	= enabled	1 '	1
	1					= P2270 (and P2272 (if	1 '	1
!	1				DTC's Passed	applicable))	1 '	ı
	1					= P013E (and P014A (if	1 '	1
!	1				DTC's Passed		1 '	ı
!	ĺ					= P013A (and P013C (if	1 '	ı
!	1				DTC's Passed		1 '	1
!	1					= P2271 (and P2273 (if	1 '	1
!	1				DTC's Passed		1 '	ı
!	ĺ				DT0:- D	= P013F (and P014B (if	1 '	ı
ŀ	ĺ				DTC's Passed	applicable))	1 '	ı
	1				After obeye senditi	L and are met:	4 '	1
	ĺ				After above condition Fuel Enrich mode		1 '	ı
ŀ	1						1 '	1
	l .	1		1	During test: Fuel EQR must stay between:	I	1 !	l .

Q2 Service Debuyed P013E Response Ratio Into BTIC determines if the post cashly C2 service cannot go believe the post cashly C2 service cannot go believe the post cashly C2 service cannot go believe the post cashly C3 service cannot go believe th	Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
CE Sersor Delayed P015E Proposed Rich to Sersor Rich to Sensor 2 1 This DTC determine if the Post C2 sensor cannot go below the Post C2 sensor cannot go below the Post canning C2 sensor sensor post canning C2 sensor cannot go below the Post C2 sensor cannot go above the Doctor C2 sensor cannot go above the Do	System	Code	Description	Gineria	value	r ai ailletei S		required	mum.
Response Rich to Ison Bank 1 an emitted devised response to 1 an AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during) and AFC change from Rich to 1 AND 2 (Accumulated air floor during the globely and Rich that the Individual area in the 1 AND 2 (Accumulated air floor during the globely and Rich that the Individual area in the 1 AND 2 (Accumulated air floor during the globely and Rich that the Individual ARICH that the Individual							0.95 <= EQR <= 1.10	1	
Lon Tank 1 Sensor 2 Lon Tank 1 Lo		P013E			1) Post O2S signal > 450 mvolts	No Active DTC's			2 trips Type
Sensor 2 an AF change from fixe to Lean. The diagnostic is an instructive lest which normal in a DPCO mode to solve the end of the property o					AND		TPS ThrottleAuthorityDefaulted	Once per trip	В
Lean. The diagnostic is an intritude test which runs is a first where the control of particular test which runs is a first wronder to achieve the regarded response. The Accumulated mass air flow monitored particular test is grained. First test > 95 grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored particular test is grams. The Accumulated mass air flow monitored partic					AND		Tr 3_ThrottleAuthorityDerautieu	Note: if	
DFCO mode to achieve the organized response. disring the Delayed Response Test is growth or required response. disring the Delayed Response Test is growth or required response. DFCO sensor FA AT. S	CONSON Z				2) Accumulated air flow during				
greater than the threshold. FALSE for the given FA FALSE for the given fruit Bank FALSE for			intrusive test which runs in a	The Accumulated mass air flow monitored	stuck rich test > 95 grams.				
ECT. Sersor. FA Find Blank IAT. Sersor. FA Find									
ECT_Sensor_FA IAT_SenorFA IAT_			required response.	greater than the threshold.					
IAT_SensorFA OR NaPOPD b. Ray-life sport of the post coat analyst O2 sensor cannot go above the Rasponse Lean to Rich Bank 1 Sensor 2 2 Sensor Delaye PO15F Response Lean to Rich Bank 1 Sensor 2 AND 2 Sensor Delaye PO15F Response Lean to Rich Bank 1 Sensor 2 AND 2 Sensor Delaye PO15F Response Lean to Rich Bank 1 Sensor 2 AND AND AND AND AND AND AND AN							ECT_Sensor_FA		
RapidRospon nsakchive a TRUE, multiple tests per trip are alrowed. MAF_SensorFA AIR System FA FuelTrimSystemB1 FA FuelTrimSys							IAT_SensorFA	OR	
macActive = TRUE, multiple tests per finp are although the port finp are although the port finp are although the port fine are although the port and part of the port fine are although the port and part of the port and part of the port are although the port									
MAF. Sensor FA MAF. Sensor FA MAF. Sensor FA AIR. System FA FoulTrimSystem B1 FA FoulTrimSystem B2 Fa FoulTrimStem B2 FA F									
MAF_SensorFA ARP System FA ARP									
MAF_SensorFA MAP_SensorFA MAP_SensorFA ARF_System (Cruit_FA Full improvious of the followed of									
MAP Sensoria A AIR System FA FuelinjectorCircuit_FA FuelinjectorCirc									
AIR System FA FueltrimsystemB1_FA FueltrimsystemB2_FA Fueltrimsyst								allowed	
PuellingctorCircuit_FA FuelTrimsystemB1_FA Fue									
FuelTrimSystemB1_FA FuelTrimSystemB2_FA EngineMisfreDetected_FA EthanolCompositionSensor_FA P013A, P013B, P013F, P2270 or B1S2 Failed this key cycle P2271 10,0 votis < system voltage < 32.0 System Voltage votis Learned heater resistance = Valid ICAT MAT Burnoff delay = Not Valid =	ļ								
Post O2 Sensor Delayed P013F Response Lean to Rich Bank 1 an initial delayed response to an AF change from Lean to Rich The diagnostic is an intrusive test which increases the delivered AF ratio to achieve the required rich threshold.							FuelTrimSystemB1_FA		
Description of the post catalyst Q2 sensor Delayed Response Lean to Rich Bank 1 an initial delayer from Lean to Sensor 2 O2 Sensor Delayed Response Lean to Rich The delayers and Initial delayer response to an AF change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered AF reat to achieve the required rich threshold.	Į.								
D2 Sensor Delayed Response Lean to Rich Tendang From Lean to Rich Tend	ļ								
B1S2 Failed this key cycle P2271 10,0 volts - system voltage- 32.0 System Voltage Voltag									
System Voltage volts Learned heater resistance = Valid ICAT MAT Burnoff delay = Not Valid Bot Valid See definition of Multiple DTC Use_Green Sensor Delay Criteria (E152, Green O2S Condition Diag = False Post tutel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders ≤ 8 cylinders After above conditions are met: DPCO mode is entered (wo driver initiated pedal input). This DTC determines if the post catalyst O2 sensor has an initial delayed response to an AF change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered AF ratio to achieve the required rich threshold.						B1S2 Failed this key cycle			
Learned heater resistance Valid ICAT MAT Bumoff delay Not Valid See definition of Multiple DTC Use_Green Osc Condition Diag False Post (Delayed Post fuel cell e enabled DTC's Passed P2270 and P2272 (if applicable) Number of fueled cylinders \$ 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Post O2 sensor cannot go above the post catalyst O2 sensor has an initial delayed response to an intusive lest which increases the delivered AF ratio to achieve the required rich threshold. AND Accumulated air flow during lean to rich test > 515 grams. Accumulated air flow during AND ResetFastRe spFunce FALSE for the given FALSE for the given Text T									
CAT MAT Bumoff delay Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, Green O2S Condition B2S2) in Supporting Tables tab. Low Fuel Condition Diag = False Post fuel cell = nearbled									
Comparison of Multiple DTC Use, Green O2S Condition of Multiple DTC Use, Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. Low Fuel Condition Diag. False Post fuel cell enabled DTC's Passed = P2270 and P2272 (if applicable)									
Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. Low Fuel Condition Diag = False Post fuel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders ≤ 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). This DTC determines if the post catalyst O2 sensor bas an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders ≤ 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Frequency: Once per trip AND AND AND AND TPS_ThrottleAuthorityDefaulted Note: if NAPOPD_b_ ResetFastRe spFunc= FALSE for missing the pelayed Response Test is greater than the threshold. The Accumulated aris flow during lean to rich test > 515 grams.						ion in in it burner dotay			
Green O2S Condition Diag = False Low Fuel Condition Diag = False Post fuel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders ≤ 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). This DTC determines if the post catalyst O2 sensor cannot go above the threshold voltage. This DTC determines if the post catalyst O2 sensor has an initial delayed response to an AF change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. TPS_ThrottleAuthorityDefaulted AND AND AND AND AND AND AND AN									
Low Fuel Condition Diag = False Post fuel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders ≤ 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). O2 Sensor Delayed P013F Response Lean to Rich Bank 1 Sensor 2 This DTC determines if the post catalyst 02 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. The Accumulated mass air flow monitored during the Delayed Response Test is greater than the threshold. Low Fuel Condition Diag = False Post fuel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Frequency: Once per trip AND Note: if NaPOPD_b ResetFastRe spFunc= FALSE for the given TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b ResetFastRe spFunc= FALSE for the given									
Post fuel cell = enabled DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). O2 Sensor Delayed P013F Response Lean to Rich Bank 1 Sensor 2 This DTC determines if the post catalyst O2 sensor cannot go above the threshold voltage. AND AND AND TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b. ResetFastRe spFunc= Intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. The Accumulated mass air flow monitored during the Delayed Response Test is greater than the threshold. TREATOR TO BETT OF THE TOTAL TO BETT OF THE TOTAL THE									
DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders 8 8 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders 8 6 cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Post O2 sensor cannot go above the post catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. DTC's Passed = P2270 and P2272 (if applicable) Number of fueled cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Frequency: Once per trip NAND AND AND 2) Accumulated air flow during lean to rich test > 515 grams. The Accumulated air flow during greater than the threshold.									
Number of fueled cylinders After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). Post O2 sensor cannot go above the post catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. Post O2 sensor cannot go above the threshold voltage. AND AND AND AND AND AND AND AN									
After above conditions are met: DFCO mode is entered (wo driver initiated pedal input). O2 Sensor Delayed P013F Response Lean to Rich Bank 1 Sensor 2 This DTC determines if the post catalyst O2 sensor cannot go above the threshold voltage. AND AND AND TPS_ThrottleAuthorityDefaulted AND TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b ResetFastRe during the Accumulated mass air flow monitored during thrusive test which increases the delivered A/F ratio to achieve the required rich threshold.							, ,		
DFCO mode is entered (wo driver initiated pedal input). O2 Sensor Delayed P013F Response Lean to Rich Bank 1 Sensor 2 AND AND AND AND AND AND AND AN						Number of fueled cylinders	≤ 8 cylinders		
C2 Sensor Delayed Response Lean to Response Lean to Sensor 2 This DTC determines if the post catalyst O2 sensor has an initial delayed response to Sensor 2 AND									
O2 Sensor Delayed Response Lean to Response Lean to Sensor 2 This DTC determines if the post catalyst O2 sensor cannot go above the post catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. Post O2 sensor cannot go above the post O2 signal < 350 mvolts AND AND TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b ResetFastRe during the Delayed Response Test is greater than the threshold.									
Response Lean to Rich Bank 1 Sensor 2 post catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. threshold voltage. AND AND TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b_ Response Test is greater than the threshold. TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b_ Response Test is greater than the threshold.						(wo driver initiated	pedai input).	-	
Response Lean to Rich Bank 1 Sensor 2 post catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. threshold voltage. AND AND TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b_ Response Test is greater than the threshold. TPS_ThrottleAuthorityDefaulted Note: if NaPOPD_b_ Response Test is greater than the threshold.	O2 Sensor Delayed	P013F	This DTC determines if the	Post O2 sensor cannot go above the	1) Post O2S signal < 350 mvolts	No Active DTC's		Frequency:	2 trips Type
Sensor 2 an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. AND 2) Accumulated air flow during lean to rich test > 515 grams. 4 Change from Lean to Rote if NaPOPD_b ResetFastRe during the Delayed Response Test is greater than the threshold.	Response Lean to		post catalyst O2 sensor has	threshold voltage.	,				
Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. 2) Accumulated air flow during lean to rich test > 515 grams. 2) Accumulated air flow during lean to rich test > 515 grams. 3) Accumulated air flow during lean to rich test > 515 grams. 4) Accumulated air flow during lean to rich test > 515 grams. 5) Accumulated air flow during lean to rich test > 515 grams. 6) Accumulated air flow during lean to rich test > 515 grams. 7) Accumulated air flow during lean to rich test > 515 grams. 8) Accumulated air flow during lean to rich test > 515 grams. 9) Accumulated air flow during le					AND		TPS_ThrottleAuthorityDefaulted		
intrusive test which increases the delivered A/F ratio to achieve the required rich threshold. The Accumulated mass air flow monitored lean to rich test > 515 grams. ResetFastRe spFunc= spFunc= FALSE for threshold.	Sensor 2				0.4				
the delivered A/F ratio to achieve the required rich threshold. threshold. spFunc= FALSE for the given threshold.									
achieve the required rich greater than the threshold. FALSE for threshold.					nean to non test > 515 grams.				
threshold. the given	1								
I I I I I I I I I I I I I I I I I I I							FOT Carrage FA		
IAT_SensorFA OR								Fuel Bank	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
•							NaPOPD b	
							RapidRespo	
							nseActive =	
							TRUE,	
							multiple tests	
							per trip are	
						MAF_SensorFA	allowed	
						MAP_SensorFA	13110744013	
						AIR System FA		
						FuelInjectorCircuit_FA		
						FuelTrimSystemB1 FA		
						FuelTrimSystemB2_FA		
						EngineMisfireDetected_FA		
						EthanolCompositionSensor_FA		
						P013A, P013B, P013E, P2270 or		
	1				B1S2 Failed this key cycle	P2271	I	
					1 3, 3, 1	10.0 volts < system voltage< 32.0	1	
					System Voltage		1	
	1				Learned heater resistance		I	
					ICAT MAT Burnoff delay			
					ICAT MAT Burnoff delay			
						= Not Valid, See definition of		
						Multiple DTC Use_Green		
						Sensor Delay Criteria (B1S2,		
					Green O2S Condition	B2S2) in Supporting Tables tab.		
						is Not Valid, System is not valid		
						until accumulated airflow is greater		
						than 720000 grams. Airflow		
						accumulation is only enabled		
						when estimated Cat temperature		
						is above 600 Deg C. (Note: This		
						feature is only enabled when the		
						vehicle is new and cannot be		
					Green Cat System Condition			
					Low Fuel Condition Diag			
					Post fuel cell			
					Fost idei cell	= P2270 (and P2272 (if		
					DTC's Passed	applicable))		
					DTC's Passed	= P013E (and P014A (if		
						applicable))		
					DTC's Passed	= P013A (and P013C (if		
	1					applicable))	I	
					DTC's Passed	= P2271 (and P2273 (if		
					D1031 a3300	applicable))		
					Number of fueled cylinders	≥ 0 cylinders		
					After above condition	ons are met:	1	
					Fuel Enrich mode			
					During test: Fuel EQR must stay between:		1	
						0.95 <= EQR <= 1.10		
						5.55 N- EMIN N- 1.10	1	<u></u>
S Circuit	P0140	This DTC determines if the	Measure Oxygen Sensor Signal.	380 mvolts < Oxygen Sensor	No Active DTC's	TPS_ThrottleAuthorityDefaulted	590 failures	2 trips Typ
sufficient Activity		O2 sensor circuit is open.		signal < 520 mvolts			out of 740	В
nk 1 Sensor 2	l	1		1			samples.	
					1	MAF_SensorFA		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
						EthanolCompositionSensor_FA	Minimum of 0 delta TPS changes required to report fail. Delta TPS is incremented when the TPS %	
					System Voltage AFM Status Heater Warm-up delay Predicted Exhaust Temp (by location)		change >=	
					Engine Run Time Fuel	> 300 seconds <= 87 % Ethanol	for post sensors	
O2S Heater Performance Bank 1 Sensor 2	P0141	This DTC determines if the O2 sensor heater is functioning properly by monitoring the current through the heater circuit.		Measured Heater current < 0.3 amps -OR- Measured Heater current > 2.9 amps	No Active DTC's System Voltage Heater Warm-up delay B1S2 O2S Heater Duty Cycle O2S Heater device control	= Complete > zero = Not active	8 failures out of 10 samples Frequency: 1 tests per trip 5 seconds delay between tests and 1 second execution rate	2 trips Type B
						e met for > 120 seconds		
O2 Sensor Delayed Response Rich to Lean Bank 2 Sensor 2	P014A	This DTC determines if the post catalyst O2 sensor has an initial delayed response to an A/F change from Rich to Lean. The diagnostic is an intrusive test which runs in a DFCO mode to achieve the required response.	threshold voltage. AND	Post O2S signal > 450 mvolts AND Accumulated air flow during stuck rich test > 95 grams.	No Active DTC's	TPS_ThrottleAuthorityDefaulted ECT_Sensor_FA IAT_SensorFA	Frequency: Once per trip Note: if NaPOPD_b_ ResetFastRe spFunc= FALSE for the given Fuel Bank OR NaPOPD_b_ RapidRespo nseActive =	2 trips Type B
ı						MAF_SensorFA	TRUE, multiple tests per trip are allowed	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
System	Code	Description	Criteria	value	B2S2 Failed this key cycle System Voltage Learned heater resistance ICAT MAT Burnoff delay Green O2S Condition Low Fuel Condition Diag Post fuel cell DTC's Passed Number of fueled cylinders After above condition DFCO mode is	MAP_SensorFA AIR System FA FuelInjectorCircuit_FA FuelTrimSystemB1_FA FuelTrimSystemB2_FA EngineMisfireDetected_FA EthanolCompositionSensor_FA P013C, P013D, P014B, P2272 or P2273 10.0 volts < system voltage< 32.0 volts = Valid = Not Valid = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. = False = enabled = P2270 and P2272 (if applicable) ≤ 8 cylinders ons are met: entered	Required	mum.
					(wo driver initiated	pedal input).	ļ	
O2 Sensor Delayed Response Lean to Rich Bank 2 Sensor 2	P014B	an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which increases the delivered A/F ratio to	Post O2 sensor cannot go above the threshold voltage. AND The Accumulated mass air flow monitored during the Delayed Response Test is greater than the threshold.	1) Post O2S signal < 350 mvolts AND 2) Accumulated air flow during lean to rich test > 515 grams.	B2S2 Failed this key cycle System Voltage Learned heater resistance ICAT MAT Burnoff delay	TPS_ThrottleAuthorityDefaulted ECT_Sensor_FA IAT_SensorFA MAF_SensorFA AIR System FA FuelInjectorCircuit_FA FuelTrimSystemB1_FA FuelTrimSystemB2_FA EngineMisfireDetected_FA EthanolCompositionSensor_FA P013C, P013D, P014A, P2272 or P2273 10.0 volts < system voltage< 32.0 volts = Valid	Frequency: Once per trip Note: if NaPOPD_b_ ResetFastRe spFunc= FALSE for the given Fuel Bank OR NaPOPD_b_ RapidRespo nseActive = TRUE, multiple tests per trip are allowed	2 trips Type B

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Monitor Strategy Description	Mairunction Criteria	Value	Green Cat System Condition Green Cat System Condition Low Fuel Condition Diag Post fuel cel DTC's Passed	Conditions = Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab. is Not Valid, System is not valid until accumulated airflow is greater than 720000.0 grams. Airflow accumulation is only enabled when estimated Cat temperature is above 600 Deg C. (Note: This feature is only enabled when the vehicle is new and cannot be enabled in service.) = False = enabled = P2270 (and P2272 (if applicable)) = P013E (and P014A (if	Required	MIL illum.
					DTC's Passed DTC's Passed DTC's Passed Number of fueled cylinders	= P013A (and P013C (if applicable)) = P2271 (and P2273 (if applicable)) ≥ 0 cylinders		
					After above conditi		1	!
					Fuel Enrich mod	e entered.		
					During test: Fuel EQR must stay between:	0.95 <= EQR <= 1.10		
O2S Circuit Low Voltage Bank 2 Sensor 1	P0151	This DTC determines if the O2 sensor circuit is shorted to low.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is < 40 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAP_SensorFA AIR System FA	285 failures out of 350 samples Frequency: Continuous	2 trips Type B
					AIR intrusive test Fuel intrusive test Idle intrusive test EGR intrusive test EGR Device Contro Idle Device Contro Fuel Device Contro AIR Device Contro Low Fuel Condition Diag Equivalence Ratio	= Not active = Not active = Not active 10.0 volts < system voltage< 32.0 volts = Not active = Not active = Not active = Not active = Not active	in 100 milli - second loop	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel Condition	= TRUE		
					All of the above	mot for	1	
						> 5.0 seconds		
O2S Circuit High	P0152	This DTC determines if the	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is > 1050	No Active DTC's	TPS_ThrottleAuthorityDefaulted	100 failures	2 trips Type
Voltage Bank 2 Sensor 1	10132	O2 sensor circuit is shorted to high.	ineasure Oxygen Sensor Signal.	mvolts	NO ACTIVE DICS	MAP_SensorFA	out of 125 samples	В
						MAF_SensorFA EvapPurgeSolenoidCircuit_FA	Frequency: Continuous in 100 milli - second loop	
						EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA EvapEmissionSystem_FA	second loop	
					AIR intrusive test Fuel intrusive test	= Not active		
					Idle intrusive test EGR intrusive test System Voltage	= Not active 10.0 volts < system voltage< 32.0		
					EGR Device Control Idle Device Control Fuel Device Control	= Not active = Not active		
					AIR Device Control Low Fuel Condition Diag	= Not active		
					Throttle Position Fuel Control State	0.0 % <= Throttle <= 70.0 %		
					Closed Loop Active All Fuel Injectors for active Cylinders	= TRUE		
						Ethanol <= 87%		
					All of the above	e met for		
					Time	> 2 seconds		
O2S Slow Response Bank 2 Sensor 1	P0153	This DTC determines if the O2 sensor response time is degraded.	The average response time is caluclated over the test time, and compared to the threshold.	Refer to "P0153 - O2S Slow Response Bank 2 Sensor 1" Pass/Fail Threshold table in the Supporting Tables tab.	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAP_SensorFA	Sample time is 60 seconds	2 trips Type B
			Or	S/T L/R switches < 3, or S/T R/L switches < 3		IAT_SensorFA ECT_Sensor_FA AmbientAirDefault MAF_SensorFA	Frequency: Once per trip	
			If Slope Time L/R or R/L Switches are below the threshold.	The test averages the signal response time over 60.0 seconds		EvapPurgeSolenoidCircuit_FA EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Оузісні	Ooue	Description	Silteria	when the signal is transitioning	i ai ailletei s	EvapEmissionSystem_FA	Required	muni.
				between 600 mvolts and 300		FuelTankPressureSnsrCkt_FA		
				mvolts. An average rich to lean		FuelInjectorCircuit_FA		
				and lean to rich time are each		AIR System FA		
				calculated separately				
				calculated Separately		EthanolCompositionSensor_FA		
						EngineMisfireDetected_FA		
					Bank 2 Sensor 1 DTC's not active			
						10.0 volts < system voltage< 32.0		
					System Voltage	volts		
					EGR Device Control			
					Idle Device Control			
					Fuel Device Control	= Not active		
					AIR Device Control	= Not active		
					Low Fuel Condition Diag	= False		
						= Not Valid, See definition of		
						Multiple DTC Use_Green		
						Sensor Delay Criteria (B1S1,		
					Green O2S Condition	B2S1) in Supporting Tables tab.		
					O2 Heater on for			
					Learned Htr resistance			
					Engine Coolant			
						> -40 °C		
					Engine Run Time			
					Time since any AFM status change			
					Time since Purge On to Off change	> 0.0 seconds		
					Time since Purge Off to On change			
					Purge duty cycle	>= 0 % duty cycle		
						20 gps <= engine airflow <= 55		
					Engine airflow	gps		
						1200 <= RPM <= 3000		
						< 87 % Ethanol		
						> 70 kpa		
					Throttle Position			
					Low Fuel Condition Diag			
					Fuel Control State			
					Closed Loop Active			
					LTM fuel cell			
					Transient Fuel Mass	<= 100.0 mgrams		
					Baro	= Not Defaulted		1
					Fuel Control State	not = Power Enrichment		
						DFCO not active		I
					Commanded Proportional Gain			
					Commanded i roportional Cam	Z= 0.0 70		
					All of the above		1	
							ļ	
					Time	> 3.5 seconds		
	P0154	This DTC determines if the	Measure Oxygen Sensor Signal.	350 mvolts < Oxygen Sensor	No Active DTC's	TPS_ThrottleAuthorityDefaulted	400 failures	2 trips Typ
sufficient Activity		O2 sensor circuit is open.		signal < 550 mvolts			out of 500	В
ank 2 Sensor 1						l <u>.</u>	samples.	1
						MAF_SensorFA		
							Minimum of 0	
							delta TPS	1
							changes	l
							required to	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
						10.0 volts < system voltage< 32.0	Delta TPS is incremented when the TPS % change >= 0.0 %	
					Heater Warm-up delay		Frequency: Continuous	
					Predicted Exhaust Temp (by location) Engine Run Time Fuel	= Wamed Up > 300 seconds <= 87 % Ethanol	100msec loop	
O2S Heater Performance Bank 2 Sensor 1	P0155	This DTC determines if the O2 sensor heater is functioning properly by	Measured Heater Current.	Measured Heater current < 0.3 amps -OR-	No Active DTC's	ECT_Sensor_FA	8 failures out of 10 samples	2 trips Type B
		monitoring the current through the heater circuit.		Measured Heater current > 3.1 amps	System Voltage	10.0 volts < system voltage< 32.0 volts	Frequency: 1 tests per	
				Heater Warm-up delay	= Complete	trip 5 seconds delay between tests and 1 second		
					B2S1 O2S Heater Duty Cycle O2S Heater device control		execution rate	
					All of the above]	
						> 120 seconds		
O2S Circuit Low Voltage Bank 2 Sensor 2	P0157	This DTC determines if the O2 sensor circuit is shorted to low.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is < 50 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAP_SensorFA AIR System FA	320 failures out of 400 samples Frequency: Continuous	2 trips Type B
					AIR intrusive test Fuel intrusive test Idle intrusive test	= Not active	in 100 milli - second loop	
					System Voltage EGR Device Control Idle Device Control Fuel Device Control AIR Device Control	= Not active 10.0 volts < system voltage< 32.0 volts = Not active = Not active = Not active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					Throttle Position Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel Condition	0.9922 ≤ equiv. ratio ≤ 1.0137 3 % <= Throttle <= 70 % = Closed Loop = TRUE		
					All of the above		j	
						> 5.0 seconds		
O2S Circuit High Voltage Bank 2 Sensor 2	P0158	This DTC determines if the O2 sensor circuit is shorted to high.	Measure Oxygen Sensor Signal.	Oxygen Sensor signal is > 1050 mvolts	AIR intrusive test Fuel intrusive test Idle intrusive test Idle intrusive test EGR intrusive test EGR pevice Control Idle Device Control AIR Device Control AIR Device Control Low Fuel Condition Diag Equivalence Ratio Throttle Position Fuel Control State Fuel Control State Fuel Control State Closed Loop Active All Fuel Injectors for active Cylinders Fuel State Fuel Condition All of the above	= Not active = Not active = Not active 10.0 volts < system voltage< 32.0 volts = Not active = Not active = Not active = Not active = False 0.9922 ≤ equiv. ratio ≤ 1.0137 3.0 % <= Throttle <= 70.0 % = Closed Loop not = Power Enrichment = TRUE Enabled (On) DFCO not active Ethanol <= 87%	100 failures out of 125 samples Frequency: Continuous in 100 milli - second loop	2 trips Type B
						> 2 seconds		
O2 Sensor Delayed Response Rich to Lean Bank 1 Sensor 1		This DTC determines if the pre catalyst O2 sensor has an initial delayed response to an A/F change from Rich to Lean. The diagnostic is an intrusive test which runs in a DFCO mode to achieve the required response.	The EWMA of the Pre O2 sensor normalized R2L time delay value OR [The Accumulated time monitored during the R2L Delayed Response Test (Gross failure).	> 0.50 EWMA (sec)		TPS_ThrottleAuthorityDefaulted MAP_SensorFA IAT_SensorFA ECT_Sensor_FA AmbientAirDefault MAF_SensorFA EvapPurgeSolenoidCircuit_FA EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA	Frequency: Once per trip Note: if NaESPD_b_ FastInitRespl sActive = TRUE for the given Fuel Bank OR	1 trips Type A EWMA

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
				Value 2 2.00 Seconds	System Voltage EGR Device Control Idle Device Control AIR Device Control AIR Device Control Low Fuel Condition Diag Green O2S Condition O2 Heater (pre sensor) on for Learned Htr resistance Engine Coolant IAT Engine run Accum Engine Speed to initially enable test Engine Speed range to keep test enabled (after initially enabled) Engine Airflow Vehicle Speed to initially enable test	Conditions EvapEmissionSystem_FA FuelTankPressureSnsrCkt_FA FuelInjectorCircuit_FA AIR System FA FuelTrimSystemB1_FA FuelTrimSystemB2_FA EthanolCompositionSensor_FA EngineMisfireDetected_FA P0131 P0132 P0134 10.0 < Volts < 32.0 Not active Not active Not active Not active Solve So		
					Vehicle Speed range to keep test enabled (after initially enabled) Closed loop integral Closed Loop Active Evap	41.0 ≤ MPH ≤ 87.0 mph 0.74 ≤ C/L Int ≤ 1.08 = TRUE not in control of purge not in estimate mode = enabled		
					All post sensor heater delays			
					O2S Heater (post sensor) on Time Predicted Catalyst temp Fuel State			
					All of the above met for at least 2.0 second intrusive stage is		1	
					Pre O2S voltage B1S1 at end of Cat Rich	≥ 690 mvolts		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Cyclem	Jour	Decomption	Ontona	Value		= DFCO active	Roquirou	illulli.
					Number of fueled cylinders		4	
					After above conditions are entered (wo driver initia			
					entered (wo driver initia	пеа реал приту.	┩	
O2 Sensor Delayed Response Lean to Rich Bank 1 Sensor 1		This DTC determines if the pre catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which runs in an	The EWMA of the Pre O2 sensor normalized L2R time delay value OR [The Accumulated time monitored during	> 0.50 EWMA (sec)	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAP_SensorFA IAT_SensorFA ECT_Sensor_FA AmbientAirDefault MAF_SensorFA EvapPurqeSolenoidCircuit FA	Frequency: Once per trip Note: if NaESPD_b_ FastInitRespl sActive =	1 trips Type A EWMA
		enriched fuel mode to achieve the required response.	the L2R Delayed Response Test (Gross failure).			EvapPurgeSolenoidCircuit_FA EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA	TRUE for the given Fuel Bank OR	
			AND Pre O2 sensor voltage is below]	≥ 2.00 Seconds		EvapEmissionSystem_FA FuelTankPressureSnsrCkt_FA FuelInjectorCircuit_FA	NaESPD_b_ RapidRespo nselsActive = TRUE,	
			OR At end of Cat Rich stage the Pre O2	< 350 mvolts		AIR System FA FuelTrimSystemB1_FA FuelTrimSystemB2_FA EthanolCompositionSensor_FA	TROE,	
			sensor output is			EngineMisfireDetected_FA P0131 P0132		
				< 690 mvolts	EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag	= Not active = Not active = Not active = False = Not Valid, See definition of Multiple DTC Use_Green		
					O2 Heater (pre sensor) on for Learned Htr resistance Engine Coolant IAT	= Valid > 50 °C > -40 °C = DFCO inhibit		
					When above condit		1	
					Fuel Enrich mode enter	red (Test begins)	-	
					During test: Engine Airflow must stay between:	3 ≤ gps ≤ 22		
					and the delta Engine Airflow over 12.5msec must be :	<= 5.0 gps]	
O2 Sensor Delayed Response Rich to Lean Bank 2 Sensor 1		This DTC determines if the pre catalyst O2 sensor has an initial delayed response to an A/F change from Rich to Lean. The diagnostic is an intrusive test which runs in a	The EWMA of the Pre O2 sensor normalized R2L time delay value OR The Accumulated time monitored during	> 0.50 EWMA (sec)		TPS_ThrottleAuthorityDefaulted MAP_SensorFA IAT_SensorFA ECT_Sensor_FA AmbientAirDefault MAF_SensorFA	Frequency: Once per trip Note: if NaESPD_b_ FastInitRespl sActive =	1 trips Type A EWMA

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
		DFCO mode to achieve the required response.	the R2L Delayed Response Test (Gross failure).	≥ 2.00 Seconds		EvapPurgeSolenoidCircuit_FA EvapFlowDuringNonPurge_FA EvapVentSolenoidCircuit_FA EvapSmallLeak_FA EvapEmissionSystem_FA FuelTankPressureSnsrCkt_FA FuelInjectorCircuit_FA AIR System FA	TRUE for the given Fuel Bank OR NaESPD_b_RapidRespo nselsActive = TRUE,	
				> 550 mvolts	EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag Green O2S Condition O2 Heater (pre sensor) on for Learned Htr resistance Engine Coolant	FuelTrimSystemB1_FA FuelTrimSystemB2_FA EthanolCompositionSensor_FA EngineMisfireDetected_FA P0131 P0132 P0134 10.0 < Volts < 32.0 Not active Not active Not active Shot active False Not Valid, See definition of Multiple DTC Use_Green Sensor Delay Criteria (B1S1, B2S1) in Supporting Tables tab. 40 seconds Valid 50 °C - 40 °C > 120 seconds 1150 ≤ RPM ≤ 2500		
					Engine Airflow Vehicle Speed to initially enable test Vehicle Speed range to keep test enabled (after initially enabled)	1075 ≤ RPM ≤ 2650 3 ≤ gps ≤ 20 43.5 ≤ MPH ≤ 82.0		ı
					Closed Loop Active Evap	not in control of purge not in estimate mode		ı
					EGR Intrusive diagnostic			İ
					All post sensor heater delays O2S Heater (post sensor) on Time Predicted Catalyst temp Fuel State			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					intrusive stage is	requested.		
						≥ 690 mvolts = DFCO active ≤ 6 cylinders		
					After above conditions are	mot: DECO Modo	4	
					entered (wo driver initia		_	
O2 Sansar Dalayad	D015D	This DTC determines if the	The EWMA of the Bro O2 concer		No Activo DTC's	TDS Throttle Authority Defaulted	Fraguenos:	1 tring Type
O2 Sensor Delayed Response Lean to Rich Bank 2 Sensor 1	P015D	This DTC determines if the pre catalyst O2 sensor has an initial delayed response to an A/F change from Lean to Rich. The diagnostic is an intrusive test which runs in an enriched fuel mode to achieve the required response.	OR [The Accumulated time monitored during the L2R Delayed Response Test (Gross failure).	> 0.50 EWMA (sec)	System Voltage EGR Device Control Idle Device Control Fuel Device Control AIR Device Control Low Fuel Condition Diag Green O2S Condition	= Not active = Not active = Not active = False = Not Valid, See definition of Multiple DTC Use_Green	Frequency: Once per trip Note: if NaESPD_b_ FastInitRespl sActive = TRUE for the given Fuel Bank OR NaESPD_b_ RapidRespo nselsActive = TRUE,	1 trips Type A EWMA
					O2 Heater (pre sensor) on for Learned Htr resistance Engine Coolant IAT Fuel State Number of fueled cylinders When above conditi Fuel Enrich mode enter	= Valid > 50 °C > -40 °C = DFCO inhibit ≥ 2 cylinders ions are met: red (Test begins) 3 ≤ gps ≤ 22		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
O2S Circuit Insufficient Activity Bank 2 Sensor 2	P0160	This DTC determines if the O2 sensor circuit is open.	Measure Oxygen Sensor Signal.	380 mvolts < Oxygen Sensor signal < 520 mvolts	No Active DTC's	TPS_ThrottleAuthorityDefaulted MAF_SensorFA	590 failures out of 740 samples.	2 trips Type B
						EthanolCompositionSensor_FA	Minimum of 0 delta TPS changes required to report fail. Delta TPS is incremented when the TPS %	
					System Voltage	10.0 volts < system voltage< 32.0 volts	change >= 0.0 %	
					Heater Warm-up delay Predicted Exhaust Temp (by location)		100msec loop	
					Engine Run Time		Frequency: Once per trip for post sensors	
O2S Heater Performance Bank 2 Sensor 2	P0161	This DTC determines if the O2 sensor heater is functioning properly by	Measured Heater Current.	Measured Heater current < 0.3 amps -OR-	No Active DTC's	ECT_Sensor_FA	8 failures out of 10 samples	2 trips Type B
		monitoring the current through the heater circuit.		Measured Heater current > 2.9 amps	System Voltage	10.0 volts < system voltage< 32.0 volts	Frequency: 1 tests per	
					Heater Warm-up delay	= Complete	trip 5 seconds delay between tests and 1 second	
					B2S2 O2S Heater Duty Cycle O2S Heater device control		execution rate	
					All of the above	> 120 seconds]	
Fuel System Too Lean Bank 1	P0171	Determines if the fuel control system is in a lean condition, based on the filtered long- term and short-term fuel trim.	The filtered long-term fuel trim metric	>= Long Term Trim Lean Table	BARO Coolant Temp MAP	10 <kpa< 255<="" td=""><td>Frequency: 100 ms Continuous Loop</td><td>2 Trip(s) Type B</td></kpa<>	Frequency: 100 ms Continuous Loop	2 Trip(s) Type B
			AND The filtered short-term fuel trim metric (NOTE: any value < 0.95 effectively nullifies the short-term fuel trim criteria)	>= 0.100	Fuel Level	-20 <°C< 150 1.0 <g 510.0<br="" s<="">> 10 % or if fuel sender is faulty the diagnostic will bypass the fuel level criteria.</g>	Development data indicates that the Fuel	
						> 27.5 seconds of data must accumulate on each trip, with at least 17.5 seconds of data in the current fuel trim cell before a pass	Adjustment System Diagnostic	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	value	rarameters	or fail decision can be made.	typically enabled during 66 %	illum.
					Sometimes, certain Long-Term Fuel Trim Cells are not utilized for control and/or diagnosis	Please see "Long-Term Fuel Trim Cell Usage" in Supporting Tables Tab for a list of cells utilized for diagnosis	of the EPAIII drive cycle. This is also typical of real- world driving, however values will	
					Closed Loop Long Term FT	Enabled Enabled Please see "Closed Loop Enable Criteria" and "Long Term FT Enable Criteria" in Supporting Tables.	vary (higher or lower) based on the actual conditions present during the	
					Fuel Consumed ("Virtual Flex Fuel Sensor" applications only)	If > 0.3 liters of fuel are consumed after a refuel event then the Virtual Flex Fuel Sensor (VFFS) logic may disable Long Term FT for a few seconds while it "learns" the new ethanol concentration. (VFFS apps only)	drive cycle.	
					EGR Diag. Catalyst Diag. Post O2 Diag. Device Control EVAP Diag.	Intrusive Test Not Active Intrusive Test Not Active Intrusive Test Not Active Not Active "tank pull down" Not Active		
					No active D			
					IAC_SystemR MAP_Sens			
					MAF_Sens	orFA		
					MAF_Sensor AIR Syster			
					EvapPurgeSoleno	idCircuit_FA		
					EvapFlowDuringNo EvapVentSolenoi	dCircuit_FA		
					EvapSmallLe EvapEmissionS			
					FuelTankPressureSe	nsorCircuit_FA		
					Ethanol Composition FuelInjectorCi			
					EngineMisfireDe EGRValvePerfor	tected_FA		
					EGRValvePellol EGRValveCir MAP_EngineVac	cuit_FA		
					AmbientAirDel O2S_Bank_1_Se	fault_NA		
iel System Too	P0172	Determines if the fuel control	Passive Test: The filtered Non-Purge	<= Non Purge Rich Limit Table		Secondary Parameters and	Frequency:	2 Trip(s)
ich Bank 1		system is in a rich condition, based on the filtered long-	Long Term Fuel Trim metric			Enable Conditions are identical to those for P0171, with the	100 ms Continuous	Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum
		term fuel trim metric.				exception that fuel level is not	Loop	
		There are two methods to	AND			considered.	Development	l
		determine a Rich fault. They	The filtered Short Term Fuel Trim metric	<= 2.000			data	l
		are Passive and Intrusive. A	(NOTE: any value > 1.05 effectively				indicates that	l
		Passive Test decision cannot	nullifies the short-term fuel trim criteria)				the Fuel	I
		be made when Purge is					Adjustment	I
		enabled. The Intrusive test is					System	I
		described below:					Diagnostic (FASD) is	I
							typically	I
			Intrusive Test: The filtered Purge Long	<= Purge Rich Limit Table			enabled	I
			Term Fuel Trim metric				during 66 %	1
							of the EPAIII	1
			AND				drive cycle.	I
			The filtered Non-Purge Long Term Fuel	<= Non Purge Rich Limit Table			This is also typical of real-	I
			Trim metric	_			world driving,	1
							however	I
			AND The filtered Short Term Fuel Trim metric	<= 2.000			values will	ı
			(NOTE: value > 1.05 indicates cal-out)	All of above for			vary (higher	ı
			(14012. Value > 1.50 maioatos sar sat)	3 out of 5 intrusive segments			or lower)	l
				Ŭ			based on the	l
							actual conditions	l
		Intrusive Test:	Segment Def'n:				present	l
			Segments can last up to 30 seconds and				during the	1
			are separated by the lesser of 20				drive cycle.	ı
		Purge Rich Limit Table,	seconds of purge-on time or enough time					1
		purge is ramped off to	to purge 16 grams of vapor.					ı
		determine if excess purge						ı
		vapor is the cause of the rich condition.	A maximum of 5 completed segments or 20 attempts are allowed for each intrusive					1
		If the filtered Purge-on Long						l
		Term fuel trim > Purge Rich	toot.					1
			After an intrusive test report is completed,					l
			another intrusive test cannot occur for					ı
			300 seconds to allow sufficient time to					ı
		trim metric.	purge excess vapors from the canister. During this period, fuel trim will pass if the					l
		Performing intrusive tests too	filtered Purge-on Long Term fuel trim >					1
			Purge Rich Limit Table for at least 200					l
		EVAP and EPAIII emissions,	seconds, indicating that the canister has					l
		and the execution frequency	been purged.					l
		of other diagnostics.						ı
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Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Fuel System Too Lean Bank 2	P0174	Determines if the fuel control system is in a lean condition, based on the filtered long-term and short-term fuel trim.	The filtered long-term fuel trim metric AND The filtered short-term fuel trim metric (NOTE: any value < 0.95 effectively nullifies the short-term fuel trim criteria)	>= Long Term Trim Lean Table >= 0.100	BARC Coolant Temp MAF Inlet Air Temp MAF	375 <rpm< 7000=""> 70 kPa -40 <°C< 150 10 <kpa< -20="" .0="" 1="" 150="" 255="" <g="" <°c<="" s=""> < 10.0 10 full the full th</kpa<></rpm<>	Frequency: 100 ms Continuous Loop Development data indicates that	2 Trip(s) Type B
					Long Term Fuel Trim data accumulation:	level criteria. > 27.5 seconds of data must accumulate on each trip, with at least 17.5 seconds of data in the current fuel trim cell before a pass or fail decision can be made.	the Fuel Adjustment System Diagnostic (FASD) is typically enabled during 66 %	
					Sometimes, certain Long-Term Fuel Trim Cells are not utilized for control and/or diagnosis	Please see "Long-Term Fuel Trim Cell Usage" in Supporting Tables Tab for a list of cells utilized for diagnosis	of the EPAIII drive cycle. This is also typical of real- world driving, however values will	
					Closed Loop Long Term FT	Enabled Enabled Please see "Closed Loop Enable Criteria" and "Long Term FT Enable Criteria" in Supporting Tables.	vary (higher or lower) based on the actual conditions present during the	
					Fuel Consumed ("Virtual Flex Fuel Sensor" applications only)	If > 0.3 liters of fuel are consumed after a refuel event then the Virtual Flex Fuel Sensor (VFFS) logic may disable Long Term FT for a few seconds while it "learns" the new ethanol concentration. (VFFS apps only)		
					EGR Diag. Catalyst Diag. Post O2 Diag. Device Control EVAP Diag.	Intrusive Test Not Active Intrusive Test Not Active Intrusive Test Not Active Not Active "tank pull down" Not Active		
			No active I IAC_SystemF MAP_Sens MAF_Sens MAF_Senson AIR Syster	RPM_FA sorFA sorFA TFTKO				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					EvapPurgeSoleno EvapFlowDuringN EvapVentSolenoi EvapEmissionS FuelTankPressureSe Ethanol Compositic FuelInjectorCi EngineMisfireDe EGRValvePerfor EGRValveCir MAP_EngineVac AmbientAirDel O2S_Bank_2_Se	idCircuit_FA onPurge_FA dCircuit_FA onPurge_FA dcircuit_FA sak_FA sorCircuit_FA nsorCircuit_FA ncuit_FA tected_FA mance_FA cuit_FA uumStatus ault_NA		
Fuel System Too Rich Bank 2	P0175	Determines if the fuel control system is in a rich condition, based on the filtered long-term fuel trim metric.	Passive Test: The filtered Non-Purge Long Term Fuel Trim metric	<= Non Purge Rich Limit Table		Secondary Parameters and Enable Conditions are identical to those for P0174, with the exception that fuel level is not considered.	Frequency: 100 ms Continuous Loop	2 Trip(s) Type B
		There are two methods to determine a Rich fault. They are Passive and Intrusive. A Passive Test decision cannot be made when Purge is enabled. The Intrusive test is described below:	AND The filtered Short Term Fuel Trim metric (NOTE: any value > 1.05 effectively nullifies the short-term fuel trim criteria)	<= 2.000			Development data indicates that the Fuel Adjustment System Diagnostic (FASD) is	
			Intrusive Test: The filtered Purge Long Term Fuel Trim metric	<= Purge Rich Limit Table			typically enabled during 66% of the EPAIII drive cycle.	
			AND The filtered Non-Purge Long Term Fuel Trim metric AND	<= Non Purge Rich Limit Table			This is also typical of real- world driving, however	
			The filtered Short Term Fuel Trim metric (NOTE: value > 1.05 indicates cal-out)	<= 2.000 All of above for 3 out of 5 intrusive segments			values will vary (higher or lower) based on the actual conditions	
		Term fuel trim metric is <= Purge Rich Limit Table, purge is ramped off to determine if excess purge vapor is the cause of the rich	Segment Def'n: Segments can last up to 30 seconds and are separated by the lesser of 20 seconds of purge-on time or enough time to purge 16 grams of vapor. A maximum of 5 completed segments or				present during the drive cycle.	
			20 attempts are allowed for each intrusive test. After an intrusive test report is completed, another intrusive test cannot occur for 300 seconds to allow sufficient time to purge excess vapors from the canister.					

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
			Criteria	Value		Conditions		illum.
System	Code	Description	During this period, fuel trim will pass if the	value	Parameters	Conditions	Required	mum.
		Porforming intrusive tests too	filtered Purge-on Long Term fuel trim >					
			Purge Rich Limit Table for at least 200					
			seconds, indicating that the canister has					
		and the execution frequency	been purged.					
		of other diagnostics.						
								1
								1
								I
								I
								I
	P0178	Detects Out of Range Low	Flex Fuel Sensor Output Frequency				50 failures	
Sensor Circuit Low		Frequency Signal		< 45 Hertz	Powertrain Relay		out of 63	2 trip(s)
						< 32.0 Volts	samples	
		The ethanol sensor is					100 ms loop	Type B
		designed to measure ethanol					Continuous	
		concentrations from E0						
		(50Hz) to E100 (150Hz), with						
		a specified accuracy of 5%						
		ethanol (i.e. 5Hz). Therefore,						
		values less than 45Hz or						
		greater than 155Hz are						
		considered as faults.						
								1
								I
								1
								I
								I
Tuel Comp iti	D0470	Data ata Out of Darana III	Flow Fuel Conser Outrant Francisco				FO foiltime	-
	P0179	Detects Out of Range High	Flex Fuel Sensor Output Frequency	455 Harde	Barrada B. I	44.03/-14-	50 failures	0.4==-()
Sensor Circuit		Frequency Signal		> 155 Hertz	Powertrain Relay		out of 63	2 trip(s)
ligh				<= 185 Hertz		< 32.0 Volts	samples	I
		The ethanol sensor is					100 ms loop	Type B
		designed to measure ethanol					Continuous	I
		concentrations from E0						I
		(50Hz) to E100 (150Hz), with						
		a specified accuracy of 5%						
		ethanol (i.e. 5Hz). Therefore,						
I		values less than 45Hz or						
					i e e e e e e e e e e e e e e e e e e e		1	1
		greater than 155Hz are						
		considered as faults.						

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Engine Oil Temperature (EOT) Circuit Low	P0197	Detects a short to ground in the Engine Oil Temperature (EOT) Sensor signal	Engine Oil Temperature Sensor (EOT) Circuit Resistance	< 25 ohms	Diagnostic enabled/disabled	Enabled	20 failures out of 50 samples Sampled every 1 second	1 trip(s) Type C
Engine Oil Temperature (EOT) Circuit High	P0198	Detects an open circuit or continuous short to high in the Engine Oil Temperature (EOT) Sensor signal	Engine Oil Temperature Sensor (EOT) Circuit Resistance	> 450000 ohms	Diagnostic enabled/disabled Engine Run Time OR ECT Sensor Circuit Resistance	Enabled > 20.0 seconds >= -20 Deg C	20 failures out of 50 samples Sampled every 1 second	1 trip(s) Type C
Injector 1	P0201	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B
Injector 2	P0202	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B
Injector 3	P0203	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample	2 trips Type B
Injector 4	P0204	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B
Injector 5	P0205	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B
Injector 6	P0206	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Injector 7	P0207	This DTC checks the circuit	The ECM detects that the commanded	value	Powertrain Relay Voltage within range	11 volts ≤ Voltage ≤ 32 volts	20 failures	2 trips Type
ilijectoi /	F0207	for electrical integrity during operation.	state of the driver and the actual state of the control ciruit do not match		and stable according to Enable Conditions	greater than 5 seconds	out of 25 samples 250 ms	B
					Engine Running		/sample Continuous	
Injector 8	P0208	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control ciruit do not match		Powertrain Relay Voltage within range and stable according to Enable Conditions Engine Running	11 volts ≤ Voltage ≤ 32 volts greater than 5 seconds	20 failures out of 25 samples 250 ms /sample Continuous	2 trips Type B
TPS2 Circuit	P0220	Detects a continuous or intermittent short or open in TPS2 circuit on the secondary processor but sensor is in range on the primary processor	Secondary TPS2 Voltage < or Secondary TPS2 Voltage >	0.25 4.59		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions No 5 V reference #2 error	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary processor	Trips: 1 Type: A MIL: YES
						No 5 V reference #2 DTC (P0651)		
TPS2 Circuit Low	P0222	Detects a continuous or intermittent short or open in TPS2 circuit on both processors or just the primary processor	Primary TPS2 Voltage <	0.25		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	79 / 159 counts; 57 counts continuous; 3.125 ms /count in the primary	Trips: 1 Type: A MIL: YES
			Secondary TPS2 Voltage <	0.25		No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary	
TPS2 Circuit High	P0223	Detects a continuous or intermittent short in TPS1 circuit on both processors or just the primary processor	Primary TPS2 Voltage >	4.59		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	79 / 159 counts; 57 counts continuous; 3.125 ms /count in the primary	Trips: 1 Type: A MIL: YES
			Secondary TPS2 Voltage >	4.59		No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary	
Fuel Pump Primary Circuit	P0230	This DTC checks the circuit for electrical integrity during	The ECM detects that the commanded state of the driver and the actual state of		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	8 failures out of 10	2 trips Type B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
(ODM)		operation.	the control circuit do not match.				samples	
					Engine Speed	≥ 0 RPM	250 ms /sample	
							Continuous	
Supercharger Intercooler Coolant Pump Control Circuit	P023A	Electrical Integrity of Supercharger Intercooler Coolant Pump Control Circuitry	ECM detects that commanded and actual states of output driver do not match		Ignition Voltage Ignition Voltage Engine Speed	>= 11.00 Volts <= 32.00 Volts > 0	20 failures out of 25 samples	Type B 2 trips
							every 250 msec	
Random Misfire Detected	P0300	These DTC's will determine if a random or a cylinder specific misfire is occurring	Deceleration index vs. Engine Speed Vs Engine load	(>Idle SCD AND > Idle SCD ddt Tables) OR	Engine Run Time ECT	> 2 crankshaft revolutions -7 °C < ECT < 130 °C	Emission Exceedence = any (5)	2 Trips Type B
Cylinder 1 Misfire Detected	P0301	by monitoring crankshaft velocity	Deceleration index calculation is tailored to specific veh. Tables used are 1st	(>SCD Delta AND > SCD Delta ddt Tables) OR	If ECT at startup	<-7 °C	failed 200 rev blocks out of (16)	(Mil Flashes with Catalyst Damaging
Cylinder 2 Misfire Detected	P0302		tables encountered that are not max of range. Undetectable region at a given speed/load point is where all tables are	(>Idle Cyl Mode AND > Idle Cyl Mode ddt Tables) OR	ECT	21 °C < ECT	200 rev block tests	Misfire)
Cylinder 3 Misfire Detected	P0303		max of range point. see Algorithm Description Document for additional details.	(>Cyl Mode AND > Cyl Mode ddt Tables) OR	System Voltage + Throttle delta - Throttle delta	< 130 °C 9.00 <volts< 32.00<br="">< 75.00 % per 25 ms < 75.00 % per 25 ms</volts<>	Failure reported for (1)	
Cylinder 4 Misfire Detected	P0304			(>Rev Mode Table) OR (> AFM Table in Cyl Deact mode)	- Tillotte della	12 75.00 % per 25 ms	Exceedence in 1st (16) any Catalyst	
Cylinder 5 Misfire Detected	P0305						Exceedence = (1) 200 rev block as data	
Cylinder 6 Misfire Detected	P0306						supports for catalyst	
Cylinder 7 Misfire Detected	P0307		Misfire Percent Emission Failure	≥ 0.81 % P0300			damage.	
Cylinder 8 Misfire Detected	P0308		Threshold Misfire Percent Catalyst Damage	≥ 0.81 % emission >"Catalyst Damaging Misfire	Engine Speed	> 1200 rpm AND	reported with (1 or 3) Exceedence	
				Percentage" Table whenever secondary conditions are met.	Engine Load Misfire counts	> 20 % load AND < 180 counts on one cylinder	s in FTP, or (1)	
					(at low speed/loads, one cylinder may not cause cat damage)		Exceedence outside FTP.	
			When engine speed and load are less than the FTP cals (3) catalyst damage exceedences are allowed.	≤ 0 FTP rpm AND ≤ 0 FTP % load				
							Continuous	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	value	Engine Speed	375 < rpm <	4 cycle delay	mum.
						5600 - 400	' '	
						Engine speed limit is a function of		
						inputs like Gear and temperature		
						typical Engine Speed Limit =5600rpm		
						=3000ipiii		
				disable conditions:	No active DTCs:		4 cycle delay	
				conditions.	No active D103.	TPS_FA	4 Cycle delay	
						EnginePowerLimited		
						MAF_SensorTFTKO MAP_SensorTFTKO		
						IAT_SensorTFTKO		
						ECT_Sensor_Ckt_TFTKO		
						5VoltReferenceB_FA CrankSensorTestFailedTKO		
						CrankSensorFaultActive		
						CrankIntakeCamCorrelationFA		
						CrankExhaustCamCorrelationFA		
						CrankCamCorrelationTFTKO AnyCamPhaser_FA		
						AnyCamPhaser_TFTKO		
						If Monitor Rough Road=1 and		
						RoughRoadSource="TOSS"		
						Trans_Gear_Defaulted(TCM) (Auto Trans only)		
						Clutch Sensor FA (Manual Trans		
						only)		
						Trans_Gear_Defaulted(TCM) (Auto Trans only)		
					P0315 & engine speed Fuel Level Low	> 1000 rpm	FOO evelo	
					ruei Levei Low	LowFuelConditionDiagnostic	500 cycle delay	
					Cam and Crank Sensors	in sync with each other	4 cycle delay	
					Misfire requests TCC unlock	Not honored because	4 cycle delay	
					Mising requests 100 uniock	Transmission in hot mode	- cycle uclay	
					E 10 1 011	45 10 4	4 cycle delay	
					Fuel System Status Active Fuel Management	≠ Fuel Cut Transition in progress	7 cycle delay	
					Undetectable engine speed and engine	invalid speed load range in decel	4 cycle delay	
					load region Abusive Engine Over Speed	index tables > 8192 rpm	0 cycle delay	
						· ·		
					Below zero torque (except CARB	<" Zero torque engine load" in	4 cycle delay	
					approved 3000 rpm to redline triangle.) Below zero torque:	Supporting Tables tab	4 cycle delay	
					TPS (area)	≤ 0 %	.,	
					Veh Speed EGR Intrusive test	> 30 mph Active	O evele dolo:	
					LGIV IIIIIusive lest	Active	0 cycle delay	
							4 cycle delay	
	i l				Manual Trans	Clutch shift	1	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum
		·			Throttle Position AND Automatic transmission shift Driveline Ring Filter active After a low level misfire, another misfire may not be detectable until driveline ringing ceases. If no ringing seen, stop filter early. Filter Driveline ring: Stop filter early:	> 95.00 %	7 cycle delay	
					Abnormal engine speed oscillations: (Rough road etc) Off Idle, number of consecutive decelerating cylinders after accelerating,: (Number of decels can vary with misfire detection equation) TPS Engine Speed Veh Speed SCD Cyl Mode Rev Mode	4 engine cycles after misfire 2 Engine gualen after misfire		
						> 3 % > 950 rpm > 3 mph = 4 consecutive cyls = 4 consecutive cyls		
					Rough Road Section: Monitor Rough Road RoughRoadSource IF Rough Road is monitored, then ONE of the following Rough Road Sources will be used: Rough Road Source = "TOSS" Rough Road	1 (1=Yes) FromABS		
					Rough Road	detected		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					Rough Road Source = "WheelSpeedInECM"			
					ABS/TCS system			
					RoughRoad	active		
					VSES			
						active		
					Rough Road Source = "FromABS"			
					ABS/TCS system			
					RoughRoad			
					VSES			
						detected		
Crankshaft Position	P0315	Monitor for valid crankshaft	Sum of Compensation factors	≥ 4.0040	OBD Manufacturer Enable Counter	o o	0.50 seconds	1 Trips
System Variation Not Learned		error compensation factors		OR ≤ 3.9960			Frequency	Type A
							Continuous 100 msec	
Knock Sensor (KS) Module Performance	P0324	This diagnostic will detect a failed internal ECM component associated with knock control	Any Cylinder's Avg Gain Signal	> 4.50 Volts	Engine Speed Cylinder Air Mass No Active DTC's	≥ 400 RPM > 50 milligrams KS_Ckt_Perf_B1B2_FA	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
			or All Cylinder's Raw Signals	≤ 0.20 Volts	Engine Speed Cylinder Air Mass	≥ 400 RPM > 50 milligrams	100 msec rate	
Knock Sensor (KS) Circuit Bank 1	P0325	This diagnostic checks for an open in the knock sensor		> 4.0 Volts	Diagnostic Enabled (1 = Enabled)	= 1	50 Failures out of	Type: B MIL: YES
Olicuit Barik 1		circuit	Gated Low Pass Filter Voltage	or < 1.24 Volts	Engine Speed	≥ 400 RPM	63 Samples	Trips: 2
					ECT Enginer Run Time	≥ -40 deg. C ≥ 2 seconds	100 msec	
					Power Take Off	= Not Active	rato	
Knock Sensor (KS) Performance Bank	P0326	overactive knock sensor	Knock Fast Retard (spark degrees)	> (FastRtdMax + 2.5) degrees spark	Diagnostic Enabled (1 = Enabled)	= 1	31 Failures out of	Type: B MIL: YES
1		caused by excessive knock or noisy engine components		See Supporting Tables for	Knock Detection Enabled	> 0	63 Samples	Trips: 2
				FastRtdMax		Knock Detection Enabled is calculated by multiplying the	100 msec	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
						following three factors:		
						FastAttackRate		
						FastAttackCoolGain		
						FastAttackBaroGain		
						(see Supporting Tables)		
					Engine Speed	≥ 400 RPM		
					MAP	≥ 10 kPa		
					IWAI	2 10 Kr a		
					Power Take Off	= Not Active		
nock Sensor (KS)	P0327	This diagnostic checks for an		> 2.86 Volts	ECT	≥ -40 deg. C	50 Failures	Type: B
ircuit Low Bank 1		out of range low knock sensor signal	Sensor Input Signal Line or	2.00 VOII3	Engine Run Time	≥ 2 seconds	out of	MIL: YES Trips: 2
		sensor signal	or	4 40 14 15	Valid Oil Temp Required?	= 0	63 Samples	Trips: 2
			Sensor Return Signal Line	< 1.48 Volts	(1= Yes, 0 = No)	- "		
					(100 msec	
							rate	
					If Yes:	050 4 0		
					Engine Oil Temp and	< 256 deg. C		
					ValidOilTemp Model	EngOilModeledTemp Valid		
					Tanada sanap mada			
					or	5 O'IT O		
					No OilTemp Sensor DTC's	EngOilTempSensor CircuitFA		
						CircuitrA		
					If No:			
					No Eng Oil Temp enable criteria			
nock Sensor (KS)	P0328	This diagnostic checks for an		- 2.02 Valta	ECT	≥ -40 deg. C	50 Failures	Type: B
ircuit High Bank 1		out of range high knock	Sensor Input Signal Line	< 2.02 Volts	Enginer Run Time	≥ 2 seconds	out of	MIL: YES
		sensor signal	or				63 Samples	Trips: 2
			Sensor Return Signal Line	> 3.76 Volts	Valid Oil Temp Required?	= 0		
					(1= Yes, 0 = No)			
							100 msec	
					If Yes:		rate	
					Engine Oil Temp	< 256 deg. C		
					and	1 - 2 - 2 - 3 - 2		
					ValidOilTemp Model	EngOilModeledTemp Valid		
					or			
					No OilTempSensor DTC's	EngOilTempSensor		
						CircuitFA		
					If No:			
					No Eng Oil Temp enable criteria			
nock Sensor (KS)	P0330	This diagnostic checks for an		10111	Diagnostic Enabled (1 = Enabled)		50 Failures	Type: B
ircuit Bank 2	1 0000	open in the knock sensor		> 4.0 Volts	Diagnostic Eliabled (1 – Eliabled)	= 1	out of	MIL: YES
		circuit	Gated Low Pass Filter Voltage	or			63 Samples	Trips: 2
				< 1.24 Volts	Engine Speed	≥ 400 RPM		
					ECT	≥ -40 deg. C		
	1				Enginer Run Time	≥ 2 seconds	100 msec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					Power Take Off	= Not Active		
Knock Sensor (KS) Circuit Low Bank 2	P0332	This diagnostic checks for an out of range low knock sensor signal	Sensor Input Signal Line	> 2.86 Volts	ECT Enginer Run Time	≥ -40 deg. C ≥ 2 seconds	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
			Sensor Return Signal Line	< 1.48 Volts	Valid Oil Temp Required? (1= Yes, 0 = No)	= 0		
					<u>If Yes:</u> Engine Oil Temp and	< 256 deg. C	100 msec rate	
					ValidOilTemp Model or	EngOilModeledTemp Valid		
					No OilTempSensor DTC's	EngOilTempSensor CircuitFA		
					If No: No Eng Oil Temp enable criteria			
Knock Sensor (KS) Circuit High Bank 2		This diagnostic checks for an out of range high knock sensor signal	Sensor Input Signal Line	< 2.02 Volts	ECT Engine Run Time	≥ -40 deg. C ≥ 2 seconds	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
		serisor signal	Sensor Return Signal Line	> 3.76 Volts	Valid Oil Temp Required? (1= Yes, 0 = No)	= 0		TTIPS. Z
					If Yes: Engine Oil Temp and	< 256 deg. C	100 msec rate	
					ValidOilTemp Model	EngOilModeledTemp Valid		
					or No OilTempSensor DTC's	EngOilTempSensor CircuitFA		
					If No: No Eng Oil Temp enable criteria			
Crankshaft Position CKP) Sensor A Circuit	P0335	Determines if a fault exists with the crank position	Engine-Cranking Crankshaft Test:		Engine-Cranking Crankshaft Test:		Engine- Cranking Crankshaft	Type B 2 trips
Sircuit		sensor signal	Time since last crankshaft position sensor pulse received		Starter engaged		Test: Continuous every 100	
				>= 4.0 seconds	AND (cam pulses being received		msec	
					OR (DTC P0101 AND DTC P0102	= FALSE		
			AND DTC P0103	= FALSE = FALSE				
					AND Engine Air Flow	> 3.0 grams/second))		
			Time-Based Crankshaft Test:		Time-Based Crankshaft Test:		Time-Based Crankshaft	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
			No crankshaft pulses received		Engine is Running		Test: Continuous	
				>= 0.3 seconds	Starter is not engaged		every 12.5 msec	
					No DTC Active:	5VoltReferenceB_FA		
			Event-Based Crankshaft Test:		Event-Based Crankshaft Test:		Event-Based Crankshaft	
					Engine is Running		Test:	
			No crankshaft pulses received		OR		2 failures out of 10	
					Starter is engaged		samples	
					No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA P0340 P0341	One sample per engine	
ankshaft Position	P0336	Determines if a performance	Crank Re-synchronization Test:		Crank Re-synchronization Test:	P0341	revolution Crank Re-	Type B
CKP) Sensor A erformance		fault exists with the crank position sensor signal					synchronizati on Test:	2 trips
			Time in which 25 or more crank resynchronizations occur		Engine Air Flow Cam-based engine speed	>= 3.0 grams/second	Continuous every 250	
				< 20.0 seconds		> 450 RPM	msec	
					No DTC Active:	5VoltReferenceB_FA P0335		
			Time-Based Crankshaft Test:		Time-Based Crankshaft Test:		Time-Based Crankshaft	
			No crankshaft synchronization gap found		Engine is Running		Test: Continuous every 12.5	
				>= 0.4 seconds	Starter is not engaged		msec	
					No DTC Active:	5VoltReferenceB_FA		
			Engine Start Test during Crank:		Engine Start Test during Crank:		Engine Start Test during	
			Time since starter engaged without detecting crankshaft synchronization gap		Starter engaged		Crank: Continuous every 100	
			detecting crankshart synchronization gap		AND (cam pulses being received		msec	
				>= 1.5 seconds	OR			
					(DTC P0101 AND DTC P0102	= FALSE		
					AND DTC P0103	= FALSE		
					AND	= FALSE		
					Engine Air Flow	> 3.0 grams/second))		
			Event-Based Crankshaft Test:		Event-Based Crankshaft Test:		Event-Based Crankshaft	
			Crank Pulses received in one engine		Engine is Running		Test: 8 failures out	
			revolution	< 51 seconds	OR		of 10 samples	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
.,			OR Crank Pulses received in one engine revolution	> 65 seconds	Starter is engaged No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA		
Consolidate Desiden	D0040	Determine if a fault suiste	Facility Constitute Constants Texts		Facility Countries Countries & Tarth	P0340 P0341	One sample per engine revolution	T D
Camshaft Position (CMP) Sensor Circuit Bank 1 Sensor A	P0340	Determines if a fault exists with the cam position bank 1 sensor A signal	Engine Cranking Camshaft Test: Time since last camshaft position sensor		Engine Cranking Camshaft Test: Starter engaged		Engine Cranking Camshaft Continuous	Type B 2 trips
Sensor A			pulse received	>= 5.5 seconds	AND (cam pulses being received		every 100 msec	
			OR Time that starter has been engaged without a camshaft sensor pulse		OR (DTC P0101	= FALSE		
				>= 4.0 seconds	AND DTC P0102 AND DTC P0103	= FALSE = FALSE		
					AND Engine Air Flow	> 3.0 grams/second))		
			Time-Based Camshaft Test:		Time-Based Camshaft Test:		Time-Based Camshaft Test:	
			Fewer than 4 camshaft pulses received in a time	> 3.0 seconds	Engine is Running Starter is not engaged		Continuous every 100 msec	
			5 . 5 . 10 . 1 % 5 .		No DTC Active:	5VoltReferenceA_FA	Foot Frent	
			Fast Event-Based Camshaft Test:		Fast Event-Based Camshaft Test:		Fast Event- Based Camshaft	
			No camshaft pulses received during first 24 MEDRES events		Crankshaft is synchronized		Continuous every MEDRES	
			(There are 24 MEDRES events per engine cycle)		Starter must be engaged to enable the diagnostic, but the diagnostic will not disable when the starter is disengaged		event	
					No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA CrankSensor_FA		
			Slow Event-Based Camshaft Test:		Slow Event-Based Camshaft Test:		Slow Event- Based Camshaft	
			The number of camshaft pulses received during 100 engine cycles		Crankshaft is synchronized		8 failures out of 10 samples	
				= 0	No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA CrankSensor_FA	Continuous every engine cycle	

fault exists with the cam	ance Fast Event-Based Camshaft Test:		IE . E . D . L O . L O . T .	1		
position bank 1 sensor a signal	The number of camshaft pulses received during first 24 MEDRES events is less than 2 or greater than 8		Fast Event-Based Camshaft Test: Crankshaft is synchronized Starter must be engaged to enable the diagnostic, but the diagnostic will not disable when the starter is disengaged		Fast Event- Based Camshaft Continuous every MEDRES event	Type B 2 trips
	(There are 24 MEDRES events per engine cycle)		No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA CrankSensor_FA		
	Slow Event-Based Camshaft Test: The number of camshaft pulses received		Slow Event-Based Camshaft Test: Crankshaft is synchronized		Slow Event- Based Camshaft 8 failures out	
	during 100 engine cycles	< 398 > 402	No DTC Active:	5VoltReferenceA_FA 5VoltReferenceB_FA CrankSensor_FA	of 10 samples Continuous every engine	
circuit for electrical integ during operation. Monito EST for Cylinder 1 (Cyli	rity state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	cycle 50 Failures out of 63 Samples 100 msec rate	Type: B MIL: YES Trips: 2
circuit for electrical integ during operation. Monito EST for Cylinder 2 (Cyli	rity state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples 100 msec rate	Type: B MIL: YES Trips: 2
circuit for electrical integ	rity state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
03	This diagnostic checks the circuit for electrical integration. Monito EST for Cylinder 1 (Cylin 1 and 4 for V6 with wast spark) This diagnostic checks the circuit for electrical integration. Monito EST for Cylinder 2 (Cylin 2 and 5 for V6 with wast spark) This diagnostic checks the circuit for electrical integration. Monito EST for Cylinder 2 (Cylin 2 and 5 for V6 with wast spark)	during first 24 MEDRES events is less than 2 or greater than 8 (There are 24 MEDRES events per engine cycle) Slow Event-Based Camshaft Test: The number of camshaft pulses received during 100 engine cycles OR This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 1 (Cylinders 1 and 4 for V6 with waste spark) The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match. The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match. The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match. The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.	during first 24 MEDRES events is less than 2 or greater than 8 (There are 24 MEDRES events per engine cycle) Slow Event-Based Camshaft Test: The number of camshaft pulses received during 100 engine cycles OR 1 This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 1 (Cylinders 1 and 4 for V6 with waste spark) The ECM detects that the commanded state of the circuit for electrical integrity during operation. Monitors EST for Cylinders 2 and 5 for V6 with waste spark) This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinders 2 (Cylinders 2 and 5 for V6 with waste spark) The ECM detects that the commanded state of the circuit for electrical integrity during operation. Monitors EST for Cylinders 2 (Tylinders 2 and 5 for V6 with waste spark) The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.	during first 24 MEDRES events is less than 2 or greater than 8 Stanter must be engaged to enable the diagnostic, but the diagnostic, but the diagnostic will not disable when the starter is disengaged (There are 24 MEDRES events per engine cycle) No DTC Active: Slow Event-Based Camshaft Test: The number of camshaft pulses received during 100 engine cycles OR 	during first 24 MEDRES events is less than 2 or greater than 8 Cheek than 2 or greater than 8	during first 24 MEDRES ovents is less than 2 or greater than 8 Starter must be engaged to enable the diagnostic will not disable when the strater is disengaged

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
IGNITION CONTROL #4 CIRCUIT	P0354	This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 4 (if	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
		applicable)					100 msec rate	
IGNITION CONTROL #5 CIRCUIT	P0355	This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 5 (if applicable)	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
							100 msec rate	
IGNITION CONTROL #6 CIRCUIT	P0356	This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 6 (if applicable)	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
							100 msec rate	
IGNITION CONTROL #7 CIRCUIT	P0357	This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 7 (if	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
		applicable)					100 msec rate	
IGNITION CONTROL #8 CIRCUIT	P0358	This diagnostic checks the circuit for electrical integrity during operation. Monitors EST for Cylinder 8 (if	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Engine running Ignition Voltage	> 5.00 Volts	50 Failures out of 63 Samples	Type: B MIL: YES Trips: 2
		applicable)					100 msec rate	
Catalyst System Low Efficiency Bank 1	P0420	Oxygen Storage	Normalized Ratio OSC Value (EWMA filtered)	< 0.350	Valid Idle Perio		1 test attempted per valid idle	Type A 1 Trip(s)
		with NO and O2 during lean A (I.e. Cerium Oxidation). Durin reacts with CO and H2 to rele	ns Cerium Oxide. Cerium Oxide reacts NF excursions to store the excess oxygen ng rich A/F excursions, Cerium Oxide ease this stored oxygen (I.e. Cerium o as the Oxygen Storage Capacity, or			1 < 1.24 MPH 1 > 975 RPM for a minimum of 15 seconds since end of last idle period.	period Minimum of 1 test per trip	
		OSC. CatMon's strategy is to through forced Lean and Rich	"measure" the OSC of the catalyst		Engine run time	≥ MinimumEngineRunTime, This is a function of Coolant Temperature, please see Supporting Tables	Maximum of 8 tests per trip	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illun
		1. Raw OSC Calculation = (pos	st cat O2 Resp time - pre cat O2 Resp		Tests attempted this trip		Frequency:	
		time)			The catalyst diagnostic has not yet	completed for the current trip.	Fueling	
		BestFailing OSC value from	a calibration table (based on temp and				Related :	
		exhaust gas flow)					12.5 ms	
			ased on temp and exhaust gas flow)		Catalyst Idle Condition	ons Met Criteria	12.5 1115	
					General Enable n	net and the	000	
		Normalized Ratio Calculation =	(1-2) / (3-2)		Valid Idle Period	Criteria met	osc	
		l					Measuremen	
			tially represents a good part and a ratio of		Green Converter Delay	Not Active	1 100	
		0 essentially represents a very	bad part.			-20 < ° C < 250	1	
					Intrusive test(s):		1	
					Fueltrim			
					Post O2			
					EVAP			
					EVAP			
					RunCrank Voltage	. 10.00 Valta	1 1	
					Ethanol Estimation		1 1	
		The Catalyat Manitaring Test	is done during idle. Coveral conditions			45 < ° C < 129	1	
			is done during idle. Several conditions				1 1	
			tute this test. These conditions and their		Barometric Pressure		{	
		related values are listed in t	the secondary parameters area of this		Idle Time before going intrusive is			
					Idle time is incremented if Vehicle speed			
						position < 2.00 % as identified in		
						the Valid Idle Period Criteria		
						section.		
						0.90 < ST FT < 1.10		
					Predicted catalyst temp > MinCatTemp			
					Tables" ta	ab)		
					AND			
					Engine Airflow > MinAirflowToWarmCatal	yst table (g/s) (refer to "Supporting		
					Tables" ta	ab)		
					(Based on engine coolant at the time the \	NarmedUpEvents counter resets to		
					0.)	·		
					for at least 30 seconds with a close	d throttle time < 180 seconds		
					consecutively (closed throttle considerat			
					value as stated in the Valid Idle			
					value as stated in the valid idle	reliod Ciliena Section).		
					Ales in anderste in an estate Man Wanner	U.S		
					Also, in order to increment the Warmed			
					exceed 30 cal value), either the vehicle			
					speed cal or the TPS must exceed the			
					Period Criteria sec	ction above.		
	1						j	
					Closed loop fueli	ng Enabled	1 l	
						<u> </u>	j	
					Please see "Closed Loop Enable Crite	eria" section of the "Supporting		
					Tables" tab fo	•		
					Tables" tab to	i ucialis.	j	
					1		j	
					PRNDI	_		
					is in Drive Range on an Auto	Transmission vehicle.		
					Idle Stable Criteria :: Must hold true fro	om after Catalyst Idle Conditions	1 l	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
0,010111	5546	Description	O. noria	Faide	Met to the er		required	uiii.
					iviet to trie er	id of test		
					MA	F 4.00 < q/s < 20.00	1	
					Predicted catalyst temperatur	F 4.00 < g/S < 20.00	-	
							-	
					Engine Fueling Criteria at E	seginning of lale Perioa		
							4	
					The following fueling related must a	Iso be met from between 4 and 7		
					seconds after the Catalyst Idle Condit	ions Met Criteria has been met for	r I	
					at least 4 seconds prior to a	llowing intrusive control		
						_		
					Number of pre-O2 switcher	s >= 2	1	
						g 0.960 < ST FT Avg < 1.040	1	
	 			1	Rapid Step Response (RSR) feat		1	
	 			1	land the state of			
	l			1				
					If the difference between current EV	VMA value and the current OSC	1	
					Normalized Ratio value is > 0.620 and			
					value is <	0.100		
							4	
					Maximum of 24 RSR tests to deter	ct failure when RSR is enabled.		
							1	
					Green Converter	Delay Criteria		
					This is part of the check for the Catalyst	Idle Conditions Met Criteria section		
					The diagnostic will not be enabled u	until the following has been met:	1	
					, and the second	9		
	l			1				
				1	Predicted catalyst temperature > 0 ° 0	C for 0 seconds non-continuously	1 !	
				1		2 . 2 . 2 . 2 . 2		
	l			1	Note: this feature is only enabled whe	n the vehicle is new and cannot be		
					enabled in	service		
	l			1				
				1				
	l			1		Α	-	
	 			1	PTO Not		-	
	l			1	General E		4	
	l			1	DTC's No		1	
	l			1	MAF_Ser		_	
	 			1	AmbPresDf		_	
	l			1	IAT_Sensor			
	l			1	ECT_Sens	sor_FA	1	
	 			1	O2S_Bank_1_S	ensor 1 FA	1 !	
	 			1	O2S_Bank_1_S	ensor 2 FA	1 !	
	 			1	O2S_Bank_2_S		1	
				1	O2S_Bank_2_S	ensor 2 FA	1	
	l			1	FuelTrimSyst	on301_2_1 Λ	-	
				1	FuelTrimSyst		4	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					EngineMisfireD			
					EvapPurgeSolen			
					IAC_System			
					EGRValvePerfo			
					EGRValveCi CamSens			
					CrankSensorF			
					TPS Perform			
					EnginePowe		-	
)-4-b4 O4	D0 400	O Ot	Name aliand Datin OCC Value	0.050	VehicleSpeedS	SETISOT_FA	4 44	T A
Catalyst System	P0430	Oxygen Storage	Normalized Ratio OSC Value	< 0.350			1 test	Type A
ow Efficiency			(EWMA filtered)				attempted	1 Trip(s)
ank 2							per valid idle	
							period	
				l	1		Minimum of 1	
							test per trip	
				l	1			1
							Maximum of	
				l	1		8 tests per	I
							trip	
					Valid Idle Period Criteria			
					valid idle Period Criteria		Frequency:	
							Fueling	
							Related:	
							12.5 ms	
							osc	
							Measuremen	
							ts: 100 ms	
							10. 100 1110	
							Temp	
							Prediction:	
							1000ms	
		The catalyst washcoat cont	ains Cerium Oxide. Cerium Oxide reacts		Throttle Positio	n < 2.00 %	10001113	
			A/F excursions to store the excess oxygen			d < 1.24 MPH	1	
			uring rich A/F excursions, Cerium Oxide		Engine speed	> 975 RPM for a minimum of 15	1	
			release this stored oxygen (I.e. Cerium		Engine speed	seconds since end of last idle		
			ed to as the Oxygen Storage Capacity, or			period.		
						period.		
			is to "measure" the OSC of the catalyst					
		through forced L	_ean and Rich A/F excursions		Engine run time	≥ MinimumEngineRunTime, This	1	
			0.1.16.17.6.15.6%		2.19.110 14.11 11.110	is a function of Coolant		
			e Calculation Information and Definitions =			Temperture, please see		
		1. Raw OSC Calculation = ((post cat O2 Resp time - pre cat O2 Resp	l	1	Supporting Tables		
			time)	l	1	Supporting rapies		
			om a calibration table (based on temp and					
			khaust gas flow)					
		WorstPassing OSC value	ue (based on temp and exhaust gas flow)		Tests attempted this tri	p < 255	1	
				l	The catalyst diagnostic has not yet comp		1	
		Normalized Ra	atio Calculation = (1-2) / (3-2)		l style sagnesses			
]	
			entially represents a good part and a ratio of represents a very bad part.		Catalyst Idle Conditions Met Criteria]	
		U essentially	represents a very bad part.		General Enable	met and the	1	
					Valid Idle Period			
					Green Converter Delay	Not Active	-	
					Kareen Converter Delay	INOT ACTIVE		

 Code	Description	Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
				Induction Air	-20 < ° C < 250		
				Intrusive test(s):	=Not Active		
				Fueltrim			
				Post O2			
				EVAP			
				EGR			
				RunCrank Voltage			
				Ethanol Estimation	NOT in Progress		
	The Catalyst Monitoring Test	is done during idle. Several conditions			45 < ° C < 129		
	related values are listed in t	tute this test. These conditions and their the secondary parameters area of this		Barometric Pressure	> 70 KPA		
	'	document.		Idle Time before going intrusive is	< 50 Seconds		
				Idle time is incremented if Vehicle speed	< 1.24 MPH and the throttle		
					position < 2.00 % as identified in the Valid Idle Period Criteria section.		
				Short Term Fuel Trim	0.90 < ST FT < 1.10		
				Predicted catalyst temp > MinCatTemp t Tables" ta			
				AND	,		
				Engine Airflow > MinAirflowToWarmCatal Tables" ta	ab)		
				(Based on engine coolant at the time the V 0.)	VarmedUpEvents counter resets to		
				for at least 30 seconds with a closer consecutively (closed throttle considerat value as stated in the Valid Idle	ion involves having the TPS < the		
				Also, in order to increment the Warmed exceed 30 cal value), either the vehicle speed cal or the TPS must exceed the TPs reprod Criteria sec	e speed must exceed the vehicle FPS cal as stated in the Valid Idle		
				Closed loop fuelii	ng Enabled		
				Please see "Closed Loop Enable Crite Tables" tab for			
				PRNDL	-		
				is in Drive Range on an Auto	Transmission vohiola		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
.,						,		
					Idle Stable Criteria :: Must hold true fr	om after Catalyst Idle Conditions		
					Met to the en			
					MAF	4.00 < g/s < 20.00		
					Predicted catalyst temperature	< 825 degC		
					Engine Fueling Criteria at B	eainning of Idle Period		
						-gg		
					The following fueling related must al	so be met from between 4 and 7		
					seconds after the Catalyst Idle Conditi			
					at least 4 seconds prior to al			
					at least 4 seconds prior to at	lowing intrusive control		
					Number of pre-O2 switches	S >= 2		
					Short Term Fuel Trim Ave	0.96 < ST FT Avg < 1.04		
					Rapid Step Response (RSR) featu			
					napia diop neoponoe (non) real	no viii midate matapie teoto.		
					If the difference between current EW	MA value and the current OSC		
					Normalized Ratio value is > 0.620 and			
					value is <			
					value is <	0.100		
					Maximum of 24 RSR tests to detect	t failure when PSP is anabled		
					Maximum of 24 Non tests to detec	trailure when Nort is chabled.		
					Green Converter Delay Criteria			
					This is part of the check for the Catalyst	Idle Conditions Met Criteria section		
					This is part of the check for the datalyst	ide Conditions wet Ontena section		
					The diagnostic will not be enabled u	ntil the following has been met:		
					The diagnostic will het be chabled a	Title the following had been met.		
					Predicted catalyst temperature > 0 ° C	for 0 seconds non-continuously		
					i realisted catalyst temperature > 0 C	7.01 0 3000103 HOH-COHUHUOUSIY.		
					Note: this feature is only enabled wher	the vehicle is new and cannot be		
					enabled in s			
					enabled in s	DEI VICE		
					PTO Not A	active		
					General E			
					DTC's No			
					MAF_Sens			
					AmbPresDflt			
					IAT_SensorC			
					ECT_Sens			
					O2S_Bank_1_Se			
					O2S_Bank_1_Se	ansor 2 FA		
					O2S_Bank_1_Se O2S_Bank_2_Se	neor 1 EA		
					O2S_Bank_2_Se FuelTrimSyste			
					FuelTrimSyste			
					EngineMisfireDe	etectea_FA		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Oystem	0000	Description	Ontona	Value	EvapPurgeSolenoi	dCircuit_FA	Required	man.
					IAC_SystemR			
					EGRValvePerfor		_	
					EGRValveCiro CamSenso		_	
					CrankSensorFa		-	
					TPS Performa		-	
					EnginePower		-	
					VehicleSpeedSe		-	
vaporative	P0442	This DTC will detect a small	The total delta from peak pressure to		Fuel Level	10 % ≤ Percent ≤ 90 %	Once per trip	, 1 trip
Emission (EVAP)		leak (≥ 0.025") in the EVAP	peak vacuum during the test is		Drive Time	≥ 600 seconds	during hot	Type A
System Small Leak		system between the fuel fill	normalized against a calibration pressure		Drive length	≥ 3.1 miles	soak (up to	EWMA
Detected		cap and the purge solenoid.	threshold table that is based upon fuel		ECT	≥ 70 °C	2400 sec.).	
		The engine off natural	level and ambient temperature. (See		Baro	≥ 70 kPa	,	Average run
		vacuum method (EONV) is	P0442: EONV Pressure Threshold Table		Odometer	≥ 10.0 miles	No more	length is 6
		used. EONV is an	on Supporting Tables Tab). The				than 2	under norma
		evaporative system leak	normalized value is calculated by the				unsuccessful	conditions
			following equation: 1 - (peak pressure -				attempts	
		when the vehicle is shut off	peak vacuum) / pressure threshold. The				between	Run length is
		when enable conditions are	normalized value is entered into EWMA				completed	3 to 6 trips
		met. Prior to sealing the	(with 0= perfect pass and 1= perfect fail).				tests.	after code
		system and performing the						clear or non-
		diagnostic, the fuel volatility						volatile reset
		is analyzed. In an open						
		system (Canister Vent			Time since last complete test			
		Solenoid [CVS] open) high			·	≥ 17 hours		
		volatility fuel creates enough			if normalized result and EWMA is passing			
		flow to generate a						
		measurable pressure						
		differential relative to						
		atmospheric.			OR			
					Time since last complete test			
					·	≥ 10 hours		
					if normalized result or EWMA is failing			
					Estimated ambient temperature at end of			
					drive			
						0 °C ≤ Temperature ≤ 34 °C		
					E C A A A A A A A A A A A A A A A A A A			
					Estimate of Ambient Air Temperature Valid			
					vanu			
							_	
			When EWMA is	> 0.52 (EWMA Fail Threshold)	Conditions for Estimate of Ambient Air Temperature to be valid:			
				,	1		1	
			, the DTC light is illuminated.					
		After the confession of the confession						
		After the volatility check, the	The DTO Beld are by the 1 William		1. Cold Start	- 0 °C	1	
		vent solenoid will close.	The DTC light can be turned off if the		Startup delta deg C (ECT-IAT)	≤ 8 °C		
		After the vent is closed,	EWMA is	≤ 0.35			1	
		typically a build up of	1	= 0.00	1	İ	1	1
		pressure from the hot soak		(EWMA Re-Pass Threshold)	OR			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	pressure typically will peak and then begin to decrease as the fuel cools. When the pressure drops (-62.27) Pa from peak pressure, the vent is then opened for 60 seconds to normalize the system pressure. The vent is again closed to begin the vacuum portion of the test (phase-2). As the fuel temperature continues to fall, a vacuum will begin forming. The vacuum will continue until it reaches a vacuum peak. When the pressure rises 62.27 Pa from vacuum peak, the test then completes. If the key is turned on while the	and stays below the EWMA fail threshold for 2 additional consecutive trips.	Value	Previous time since engine off OR 3. Not a Cold Start and Previous EAT Valid and between Short and Long Soak Previous time since engine off AND Must expire Estimate of Ambient Temperature Valid Conditioning Time.		Required	illum.
		diagnostic test is in progress, the test will abort.			"P0442: Estimate of Ambient Temperature Valid Conditioning Time" in Supporting Tables Tab. OR 4. Not a Cold Start and Previous EAT Not Valid and less than Long Soak	Mass Air Flow ≥ 0 g/sec		
					Previous time since engine off AND Must expire maximum value in Estimate of Ambient Temperature Valid Conditioning Time. Please see "P0442: Estimate of Ambient Temperature Valid Conditioning Time" in Supporting Tables Tab.	< 25200 seconds Vehicle Speed ≥ 19.3 mph AND Mass Air Flow ≥ 0 g/sec		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					OR			
					5. Long Soak			
					Previous time since engine off	≥ 25200 seconds		
				Abort Conditions:	1. High Fuel Volatility		_	
				Abort Conditions.	1. High rue volumey			
					During the volatility phase, pressure in the			
					fuel tank is integrated vs. time. If the			
					integrated pressure is			
						< -5		
					then test aborts and unsuccessful	< -0		
					attempts is incremented.			
					OR 2. Vacuum Refueling Detected			
					2. Vacuum Rerueling Detected			
					See P0454 Fault Code for information on			
					vacuum refueling algorithm.			
					OR 3. Fuel Level Refueling Detected			
					3. I del Level Reldelling Detected			
					See P0464 Fault Code for information on			
					fuel level refueling.			
					OR 4. Vacuum Out of Range and No			
					Refueling			
					See P0451 Fault Code for information on			
					vacuum sensor out of range and P0464			
					Fault Code for information on fuel level refueling.			

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					OR 5. Vacuum Out of Range and Refueling Detected			
					See P0451 Fault Code for information on vacuum sensor out of range and P0464 Fault Code for information on fuel level refueling.			
					OR 6. Vent Valve Override Failed			
					Device control using an off-board tool to control the vent solenoid, cannot exceed during the EONV test			
						0.50 seconds		
					OR 7. Key up during EONV test			
					No active DTCs:	FuelLevelDataFault MAF_SensorFA ECT_Sensor_FA IAT_SensorFA VehicleSpeedSensor_FA IgnitionOffTimeValid AmbientAirDefault P0443 P0446 P0449 P0452 P0453 P0496		
vaporative mission (EVAP) anister Purge	P0443	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		PT Relay Voltage	11 volts ≤ Voltage ≤ 32 volts	20 failures out of 25 samples	2 trips Typ B

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Solenoid Valve Circuit (ODM)							250 ms / sample	
							Continuous with solenoid operation	
Evaporative Emission (EVAP) Vent System Performance	P0446	This DTC will determine if a restriction is present in the vent solenoid, vent filler, vent hose or EVAP canister. This test runs with normal purge and vent valve is open.	OR Vented Vacuum for 60 seconds Vent Restriction Test: Tank Vacuum for 5 seconds BEFORE	< -623 Pa > 1245 Pa > 2989 Pa ≥ 10 liters	Fuel Level System Voltage Startup IAT Startup ECT BARO No active DTCs:	10 ≤ Percent ≤ 90 11 volts ≤ Voltage ≤ 32 volts 4 °C ≤ Temperature ≤ 30 °C ≤ 35 °C ≥ 70 kPa MAP_SensorFA TPS_FA VehicleSpeedSensor_FA IAT_SensorCircuitFA ECT_Sensor_FA AmbientAirDefault EnginePowerLimited P0443 P0449 P0452 P0453 P0454		2 trips Type B
Evaporative Emission (EVAP) Vent Solenoid Control Circuit (ODM)	P0449	This DTC checks the circuit for electrical integrity during operation. If the P0449 is active, an intrusive test is performed with the vent solenoid commanded closed for 15 seconds.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage Run/Crank voltage goes to 0 volts at key off	11 volts ≤ Voltage ≤ 32 volts	20 failures out of 25 samples 250 ms / sample Continuous with solenoid operation	2 trips Type B
Fuel Tank Pressure (FTP) Sensor Circuit Performance	P0451	tank vacuum sensor is out of range when it tries to re-zero prior to the phase-1 or phase- 2 portions of the engine-off natural vacuum small leak test.	The tank vacuum sensor voltage is compared to a window about the nominal sensor voltage offset (~1.5 volts) Upper voltage threshold (voltage addition above the nominal voltage) Lower voltage threshold (voltage	0.2 volts	This test will execute whenever the engine-off natural vacuum small leak test (P0442) executes		This test is executed during an engine-off natural vacuum small leak test. The number of times that it executes can	1 trip Type A EWMA Average run length: 6

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
			subtraction below the nominal voltage) The difference between tank vacuum sensor voltage and the nominal offset voltage is then normalized against the appropriate threshold listed above to produce a ratio between 0.0 and 1.0. This normalized re-zero ratio is then filtered with a EWMA (with 0= perfect pass and 1=perfect fail).	0.2 volts			Tarige from zero to two per engine-off period. The length of the test is determined by the refueling rationality test, which can take up to 600 seconds to	Run length is 2 trips after code clear or non-volatile reset
			When EWMA is , the DTC light is illuminated.	> 0.73 (EWMA Fail Threshold)				
			The DTC light can be turned off if the EWMA is and stays below the EWMA fail threshold for 2 additional consecutive trips.	≤ 0.40 (EWMA Re-Pass Threshold)				
Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	P0452	This DTC will detect a fuel tank pressure sensor signal that is too low out of range.	Fuel tank pressure sensor signal The normal operating range of the fuel tank pressure sensor is 0.5 volts (~1245 Pa) to 4.5 volts (~-3736 Pa).	Pa)	Time delay after sensor power up for sensor warm-up ECM State ≠ crank	is 0.10 seconds	80 failures out of 100 samples 100 ms / sample Continuous	2 trips Type B
Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	P0453	This DTC will detect a fuel tank pressure sensor signal that is too high out of range.	Fuel tank pressure sensor signal The normal operating range of the fuel tank pressure sensor is 0.5 volts (~1245 Pa) to 4.5 volts (~3736 Pa).	> 4.85 volts (97% of Vref or ~ - 4172 Pa)	Stops 6.0 seconds after key-off Time delay after sensor power up for sensor warm-up ECM State ≠ crank	is 0.10 seconds	80 failures out of 100 samples 100 ms / sample	2 trips Type B
			(~ -5730 Fa).		Stops 6.0 seconds after key-off		Continuous	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Fuel Tank Pressure (FTP) Sensor Circuit Intermittent	P0454	This DTC will detect intermittent tank vacuum sensor signals that would have caused the engine-off natural vacuum small leak test to abort due to an apparent re-fueling event.	If an abrupt change in tank vacuum is detected the engine-off natural vacuum test is aborted due to an apparent refueling event. Subsequent to the abort, a refueling rationality test is executed to confirm that a refueling event occurred. If a refueling is confirmed, then the test sample is considered passing. Otherwise, the sample is considered failing indicating an intermittent signal problem. An abrupt change is defined as a change in vacuum: in the span of 1.0 seconds.	> 112 Pa	This test will execute whenever the engine-off natural vacuum small leak test (P0442) executes	Conditions	This test is executed during an engine-off natural vacuum small leak test. The test can only execute up to once per engine-off the test is determined by the refuelling rationality test, which can take up to 600 seconds to complete. The test will report a failure if 2 out of 3 samples are failures.	1 trips Type A
			But in 12.5 msec. A refueling event is confirmed if the fuel level has a persistent change for 30 seconds.	< 249 Pa of 10 %			12.5 ms / sample Continuous when vent solenoid is	
Evaporative Emission (EVAP) System Large Leak Detected	P0455	This DTC will detect a weak vacuum condition (large leak or purge blockage) in the EVAP system. Purge valve is controlled (to allow purge flow) and vent valve is commanded closed.	Purge volume while Tank vacuum After setting the DTC for the first time, 2 liters of fuel must be consumed before setting the DTC for the second time. Weak Vacuum Follow-up Test (fuel cap replacement test) Weak Vacuum Test failed. Passes if tank vacuum	> 18 liters ≤ 2740 Pa	Fuel Level System Voltage BARO No active DTCs:	10 % ≤ Percent ≤ 90 % 11 volts ≤ Voltage ≤ 32 volts ≥ 70 kPa MAP_SensorFA TPS_FA VehicleSpeedSensor_FA IAT_SensorCircuitFA ECT_Sensor_FA AmbientAirDefault EnginePowerLimited P0443 P0449 P0452 P0453 P0454	closed. Once per cold start Time is dependent on driving conditions Maximum time before test abort is 1000 seconds	2 trips Type B

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value ≥ 2740 Pa	Parameters	Conditions	Required	illum.
			Note: Weak Vacuum Follow-up Test can only report a pass.	£ 2/40 F d	Cold Start Test If ECT > IAT, Startup temperature delta (ECT-IAT): Cold Test Timer Startup IAT Startup ECT Weak Vacuum Follow-up Test This test can run following a weak vacuum failure or on a hot restart.	≤8°C ≤1000 seconds 4°C ≤ Temperature ≤ 30°C ≤ 35°C	Weak Vacuum Follow-up Test With large leak detected, the follow-up test is limited to 1300 seconds. Once the MIL is on, the follow-up test runs indefinitely.	
Fuel Level Sensor Performance For use on rehicles with a single fuel tank)	P0461	This DTC will detect a fuel sender stuck in range in the primary fuel tank.	Delta Fuel Volume change over an accumulated 148 miles.	< 3 liters	Engine Running No active DTCs:	VehicleSpeedSensor_FA	250 ms / sample Continuous	2 trips Type B
Fuel Level Sensor Performance For use on	P0461	This DTC will detect a fuel sender stuck in range in the primary fuel tank.			Engine Running No active DTCs:	VehicleSpeedSensor_FA	250 ms / sample Continuous	2 trips Type B
rehicles with nechanical transfer bump dual fuel anks)			Fuel Level in Primary Tank Remains in an Unreadable Range too Long If fuel volume in primary tank is AND Fuel volume in secondary tank and remains in this condition for OR After Refuel Event If the secondary fuel volume changes by 14.0 liters from engine "off" to engine "on" the primary volume should change by 3.0 liters.	>= 23.0 liters < 3.5 liters 87 miles.	The shutdown primary tank volume + 3.0 liters must be			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Level Change	value	Parameters	Conditions	Required	illum.
			_					
			Delta Fuel Volume change	0.145				
				< 3 liters				
	50.101	TI. 570 III	over an accumulated 50 miles.					
Fuel Level Sensor I Performance	P0461	This DTC will detect a fuel sender stuck in range in the			Engine Running		250 ms / sample	2 trips Typ B
Torronnance		primary fuel tank.			No active DTCs:			
For use on						VehicleSpeedSensor_FA	Continuous	
ehicles with			Fuel Level in Primary and Secondary					
lectric transfer ump dual fuel			Tanks Remains in an Unreadable Range					
inks)			too Long					
,								
						_		
			If fuel volume in primary tank is	>= 23.0 liters				
			AND	22.0 III.613				
			Fuel volume in secondary tank					
				< 3.5 liters				
			and remains in this condition for	87 miles.				
			OR					
			During Fuel Transfer					
			During fuel transfer, when the enable		Transfer Pump is commanded on			
			conditions are met, at least 3.0 liters of					
			fuel will be transferred from the secondary		No device central for the transfer numn			
			tank and 3.0 liters of fuel will be transfered into the primary tank within 0		No device control for the transfer pump			
			seconds. There is a short delay of 20					
			seconds to allow fuel slosh to settle		Fuel Volume in Secondary Tank			
			before the fail timer begins. If the			< 10 liters		
			secondary tank volume does decrease by the cal amount but the primary volume		Vehicle Speed	< 0 mph		
			does not increase by the cal amount after					
			the fail timer has expired, then P0461					
			sets.					
!								
!								
!								
!			OR					
!		1	Distance Traveled without a Primary Fuel	1	<u> </u>	1		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
			Level Change					
			D 1: 5 17/1	T		T		
			Delta Fuel Volume change	< 3 liters				
			over an accumulated 50 miles.					
Fuel Level Sensor	P0462	This DTC will detect a fuel	Fuel level Sender % of 5V range		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	100 failures	2 trips Type
Circuit Low		sender stuck out of range low	3	< 10 %			out of 125	В
/oltage		in the primary fuel tank.			Run/Crank voltage goes to 0 volts at key		samples	
					off		100 ms /	
							sample	
							Continuous	
Fuel Level Sensor	P0463	This DTC will detect a fuel	Fuel level Sender % of 5V range		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts		2 trips Type
Circuit High		sender stuck out ofrange		> 60 %			out of 125	В
/oltage		high in the primary fuel tank.			Run/Crank voltage goes to 0 volts at key		samples	
					off		100 ms /	
							sample	
							Continuous	
uel Level Sensor	P0464	This DTC will detect	If a change in fuel level is detected, the		This test will execute whenever the		This test is	1 trips Type
Circuit ntermittent		intermittent fuel level sensor signals that would have	engine-off natural vacuum test is aborted		engine-off natural vacuum small leak test (P0442) executes		executed	Α
ntermittent			due to an apparent refueling event. Subsequent to the abort, a refueling		(P0442) executes		during an engine-off	
		vacuum small leak test to	rationality test is executed to confirm that				natural	
		abort due to an apparent re-	an actual refueling event occurred. If a				vacuum	
		fueling event.	refueling event is confirmed, then the test				small leak	
			sample is considered passing.				test. The test	
			Otherwise, the sample is considered failing indicating an intermittent signal				can only execute up to	
			problem.				once per	
			p. 62.6				engine-off	
							period.	
							The length of the test is	
							determined	
							by the	
							refueling	
							rationality	
							test, which	
							can take up to 600	
							seconds to	
							complete	
			An intermintant change in fuel level is				The test will	
			defined as:				report a	
			The fuel level changes				failure if 2 out of 3 samples	
			The racinever changes	by 10 %			are failures.	
			and does not remain					
			for 30 seconds during a 600 second	> 10 %			100 ms /	
			refueling rationality test.				sample	
			g.auonamy toon					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Cooling Fan 1 Relay Control Circuit (ODM)	P0480	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage Engine Speed	11 volts ≤ Voltage ≤ 32 volts ≥ 400 RPM	20 failures out of 25 samples 250 ms / sample Continuous with fan operation	2 trips Type B Not used on systems with Mechanical Fan)
Cooling Fan 2 Relay Control Circuit (ODM)	P0481	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage Engine Speed	11 volts ≤ Voltage ≤ 32 volts ≥ 400 RPM	20 failures out of 25 samples 250 ms / sample Continuous with fan operation	2 trips Type B Not used on systems with Mechanical Fan)
Evaporative Emission (EVAP) System Flow During Non-Purge	P0496	This DTC will determine if the purge solenoid is leaking to engine manifold vacuum. This test will run with the purge valve closed and the vent valve closed.	for 5 seconds BEFORE Test time	> 2491 Pa ≥ refer to "P0496: Purge Valve Leak Test Engine Vacuum Test Time (Cold Start) as a Function of Fuel Level table" in Supporting Tables Tab.	Fuel Level System Voltage BARO Startup IAT Startup ECT Engine Off Time No active DTCs:	10 % ≤ Percent ≤ 90 % 11 volts ≤ Voltage ≤ 32 volts ≥ 70 kPa 4 °C ≤ Temperature ≤ 30 °C ≤ 35 °C ≥ 28800.0 seconds MAP_SensorFA TPS_FA VehicleSpeedSensor_FA IAT_SensorCircuitFA ECT_Sensor_FA AmbientAirDefault EnginePowerLimited P0443 P0449 P0452 P0453 P0454	Once per cold start Cold start: max time is 1000 seconds	2 trips Type B
Transmission Output Speed Sensor (TOSS)	P0502	No activity in the TOSS circuit	TOSS Raw Speed	<= 60 RPM	Maximum Engine Torque Minimum Engine Torque Maximum Engine Torque in Park or Neutral Minimum Engine Torque in Park or Neutral Minimum Engine Torque in Park or Neutral Minimum Throttle opening Minimum Engine Speed when there is a Brake DTC: P0572, P0573, P0703. **Cald Out by matched threshold with below. **	<= 8191.9 N-m >= 68.0 N-m <= 8191.9 N-m >= 90.0 N-m >= 3.5 % >= 1500 RPM	>= 4.50 sec	Type B 2 trips

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Cineria	value	raidilleteis	Conditions	Kequirea	mum.
					Minimum Engine Speed when there is no Brake DTC :P0572, P0573, P0703. **Cald Out by matched threshold with above. **	>= 1500 RPM		
					Maximum Engine Speed Minimum Transmission Fluid Temperature	<= 6500 RPM >= -40.0 ° C.		
					Disable P0502 if PTO Active Engine Speed	Enabled <= 7500 RPM >= 200 RPM for >= 5.0 sec		
					Vehicle Speed	<= 318 MPH for >= 5.0 sec	1	
					Ignition Voltage Ignition Voltage	<= 32.0 volts >= 11.0 volts]	
					No Active DTCs:	EngineTorqureInaccurate AcceleratorEffectivePstnValid P0503 Active this Key On	 	
Transmission	P0503	TOSS Signal Intermittent	Loop-to-Loop change in TOSS	>= 350 RPM	Disable P0502 if PTO Active	Enabled	>= 3.25 sec	Type B
Output Speed Sensor (TOSS)	1 0000	1 GGG Gighar intomittant	Loop to Loop thango in 1000	2-300 IVI W	Engine Speed	<= 7500 RPM >= 200 RPM		2 trips
					Vehicle Speed	for >= 5.0 sec <= 318 MPH	┨	
					Ignition Voltage Ignition Voltage Time since Selected Gear Range Change	for >= 5.0 sec <= 32.0 volts >= 11.0 volts >= 6 sec		
					Time since 4WD Range change Loop-to-Loop Input Speed Change Raw Output Speed Output Speed change	>= 6 sec <= 500 RPM For >= 2 Sec. > 300 RPM for >= 2 Sec. <= 150 RPM for >= 2 Sec.		
					Disabled For Following DTCS:	ShiftSolenoidFaults (TCM)		
Low Engine Speed dle System	P0506	This DTC will determine if a low idle exists	Filtered Engine Speed Error	< 91.00 rpm	Baro	> 70 kPa	Diagnostic rur	2 trips Type B
,			filter coefficient	0.003	Coolant Temp	> 60 °C and < 125 °C	every 12.5 ms	loop
					Engine run time	≥ 60 sec	Diagnostic rep	
					Ignition voltage		pass or fail in	
					Time since gear change	≥3 sec	10 sec	
					Time since a TCC mode change		once all enabl	
						> -20 °C	conditions are	met
				+	Vehicle speed Commanded RPM delta		+	-
					For manual transmissions: Clutch Pedal TOT Threshold	•		
					or Clutch Pedal BOT Threshold	< 20.00 pct		
				1	Ciulon Feudi BOT TilleSilolu	PTO not active	1	
				1		Transfer Case not in 4WD		
		1				LowState	1	1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
		, , ,				Off-vehicle device control (service		
						bay control) must not be active.		
						bay control) must not be active.		
					No active DTCs	AmbientAirDefault		
					THO GOLLYO D TOO	ECT_Sensor_FA		
						EGRValveCircuit_FA		
						EGRValvePerformance_FA		
						IAT_SensorCircuitFA		
						EvapFlowDuringNonPurge_FA		
						FuelTrimSystemB1_FA		
						FuelTrimSystemB2_FA		
						FuelInjectorCircuit_FA		
						MAF_SensorFA		
						EngineMisfireDetected FA		
						IgnitionOutputDriver_FA		
						EnginePowerLimited		
						TPS FA		
						TPS_Performance_FA		
						VehicleSpeedSensor_FA		
						FuelLevelDataFault		
						LowFuelConditionDiagnostic		
						Clutch Sensor FA		
					All of the above met	oratori correct i i		
					for Idle time	> 10 sec		
igh Engine Speed lle System	P0507	This DTC will determine if a high idle exists	Filtered Engine Speed Error	> -182.00 rpm	Baro	> 70 kPa	Diagnostic rur	2 trips Ty
0,0.0			filter coefficient	0.003	Coolant Temp	> 60 °C and < 125 °C	every 12.5 ms	s loop
					Engine run time	≥ 60 sec	Diagnostic rep	
					Ignition voltage		pass or fail in	
					Time since gear change		10 sec	
					Time since a TCC mode change		once all enabl	е
						> -20 °C	conditions are	met
					Vehicle speed	≤ 1.24 mph		
					Commanded RPM delta	≤ 25 rpm		
					For manual transmissions: Clutch Pedal TOT Threshold			
					Clutch Pedal BOT Threshold	< 20.00 pct		
					Ciuteri Fedai BOT Tillesiloid	PTO not active		
						Transfer Case not in 4WD		
						LowState		
						Off-vehicle device control (service		
						bay control) must not be active.		
					No potivo DTCs	Ambient Air Default		
					No active DTCs	AmbientAirDefault		
						ECT_Sensor_FA		
						EGRValveCircuit_FA		
						EGRValvePerformance_FA		-
						IAT_SensorCircuitFA		
						EvapFlowDuringNonPurge_FA		
						FuelTrimSystemB1_FA		
						FuelTrimSystemB2_FA		
				1	į	FuelInjectorCircuit_FA		l
				-				
						MAF_SensorFA EngineMisfireDetected FA		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
- Cyc.c		2000	0.110.112	1	- Landington	IgnitionOutputDriver FA		
						EnginePowerLimited		
						TPS FA		
						TPS Performance FA		
			-			VehicleSpeedSensor_FA		
								1
						FuelLevelDataFault		1
						LowFuelConditionDiagnostic		
						Clutch Sensor FA		
					All of the above met			
					for Idle time	> 10 sec		
Engine Oil	P0521	Determines if the Engine Oil	To fail a currently passing test:		Diagnostic enabled/disabled		Performed	2 trip(s)
Pressure (EOP)		Pressure (EOP) Sensor is				Enabled	every 100	
Sensor		stuck or biased in range	The filtered, weighted difference between		Oil Pressure Sensor In Use		msec	Type B
Performance			measured EOP and predicted EOP (a			Present		
			function of engine speed and engine oil		Filtered engine oil pressure test weighting			
			temp.):		(function of engine speed, engine oil			
					temperature, predicted oil pressure, and			
					engine load stability). Details on			
I				< -48.0 kPa OR > 45.0 kPa	Supporting Tables Tab (P0521 Section)			
			To pass a currently failing test:					
			The filtered, weighted difference between					
			measured EOP and predicted EOP (a					
			function of engine speed and engine oil					
			temp.):					
			temp.).					
				> -45.0 kPa AND < 42.0 kPa				
						>= 0.30 weighting		
						2 - 0.00 Weighting		
					No active DTC's	Fault bundles:		
					140 active D103	CrankSensorFA		
						ECT_Sensor_FA		
						MAF SensorFA		
						IAT SensorFA		
						EOPCircuit_FA		
						EOPGIICUIL_FA		
Engine Oil	P0522	Determines if the Engine Oil	(Engine Oil Pressure Sensor Circuit		Engine Running	= True	50 failures	2 trip(s)
	F0322				Engine Kunning	= True	out of 63	Z trip(S)
Pressure (EOP)		Pressure (EOP) Sensor	Voltage) / 5 Volts	. 5	L	20.01/ ===1. 44.01/		T D
Sensor Circuit Low		circuit voltage is too low		< 5 percent	Ignition Voltage	<= 32.0 V and >= 11.0 V	samples	Type B
Voltage					Sensor Present	Yes	Performed	
					Diagnostic enabled/disabled		every 100	
- · o::					15 . 5 .	Enabled	msec	
Engine Oil	P0523	Determines if the Engine Oil	(Engine Oil Pressure Sensor Circuit		Engine Running	= True	204 failures	2 trip(s)
Pressure (EOP)		Pressure (EOP) Sensor	Voltage) / 5 Volts				out of 255	
Sensor Circuit High		circuit voltage is too high		> 85 percent	Ignition Voltage		samples	Type B
Voltage	1				Sensor Present	Yes	Performed	
					Diagnostic enabled/disabled		every 100	
						Enabled	msec	Į
Air Conditioning	P0532	Determines if the Air	(AC Pressure Sensor Voltage) / 5 Volts	< 2.0 percent	AC Pressure Sensor diagnostic enabled	Enabled	120 failures	1 Trip(s)
Refrigerant	1	Conditioning Refrigerant						Type C
Pressure Sensor		Pressure circuit voltage is						
Circuit Low Voltage		too low			AC pressure sensor present	Learned from BCM or Not Present	Performed	
	1						every 25	
	1						msec	
Air Conditioning	P0533	Determines if the Air	(AC Pressure Sensor Voltage) / 5 Volts	> 98.0 percent	AC Pressure Sensor diagnostic enabled	Enabled	120 failures	1 Trip(s)
Refrigerant		Conditioning Refrigerant	1		The state of the s			Type C
Pressure Sensor		Pressure circuit voltage is						75
Circuit High Voltage	1	too high		AC pressure sensor present Learned from BCM or Not Present Performed	İ			
On cuit i ngri voltage	1	Tiou riigir			process octoor process		every 25	
	1						msec	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Brake Booster Pressure Sensor Performance	P0556	Determines if the Brake Booster Vacuum Sensor is stuck or skewed within the normal operating range by comparing the engine vacuum to the brake booster vacuum when the engine is producing a large amount of vacuum	Engine vs brake booster vacuum sensor values are compared when % throttle < value for a time period. When throttle once again > calibrated value, min and max vacuum sensor values are normalized and subtracted from a 1st order lag filter value of 1. A properly operating vacuum sensor would have a normalized result of 1 or greater. If the normalized result is greater than 1 it is considered 1. The 1st order lag filter value would be 0 in a passing system.		Throttle Area (with idle included) for time period of Ignition Voltage BrkBoostVacDiff For time period of AND Vacuum Delta Diagnostic enabled/disabled No active DTC's	<= 1 Percent for > 3 seconds <= 32.0 V and >= 11.0 V > 0.3 kPa >= 0.2 Seconds >= 6.0 kPa Enabled Fault bundles: MAP_SensorFA GetTPSR_FaultActive_TPS	Pass counter incremented when enable conditions are met, pass achieved when counter. Performed every 100 msec	2 trip(s) Type B
			1 st order lag fail threshold 1 st order lag re-pass threshold	> 0.5 < 0.6				
Brake Booster Pressure Sensor Circuit Low Voltage	P0557	Determines if the Brake Booster Pressure Sensor circuit voltage is too low	(Brake Booster Pressure Sensor Voltage) /5 Volts	< 2.0 percent	Brake booster diagnostic enabled/disabled Brake booster pressure sensor present	Enabled Yes	320 failures out of 400 samples Performed every 12.5	2 trip(s) Type B
Brake Booster Pressure Sensor Circuit High Voltage	P0558	Determines if the Brake Booster Pressure Sensor circuit voltage is too high	(Brake Booster Pressure Sensor Voltage) / 5 Volts	> 87.0 percent	Brake booster diagnostic enabled/disabled Brake booster pressure sensor present	Enabled Yes	msec 2000 failures out of 2400 samples Performed every 12.5	2 trip(s) Type B
Cruise Control Mutil- Functon Switch Circuit	P0564	Detect when cruise control multi-function switch circuit (analog) voltage is in an illegal range	Cruise Control analog circuit voltage must be in an "illegal range" for greater than a calibratable period of time for cruise switch states that are received over serial data		CAN cruise switch diagnostic enable in ECM	TRUE -1	msec fail continuously for greater than 0.750 seconds	Type: C MIL: NO Trips:
Cruise Control Resume Circuit	P0567	Detects a failure of the cruise resume switch in a continously applied state	Cruise Control Resume switch remains applied for greater than a calibratable period of time for architecture where cruise switch states are received over serial data		CAN cruise switch diagnostic enable in ECM	TRUE -1	fail continuously for greater than 90.000 seconds	Type: C MIL:

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Oyotom	oouc	Becomption	Ontona	Value	Tarameters	Conditions	Roquirou	
								NO Trips:
								1 nps.
Cruise Control Set	P0568		Cruise Control Set switch remains applied		CAN cruise switch diagnostic enable in	TRUE -1	fail	Type:
Circuit		set switch in a continously applied state	for greater than a calibratable period of time for architecture where cruise switch		ECM		continuously for greater	
		applied state	states are received over serial data				than 90.000	
							seconds	С
								MIL:
							4-11	NO
							fail continuously	Trips:
							for greater	
							than 90.000 seconds	
					ı			1
Cruise Control Input Circuit	P0575	Detects rolling count or protection value errors in	If x of y rolling count / protection value faults occur, disable cruise for duration of		Cruise Control Switch Serial Data Error Diagnostic Enable	TRUE -1	10 / 16 counts	Type:
Circuit		Cruise Control Switch Status			Diagnostic Enable		Couries	
		serial data signal						
								C MIL:
								NO
								Trips:
	P057B	This diagnostic monitors the	DTC Fail:		Brake Pedal Position Range Diagnostic	TOUE	Performed	Type:
Position Sensor Circuit		Brake Pedal Position Sensor for a stuck in range failure	Calculated brake pedal position delta and		Enable Ignition voltage	TRUE	every 25 msec	A MIL:
Range/Performanc		nor a stack in range randre	resulting filtered EWMA			> 10 volts		YES
e			calculation(supporting table) is less than a value for a calibratable number of		EWMA Filter Value			Trips:
			complete EWMA tests):					·
				0.4 threshold / 2 counts				
				0.4 threshold / 2 counts	1			
			DTC Pass:					
			Calculated brake pedal position delta and resulting filtered EWMA					
			calculation(supporting table) is greater					
			than a value for a calibratable number of EWMA tests):					
			EVVIVIA tests).	0.4 threshold / 1 counts				
						0.0	3	
					No active DTC's	P057C / P057D		
					Criteria to Run Complete Test:			
					shift lever	In park at least once this key on		
					shift lever position vehicle speed	≠ park > 5		
					accelerator pedal position	< 5		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					calculated brake pedal position delta samples	1000 samples	Each calculated difference test is a minimum of 25 seconds (1000 counts @ 25ms)	
					Fast Test To Pass Criteria: calculated brake pedal position delta samples	50 samples	Each calculated difference test is a minimum of seconds (1000 counts @ 25ms)	
Brake Pedal Position Sensor Circuit Low	P057C	Detects low circuit failure when brake pedal position is below calibratable value	If x of y faults occur, default brake pedal position to zero for duration of fault	0.25	Brake Pedal Position Diagnostic Enable	TRUE -1	20 / 32 counts	Type: A MIL: YES Trips:
Brake Pedal Position Sensor Circuit High	P057D	Detects high circuit failure when brake pedal position is above calibratable value	If x of y faults occur, default brake pedal position to zero for duration of fault	4.75	Brake Pedal Position Diagnostic Enable	TRUE -1	20 / 32 counts	Type: A MIL: YES Trips:
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if the calibration check sum is incorrect	Output state invalid		PCM State	= crank or run	Diagnostic runs continuously in the Diagnostic reports a fault if 1 failure occurs on the first Diagnostic reports a fault if 5 failures occur after the first pass is	Type A 1 trips
Control Module Not Programmed		This DTC will be stored if the PCM is a service PCM that has not been programmed.	Output state invalid		PCM State	= crank or run PCM is identified through calibration as a Service PCM	Diagnostic runs at powerup	Type A 1 trips
Control Module Long Term Memory Reset		Non-volatile memory checksum error at controller power-up	Checksum at power-up does not match checksum at power-down				Diagnostic runs at powerup Diagnostic	Type A 1 trips

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required reports a	illum.
							fault if 1	
ECM RAM Failure	P0604	Indicates that the ECM is unable to correctly read data	Primary processor data pattern written doesn't match the pattern read for a count	1 count if found on first memory			Will finish first memory	Trips:
		from or write data to RAM	>	subsequent scans.			scan within	Type:
							30 seconds	A MIL:
							at all engine conditions -	YES
							diagnostic	
							runs	
			Secondary processor battery backed RAM failed checksum twice for original				Completion at intilization,	
			values at power up and the defaulted				<500 ms	
			values					
			Secondary processor copy of calibration	2 counts			Completion	
			area to RAM failed for a count >	2 Courts			at intilization,	
							<500 ms	
			Secondary Processor data pattern written				Will finish within 30	
			doesn't match the pattern read consecutive times				seconds at	
							all engine	
							conditions.	
			Secondary Processor TPS or APPS				0.0625 sec continuous	
			minimum learned values fail compliment check continuously				continuous	
ECM Processor	P0606	Indicates that the ECM has detected an internal	When drag is active Secondary processor			Run/crank voltage or Powertrain	0.1875 sec in the	Trips:
		processor integrity fault	detects Primary's calculated throttle position is greater > than Secondary			relay voltage > 6.00 and reduced power is false, else the failure will	secondary	Type:
			Processor calculated Throttle Position by	0.00 %.		be reported for all conditions	processor	A MIL:
								YES
			Secondary processor detects Primary's	8.41 %.		Run/crank voltage or Powertrain		
			calculated throttle position is greater >	0.41 %.		relay voltage > 6.00 and reduced		
			than Secondary's calculated Throttle			power is false, else the failure will		
			Position when driver is commanding the throttle from APP by			be reported for all conditions		
			,					
			Secondary processor detects Primary's	39.26 %.		Run/crank voltage or Powertrain	1	
			calculated throttle position is greater >			relay voltage > 6.00 and reduced		
1	l	I	than Secondary's calculated Throttle	I	I	power is false, else the failure will	1	ı I

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
әуѕіет	Code	Description	Position when reduce engine power is active by	value	rarameters	be reported for all conditions	Required	nium.
			Software tasks on the Primary Processor in the 12.5 ms loop were not executed or were not executed in the correct order.	0.0625 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.0625 sec continuous	
			Software tasks on the Primary Processor in the 25 ms loop were not executed or were not executed in the correct order.	0.1250 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.1250 sec continuous	
			Software tasks on the Primary Processor in the 50 ms loop were not executed or were not executed in the correct order.	0.2500 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.2500 sec continuous	
			Software tasks on the Primary Processor in the 100 ms loop were not executed or were not executed in the correct order.	0.5000 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.5000 sec continuous	
			Software tasks on the Primary Processor in the 250 ms loop were not executed or were not executed in the correct order.	1.2500 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	1.2500 sec continuous	
			The first completion of the RAM diagnostic on the Primary Processor was completed > the amount of time	360.0000 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	360.0000 sec continuous	
			The first completion of the ROM diagnostic on the Primary Processor was completed > the amount of time	360.0000 sec continuous		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	360.0000 sec continuous	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MII illur
			Software tasks on the Secondary Processor were not executed or were not executed in the correct order.	Two Consecutive Loops (12.5ms * 2) 25ms		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	25 ms	
			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 recieved by the Primary Processor			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	In the primary processor, 159 / 400 counts intermittent or 15 counts continuous; 39 counts continuous @ initialization	
			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 recieved by the Secondary Processor			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	In the secondary processor 0.4750 sec at initialization, 0.1750 sec continuous or 20 / 200 intermittent.	
			Primary processor check of the secondary processor by verifing the hardware line toggle between the two processors toggles within the threshold values	9.3750 ms and 15.6250 ms		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	9 counts continuous at initialization or 9 counts continuous; 212.5 ms /count in the primary	
			Primary Processor TPS or APP minimum learned values fail compliment check			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	processor 0.1000 sec continuous	
			The ocillator failed for the Primary	27.85 kHz and 37.68 kHz		Run/crank voltage or Powertrain	100 ms	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
			processor where the clock is outside the threshold			relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	continuous	
			The secondary check of the ALU failed to compute the expected result			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5 ms continuous	
			Secondary processor failed configuration check of the registers.			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5 ms continuous	
			Secondary processor checks stack beginning and end point for pattern written at initialization.			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5ms continuous	
			Secondary processor check that the Primary processor hasen't set a select combination of internal processor faults			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5ms continuous	
			The primary processor check of the ALU failed to compute the expected result	Two Consecutive Times		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5ms continuous	
			Primary processor failed configuration check of the registers.			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	12.5ms continuous	
Main & MHC state of health fault	P0607		Primary state of health (SOH) discrete line is not toggling between the two processors for a time >	0.4875 sec		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.4875 sec continuous	Trips: 1 Type: C MIL: NO
ontrol Module ccelerator Pedal osition (APP) ystem erformance	P060D	Verify that the indicated accelerator pedal position calculation is correct	PPS sensor switch fault - When the APP sensor 2 is shorted to ground, the sensor value is >	41		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	Consecutive checks within 200ms or 2 / 2 counts; 175 ms/count	Trips: 1 Type:
						Engine Running TPS minimum learn is not active		
						No Pedal related errors or diagnostic faults.		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
• **						Diagnostic is enabled (Only applicable for Legacy accelerator pedals)		
			Difference between primary processor indicated accelerator pedal position and secondary indicated accelerator pedal position is >	5		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	44 / 40 counts or 39 counts continuous; 12.5 ms/count in	
						Primary processor Pedal Sync Error is FALSE	the secondary processor	
Control Module EEPROM Error	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write did not complete		Ignition State	= unlock/accesory, run, or crank	1 test failure Diagnostic runs once at	Type B 2 trips
5 Volt Reference #1 Circuit	P0641	Detects a continuous or intermittent short on th 5 volt reference circuit #1	Primary Processor Vref1 < or Primary Processor Vref1 > or the difference between Primary filtered Vref1 and Primary Vref1 >	4.875 5.125 0.05		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced	powerup 19 / 39 counts or 0.1875 continuous; 12.5 ms/count in primary processor	Trips: 1 Type: A MIL: YES
			Secondary Processor Vref1 < or Secondary Processor Vref1 >	4.875 5.125		power is false, else the failure will be reported for all conditions	19 / 39 counts or 15 counts continuous; 12.5 ms/count in secondary	
Malfunction Indicator Lamp (MIL) Control	P0650	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	20 failures out of 25 samples	2 trip Type B
Circuit (ODM)					Remote Vehicle Start is not active		250 ms / sample	NO MIL
5 Volt Reference #2 Circuit	P0651	Detects a continuous or intermittent short on th 5 volt reference circuit #2	Primary Processor Vref2 < or Primary Processor Vref2 > or the difference between Primary filtered Vref2 and Primary Vref2 >	4.875 5.125			19 / 39 counts or 0.1875 sec continuous; 12.5 ms/count in primary	Trips: 1 Type: A MIL: YES
			Secondary Processor Vref2 <	0.05		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	processor	-
			or Secondary Processor Vref2 >	4.875 5.125		per reported for all conditions	counts or 15 counts continuous; 12.5 ms/count in secondary	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Powertrain Relay Control (ODM)	P0685	This DTC checks the circuit for electrical integrity during operation.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	8 failures out of 10 samples	2 trips Type B
							250 ms / sample	
Powertrain Relay Feedback Circuit High	P0690	This DTC is a check to determine if the Powertrain relay is functioning properly.	PT Relay feedback voltage is	≥ 18 volts	Powertrain relay commanded "ON"		Continuous 5 failures out of 6 samples	
			Stuck Test:		No active DTCs:	PowertrainRelayStateOn_FA	1 second / sample	
			PT Relay feedback voltage is when commanded 'OFF'	> 3 volts			Stuck Test: 100 ms/ sample	
Fuel Pump Control	P069E	Monitors the FPCM MIL	Fuel Pump Control Module Emissions-			Time since power-up > 3 seconds	Continous failures ≥ 4 seconds Continuous	1 trips Type
Module (FPCM) Requested MIL Illumination	F009E	request line to determine when the FPCM has detected a MIL illuminating fault.	Related DTC set			Time since power-up > 3 seconds	Continuous	A (No MIL)
Transmission Control Module (TCM) Requested MIL Illumination	P0700	Monitors the TCM MIL request line to determine when the TCM has detected a MIL illuminating fault.	Transmission Control Module Emissions- Related DTC set			Time since power-up > 3 seconds	Continuous	1 trips Type A (No MIL)
Clutch Pedal Position Sensor	P0806	Detects if Clutch Pedal Position Sensor is Stuck in a	Filtered Clutch Pedal Position Error when the vehicle is determined to be in	> 1 %	N/V Ratio	Must match actual gear (i.e. vehicle in gear)	25 ms loop	1 Trip(s)
Circuit Range / Performance		range indicative of a vehicle NOT in gear, when the vehicle is determined to be in gear. Gear determination is	gear		Transfer Case vehicle speed Engine Torque	Not in 4WD Low range > 0.0 MPH > EngTorqueThreshold Table	Continuous	Туре А
		made by verifying that engine RPM/ Vehicle Speed (N/V) ratio represents a valid gear.			Clutch Pedal Position	< ResidualErrEnableLow Table		
	ratio represents a valia gear.			Clutch Pedal Position	> ResidualErrEnableHigh Table	-		
			ClutchPositi ClutchPositi Cran	No Active E ClutchPositionSen: ClutchPositionSen CrankSens VehicleSpeedSe	OTCs: sorCktLo FA sorCktHi FA orFA			
Clutch Pedal Position Sensor Circuit Low	P0807	Detects Continuous Circuit Short to Low or Open	Clutch Position Sensor Circuit	< 4 % of Vref 200 counts out of 250 samples	Engine Not Cranking System Voltage	> 9.0 Volts	25 ms loop Continuous	1 Trip(s)

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
								Type A
Clutch Pedal Position Sensor Circuit High	P0808	Detects Continuous Circuit Short to High	Clutch Position Sensor Circuit for	> 96 % of Vref 200 counts out of 250 samples	Engine Not Cranking System Voltage	> 9.0 Volts	25 ms loop Continuous	1 Trip(s) Type A
Clutch Pedal Position Not Learned	P080A	Monitor for Valid Clutch Pedal Fully Applied Learn Position values	Fully Applied Learn Position	< 9.0 %	OBD Manufacturer Enable Counter	= 0	250 ms loop Continuous	1 Trip(s) Type A
			Fully Applied Learn Position	> 35.0 %	-			
Skip Shift Solenoid Control Circuit Low (Manual	P080C	This DTC checks for an open and shorted low circuit while the device is commanded off.	The ECM detects that the commanded state of the driver and the actual state of the control circuit do not match.		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	5 failures out of 6 samples	
Transmission Only)		Oii.			Engine Speed	> 250 RPM	250 ms / sample	
Skip Shift Solenoid	P080D	This DTC checks for a	The ECM detects that the commanded		Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	with device off 5 failures out	2 trine Type
Control Circuit High	FOOD	shorted high circuit while the device is commanded on.	state of the driver and the actual state of the control circuit do not match.		INDIVIDUALIK VOILAGE	TT VOILS 3 VOILAGE 3 32 VOILS	of 6 samples	
(Manual Transmission Only)					Engine Speed	> 250 RPM	250 ms / sample	
Traction Control	P0856	Determines if torque request	With GMLAN:		With GMLAN:		Continuous with device With	
Torque Request Circuit	. 0000	from the EBTCM is valid	Serial Communication 2's complement message - (\$140 for PPEI2 or \$1C7/\$1C9 for PPEI3 engine torque or		Serial communication to EBTCM (U0108)	No loss of communication	GMLAN: Count of 2's complement	
			\$1CA for PPEI3 axle torque)	Message <> 2's complement of message	Power Mode Engine Running	= Run = True	values not equal >= 10	
			OR Serial Communication message (\$140 for PPEI2 or \$1C7/\$1C9 for PPEI3 engine torque or \$1CA for PPEI3 axle torque) rolling count value		Status of traction in GMLAN message (\$380 for PPEI2 or \$4E9 for PPEI3)	= Traction Present	OR 10 rolling count failures out of 10 samples	
			OR				Samples	1 trip(s)
			Too many minimum limit torque request	Requested torque intervention type toggles from not increasing request to increasing request			>= 5 multi- transitions out of 5 samples	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System:	9945	Societion	Torque request greater than allowed	value	, unanocoro		>= 10 out of 10 samples above 250 Nm	
			With PWM: PWM Duty cycle	< 5 Pct	With PWM: Traction Status for PWM (\$2B3C Class2		Performed every 25 With PWM:	Туре С
			OR PWM Duty cycle	> 95 Pct	message)	= Traction Present	12 failures out of 30	
alat Aiaflau Cuata	D4404	Determine if the con-	Silver d Theoritis Madel Serve		Engine Run Time	> 2 Seconds	Performed every 50 msec	T D
inlet Airflow System Performance (naturally aspirated applications)		Determines if there are multiple air induction problems affecting airflow and/or manifold pressure.	Filtered Throttle Model Error AND (ABS(Measured Flow – Modeled Air Flow) Filtered OR ABS(Measured MAP – MAP Model 1) Filtered AND ABS(Measured MAP – MAP Model 2)	<= 300 kPa*(g/s) > 12 grams/sec > 15.0 kPa)	Engine Speed Engine Speed Coolant Temp Coolant Temp Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	>= 450 RPM <= 5200 RPM > 7 Deg C < 129 Deg C > -20 Deg C < 125 Deg C >= 0.00 Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM	Continuous Calculation are performed every 12.5 msec	Type B 2 trips
			Filtered	> 15.0 kPa		Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor Based on MAF Estimate		
						MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM		
						MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM		
						See table "IFRD Residual Weighting Factors".		
						MAP_SensorCircuitFA EGRValve_FP		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
llet Airflow System erformance upercharged)	P1101	Determines if there are multiple air induction problems affecting airflow and/or manifold pressure.	See table "Supercharger Intake Flow Rationality Diagnostic Failure Matrix" for combinations of model failures that can set this DTC.		Engine Speed Engine Speed Coolant Temp Coolant Temp	EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensorFA ECT_sensor_FA ECT_Sensor_FP IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO >= 450 RPM <- 5800 RPM >-7 Deg C < 129 Deg C	Continuous Calculation are	Type B 2 trips
					Intake Air Temp Intake Air Temp Minimum total weight factor (all factors multiplied together)	> -20 Deg C < 125 Deg C	performed every 12.5 msec	
			TPS model fails when			>= 0.00 RPM		
				> 400 kPa*(g/s)		Filtered Throttle Model multiplied by TPS Residual Weight Factor based on RPM		
	MAF model fails when ABS(Measured Flow – Model Filtered							
			> 21 grams/sec		Modeled Air Flow multiplied by MAF Residual Weight Factor based on RPM and MAF Residual Weight Factor Based on MAF			
			MAP1 model fails when			Estimate		
			ABS(Measured MAP – MAP Model 1) Filtered	> 22.0 kPa		MAP Model 1 multiplied by MAP1 Residual Weight Factor based on RPM and Boost Residual Weight		
			MAP2 model fails when	2		Factor based on % of Boost		
			ABS(Measured MAP – MAP Model 2) Filtered					
			SCIAP1 model fails when	> 22.0 kPa		MAP Model 2 multiplied by MAP2 Residual Weight Factor based on		
			ABS(Measured SCIAP – SCIAP Model 1)			RPM and Boost Residual Weight Factor based on % of Boost		
			Filtered	> 14.0 kPa		CCIAD Model 4 multiplied by		
			SCIAP2 model fails when			SCIAP Model 1 multiplied by SCIAP1 Residual Weight Factor based on RPM and Boost		
		ABS(Measured SCIAP – SCIAP Model 2) Filtered	> 14.0 kPa		Residual Weight Factor based on % of Boost			
						SCIAP Model 2 multiplied by SCIAP2 Residual Weight Factor based on RPM and Boost Residual Weight Factor based on % of Boost		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
·					No Active DTCs:	See table "IFRD Residual Weighting Factors". MAP_SensorCircuitFA		
						EGRValve_FP EGRValvePerformance_FA MAF_SensorCircuitFA CrankSensorFA ECT_Sensor_FA ECT_Sensor_FP IAT_SensorFA IAT_SensorCircuitFP CylDeacSystemTFTKO IAT2_SensorCircuitFP SCIAP_SensorCircuitFP SCIAP_SensorCircuitFA SCIAP_SensorCircuitFA SCIAP_SensorCircuitFA AmbientAirDefault_SC		
EngineMetal OvertempActive	P1258	The objective of the algorithm is to protect the engine in the event of engine metal overtemperature, mainly due to loss of coolant	Engine Coolant For	≥ 129 °C ≥ 10 seconds	Engine Run Time If feature was active and it set the coolant sensor fault then feature will be enabled on coolant sensor fault pending on the next trip.	≥ 10 Seconds	Fault present for ≥ 0 seconds	1 trips Type A
ABS Rough Road malfunction	P1380	This diagnostic detects if the ABS controller is indicating a fault, and misfire is present. When this occurs, misfire will continue to run.	GMLan Message: "Wheel Sensor Rough Road Magnitude Validity"	= FALSE	Vehicle Speed Engine Speed Engine Load RunCrankActive Active DTC	VSS ≥ 5 mph rpm < 8192 load < 60 = TRUE P0300, MIL Request	40 failures out of 80 250 ms /sample Continuous	1 Trips Type C "Special Type C"
ABS System Rough Road Detection Communication Fault.	P1381	This diagnostic detects if the rough road information is no longer being received from the ABS controller, and misfire is present. When this occurs, misfire will continue to run.	Loss of GMLan Message: "Wheel Sensor Rough Road Magnitude"	= FALSE	Vehicle Speed Engine Speed Engine Load RunCrankActive Active DTC	VSS ≥ 5 mph rpm < 8192 load < 60 = TRUE P0300, MIL Request	40 failures out of 80 250 ms /sample Continuous	1 Trips Type C "Special Type C"

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Cold Start	P1400	Model based test computes	Average desired accumulated exhaust	< -32.00 KJ/s			Runs once	Туре А
Emissions		power from exhaust flow and	power - Average estimated accumulated	(high RPM failure mode)			per trip when	1 Trip(s)
Reduction System		thermal energy resulting from	exhaust power				the cold start	
Fault		elevated idle speed and			Cold Start Emission Reduction Strategy Is	Active. The strategy is considered	emission	
		retarded spark advance.	OR		active if either the Spark cat light off of		reduction	
		Detects if the cold start			considered a		strategy is	
		emission reduction system	Average desired accumulated exhaust				active	
		has failed resulting in the	power - Average estimated accumulated		Spark CLO is considered active when th	e CatLightOffDesiredSparkRetard		
			exhaust power		(function of idle RPM and air per cylinder		Frequency:	
		range.	· '	> 1.20 KJ/s	engine run time) <= 10.00		100ms Loop	
			(EWMA filtered)	(low RPM failure mode)		gp	l '	
			(=,	(Idle CLO is considered active if the desire	d RPM exceeds a base RPM value	Test	
					(function of coolant) plus an RPM offset.		completes	
					considered catalyst light off is also a funct			
					state. Refer to "Supporting		seconds of	
					state. Neter to Supporting	g Tables Tol details.	accumulated	
							qualified	
		1					data.	
		1					uaia.	
	-					L 4 O4 MDLI		
		1			Vehicle Speed OBD Manufacturer Enable Counter		-	
							1	
					Throttle Position		1	
					A change in throttle position (tip-in/tip-out)			
					of the average qualified residual value. W			
					the diagnostic will contin	ue the calculation.		
					For Manual Transmission vehicles, th	e clutch must be fully engaged.	1	
					Clutch Pedal Posi			
					OR			
					The clutch must be fu	Illy disengaged		
					Clutch Pedal Posi			
					Cidioii i Gadi i Go			
		1						
		1			General Er		4	
		1			DTC's Not			
		1			MAF_Sens		4	
		1			MAP_Sens		1	
		1			IAT_SensorC		-	
		1			IAT2_SensorC		1	
		1			ECT_Sensor		1	
		1			CrankSensorFa		1	
		1			IAC_SystemR		-	
		1			TPS_F, VehicleSpeedS		1	
		1					-	
		1			EngineMisfireDe		-	
		1			IgnitionOutputD ControllerProcess		1	
		1			5VoltReferences		-	
		1			5VoltReference 5VoltReference		1	
		1			FuellnjectorCii		1	
		1			FuelinjectorCii TransmissionEngag		-	
1	I	I	I .	I	rransmissionEnga	yeuoidie_FA	J	l

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					Clutch Ser]	
					P050A (ColdStrt_			
) !! 4!	P150A	No anticitation the DTOO	RTOS Sensor Raw Speed	<= 60 RPM	P050B (ColdStrt Transmission output Speed Angular		4.50.5-:1	T D
Replicated Fransmission Dutput Speed RTOS) Sensor	P150A	No activity in the RTOS Signal circuit	RTOS Sensor Raw Speed	<= 60 RPM	Velocity Velocity	>= 1000 RPM	>= 4.50 Fail Time (Sec)	Type B 2 trips
					Engine Speed	<= 7500 RPM >= 200 RPM for >= 5.0 sec		
					Vehicle Speed	<= 124 MPH for >= 5.0 sec		
					Ignition Voltage Ignition Voltage	<= 32.0 volts >= 9.0 volts	1	
					Disabled For Following DTCS:	VehicleSpeedSensor_FA P150B		
Replicated Transmission Output Speed	P150B	RTOS Signal Circuit Intermittent	RTOS Sensor Loop-to-Loop speed change	>= 350 RPM	Raw Transmission Output Speed	> 300 RPM for >= 2 sec.	>= 3.25 Fail Time (Sec)	Type B 2 trips
(RTOS) Sensor					Output Speed change	<= 150 RPM for >= 2 sec.		
					Engine Speed	<= 7500 RPM	1	
						>= 200 RPM		
						for >= 5.0 sec	J	
					Vehicle Speed	<= 124 MPH for >= 5.0 sec		
					Ignition Voltage Ignition Voltage	<= 32.0 volts >= 9.0 volts		
				Disabled For Following DTCS:	VehicleSpeedSensor_FA			
Transmission Engine Speed Request Circuit	P150C	Determines if engine speed request from the TCM is valid	Serial Communication rolling count value	+ 1 from previous \$19D message (PTEI3)	Diagnostic enable bit	1	Diagnostic runs in 12.5 ms loop	2 trips Typ B
toquost olloun		Yand	Transmission engine speed protection	not equal to 2's complement of transmission engine speed request + Transmission alive	Engine run time	0.50 sec	moloop	
				rollina count	# of Protect Errors	10 protect errors out of 10 samples		
					# of Alive Rolling Errors	6 rolling count errors out of 10 samples		
					No idle diagnostic 506/507 code	IAC_SystemRPM_FA		1
				 	No Serial communication loss to TCM	(U0101)		1
					Engine Running	= TRUE		+
hrottle Actuator	P1516	Detect a throttle positioning	The throttle model and actual Throttle		Power mode	Run Crank Active Run/crank voltage or Powertrain	0.1875 sec ir	n Trips:
Control - Position	F1310	error	position differ by >	8.411 %.		relay voltage > 6.00 and reduced	the	1 Type:
Performance			or The actual Throttle position and throttle	0.711 /0.		power is false, else the failure will be reported for all conditions	secondary processor	A MIL: YES
			model differ by >	8.411 %.	Engine Running or Ignition Voltage >			YES

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					and Ignition Voltage > and Throttle is being Controlled	5.4		
					and Communication Fault (SPI is not set)			
					and TPS minimum learn is not active			
					Ignition voltage failure is false (P1682)			
		Detect throttle control is driving the throttle in the incorrect direction	Thottle Position >	39.761 %.	(Throttle is being Controlled and TPS minimum learn is active) or	Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.1375 sec continuous	
					Reduce Engine Power is Active			
		Degraded Motor	Desired throttle position is stable within 0.25 for 4.0000 sec and the delta between Indicated throttle position and desired throttle position in greater than 2.00 %			Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	0.4875 sec continuous on secondary processor	
					Engine Running or Ignition Voltage >			
					and Ignition Voltage > and Throttle is being Controlled	5.4		
					and Communication Fault (SPI is not set)			
					and TPS minimum learn is not active			
					Ignition voltage failure is false (P1682)			
Ignition Voltage Correlation	P1682	Detect a continuous or intermittent out of correlation between the Run/Crank Ignition Voltage & the Powertrain Relay Ignition Voltage	Run/Crank – PT Relay Ignition >	3 Volts	Powertrain commanded on and		240 / 480 counts or 0.175 sec continuous; 12.5 msec/count	Trips: 1 Type: A MIL:
					(Run/crank voltage > or PT Relay Ignition voltage >	Table, f(IAT). See supporting tables	in main processor	YES
						5.5		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
0,000				1	and Run/crank voltage >			
						5.5		
uel Level Sensor	P2066	This DTC will detect a fuel			Engine Running		250 ms /	2 trips Type
Performance	1 2000	sender stuck in range in the					sample	В
		secondary fuel tank.			No active DTCs:	VehicleSpeedSensor_FA	Continuous	
or use on ehicles with						Verlicieopeedoerisoi_i A	Continuous	
ectric transfer			5 H 1: B: 10					
ump dual fuel anks)			Fuel Level in Primary and Secondary Tanks Remains in an Unreadable Range					
IIINS)			too Long					
			If fuel volume in primary tank is	>= 23.0 liters				
			AND	22.0 INC/3				
			Fuel volume in secondary tank	< 3.5 liters				
			and remains in this condition for					
				87 miles				
			OR During fuel tranfer				_	
			When the enable conditions are met, 3.0		Transfer Pump is commanded on			
			liters of fuel will be transferred from the secondary tank and 3.0 liters of fuel will					
			be transfered into the primary tank within					
			0 seconds. There is a short delay of 20		No device control for the transfer pump			
			seconds to allow fuel slosh to settle before the fail timer begins. If the					
			secondary tank volume does not		Fuel Volume in Secondary Tank			
			decrease by the cal amount but the primary volume does increase by the cal		ruei voiume in Secondary Tank			
			amount after the fail timer has expired,			< 10 liters		
			then P2066 sets.		Vehicle Speed	< 0 mph		
					•	,		
			OR After a Refuel Event				_	
			Aitei a Reiuei Everit					

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
			liters from engine "off" to engine "on" the secondary volume should change by 3 liters. Otherwise, P2066 will set.					
			OR Distance Traveled without a Secondary Fuel Level Change					
			If the vehicle is driven a distance of 88 miles without the secondary fuel level changing by 3 liters, then the sender must be stuck.		Volume in Secondary Tank and Volume in Secondary Tank	>= 4 liters		
			OR The secondary fuel sender is stuck in the deadband AND If the vehicle is driven a distance of 88 miles without the secondary fuel level	> 10 liters.	Secondary Full Transfer Pump On Time	< 10 liters >= 200 seconds		
Fuel Level Sensor	P2066	This DTC will detect a fuel	changing by 3 liters, then the sender must be stuck.		Engine Running		250 ms /	2 trips Type
Performance For use on ehicles with		sender stuck in range in the secondary fuel tank.			No active DTCs:	VehicleSpeedSensor_FA	sample Continuous	В
enicies with nechanical transfer nump dual fuel anks)			Fuel Level in Secondary Tank Remains in an Unreadable Range too Long					
			If fuel volume in primary tank is AND Fuel volume in secondary tank	>= 23.0 liters				
			OR Fuel Level is in a Readable Range for	87 miles				
			both Primary and Secondary Tanks too Long					
			Volume in Primary Tank	< 23 liters				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
,			AND Volume in Secondary Tank and remains in this condition for	> 4 liters 2430 seconds				
			OR Distance Traveled without a Secondary Fuel Level Change					
			If the vehicle is driven a distance of 88 miles without the secondary fuel level changing by 3 liters, then the sender must be stuck.		Volume in Secondary Tank	>= 3.5 liters		
Fuel Level Sensor 2 Circuit Low Voltage	P2067	This DTC will detect a fuel sender stuck out of range low in the secondary fuel tank.	Fuel level Sender % of 5V range	< 10 %	Run/Crank Voltage Run/Crank voltage goes to 0 volts at key	11 volts ≤ Voltage ≤ 32 volts	100 failures out of 125 samples	2 trips Type B
(For use on vehicles with dual fuel tanks)					off		100 ms / sample Continuous	
Fuel Level Sensor 2 Circuit High Voltage (For use on vehicles with dual	P2068	This DTC will detect a fuel sender stuck out of range low in the secondary fuel tank.	Fuel level Sender % of 5V range	> 60 %	Run/Crank Voltage Run/Crank voltage goes to 0 volts at key off	11 volts ≤ Voltage ≤ 32 volts	100 failures out of 125 samples 100 ms / sample	2 trips Type B
fuel tanks)							Continuous	
Post Catalyst Fuel Trim System Low Limit Bank 1 (Too Rich)	P2096	Determines if the post catalyst O2 sensor based fuel control system has been unable to adapt to a rich exhaust gas condition that	Note: If the fail count threshold is reached, a fail is reported and the	> 500 out of 1000 samples Note: 10 sample counts = 1 second	The following must be true for: PTO: Intrusive diagnostic fuel control:	> 0.0 sec NOT active FALSE (i.e. catalyst monitor diagnostic)	Frequency: Continuous Monitoring in 100ms loop	2 Trip(s) Type B
		results in an emissions correlated failure.	diagnostic will not report again until the next trip. If the sample count threshold is reached before a fail is reported, a pass is reported, the counters are reset to 0,		Long Term Secondary Fuel Trim Enabled	Please see "Long Term Secondary Fuel Trim Enable Criteria" in Supporting Tables		
			and evaluation starts again.		Ambient air pressure	>= 70 kPa	1	
					Engine air flow	>= 0 g/s and <= 10000 g/s		
					Intake manifold air pressure	>= 0 kPa and <= 200 kPa		
					Induction air temperature Start up coolant temperature	>= -20 °C and <= 45 °C	_	
						> -20 °C		<u> </u>
					NO ACTIVE AmbientAirDef AIR Syster	ault_NA		
					Ethanol Composition ECT_Sensor	n Sensor FA		

omponent/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illun
ystem	Code	Description	Cineria	value	EGRValveCin EGRValvePerfor IAT_Senso CamSnst_Ctn. EvapEmissionS; EvapFlowDuringNt FuelTankPressureSe EvapPurgeSoleno EvapSmallLe EvapVentSolenoi FuellipetorCin MAF_Senso MAF_Senso MAP_EngineVac EngineMisfireDe A/F Imbalance	cuit_FA mance_FA r_FA Any_FA Any_FA system_FA onPurge_FA nsorCircuit_FA dicCircuit_FA dicCircuit_FA cuit_FA orFA TFTKO orFA uumStatus tected_FA B Bank1	required	niu
					O2S_Bank_1_Se O2S_Bank_1_Se			
		Additional notes, strategy a	nd anable requirements:					
		If the post catalyst O2	The above specified Sample Counter wil	Il increment if:				
		voltage is outside a control	The current post O2 airflow mode is a select	ted cell:		See supporting tables: Selected		
		window, the integral offset is adjusted in an attempt to	AND Accumulated Cell Count is greater than			Cells See supporting tables: Cell		
		move the voltage back inside	(counts spent in the given cell while enabled	d)		Accum Min		
		the control window. The	The above specified Fail Counter will inc Filtered post O2 voltage is beyond the fail the		r increments AND:	See supporting tables:	1	
		offset value is used to adjust the front O2 sensor control to bias the bulk average	Tillered post O2 voltage is beyond the fail th	iresticia.		> O2 Rich Thresh		
		exhaust air/fuel ratio either lean or rich. The integral			for more than this many counts:	See supporting tables: Out of Window Count]	
		offset value is retained	AND The post catalyst O2 integral offset is:			See supporting tables:	1	
		between trips.	The poor catalyor of minegral ender in			<= Integral Offset Min		
					Note - the Post O2 filter coefficient is:	See supporting tables: Post O2 Filt Coefficient]	
		Re-Pass Feature						
		If a fault is active from a prior	Re-Pass sample counter is		If neither a pass nor a fail can be reported			
		trip and the above fail threshold is not met on the current trip, a Re-Pass sample counter must exceed a threshold in order for a			before the sample counter reaches its threshold, no report is made (indeterminate state).			
		pass to be reported.	continuona apove)					
		High Vapor (HV) Delay Feat	l lure			<u> </u>		
		The diagnostic is at risk of	Canister purging is active and Long term		Filtered post O2 voltage is outside the	See supporting tables:	When these	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.	
- Cystam	3340	conditions that impact the fuel control system are present. This HV condition is indicated when the criteria to the right are met. In this situation, the diagnostic will temporarily stop evaluation. When the HV condition	If HV has caused the diagnostic to stop evaluation, evaluation will resume when long term fuel correction is	>= 5.0 sec	Integral offset is outside the window defined by:	See supporting tables: HV Integral Offset Low and HV Integral Offset High	is detected and the diagnostic will temporarily stop evaluation.		
		subsides, evaluation will resume. Determines if the post catalyst Q2 sensor based			> 0.85 >= 20.0 sec		Note: When either the filtered post O2 voltage or the integral offset returns to the above defined windows, the diagnostic will immediately resume evaluation.		l
				>= 20.0 sec					
Post Catalyst Fuel Trim System High Limit Bank 1 (Too Lean)	P2097	Determines if the post catalyst O2 sensor based fuel control system has been unable to adapt to a lean exhaust gas condition that results in an emissions correlated failure.			Same enable conditions for P2096, P2097, P2098, P2099 (see P2096 enable conditions)		Frequency: Continuous Monitoring in 100ms loop	2 Trip(s) Type B	
		Additional notes, strategy a	nd enable requirements:						
		If the post catalyst O2 voltage is outside a control window, the integral offset is adjusted in an attempt to	The above specified Sample Counter w The current post O2 airflow mode is a sele AND Accumulated Cell Count is greater than	cted cell:		See supporting tables: Selected Cells See supporting tables: Cell			
		move the voltage back inside	(counts spent in the given cell while enable			Accum Min			
		the front O2 sensor control to	The above specified Fail Counter will in Filtered post O2 voltage is beyond the fail to		increments AND:	See supporting tables: < O2 LeanThresh			
	bias the bulk average exhaust air/fuel ratio either lean or rich. The integral	AND		for more than this many counts:	See supporting tables: Out of Window Count				
		offset value is retained between trips.	The post catalyst O2 integral offset is:		N. J. D. J. O. Ch.	See supporting tables: >= Integral Offset Max			
1					Note - the Post O2 filter coefficient is:	See supporting tables: Post O2 Filt Coefficient			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
System	Code	Description	Criteria	value	Parameters	Conditions	Required	illum.
			P2096, P2097, P2098, P2099 (see P2096 Ire: same as rich fault for bank 1 (see P					
Post Catalyst Fuel	P2098	Same as bank 1 rich fault		> 500 out of 1000 samples			Frequency:	2
Trim System Low Limit Bank 2 (Too Rich)		(see P2096)		Note: 10 sample counts = 1	Same enable conditions for P2096, P enable con-		Continuous Monitoring in 100ms loop	Trip(s) Type B
					NOTE: The Bank1 faults listed in the P20	096 section are replaced by:	_	
					A/F Imbaland O2S_Bank_2_S O2S_Bank_2_S	ensor_1_FA		
			nd enable requirements: same as bank					
			P2096, P2097, P2098, P2099 (see P2096	for details)				
		High Vapor (HV) Delay Featu The diagnostic is at risk of	Canister purging is active and Long term		Filtered post O2 voltage is outside the	See supporting tables:	When these	
		reporting a false fail when excessively High Vapor (HV) conditions that impact the	fuel correction is	<= 0.82	window defined by:	HV Post Low and HV Post High	conditions are met, HV is detected and the	
		fuel control system are present. This HV condition is indicated when the criteria to the right are met. In this		>= 5.0 sec	Integral offset is outside the window defined by:	See supporting tables: HV Integral Offset Low and HV Integral Offset High	diagnostic will temporarily	
		situation, the diagnostic will temporarily stop evaluation. When the HV condition	If HV has caused the diagnostic to stop evaluation, evaluation will resume when long term fuel correction is for				stop evaluation.	
		subsides, evaluation will resume.	i.	> 0.85		Note: When either the filtered post O2 voltage or the integral offset returns to the above defined windows, the diagnostic will		
			If HV has caused the diagnostic to stop evaluation, evaluation will resume when the purge valve closes for			immediately resume evaluation.		
				>= 20.0 sec				
Post Catalyst Fuel Trim System High Limit Bank 2 (Too Lean)	P2099	Same as bank 1 lean fault (see P2097)		> 500 out of 1000 samples Note: 10 sample counts = 1 second	Same enable conditions for P2096, P enable con-		Frequency: Continuous Monitoring in 100ms loop	Trip(s) Type
					NOTE: The Bank1 faults listed in the P20		_	
					A/F Imbaland O2S_Bank_2_S O2S_Bank_2_S	ensor_1_FA		
		Additional notes, strategy and enable requirements: same as bank 1 lean fault (see P2097) Re-Pass Feature: same for P2096, P2097, P2098, P2099 (see P2096 for details)						
		IRe-Pass Feature: same for I	P2096, P2097, P2098, P2099 (see P2096	tor details)				

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Throttle Actuator Control - Position Performance	P2101	Detect a throttle positioning error	The throttle model and actual Throttle position differ by > or The actual Throttle position and throttle	7.568 %.		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	15 / 15 counts; 12.5 msec/count in the primary	Trips: 1 Type: A MIL:
			model differ by >	7.568 %.	Engine Running or Ignition Voltage >		processor	YES
					and Ignition Voltage > and Throttle is being Controlled	11 5.5		
					and Communication Fault (SPI is not set)			
					and TPS minimum learn is not active			
					Ignition voltage failure is false (P1682)			
		Detect throttle control is driving the throttle in the incorrect direction or exceed the reduced power limit	Thottle Position >	39.26 %.	TPS minimum learn is active	Run/crank voltage or Powertrain relay voltage > 6.00 and reduced	11 counts; 12.5 msec/count in the primary	
		·	Thottle Position >	39.06 %.	Reduce Engine Power is Active	power is false, else the failure will be reported for all conditions	processor	
Throttle return to default	P2119	Throttle unable to return to default throttle position after de-energizing ETC motor.	TPS1 Voltage >	1.689	Throttle de-energized	No 5V reference error or fault for # 2 5V reference circuit (P0651)	0.4969 sec continuous	Trips:
			AND TPS2 Voltage > On the main processor	1.789	No TPS circuit faults			1 Type: C MIL:
			Or		PT Relay Voltage > 5.500			NO
			TPS1 Voltage > AND TPS2 Voltage > On the secondary processor	1.689 1.789				
APP1 Circuit	P2120	Detects a continuous or intermittent short or open in APP1 circuit on the secondary processor but sensor is in range on the primary processor	Secondary APP1 Voltage < or Secondary APP1 Voltage >	0.463 4.75		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 14 counts continuous; 12.5 msec/count in the secondary	Trips: 1 Type: A MIL: YES
						No 5 V reference #2 error	processor	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
						No 5 V reference #2 DTC (P0651)		
APP1 Circuit Low	P2122	Detects a continuous or intermittent short or open in APP1 circuit on both processors or just the primary processor	Primary APP1 Voltage <	0.463		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the primary	Trips: 1 Type: A MIL: YES
			Secondary APP1 Voltage <	0.463		No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary	
APP1 Circuit High	P2123	Detects a continuous or intermittent short in APP1 circuit on both processors or just the primary processor	Primary APP1 Voltage >	4.75		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the primary	Trips: 1 Type: A MIL: YES
			Secondary APP1 Voltage >	4.75		No 5 V reference #2 error No 5 V reference #2 DTC (P0651)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the	
APP2 Circuit	P2125	Detects a continuous or intermittent short or open in APP2 circuit on the secondary processor but sensor is in range on the primary processor	Secondary APP2 Voltage < or Secondary APP2 Voltage >	0.325 2.6		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions No 5 V reference #1 error No 5 V reference #1 DTC (P0641)	19 / 39 counts or 14 counts continuous; 12.5 msec/count in the secondary processor	Trips: 1 Type: A MIL: YES
APP2 Circuit Low	P2127	Detects a continuous or intermittent short or open in APP2 circuit on both processors or just the primary processor	Primary APP2 Voltage <	0.325		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the primary	Trips: 1 Type: A MIL: YES
			Secondary APP2 Voltage <	0.325		No 5 V reference #1 error	19 / 39 counts or 14 counts	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
						No 5 V reference #1 DTC (P0641)	continuous; 12.5 ms/count in the secondary	
APP2 Circuit Low	P2128	Detects a continuous or intermittent short in APP2 circuit on both processors or just the primary processor	Primary APP2 Voltage >	2.6		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the primary	Trips: 1 Type: A MIL: YES
			Secondary APP2 Voltage >	2.6		No 5 V reference #1 error No 5 V reference #1 DTC (P0641)	19 / 39 counts or 14 counts continuous; 12.5 ms/count in the secondary	
Throttle Position (TP) Sensor 1-2 Correlation	P2135	Detects a continuous or intermittent correlation fault between TPS sensors #1 and #2 on primary or secondary processor	Difference between TPS1 displaced and TPS2 displaced >	position with a linear threshold to 9.698 % at max. throttle position		Run/Crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	79 / 159 counts or 58 counts continuous; 3.125 ms/count in the primary processor	Trips: 1 Type: A MIL: YES
			Difference between (normalized min TPS1) and (normalized min TPS2) >	4.999 % Vref		No TPS sensor faults (P0120, P0122, P0123, P0220, P0222, P0223) No 5V reference error or fault for # 2 5V reference circuit (P0651)	processor	
				position with a linear threshold to 9.698 % at max. throttle position		Run/Crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 15 counts continuous; 12.5 ms/count in the secondary	
			Difference between (normalized min TPS1) and (normalized min TPS2) >	5.000 % Vref		No TPS sensor faults (P0120, P0122, P0123, P0220, P0222, P0223) No 5V reference error or fault for # 2 5V reference circuit (P0651)	processor	
Accelerator Pedal Position (APP) Sensor 1-2 Correlation	P2138	Detects a continuous or intermittent correlation fault between APP sensors #1 and #2 on primary or secondary processor	Difference between APP1 displaced and APP2 displaced >			Run/Crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 15 counts continuous; 12.5 ms/count in	Trips: 1 Type: A MIL: YES

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time	MIL illum.
System	Code	Description	Ciliena	value	raiailleteis	Conditions	Required the primary	mum.
			Difference between (normalized min APP1) and (normalized min APP2) >	5.000 % Vref		No APP sensor faults (P2120, P2122, P2123, P2125, P2127, P2128) No 5V reference error or fault for #1 or #2 5V reference circuits	processor	
			D''' ADD4 I' I I I I	0.070.0/ //		(P0641, P0651)	10./00	
			Difference between APP1 displaced and APP2 displaced > Difference between (normalized min	position with a linear threshold to 9.973 % at max. pedal position		Run/Crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	19 / 39 counts or 15 counts continuous; 12.5 ms/count in the secondary	
			APP1) and (normalized min APP2) >	5.000 % Vref		No APP sensor faults (P2120, P2122, P2123, P2125, P2127, P2128) No 5V reference error or fault for #1 or # 2 5V reference circuits (P0641, P0651)	processor	
Minimum Throttle Position Not Learned	P2176	TP sensors were not in the minmum learn window after multiple attempts to learn the minimum.	During TPS min learn on the Primary processor, TPS Voltage > or	0.935		Run/crank voltage or Powertrain relay voltage > 6.00 and reduced power is false, else the failure will be reported for all conditions	2.0 secs continuous	Trips: 1 Type: A MIL: YES
			During TPS min learn on the Secondary processor, TPS Voltage >		No TPS circuit errors No TPS circuit faults			
				0.935	P1682 is not active			
					Minimum TPS learn active			
			and					
			Number of learn attempts > AND	10 counts				
			TPS2 Voltage > On the Primary processor	1.789	Throttle de-energized			
			OR TPS1 Voltage > AND	1.689	No TPS circuit faults PT Relay Voltage >	5.5		
			TPS2 Voltage > On the Secondary processor	1.789				

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Cooling System Performance	P2181	This DTC detects thermostat malfunction (i.e. stuck open)	Engine Coolant Temp (ECT) is ≤ target temperature of 75 Deg C and normalized ratio is ≤ than 1. When above is present for more than 0 seconds, fail counts start.				60 failures out of 90 samples	2 trips Type B
					No Active DTC's	MAF_SensorFA IAT_SensorFA	1 sec /sample	
			Engine total airgrams is accumulated when 25 ≤ AirFlow ≤ 450 grams per second.			THMR_RCT_Sensor_Ckt_FA THMR_ECT_Sensor_Ckt_FA	Once per ignition key cycle	
			Ratio Definition: Current temp difference between ECT and RCT minus PwrUp difference divided by total airgrams. Note: Minimum total airgrams is 500.0		Engine not run time	≥ 1800 seconds		
			grams.		Fuel Condition ECT at Power Up IAT min	90 ≤ Time ≤ 1370 seconds Ethanol ≤ 87% -7.0 ≤ ECT ≤ 70.0 °C -7°C ≤ IAT ≤ 55°C. 25.0 ≤ Airflow ≤ 450.0 GPS		
Air Fuel Imbalance Bank 1	P219A	Determines if the air-fuel delivery system is	Bank 1 Filtered Length Ratio variable	> 1.35 at any time during the trip	System Voltage	10 <= V <= 32 for >= 4 seconds	Frequency: Continuous	2 Trip(s) Type
Dalik I		imbalanced by monitoring the		at any time during the trip		> -20 oC	Monitoring of	B B
		pre and post catalyst O2 sensor voltage			Engine Run Time Engine speed	>= 10 seconds 1000 <= rpm <= 3500	O2 voltage signal in	
		characteristics.	OR		Engine speed change during the current		12.5ms loop	
			Bank 1 AFM (DoD) Filtered Length Ratio variable (AFM applications only)	> 1.00 at any time during the trip	3.13 sec sample period is <=			
						8192 rpm	The AFIM Filtered	
		To improve S/N, pre-catalyst	AND			5.0 <= g/s <= 510.0	Length Ratio	
		O2 voltages between 1000 and 0 millivolts are ignored.	Bank 1 Filtered Post catalyst O2 voltage is NOT between		·	181 <= mg/cylinder <= 580	variable is updated after	
		This feature is enabled at Air Per Cylinder values <= 0 mg/cylinder.	Note: If the first voltage value is >= the second voltage value, this is an indication that the post catalyst O2 data is not used	1000 and 0 millivolts	Air Per Cylinder change during the current 3.13 sec sample period is <=		every 3.13 seconds of valid data.	
		Note: If the first voltage value is >= the second voltage	for diagnosis on this application.			8192 mg/cylinder	The first	
		value, AND/OR the Air Per			% Ethanol	<= 87 %	report is	
		Cylinder value is equal to zero, the feature is not used on this application and the			Positive (rising) Delta O2 voltage during previous 12.5ms is OR	> 5.0 millivolts	delayed for 219 seconds to allow time	
		full pre-catalyst O2 voltage range is utilized.			Negative (falling) Delta O2 voltage during previous 12 5ms is		for the AFIM Filtered	
					Negative (falling) Delta O2 voltage during previous 12.5ms is	< -5.0 millivolts	Length Ratio variable to saturate. This minimizes the possibility	
					For AFM (Cylinder Deactivation) vehicles only	No AFM state change during current 3.13 second sample period.	of reporting a pass before a potential failure could	
					O2 sensor switches	>= 1 times during current 3.13 second sample period	be detected.	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
]	
					Quality Factor	>= 0.74 in the current operating		
		Monitor Strategy Notes: The	The AFIM Filtered Length Ratio is the	The Quality Factor (QF)		region		
			difference between the measured String	calibrations are located in a 17x17	No EngineMisfireDetected_FA			
		derived from the pre-O2	Length and a 17x17 table lookup	lookup table versus engine speed	No MAP_SensorFA			
		sensor voltage metric known	value, divided by the same lookup value,	and load (see Supporting Tables).	No MAF_SensorFA]	
		as String Length. String	and finally multiplied by a Quality Factor	A QF of "1" is an indication that we	No ECT_Sensor_FA]	
		Length is simply the curve	(the latter ranges between 0 and 1, based	were able to achieve at least	No Ethanol Composition Sensor FA]	
		length of the O2 sensor	on robustness to false diagnosis in the	4sigma/2sigma robustness in that	No TPS_ThrottleAuthorityDefaulted]	
		voltage over a fixed time	current operating region). The reason we	speed/load region. QF values less	No FuelInjectorCircuit_FA			
		period of 3.13 seconds. The		than "1" indicate that we don't	No AIR System FA			
		reason we use String Length	we can normalize the failure metric over	have 4sigma/2sigma robustness	No O2S_Bank_1_Sensor_1_FA			
		is because it comprehends	various engine speed and load regions	in that region. The quality of the	No O2S_Bank_2_Sensor_1_FA			
			since engine speed and load directly	data is determined via statistical	No EvapPurgeSolenoidCircuit_FA			
		amplitude in one metric. The	impact pre-O2 String Length, especially	analysis of String Length data. QF	No EvapFlowDuringNonPurge_FA			
		busier the O2 voltage (an	when AFIM failures are present. In order	values less than 0.74 identify	No EvapVentSolenoidCircuit_FA			
		indication of imbalance), the	to filter out signal noise (to avoid false	regions where diagnosis is not	No EvapSmallLeak_FA			
					No EvapEmissionSystem_FA			
		longer the String Length will		possible.	No FuelTankPressureSensorCircuit_FA			
		be.	a common first-order lag filter. The result		Device Control Not Active			
			is the AFIM Filtered Length Ratio.		Intrusive Diagnostics Not Active			
					Engine OverSpeed Protection Not Active			
					Reduced Power Mode (ETC DTC) Not Ac	tive		
					PTO Not Active			
					Traction Control Not Active			
					Fuel Control			
					Closed Loop	Enabled		
					Long Term FT	Enabled		
						Please see "Closed Loop		
						Enable Criteria" and "Long		
						Term FT Enable Criteria" in		
						Supporting Tables.		
						•		
					Cumulative (absolute) delta MAF during	< 500 g/s		
					the current 3.13 second sample period is			
						Note: This protects against false		
					Note: This protects against false	diagnosis during severe transient		
					diagnosis during severe transient	maneuvers.		
					maneuvers			1
					Data collection is suspended under the	- for 0.5 seconds after AFM		
					following circumstances:	transitions		
					_	- for 0.5 seconds after Closed		
						Loop transitions from Off to On		
						- for 0.5 seconds after purge		1
						transitions from Off to On or On to		1
						Off		1
						- for 0.5 seconds after the AFIM		
						diagnostic transitions from		
						Disabled to Enabled		
Fuel Imbalance	P219B	Determines if the air-fuel	Bank 2 Filtered Length Ratio variable	> 0.83	System Voltage	10 <= V <= 32 for >= 4 seconds	Frequency:	2
nk 2		delivery system is	-	at any time during the trip			Continuous	Trip(s) Ty
		imbalanced by monitoring the			ECT	> -20 oC	Monitoring of	B
		pre and post catalyst O2			Engine Run Time		O2 voltage	
		sensor voltage				1000 <= rpm <= 3500	signal in	1
		characteristics.	OR		Engine speed change during the current		12.5ms loop	1

component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	ill
			variable (AFM applications only)	at any time during the trip				
						0400	The AFIM	
						8192 rpm	Filtered	
		To improve S/N, pre-catalyst	AND	I		5.0 <= g/s <= 510.0	Length Ratio	
		O2 voltages between 1000	Bank 2 Filtered Post catalyst O2 voltage		Air Per Cylinder	181 <= mg/cylinder <= 580	variable is	
		and 0 millivolts are ignored.	is NOT between	1000 10 38 8	A: B 0 !!		updated after	
		This feature is enabled at Air		1000 and 0 millivolts	Air Per Cylinder change during the current		every 3.13	
		Per Cylinder values <= 0	Note: If the first voltage value is >= the		3.13 sec sample period is <=		seconds of	
		mg/cylinder.	second voltage value, this is an indication				valid data.	
			that the post catalyst O2 data is not used					
		Note: If the first voltage value	for diagnosis on this application.			8192 mg/cylinder	Th - 64	
		is >= the second voltage			% Ethanol	<= 87 %	The first	
		value, AND/OR the Air Per			Positive (rising) Delta O2 voltage during	> 5.0 millivolts	report is	
		Cylinder value is equal to			(0)	> 5.0 millivoits	delayed for	
		zero, the feature is not used			previous 12.5ms is OR		105 seconds	
		on this application and the			1 - 1		to allow time	
		full pre-catalyst O2 voltage			Negative (falling) Delta O2 voltage during		for the AFIM	
		range is utilized.			orevious 12.5ms is		Filtered	
					Negative (falling) Delta O2 voltage during	< -5.0 millivolts	Length Ratio	
					previous 12.5ms is	< -3.0 milivoits	variable to	
					previous 12.5ms is		saturate. This	
							minimizes	
							the possibility	
					For AFM (Cylinder Deactivation) vehicles	No AFM state change during	of reporting a	
					only	current 3.13 second sample	pass before	
					,	period.	a potential	
						F	failure could	
					O2 sensor switches	>= 1 times during current 3.13	be detected.	
						second sample period		
					Quality Factor	>= 0.74 in the current operating		
		Monitor Strategy Notes: The	The AFIM Filtered Length Ratio is the	The Quality Factor (QF)		region		
		AFIM Filtered Length Ratio is	difference between the measured String	calibrations are located in a 17x17				
		derived from the pre-O2	Length and a 17x17 table lookup	lookup table versus engine speed	No MAP_SensorFA			
		sensor voltage metric known	value, divided by the same lookup value,	and load (see Supporting Tables).	No MAF_SensorFA		_	
		as String Length. String	and finally multiplied by a Quality Factor	A QF of "1" is an indication that we	No ECT_Sensor_FA		_	
		Length is simply the curve	(the latter ranges between 0 and 1, based	were able to achieve at least	No Ethanol Composition Sensor FA		_	
		length of the O2 sensor	on robustness to false diagnosis in the	4sigma/2sigma robustness in that	No TPS_ThrottleAuthorityDefaulted			
		voltage over a fixed time	current operating region). The reason we	speed/load region. QF values less	No FuelInjectorCircuit_FA		_	
		period of 3.13 seconds. The		than "1" indicate that we don't	No AIR System FA		_	
		reason we use String Length	we can normalize the failure metric over	have 4sigma/2sigma robustness	No O2S_Bank_1_Sensor_1_FA		⊣	
		is because it comprehends	various engine speed and load regions	in that region. The quality of the	No O2S_Bank_2_Sensor_1_FA		_	
			since engine speed and load directly	data is determined via statistical	No EvapPurgeSolenoidCircuit_FA		⊣	
		amplitude in one metric. The	impact pre-O2 String Length, especially	analysis of String Length data. QF	No EvapFlowDuringNonPurge_FA		_	
		busier the O2 voltage (an	when AFIM failures are present. In order	values less than 0.74 identify	No EvapVentSolenoidCircuit_FA		_	
		indication of imbalance), the	to filter out signal noise (to avoid false	regions where diagnosis is not	No EvapSmallLeak_FA		4	
		longer the String Length will	failures), the Length Ratio is filtered using		No EvapEmissionSystem_FA		-	
		0 0	a common first-order lag filter. The result		No FuelTankPressureSensorCircuit_FA		-	
		[is the AFIM Filtered Length Ratio.		Device Control Not Active		-	
			1.5 1.5 7 II IIV I III.O I GA LONGIN I NAIIO.		Intrusive Diagnostics Not Active		-	
					Engine OverSpeed Protection Not Active Reduced Power Mode (ETC DTC) Not Active	ivo	-	
					PTO Not Active	ive	-	
					Traction Control Not Active		-	
					Traction Control Not Active		┨ ┃	
					Fuel Control	Status	-	
					Closed Loop	Enabled	⊣ ∣	
						Enabled		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
•		·				Enable Criteria" and "Long Term FT Enable Criteria" in Supporting Tables.	·	
					Cumulative (absolute) delta MAF during the current 3.13 second sample period is Note: This protects against false diagnosis during severe transient maneuvers	< 500 g/s Note: This protects against false diagnosis during severe transient maneuvers.		
					Data collection is suspended under the following circumstances:	- for 0.5 seconds after AFM transitions - for 0.5 seconds after Closed Loop transitions from Off to On - for 0.5 seconds after purge transitions from Off to On or On to Off - for 0.5 seconds after the AFIM diagnostic transitions from Disabled to Enabled		
Barometric Pressure (BARO) Sensor Performance	P2227	Detects a noisy or erratic barometric pressure input	Difference between the current Baro sensor reading and the previous Baro sensor reading	> 10.0 kPa	Ignition has been on Vehicle Speed No Active DTCs:	> 10.0 seconds < 62 MPH AmbientAirPressCktFA ECT_Sensor_FA IAT_SensorFA MAF_SensorFA AfterThrottlePressure_NA or AfterThrottlePressure_SC TPS_FA TPS_Performance_FA VehicleSpeedSensorError	5 failures out of 25 1 sample every 250 msec	Type B 2 trips
Barometric Pressure(BARO) Sensor Circuit Low	P2228	Detects a continuous short to low or open in either the signal circuit or the BARO sensor.	BARO Voltage	< 40.0 % of 5 Volt Range (2.0 Volts = 50.9 kPa)	Continuous		20 failures out of 25 samples 1 sample every 12.5 msec	Type B 2 trips
Barometric Pressure(BARO) Sensor Circuit High	P2229	Detects an open sensor ground or continuous short to high in either the signal circuit or the BARO sensor.	BARO Voltage	> 90.0 % of 5 Volt Range (4.5 Volts = 115.0 kPa)	Continuous		20 failures out of 25 samples 1 sample every 12.5 msec	Type B 2 trips
Fuel Conductivity Out Of Range (water in fuel)	P2269	Detects the presence of High Conductivity Fuel (e.g. water in fuel) via a specific range of sensor frequency. High conductivity in the fuel causes a significant upward shift in the sensor's output frequency.	Flex Fuel Sensor Output Frequency	> 185 Hertz	Powertrain Relay	> 11.0 Volts < 32.0 Volts	50 failures out of 63 samples 100 ms loop Continuous	2 trip(s) Type B

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
02 Sensor Signal	P2270	This DTC determines if the	Post O2 sensor cannot achieve the rich	1) Post O2S signal < 845 mvolts	No Active DTC's		Frequency:	2 trips Type
Stuck Lean Bank 1		post catalyst O2 sensor is	threshold voltage.			TDO Therefore Augustic Defended	Once per trip	В
ensor 2		stuck in a normal lean voltage range and thereby	AND	AND		TPS_ThrottleAuthorityDefaulted	Note: if	
		can no longer be used for		2) Accumulated air flow during			NaPOPD_b_	
		post oxygen sensor fuel	The Accumulated mass air flow monitored	stuck lean test > 195 grams.			ResetFastRe	
		control or for catalyst monitoring. The diagnostic is	during the Stuck Lean Voltage Test is greater than the threshold before the				spFunc= FALSE for	
		an intrusive test (during	above voltage threshold is met.				the given	
		coast) which increases the				ECT_Sensor_FA IAT_SensorFA	Fuel Bank OR	
		delivered fuel to achieve the				IAT_Genson A	NaPOPD_b_	
		required rich threshold.					RapidRespo	
							nseActive = TRUE,	
							multiple tests	
							per trip are	
						MAF_SensorFA MAP_SensorFA	allowed	
						AIR System FA		
						FuelInjectorCircuit_FA FuelTrimSystemB1_FA		
						FuelTrimSystemB2 FA		
						EngineMisfireDetected_FA		
					R1S2 Failed this key cycle	EthanolCompositionSensor_FA P013A, P013B, P013E, P013F,		
					B1021 alled this key cycle	P2270 or P2271		
						10.0 volts < system voltage< 32.0		
					System Voltage ICAT MAT Burnoff delay	volts = Not Valid		
						= Not Valid, See definition of		
						Multiple DTC Use_Green		
					Green O2S Condition	Sensor Delay Criteria (B1S2, B2S2) in Supporting Tables tab.		
					Low Fuel Condition Diag	= False		
					Engine Speed to initially enable test Engine Speed range to keep test enabled	1150 <= RPM <= 2500		
						1075 <= RPM <= 2650		
						3 gps <= Airflow <= 20 gps		
					Vehicle Speed to initially enable test	43.5 mph <= Veh Speed <= 82.0		
					Vehicle Speed range to keep test enabled	41.0 mph <= Veh Speed <= 87.0		
					(after initially enabled)	mph 0.74 <= C/L Int <= 1.08		
					Closed Loop Active			
					Evap	not in control of purge		
					Ethanol Post fuel cell	not in estimate mode		
				Post fuel cell Power Take Off	= not active			
					EGR Intrusive diagnostic			
			All post sensor heater delays = not active O2S Heater on Time >= 80.0 sec					
					Predicted Catalyst temp	600 °C <= Cat Temp <= 900 °C		
					Fuel State	= DFCO possible		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					All of the above met f	or at least 2.0		
					seconds, and then the Fore	ce Cat Rich intrusive		
					stage is requ	ested.		
				Ţ	•		1	
				ľ	During Stuck Lean tes	st the following	1	
					must stay TRUE or th			
				l t		0.95 <= EQR <= 1.10	1	
				<u> </u>	Communaca i dei	0.00 1- 24.1 1- 1110	†	
2 Sensor Signal	P2271	This DTC determines if the	Post O2 sensor cannot achieve the lean	1) Post O2S signal > 100 mvolts	No Active DTC's		Frequency:	2 trips Type
	1 22/1			1) Fost O23 signal > 100 mivolis	NO ACTIVE DTC 3			B B
uck Rich Bank 1		post catalyst O2 sensor is	threshold voltage.				Once per trip	Ь
nsor 2		stuck in a normal rich voltage		AND		TDC Th		
			AND			TPS_ThrottleAuthorityDefaulted		
		longer be used for post		Accumulated air flow during			Note: if	
		oxygen sensor fuel control or	The Accumulated mass air flow monitored	stuck rich test > 100 grams.			NaPOPD_b_	
		for catalyst monitoring. The	during the Stuck Rich Voltage Test is				ResetFastRe	
			greater than the threshold before the				spFunc=	
		which requests the DFCO	above voltage threshold is met.				FALSE for	
	1						the given	1
		mode to achieve the required				ECT_Sensor_FA	Fuel Bank	
		lean threshold.				IAT SensorFA	OR	
	1						NaPOPD b	1
							RapidRespo	
							nseActive =	
							TRUE,	
							multiple tests	
							per trip are	
						MAF_SensorFA	allowed	
						MAP_SensorFA		
						AIR System FA		
						FuelInjectorCircuit_FA		
						FuelTrimSystemB1_FA		
						FuelTrimSystemB2 FA		
						EngineMisfireDetected FA		
						EthanolCompositionSensor_FA		
						P013A, P013B, P013E, P013F or		
					B100 = 11 111 1			
					B1S2 Failed this key cycle			
						10.0 volts < system voltage< 32.0		
					System Voltage	volts		
					ICAT MAT Burnoff delay			
						 Not Valid, See definition of 		
						Multiple DTC Use Green		
	1					Sensor Delay Criteria (B1S2,	I	1
	1				Green O2S Condition	B2S2) in Supporting Tables tab.	I	1
					Low Fuel Condition Diag			
						1150 <= RPM <= 2500		
					Engine Airflow	3 gps <= Airflow <= 20 gps		
						43.5 mph <= Veh Speed <= 82.0	1	
					Vehicle Speed		1	
	1				Closed loop integral	0.74 <= C/L Int <= 1.08	I	1
					Closed Loop Active		1	
	1					not in control of purge	I	1
	1					not in estimate mode	I	1
	1				Post fuel cell		I	1
					Power Take Off		1	
	1						I	1
	1				EGR Intrusive diagnostic		I	1
					All post sensor heater delays		1	
					O2S Heater on Time	>= 80.0 sec	1	
	1				Predicted Catalyst temp	600 °C <= Cat Temp <= 900 °C	I	1
	1				Fuel State	= DFCO possible	I	1
	1					= P2270 (and P2272 (if	I	1
	ı		1	1		applicable))	1	ı

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
					DTC's Passed	= P013E (and P014A (if		
						applicable))		
					DTC's Passed	= P013A (and P013C (if		
						applicable))		
					After above condition		1	
					DFCO mode is			
					(wo driver initiated	pedal input).	J	
O2 Sensor Signal	P2272	This DTC determines if the	Post O2 sensor cannot achieve the rich	1) Post O2S signal < 845 mvolts	No Active DTC's		Frequency:	2 trips Type
Stuck Lean Bank 2		post catalyst O2 sensor is	threshold voltage.				Once per trip	В
Sensor 2		stuck in a normal lean		AND		TPS_ThrottleAuthorityDefaulted		
		voltage range and thereby	AND				Note: if	
		can no longer be used for		Accumulated air flow during			NaPOPD_b_	
		post oxygen sensor fuel	The Accumulated mass air flow monitored	stuck lean test > 195 grams.			ResetFastRe	
		control or for catalyst	during the Stuck Lean Voltage Test is				spFunc=	
		monitoring. The diagnostic is	greater than the threshold before the				FALSE for	
		an intrusive test (during	above voltage threshold is met.			ECT Sangar EA	the given	
		coast) which increases the				ECT_Sensor_FA IAT_SensorFA	Fuel Bank	
		delivered fuel to achieve the				IAI_SelisulfA	OR NaPOPD b	
		required rich threshold.						
							RapidRespo nseActive =	
							TRUE,	
							multiple tests	
						MAF_SensorFA	per trip are	
						MAP SensorFA	allowed	
						AIR System FA		
						FuelInjectorCircuit_FA		
						FuelTrimSystemB1_FA		
						FuelTrimSystemB2_FA		
						EngineMisfireDetected FA		
						EthanolCompositionSensor_FA		
					B2S2 Failed this key cycle	P013C, P013D, P014A, P014B,		
					BEEZ : allou tillo koy oyolo	P2272 or P2273		
						10.0 volts < system voltage< 32.0		
					System Voltage	volts		
					ICAT MAT Burnoff delay			
					,	= Not Valid, See definition of		
						Multiple DTC Use_Green		
						Sensor Delay Criteria (B1S2,		
					Green O2S Condition	B2S2) in Supporting Tables tab.		
					Low Fuel Condition Diag	= False		
					Engine Speed to initially enable test			
					Engine Speed range to keep test enabled			
					(after initially enabled)	1075 <= RPM <= 2650		
					Engine Airflow	3 gps <= Airflow <= 20 gps		
						43.5 mph <= Veh Speed <= 82.0		
					Vehicle Speed to initially enable test	mph		
					Vehicle Speed range to keep test enabled	41.0 mph <= Veh Speed <= 87.0		
					(after initially enabled)	mph		
					Closed loop integral	0.74 <= C/L Int <= 1.08		
					Closed Loop Active	= TRUE		
						not in control of purge		
					Ethanol	not in estimate mode		
					Post fuel cell	= enabled		
					Power Take Off	= not active		
					EGR Intrusive diagnostic			
					All post sensor heater delays			
	Ì		1		O2S Heater on Time	>= 80.0 sec	I	

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
						600 °C <= Cat Temp <= 900 °C = DFCO possible		
				l i	All of the above met f	or at least 2.0	1	
					seconds, and then the			
					intrusive stage is	requested.	ļ	
					During Stuck Lean tes		1	
					must stay TRUE or th			
					Commanded Fuel	0.95 <= EQR <= 1.10		
02 Sensor Signal Stuck Rich Bank 2	P2273	This DTC determines if the post catalyst O2 sensor is	Post O2 sensor cannot achieve the lean threshold voltage.	1) Post O2S signal > 100 mvolts	No Active DTC's		Frequency: Once per trip	2 trips Type B
Sensor 2		stuck in a normal rich voltage	_	AND		TPS_ThrottleAuthorityDefaulted		
			AND				Note: if	
		longer be used for post		2) Accumulated air flow during			NaPOPD_b_	
			The Accumulated mass air flow monitored	stuck rich test > 100 grams.			ResetFastRe spFunc=	
		for catalyst monitoring. The	during the Stuck Rich Voltage Test is				FALSE for	
		diagnostic is an intrusive test which requests the DFCO	greater than the threshold before the above voltage threshold is met.				the given	
		mode to achieve the required	above voltage tilleshold is filet.			ECT_Sensor_FA	Fuel Bank	
		lean threshold.				IAT_SensorFA	OR	
							NaPOPD_b_	
							RapidRespo	
							nseActive = TRUE,	
							multiple tests	
							per trip are	
						MAF_SensorFA	allowed	
						MAP_SensorFA		
						AIR System FA		
						FuelInjectorCircuit_FA		
						FuelTrimSystemB1_FA		
						FuelTrimSystemB2_FA EngineMisfireDetected_FA		
						EthanolCompositionSensor FA		
						P013C, P013D, P014A, P014B or		
					B2S2 Failed this key cycle			
						10.0 volts < system voltage< 32.0		
					System Voltage ICAT MAT Burnoff delay			
					ICAT MAT Bullion delay	= Not Valid = Not Valid, See definition of		
						Multiple DTC Use_Green		
						Sensor Delay Criteria (B1S2,		
					Green O2S Condition	B2S2) in Supporting Tables tab.		
					Low Fuel Condition Diag			
						1150 <= RPM <= 2500		
					Engine Airflow	3 gps <= Airflow <= 20 gps		
					Vahiala O	43.5 mph <= Veh Speed <= 82.0		
					Vehicle Speed	mpn 0.74 <= C/L Int <= 1.08		
					Closed Loop Integral			
						not in control of purge		
						not in estimate mode		
					Post fuel cell	= enabled		
					Power Take Off	= not active		
					EGR Intrusive diagnostic			
					All post sensor heater delays			
					O2S Heater on Time			
	I					600 °C <= Cat Temp <= 900 °C = DFCO possible	I	1

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters DTC's Passad	Conditions = P2270 (and P2272 (if	Required	illum.
						applicable)) = P013E (and P014A (if		
						applicable))		
					DTC's Passed	= P013A (and P013C (if		
						applicable))		
					After above condition		1	
					DFCO mode is ((wo driver initiated			
					(wo driver iriitiated	речан пригу.	1	
Transmission	P2544	Determines if the torque	Protect error - Serial Communication				>= 16	
Control Torque		request from the TCM is	message - (\$199 - PTEI3)	Message <> two's complement of			Protect errors during	
Request Circuit		valid		message			key cycle	2 trip(s)
			OR					
			Rolling count error - Serial		Diamantia arabia d/diambia d		>= 6 Rolling count errors	Type B
			Communication message (\$199 - PTEI3) rolling count value	Message <> previous message	Diagnostic enabled/disabled	Enabled	out of ten	
				rolling count value + one			samples	
			OR	I -	Power Mode	= Run	0.5414	
			RAM Error - Internal ECU fault	Transmission torque request value or request type dual store not	Engine Running	= True	>= 3 RAM errors during	
				equal			key cycle	
					Run/Crank Active	> 0.50 Sec		
			OR	I				
			Range Error - Serial Communication	> 450 Nm			>= 3 out of	
			message - (\$199 - PTEI3) TCM				10 samples	
			Requested Torque Increase					
			OR	le			2 multi	
			Multi-transition error - Trans torque	Requested torque intervention type toggles from not increasing			>= 3 multi- transitions	
			intervention type request change	request to increasing request			out of 5	
							Performed every 12.5	
							msec	
Torque	P2548	Determines if the	Protect error - Serial Communication		Diagnostic enabled/disabled			1 trip(s)
Management Request Input		performance launch torque request is valid	message - (\$1C8 Message)			Enabled		Type B
Signal B		request is valid			Run/Crank Active and Above minimum	> 0.50 Sec	>= 10	Турс Б
3 3					voltage threshold		Protection	
				Message <> two's complement of message			errors during key cycle	
			OR	Imooodgo			NOY CYCIC	
			Rolling count error - Serial	Message <> previous message	Voltage	> 0.054 Volts	>= 3 Rolling	
			Communication message (\$1C8) rolling	rolling count value + one	No social second size that the EDTOM		count errors out of 10	
			count value		No serial communication loss to EBTCM (U0121)		samples	
					(55.21)		·	
							Performed	
							every 100 msec	
ECM/PCM Internal	P2610	This DTC determines if the	Initial value test:	l	ECM is powered down		Initial value	2 trips Type

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
Engine Off Timer Performance		engine off timer does not initialize or count properly.	Initial ignition off timer value OR	< 0 seconds	IAT Temperature	-40 °C ≤ Temperature ≤ 125 °C	test: 3 failures 1.375 sec /	В
		Clock rate test: Checks the accuracy of the 1 second timer by comparing it	Initial ignition off timer value	> 10 seconds			sample	DTC sets or next key cycle if
		with the 12.5 ms timer	Clock rate test: Time between ignition off timer increments	< 0.8 seconds			Clock rate test: 8 failures out of 10	failure detected
			Time between ignition off timer increments	> 1.2 seconds			samples 1 second /	
			Time since last ignition off timer increment	≥ 1.375 seconds			sample test runs	
			Current ignition off time < old ignition off time				once each key-off	
			Current ignition off timer minus old ignition off timer	± 1				
Deactivation		ABS(Measured MAP – MAP Model 2)	7-1	DIAGNOSTIC ENABL	E CONDITIONS			
ystem dea	deactivate" condition when Deactivation Mode allowed:	Filtered AND ((Measured MAP – MAP Model 2) filtered) (stored from previous all- Cylinder mode event) - ((Measured MAP	< -10.0 kPa		>= 0.0 factor > -7 and < 125 Deg C > -20 and < 125 Deg C > 450 and < 5800 RPM	100 cylinder deactivation lag residual failures out of 200 samples		
			- MAP Model 2) filtered) (current)	> 10.0 kPa	,	MAP Model 2 multiplied by MAP2 Residual Weight Factor based on RPM. See table IFRD Residual Weighting Factors	Performed once every 100 msec	
					CYLINDER DEACTIVATION I (Conditions below must be met for >= 0 so will begi	econds before cylinder deactivation		
					Engine running Engine RPM	> 30.0 seconds > EngSpeedLwrLimitEnableTable		
					Engine coolant Ignition voltage Pedal Commanded Throttle Area	AND < EngSpeedUprLimitEnableTable Details on Supporting Tables Tab (P3400 Section) >= 44.0 and <= 128.0 Deg C >= 11.0 and <= 32.0 Volts < 5 Percent		
					Brake booster vacuum	>= 45.0 kPa		
					Engine oil temp Transmission gear	>= 20 and <= 128 Deg C HalfCylDisabledTransGr and HalfCylDisabledTransGrDeviceCo ntrol (when in device control) - See details on Supporting Tables Tab (P3400 Section)		
					Vehicle speed FCO not active for Time since last cylinder deac mode event	>= 11 MPH >= 3.0 Seconds		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
						>= 3.0 Seconds		
					Gear shift	>= 3.0 Seconds Not currently in progress		
					Codi Gillit	Troc ourreinty in progress		
					AC Clutch transition	Not currently in progress		
					Tip In Bump	Not active		
					Accelerator pedel delta			
						<= 50.0 Percent in 12.5 ms		
					Engine oil pressure	>= 187 and <= 455 kPa		
					Filtered engine vacuum	> AllCylToHalfCylVacuum or		
					i litered erigirie vacuum	EcoAllCylToHalfCylVacuum (in		
						Eco mode) - See details on		
						Supporting Tables Tab (P3400		
						Section) for 0.0 sec. HalfCylDisabledPRNDL and		
					PRNDL state	HalfCylDisabledPRNDL and		
						HalfCylDisabledPRNDLDeviceCo		
						ntrol tables (when in device control) - See details on		
						Supporting Tables Tab (P3400		
						Section)		
					Oil aeration present	Aeration enabled by engine RPM		
					p. 5557.k	> 3100 for 10 seconds, disabled		
						by engine RPM < 3000 for 50		
						seconds		
					After exiting deac mode, must be in all			
					cylinder mode for			
					DECC	>= 60 seconds Not currently in DFCO		
					DFCO mode Fuel shut off mode other than DFCO	Not currently in DFCO		
					ruei shut on mode other than broo	Not currently in fuel shut-off		
					ETC Power management mode	Trot durionaly arradi on at on		
						Not active		
					Heater performance			
						Not in Heater Performance Mode		
					POSD Intrusive POPD Intrusive	POSD diagnostic not active POPD diagnostic not active		
					Low range 4WD	Not in Low Range 4WD		
					AFM is disabled at high percent ethanol	Ethanol concentration > 95 %		
					7 ti ili io diodologi at iligili porcolli otridilor	disables AFM. Once disabled,		
						ethanol concentration must be <		
						85 % to re-enable		
					If feature is enabled, AFM is allowed only			
					when percent ethanol learn is not in			
					progress			
					1	Feature is Disabled		
					IF DEACTIVATED, ANY OF THE CON	DITIONS BELOW WILL FORCE		
					CYLINDER REA	CTIVATION		
					If deactivation mode is active for			
						>= 480 seconds		
					then reactivation will occur if:			
					Deac mode active OR	>= 600 seconds		
					Delta vacuum	> 5 or < -5 kPa		
					Engine RPM	> 5 UI < -5 KPa		
					Engilo IXI W	EngSpeedLwrLimitDisableTabl		
		ı		!	1	I - 1.2 - Decer - M. FILLIII DISADIG I ADI		

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illun
						e AND <		
						EngSpeedUprLimitDisableTable		
						- Details on Supporting Tables Tab		
						(P3400 Section)		
						Active		
					Engine power limited mode			
					Pedal Commanded Throttle Area			
						> 6 Percent		
					Piston protection	Active		
					Engine oil temperature			
					9	< 18 or > 130 Deg C		
					Engine oil pressure	1		
					Engine on procoure	< 172 or > 470 kPa		
					Oil aeration present	Aeration enabled by engine RPM		
					Oil defation present	> 3100 for 10 seconds, disabled		
						by engine RPM < 3000 for 50		
						seconds		
					Engine metal overtemp protection			
						Active		
					Accelerator pedel delta			
					·	<= 50.0 percent in 12.5 ms		
					In device control only, if PNDRL in Park	· ·		
					or Neutral, vehicle speed			
					or redutal, verticie specu			
						<= 5.0 MPH		
					Transmission goor	HalfCylDisabledTransGr and		
					Transmission gear	HalfCylDisabledTransGrDeviceCo		
						ntrol (when in device control) -		
						See details on Supporting Tables		
						Tab (P3400 Section) HalfCylDisabledPRNDL and		
					PRNDL state			
						HalfCylDisabledPRNDLDeviceCo		
						ntrol tables (when in device		
						control) - See details on		
						Supporting Tables Tab (P3400		
						Section)		
					Ignition voltage	< 11.0 or > 32.0 Volts		
					Engine coolant	< 40.0 or > 132.0 Deg C		
					Vehicle speed	< 9.3 MPH		
						< 3.3 WIF⊓		
	j				Brake booster vacuum	44.0 LB-		1
	[< 41.0 kPa > HalfCylToAllCylVacuum or		
					Filtered engine vacuum			
						EcoHalfCylToAllCylVacuum (in		
	j					Eco mode) - See details on		1
						Supporting Tables Tab (P3400		
						Section) for 0 sec.		
					ETC Power management mode			
	j							1
	j					Active		1
					Converter overtemp protect			
	j				process	Active		1
					Hot coolant mode	Active		
	j				Engine running	= False		1
						- I alsc		
					Engine overspeed protection	A .:		
					L	Active		1
					Engine metal overtemp protect			1
					Engine metal overtemp protect			
					Engine metal overtemp protect	Active		
						Active Active		
					Cat. temp low POSD Intrusive			

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
,		·			Engine misfire Heater performance POPD Intrusive	Detected Active Active		
					No active DTC's	Fault bundles: Map_SensorFA VehicleSpeedSensorError ECT_Sensor_FA EOP_Sensor_FA PowertrainRelayFault BrakeBoosterSensorFA CrankSensorFA CamSensorFA IAT_SensorFA CyInderDeacDriverTFTKO FourWheelDriveLowStateValid EngineTorqueEstInaccurate TransmissionGearDefaulted EnginePowerLimited		
Cylinder 1 Deactivation Solenoid Control	P3401	Checks the Solenoid Control Circuit electrical integrity for cylinder #1	The ECM detects that commanded state of driver and actual state of the control circuit do not match. (Short to ground,		Engine RPM	>= 400.0 RPM <= 32.0 and >= 11.0 Volts	20 failures out of 25 samples	2 trip(s)
Circuit			short to voltage, open circuit)		Diagnostic enabled/disabled	Enabled	Performed every 250	Type B
Cylinder 4 Deactivation Solenoid Control	P3425	Checks the Solenoid Control Circuit electrical integrity for cylinder #4	The ECM detects that commanded state of driver and actual state of the control circuit do not match. (Short to ground,		Engine RPM Ignition Voltage	>= 400.0 RPM <= 32.0 and >= 11.0 Volts	msec 20 failures out of 25 samples	2 trip(s)
Circuit			short to voltage, open circuit)		Diagnostic enabled/disabled	Enabled	Performed every 250	Туре В
Cylinder 6 Deactivation Solenoid Control	P3441	Checks the Solenoid Control Circuit electrical integrity for cylinder #6	The ECM detects that commanded state of driver and actual state of the control circuit do not match. (Short to ground,		Engine RPM Ignition Voltage	>= 400.0 RPM <= 32.0 and >= 11.0 Volts	msec 20 failures out of 25 samples	2 trip(s)
Circuit		Cylinder #0	short to voltage, open circuit)		Diagnostic enabled/disabled	Enabled	Performed every 250 msec	Туре В
Cylinder 7 Deactivation Solenoid Control Circuit	P3449	Checks the Solenoid Control Circuit electrical integrity for cylinder #7	The ECM detects that commanded state of driver and actual state of the control circuit do not match. (Short to ground, short to voltage, open circuit)		Engine RPM Ignition Voltage Diagnostic enabled/disabled	>= 400.0 RPM <= 32.0 and >= 11.0 Volts Enabled	20 failures out of 25 samples	2 trip(s) Type B
Control Module Communication	U0073	This DTC monitors for a BUS	Bus off failures	≥ 5 counts	CAN hardware is bus OFF for	> 0.1125 seconds	every 250 msec Diagnostic runs in 12.5	2 Trip(s)
Bus A Off		A off condition	out of these samples	≥ 5 counts	Diagnostic enable timer	> 3.0000 seconds	ms loop	Type B

Component/	Fault	Monitor Strategy	Malfunction	Threshold	Secondary	Enable	Time	MIL
System	Code	Description	Criteria	Value	Parameters	Conditions	Required	illum.
Lost	U0101	This DTC monitors for a loss	Message is not received from controller	12 counts	Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	The fail	2 Trip(s)
Communication		of communication with the	for this many counts			_	diagnostic	
With TCM		transmission control module					runs in the	
							6.25 ms loop	
							with pass	
							conditions	
							reported to	
							the DFIR in	
							the 1000ms	
							loop.	
			out of these samples	12 counts	Power mode is RUN			Type B
			out of those cumples	12 ocume	Communication bus is not OFF			.,,,,,
					or is typed as a C code			
					Normal Communication is enabled			
					Normal Transmit capability is TRUE			
					The diagnostic system is not disabled			
					The bus has been on for	> 3.0000 seconds		
					A message has been selected to monitor.			
Lost	U0109	This DTC monitors for a loss	Message is not received from controller	12 counts	Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	The fail	2 Trip(s)
Communication		of communication with the	for this many counts				diagnostic	,
With Fuel Pump		fuel pump control module					runs in the	
Control Module							6.25 ms loop	
							with pass	
							conditions	
							reported to	
							the DFIR in	
							the 1000ms	
							loop.	
			out of these samples	12 counts	Power mode is RUN			Type B
					Communication bus is not OFF			
					or is typed as a C code			
					Normal Communication is enabled			
					Normal Transmit capability is TRUE			1
					The diagnostic system is not disabled The bus has been on for	> 3.0000 seconds		-
					A message has been selected to monitor.	> 3.0000 Seconds		
					7 moddage nad bodn bolodiod to mormon.			
Lost	U0121	This DTC monitors for a loss	Message is not received from controller	12 counts	Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	The fail	1 Trip(s)
Communication		of communication with the	for this many counts				diagnostic	
With Anti-Lock		ABS control module.					runs in the	
Brake System							6.25 ms loop	
(ABS) Control							with pass	
Module							conditions	
							reported to	1
							the DFIR in	1
							the 1000ms	
							loop.	
			out of these samples	12 counts	Power mode is RUN Communication bus is not OFF			Type C Special Type
					Communication bus is not OFF			C C
					or is typed as a C code			
					Normal Communication is enabled			
					Normal Transmit capability is TRUE			
				1	The diagnostic system is not disabled			
	1			<u>I</u>	The bus has been on for	> 3.0000 seconds		1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL illum.
					A message has been selected to monitor.			
Lost Communication With Body Control Module	U0140	This DTC monitors for a loss of communication with the Body Control Module.	Message is not received from controller for this many counts	12 counts	Run/Crank Voltage	11 volts ≤ Voltage ≤ 32 volts	The fail diagnostic runs in the 6.25 ms loop with pass conditions reported to the DFIR in the 1000ms loop.	1 Trip(s)
			out of these samples	12 counts	Power mode is RUN			Type C
					Communication bus is not OFF			Special Type C
					or is typed as a C code			
					Normal Communication is enabled			
					Normal Transmit capability is TRUE			
					The diagnostic system is not disabled			
					The bus has been on for	> 3.0000 seconds		
					A message has been selected to monitor.			

FAPD Section										
P2096, P2097, P2098, P2099 Cell	Accun	n Min								
					Bank1	Bank2	Bank1 Light	Bank2 Light	Bank1 Heavy	Bank2 Heavy
Post O2 Air Flow Mode Bank1 Cell Accum Min Count (10	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Cruise	Cruise	Accel	Accel	Accel	Accel
counts = 1 sec.)	300	300	300	300	0		300	300	300	300
P2097, P2099 Integral Offset Max										
Post O2 Air Flow Mode Decel		Idle	Cruise	Light Accel	Heavy Accel					
Post O2 Integral Offset Max [mV]	130	130	380	380	380					
P2096, P2098 Integral Offset Min										
Post O2 Air Flow Mode Decel		Idle	Cruise	Light Accel	Heavy Accel					
Post O2 Integral Offset Min [mV]	-140	-140	-390	-390						
	-140	-140	-580	-580	-530					
P2097, P2099 O2 Lean Thresh										
					Bank1	Bank2	Bank1 Light	Bank2 Light	Bank1 Heavy	Bank2 Heavy
Post O2 Airflow Mode Cell Bank1 O2 Lean Threshold [mV]	Decel 660	Bank2 Decel 660		Bank2 Idle 660	Cruise	Cruise	Accel	Accel	Accel	Accel
P2096, P2098 O2 Rich	000	000	000	000	0.0				0.0	0,0
Thresh										
					Bank1	Bank2		Bank2 Light		
Post O2 Airflow Mode Cell Bank1 O2 Rich Threshold [mV]	Decel 780	Bank2 Decel 780		Bank2 Idle 780	Cruise 760	Cruise 760	Accel 780	Accel 780	Accel 780	Accel 780
P2096, P2097, P2098, P2099 Out	Of Win	dow Count								
Post O2 Airflow Mode Cell Decel		Idle	Cruise	Links Acces	Harris Arrel					
Out of Window Count (10	0	idle 0	Ciuse	Light Accel	Heavy Accel					
counts = 1 sec.)	-	-	0	0	0					
P2096, P2097, P2098, P2099 Sele	cted C	ells								
Post O2 Airflow Mode Cell Bank1	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Bank1 Cruise	Bank2 Cruise	Bank1 Light Accel	Bank2 Light Accel	Bank1 Heavy Accel	Bank2 Heavy Accel
Post O2 Airflow Mode Selected Cell	0	0	0	0	1	1	1	1	1	1
0 if not selected, 1 if		0	· ·	·						
selected										
P2096, P2097, P2098, P2099 HV I	Post Lo	w								
Post O2 Airflow Mode Cell Bank1	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Bank1 Cruise	Bank2 Cruise	Bank1 Light Accel	Bank2 Light Accel	Bank1 Heavy Accel	Bank2 Heavy Accel
KaFAPD_U_HV_PO2_FiltL oThresh	625	625	625	625	695				625	625
			023	023	093	050	020	023	023	020
P2096, P2097, P2098, P2099 HV I	Post HI	gn								
Post O2 Airflow Mode Cell Bank1	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Bank1 Cruise	Bank2 Cruise	Bank1 Light Accel	Bank2 Light Accel	Bank1 Heavy Accel	Bank2 Heavy Accel
KaFAPD_U_HV_PO2_Filt HiThresh	795	795	795	795	735	735	785	785	785	785
P2096, P2097, P2098, P2099 HV I										
1 2000, 1 2007, 1 2000, 1 2000 117 1	cg.u.	011001 2011			Bank1	Bank2	Devil at Links	De-to Heb	Devid Henry	B1011
Post O2 Airflow Mode Cell Bank1	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Cruise	Cruise	Bank1 Light Accel	Bank2 Light Accel	Accel Accel	Accel
KaFAPD_U_HV_PO2_IntO ffLoThresh	-115	-115	-115	-115	-365	-365	-365	-365	-365	-365
P2096, P2097, P2098, P2099 HV I	ntegral	Offset High								
					Bank1	Bank2	Bank1 Light	Bank2 Light	Bank1 Heavy	Bank2 Heavy
Post O2 Airflow Mode Cell Bank1 KaFAPD_U_HV_PO2_IntO	Decel	Bank2 Decel	Bank1 Idle	Bank2 Idle	Cruise	Cruise	Accel	Accel	Accel	Accel
ffHiThresh	105	105	105	105	355	355	355	355	355	355
P2096, P2097, P2098, P2099 Pos										
Bank and Index 0		Bank 2 Index 0	Bank 1 Index 1	Bank 2 Index 1	Bank 1 Index 2	Bank 2 Index 2	Bank 1 Index 3	Bank 2 Index 3	Bank 1 Index 4	Bank 2 Index 4
Filter Coefficient	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050

P0068: MAP / MAF / TPS Correleation

X-axis is TPS (%)

Data is MAP threshold (kPa) 10.0006 14.9994 19.9997 25.0000 30.0003 35.0006

34.1953 32.3125 30.2031 25.6172 23.5313 22.3281 21.7734 100.0000 100.0000 Data

X axis is 17-5 (%)
5.0003 10.0006 14.9994 19.9997 25.0000 30.0003 35.0006 39.9994 99.9985
26.9766 29.7813 31.2813 36.2813 44.2734 63.9844 66.0078 255.0000 255.0000

X-axis Data

X axis is Battery Voltage (V)
Data is max MAF vs Voltage (grams/sec)
7.00 8.00 9.00 10.00 11.00 12.00 13.00 14.00
18.000 40.000 75.0000 135.0000 250.0000 500.0000 500.0000 500.0000 Data

P1682: Ignition Voltage Correleation

X-axis is IAT (DegC)
Data is Voltage threshold (V)
85.0000 95.0000 105.0000 125.0000
8.6992 9.0000 9.1992 10.0000 X-axis

P0326 Knock Detection Enabled Factors:

FastRtdMax:

X-axis

X - axis = Engine Speed (RPM) Y - axis = Manifold Pressure (kPa)

	0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168	7680	8192
)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
)	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
)	0.0	1.5	2.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
)	0.0	1.5	2.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
1	0.0	1.5	3.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
1	0.0	1.5	3.0	6.0	6.0	6.0	8.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
1	0.0	1.5	3.0	6.0	6.0	6.0	8.0	10.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
0	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
0	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0
)	0.0	1.5	3.0	6.0	6.0	6.0	8.0	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0

Knock Detection Enabled = FastAttackRate * FastAttackCoolGain * FastAttackBaroGain

	RPM:	0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168	7680	8192
FastAttackRate:		0.00	2.50	3.50	3.50	3.50	3.50	3.50	3.50	4.00	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50

ECT (deg. C):	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120
FastAttack	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.10	1.20
CoolGain:																	

Baro:	55.00	61.25	67.50	73.75	80.00	86.25	92.50	98.75	105.00
FastAttack	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Tables supporting P219A and P219B Diagnostics:

P219A									KtOXYD_cmp	_AFIM_Lngth	Thrsh1							
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3500	4000	4500	5000	6000
	40	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
	80	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
	120	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
	160	90000	90000	90000	11792	11792	12816	14416	14736	14736	18352	18352	18352	90000	90000	90000	90000	90000
	200	90000	90000	90000	11792	11792	12816	14416	14736	16464	18288	18352	22096	25776	25776	90000	90000	90000
	240	90000	90000	90000	13296	13296	14064	14960	15280	18176	18224	22624	25824	25776	25776	90000	90000	90000
	280	90000	90000	90000	13584	13584	14880	15216	16192	17136	19808	20224	24240	25104	25104	90000	90000	90000
	320	90000	90000	90000	13184	13184	15824	15232	16144	16784	18128	21760	24064	24048	24048	90000	90000	90000
	360	90000	90000	90000	13184	14464	15760	16208	16976	16752	18608	26944	21344	22688	24048	90000	90000	90000
	400	90000	90000	90000	90000	18432	18432	16352	17968	17648	21184	21568	23648	23648	90000	90000	90000	90000
	440	90000	90000	90000	90000	19888	19888	16688	17584	17088	19360	23232	23440	23648	90000	90000	90000	90000
	480	90000	90000	90000	90000	19504	19504	17632	17952	18896	20096	21664	23232	90000	90000	90000	90000	90000
	520	90000	90000	90000	90000	21040	21040	17280	19552	22144	20160	20160	90000	90000	90000	90000	90000	90000
	560	90000	90000	90000	90000	20704	20704	18560	19456	16624	18400	20160	90000	90000	90000	90000	90000	90000
	640	90000	90000	90000	90000	20704	20704	18560	19456	16624	16624	90000	90000	90000	90000	90000	90000	90000
	720	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
	800	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000

P219A AvgFlow / AvgRPM		250	500	750	1000	1250	1500	(tOXYD_cmp	_AFIM_LngthT	hrsh1_DoD	(AFM applicati	ons only)	3000	3500	4000	4500	5000	6000
Avgi low / Avgivi iii	40	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	80	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	120 160	99008 99008	99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008									
	200	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	240 280	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008											
	320	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	360	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	400 440	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008											
	480	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	520	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	560 640	99008 99008	99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008									
	720	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	800	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
P219B									KtOXYD_cm	p_AFIM_Lng	thThrsh2							
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3500	4000	4500	5000	6000
	40 80	90000 90000	90000 90000	90000	90000	90000 90000	90000 90000											
	120	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
	160 200	90000 90000	90000 90000	90000 90000	90000 12256	90000 12256	90000 12256	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000
	240	90000	90000	90000	12256	12256	14416	16272	17152	17120	18384	19664	19664	90000	90000	90000	90000	90000
	280	90000	90000	90000	12592	12592	16576	16272	17152	17120	18320	19664	21056	20000	20000	90000	90000	90000
	320 360	90000	90000	90000	13120 13120	13120 14288	15920 15440	16016 16752	17792 15920	17504 17136	18176 18496	21120 23584	22464 20496	20000	20000	90000	90000	90000
	400	90000	90000	90000	90000	14960	14960	15136	15456	18224	19584	21648	25136	25136	90000	90000	90000	90000
	440 480	90000	90000	90000	90000	14608 17568	14608 17568	15712 16672	14576 15280	17536 16624	18432 18912	24240 21584	24688 24240	25136 90000	90000	90000	90000	90000
	480 520	90000	90000	90000	90000	17568	17568 17664	16672 17376	15280 14944	16624 18160	18912 18016	21584 18016	90000	90000	90000	90000	90000	90000
	560	90000	90000	90000	90000	18624	18624	18384	15968	17264	17632	18016	90000	90000	90000	90000	90000	90000
	640 720	90000 90000	90000 90000	90000 90000	90000 90000	18624 90000	18624 90000	18384 90000	15968 90000	17264 90000	17264 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000	90000 90000
	800	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000	90000
P219B								/40VVD amm	A EIM I nesth?	Throb2 DoD	(AFM application	ana antıı)						
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3500	4000	4500	5000	6000
	40 80	99008 99008	99008 99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008 99008	99008 99008
	120	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	160	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	200	99008 99008	99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008									
	280	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	320	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	360 400	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008											
	440	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	480 520	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008											
	560	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	640	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008	99008
	720 800	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008	99008 99008											
P219A									KAOVVD K	AFIM Quali	Factors							
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	_AFIM_Quali 2250	2500	2750	3000	3500	4000	4500	5000	6000
	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80 120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	200 240	0.00	0.00	0.00	0.00	0.90 1.00	0.95 1.00	0.85 1.00	0.85	0.00 1.00	0.00 1.00	0.85	0.00 1.00	0.00 0.75	0.00	0.00	0.00	0.00
	280	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
	320	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
	360 400	0.00	0.00	0.00	0.00	0.00	1.00 1.00	0.00	0.00	0.00	0.00	0.00						
	440	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	480 520	0.00	0.00	0.00	0.00	0.00	1.00 1.00	1.00	1.00	1.00	1.00 1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	560	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	640	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	720 800	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			500	750	1000	1250	1500	1750	AFIM_QualFac	2250	AFM application 2500	2750	3000	3500	4000	4500	5000	6000
P219A AvgFlow / AvgRPM		250	500			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P219A AvgFlow / AvgRPM	40	0.00	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80	0.00	0.00	0.00 0.00 0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00			0.00
	80 120 160	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00	0.00 0.00	0.00	0.00 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80 120 160 200	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00	0.00	0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00
	80 120 160	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00	0.00 0.00	0.00	0.00 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80 120 160 200 240 280 320	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
	80 120 160 200 240 280	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
	80 120 160 200 240 280 320 360 400 440	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00
	80 120 160 200 240 280 320 360 400 440 480	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	80 120 160 200 240 280 320 360 400 440 480 520 560	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	80 120 160 200 240 280 320 360 400 440 480 520 560 640	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
	80 120 160 200 240 280 320 360 400 440 480 520 560	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0

P219B									KtOXYD_K_	AFIM_QualFa	ctor2							
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3500	4000	4500	5000	6000
	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	240	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	280	0.00	0.00	0.00	0.00	1.00	0.85	1.00	1.00	0.75	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
	320	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.95	0.00	0.00	0.00	0.00
	360	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
	400	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
	440	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	480	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	520	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	560	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	640	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	720	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	800	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P219B								(40VVD K A	FIM OvelEast	ar2 DaD (AE	M application	antid						
AvgFlow / AvgRPM		250	500	750	1000	1250	1500	1750	2000	2250 (AF	2500	2750	3000	3500	4000	4500	5000	6000
Avgriow / AvgRrivi	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	240	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	280	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	320	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	360	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	440	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	480	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	520	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	560	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	640	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	720	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	800	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tables supporting Brake Pedal Position Sensor Diagnostic

P057B

	CmpltTestPo	intWeight	
Axis	0.00	0.05	

0.00	0.05	0.08	0.25	0.35	0.45	0.55	0.75	1.0
0.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1

	FastTestPoir	ntWeight							
Axis	0.00	0.05	0.08	0.25	0.35	0.45	0.55	0.75	1.00
Curve	0.2	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Tables supporting Clutch Diagnostics:

	EngTorqueTh	reshold Tabl	e			axis is Percer	nt Clutch Peda	al Position, 0	= bottom of t	ravel							
Axis	0	6.2485	12.497	18.7455	24.994	31.2425	37.491	43.7395	49.988	56.2365	62.485	68.7335	74.982	81.2305	87.479	93.7275	99.976
Curve	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

	ResidualErro	renableLow	rabie			axis is Gear		
Axis	1st	2nd	3rd	4th	5th	6th	rev	neutral
Curve	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	ResidualErro	rEnableHigh	Table			axis is Gear		
Axis	1st	2nd	3rd	4th	5th	6th	rev	neutral
Curve	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The following tables	define the Lean and	Rich failure thresholds for FASD	

The following tables define the Lean and Kich failure thresholds for FASD																	
P0171 & P0174	Long Term Trin	n Lean (Lean	Fail threshold)														
% Ethanol	0.00	6.25	12.50	18.75	25.00	31.25	37.50	43.75	50.00	56.25	62.50	68.75	75.00	81.25	87.50	93.75	100.00
Long Term Fuel Trim Lear	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245	1.245
POTTS Non Purge Rich Limit (Rich Fail threshold)																	
% Ethanol	0.00	6.25	12.50	18.75	25.00	31.25	37.50	43.75	50.00	56.25	62.50	68.75	75.00	81.25	87.50	93.75	100.00
Long Term Fuel Non-Purg	e 0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755	0.755
P0172 & P0175	Purge Rich Lim	it (Triggers R	tich Intrusive to	est)													
% Ethanol	0.00	6.25	12.50	18.75	25.00	31.25	37.50	43.75	50.00	56.25	62.50	68.75	75.00	81.25	87.50	93.75	100.00
Long Term Fuel Purge Ric	h 0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760

The following table defines the Long Fuel Trim cells utilized for FASD diagnosis (cells identified with a "Yes" are enabled, and with a "NO" are disabled)

P0172, P0174, and P0175 Long-Term Fuel Trim Cell Usage
Cell LD. CeFADR, e, CCeFADR, e, CCE

P1400 Detail																	
KnIDLC_T_ECT_Axis Coolant Temperature	-11	-10	1	2	16	17	38	39	100								
KalDLC_n_CLO_ThrshOf		1000	1000	1000	1000	125	125	1000	1000								
KalDLC_n_CLO_ThrshOf		1000	1000	1000	1000	125	123	1000	1000								
be considered Cat Light Of	f 1000	1000	1000	1000	1000	125	125	1000	1000								
KalDLC_n_EngDsrdBase Coolant Temperature	-40	-28	-16	-4	8	20	32	44	56	68	80	92	104	116	128	140	152
Base RPN	1 800	800	800	800	800	800	800	800	625	580	580	580	580	580	580	600	620
KalDLC_n_EngDsrdBase		-28	-16	-4	8	20	32	44	56	68	80	92	104	116	128	140	152
Base RPN	800	800	800	800	800	800	800	800	625	580	580	580	580	580	580	600	620
P0420 / P0430 Detail MinimumEngineRunTime																	
Coolant Temp Engine Run Time	40 100	50 100	60 100	70 100	80 100												
MinCatTemp CATD_ExhaustWarmMin_L		X_AXIS_PTS 0															
CATD_ExhaustWarmMin_L CATD_ExhaustWarmMin_L	L(440	1 2															
CATD_ExhaustWarmMin_L	L(440	3															
CATD_ExhaustWarmMin_L CATD ExhaustWarmMin L		4 5															
CATD_ExhaustWarmMin_L CATD_ExhaustWarmMin_L	Lt 440	6															
MinAirflowToWarmCataly																	
Engine Coolant MinAirFlowToWrmCat	0 20	45 18	90 12														
min air iom rownious	20																
P0101, P0106, P0121, P01	2B, P1101: IFF	RD Residual W	eighting Fac	tors													
RPM	TPS Residual	Weight Facto	or based on R 800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000	6400
	1.000 MAF Residua	1.000 I Weight Facto	0.784 or based on F	0.865 RPM	0.907	0.770	0.669	0.655	0.616	0.588	0.550	0.500	0.532	0.650	0.750	1.000	1.000
RPM	1.000	400 1.000	800 0.890	1200 0.916	1600 0.728	2000 0.646	2400 0.600	2800 0.556	3200 0.531	3600 0.522	4000 0.507	4400 0.534	4800 0.527	5200 1.000	5600 1.000	6000 1.000	6400 1.000
gm/sec		Weight Facto			67.0	79.0	93.0	111.0	131.0	156.0	184.0	218.0	259.0	307.0	363.0	431.0	510.0
gillaec	1.000	1.000 al Weight Fac	0.909	0.836	0.773	0.719	0.660	0.584	0.501	0.408	0.336	0.294	0.268	0.243	0.219	0.191	0.159
RPM	1,000	400 0.550	800 0.654	1200 0.761	1600 0.845	2000	2400	2800 0.749	3200 0.688	3600 0.780	4000 0.709	4400 0.787	4800 0.755	5200 0.632	5600 1.000	6000 1.000	6400 1.000
RPM	MAP2 Residu	al Weight Fac	tor based on 800	RPM 1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200	5600	6000	6400
	1.000 SCIAPI Resid	0.664 dual Weight Fa	0.538	0.743	0.833	0.787	0.814	0.608	0.604	0.574	0.564	0.557	1.000	1.000	1.000	1.000	1.000
RPM	1,000	0	0	0	1.000	0 1.000	1.000	1.000	1.000	0 1.000	0 1.000	1.000	1.000	0 1.000	1.000	0 1.000	1.000
RPM		dual Weight Fa			0	0	0	0	0	0	0	0	0	0	0	0	0
RPM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
% Boost	0.00	0.00	0.00	% of Boost 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
P0101, P0106, P0121, P01		RD Residual W Weight Facto			rged												
RPM	0.000	600	1000	1400	1800 0.956	2200 1.000	2600 1.000	3000 1.000	3400 1.000	3800 1.000	4200 1.000	4600 1.000	5000 1.000	5400 1.000	5800 1.000	6200	6600 0.339
RPM		l Weight Fact															
RPM	0.000	600 0.734	1.000	0.680	1800 0.290	2200 0.488	2600 0.330	3000 0.361	3400 0.430	3800 0.177	4200 0.327	4600 0.279	5000 0.283	5400 0.245	5800 0.272	6200 0.000	6600 0.000
gm/sec	0.0	40.0	47.0	56.0	67.0	79.0	93.0	111.0	131.0	156.0	184.0	218.0	259.0	307.0	363.0	431.0	510.0
	1.000 MAP1 Residu	1.000 al Weight Fac	0.909 tor based on	0.836 RPM	0.773	0.719	0.660	0.584	0.501	0.408	0.336	0.294	0.268	0.243	0.219	0.191	0.159
RPM	0.000	600	1000 0.754	1400	1800 0.509	2200 0.695	2600 0.704	3000 0.682	3400 0.700	3800 0.580	4200 1.000	4600 1.000	5000 1.000	5400 0.750	5800 0.750	6200 0.000	6600 0.000
RPM		al Weight Fac			1800	2200	2600	3000	3400	3800	4200	4600	5000	5400	5800	6200	6600
REW	0.000	600 0.818	1.000	0.575	0.406	1.000	0.858	1.000	1.000	0.755	1.000	1.000	1.000	0.508	0.477	0.000	0.000
RPM	0	dual Weight Fa	1000	1400	1800	2200	2600	3000	3400	3800	4200	4600	5000	5400	5800	6200	6600
	0.000 SCIAP2 Resid	0.674 dual Weight Fa	1.000 actor based o	1.000 on RPM	1.000	1.000	0.872	1.000	1.000	0.801	1.000	1.000	1.000	0.682	0.710	0.000	0.000
RPM	0	600	1000	1400	1800	2200	2600	3000	3400	3800	4200	4600	5000	5400	5800	6200	6600
		0.827 al Weight Fac			1.000	1.000	0.851	1.000	1.000	0.851	1.000	1.000	1.000	0.649	0.686	0.000	0.000
% Boost	1.000	0.06 1.000	0.13 1.000	0.19 1.000	0.25 1.000	0.31 1.000	0.38 1.000	1.000	0.50 1.000	0.56 1.000	0.63 1.000	0.69 1.000	0.75 1.000	0.81 1.000	0.88 1.000	0.94 1.000	1.000

P0116: Fail if power up ECT exceeds IAT by these values

Z axis is the Fast Failure temp difference (° C)

X axis is IAT Temperature at Power up (° C)

P0128: Maximum Accumulated Airflow for IAT and Start-up ECT conditions

Z axis is the accumulated airflow failure threshold (grams)

X axis is ECT Temperature at Power up (° C) Y axis is IAT min during test (° C)

IAT Range

	Low	Hi	-40	-28	-16	-4	8	20	32	44	36	68	80
Primary	10.0 ° C	54.5 ° C	17626	17626	17626	17626	17626	15882	14137	12392	10648	8903	7159
Alternate	-7.0 ° C	10.0 ° C	16976	16976	16976	15517	14060	12600	11142	9684	8225	8225	8225

P0128: Maximum Accumulated Time for IAT and Start-up ECT conditions

Z axis is the accumulated time failure threshold (seconds)

X axis is ECT Temperature at Power up (° C)
Y axis is IAT min during test (° C)

IAT Range

	Low	Hi	-40	-28	-16	-4	8	20	32	44	56	68	80
Primary	10.0 ° C	54.5 ° C	1100	1015	930	845	760	675	590	505	420	335	250
Alternate	-7.0 ° C	10.0 ° C	1020	935	850	765	680	595	510	425	340	255	170

P0133 - O2S Slow Response Bank 1 Sensor 1" Pass/Fail Threshold table

Z axis is the pass/fail result (see note below) X axis is Lean to Rich response time (msec) Y axis is Rich to Lean response time (msec)

Note: If the cell contains a "0" then the fault is not indicated, if it contains a "1" a fault is indicated

	0.000	0.020	0.030	0.040	0.050	0.060	0.070	0.100	0.130	0.140	0.150	0.160	0.170	0.180	0.190	0.200	2.000
0.000	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
0.030	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
0.040	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
0.050	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
0.060	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
0.070	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
0.080	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.090	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.130	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.140	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.150	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.160	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.170	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0.180	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0
0.190	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0
0.200	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0
2.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

P0153 - O2S Slow Response Bank 2 Sensor 1" Pass/Fail Threshold table

Z axis is the pass/fail result (see note below

Z axis is Lean to Rich response time (msec)
Y axis is Rean to Rich response time (msec)
Y axis is Rich to Lean response time (msec)
Note: If the cell contains a "1" a fault is indicated, if it contains a "1" a fault is indicated

	0.000	0.020	0.030	0.040	0.050	0.060	0.070	0.100	0.130	0.140	0.150	0.160	0.170	0.180	0.190	0.200	2.000
0.000	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
0.030	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
0.040	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
0.050	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
0.060	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
0.070	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
0.080	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.090	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.130	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.140	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.150	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.160	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0.170	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0
0.180	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0
0.190	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0
0.200	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0
2.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Multiple DTC Use Green Sensor Delay Criteria:

The specific diagnostic (from summary table) will not be enabled until the next ignition cycle after the airflow criteria below (by sensor location) has been met:

- * B1S1 Airflow greater than 22 gps for 120000 grams of accumulated flow non-continuously.
- * B1S2 Airflow greater than 22 gps for 120000 grams of accumulated flow non-continuously.

 * B2S1 Airflow greater than 22 gps for 120000 grams of accumulated flow non-continuously.
- * B2S2 Airflow greater than 22 gps for 120000 grams of accumulated flow non-continuously.

Note that all other enable criteria must be met on the next ignition cycle for the test to run on that ignition cycle.

Note: This feature is only enabled when the vehicle is new and cannot be enabled in service

P0300-P0308: Idle SCD			(decel index (:	> Idle SCD AN	D > Idle SCD	ddt Tables))								
		400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
load	9	600	425	300	220	135	70	60	50	50	32767	32767	32767	32767
Load	12	550	425	300	220	135	70 70	60	50	50	32767	32767	32767	32767
	13 14	550 550	425 425	300 320	220 220	135 135	80	60 60	50 50	50 50	32767 32767	32767 32767	32767 32767	32767 32767
	15	550	425	340	220	150	90	60	50	50	32767	32767	32767	32767
	16	600	425	340	220	150	100	70	60	50	32767	32767	32767	32767
	17	600	425	340	250	150	110	70	60	50	32767	32767	32767	32767
	18	600	425	320	290	150	115	80	60	50	32767	32767	32767	32767
	19 21	700 800	425 450	400 425	300 320	150 170	115 115	85 90	60 70	50 65	32767 32767	32767 32767	32767 32767	32767 32767
	22	900	475	450	350	180	120	102	75	65	32767	32767	32767	32767
	24	1000	500	500	350	190	130	105	85	65	32767	32767	32767	32767
	25	1100	650	600	350	200	140	110	90	65	32767	32767	32767	32767
	27 29	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767
	31	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
	41	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
P0300-P0308: Idle SCD d			•			•		•	•			•		,
		400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
load	9	600	425 425	300	200	135 135	70 70	60	50	50 50	32767	32767 32767	32767 32767	32767
	12	550 550	425 425	300	200	135	70	60	50 50	50	32767 32767	32767	32767	32767 32767
	14	550	425	320	200	135	80	60	50	50	32767	32767	32767	32767
	15	550	425	340	200	135	90	60	50	50	32767	32767	32767	32767
	16	600	425	340	200	135	100	65	60	50	32767	32767	32767	32767
	17	600	425	340	250	135	110	65	60	50	32767	32767	32767	32767
	18 19	600 700	425 425	340 400	280 300	135 140	115 115	80 85	60 60	50 50	32767 32767	32767 32767	32767 32767	32767 32767
	21	800	450	425	320	170	115	90	60	60	32767	32767	32767	32767
	22	900	475	450	350	180	120	100	70	65	32767	32767	32767	32767
	24	1000	500	500	350	190	130	105	85	65	32767	32767	32767	32767
	25	1100	650	600	350	200	140	110	90	65	32767	32767	32767	32767
	27 29	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767	32767 32767
	31	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
	41	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
			02707					OLIVI	32707				5	02101
			02/0/			02707	02707	02707	32707		02707	02707	02.707	02707
P0300-P0308: SCD Delta				dex >SCD Delt				02.707	32707		OL 101	02101	02101	OL/O
P0300-P0308: SCD Delta		400						1000	1100	1200	1400	1600	1800	2000
load	8	400 350	OR (decel inc	dex >SCD Delt	a AND > SCD 700 150	Delta ddt Tabl 800 125	es)) 900 70	1000 50	1100 40	1200 30	1400 32767	1600 32767	1800 32767	2000 32767
	9	400 350 350	OR (decel ind 500 350 350	dex >SCD Delt 600 250 250	a AND > SCD 700 150 130	Delta ddt Tabl 800 125 125	es)) 900 70 70	1000 50 50	1100 40 40	1200 30 30	1400 32767 32767	1600 32767 32767	1800 32767 32767	2000 32767 32767
load	9	400 350 350 350	OR (decel inc 500 350 350 350 350	dex >SCD Delt 600 250 250 225	a AND > SCD 700 150 130 125	Delta ddt Tabl 800 125 125 100	es)) 900 70 70 70	1000 50 50 50	1100 40 40 40	1200 30 30 30	1400 32767 32767 32767	1600 32767 32767 32767	1800 32767 32767 32767	2000 32767 32767 32767
load	9 11 12	400 350 350 350 350 350	OR (decel ind 500 350 350 350 350 350	dex >SCD Delt 600 250 250 250 225 215	a AND > SCD 700 150 130 125 125	Delta ddt Tabl 800 125 125 100 100	es)) 900 70 70 70 78	1000 50 50 50 50	1100 40 40 40 40 43	1200 30 30 30 30 30	1400 32767 32767 32767 32767	1600 32767 32767 32767 32767	1800 32767 32767 32767 32767	2000 32767 32767 32767 32767
load	9	400 350 350 350	OR (decel inc 500 350 350 350 350	dex >SCD Delt 600 250 250 225	a AND > SCD 700 150 130 125	Delta ddt Tabl 800 125 125 100	es)) 900 70 70 70	1000 50 50 50	1100 40 40 40	1200 30 30 30	1400 32767 32767 32767	1600 32767 32767 32767 32767 32767	1800 32767 32767 32767	2000 32767 32767 32767
load	9 11 12 13 15	400 350 350 350 350 350 350 350 350	OR (decel inc 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 255 215 215 230 250	a AND > SCD 700 150 130 125 125 125 135 145	Delta ddt Tabl 800 125 125 100 100 1100 1100 120	900 70 70 70 70 78 78 80 85	1000 50 50 50 50 50 50 54 58	1100 40 40 40 43 44 44 50	1200 30 30 30 30 30 35 35 40	1400 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17	400 350 350 350 350 350 350 350 350 350	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 225 215 215 215 230 250 250	a AND > SCD 700 150 130 125 125 125 135 145 160 180	Delta ddt Tabl 800 125 125 100 100 100 110 110 120 140	900 70 70 70 78 78 80 85	1000 50 50 50 50 50 54 58 60 70	1100 40 40 40 43 44 44 50 60	1200 30 30 30 30 35 35 40	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19	400 350 350 350 350 350 350 350 350 350 3	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 225 215 215 230 250 250 250 300	a AND > SCD 700 150 130 125 125 125 136 145 160 180 200	Delta ddt Tabl 800 125 125 100 100 100 110 120 140 150	900 70 70 70 78 78 80 85 90	1000 50 50 50 50 50 54 58 60 70	1100 40 40 40 43 44 44 50 60	1200 30 30 30 30 35 35 40 45	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25	400 350 350 350 350 350 350 350 350 350	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 255 225 215 215 230 250 250 300 350	a AND > SCD 700 150 130 125 135 145 160 180 200 300	Delta ddt Tabl 800 125 125 100 100 100 110 110 120 140	900 70 70 70 78 78 80 85	50 50 50 50 50 50 50 54 58 60 70 80	1100 40 40 40 43 44 44 50 60 70 80	1200 30 30 30 30 35 35 40 45 45	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33	400 350 350 350 350 350 350 350 350 350 3	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 250 255 215 215 215 230 250 250 300 350 32767	a AND > SCD 700 150 130 125 125 135 145 140 180 200 307 32767	Delta ddt Tabl 800 125 125 125 100 100 100 110 110 110 150 200 32767	es)) 900 70 70 70 78 80 80 100 130 32767	1000 50 50 50 50 50 54 58 60 70 80 100 32767 32767	1100 40 40 40 43 44 44 44 50 60 70 80 32767 32767	1200 30 30 30 30 35 35 40 45 45 45 45 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33 38	400 350 350 350 350 350 350 350 350 350 3	OR (decel inc 500 350 350 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 250 225 215 215 230 250 250 300 350 32767 32767	a AND > SCD 700 150 150 125 125 135 145 160 180 200 300 32767 32767	Delta ddt Tabl 800 125 125 100 100 100 110 110 120 140 150 200 32767 32767	900 70 70 70 78 78 80 85 90 100 130 32767 32767	1000 50 50 50 50 50 50 54 58 60 70 80 100 32767 32767	1100 40 40 40 43 44 44 50 60 70 80 32767 32767 32767	1200 30 30 30 30 35 35 40 45 45 45 45 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33 38 42	400 350 350 350 350 350 350 350 350 350 3	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 225 215 215 230 250 250 300 32767 32767 32767	a AND > SCD 700 150 130 125 125 125 135 145 160 180 200 32767 32767 32767	Delta ddt Tabl 800 125 125 100 100 100 110 110 120 140 150 200 32767 32767 32767	990 70 70 70 78 78 80 85 90 100 130 32767 32767 32767	1000 50 50 50 50 50 54 58 60 70 80 100 32767 32767 32767	1100 40 40 40 40 43 44 44 50 60 70 80 32767 32767 32767 32767	1200 30 30 30 30 30 35 35 40 45 45 45 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33 38 42 48	400 350 350 350 350 350 350 350 350 350 3	OR (decel inc) 500 350 350 350 350 350 350 350 350 350	dex > SCD Delit 600 250 250 225 215 215 230 250 300 350 32767 32767 32767	a AND > SCD 700 150 150 125 125 125 145 160 200 300 32767 32767 32767	Delta ddt Tabl 800 125 125 100 100 100 110 120 140 150 200 32767 32767 32767	900 70 70 70 70 78 80 85 90 100 130 32767 32767 32767	1000 50 50 50 50 50 54 58 60 70 80 100 32767 32767 32767 32767	1100 40 40 40 43 44 44 50 60 70 80 32767 32767 32767 32767	1200 30 30 30 30 30 35 45 45 45 45 32767 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33 38 42	400 350 350 350 350 350 350 350 350 350 3	OR (decel ind 500 350 350 350 350 350 350 350	dex >SCD Delt 600 250 250 225 215 215 230 250 250 300 32767 32767 32767	a AND > SCD 700 150 130 125 125 125 135 145 160 180 200 32767 32767 32767	Delta ddt Tabl 800 125 125 100 100 100 110 110 120 140 150 200 32767 32767 32767	990 70 70 70 78 78 80 85 90 100 130 32767 32767 32767	1000 50 50 50 50 50 54 58 60 70 80 100 32767 32767 32767	1100 40 40 40 40 43 44 44 50 60 70 80 32767 32767 32767 32767	1200 30 30 30 30 30 35 35 40 45 45 45 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load	9 11 12 13 15 17 19 22 25 29 33 38 42 48 61	400 350 350 350 350 350 350 350 3	OR (decel inc 500 500 350 350 350 350 350 350 350 350	dex > SCD Delti 600 250 250 225 215 215 230 250 250 250 350 32767 32767 32767 32767 32767	a AND > SCD 700 150 150 125 125 135 145 160 180 200 300 32767 32767 32767 32767 32767	Delta ddt Tabl 800 125 125 125 120 100 100 100 110 120 140 200 207 32767 32767 32767 32767	900 70 70 70 70 70 70 78 80 85 90 130 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 54 58 60 70 32767 32767 32767 32767 32767 32767	1100 40 40 40 43 44 44 44 50 80 32767 32767 32767 32767 32767 32767	1200 30 30 30 30 35 35 40 45 45 45 32767 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load Load	9 11 12 13 15 17 19 22 25 29 33 38 42 48 54 61	400 350 350 350 350 350 350 350 3	OR (decel inc 500 350 350 350 350 350 350 350 350 350	dex >SCD Delti 600 250 250 250 225 215 215 215 230 250 250 250 230 350 32767 32767 32767 32767 32767	a AND > SCD 700 150 130 125 125 125 135 145 160 180 300 32767 32767 32767 32767 32767	Delta ddt Tabl 800 125 125 125 100 100 100 110 120 140 150 200 32767 32767 32767 32767	900 70 70 70 70 70 78 88 80 85 90 100 132767 32767 32767 32767 32767	1000 50 50 50 50 50 54 58 60 70 100 32767 32767 32767 32767 32767	1100 40 40 40 40 43 44 44 50 60 60 80 32767 32767 32767 32767 32767	1200 30 30 30 30 35 35 40 45 45 45 45 32767 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1800 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load Load	9 111 12 13 15 17 17 19 22 25 29 33 38 42 48 54 61	400 350 350 350 350 350 350 350 350 350 3	OR (decel inc 500 500 350 350 350 350 350 350 350 350	dex >SCD Delti 600 250 250 250 215 215 215 215 230 280 300 350 32767 32767 32767 32767 32767 32767 32767	8 AND > SCD 700 150 130 125 125 125 136 145 160 200 300 32767 32767 32767 32767 32767 32767	Delta ddt Tabl 800 125 125 126 100 100 100 110 120 140 150 32767 32767 32767 32767 32767 32767 32767	es)) 900 70 70 70 70 78 78 80 85 90 100 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 50 50 54 58 60 70 80 32767 32767 32767 32767 32767 32767 32767 32767	1100 40 40 40 43 44 44 44 50 80 32767 32767 32767 32767 32767 32767 32767 32767	1200 30 30 30 30 35 40 45 45 45 32767 32767 32767 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767	1800 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load Load	9 111 12 13 15 17 19 22 25 29 33 38 42 42 48 54 61	400 350 350 350 350 350 350 350 350 350 3	OR (decel int) 500 350 350 350 350 350 350 350 350 350	30x >SCD Delti 600 250 250 250 250 250 215 215 230 250 250 300 32767 32767 32767 32767 32767 32767	a AND > SCD 700 150 150 130 125 125 125 135 145 160 200 300 32767 32767 32767 32767 32767 32767	Delta ddt Tabl 800 125 125 126 100 100 100 110 120 200 32767 32767 32767 32767 32767 32767	900 900 70 70 70 78 88 89 90 130 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 54 58 60 70 32767 32767 32767 32767 32767 32767 32767 32767	1100 40 40 40 43 44 44 44 50 60 32767 32767 32767 32767 32767 32767 32767	1200 30 30 30 30 35 35 35 45 45 45 45 45 45 32767 32767 32767 32767 32767	1400 32767	1600 32767	1800 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load Load	9 111 12 13 15 17 17 19 22 25 29 33 38 42 48 54 61	400 350 350 350 350 350 350 350 350 350 3	OR (decel int) 500 350 350 350 350 350 350 350 350 350	30x >SCD Delti 600 250 250 250 250 250 215 215 230 250 250 300 32767 32767 32767 32767 32767 32767 32767	a AND > SCD 700 150 150 130 125 125 125 135 145 160 200 300 32767 32767 32767 32767 32767 32767	Delta ddf Tabl 800 125 125 125 100 100 100 110 120 140 150 200 32767 32767 32767 32767 32767 32767 32767	es)) 900 70 70 70 70 78 78 80 85 90 100 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 50 50 54 58 60 70 80 32767 32767 32767 32767 32767 32767 32767 32767	1100 40 40 40 43 44 44 44 50 80 32767 32767 32767 32767 32767 32767 32767 32767	1200 30 30 30 30 35 40 45 45 45 32767 32767 32767 32767 32767 32767 32767	1400 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1600 32767	1800 32767	2000 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767
load Load	9 111 12 13 15 16 16 16 16 16 16 16 16 16 16 16 16 16	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	six > SCD Delt. 600 250 250 250 250 250 250 251 215 230 250 250 350 35767 32767	a AND > SCD 700 150 150 125 125 125 125 135 145 140 300 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	Delta ddt Tabl 800 125 125 125 120 100 100 110 110 110 120 140 150 200 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	900 70 70 70 78 80 80 80 32767 32767 32767 32767 32767 32767 32767 80 80 80 80 80 88	1000 50 50 50 50 50 50 50 50 50 50 40 58 60 70 32767 32767 32767 32767 32767 55 55 55 55	1100 40 40 40 40 43 44 44 44 44 50 32767 32767 32767 32767 32767 32767 32767 32767	1200 30 30 30 30 30 30 30 35 45 45 45 45 42 76 32767 32767 32767 32767 400 40 40 40 40 40	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 13 15 142 142 143 15 15 161 142 142 143 15 15 161 142 143 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 145 145 145 145 145 145 145 145 145 145	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex > SCD Delta 600 250 250 250 251 215 215 215 230 250 350 3507 32767 3	a AND > SCD 700 150 150 130 125 125 125 135 145 160 300 300 32767 32767 32767 32767 32767 32767 32767 150 150 150 140 140 155	Delta ddt Tabl 800 125 125 125 100 100 100 110 120 200 150 200 32767 32767 32767 32767 32767 32767 150 150 150 150 150 150 150 150 150 150	900 70 70 70 78 80 80 85 90 130 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 50 50 54 68 60 100 32767 32767 32767 32767 32767 32767 55 65 65	1100 40 40 40 40 40 40 44 44 44 44 44 50 80 80 80 80 80 80 80 80 80 80 80 80 80	1200 30 30 30 30 30 30 30 30 35 35 45 45 45 32767 32767 32767 32767 32767 32767 40 40 40 40 42 42	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 13 15 16 16 16 16 16 16 16 16 16 16 16 16 16	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	30x > SCD Delta 600 250 250 250 250 250 250 250 250 250 2	a AND > SCD 700 150 150 130 125 125 125 135 145 160 300 32767	Delta ddt Tabl 800 125 125 125 120 100 100 110 110 110 120 140 150 200 32767 32767 32767 32767 32767 32767 150 150 150 150 150 150 150 150 150 150	900 70 70 70 78 80 80 80 32767 32767 32767 32767 32767 32767 32767 32768 80 80 80 80 88	1000 50 50 50 50 50 50 50 50 50 50 50 50	1100 40 40 40 43 43 44 44 44 50 50 32767 30767 3	1200 30 30 30 30 30 30 35 35 45 45 45 45 32767 32767 32767 32767 420 40 40 40 40 42 42 48	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 13 15 142 142 143 15 15 161 142 142 143 15 15 161 142 143 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 15 15 161 142 143 145 145 145 145 145 145 145 145 145 145	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex > SCD Delta 600 250 250 250 251 215 215 215 230 250 350 3507 32767 3	a AND > SCD 700 150 150 130 125 125 135 145 160 300 32767	Delta ddf Tabl 800 125 126 127 129 100 100 100 110 120 140 150 200 32767	900 70 70 70 78 80 80 85 90 130 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 50 50 50	1100 40 40 40 40 40 43 44 44 44 44 44 50 80 80 80 80 80 80 80 80 80 80 80 80 80	1200 30 30 30 30 30 30 30 30 35 45 45 45 32767 32767 32767 32767 32767 32767 40 40 40 40 42 42 48 55	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 13 15 17 19 19 19 11 11 12 12 13 15 17 11 11 11 11 11 11 11 11 11 11 11 11	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex > SCD Delti Sex > SCD Delt	a AND > SCD 700 150 150 130 125 125 125 135 145 160 300 32767	Delta ddt Tabl 800 125 125 125 120 100 100 110 110 110 120 140 150 200 32767 32767 32767 32767 32767 32767 150 150 150 150 150 150 150 150 150 150	990) 900 70 70 70 70 70 70 78 80 80 100 1307 32767	1000 50 50 50 50 50 50 50 50 50 50 50 50	1100 40 40 40 43 43 44 44 44 50 50 32767 30767 3	1200 30 30 30 30 30 30 35 35 45 45 45 45 32767 32767 32767 32767 420 40 40 40 40 42 42 48	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 133 155 157 171 19 12 12 13 13 15 15 15 17 17 19 12 12 15 15 17 17 19 11 11 12 13 15 15 17 19 19 12 12 15 17 19 19 12 15 17 19 19 12 15 17 19 19 12 15 17 19 19 12 15 17 19 19 19 19 19 19 19 19 19 19 19 19 19	400 350 350 350 350 350 350 350 350 350 3	OR (decel into 500 as 5	sex>SCD Delite 600 250 250 250 251 215 215 215 215 215 300 300 32767	a AND > SCD 700 150 150 150 125 135 145 160 200 32767	Delta ddf Table 800 125 125 100 100 100 110 110 1	990) 900 70 70 70 78 88 89 90 100 32767	1000 50 50 50 50 50 50 50 50 50 60 70 80 80 10 32767	1100 40 40 40 43 44 44 44 50 80 80 32767 30767 3	1200 30 30 30 30 30 35 40 45 45 45 45 32767 32767 32767 32767 32767 32767 40 40 40 40 40 40 40 40 40 40	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 9 11 12 13 15 17 19 22 25 29 33 15 17 19 22 25 29 33 38 42 48 54 61 11 12 25 25 29 35 29 29 33 38 38 38 38 38 38 38 38 38 38 38 38	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex > SCD Delta 600 250 250 250 251 215 215 215 230 260 300 300 300 300 300 300 300 300 300 3	a AND > SCD 700 150 150 130 125 125 135 145 160 200 32767	Delta ddt Table 800 125 126 100 100 100 110 110 120 140 150 32767	990) 900 70 70 70 70 78 78 80 80 80 100 32767	1000 50 50 50 50 50 50 50 50 50	1100 40 40 40 40 40 40 41 44 44 44 44 44 44 44 45 50 70 32767	1200 30 30 30 30 30 30 30 35 35 45 45 45 32767 32767 32767 32767 1200 40 40 40 42 42 48 48 60 60 60 60 32767	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 111 12 133 155 161 161 161 161 161 161 161 161 161	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex>SCD Delite 600 250 250 250 251 215 215 215 215 230 250 300 32767	a AND > SCD 700 150 150 150 125 125 135 145 160 200 32767	Delta ddf Table 800 125 125 100 100 100 110 110 1	990) 900 70 70 70 78 88 89 90 100 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1000 50 50 50 50 50 50 50 50 50 60 70 80 80 10 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767 32767	1100 40 40 40 43 44 44 44 50 50 80 32767	1200 30 30 30 30 30 35 40 45 45 45 45 32767 3	1400 32767	1600 32767	1800 32767	2000 32767
load Load	9 9 11 12 13 15 17 19 22 25 29 33 15 17 19 22 25 29 33 38 42 48 54 61 11 12 25 25 29 35 29 29 33 38 38 38 38 38 38 38 38 38 38 38 38	400 350 350 350 350 350 350 350 350 350 3	OR (decel in: 500 350 350 350 350 350 350 350 350 350	sex > SCD Delta 600 250 250 250 251 215 215 215 230 260 300 300 300 300 300 300 300 300 300 3	a AND > SCD 700 150 150 130 125 125 135 145 160 200 32767	Delta ddt Table 800 125 126 100 100 100 110 110 120 140 150 32767	990) 900 70 70 70 70 78 78 80 80 80 100 32767	1000 50 50 50 50 50 50 50 50 50	1100 40 40 40 40 40 40 41 44 44 44 44 44 44 44 45 50 70 32767	1200 30 30 30 30 30 30 30 35 35 45 45 45 32767 32767 32767 32767 1200 40 40 40 42 42 48 48 60 60 60 60 32767	1400 32767	1600 32767	1800 32767	2000 32767

P0300-P0308: Idle Cyl Mc	ode			OR (decel ind	ex (>ldle Cyl N	Mode AND > Id	lle Cyl Mode d	dt Tables))																			
•		400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600													
load	9	1300	1200	850	500	330	235	180	150	120	115	90	80	70													
Load	12	1300	1200	850	500	330	235	180	150	120	115	90	80	70													
	13	1300	1100	850	500	330	235	180	150	120	115	90	80	70													
	14	1200	1100	850	500	330	235	180	150	120	115	90	80	70													
	15	1200	1100	850	500	330	235	180	150	120	115	90	80	70													
	16	1200	1100	850	500	330	235	180	150	120	115	90	80	70													
	17	1300	1200	950	500	330	235	180	150	120	115	90	80	70													
	18	1400	1300	1000	550	330	235	180	150	120	115	90	80	70													
	19	1500	1400 1500	1200	600	330 330	250 250	180 180	150	140	115	90 90	80 80	70 70													
	21	1600 1700	1600	1200 1300	600	330	220	180	160 170	140	120	90	80	70													
	24	1800	1700	1400	600	360	200	155	170	135	120	95	80	70													
	25	1900	1800	1500	600	370	205	160	120	105	85	85	80	60													
	27	2000	1900	1500	625	400	240	150	120	95	80	70	65	60													
	29	2100	2000	1600	625	500	260	170	117	85	80	70	75	60													
	31	2100	2000	1600	625	600	325	240	125	85	76	70	60	60													
	41	2100	2000	1800	650	600	500	315	130	70	80	89	75	60													
P0300-P0308: Idle Cyl Mo																											
		400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600													
load	9	1300	1200	850	500	300	225	160	150	120	100	90	80	70													
	12	1300	1200	850	500	300	225	160	150	120	100	90	80	70													
	13	1300	1100	850	500	300	225	160	150	120	100	90	80	70													
	14	1200	1100	850	500	300	225	160	150	120	100	90	80	70													
	15	1200	1100	850	500	300	225	160	150	120	100	90	80	70													
	16	1200	1100	750	500	300	225	160	150	120	100	90	80	70													
	17	1300	1200	800	500	300	225	160	150	120	100	90	80	70													
	18	1400	1300	1000	550	300	225	160	150	120	115	90	80	70													
	19	1500	1400	1200	600	300	225	160	150	130	115	90	80	70													
	21	1600	1500	1200	600	300	230	160	150	140	120	90	80	70													
	22	1700	1600	1300	600	300	190	160	155	140	130	90	80	70													
	24	1800	1700	1400	600	360	190	135	130	120	110	95	80	70													
	25	1900	1800	1500	600	370	190	140	100	85	76	80	80	60													
	27	2000	1900	1500	625	400	220	125	90	75	70	65	60	60													
	29	2100	2000	1600	625	500	260	150	95	70	65	60	60	60													
	31	2100	2000	1600	625	600	325	240	115	70	60	60	60	60													
	41	2100	2000	1800	650	600	500	315	120	80	60	70	70	60													
P0300-P0308: Cvl Mode				OR (decel ind	ex > Cyl Mode	AND > Cyl Mo	ode ddt Tables	:))																			
P0300-P0308: Cyl Mode		400	500	OR (decel ind		AND > Cyl Mo	ode ddt Tables		1100	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3500	4000	4500	5000	5500	6000	6500	7000
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load Load	9 1 11 12 13 15 17 19 19 12 12 13 15 15 17 19 12 12 13 15 15 17 17 19 19 12 11 11 11 11 11 11 11 11 11 11 11 11	700 650 600 650 600 600 526 516 510 528 550 600 700 800 1050 800 1050 1150 1150 11200 400 700 600 650 600 655 565 565 580 630 740 800 800 800 800	\$00 650 650 650 650 600 525 600 525 600 700 800 800 800 800 800 800 800 800 8	600 650 650 650 650 650 600 525 600 700 800 800 800 900 900 900 600 600 600 600 600 600 6	700 700 700 700 700 700 700 700 700 700	800 350 350 390 300 290 280 500 650 700 800 800 350 350 350 350 350 350 350 350 350 3	900 175 175 176 1775 1775 1775 188 1895 1995 200 225 2275 3275 425 425 450 600 900 900 900 900 900 900 900 900 90	1000 150 150 150 150 150 150 150 140 140 140 140 150 230 270 325 325 400 450 500 500 500 200 300 300	115 115 100 100 100 100 105 120 120 145 170 190 230 240 250 250 122 125 125 126 120 120 120 120 120 120 120 120 120 120	72 74 74 80 86 86 88 90 100 120 120 140 225 250 300 300 400 1200 85 85 85 90 105 115 115 120 120 120	52 50 50 50 50 50 50 50 50 50 50 50 50 50	42 42 42 42 42 42 42 42 42 42 42 42 42 4	32 32 30 30 28 28 28 28 30 35 40 50 60 60 70 1115 1800 35 35 34 35 36 37 37 38 38 39 40 40 40 40 40 40 40 40 40 40 40 40 40	22 22 22 21 22 22 22 22 22 22 25 30 30 35 40 45 55 65 65 100 2000 30 9 29 27 27 28 29 29 29 29 30 32 35 40 40 55	18 18 17 17 17 17 18 20 25 30 36 40 45 55 60 80 222 22 22 22 26 30 40 40 45	14 13 13 13 12 11 11 12 15 16 20 22 26 30 30 40 45 50 60 2400 15 15 16 17 17 17 19 20 25 30 30 30	10 10 10 10 9 11 11 11 12 15 18 20 20 25 30 30 50 2600 12 12 12 12 12 13 14 15 16 16 20 20 20 20	8 8 8 8 8 8 8 9 9 10 10 10 10 10 10 10 11 11 11 11 11 11	7 6 6 7 7 7 7 7 8 8 10 0 3000 7 7 7 8 8 9 9 9 10 10 12 12 12 15	4 4 4 4 4 4 4 5 5 5 5 5 6 6 7 7 7 7 7 7 7 7 7 7 15 7 15	4 4 4 4 4 4 4 4 4 4 4 5 6 6 6 7 7 8 9 4 4000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 4 4 4 4 4 4 5 5 7 8 4500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 5 5 5000 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 5 5 50000000000	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4
load Load	9 1 11 12 13 15 17 19 22 25 29 29 33 38 88 9 18 19 22 25 29 39 39 19 19 19 19 19 19 19 19 19 19 19 19 19	700 650 600 650 600 525 510 525 550 600 700 800 1050 1150 1150 1150 1150 1200 700 650 650 600 740 800 800 800 800 800 800 800	\$00 650 650 650 650 600 525 510 525 600 700 800 800 900 900 900 900 900 900 900 9	600 650 650 650 650 650 650 650 650 650	700 500 400 400 325 325 325 325 400 400 475 575 650 900 900 900 900 900 900 900 900 900 9	800 350 350 390 290 280 280 280 350 300 280 350 800 900 800 800 900 800 800 900 800 80	900 175 175 175 175 175 185 185 195 198 198 198 198 198 198 198 198 198 198	1000 150 150 150 150 150 150 150 150 150	115 115 100 100 100 105 120 145 170 120 145 170 120 146 170 120 146 170 190 190 190 190 190 190 190 190 190 19	72 74 74 74 80 86 86 88 90 100 120 120 225 300 300 300 400 1200 85 85 85 90 105 115 115 115 115 120 200 225 225 225	52 50 50 50 50 52 55 55 56 60 100 1100 140 180 200 255 55 56 60 100 140 150 150 160 160 160 160 160 160 160 16	42 42 42 42 42 42 42 45 42 45 45 45 45 45 45 45 45 45 45 45 45 45	32 32 30 30 28 28 28 28 28 35 40 50 60 70 110 1115 1800 35 35 34 40 35 36 37 38 38 39 40 40 40 40 40 40 40 40 40 40 40 40 40	22 22 22 21 22 22 22 22 25 30 36 40 45 55 66 80 29 29 29 29 29 29 30 30 30 30 30 30 30 30 30 30 30 30 30	18 18 18 17 17 17 17 17 18 20 25 30 35 40 45 55 60 22 22 22 22 22 22 22 22 22 22 22 22 26 30 40 46 55	14 13 13 13 12 11 12 15 16 20 22 26 30 30 40 45 50 60 2400 15 15 15 16 17 17 19 20 22 25 30 30 30 30 30 30 30 30 30 30 30 30 30	10 10 10 10 10 10 9 10 11 11 12 15 18 20 20 25 30 35 35 40 40 50 2600 21 12 12 12 12 12 12 12 12 12 12 12 12	8 8 8 8 8 8 9 9 10 10 10 13 15 18 20 20 20 20 20 20 20 20 20 20 20 20 20	7 6 6 6 7 7 7 7 7 8 8 10 10 12 2 25 27 7 7 7 7 8 8 9 9 9 10 10 12 12 15 15 18	4 4 4 4 4 4 4 5 5 5 5 6 6 7 7 7 8 8 9 9 12 13 13 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 4 4 4 4 4 4 4 4 4 4 5 5 6 6 7 7 8 9 9 40000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 4 4 4 4 4 4 4 4 5 5 5 7 8 8 4500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
load Load	9 1 11 12 13 15 17 19 22 25 29 29 29 29 29 29 29 29 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	700 650 600 650 600 650 600 600 600 600 6	\$00 650 650 650 650 650 600 525 600 700 800 800 800 800 800 800 8	600 650 650 650 650 650 600 525 600 700 800 800 800 900 900 900 600 600 600 600 600 600 6	700 500 400 400 325 325 325 400 400 425 475 650 650 900 900 900 900 900 900 900 900 900 9	800 350 350 350 300 290 280 280 500 650 700 800 800 350 350 350 350 350 350 350 350 350 3	900 175 175 175 175 176 177 178 188 189 199 199 199 200 225 275 325 325 325 325 325 326 327 420 240 240 240 240 240 260 230 230 230 230 230 230 230 230 230 23	1000 150 150 150 150 150 150 150 140 140 140 140 150 200 230 270 325 325 400 450 500 500 500 500 200 350 350	115 115 100 100 100 100 105 120 120 145 170 190 230 250 350 105 120 1100 1125 125 126 127 126 127 127 128 129 129 129 129 120 120 120 120 120 120 120 120 120 120	72 74 74 80 86 86 88 90 100 120 120 140 205 300 300 300 300 400 1200 85 85 85 90 105 115 115 120 200 225 225 225 225 225 225 225 225 2	52 55 55 65 80 100 100 100 1100 1160 150 52 52 55 55 55 65 60 52 55 55 55 55 55 55 55 55 55 55 55 55	42 42 42 42 42 42 42 42 42 42 42 42 42 4	32 32 30 30 30 28 28 28 30 35 40 50 70 80 90 110 115 1800 35 34 35 34 36 37 36 37 36 37 36 36 37 36 36 37 38 38 39 40 40 40 40 40 40 40 40 40 40 40 40 40	22 22 22 21 22 22 22 22 22 25 30 30 35 55 55 55 55 55 55 55 5 55	18 18 17 17 17 17 18 20 25 30 36 40 45 55 22 22 22 26 20 30 40 40 45 55 50 30 40 40 40 45 55 50 50 50 50 50 50 50 50 50 50 50 50	14 14 13 13 13 13 15 15 15 15 16 17 17 19 20 25 30 32 35 45 5 30 32 35 45 5 30 30 30 30 30 30 30 30 30 30 30 30 30	10 10 10 10 10 10 10 10 10 10 10 10 10 1	8 8 8 8 8 8 8 8 9 9 9 10 10 10 11 11 11 11 11 11 11 11 15 15 20 28 28 20 20 20 28	7 6 6 7 7 7 7 7 8 8 9 9 9 10 10 12 12 12 15 18 18 12 22	4 4 4 4 4 4 4 5 5 5 5 5 6 6 7 7 7 7 7 7 15 15 15 15 15 15 15 15 15 15 15 15 15	4 4 4 4 4 4 4 4 4 4 4 4 5 6 6 6 7 7 8 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 4 4 4 4 4 4 5 5 7 8 4500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 5 5 5000 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 5 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 5 5 7000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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load Load	9 1 11 12 13 15 17 17 19 22 25 29 33 38 42 11 17 17 19 22 25 29 33 38 38 38 38 38 38 38 38 38 38 38 38	700 650 600 650 600 650 600 600 600 600 6	\$00 650 650 650 650 650 600 525 525 600 700 800 900 900 900 900 900 900 900 950	600 650 650 650 650 650 650 650 650 650	700 700 700 700 700 700 700 700 700 700	800 350 350 390 390 290 280 280 500 650 700 300 300 300 300 300 300 300 300 30	900 900 175 175 176 1775 1775 185 185 1895 1995 225 225 225 225 225 225 225 225 225	1000 150 150 150 150 150 150 150 150 150	115 115 100 100 100 100 105 120 120 145 170 190 280 380 380 380 1100 125 125 126 127 180 180 180 180 180 180 180 180 180 180	72 74 74 80 86 86 88 90 100 120 120 140 205 300 300 350 1105 1105 1105 1120 120 120 120 120 120 120 120 120 12	52 55 55 65 80 100 100 140 140 140 140 140 140 140 14	42 42 42 42 42 42 42 42 42 42 42 42 42 4	32 32 30 30 30 28 28 28 30 35 40 50 60 70 80 90 110 115 1800 35 34 35 36 37 38 39 30 110 115 36 37 38 39 30 30 30 30 30 30 30 30 30 30	22 22 22 21 22 22 22 22 22 25 30 30 35 55 55 55 55 55 55 57 70 90 90	18 18 17 17 17 17 18 20 25 30 36 40 46 55 22 22 22 26 60 40 40 46 55 50 60 60 70 70 70 60 60 60 70	14 13 13 13 13 12 11 11 12 15 16 20 22 26 30 30 40 50 2400 15 15 15 16 17 17 17 19 20 20 25 30 30 30 30 30 30 30 45 50 50 50 50 50 50 55	10 10 10 10 10 10 10 10 10 10 10 10 10 1	8 8 8 8 8 8 8 9 9 9 10 10 10 11 11 11 11 11 11 11 11 15 20 20 20 28 30 30 40 40 40 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 6 6 7 7 7 7 7 8 8 10 0 3000 7 7 7 8 8 9 9 9 10 10 12 12 12 12 12 12 12 12 12 12 12 12 12	4 4 4 4 4 4 4 5 5 5 5 5 6 6 7 7 7 7 7 7 7 15 15 15 15 15 15 15 15 15 15 15 15 15	4 4 4 4 4 4 4 4 4 4 4 4 5 6 6 6 7 7 8 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 4 4 4 4 4 4 5 5 5 7 7 8 8 4500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 5 5 5000 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4 4
load Load	9 1 11 12 13 15 17 19 22 25 29 33 38 42 22 25 29 33 34 15 17 19 19 11 12 13 15 17 17 19 19 12 13 15 17 19 19 19 19 19 19 19 19 19 19 19 19 19	700 650 600 525 510 525 510 525 550 600 700 800 1000 1100 1150 1200 400 400 400 400 650 660 680 680 680 880 880 980 980 980 980 980 980 990	\$00 650 650 650 650 650 525 510 525 650 700 800 800 900 1050 500 700 650 600 700 650 600 700 650 600 700 650 600 700 600 600 600 600 600 600 600 60	600 650 650 650 650 650 650 650 650 650	700 500 400 400 325 325 325 325 400 400 475 575 650 900 900 900 900 900 900 900 900 900 9	800 350 350 350 390 290 280 275 310 350 300 280 275 310 350 800 800 800 800 300 800 800 350 800 800 800 800 800 800 800 8	900 175 175 175 175 175 185 195 198 198 199 199 199 199 199 199 199 199	1000 150 150 150 150 150 150 150 150 150	115 115 100 100 100 105 120 145 170 120 145 170 130 230 230 260 300 350 400 450 125 125 125 126 120 120 120 120 120 120 120 120 120 120	72 74 74 80 86 88 89 90 120 120 140 146 165 200 225 300 300 350 400 1200 1200 1505 115 115 115 115 120 150 200 225 225 220 230	52 50 50 50 50 52 55 55 56 60 100 140 180 200 255 50 50 50 50 50 60 100 140 140 150 55 55 56 60 100 140 150 150 150 150 150 150 150 15	42 42 42 42 42 42 42 45 42 45 45 45 45 45 45 45 45 45 45 45 45 45	32 32 30 30 28 28 28 28 28 35 40 50 60 70 110 1115 1800 35 34 35 36 37 38 40 40 40 40 40 40 40 40 40 40 40 40 40	22 22 22 21 22 22 22 22 25 30 36 40 45 55 40 29 29 29 29 30 30 30 30 30 30 30 30 30 30 30 30 30	18 18 18 17 17 17 17 17 18 20 25 30 35 40 45 55 60 22 22 22 22 22 22 22 22 22 22 22 22 26 30 40 46 55 60 60 60 60 60 60 60 60	14 13 13 13 12 11 12 15 16 20 22 26 30 30 40 45 50 60 2400 15 15 15 15 16 17 17 19 20 22 25 33 33 34 45 55 55 56 57 58 58 58 58 59 59 59 59 59 59 59 59 59 59 59 59 59	10 10 10 10 10 10 10 10 11 11 12 15 18 20 25 30 35 35 40 40	8 8 8 8 8 8 9 9 10 10 10 13 15 18 20 20 10 11 11 11 11 12 15 20 20 28 30 30 30 30 30 30 30 30 30 30 30 30 30	7 6 6 6 7 7 7 7 7 8 8 10 25 25 27 7 7 7 7 8 8 9 9 9 10 10 12 12 15 15 16 15 16 16 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	4 4 4 4 4 4 4 5 5 5 5 6 6 7 7 7 8 8 9 9 12 12 13 13 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	3 4 4 4 4 4 4 5 5 5 7 7 8 8 4500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4	3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 5 5 6000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4

OR (decel index > Rev Mode Table)

P0300-P0308: Rev Mode Table

	1100	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3500	4000	4500	5000	5500	6000	6500	7000
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9	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	70	60	35	20	20	20	20	20	20
11	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	70	56	35	20	20	20	20	20	20
12	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	65	52	35	22	20	20	20	20	20
13	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	70	50	35	25	20	20	20	20	20
15	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	70	50	40	30	22	22	22	22	22
17	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	90	60	50	35	24	24	24	24	24
19	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	100	75	55	40	26	26	26	26	26
22	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	120	85	65	45	35	35	35	35	35
25	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	140	100	70	50	40	40	40	40	40
29	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	150	110	85	60	40	40	40	40	40
33	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	180	125	95	70	50	50	50	50	50
38	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	200	145	110	80	60	60	60	60	60
42	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	235	165	130	90	65	65	65	65	65
48	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	270	185	145	100	75	75	75	75	75
54	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	310	215	170	115	80	80	80	80	80
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P0300-P0308: AFM Mode Table

de Table			OR (decel ind	lex > AFM Tab	le if active fuel	management)													
	400	500	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3500
8	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
9	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
11	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
12	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
13	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
15	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
17	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
19	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
22	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
25	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
29	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
33	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
38	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
42	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
48	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
54	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767
61	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767	32767

P0300-P0308: Zero torque engine load

e engine load

Zero Torque: All Cylinders active

RPM Pct load

400 10.50

500 10.30

600 9.90

700 9.65

800 9.30 800 9.30 900 9.30 900 9.30 1000 9.30 1100 9.30 1200 9.30 1400 9.20

1600 9.10 1800 9.00

2000 9.30 2200 9.60 2400 9.80 2600 10.10 2800 10.20 3000 10.30 3500 13.28

4000 15.56 4500 17.84 5000 20.13 5500 22.41 6000 24.69 6500 26.97 7000 29.25 Baro KPa Multiplier 65 0.82 70 0.85 75 0.88 80 0.90 0.93 0.95 0.97 100 1.00 105 1.03

Zero Torque: Active Fuel Management (AFM) RPM Pct load

400 12.00 500 11.30 \$00 11.30 600 10.80 700 10.60 800 10.60 900 10.60 1000 10.60 1100 10.60 1200 10.50 1400 10.50 1600 10.50 1800 10.60 1800 10.60 2000 10.70 2200 10.80 2400 10.85 2600 10.90 2800 10.95 3000 11.00 3500 13.50

3500 13.50 4000 16.00 4500 18.50 5000 21.00 5500 23.50 6000 26.00 6500 28.50 7000 31.00

Note: Zero torque is adjusted for Baro. Misfire thresholds are relative to (maximum air density PID \$1188 SAE xxx) and do not shift appreciably with altitude compared to (current density as defined PID \$04 SAE1979)

Catalyst Damaging Misfire Percentage

Load

	0	1000	2000	3000	4000	5000	6000	7000
0	11	11	11	7	6	5	5	5
10	11	11	8	6	6	5	5	5
20	11	11	7	6	5	5	5	5
30	10	8	6	5	5	5	5	5
40	8	7	5	5	5	5	5	5
50	7	6	5	5	5	5	5	5
60	6	6	5	5	5	5	5	5
70	6	5	5	5	5	5	5	5
80	5	5	5	5	5	5	5	5
90	5	5	5	5	5	5	5	5
100	5	5	5	5	5	5	5	5

RoughRoadSource = CeRRDR_e_WheelSpeedInECM or CeRRDR_e_SerialDataFromABS Rough Road Threshold

Kph	0	12	24	36	48	60	72	84	96	108	120	132	144	158	170	181	194
Accel	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72

P0442: EONV Pressure Threshold Table (in Pascals)

X axis is tuel level III % V avis is temperature in dec

	Y axis is temperature in deg C																
	0.0000	6.2499	12.4998	18.7497	24.9996	31.2495	37.4994	43.7493	49.9992	56.2491	62.4990	68.7490	74.9989	81.2488	87.4987	93.7486	99.9985
-10.0000	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
-4.3750	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
1.2500	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
6.8750	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
12.5000	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
18.1250	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
23.7500	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
29.3750	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
35.0000	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
40.6250	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
46.2500	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
51.8750	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
57.5000	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
63.1250	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
68.7500	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
74.3750	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537
80.0000	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537	-560.4537

P0442: Estimate of Ambient Temperature Valid Conditioning Time

EAT Valid Conditioning Time (in seconds)
Axis is Ignition Off Time (in seconds)

Axis is Igniti	
Axis	Curve
0	300
600	330
1200	390
1800	450
2400	510
3000	600
3600	600
4200	600
4800	600
5400	600
6000	600
6600	588
7200	575
7800	563
8400	550
9000	538
9600	525
10200	513
10800	500
11700	475
12600	450
13500	425
14400	400
15300	375
16200	350
17100	325
18000	300
19200	283
20400	267
21600	250
22800	233
24000	217
25200	200

P0496: Purge Valve Leak Test Engine Vacuum Test Time (Cold Start) as a Function of Fuel Level

Purge Valve Leak Test Engine Vacuum Test Time (in seconds) Axis is Fuel Level in %

P0461, P2066, P2636: Transfer Pump Enable

TransferPumpOnTimeLimit (in second
Avie ie Euol I aval in %

Axis is Fuel	Level in %
Axis	Curve
0	0
3	0
6	0
9	0
13	0
16	0
19	0
22	0
25	0
28	0
31	0
34	0
38	0
41	0
44	0
47	0
50	0
53	0
56	0
59	0
63	0
66	0
69	0
72	0
75	0
78	0
81	0
84	0
88	0
91	0
94	0
97	0
100	0

KtEGRD_p_StepDelta

	axis is Rpa BAI	RU						
65	70	75	80	85	90	95	100	105
3.1953	3.1953	3.1953	3,1953	3.1953	3.1953	3.1953	3.1953	3,1953

KtEGRD_p_StepMAP_DIFF

	and is the Dri	I CO						
65	70	75	80	85	90	95	100	105
0.2656	0.3906	0.5078	0.6328	0.7500	0.7656	0.7813	0.7969	0.8125

KtEGRD_Cnt_StepSamplesPerTrip

65	70	75	80	85	90	95	100	105
8.0000	7.0000	7.0000	6.0000	6.0000	6.0000	5.0000	5.0000	5.0000

KtEGRD_Cnt_SamplesAfterStep

	X	axis is Kpa BA	RO						
	65	70	75	80	85	90	95	100	105
ı	10.0000	10,0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000

KtEGRD_Cnt_SamplesAfterRese

	65	70	75	80	85	90	95	100	105
Ε	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000

KtPHSD_phi_CamPosErrorLimlc1

X axis is Deg C Y axis is RPM

	-40.0000	-28.0000	-16.0000	-4.0000	8.0000	20.0000	32.0000	44.0000	56.0000	68.0000	80.0000	92.0000	104.0000	116.0000	128.0000	140.0000	152.0000
400	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
800	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
1200	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
1600	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
2000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
2400	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
2800	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
3200	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
3600	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
4000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
4400	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
4800	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
5200	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
5600	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
6000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
6400	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
6800	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000

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								15	OBD	G07	ECM	Sup	porti	ing T	ables	s (4.8	3L/L2
KtPHSD_phi_CamPosErro	rLimEc1																
		X axis is Deg C															
	-40.0000	Y axis is RPM -28.0000	-16.0000	-4.0000	8.0000	20.0000	32.0000	44.0000	56.0000	68.0000	80.0000	92.0000	104.0000	116.0000	128.0000	140.0000	152.0000
400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
1200 1600	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
3200 3600	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000
4000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4800 5200	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
5600	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
HSD_phi_CamPosErro																	
		X axis is Deg C Y axis is RPM															
	-40.0000	-28.0000	-16.0000	-4.0000	8.0000	20.0000	32.0000	44.0000	56.0000	68.0000	80.0000	92.0000	104.0000	116.0000	128.0000	140.0000	152.0000
400 800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000 2.0000	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000 2.0000	2.0000	2.0000 2.0000	2.0000 2.0000	2.0000
1200	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
1600	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2400 2800	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000	2.0000	2.0000 2.0000	2.0000 2.0000	2.0000	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000
3200	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
3600	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4000 4400	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
5200	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
5600	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6000 6400	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
PHSD_phi_CamPosErro	rlimEc2																
rriob_piii_caiiir osciro		X axis is Deg C															
	-40.0000	Y axis is RPM -28.0000	-16.0000	-4 0000	8 0000	20.0000	32.0000	44.0000	56,0000	68,0000	80.0000	92,0000	104.0000	116.0000	128.0000	140.0000	152 0000
400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
1200	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
1600 2000	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
2800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
3200 3600	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4400	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
4800	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
5200 5600	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000 2.0000	2.0000	2.0000	2.0000	2.0000
6000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
6400 6800	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000 2.0000	2.0000
PHSD_t_StablePosition		V - de la Da - O															
		X axis is Deg C Y axis is RPM															
	-40.0000	-28.0000	-16.0000	-4.0000	8.0000	20.0000	32.0000	44.0000	56.0000	68.0000	80.0000	92.0000	104.0000	116.0000	128.0000	140.0000	152.0000
400 800	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350	3.350 3.350
1200	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350
1600	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350	3.350

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400 800 1200 1500 2400 2400 3200 3200 4000 4000 5500 6400 6800 1200 1200 1200 1200 1200 1200 1200 1	40.0000 2.000	axis is RPM -28.0000 2.000	-16.0000 2.000	-4.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	8.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	20.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	32.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	44.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	92.0000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.00 2.00 2.00
800 1200 1600 2400 2400 3200 3200 3600 4000 4000 5600 6400 6400 6400 6400 1000 6400 1000 10	2.000 2.000	2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000 2,000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000
1600 2400 2400 3200 3200 3200 4000 4400 4800 5600 6400 6400 6400 6400 1000 6400 1000 10	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.00
2000 2800 2800 3600 4400 4400 5200 5600 6000 6400 6800 2PHSD_t_StablePositionTi 400 800 1200 1600 2000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000 2.000	2.000	2.00
2400 2800 3200 3200 3600 4000 4400 5000 6000 6400 6400 6800 1PHSD_t_StablePositionTi 400 800 1200 1600 1600	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000	
3200 3600 4000 4400 4400 5600 6000 6400 PHSD_t_StablePositionTi 400 800 1200 1600 1600	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000	2.000						2.000	
3600 4400 4400 5200 5200 6000 6800 L StablePositionTi 400 800 1200 1200 1200 1200 1200 2000 9000 90	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000	2.000						2.000	2.000	2.000
4400 4800 5200 6600 6400 6400 6800 PHSD_t_StablePositionTi 400 800 1200 1600	2.000 2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000			2.000	2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000	2.000	2.000
4800 5200 5600 6000 6400 6800 PHSD_t_StablePositionTi 400 800 1200 1600 2000	2.000 2.000 2.000 2.000 2.000 2.000 2.000 X Y -40.0000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000	2.000 2.000			2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
5200 5600 6000 6400 6400 6800 PHSD_t_StablePositionTi 400 800 1200 1600 2000	2.000 2.000 2.000 2.000 2.000 2.000 ximelc2	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000	2.000 2.000	2.000		2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000
6000 6400 6400 PHSD_t_StablePositionTi 400 800 1200 1600	2.000 2.000 2.000 2.000 imelc2 X Y -40.0000	2.000 2.000 2.000	2.000 2.000	2.000 2.000			2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
6400 6800 PHSD_t_StablePositionTi 400 800 1200 1600 2000	2.000 2.000 imelc2 X Y -40.0000	2.000 2.000	2.000	2.000		2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000
PHSD_t_StablePositionTi 400 800 1200 1600 2000	imelc2 X Y -40.0000		2.000	2.000	2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
400 800 1200 1600 2000	-40.0000	axis is Deg C															
800 1200 1600 2000		axis is RPM	16 0000	4.0000	9 0000	20 0000	22,0000	44.0000	E6 0000	68 0000	90,0000	02 0000	104 0000	116 0000	128 0000	140,0000	452,0000
1200 1600 2000	2.000	-28.0000 2.000	-16.0000 2.000	-4.0000 2.000	8.0000 2.000	20.0000	32.0000 2.000	2.000	56.0000 2.000	68.0000 2.000	2.000	92.0000 2.000	104.0000 2.000	116.0000 2.000	128.0000 2.000	2.000	152.0000 2.000
1600 2000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2800	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000
3200	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
3600 4000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
4400	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
4800 5200	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000
5600	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
6000 6400	2.000	2.000 2.000	2.000	2.000	2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000 2.000	2.000 2.000	2.000
6800	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
400 800 1200 1600	2.000 2.000 2.000 2.000 2.000 2.000	28.0000 2.000 2.000 2.000 2.000 2.000	-16.0000 2.000 2.000 2.000 2.000	-4.0000 2.000 2.000 2.000 2.000	8.0000 2.000 2.000 2.000 2.000	20.0000 2.000 2.000 2.000 2.000	32.0000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	92.0000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	2.000 2.000 2.000 2.000 2.000	152.0000 2.000 2.000 2.000 2.000
2000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
2400 2800	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000 2.000
3200	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
3600 4000	2.000	2.000	2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
4400	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
4800 5200	2.000	2.000 2.000	2.000	2.000 2.000	2.000	2.000 2.000	2.000 2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000 2.000	2.000 2.000	2.000
5600	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
6000 6400	2.000	2.000	2.000	2.000 2.000	2.000	2.000	2.000	2.000 2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
6800	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
ed Loop Enable Criteri	a																
lant greater than STA_T_ClosedLoopTem Start-Up Coolant	-40	-28	-16	-4	8	20	32	44	56	68	80	92	104	116	128	140	152
Coolant engine run time greater STA_t_ClosedLoopTime		-28	75.0 -16	65.0	45.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Start-Up Coolant close Loop Enable Time pre converter 02 senso	120.0	90.0	-16 65.0	-4 45.0	25.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
ULC_U_O2_SensorRead	lyThrshHi 550	er than															
less than FULC_U_O2_SensorRead	lyThrshLo : 350																
Voltage <u>r</u> d OSC (Converter Oxygen S) not enabled	ı														
d ensumed AirFuel Ratio is d	stoichiometry	i.e. not in co	mponent prote	ection													
DPD or Catalyst Diagnosti d	c not intrusive																
cylinders whose valves	are active also	have their in	njectors enable	ed													
d !S_Bank_ 1_TFTKO, O2S_	Bank_2_TFT	KO, FuelIniec	torCircuit_FA	and CylnderD	DeacDriverTF	TKO = False											

Long Term FT Enable C																	
Coolant greater than																	
KfFCLL_T_AdaptiveLo	> 39 Celcius																
or less than	ant																
KfFCLL_T_AdaptiveHiC	Coolant < 140																
Cools	ant Celcius																
KtFCLL_p_AdaptiveLo	wMAP_Limit																
Barometric Pressi Manifold Air Pressi		70 20.0	75 20.0	80 20.0	85 20.0	90 20.0	95 20.0	100 20.0	105 20.0								
and TPS_ThrottleAuthorityI	Defaulted = False																
and Flex Fuel Estimate Alg	orithm is not active	9															
and Catalyst or EVAP large																	
Secondary Fuel Trim E		sive															
Closed Loop Enable an																	
KfFCLP_U_O2ReadyTh																	
Volta	age milliVolts																
for KcFCLP_Cnt_O2RdyCy	clesThrsh																
(events * 12.5 millisecond	> 10 events ds)																
Long Term Secondary I	Fuel Trim Enable C	riteria															
KtFCLP_t_PostIntglDis																	
Start-Up Cool: Post Integral Enable Ti		-29 100.0	-18 100.0	-6 100.0	5 100.0	16 100.0	28 100.0	39 100.0	50 100.0	61 100.0	73 100.0	84 100.0	95 100.0	106 100.0	118 100.0	129 100.0	140 100.0
Plus KtFCLP_t_PostIntglRan	mpInTime																
Start-Up Coole Post Integral Ramp In Ti	ant -40	-29 60.0	-18 60.0	-6 60.0	5 60.0	16 60.0	28 60.0	39 60.0	50 60.0	61 60.0	73 60.0	84 60.0	95 60.0	106 60.0	118 60.0	129 60.0	140 60.0
and KeFCLP_T_Integration																	
Modeled Catalyst Temper	< 950																
and																	
KeFCLP_T_Integration	> 550																
Modeled Catalyst Temper and																	
KfFCLP_T_CoolantThrs	> 80 Celcius																
Cooli	ant																
(KeFCLP_Pct_CatAccu	SIphrPostDsbl < 75 Percent																
Modeled converter sulfur and																	
Post Integral < KaFCLP X axis: Post O2 Sensor	_U_SIphrIntglOfst_	_Thrsh) 2_PostCat1_02	2 DoorCot2														
Y axis: Post O2 Mode	iFCLP_Decel	375	375														
Z: Post Integral threshold	CiFCLP_Cruise	375 375	375 375														
CiF	FCLP_LightAccel CLP_HeavyAccel	375 375	375 375														
and PO2S_Bank_1_Snsr_2_	FA and PO2S_Ban	k_2_Snsr_2_I	FA = False														
Tables supporting Dea	ctivation System P	erformance															
P3400	EngSpeedLwrL						Engine Speed										
Axis Curve	1st Gear 2r 950	nd Gear 3rd	d Gear 4th	Gear 5th	Gear 6th	950 Ne	utral Rev 950	verse Par 950	950								
	EngSpeedUprL				IS is Gear Sta			•									
Axis	1st Gear 2r	nd Gear 3r	d Gear 4th	Gear 5th	Gear 6th	Gear Ne	utral Rev	verse Par									
Curve	2800	2800		2800	2800	2800		2800	2800								
Axis	EngSpeedLwrL 1st Gear 2r	imitDisableTa	d Gear 4th		IS is Gear Sta Gear 6th		Engine Speed utral Rev	verse Par	rk								
Curve	675	675	675	675	675	675	675	675	675								
Axis	EngSpeedUprL	imitDisableTa	able	AX Gear 5th	IS is Gear Sta	ate, Curve is E	Ingine Speed	verse Par									
Curve	1st Gear 2r 3000	3000		3000	3000 6th				3000								

HalfCylToAl	ICylVacuum			Horizontal AXIS is Gear State, Vertical axis is Engine RPM								
RPM	1st Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Neutral	Park	Reverse			
0.0	6	6	31	31	30	20	6	6	6			
100.0	5	5	31	31	30	20	5	5	5			
200.0	4	4	31	31	30	20	4	4	4			
300.0	4	4	31	31	30	20	4	4	4			
400.0	4	4	31	31	30	20	4	4	4			
500.0	4	4	31	31	30	20	4	4	4			
600.0	4	4	31	31	30	20	4	4	4			
700.0	4	4	31	31	30	20	4	4	4			
800.0	4	4	30	31	30	20	4	4	4			
900.0	4	4	28	29	29	20	4	4	4			
1000.0	4	4	26	29	28	19	4	4	4			
1100.0	4	4	25	27	28	17	4	4	4			
1200.0	4	4	24	24	25	16	4	4	4			
1300.0	4	4	17	17	21	14	4	4	4			
1400.0	4	4	10	11	17	11	4	4	4			
1500.0	4	4	6	7	13	8	4	4	4			
1600.0	4	4	4	5	10	7	4	4	4			
1700.0	4	4	4	4	8	6	4	4	4			
1800.0	4	4	4	4	4	5	4	4	4			
1900.0	4	4	4	4	4	4	4	4	4			
2000.0	4	4	4	4	4	4	4	4	4			
2100.0	4	4	4	4	4	4	4	4	4			
2200.0	4	4	4	4	4	4	4	4	4			
2300.0	4	4	4	4	4	4	4	4	4			
2400.0	4	4	4	4	4	4	4	4	4			
2500.0	4	4	4	4	4	4	4	4	4			
2600.0	4	4	4	4	4	4	4	4	4			
2700.0	4	4	4	4	4	4	4	4	4			
2800.0	4	4	4	4	4	4	4	4	4			
2900.0	4	4	4	4	4	4	4	4	4			
3000.0	4	4	4	4	4	4	4	4	4			
3100.0	4	4	4	4	4	4	4	4	4			
3200.0	4	4	4	4	4	4	4	4	4			

RPM	1st Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Neutral	Park	Reverse
0.0	4	4	4	4	4	4	4	4	4
100.0	4	4	4	4	4	4	4	4	4
200.0	4	4	4	4	4	4	4	4	4
300.0	4	4	4	4	4	4	4	4	4
400.0	4	4	4	4	4	4	4	4	4
500.0	4	4	4	4	4	4	4	4	4
600.0	4	4	4	4	4	4	4	4	4
700.0	4	4	4	4	4	4	4	4	4
800.0	4	4	4	4	4	4	4	4	4
900.0	4	4	4	4	4	4	4	4	4
1000.0	4	4	4	4	4	4	4	4	4
1100.0	4	4	4	4	4	4	4	4	4
1200.0	4	4	4	4	4	4	4	4	4
1300.0	4	4	4	4	4	4	4	4	4
1400.0	4	4	4	4	4	4	4	4	4
1500.0	4	4	4	4	4	4	4	4	4
1600.0	4	4	4	4	4	4	4	4	4
1700.0	4	4	4	4	4	4	4	4	4
1800.0	4	4	4	4	4	4	4	4	4
1900.0	4	4	4	4	4	4	4	4	4
2000.0	4	4	4	4	4	4	4	4	4
2100.0	4	4	4	4	4	4	4	4	4
2200.0	4	4	4	4	4	4	4	4	4
2300.0	4	4	4	4	4	4	4	4	4
2400.0	4	4	4	4	4	4	4	4	4
2500.0	4	4	4	4	4	4	4	4	4
2600.0	4	4	4	4	4	4	4	4	4
2700.0	4	4	4	4	4	4	4	4	4
2800.0	4	4	4	4	4	4	4	4	4
2900.0	4	4	4	4	4	4	4	4	4
3000.0	4	4	4	4	4	4	4	4	4
3100.0	4	4	4	4	4	4	4	4	4
3200.0	4	4	4	4	4	4	4	4	4

HalfCylDisabledPRNDL	
PRNDL Drive 1	1
PRNDL Drive 2	1
PRNDL Drive 3	0
PRNDL Drive 4	0
PRNDL Drive 5	0
PRNDL Drive 6	0
PRNDL Neutral	1
PRNDL Reverse	1
PRNDL Park	1
PRNDL Transitional 1	1
PRNDL Transitional 2	1
PRNDL Transitional 4	1
PRNDL Transitional 7	1
PRNDL Transitional 8	1
PRNDL Transitional 11	1
PRNDL Transitional 13	1
PRNDL Transitional Illegal	1
PRNDL Transitional Between State	1

HalfCylDisabledPRNDLDeviceControl	
PRNDL Drive 1	1
PRNDL Drive 2	1
PRNDL Drive 3	0
PRNDL Drive 4	0
PRNDL Drive 5	0
PRNDL Drive 6	0
PRNDL Neutral	0
PRNDL Reverse	1
PRNDL Park	0
PRNDL Transitional 1	1
PRNDL Transitional 2	1
PRNDL Transitional 4	1
PRNDL Transitional 7	1
PRNDL Transitional 8	1
PRNDL Transitional 11	1
PRNDL Transitional 13	1
PRNDL Transitional Illegal	1
PRNDL Transitional Between State	1

	HalfCylDisab	ledTransGr			AXIS is Gear State						
	1st Gear	2nd Gear	3rd Gear	4th Gear	5thGear	6th Gear	Neutral	Reverse	Park		
9	1	1	0	0	0	0	1	1	1		

Ha	HalfCylDisabledTransGrDeviceControl 1st Gear 2nd Gear 3rd Gear 4th Gear				AXIS is Gear State							
18	st Gear	2nd Gear	3rd Gear	4th Gear	5thGear	6th Gear	Neutral	Reverse	Park			
Г	1	1	0	0	0	0	0	1	0			

IICylToHalf	CylVacuum			Horizontal AXIS is Gear State, Vertical axis is Engine RPM							
RPM	1st Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Neutral	Park	Reverse		
0.0	40	40	56	58	56	56	40	40	40		
100.0	40	40	56	58	56	56	40	40	40		
200.0	40	40	56	58	56	56	40	40	40		
300.0	40	40	56	58	56	56	40	40	40		
400.0	40	40	56	58	56	56	40	40	40		
500.0	40	40	56	58	56	56	40	40	40		
600.0	40	40	56	58	56	55	40	40	40		
700.0	40	40	55	58	56	55	40	40	40		
800.0	40	40	55	58	56	54	40	40	40		
900.0	40	40	54	58	56	54	40	40	40		
1000.0	40	40	54	58	56	53	40	40	40		
1100.0	40	40	53	57	56	52	40	40	40		
1200.0	40	40	53	56	56	52	40	40	40		
1300.0	40	40	52	55	55	52	40	40	40		
1400.0	40	40	52	55	55	52	40	40	40		
1500.0	40	40	51	53	53	52	40	40	40		
1600.0	40	40	51	50	51	52	40	40	40		
1700.0	40	40	51	50	51	52	40	40	40		
1800.0	40	40	51	50	51	52	40	40	40		
1900.0	40	40	51	50	51	52	40	40	40		
2000.0	40	40	51	50	51	52	40	40	40		
2100.0	40	40	51	50	51	52	40	40	40		
2200.0	40	40	51	50	51	52	40	40	40		
2300.0	40	40	51	50	51	52	40	40	40		
2400.0	40	40	51	50	51	52	40	40	40		
2500.0	40	40	51	50	51	52	40	40	40		
2600.0	40	40	51	50	51	52	40	40	40		
2700.0	40	40	51	50	51	52	40	40	40		
2800.0	40	40	52	50	51	53	40	40	40		
2900.0	40	40	54	54	54	54	40	40	40		
3000.0	40	40	55	55	55	55	40	40	40		
3100.0	40	40	55	55	55	55	40	40	40		
3200.0	40	40	55	55	55	55	40	40	40		

RPM	1st Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Neutral	Park	Reverse
0.0	48	48	48	48	48	48	48	48	48
100.0	48	48	48	48	48	48	48	48	48
200.0	48	48	48	48	48	48	48	48	48
300.0	48	48	48	48	48	48	48	48	48
400.0	48	48	48	48	48	48	48	48	48
500.0	48	48	48	48	48	48	48	48	48
600.0	48	48	48	48	48	48	48	48	48
700.0	48	48	48	48	48	48	48	48	48
800.0	48	48	48	48	48	48	48	48	48
900.0	48	48	48	48	48	48	48	48	48
1000.0	48	48	48	48	48	48	48	48	48
1100.0	48	48	48	48	48	48	48	48	48
1200.0	48	48	48	48	48	48	48	48	48
1300.0	48	48	48	48	48	48	48	48	48
1400.0	48	48	48	48	48	48	48	48	48
1500.0	48	48	48	48	48	48	48	48	48
1600.0	48	48	48	48	48	48	48	48	48
1700.0	48	48	48	48	48	48	48	48	48
1800.0	48	48	48	48	48	48	48	48	48
1900.0	48	48	48	48	48	48	48	48	48
2000.0	48	48	48	48	48	48	48	48	48
2100.0	48	48	48	48	48	48	48	48	48
2200.0	48	48	48	48	48	48	48	48	48
2300.0	48	48	48	48	48	48	48	48	48
2400.0	48	48	48	48	48	48	48	48	48
2500.0	48	48	48	48	48	48	48	48	48
2600.0	48	48	48	48	48	48	48	48	48
2700.0	48	48	48	48	48	48	48	48	48
2800.0	48	48	48	48	48	48	48	48	48
2900.0	48	48	48	48	48	48	48	48	48
3000.0	48	48	48	48	48	48	48	48	48
3100.0	48	48	48	48	48	48	48	48	48
3200.0	48	48	48	48	48	48	48	48	48

P0521

	EngSpeedWe	eightFactorTa	ıble		AXIS is Engine RPM, Curve is Weight Factor					
Axis	0	900	1000	2000	2500	3000	3100	5000	6000	
Curve	0.00	0.00	0.45	0.45	0.45	0.45	0.00	0.00	0.00	

	EngOilTemp\	NeightFactor	AXIS is Engine Oil Temp Deg C, Curve is Weight Factor						
Axis	-10	-5	60	80	90	100	120	130	140
Curve	0.00	0.70	0.70	0.70	0.70	0.70	0.70	0.00	0.00

	LiigLoadotai	Jility ** eigilti	actor rable		ANIO IS DEILE	Ar C, Cui ve i	s weignt i at	itoi		
Axis	0	5	10	20	30	50	100	200	399	
Curve	1.00	1.00	1.00	0.30	0.00	0.00	0.00	0.00	0.00	
	EngOilPredic	tionWeightF	actorTable		AXIS is Predicted Engine Oil Pressure, Curve is Engine Oil Pr					tion Weight Factor
Axis	160	170	200	275	360	375	400	450	500	
Curve	0.00	0.10	1.00	1.00	1.00	1.00	1.00	0.25	0.00	

Cert Doc Bundle Name	Pcodes										
IAC_SystemRPM_FA	P0506	P0507									
TCM_EngSpdReqCkt	P150C										
FuelTrimSystemB1 FA	P0171	P0172									
FuelTrimSystemB2_FA	P0174										
FuelTrimSystemB1 TFTKO	P0171										
FuelTrimSystemB2_TFTKO	P0174										
ruei I IIII I Systemb2_17 TKO	FU174	P01/5									
NA	P2096	P2097	P2098	P2099							
A/F Imbalance Bank1	P219A										
A/F Imbalance Bank2	P219B										
AIRSystemPressureSensor FA	P2430	P2431	P2432	P2433	P2435	P2436	P2437	P2438			
AIR System FA	P0411	P2440	P2444								
AIRValveControlCircuit FA	P0412										
AIRPumpControlCircuit FA	P0418										
Clutch Sensor FA		P0807	P0808								
ClutchPositionSensorCircuitLo FA	P0807										
ClutchPositionSensorCircuitHi FA	P0808										
Ethanol Composition Sensor FA	P0178	P0179	P2269								
EngineMetalOvertempActive	P1258										
FuelInjectorCircuit_FA	P0201	P0202	P0203	P0204	P0205	P0206	P0207	P0208			
FuelInjectorCircuit_TFTKO	P0201						P0207				
CatalystSysEfficiencyLoB1_FA	P0420										
CatalystSysEfficiencyLoB2_FA	P0430										
AmbientAirPressCktFA	P2228	P2229									
AmbientAirPressCktFA_NoSnsr	P0106	P0107	P0108								
AmbientAirDefault	For Nat	urally As	pirated E	ngines:	P0106	P0107	P0108	P2227	P2228	P2229	
	For Sup	er Char	ged Engi	nes:	P012B	P012C	P012D	P2227	P2228	P2229	
	For Eng	ines with	no Baro	Sensor:	P0106	P0107	P0108				
IAT_SensorCircuitTFTKO	P0112	P0113									
IAT_SensorCircuitFA	P0112										
IAT_SensorCircuitFP	P0112	P0113									
IAT_SensorTFTKO		P0112	P0113								
IAT_SensorFA	P0111	P0112	P0113								
IAT2_SensorCktTFTKO	P0097	P0098									
IAT2_SensorCktTFTKO_NoSnsr	P0112										
IAT2_SensorCircuitFA	P0097										
	50110	D0112									
IAT2_SensorCircuitFA_NoSnsr	P0112	PULIS									
	P0112 P0097										
IAT2_SensorcircuitFP		P0098									
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr	P0097 P0112	P0098	P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO	P0097 P0112 P0096	P0098 P0113									
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr	P0097 P0112 P0096 P0111	P0098 P0113 P0097	P0113								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA	P0097 P0112 P0096 P0111 P0096	P0098 P0113 P0097 P0112	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA	P0097 P0112 P0096 P0111 P0096	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorFTFKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA SuperchargerBypassValveFA	P0097 P0112 P0096 P0111 P0096 P0111	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA CylDeacSystemTFTKO	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA_NoSnsr SuperchargerBypassValveFA CylDeacSystemTFTKO MAF_SensorPerfFA	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA_NoSnsr SuperchargerBypassValveFA CylDeacSystemTFTKO MAF_SensorPerfFA MAF_SensorPerfTFKO	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101 P0101	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA OylDeacSystemTFTKO MAF_SensorPerfFA MAF_SensorPerfFA MAF_SensorPerfFA	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101 P0101 P0106	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA_NoSnsr SuperchargerBypassValveFA CylDeacSystemTFTKO MAF_SensorPerfFA MAF_SensorPerfFA MAP_SensorPerfFTKO MAP_SensorPerfFTKO MAP_SensorPerfFTKO	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101 P0101 P0106 P0106	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorPerfFA P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101 P0106 P0106 P0128	P0098 P0113 P0097 P0112 P0097	P0113 P0098									
IAT2_SensorCircuitFA_NoSnsr IAT2_SensorcircuitFP_NoSnsr IAT2_SensorircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA_NoSnsr IAT2_SensorFA_NoSnsr IAT2_SensorFA_NoSnsr SuperchargerBypassValveFA CylDeacSystemTFTKO MAF_SensorPerfFA MAF_SensorPerfFA MAF_SensorPerfFA MAP_SensorPerfFA MAP_SensorPerfFA SCIAP_SensorPerfFA SCIAP_SensorPerfFA SCIAP_SensorPerfFA	P0097 P0112 P0096 P0111 P0096 P01111 P2261 P3400 P0101 P0106 P0106 P0108 P0128 P0128	P0098 P0113 P0097 P0112 P0097	P0113 P0098								
IAT2_SensorcircuitFP IAT2_SensorcircuitFP_NoSnsr IAT2_SensorTFTKO IAT2_SensorTFTKO_NoSnsr IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorFA IAT2_SensorPerTFTKO MAF_SensorPerfTFTKO MAF_SensorPerfFA MAP_SensorPerfTFTKO SCIAP_SensorPerfFA	P0097 P0112 P0096 P0111 P0096 P0111 P2261 P3400 P0101 P0106 P0106 P0128	P0098 P0113 P0097 P0112 P0097	P0113 P0098								

Cert Doc Bundle Name	Pcodes	5										_
MAF SensorFA	P0101	P0102	P0103									
MAF SensorTFTKO		P0102										
MAF_SensorFP	P0102	P0103										
MAF_SensorCircuitFA	P0102	P0103										
MAF_SensorCircuitTFTKO	P0102	P0103										
MAP_SensorTFTKO	P0106	P0107	P0108									
MAP_SensorFA	P0106	P0107	P0108									
SCIAP_SensorFA	P012B	P012C	P012D									
SCIAP_SensorTFTKO		P012C	P012D									
SCIAP_SensorCircuitFP		P012D										
AfterThrottlePressureFA_NA		P0107										
AfterThrottlePressureFA_SC		P012C										
AfterThrottleVacuumTFTKO_NA		P0107 P012C	P0108									
AfterThrottleVacuumTFTKO_SC SCIAP SensorCircuitFA		P012C	PU12D									
AfterThrottlePressTFTKO_NA		P012D	P0108									
AfterThrottlePressTFTKO_SC		P012C										
MAP SensorCircuitFA		P0108										
MAP_EngineVacuumStatus		ensorFA	OR P01	07, P010	8 Pendi	ng						
ECT_Sensor_Ckt_FA	P0117	P0118										
ECT_Sensor_Ckt_TPTKO	P0117											
ECT_Sensor_Ckt_TFTKO	P0117											
ECT_Sensor_DefaultDetected		P0118	P0116									
ECT_Sensor_FA	P0117	P0118	P0116	P0128								
ECT_Sensor_TFTKO	P0117	P0118	P0116									
ECT_Sensor_Perf_FA	P0116											
ECT_Sensor_Ckt_FP		P0118										
ECT_Sensor_Ckt_High_FP	P0118											
ECT_Sensor_Ckt_Low_FP	P0117											
THMR_Insuff_Flow_FA	P00B7											
THMR_Therm_Control_FA		P0598	P0599									
THMR_RCT_Sensor_Ckt_FA		P00B4	D0440	DOODO								
THMR_ECT_Sensor_Ckt_FA	PUTT	P0118	PUTTO	P00B6								
O2S_Bank_ 1_TFTKO	P0131	P0132	P0134	P2400								
O2S_Bank_ 2_TFTKO	P0151	P0152										
O2S_Bank_1_Sensor_1_FA		P0131	P0132		P0134	P0135	P0053	P1133	P015A	P015B	P0030	
O2S_Bank_1_Sensor_2_FA		P013B	P013E	P013F	P2270		P0137	P0138		P0141		P003
O2S_Bank_2_Sensor_1_FA		P0151	P0152			P0155		P1153		P015D		
O2S_Bank_2_Sensor_2_FA	P013C	P013D	P014A	P014B	P2272	P2273	P0157	P0158	P0160	P0161	P0060	P005
PO2S_Bank_1_Snsr_2_FA	P0137	P0138	P0140	P0036	P0054	P0141	P2270	P2271				
PO2S_Bank_2_Snsr_2_FA	P0157	P0158	P0160	P0056	P0060	P0161	P2272	P2273				
EngineMisfireDetected_TFTKO	P0300	P0301	P0302		P0304		P0306	P0307	P0308			
EngineMisfireDetected_FA	P0300	P0301	P0302	P0303	P0304	P0305	P0306	P0307	P0308			
CrankCamCorrelationTFTKO	P0016	P0017	P0018	P0019								
CrankSensorFA	P0335	P0336										
CrankSensorTFTKO		P0336										
CamSensorFA		P0017		P0019			P0345				P0390	
CamSensorTFTKO		P0017	P0018	P0019	P0340	P0341	P0345	P0346	P0365	P0366	P0390	P039
CrankIntakeCamCorrelationFA		P0018										
CrankExhaustCamCorrelationFA IntakeCamSensorTFTKO		P0019 P0018	P0340	P0341	DU34E	P0346						
IntakeCamSensorFA		P0018	P0340	P0341	P0345	P0346						
ExhaustCamSensorTFTKO	P0017		P0365	P0366	P0343							
ExhaustCamSensorFA	P0017		P0365	P0366	P0390							
IntakeCamSensor_FA		P0018	P0340	P0341		P0346						
IntakeCamSensor_TFTKO		P0018	P0340	P0341		P0346						
ExhaustCamSensor_FA		P0019	P0365	P0366		P0391						
ExhaustCamSensor_TFTKO		P0019	P0365	P0366	P0390	P0391						
CrankIntakeCamCorrFA		P0018										
CrankExhaustCamCorrFA	P0017	P0019										

Cert Doc Bundle Name	Pcodes
CrankSensorFaultActive	P0335 P0336
CrankSensor_FA CrankSensorTestFailedTKO	P0335 P0336 P0335 P0336
CrankSensor_TFTKO	P0335 P0336
CamSensor_FA	P0016 P0017 P0018 P0019 P0340 P0341 P0345 P0346 P0365 P0366 P0390 P039
CamSensorAnyLocationFA	P0016 P0017 P0018 P0019 P0340 P0341 P0345 P0346 P0365 P0366 P0390 P039
CamSensor_TFTKO	P0016 P0017 P0018 P0019 P0340 P0341 P0345 P0346 P0365 P0366 P0390 P039
EvapPurgeSolenoidCircuit_FA	P0443
EvapFlowDuringNonPurge_FA	P0496
EvapVentSolenoidCircuit_FA	P0449
EvapSmallLeak_FA	P0442
EvapEmissionSystem_FA FuelTankPressureSnsrCkt_FA	P0455 P0446 P0452 P0453
CoolingFanSpeedTooHigh_FA	P0495
FanOutputDriver_FA	P0480 P0481 P0482
FuelLevelDataFault	P0461 P0462 P0463 P2066 P2067 P2068
PowertrainRelayFault	P1682
PowertrainRelayStateOn_FA	P0685
PowertrainRelayStateOn_Error	P0685
IgnitionOffTimer_FA IgnitionOffTimeValid	P2610 P2610
EngineModeNotRunTimerError	P2610
EngineModeNotRunTimer_FA	P2610
VehicleSpeedSensor_FA	P0502 P0503 P0722 P0723
VehicleSpeedSensorError	P0502 P0503 P0722 P0723
LowFuelConditionDiagnostic	Flag set to TRUE if the fuel level <
	AND
	No Active DTCs: FuelLevelDataFault
	P0462 P0463
	for at least 30 seconds.
Transfer Pump is Commanded On	Fuel Volume in Primary Fuel Tank < 0.0 liters
	AND Firel Volume in Secondary Firel Tonk > 100 0 litere
	Fuel Volume in Secondary Fuel Tank ≥ 100.0 liters AND
	Transfer Pump on Time < TransferPumpOnTimeLimit Table
	· · · · · · · · · · · · · · · · · · ·
	AND Transfer Pump had been Off for at least 0.0 seconds
	AND Transfer Pump had been Off for at least 0.0 seconds AND
	AND Transfer Pump had been Off for at least 0.0 seconds
	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test,
	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND
	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND
	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND
	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND Engine Running
EGRValveCircuit_FA	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND Engine Running P0401 P042E P0403 P0404 P0405 P0406
EGRValveCircuit_FA EGRValve_FP	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND Engine Running P0401 P042E P0403 P0404 P0405 P0406 P0405 P0406 P042E
EGRValveCircuit_FA	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND Engine Running P0401 P042E P0403 P0404 P0405 P0406
EGRValveCircuit_FA EGRValve_FP EGRValveCircuit_TFTKO	AND Transfer Pump had been Off for at least 0.0 seconds AND Evap Diagnostic (Purge Valve Leak Test, AND Engine Running P0401 P042E P0403 P0404 P0405 P0406 P0405 P0406 P042E P0403 P0404 P0405 P0406

Cert Doc Bundle Name	Pcodes
EngOilTempSensorCircuitFA	P0197 P0198
EngOilModeledTempValid	ECT_SeIAT_SensorCircuitFA
EngOilPressureSensorCktFA	P0522 P0523
EngOilPressureSensorFA	P0521 P0522 P0523
CylnderDeacDriverTFTKO	P3401 P3409 P3417 P3425 P3433 P3441 P3449
BrakeBoosterSensorFA	P0556 P0557 P0558
BrakeBoosterVacuumValid	P0556 P0557 P0558
BrakeBoosterVacuumValid	VehicleSMAP_SensorFA
CylnderDeacDriverTFTKO	P3401 P3409 P3417 P3425 P3433 P3441 P3449
EngineTorqueEstInaccurate	Enginel/FuelInjerFuelInjerFuelTrirrFuelTrirrMAF_ScMAP_ScEGRValuePerforamnce_FA
PPS1_OutOfRange_Composite	P2122 P2123 P0651
PPS2_OutOfRange_Composite	P2127 P2128 P0641
PPS1_OutOfRange_Composite	P2122 P2123 P0651
PPS2_OutOfRange_Composite	P2127 P2128 P0641
PPS1_OutOfRange	P2122 P2123
PPS2_OutOfRange	P2127 P2128
PPS1_OutOfRange	P2122 P2123
PPS2_OutOfRange	P2127 P2128
AcceleratorPedalFailure	P2122 P2123 P2127 P2128 P2138 P0641 P0651
ControllerRAM_Error_FA ControllerProcessorPerf_FA	P0604 P0606
TPS1_OutOfRange_Composite	P0122 P0123 P0651
TPS2 OutOfRange Composite	P0222 P0223 P0652
TPS FA	P0120 P0122 P0123 P0220 P0222 P0223 P2135
TPS TFTKO	P0120 P0122 P0123 P0220 P0222 P0223 P2135
TPS_Performance_FA	P0068 P0121 P1516 P2101
TPS_Performance_TFTKO	P0068 P0121 P1516 P2101
TPS FaultPending	P0120 P0122 P0123 P0220 P0222 P0223 P2135
TPS_ThrottleAuthorityDefaulted	P0068 P0120 P0122 P0123 P0220 P0222 P0223 P1516 P2135 P2176
EnginePowerLimited	P0068 P0606 P0120 P0122 P0123 P0220 P0222 P0223 P0641 P0651
	P1516 P2101 P2120 P2122 P2123 P2125 P2127 P2128 P2135 P2138 P2176
5VoltReferenceA_FA	P0641
5VoltReferenceB_FA	P0651
T000 F- #	FOM BOSOO BOSOO
TOSS_Fault	ECM: P0502 P0503 TCM: P0722 P0723
ShiftSolenoidFaults (TCM)	M30/M70: P0751 P0752 P0756 P0757
	MYC/MYD: P0751 P0752 P0756 P0757 P0973 P0974 P0976 P0977
TransTurbing Cos = 4\/-1:4/TO**	M20/M70, D0746 D0747
TransTurbineSpeedValid(TCM)	M30/M70: P0716 P0717 MYC/MYD: P0716 P0717 P07BF P07C0
	WITO/WITO. TO TO FOIT FOID FOICO
Trans_Gear_Defaulted(TCM)	M30/M70: P0705 P1810 P1815 P1816 P1817 P1818 P1915 P1820 P182A
	P1822 P182C P1823 P182D P1825 P182E P1826 P182F
KS_CktPerfB1B2_FA	P0324 P0325 P0326 P0327 P0328 P0330 P0332 P0333
FOT Delivership of	DOORA DOORG DOORA DOORA DOORG DOORG DOORG
EST_DriverFltActive	P0351 P0352 P0353 P0354 P0355 P0356 P0357 P0358

	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
uel Rail Pressure		This DTC detects	Absolute value of change in	<= 30 kPa			Frequency:	DTC Type A
FRP) Sensor		a fuel pressure	fuel pressure as sensed during				Continuous; 12.5 ms loop.	1 trip
erformance		sensor response	intrusive test.				60 seconds between	p
ationality)		stuck within the	intrasive test.				intrusive tests that pass	
allonality)							initiusive tests triat pass	
		normal operating					Internalization to at some or and if	
		range					Intrusive test requested if	
							fuel system is clamped for	
							>= 5 seconds or fuel	
							pressure error variance <=	
							typically (0.3 to 0.6)	
							(calculated over a 2.5sec	
							period); otherwise report	
							pass	
					1. FRP Circuit Low DTC (P018C)	not active		
					2. FRP Circuit High DTC (P018D)	not active		
					3. FuelPump Circuit Low DTC (P0231)		5	
					, ,		Duration of intrusive test is	
							fueling related (5 to 12	
						not active	seconds).	
					4. FuelPump Circuit High DTC	not active		
					(P0232)	not active		
					5. FuelPump Circuit Open DTC	not notive		
						not active		
					(P023F)		Intrusive test is run when	
							fuel flow is below Max	
							allowed fuel flow rate	
							(Typical values in the	
							range of 11 to 50 g/s)	
					6. Reference Voltage DTC	not active		
					(P0641)			
					Fuel Pump Control Module Driver	not active		
					Over-temperature DTC's			
					(P064A, P1255)			
					8. Control Module Internal	not active		
					Performance DTC (P0606)			
					9. Engine run time	>=5 seconds		
					10. Emissions fuel level	not low		
					(PPEI \$3FB)			
					AND			
					Engine Run Time	> 30 sec		
					11. Fuel pump control	enabled		
					12. Fuel pump control state	normal or FRP		
						Rationality control		
					13. Engine fuel flow	> 0.047 g/s		
					ECM fuel control system failure	failure has not		
					(PPEI \$1ED)	occurred		
uel Rail Pressure	P018C	This DTC detects	FRP sensor voltage	< 0.14 V	·		72 failures out of 80	DTC Type A
FRP) Sensor		if the fuel pressure	ĺ				samples	1 trip
Circuit Low		sensor circuit is					1	
		shorted to low					1 sample/12.5 ms	
oltage								
oltage								

Component/ System	Fault Code	Monitor Strategy Description		Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Fuel Rail Pressure			FRP sensor voltage	> 4.86 V	- unumotoro	001141110110	72 failures out of 80	DTC Type A
FRP) Sensor		if the fuel pressure	The control control				samples	1 trip
Circuit High		sensor circuit is						
/oltage		shorted to high					1 sample/12.5 ms	
					Ignition	Run or Crank		
Fuel Pump	P0231	This DTC detects	Fuel Pump Current	> 14.48A			72 test failures in 80 test	DTC Type A
Control Circuit Low Voltage		if the fuel pump control circuit is					samples if Fuel Pump Current <100A	1 trip
LOW Voltage		shorted to low					Guitelit C100A	
					Ignition	Run or Crank		
					OR		3 test failures in 15 test	
							samples if Fuel Pump	
							Current >=100A	
					HS Comm	enabled		
					OR		1 sample/12.5 ms	
					Fuel Pump Control	enabled		
					AND	enabled		
					Ignition Run/Crank Voltage	9V < voltage < 32V		
Fuel Pump	P0232	This DTC detects	Voltage measured at fuel pump	> 3.86 V	Commanded fuel pump output	0% duty cycle (off)	36 test failures in 40 test	DTC Type A
Control Circuit		if the fuel pump	circuit			, , , , , , , , , , , , , , , , , , , ,	samples;	1 trip
High Voltage		control circuit is						
		shorted to high					1 sample/12.5ms	
					Fuel pump control enable	False	Pass/Fail determination made only once per trip	
							made only once per trip	
					Time that above conditions are met	>=4.0 seconds		
Fuel Pump	P023F	This DTC detects	Fuel Pump Current	<=0.5A	Ignition	Run or Crank	72 test failures in 80 test	DTC Type A
Control Circuit		if the fuel pump			OR .	rtan or oranic	samples;	1 trip
(Open)		control circuit is			HS Comm	Enabled	1 sample/12.5ms	
		open			OR			
					Fuel Pump Control	Enabled		
			AND	000/	AND	0)/ // 00)/		
F 1 O	DOOFA	This DTO data to	Fuel Pump Duty Cycle	> 20%	Ignition Run/Crank voltage	9V <voltage< 32v<="" td=""><td>70 (-1)</td><td>DTO To to A</td></voltage<>	70 (-1)	DTO To to A
Fuel System Control Module	P025A	This DTC detects if there is a fault in	PPEI (PPEI (Powertrain Platform Electrical Interface)	≠ Fuel Pump Control Module Enable Control			72 failures out of 80 samples	DTC Type A 1 trip
Enable Control		the fuel pump	Fuel System Request (\$1ED)	Circuit		Run or Crank	samples	т шр
Circuit		control enable	Tuoi Cystem Request (#122)	Onoun	Ignition	rtuir or Oraint	1 sample/12.5 ms	
		circuit			AND	Valid		
					PPEI Fuel System Request (\$1ED)			
Control Module	P0601	This DTC will be	Calculated Checksum	≠ stored checksum for any		Run or Crank	1 failure if it occurs during	DTC Type A
Read Only		stored if any	(CRC16)	of the parts (boot,			the first ROM test of the	1 trip
Memory (ROM)		software or		software, application			ignition cycle, otherwise 5	
		calibration check		calibration, system			failures	
		sum is incorrect		calibration)				
					OR			
							Frequency:	
							Runs continuously in the	
							background	
					HS Comm	enabled	-	
					OR			
		I .	l .		Fuel Pump Control	enabled		1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Control Module Not Programmed	P0602	Indicates that the FSCM needs to be programmed	This DTC is set via calibration, when KeMEMD_b_NoStartCal	TRUE	, diamond	Containent	Runs once at power up	DTC Type A 1 trip
		be programmed			Ignition	Run or Crank		
					OR HS Comm OR	enabled		
					Fuel Pump Control	enabled		
Control Module Long Term Memory Reset	P0603	Non-volatile memory checksum error at controller	Checksum at power-up	≠ checksum at power- down			1 failure	DTC Type A 1 trip
		power-up					Frequency: Once at power-up	
					Ignition OR	Run or Crank		
					HS Comm OR	enabled		
Control Module	P0604	Indicates that	Data read	≠ Data written	Fuel Pump Control	enabled	1 failure if it occurs during	DTC Type A
Random Access Memory (RAM)	F 0004	control module is unable to correctly write and read data to and from RAM		F Data witten			the first RAM test of the ignition cycle, otherwise 5 failures	1 trip
					Ignition OR	Run or Crank	Frequency:	
					HS Comm	enabled	Runs continuously in the background.	
					OR Fuel Pump Control	enabled		
Control Module Internal Performance 1. Main Processor Configuration Register Test	P0606	This DTC indicates the FSCM has detected an internal processor fault or external watchdog fault (PID 2032 can tell	For all I/O configuration register faults:		Total and Solution	Chabled	Tests 1 and 2 1 failure Frequency: Continuously (12.5ms)	DTC Type A 1 trip
		what causes the fault.)	•Register contents	Incorrect value.	Ignition OR HS Comm	Run or Crank enabled		
2. Processor clock			For Processor Clock Fault: EE latch flag in EEPROM.		OR Fuel Pump Control 1. For all I/O configuration register faults:	enabled	Total	
esi			OR	0x5A5A	*KeMEMD_b_ProcFltCfgRegEnbl	TRUE	Test 3 3 failures out of 15 samples	
			RAM latch flag.	0x5A	For Processor Clock Fault: KeMEMD_b_ProcFltCLKDiagEnbl	TRUE	1 sample/12.5 ms	
3. External watchdog test			For External Watchdog Fault: Software control of fuel pump	Control Lost	3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagEnbl			
			driver			TRUE		

Component/	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Poquired	MIL Illumination
System	Code	Description	Criteria	value	3. For External Watchdog Fault: •Control Module ROM(P0601)	not active	Required	illumination
					3. For External Watchdog Fault: •Control Module RAM(P0604)	not active		
Control Module Long Term Memory (EEPROM) Performance	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write	Did not complete			1 test failure Once on controller power-up	DTC Type A 1 trip
renomance					Ignition OR	Run or Crank		
					HS Comm OR	enabled		
					Fuel Pump Control	enabled		
5Volt Reference Circuit (Short High/Low/Out of Range)	P0641	Detects continuous short or out of range on the #1 5V sensor reference circuit	Reference voltage AND	>= 0.5V			15 failures out of 20 samples 1 sample/12.5 ms	DTC Type A 1 trip
		reference circuit	Output OR	inactive .	Ignition	Run or Crank		
ı			Reference voltage AND Output	>= 5.5V active				
			OR Reference voltage AND Output	<= 4.5V				
			OR Reference voltage	> 102.5% nominal (i.e., 5.125V) OR <97.5% nominal (i.e., 4.875V)				
Fuel Pump Control Module - Driver Over-	P064A	This DTC detects if an internal fuel pump driver	Module Range of Operation	Module is within Acceptable Operation Range (Motorola's			3 failures out of 15 samples	DTC Type E 2 trips
temperature 1		overtemperature condition exists under normal		responsibility - FSCM is in normal operating range for module voltage versus			1 sample/12.5 ms	
		operating conditions (Tier 1 supplier		PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.)	Ignition OR	Run or Crank		
		Continental responsibility)		10 70 70 W 10V.)	HS Comm OR Fuel Pump Control	Enabled Enabled		
					AND Ignition Run / Crank	9V <voltage<32v< td=""><td></td><td></td></voltage<32v<>		
			AND Fuel pump driver Temp	> 190C	KeFRPD_b_FPOverTempDiagEnbl	TRUE		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Fuel Pump Control Module - Driver Over- temperature 2	P1255	This DTC detects if an internal fuel pump driver overtemperature condition exists under extreme operating conditions (GM's responsibility)	Module Range of Operation	Outside normal range (FSCM is NOT in normal operating range for module voltage versus PWM duty cycle. Linear range from 100% @ 12.5V to 70% @ 18V.)	Ignition OR HS Comm OR Fuel Pump Control AND Ignition Run / Crank	Run or Crank Enabled Enabled 9V <voltage<32v< td=""><td>3 failures out of 15 samples 1 sample/12.5 ms</td><td>DTC Type B 2 trips</td></voltage<32v<>	3 failures out of 15 samples 1 sample/12.5 ms	DTC Type B 2 trips
			AND Fuel pump driver Temp	> 190C	KeFRPD_b_FPOverTempDiagEnbl	TRUE		
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or open	Ignition 1 voltage	<= 6 V	Engine	Running	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip
Ignition 1 Switch Circuit High Voltage	P2535	Detects if the Ignition1 Switch circuit is shorted to vehicle supply voltage	Ignition 1 voltage	> 11.7 V	Ignition Run_Crank terminal	Off	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip
Fuel Pump Flow Performance (rationality)	P2635	This DTC detects degradation in the performance of the SIDI electronic return-less fuel system		<= Low Threshold (continuously calculated function of desired fuel rail pressure and fuel flow rate) OR >= High Threshold (continuously calculated function of desired fuel rail pressure and fuel flow rate) (See Supporting Tables tab and Supporting Calculations tab)	2. FRP Circuit High DTC	not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 12.5 ms loop	DTC Type B 2 trips
					(P018D) 3. Fuel Pressure Sensor Performance DTC (P018B)			
					4. FuelPump Circuit Low DTC (P0231)	not active		
					5. FuelPump Circuit High DTC (P0232)	not active		
					6. FuelPump Circuit Open DTC (P023F)	not active		
					7. Reference Voltage DTC (P0641)	not active		
					8. Fuel Pump Control Module Driver Over-temperature DTC's (P064A, P1255)	not active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Enable Conditions	Time Required	MIL Illumination
bystein	Coue	Description	Criteria	value		not active	Required	illullillation
						not active		
					Performance DTC (P0606)	has not occurred		
					 An ECM fuel control system failure (PPEI \$1ED) 	nas not occurred		
					11. The Barometric pressure (PPEI	valid (for absolute fuel		
						pressure sensor)		
						>= 30 seconds		
					(PPEI \$3FB) AND	not low		
					Engine Run Time	> 30 sec		
					14. Fuel pump control	enabled		
						normal		
						11V<=voltage=<32V		
					(See Supporting Tables tab)	> 0.047 g/s AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values in the range of 11 to 50 g/s)		
						Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.		
Control Module	U0073	Detects that a	Bus Status	Off	Power mode	Run/Crank	5 failures out of 5	DTC Type B
Communication Bus "A" Off		CAN serial data bus shorted condition has occurred to force the CAN device driver to enter a bus-off state					samples (5 seconds)	2 trips
Lost Communication With ECM/PCM 'A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected		Run/Crank	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips
					2. Ignition Run/Crank Voltage	11V<=voltage=<32V		
					3. U0073	not active		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
			II.				-	
Fuel Rail Pressure FRP) Sensor Performance rationality)	P018B	This DTC detects a fuel pressure sensor response stuck within the normal operating	Absolute value of fuel pressure change as sensed during intrusive test.	<= 30 kPa	1. FRP Circuit Low DTC (P018C)	not active	Frequency: Continuous; 12.5 ms loop. 60 seconds between intrusive tests that pass	DTC Type A 1 trip
		range					Intrusive test requested if fuel system is clamped for >= 5 seconds or fuel pressure error variance <= typically (0.3 to 0.6) (calculated over a 2.5sec period); otherwise report pass	
					2. FRP Circuit High DTC (P018D)	not active		
					3. FuelPump Circuit Low DTC (P0231)	not active	Duration of intrusive test is fueling related (5 to 12 seconds).	
					4. FuelPump Circuit High DTC (P0232)	not active		
					5. FuelPump Circuit Open DTC (P023F)	not active	Intrusive test is run when fuel flow is below Max allowed fuel flow rate (Typical values in the range of 11 to 50 g/s)	
					6. Reference Voltage DTC (P0641)	not active		
					7. Fuel Pump Control Module Driver Over-temperature DTC (P064A)	not active		
					8. Control Module Internal Performance DTC (P0606)	not active		
					9. Engine run time	>=5 seconds		
					10. Emissions fuel level (PPEI \$3FB)	not low		
					11. Fuel pump control	enabled		
					12. Fuel pump control state13. Engine fuel flow	normal or FRP Rationality control > 0.047 q/s		
					14. ECM fuel control system failure (PPEI \$1ED)	failure has not occurred		
uel Rail Pressure FRP) Sensor	P018C	This DTC detects if the fuel pressure	FRP sensor voltage	< 0.14 V			72 failures out of 80 samples	DTC Type A 1 trip
Circuit Low oltage		sensor circuit is shorted low			Ignition	Run or Crank	1 sample/12.5 ms	
uel Rail Pressure	P018D	This DTC detects	FRP sensor voltage	> 4.86 V			72 failures out of 80	DTC Type A
FRP) Sensor Circuit High	. 0100	if the fuel pressure sensor circuit is	Shoot vollage				samples	1 trip
Voltage		shorted high			Ignition	Run or Crank	1 sample/12.5 ms	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Fuel Pump Control Circuit Low Voltage	P0231	This DTC detects if the fuel pump control circuit is shorted to low	Fuel Pump Current	> 14.48A			72 test failures in 80 test samples if Fuel Pump Current <100A	DTC Type A 1 trip
		Shorted to low			Ignition OR Ignition power mode OR Fuel Pump Control AND	Run or Crank Accessory enabled	1 sample/12.5 ms	
					Ignition Run/Crank Voltage	9V < voltage < 32V		
Fuel Pump Control Circuit High Voltage	P0232	This DTC detects if the fuel pump control circuit is shorted to high	Voltage measured at fuel pump circuit	> 3.86 V	Commanded fuel pump output	0% duty cycle (off)	36 test failures in 40 test samples; 1 sample/12.5ms	DTC Type A 1 trip
					Fuel pump control enable	False	Pass/Fail determination made only once per trip	
					Time that above conditions are met	>=4.0 seconds		
Fuel Pump Control Circuit (Open)	P023F	This DTC detects if the fuel pump control circuit is	Fuel Pump Current	<=0.5A			72 test failures in 80 test samples; 1 sample/12.5ms	DTC Type A 1 trip
		open	AND		Ignition OR	Run or Crank		
			Fuel Pump Duty Cycle	>20%	Ignition power mode OR	Accessory		
					Fuel Pump Control AND	enabled		
					Ignition Run/Crank Voltage	9V < voltage < 32V		
Fuel System Control Module Enable Control	P025A	This DTC detects if there is a fault in	PPEI (PPEI (Powertrain Platform Electrical Interface)	≠ Fuel Pump Control Module Enable Control Circuit			72 failures out of 80 samples	DTC Type A 1 trip
Circuit		the fuel pump control enable circuit	Fuel System Request (\$1ED)	Circuit			1 sample/12.5 ms	
		Circuit			Ignition AND	Run or Crank		
					PPEI Fuel System Request (\$1ED)	valid		
Control Module Read Only Memory (ROM)	P0601	This DTC will be stored if any software or calibration check sum is incorrect	Calculated Checksum (CRC16)	≠ stored checksum for any of the parts (boot, software, application calibration, system calibration)			1 failure if it occurs during the first ROM test of the ignition cycle, otherwise 5 failures	DTC Type A 1 trip
		Sum is incorrect		Cantri dutiti)	Ignition OR	Run or Crank	Frequency: Runs continuously in the background	
					Ignition power mode OR	Accessory		
					Fuel Pump Control	enabled		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Control Module	P0602	Indicates that the	This DTC is set via calibration	,			Runs once at power up	DTC Type A
Not Programmed		FSCM needs to	wher					1 trip
		be programmed	KeMEMD_b_NoStartCa	I = TRUE				
					Ignition OR	Run or Crank		
					Ignition power mode	Accessory		
					OR	Accessory		
					Fuel Pump Control	enabled		
Control Module	P0603	Non-volatile	Checksum at power-up	≠ checksum at			1 failure	DTC Type A
ong Term		memory		power-down				1 trip
Memory Reset		checksum error at					Frequency:	
		controller power-			Ignition	Run or Crank	Once at power-up	
		up			Ignition OR	Rull of Clark		
					Ignition power mode	Accessory		
					OR	, , , , ,		
					Fuel Pump Control	enabled		
Control Module	P0604	Indicates that	Data read	≠ Data written			1 failure if it occurs during	DTC Type A
Random Access		control module is					the first RAM test of the	1 trip
Memory (RAM)		unable to correctly					ignition cycle, otherwise 5	
		write and read data to and from					failures	
		RAM						
		TOTAVI						
					Ignition	Run or Crank		
					OR		Frequency:	
					Ignition power mode	Accessory	Runs continuously in the	
					OR		background.	
					Fuel Pump Control	enabled		
Control Module	P0606	This DTC			r dorr drip control	Onabioa	Tests 1 and 2	DTC Type A
nternal		indicates the					1 failure	1 trip
Performance		FSCM has					Frequency:	
		detected an					Continuously (12.5ms)	
. Main		internal processor						
Processor Configuration		fault or external watchdog fault	register faults:					
Register Test		(PID 2032						
register rest		discriminates the						
			•Register contents	Incorrect value.	Ignition	Run or Crank		
)			OR			
					Ignition power mode	Accessory		
					OR Fuel Pump Control	anablad		
			2. For Processor Clock Fault:		Fuel Pump Control For all I/O configuration register	enabled	Test 3	
			•EE latch flag in EEPROM.		faults:		3 failures out of 15	
			OR	0x5A5A	KeMEMD_b_ProcFltCfgRegEnbl	TRUE	samples	
2. Processor clock								
est							1 sample/12.5 ms	
			RAM latch flag.	0x5A	2. For Processor Clock Fault:			
		1	1	1	KeMEMD_b_ProcFltCLKDiagEnbl	TRUE		1

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
3. External watchdog test			3. For External Watchdog Fault: • Software control of fuel pump driver	Control Lost	3. For External Watchdog Fault: •KeFRPD_b_FPExtWDogDiagEnbl	TRUE		
					For External Watchdog Fault: Control Module ROM(P0601)	not notive		
					3. For External Watchdog Fault: •Control Module RAM(P0604)	not active		
Control Module Long Term Memory (EEPROM)	P062F	Indicates that the NVM Error flag has not been cleared	Last EEPROM write	Did not complete		not active	1 test failure Once on controller power- up	DTC Type A 1 trip
Performance		cleared			Ignition OR	Run or Crank		
					Ignition power mode OR	Accessory		
					Fuel Pump Control	enabled		
Volt Reference ircuit (Short igh/Low/Out of ange)	P0641	Detects continuous short or out of range on the #1 5V sensor			Ignition	Run or Crank	15 failures out of 20 samples	DTC Type A 1 trip
3 /		reference circuit	Reference voltage AND Output	>= 0.5V inactive			1 sample/12.5 ms	
			OR Reference voltage AND	>= 5.5V				
			Output OR Reference voltage AND	active <= 4.5V				_
			Output	active				
			OR Reference voltage	> 105% nominal (i.e., 5.25V) OR <95% nominal (i.e., 4.75V)				
Fuel Pump Control Module -	P064A	This DTC detects if an internal fuel					3 failures out of 15 samples	DTC Type B 2 trips
Driver Over- iemperature 1		pump driver overtemperature condition exists under normal operating conditions	Pump Driver Temp	> 150C	Ignition OR Ignition power mode OR Fuel Pump Control KeFRPD_b_FPOverTempDiagEnbl	Run or Crank Accessory enabled TRUE	1 sample/12.5 ms	

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Ignition 1 Switch Circuit Low Voltage	P2534	This DTC detects if the Ignition1 Switch circuit is shorted to low or	Ignition 1 voltage	<= 6 V	Engine	Running	180 failures out of 200 samples	DTC Type A 1 trip
		open					1 sample/25.0 ms	
gnition 1 Switch Circuit High /oltage	P2535	Detects if the Ignition1 Switch circuit is shorted to vehicle supply voltage	Ignition 1 voltage	> 11.7 V	Ignition Run_Crank terminal	Off	180 failures out of 200 samples 1 sample/25.0 ms	DTC Type A 1 trip
	P2635	This DTC detects degradation in the performance of the SIDI electronic return-less fuel system	Filtered fuel rail pressure error	<= Low Threshold (continuously calculated function of desired fuel rail pressure and fuel flow rate) OR >= High Threshold (continuously calculated function of desired fuel rail pressure and fuel flow rate) (See Supporting Tables tab and Supporting Calculations tab)	1. FRP Circuit Low DTC (P018C)	not active	Filtered fuel rail pressure error Time Constant = 12.5 seconds Frequency: Continuous 12.5 ms loop	DTC Type B 2 trips
					2. FRP Circuit High DTC (P018D)	not active		
					3. Fuel Rail Pressure Sensor Performance DTC (P018B)	not active		
					4. FuelPump Circuit Low DTC (P0231)	not active		
					5. FuelPump Circuit High DTC (P0232)	not active		
					6. FuelPump Circuit Open DTC (P023F)	not active		
					7. Reference Voltage DTC (P0641)	not active		
					8. Fuel Pump Control Module Driver Over-temperature DTC's (P064A)	not active		
					9. Control Module Internal Performance DTC (P0606)	not active	-	
					10. An ECM fuel control system failure (PPEI \$1ED)	has not occurred		
					11. The Barometric pressure (PPEI \$4C1) signal	valid (for absolute fuel pressure sensor)		
					12. Engine run time	>= 30 seconds		

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
					13. Emissions fuel level (PPEI \$3FB)	not low		
					14. Fuel pump control	enabled		
					15. Fuel pump control state	normal		
					16. Battery Voltage	11V<=voltage=<32V		
i					17. Fuel flow rate	> 0.047 g/s		
					(See Supporting Tables tab)	AND <= Max allowed fuel flow rate as a function of desired rail pressure & Vbatt (Typical values)		
						in the range of 11 to 50 g/s)		
					18. Fuel Pressure Control System	Is not responding to an over-pressurization due to pressure build during DFCO or a decreasing desired pressure command.		
Control Module Communication	U0073	CAN serial data	Bus Status	Off	Power mode	Run/Crank	5 failures out of 5 samples (5 seconds)	DTC Type B 2 trips
Bus "A" Off		bus shorted condition has occurred to force the CAN device driver to enter a bus-off state						
Lost Communication With ECM/PCM "A"	U0100	Detects that CAN serial data communication has been lost with the ECM	Message \$0C9	Undetected	1. Power mode	Run/Crank	12 failures out of 12 samples (12 seconds)	DTC Type B 2 trips
					2. Ignition Run/Crank Voltage	11V <voltage<32v< td=""><td></td><td></td></voltage<32v<>		
					3. U0073	not active		

P2635-Fuel Pump Performance Maximum Fuel Flow map (grams / second)

X-axis= Desired Fuel Pressure (kiloPascals)

Y-axis= Battery voltage (volts)

I-axis-	Dallery	voitage	ollo /	,					
	200	250	300	350	400	450	500	550	600
4.5	42.7	42.7	42.7	42.7	42.7	41.52	37.66	33.89	30.2
6	42.7	42.7	42.7	42.7	42.7	41.52	37.66	33.89	30.2
7.5	42.7	42.7	42.7	42.7	42.7	41.52	37.66	33.89	30.2
9	42.7	42.7	42.7	42.7	42.7	41.52	37.66	33.89	30.2
10.5	42.7	42.7	42.7	42.7	42.7	41.52	37.66	33.89	30.2
12	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.27
13.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
15	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
16.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
18	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
19.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
21	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
22.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
24	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
25.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
27	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
28.5	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7

P2635-Fuel Injector curve (grams / second)

X-axis= Fuel Pressure (kiloPascals)

128	148	168	188	208	228	248	268	288	308	328	348	368	388	408	428	448
3.55	3.785	4.019	4.254	4.488	4.723	4.94	5.131	5.322	5.513	5.694	5.86	6.027	6.194	6.356	6.51	6.661
	468	488	508	528	548	568	588	608	628	648	668	688	708	728	748	768
	6.807	6.945	7.071	7.197	7.323	7.449	7.575	7.702	7.828	7.954	8	8	8	8	8	8

P2635-Maximum Engine Intake Boost curve (kiloPascals)

X-axis= barometric pressure (kiloPascals)

40	50	60	70	80	90	100	110	120
0	0	0	0	0	0	0	0	0

P2635-Minimum Fuel Injector Pulse Width curve (seconds)

X-axis= engine speed (revolutions / minute)

0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168	7680	8192
0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633	0.633

P2635-Fuel Pump Performance Maximum Fuel Flow map (grams / second)

X-axis= Desired Fuel Pressure (kiloPascals)

Y-axis= Battery voltage (volts)

I UNIS-	Dattery	voitage	<i>y</i> (v Oit3	,					
	200	250	300	350	400	450	500	550	600
4.5	31.22	31.22	31.22	30.1	25.42	21.23	17.48	14.07	10.98
6	31.22	31.22	31.22	30.1	25.42	21.23	17.48	14.07	10.98
7.5	31.22	31.22	31.22	30.1	25.42	21.23	17.48	14.07	10.98
9	31.22	31.22	31.22	30.1	25.42	21.23	17.48	14.07	10.98
10.5	31.22	31.22	31.22	30.1	25.42	21.23	17.48	14.07	10.98
12	31.22	31.22	31.22	31.22	31.22	29.37	25.2	21.42	17.99
13.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	28.79	25.02
15	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
16.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
18	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
19.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
21	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
22.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
24	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
25.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
27	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22
28.5	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22	31.22

P2635-Fuel Injector curve (grams / second)

X-axis= Fuel Pressure (kiloPascals)

128	148	168	188	208	228	248	268	288	308	328	348	368	388	408	428	448
2.974	3.155	3.325	3.488	3.643	3.792	3.935	4.073	4.206	4.336	4.462	4.584	4.703	4.819	4.932	5.043	5.152
	468	488	508	528	548	568	588	608	628	648	668	688	708	728	748	768
	5.258	5.362	5.464	5.565	5.663	5.76	5.855	5.949	6.041	6.132	6.221	6.31	6.397	6.483	6.567	6.651

P2635-Maximum Engine Intake Boost curve (kiloPascals)

X-axis= barometric pressure (kiloPascals)

40	50	60	70	80	90	100	110	120
0	0	0	0	0	0	0	0	0
-								

P2635-Minimum Fuel Injector Pulse Width curve (seconds)

X-axis= engine speed (revolutions / minute)

0	512	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168	7680	8192
0	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797