2005 1.6L (L91) DIAGNOSTIC PARAMETERS

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Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
MAP Rationality	P0106	10.33 - 104.8 kPa	Power test:	None of the following DTC's:	Power test:	Absolute	Туре В	Analog
		The map reading is	Altitude compensated	Coolant Sensor P0117, P0118	MAP out of range for	Pressure		
		compared to expected	MAP reading >	Coolant Sensor Stuck P0115	100 fail samples out of	Sensor		
		MAP high & low limits	Maximum table	Coolant C/L System P0125	200 total test samples			
		based on RPM & TPS	Table is based on	EGR Flow P0401				
			RPM and TPS	EGR P0402,P0404, P0488, P0405, P0406				
				EST P0351, P0352.	Deceleration test:			
			Altitude compensated	EVAP Purge O0441	MAP out of range for			
			MAP reading <	Idle P0506.P0507	20 fail samples out of			
			Minimum table.	Injector P0201,P0202,P0203,P0204	40 total test samples			
			l able is based on	MAP Sensor P0107, P0108				
			RPM and TPS	Mistire P0300				
			Developed in text	Purge Solenoid P0443				
			Altitude compensated	IPS P0122, P0123				
			MAP reading <	Common Stable conditions	Continuous monitoring			
			Deceleration table.	Engine running	every 125 msec			
			Table is based on RPM	Coolant Temperature > -10 degrees C				
			when TPS < 0.2% TPS	Valid barometric pressure update				
				TCC is not transitioning				
				Decel Test Stable Conditions				
				1300 rpm< RPM < 4500 rpm				
				Delta Idle airflow < 5%				
				Power Test Stable Conditions				
				Engine speed > 1300 rpm				
				Engine speed < 4500 rpm				
				A/C clutch not transitioning				
				Traction/Torque Control is not active				
				If ETC: Brake switch not activated				
				If PwrStrSwtch: Power Steering not cramped				
				Delta RPM < 200 rpm				
				(Delta TPS <3%				
				Delia IVIACS 3 KCa) If ECP: Data ECP $> 6\%$				
				$\frac{1}{2} = \frac{1}{2} = \frac{1}$				
				If Cam Phasing: VCPC stable				
				Common Enable Conditions				
				No MAP short fail conditions				
		I		(high/iow) present				l

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				No TPS Short Fail conditions (high/low) present				
				EGR Flow intrusive test not active				
				Decel Test Enable Conditions				
				Decel Stable conditions met				
				TPS < 0.2 %				
				VSS > 20 kph				
				Decel Enable conditions timer > 1.5 sec.				
				Power Test Enable Conditions				
				Power Stable conditions met				
				Power Enable condition timer > 1.5 sec				
MAP Intermittent High	P1106	10.33 - 104.8 kPa	Raw MAP > 98% of sensor	No TPS fail conditions	256 test failures within a	Absolute	Type Cnl	Analog
Volts		This code detects a	reading scale(103.0kpa)	(high/low) present	7682 test samples	Pressure		
		continuous short to high		Engine running > 10 sec.	(2.0 sec./60.0 sec.)	Sensor		
		In either the signal circuit		1PS < 15% IF RPM < 2500				
MARIOValta	P0107		$P_{DW}MAP < 2.0\%$ of son	01 TPS < 35% II RPM > 2500	7.6 IIISEC	Absoluto		Analog
WAF EO VOILS	FUIU	This code detects a	sor reading scale (12 0 kpa)	(high/low) present	a 640 test sample	Pressure	туре А	Analog
		continuous short to low	sol reading scale (12.0kpa)	(high/low) present	(2.5 sec./5.0 sec.)	Sensor		
		or open in either the		TPS 3 0% if RPM £ 1000	Continuous monitoring	0011001		
		signal circuit or the MAP		or TPS > 5.0% if RPM >1000	7.81msec			
		ů		System voltage > 11.5 volts				
MAP Intermittent Low	P1107	10.33 - 104.8 kPa	Raw MAP < 2.0% of sen-	No TPS fail conditions	256 test failures within a	Absolute	Type Cnl	Analog
Volts		This code detects a	sor reading scale(12.0kpa)	(high/low) present	7682 test samples	Pressure		
		continuous short to low			(2.0 sec./60.0 sec.)	Sensor		
		or open in either the		TPS 3 0% if RPM £ 1000	Continuous monitoring			
		signal circuit or the MAP		or TPS > 5.0% if RPM >1000	7.81msec			
	Datas			System voltage >11.5 volts			-	A 1
MAP HI Volts	P0108	10.33 - 104.8 kPa This and a datasta a	Raw MAP > 98% of sensor	No TPS fail conditions	320 test failures within	Absolute	Туре А	Analog
		continuous short to high	reading scale (103.0kpa)	(high/low) present	(2.5 sec)(5.0 sec)	Sensor		
		in either the signal circuit		TPS < 15% if RPM < 2500	Continuous monitoring	Sensor		
		or the MAP sensor		or TPS < 35% if RPM > 2500	7.81msec			
Intake Air Temp	P1111	-40 to 151°C	Raw IAT > 98% of sensor	Vehicle speed <25KPH	32 test failures within a	Thermistor	Type Cnl	Analog
Intermittent High Volts		This code detects a	reading scale(-38°C)	Engine run time > 120 sec	960 test samples			Ũ
(Low Temperature)		continuous short to high		Coolant temp > 70°C	(4.0 sec./120.0 sec.)			
		in either the signal		Airflow < 15 g/s	Continuous monitoring			
		circuit or the sensor		None of the following DTC's:	every 125msec			
				Vehicle Speed Sensor (VSS) P0502				
				Coolant Sensor: P0117, P0118				

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(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Intake Air Temp	P0112	-40 to 151°C	Raw IAT < 2% of sensor	Vehicle speed ³ 50KPH	80 test failures within	Thermistor	Туре А	Analog
LO Volts		This code detects a	reading scale(149°C)	Engine run time > 120 sec	a 160 test samples			
(High Temp.)		continuous short to ground		None of the following DTC's:	(10.0 sec./20.0 sec.)			
		in either the signal circuit		Vehicle Speed Sensor (VSS) P0502	Continuous monitoring			
		or the sensor			every 125msec			
Intake Air Temp	P1112	-40 to 151°C	Raw IAT < 2% of sensor	Vehicle speed ³ 50 MPH	32 test failures within	Thermistor	Type Cnl	Analog
Intermittent Low Volts		This code detects a	reading scale(149°C)	Engine run time > 120 sec	960 test samples			
(High Temperature)		continuous short to ground		None of the following DTC's:	(10.0 sec./20.0 sec.)			
		in either the signal circuit		Vehicle Speed Sensor (VSS) P0502	Continuous monitoring			
		or the sensor			every 125msec			
Intake Air Temp HI Volts	P0113	-40 to 151°C	Raw IAT > 98% of sensor	Vehicle speed <25KPH	80 test failures within	Thermistor	Туре А	Analog
(Low Temp.)		This code detects a	reading scale(-38°C)	Engine run time > 120 sec	a 160 test samples			
		continuous short to high		Coolant temp > 70°C	(4.0 sec./120.0 sec.)			
		in either the signal		Airflow < 15 g/s	Continuous monitoring			
		circuit or the sensor		None of the following DTC's:	every 125msec			
				Vehicle Speed Sensor (VSS) P0502				
				Coolant Sensor: P0117, P0118				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
IAT Skewed Rationality	P0111	-40 to 151°C This code detects a continuous short to ground in either the signal circuit or the sensor	Skewed Low fails if (Startup Coolant - Startup IAT) < 20 deg C Skewed High fails if IAT > threshold based on startup coolant	None of the following DTC's: MAP Sensor P0107, P0108 MAP Rationality P0106 TPS P0122, P0123 Coolant Sensor P0117, P0118 IAT DTC's: P0112, P0113 System Voltage Low P0562 VSS P0502	Test passes 10 consecutive counts or Test fails 10 consecutive counts	Thermistor	Туре В	Analog
				Common Enable Conditions Soaktime > 480 minutes Engine is running IAT stored on previous trip Skewed Low Test Startup Coolant > -20 deg C VSS > 40 kph Airflow > 12 g/sec Skewed Low Delay timer > 2400 cts (300 sec) No report if (Max IAT - Min IAT) > 10 deg C Skewed High Test VSS > 40 kph Airflow > 12 g/sec Skewed High Delay timer > 2400 cts (300 sec) No report if (Max IAT - Min IAT) > 10 deg C	Continuous monitoring every 125 msec The test is performed once per trip			
				No report if (IAT < threshold based on startup coolant temperature)				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
IAT Stuck Rationality	P0110	-40 to 151°C This code detects a continuous short to ground in either the signal circuit or the sensor	IAT Delta < 3 deg C (IAT delta = IAT from previous key cycle - current IAT)	None of the following DTC's: MAP Sensor P0107, P0108 MAP Rationality P0106 TPS P0122, P0123 Coolant Sensor P0117, P0118 IAT DTC's: P0112, P0113 System Voltage Low P0562 VSS P0502 Common Enable Conditions Soaktime > 480 minutes Engine is running IAT stored on previous trip Driving Enable Conditions VSS > 40 kph Airflow > 12 g/sec Driving conditions met for 2400 cts (300 seconds) Idle Enable Conditions TPS<< 0.2%	Test passes 10 consecutive counts or Test fails 10 consecutive counts If test doesn't pass based on (IAT from previous key cycle more than 3 deg C different than current IAT), then a drive/idle test will run. Continuous monitoring every 125 msec The test is performed once per trip	Thermistor	Type B	Analog
Engine Coolant Temp Intermittent Low Volts (High Temperature)	P1114	-40 to 151°C This code detects a continuous short to ground in the signal circuit or the sensor	Low resistance pull-up: Raw coolant < 2% of sensor reading scale (149°C) High resistance pull-up: Raw coolant < 2% of sensor reading scale (149°C)	Engine run time >120 sec	32 test failures within 960 test samples Continuous monitoring every 125msec	Thermistor	Type Cnl	Analog
Engine Coolant Temp Intermittent High Volts (Low Temperature)	P1115	-40 to 151°C This code detects a continuous short to high in the signal circuit or the sensor	Low resistance pull-up: Raw coolant > 98% of sensor reading scale (-38°C) High resistance pull-up: Raw coolant > 98% of sensor reading scale (-38°C)	Engine run time > 120 sec	32 test failures within 960 test samples Continuous monitoring every 125msec	Thermistor	Type Cnl	Analog
Engine Coolant Temp Low Volts (High Temperature)	P0117	-40 to 151°C This code detects a continuous short to ground in the signal circuit or the sensor	Low resistance pull-up: Raw coolant < 2% of sensor reading scale (149°C) High resistance pull-up: Raw coolant < 2% of sensor reading scale (149°C)	Engine run time > 120 sec	80 test failures within a 160 test samples Continuous monitoring every 125msec	Thermistor	Туре А	Analog

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(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Engine Coolant Temp	P0118	-40 to 151°C	Low resistance pull-up:	Engine run time > 120 sec	80 test failures within	Thermistor	Туре А	Analog
High Volts		This code detects a	Raw coolant > 98% of sensor		a 160 test samples			
(Low Temperature)		continuous short to	reading scale (-38°C)					
		high in the signal	High resistance pull-up:		Continous monitoring			
		circuit or the sensor	Raw coolant > 98% of sensor		every 125msec			
	Diad		reading scale (-38°C)	Marca		Detentioneter	Terra Ord	A secola se
TPS Intermittent High Volts	P1121	0-100% (0 - 5.0 volts)	Raw IPS > 98% of sensor	None	256 test failures within	Potentiometer	Type Chi	Analog
		This code detects o	reading scale		7682 test sample			
		This code delects a			(2.0 Sec./60.0 Sec.)			
		in either the circuit or the			continuous monitoring			
					every 7.0 misec			
TPS Low Volts	P0122	0-100% (0 - 5 0 volts)	Raw TPS < 2.8% of sensor	None	320 test failures within	Potentiometer		Analog
	10122	0-100 % (0 - 3.0 Volt3)		NOTE	a 640 test sample	i otentiometer	Туре А	Analog
		This code detects a	reading scale		(2.5 sec/5.0 sec)			
		continuous short to			Continuous monitoring			
		around in either the			every 7 81msec			
		circuit or the sensor						
TPS Intermittent Low Volts	P1122	0-100% (0 - 5.0 volts)	Raw TPS < 2.8% of sensor	None	256 test failures within	Potentiometer	Type Cnl	Analog
		· · · · ·	reading scale		7682 test sample			0
		This code detects a	5		(2.0 sec./60.0 sec.)			
		continuous short to			Continuous monitoring			
		ground in either the			every 7.81msec			
		circuit or the sensor						
TPS High Volts	P0123	0-100% (0 - 5.0 volts)	Raw TPS > 98% of sensor	None	320 test failures within	Potentiometer	Туре А	Analog
			reading scale		a 640 test sample			
		This code detects a			(2.5 sec./5.0 sec.)			
		continuous short to high			Continuous monitoring			
		in either the circuit or the			every 7.81msec			
		sensor						
Stuck Coolant Temp	P0115	-39 - 149°C	(coolant temp sensor	None of the following DTC's:	240 test failures within	Thermistor	Туре В	Analog
Sensor		This code detects	reading - start up coolant	ECT P0117,P0118	300 test samples			
		a coolant temp sensor	temp) < 3°C	Low Power Counter P2610				
		that is stuck within an						
		expected range of		Engine soak time > 360 min.	F 500			
		movement.			Every 500msec			
1				Engine running	I he test is performed once			
					per trip			

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(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Insufficient Coolant	P0125	-39 - 149°C	Coolant temperature sensor	None of the following DTC's:	Test passes 10 times	Thermistor	Туре В	Analog
Temperature for Stable		This code detects a	reading < coolant threshold	Coolant Sensor P0117, P0118	consecutively			
Operation		cooling system that cannot	after engine run time =	TPS P0122, P0123				
		achieve a temperature	time threshold	VSS P0502	Every 500msec			
		sufficient to achieve		System Voltage P0562, P0563				
		closed loop fueling		SPI ECM TCM U0101	The test is performed once			
			Coolant threshold	SPI PSVI P0606	per trip			
			is based on the difference	SPI SIDM P0606				
			between (Coolant temperature to					
			meet C/L conditions)	Test can enable if:				
			and	Engine is running				
			minimum of (StartUp					
			Coolant temperature and StartUp	Coolant Sensor output in range				
			Intake Air Temperature)	2% < Coolant sensor output < 98%				
				within first 10 counts				
				Startup Coolant < 34deg C.				
				Test will not report a failure if				
				idle time > idle time threshold				
				The idle time threshold is based on				
				minimum of (StartUp Coolant or				
				StartUp Intake Air Temperature)				
				Test will not report a failure if				
				accumulated airflow < airflow threshold				
				AirflowThreshold is based on the minimum of				
				(StartUp Coolant or StartUp				
				Intake Air Temperature)				

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Coolant Temperature	P0128	-39 - 149°C	Coolant temperature sensor	None of the following DTC's:	Test passes 10 consecutive	Thermistor	Туре В	Analog
Below Thermostat		This code detects a	reading < coolant threshold	Coolant Sensor P0117, P0118	counts			
Regulating Temperature		thermostat that is	after engine run time =	TPS P0122, P0123				
(Coolant Thermostat)		stuck open and prevents	time threshold	VSS P0502				
		the engine coolant from		System Voltage P0562, P0563	Every 500msec			
		reaching normal operating		SPI ECM TCM U0101				
		temperatures	Coolant threshold	SPI PSVI P0606	The test is performed once			
			is based on StartUp Coolant	SPI SIDM P0606	per trip			
			temperature					
				Test can enable if:				
			Time threshold	Engine is running				
			is based on the minimum of					
			(StartUp Coolant and StartUp	Coolant Sensor output in range				
			Intake Air Temperature)	2% < Coolant sensor output < 98%				
				within first 10 counts				
				Startup Coolant Temperature < (Tstat coolant				
				threshold - 20 deg C)				
				Minimum IAT this key on < -39deg C.				
				Test will not report a failure if				
				idle time > time threshold				
				based on				
				minimum of (StartUp Coolant or				
				StartUp Intake Air Temperature)				
1				Test will est encode follows if				
				rest will not report a failure if				
				accumulated almow < almow threshold				
				based on minimum of				
				(Startup Coolant or Startup				
				Intake Air Temperature)				

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(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Engine Coolant	P0217	50 deg C	Coolant temperature sensor	None of the following DTC's:	Test passes 10 counts	Thermistor	Туре В	Analog
Over Temperature		to	reading > 110 degrees C	Coolant Sensor P0117, P0118	before 10 fail counts			
Condition		110 deg C		Low Power Counter P2610				
				TPS P0122, P0123				
				VSS P0502				
		This code detects a		System Voltage P0562, P0563				
		coolant sensor that is		SPI ECM TCM U0101	Every 125msec			
		skewed to the high-side		SPI PSVI P0606				
				SPI SIDM P0606	The test is performed once			
		The diagnostic monitors			per trip			
		the coolant temperature		Test can enable if:				
		on a cold start.		Engine is running				
		If the coolant temperature						
		reaches a high value		Coolant temperature > 50 deg.C				
		without aggressive						
		driving conditions, a		IAT < 35 deg C.				
		fault will be detected.						
				Coolant Sensor output in range				
				within first 10 counts,				
				Soaktime > 360 minutes				
				OR				
				StartUp Coolant < 45 deg. C				
				Airflow conditions are analyzed for 60 secs				
				to provide initial engine load conditions				
				Once initial data is completed, airflow is				
				monitored for aggressive				
				driving conditions for 240 seconds				
				If the average airflow > 35 g/sec				
				or				
				if the EWMA airflow > 33 g/sec,				
				then the diagnostic will				
1				not report a pass or fail.				
				Diagnostic can increment the				
				pass counter if after a delay of 10				
				seconds, passing conditions				
				are met.				

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Front O2 sensor low volts	P0131	0.0V-1.0V Determines if O2 sensor shorted low	O2 sensor voltage<0.05V	Closed loop stoich ECT>60°C System volt > 10V Delay 3 sec after conditions met None of the following DTC's: Coolant Sensor P0117, P0118 Crank Sensor P0336, P0337. EGR Flow P0401 EGR P0402,P0404, P0488, P0405, P0406 EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP Sensor P0107, P0108 MAP rationality P0106 Misfire P0300 Purge solenoid P0443 TPS P0122, P0123 VSS P0502.	100 test failures in 120 test samples. Failure needs to be repeated twice poll rear O2 sensor). Continuous monitoring every 125msec	Exhaust Oxygen Sensor	Туре А	Analog
Front O2 sensor high volts	P0132	0.0V-1.0V Determines if O2 sensor shorted high	O2 sensor voltage >0.952V	Closed loop stoich ECT>60°C System volt > 10V Delay 3 sec after conditions met No related malfs (See P0131)	100 test failures within 120 test samples. Failure needs to be repeated twice (poll of rear O2 sensor). Continuous monitoring every 125msec	Exhaust Oxygen Sensor	Туре А	Analog

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Front O2 sensor Average response time	P0133	0.0V-1.0V Determines O2 sensor functionality by checking response rate	O2 sensor average transition time between 0.3-0.6V is greater than: Lean to rich: 125 msec AT 101 msec AT 101 msec MT OR Number if switches is less than: 40 counts (A/T) 60 counts (M/T) OR Ratio of response time (Rich to Lean average / Lean to Rich average) is less than 0.55 (A/T) or greater than 2.13 (A/T) or ges than 0.58 (M/T)	Closed loop stoich Coolant >70°C System volt > 10V Engine run time > 60 sec Purge fuel < 20% 1500 < RPM < 3000 RPM 9 <air 30="" <="" flow="" g="" sec<br="">Engine running status within certain range (RPM, TPS). Delay 2 sec after conditions met No related malfs (See P0131) and none of the following DTC's: O2 Front P0131, P0132, P0134, P2196, P2199 IAT DTC's (P0112, P0113)</air>	Once per key cycle Monitored every 1 second until test is complete.	Exhaust Oxygen Sensor	Type B	Analog
Front O2 sensor No Activity or Open	P0134	0.0V-1.0V Determines if O2 sensor is open circuited	O2 sensor voltage is stuck in range (0.3V, 0.6V)	ECT>60°C System volt > 10V Engine run time > 60 sec Air flow > 9g/s Delay 3 sec after exit DFCO No related malfs (See P0131)	612 test failures in 720 test samples Continuous monitoring every 125msec	Exhaust Oxygen Sensor	Туре А	Analog
Front O2 Heater Circuit Not functioning	P0135	0 amps - 8 amps Determines if front O2 heater functionality by measuring current	Filtered O2 heater current > 0.1 amps	Engine Run time >60 sec System Voltage > 10 volts MAP < 65 kPa None of the following DTC's: Coolant Sensor P0117, P0118 MAP P0106, P1017	20 test failures in 40 test samples every 1 sec	Exhaust Oxygen Sensor Heater	Туре В	Digital
Front O2 sensor Rich in DFCO	P2196	0.0V-1.0V Determines if O2 sensor indicates rich exhaust while in decel fuel cut-off (DFCO)	O2 sensor voltage > 0.55V in DFCO mode	In DFCO mode System volt > 10V Delay 3 sec after in DFCO mode No related malfs (See P0131)	90 test failures in a 100 sample test Continuous monitoring every 125msec	Exhaust Oxygen Sensor	Туре А	Analog

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Fuel Trim System Lean During Power Enrichm	P2195 ent	0.0V-1.0V Determines if O2 sensor indicated lean exhaust while in power enrichment (PE)	O2 sensor voltage < 0.35V in PE mode	In PE mode ECT>60°C System volt > 10V Air fuel ratio <= 13.5 Delay 2 sec after in PE mode No related malfs (See P0131)	90 test failures in a 100 sample test Continuous monitoring every 125 msec	Exhaust Oxygen Sensor	Type B	Analog
Post O2 sensor Low Volts	P0137	0.0V-1.0V Determines if O2 sensor shorted low	O2 sensor voltage<0.052V in closed loop control or	ECT>60°C System voltage > 10V Closed loop test: delay for 3 sec after in C/L Airflow > 9g/s	Closed loop test: 850 test failures in 1000 test samples. Failure needs to be repeated for 2 times (poll of front O2 sensor).	Exhaust Oxygen Sensor	Туре А	Analog
			PE test: O2 sensor voltage < 0.35V	PE test: Air fuel ratio <= 13.5 delay for 2 sec after in PE No related malfs (See P0131) and no O2 rear heater P0141	PE test: 90 test failures in 100 test samples Continuous monitoring every 125msec			
Post O2 sensor High Volts	P0138	0.0V-1.0V Determines if O2 sensor shorted high	O2 sensor volt >0.952V in closed loop control or	ECT>60°C System voltage > 10V Closed loop test: delay for 3 sec after in C/L Airflow > 9g/s	Closed loop test: 850 test failures in 1000 test samples. Failure needs to be repeated for 2 times (poll of front O2 sensor).	Exhaust Oxygen Sensor	Туре А	Analog
			O2 sensor voltage > 0.55V in DFCO	DFCO test: delay for 2 sec after in DFCO	DFCO test: 90 test failures in 100 test samples			
				No related mains (See P0131) and no O2 rear heater P0141	every 125msec			
Post O2 sensor No Activity or Open	P0140	0.0V-1.0V Determines if O2 sensor is open circuited	0.422 volts<02 sensor voltage <0.478 volts	Engine run time > 60 sec System voltage > 10V Airflow > 9 g/s Coolant > 60 deg C Closed loop stoich Delay for 3 sec after exit DFCO	1300 test failures in 1500 test samples Continuous monitoring every 125msec	Exhaust Oxygen Sensor	Type A	Analog
				and no O2 rear heater P0141				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Post O2 sensor	P0141	Determines if O2 sensor	Heater electrical current is	Engine run time >30 sec	60 test failures in 70 test	Exhaust	Туре В	Analog
Heater		heater is functioning	less than 0.1 Amps	System voltage > 10V	samples	Oxygen		
		properly by monitoring				Sensor		
		heater electrical current			Continous monitoring	Heater		
					every 1 sec			
Fuel trim system too lean	P0171	Determines if the system	The average of short term	No intrusive tests active	Lean counter > 10	Short term	Туре В	Software
		is in a lean condition	fuel trim values >=0.9375	None of the following DTC's:		fuel trim		
				Cam Sensor P0341, P0342	Continuous monitoring	and adaptive		
			and the average of	Coolant Sensor P0117, P0118	every 250 msec			
			adaptive index multiplier	Coolant System P0115, P0125, P0128, P0217.		Index		
			values >= 1.3	Crank Sensor P0336, P0337.		Multiplier		
				EGR P0402,P0404, P0488, P0405, P0406,				
				EST P0351, P0352.				
				EVAP Purge P0441				
				IAT P0112, P0113				
				Idle P0506, P0506				
				Injector P0201, P0202,P0203,P0204				
				MAP rationality P0106				
				MAP Sensor P0107, P0108				
				Misfire P0300				
				O2 Front P0131, P0132, P0133, P0134, P219	6, P2195			
				O2 front heater P0135				
				Purge solenoid P0443				
				TPS P0122, P0123				
				Throttle position< 95%				
				Engine speed >700 RPM				
				but <6000 RPM				
				Baro >72.0 kPa				
				70°C <coolant td="" temp<115°c<=""><td></td><td></td><td></td><td></td></coolant>				
				25kPa < MAP < 99.7kPa				
				-40°C < MAT < 120°C				
				Vehicle speed < 140 KPH				
				System is in Closed Loop				
				Adaptive index ready				
				System voltage>11V				
				1.5 <airflow<45 g="" s<="" td=""><td></td><td></td><td></td><td></td></airflow<45>				

Sensed Parameter	Fault Code	Acceptable Operating	Primary Malf	Secondary Monitoring Parameters & Conditions	Monitoring Time, Length	Monitoring Method	Fault Code	Signal
Fuel Trim System Too Rich	P0172	Determines if the system is in a rich condition not caused by high purge vapor	The average of short term fuel trim values<=1.054 adaptive index multiplier values <= .72	No intrusive tests active No related malfunctions (See P0171) Throttle position< 95% Engine speed >700 RPM but <6000 RPM Baro >72.0 kPa 70°C <coolant temp<115°c<br="">25kPa < MAP < 99.7kPa -40°C < MAT < 120°C Vehicle speed < 140 KPH System is in Closed Loop Adaptive index ready System voltage>11V 1.5<airflow<45 g="" s<="" th=""><th>Rich counter > 10 Continuous monitoring every 250 msec</th><th>Short term fuel trim and adaptive Index Multiplier</th><th>Type B</th><th>Software</th></airflow<45></coolant>	Rich counter > 10 Continuous monitoring every 250 msec	Short term fuel trim and adaptive Index Multiplier	Type B	Software
Injector Output Circuit Fault	P0201 P0202 P0203 P0204	Detects short to ground and/or open circuit and short to battery conditions for low side drive injector outputs of FET I/C's.	Monitor fault feedback signal from FETS.	Engine in run mode Battery voltage > 9.0V Engine speed > 700 rpm	Fault present > 5 sec. Continuous monitoring every 125 msec.	GFD feedback voltage	Туре А	Digital

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Multi Cyl. Misfire	P0300	This DTC will determine	Deceleration index versus	Engine load and engine	Emission Level:	Crankshaft	DTC type B	Digital
Detected		if individual cylinder	engine speed versus load	speed is in a detectable	5 failed 100 engine cycle	position	for Emission	
		misfire or multiple	and crankshaft position	region and is at or above	blocks out of 16 - 4 times	sensor and	level	
		cylinder misfire is		zero torqueif Engine Runtime >= 10 sec,		camshaft		
		occurring by monitoring		see Misfire Detection Region	Catalyst Damaging	position	DTC type A	
		crankshaft velocity.		Graph attached,	Level: See speed and	sensor	for catalyst	
				else no Zero Torque or	load chart attached.		damaging level	
			Emission Threshold -	Undetectable Region Disable.				
			2.75% for Automatic transm.	Camshaft position sensor				
			2.75% for Manual transm.	is in synchronization				
				Exhaust gas recirculation	Continuous monitoring			
				flow diagnostic is not	every ref event			
				in progress				
				Fuel level > 15% rated				
			Catalyst damage - See	tank capacity				
			speed and load chart	Decel fuel cutoff not active				
				Fuel is not shutoff from				
				high engine speed of				
				6525 RPM for M/T or 6500				
				RPM for A/T in drive and				
				6525 RPM in park for A/T veh.				
				Fuel is not shutoff at				
				255 KPH.				
				Positive delta throttle position				
				< 65% / 125 ms				
				minus delta throttle position				
				< 100% / 125 ms				
				Have not encountered				
				an abusive engine speed				
				of 7025 RPM for M/T and				
				7025 RPM for A/T vehicles.				
				Crankshaft speed patterns				
				are normal				
				Engine acceleration rate				
				(jerk) > 33 consecutive				
				powerstrokes for A/T(38 for M/T).				
				Engine deceleration rate				
				(jerk) > 25 consecutive				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
				powerstrokes for A/T (18 for M/T)			J	<u></u>
				Throttle position < 0% when				
				vehicle speed >511 kph				
				Engine Speed <= 2300 RPM				
				when Engine Run Time<= 10 sec.				
				and 600 RPM <= Engine speed				
				<= 6500 RPM when				
				Engine Run Time >= 10 sec.				
				The above criteria prevents normal delays				
				from occurring in the first 10 sec after power up)			
				to meet the no power-up delay requirement				
				······································				
				11 Volts <= Vehicle				
				voltage <= 16 volts when				
				Engine Run Time >= 10 sec. Else				
				no Ignition Voltage Disable				
				-7 °C <= Coolant temp.<= 120 °C				
				if Coolant Startup Temp 3-7°C				
				21°C £ Coolant temp.£ 120 °C				
				if Coolant Startup Temp £ -7°C				
				Engine speed £ 1800 RPM or				
				the crank angle sensing				
				error has been learned				
				There is the correct ratio				
				between crankshaft				
				position sensor pulses				
				and camshaft position				
				sensor pulses				
				None of the following DTC's:				
				Coolant Sensor P0117, P0118				
				Crank Sensor P0336, P0337				
				MAP Rationality P0106				
				MAP P0107, P0108				
				TPS P0122, P0123				
				VSS P0502				
Knock System	P0324	This DTC will detect a	A. Average reading	None of the following DTC's:	Must receive 26	Piezoelectric	Туре В	Analog
Internal Malf		malfunction in the knock	< 3.9% for any of the 4 cyl.	MAP Rationality P0106	failures within 80	Knock Sensor		-
		filter integrated circuit.		MAP P0107, P0108	executions.			
1		-	B. Average reading		Continuous monitoring			
			> 80% for any of the 4 cyl.	VAC < Table (10 to 50 kPa	performed every 125 ms.			
1				based on RPM)				
				RPM > 1600				
1				Coolant > 50°C				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Knock Sensor Circuit Fault	P0327	This DTC will detect knock sensor failures and knock sensor wiring failures. There is also a sensor short to ground test.	Min difference between cylinders > 0.4%	None of the following DTC's: MAP Rationality P0106 MAP P0107, P0108 VAC < Table (10 to 50 kPa based on RPM) RPM > 1600 Coolant > 50°C	Must receive 26 failures within 64 executions. Continuous monitoring performed every 125 ms.	Piezoelectric Knock Sensor	Туре В	Analog
58X Crank Position Extra/Missing Pulses (Noisy)	P0336	This diagnostic will detect extra/missing pulses in the 58X signal	Extra or missing pulses detected between consecutive 58X reference pulses	Engine running # of extra or missing teeth ³ 2 per revolution	Extra or missing pulses detected in 10 crankshaft rotations within a 100 revolution sample size. Continuously monitored every 7.8 msec	Variable Reluctance Crankshaft Sensor	Туре В	Digital
58X Crank Position Tooth Error Not Learned	P0315	This DTC indicates that crankwheel tooth error has not been learned.	Tooth Error not learned if the manufacture enable counter is set to zero.	None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0117, P0118 Crank Sensor P0336, P0337 EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. Injector P0201, P0202,P0203,P0204 Knock Sensor P0324, P0327 MAP Sensor P0107, P0108 MAP rationality P0106 O2 front P0132 TPS P0122, P0123 Trans MIL P0700 VSS P0502.	The manufacture enable counter is set to zero. Monitored every 125 msec	Tooth Error learning status	Туре А	Digital
58X Crank Position No Signal	P0337	This diagnostic will detect if crank sensor signal is present	58X reference pulse not seen during crank	None of the following DTC's: Cam Sensor P0341, P0342 during crank delta volt drop>0.6V and delta MAP >1.2KPA for MT delta volt drop>1.2V and delta MAP >0.8 KPA for AT	If 58X not seen for 8 seconds, test failed Continuously monitored every 7.8 msec	Variable Reluctance Crankshaft Sensor	Туре А	Digital
CAM Rationality	P0341	This diagnostic will determine if CAM sensor is synchronized correctly	CAM sensor reference pulse is not detected at the correct interval every 4 cylinders	Engine running	40 test failures within a 200 test sample size Continuous monitoring every ref event	Hall effect CAM Sensor	Туре В	Digital

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
CAM Position No Signal	P0342	This diagnostic will	CAM sensor is not seen	Engine running	If CAM not seen for	Hall effect	Туре А	Digital
		determine if no CAM	once every 4 cylinders		32 TDC cylinder 1 events,	САМ		
		sensor signal is present			test failed	Sensor		
					Continuous monitoring			
					every ref event			
Ignition Control Circuit		This will detect a short to	Monitor fault feedback	lanition on.	Must receive 20	Output	Type A	Digital
Circuit A Fault (cvl 2, 3)	P0351	ground, battery or open	signal	Fault flag increments fail count.	failures within 40 test	driver	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	g
Circuit B Fault (cyl 1 4)	P0352	circuit on ESC	olghail		cycles	feedback		
		output			0,000	voltage		
		oupun			Continuous monitoring	Vollago		
					performed every 125 ms			
Pough Pood Source Dotect	D0217	This will detect if no rough	If poither of the selected	Engine Pup Time 3 10 seconds	72 out of 80 samples to fail	voltago	Type Cel	Softwara
Rough Road Source Delect	1 0317	road source is present	n heither of the selected	Engine Run Time To seconds	tost	voltage	Type Cill	Soltware
		(ABS C consor or W(SS)	bardware is detected		lest			
		(ABS, G-sensor, or WSS)	Hardware is delected					
		A valid signal from one			Continuous monitoring			
		is seen at the FCM			continuous monitoring			
C. Concer Downh Dood	D4004		Toot A.		every 125 msec	Conceltive	Turne Crel	Cathurana
G Sensor Rough Road	P1391	-1.5 10 +3.5 G S	C Senser output et idle	Test A.	190 foiled tests detected	Capacitive	Type Chi	Sollware
Rationality						Sensor		
			below -0.39 G S or	Venicle speed £ 5 KPH	within a 200 sample size			
			above 2.21 G S.	Test B.	Test B.			
			Test B:	30 KPH < vehicle speed	180 failed tests detected			
			G Sonsor movement		within a 200 sample size			
			< 0.00024 G/s while driving		within a 200 sample size			
				Engine Run Time 3 10 seconds	Continuous monitoring			
				Engine Run Time To seconds	overy 125 mag			
C Songer Bough Bood	D1202	1.5 to 12.5 C'o	C Sanaar autout 29%	Engine Bun Time 3 10 seconds	every 125 lilsec	Conocitivo	Turna Cral	Apolog
Low Volte	F 1392	-1.5 10 +5.5 G S		Engine Run Time - To seconds	within a 160 sample size	Sonsor	rype Chi	Analog
						001301		
					over 125 mage			
C Sanaar Daugh Dast	D1202		C Sensor output - 08%	Engine Dun Time 3.10 seconds	every 120 misec	Consolitive	Turna Cral	Anolog
G Sensor Kough Koad	P1393	-1.5 10 +3.5 G S	G-Sensor output >98%	Engine Run Time - TO seconds		Capacitive	i ype Chi	Analog
					Continuous monitoris 7	Sensor		
					Continuous monitoring			
					every 125 msec			

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
WSSD Rough Road	P1396	Determine linear wheel	The wheel speed variation	Test Enable:	3 failed tests detected	WSSD	Type Cnl	Software
System fault		speed excessive variation.	test detects at least one	Coolant Temp ³ 60 C	within a 128 sample size	input		
			missing edge from the	11 Volts £ Vehicle				
			wheel speed sensor signal.	voltage £ 16 volts	Continuous monitoring			
				Engine State = Run	every 125 msec			
				None of the following DTC's:				
				Coolant Sensor P0117, P0118				
				Coolant System P0115, P0125, P0128, P0217.				
				EGR P0402,P0404, P0488, P0405, P0406,				
				EST P0351, P0352.				
				Injector P0201, P0202,P0203,P0204				
				MAP Sensor P0107, P0108				
				MAP rationality P0106				
				Misfire P0300				
	_			TPS P0122, P0123				
WSSD Rough Road	P1397	Determine linear wheel	Detects a good or failed	Test Enable:	180 failed tests detected	WSSD input	Type Cnl	Software
Serial Data fault		speed fail threshold.	wheel speed sensor under	Coolant Temp ³ 60 C	within a 200 sample size			
			power conditions.	11 Volts £ Vehicle				
				voltage £ 16 volts	Continuous monitoring			
				Engine State = Run	every 125 msec			
				None of the following DTClos				
				None of the following DTCS:				
				Coolant Sensor P0117, P0118				
				ECP D0402 D0404 D0488 D0405 D0406				
				EST 00351 00352				
				Injector P0201 P0202 P0203 P0204				
				MAP Sensor P0107 P0108				
				MAP rationality P0106				
				Misfire P0300				
				TPS P0122 P0123				
				183 80122, 80123				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
EGR Insufficient Flow	P0401	Range & Rationality This diagnostic will determine if there is a reduction in EGR flow	EGR is closed then opened. The associated change in MAP is compared with a threshold from RPM vs Baro table . The results are statistically filtered (EWMA) and compared to a decision decision limit. DTC is set when the filtered result exceeds the decision limit.	Parameters & ConditionsNone of the following DTC's:Coolant Sensor P0117, P0118Coolant System P0115, P0125, P0128, P0217.EGR P0402,P0404, P0488, P0405, P0406,EST P0351, P0352.EVAP Continuous Purge P0441IAT P0112, P0113Idle P0506,P0507Injector P0201, P0202,P0203,P0204MAP Sensor P0107, P0108MAP rationality P0106TPS P0122, P0123VSS P0502.Tests run in DFCO modeBaro> 72kPaVehicle speed >18 KPHAC clutch/transmission statusunchangedRPM within (1550-2900) A/TRPM within (1550-2900) M/TCompensated MAP withinrange (10.3 kPa, 37 kPa),To start test:TPS<1%EGR<1%Delta MAPDelta MAPVehicle Speed > 4 KPHDelta RPM > 50 (increase)	And Frequency of Check One sample taken per trip Monitored every 125 msec Test run more frequently under the following condition - RAM clear - a large change is observed in measured diag index	Delta manifold absolute pressure Linear EGR Valve	Storage & MIL Type A	Software
				commanded position				
EGR Excessive Flow during Crank	P0402	0-5 V Detects an EGR open to a large value during crank.	EGR position > 70% for 3 sec during crank	Engine cranking (not running) Ignition voltage with in range (10 - 16v)	Test runs during cranking monitored every 125 msec	Potentiometer	Туре В	Analog

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
EGR Open Valve Position Error	P0404	0-5 V This DTC will detect an open valve position	Difference between current and commanded position > 15 %	Desired EGR position>0 Delta Desired EGR < 3%	40 failures out of 80 test samples	Potentiometer	Туре В	Analog
		error		Engine Running Air Temperature > 3°C Ignition voltage within range (11.7 v, 16v) None of the following DTC's: EGR P0405, P0406,	The above fail condition repeats 3 times, each is separated by at least a 5 sec period with desired EGR position <3%			
				IAT P0112, P0113 VSS P0502	Continous monitoring every 125 msec			
EGR Closed Valve Pintle Error	P0488	0-5 V This DTC will detect an EGR valve that will not close completely	Difference between current and learned low position > 10%	Desired EGR position=0 Engine running Ignition voltage (11.7v, 16v) Air Temperature > 3°C None of the following DTC's: EGR P0405, P0406, IAT P0112, P0113 VSS P0502.	40 failures out of 40 test samples The above fail condition repeats 3 times, each is separated by at least a 5sec period with desired EGR position > 30% Continous monitoring every 125 msec	Potentiometer	Туре В	Analog
EGR Pintle Position Sensor Circuit Low	P0405	0-5 V This DTC will detect open/short low circuit or sensor	EGR position < 2%	Ignition voltage within (11.7v, 16v)	Fail conditions last more than 10 sec. Continuous monitoring every 125 msec	Potentiometer	Туре А	Analog
EGR Pintle Position High Voltage	P0406	0-5 V This DTC will detect short high circuit or sensor	EGR position signal > 98%	Ignition voltage within (11.7v, 16v)	Fail conditions last more than 10 sec. Continuous monitoring every 125 msec	Potentiometer	Туре А	Analog

Undicate Application) Code Range & Rationality Detection Parameters Parameters & Conditions Inf Frequency of Check Method Storage & Aution Low Efficiency Prof. In advertinine with a domaine according according the converter and correlates it to converte	Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
Catabyse Bank 1 Low Efficiency PD420 This determines the corgene storage aparking of the converter and correlates it to onwerter efficiency Oxygen storage aparking out the storage aparking of the converter and correlates it to onwerter efficiency Oxygen storage aparking out the s	(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Low Efficiency oxygen solvage capacity of the converter efficiency index time < TBD sec to be driven for at leads: 1 sec at Artflow > 1 g is (AT) per key on Oxygen Server at every 125 masc O the converter efficiency index time < TBD sec 1 sec at Artflow > 1 g is (AT) Continuous monitoring every 125 masc Build or at Software O Lies Lies Converter efficiency I sec at Artflow > 1 g is (AT) Continuous monitoring every 125 masc Figure 140 Figure 140 Figure 140 mine > 570 sec 2.25 < Artflow 7.5 g iset (ATT) 2.25 < Artfl	Catalyst Bank 1	P0420	This determines the	Oxygen storage capacity	Before idle test, vehicle needs	One pass/fail decision	Exhaust	Туре А	Software
of the converter and correlates it to converter efficiency 15 sec at Artifors > 11 g/s (AT) Sonor and converter efficiency Sonor and Soltware <u>OSC test conditions:</u> At clie (DR position for AT) Closed loop Purge concolination island Discretions: At clie (DR position for AT) Closed loop Purge concolination island Discretions: At clie (DR position for AT) Closed loop Purge concolination island Discretion for AT) 2.25 < Arithms 6.5 globic (MT) TeX-FT-15% TEX-FT-15% TEX-FT-15% TEX-FT-15% TEX-FT-15% TEX-FT-15% TEX-FT-15% TEX-FT-15%	Low Efficiency		oxygen storage capacity	index time < TBD sec	to be driven for at least:	per key on	Oxygen		
11 see at Alflow > 11 gls (AT) Continuous monitoring every 125 msec Software 0SC jest control (CR) position for AT) Closed loop College control (CR) position for AT) Closed loop Software 0SC jest control (CR) position for AT) Closed loop Closed loop Software Software 0SC jest control (CR) position for AT) Closed loop Closed loop Software Software 2.25 < Antiows C 5 ginse (AT) 2.25 Antis (AT) 2.25 11 Antion AT = Antion (A			of the converter and		16 sec at Airflow > 7.8 g/s (MT)		Sensor and		
every 125 maec every			correlates it to converter		11 sec at Airflow > 11 g/s (AT)	Continuous monitoring	Software		
SC: Net .conditions; At tild (DR position for AT) Closed loop Purge concentration learned Engine run time \$75 gase. 2.25 \$ Artflows 75 gisse (AT) 7-4-147105C BAR05-73/RPA BAR05-73/RPA 300"C* Catalyst temp < 900"C CL. Integrator change=0.05 Lidi time < tmin Veh.speed-5/RPH BLM Meaned Above stabilized for 4.5 sec. Test is aborded for this lide it: D enging speed > 80mm or A/C state changed or FAN state changed or Insufficient AF shift None of the following DTC's: Came smear P034, P0324 Coolent Speer P017, P0174 Coolent System P015, P0428, P0437. EST P0351, P0324. EST P0351, P0322. EST P0351, P0322. EST P0351, P0322. EST P0351, P0322. EST P			efficiency			every 125 msec			
At Ide (DR position for AT) Closed loop Purge constraints learned Engine run time > 570 sec. 2.25 < Airllow < 5.5 greec (AT) 2.25 < Airllow < 5.5 greec (MT) 1.2,25 < Airllow < 5.5 greec (MT) TP3<1.5% 7.74L7<105C EAAK0>720FA 300°C < Cable Set (MT) 300°C < Cable Set (MT) 300°C < Cable Set (MT) 300°C < Cable Set (MT) 200°C 200°C <th></th> <th></th> <th></th> <th></th> <th>OSC test conditions:</th> <th></th> <th></th> <th></th> <th></th>					OSC test conditions:				
Closed topy Purge conceptration learned Engine run inter > 570 sec. 2.25 < Artifore > 51 g/sec (AT) 2.25 < Artifore > 51 g/sec (AT) 12.25 < Artifore > 51 g/sec (AT) 12.25 < Artifore > 51 g/sec (AT) 17 FPS-1.5% 70-ECT-103C -7-24AT<105C BARO>724CT-103C 7-24AT<105C C. (Lintegrator Ange>0.05 Idle time < trim Vel.speed>XEKH BLM learned Above stabilized for 4.5 sec. Test is aborded for this idle if: Dengine speed > 800 m or AC state changed or Insufficient AF shit None of the Ioldiving DTC%: Coolant System P0115, P0128, P0247 Coolant System P0115, P0247 Coolant System P0115, P0247 Coolant System P0115, P0128, P0247 Coolant System P0115, P0247 Coola					At idle (D/R position for AT)				
Punge conditation learned Engine run time > 570 sec. 2.25 < Allrows 7.5 g/sec (AT) 2.25 < Allrows 7.5 g/sec (SAT) TFS<1.5% 70-ECT-109C 7-KIAT-105C 8ARX-74CPA 300°C < CAllyst tem < 900°C CAllystater + 100°C CAllystater + 10°C CAllystater + 1					Closed loop				
Engine unit time > 570 sec. 2.25 < Auflow: 5.5 g/sec (MT) 2.25 < Auflow: 5.5 g/sec (MT) 2.26 < Constraints 70-ECT-100C 3007C < Catalyst temp < 900°C CL Integrator change=0.05 Ide and the time Veh.speed=3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 800pm or A/C State changed or Insufficient A/F shift None of the following DTC's: Can of the following DTC's: Cand Secor P0341, P0342 Coolant Sensor P0117, P0118 Calord System P0115, P0128, P0217. Carrier Secor P038, P0387. EGR P0422, P0404 Fuel Tim P0171, P0128 EVAP Purge P0421 Fuel Tim P0171, P0120 Idle Togon, P0387, P0387. EGR P0422, P0421 Fuel Tim P0171, P0120 Idle Togon, P0387, P0387. EGR P0422, P0421 Fuel Tim P0171, P0120 Idle Togon, P0387, P0387. EGR P0422, P0450 EGR P0422, P0450, P0460 EVAP Purge P0451 Fuel Tim					Purge concebtration learned				
2.25 < Alridove 5.9 g/sec (A/T) TF95-1.5% 70-ECT-190C -7-IAT-106C BAR0-572KPA 300°C 2 Catalyst temp < 900°C C/L Integrator change<0.05 Idle time < tmin Veb.speed-3KPH BLM learned BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80/Pm or A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Coalan System P0431, P0342 Coolan System P0431, P0342 Coolan System P0431, P0342 EGR P0422-P0404, P0448, P0405, P0406, EST P0422-P0203, P0204 MAP retionality P016					Engine run time > 570 sec.				
2.25 Arilow: 6.5 g/sec (M/T) TPS-1.5% 70-6CT-1090 -7-KINT-105C BARD-72KPA 300°C < Calayst temp = 900°C C/L C/L Itelegrator changes:0.05 Idle time - 1min Veh.speed:-3KPH BLM Beamed Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80gm or AC: state changed or FRAN state changed or FRAN state changed or Insufficient AF shift None of the following DTC's: Came Sensor P013, P0128, P0217. Crainel Sensor P013, P0128, P0217. Crainel Sensor P0136, P0137. EGR P0022, P0404, P0488, P0405, P0406, EST P0351, P0352, EVP Purge P0441 Fuel Fuel Fuel BLI Diagostrup 2041 Fuel F0605, P0507 Ide Diagnostic P0505, P0203, P0204					2.25 < Airflow< 7.5 g/sec (A/T)				
TO-ECT-109C -7-4XT-105C -7-4XT-105C -7-4XT-105C BARD-72KPA 300°C 300°C < Catalyst temp < 90°C CUL Integrator change-0.05 Idle time < tmin Veh speed-3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: De ongine speed > 800°m or A/C state changed or Insufficient A/F shift None of the following DTC's: Canna Sensor P034, P0342 Coolant System P0115, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402/P0404, Pu488, P0405, P0406, EST P031, P0352. EVAP Pruge P0441 Fuel Tim P0171, P0172 Idle Diagnositic P0506, P0507 Injector P0207, P0202, P0203, P0204					2.25 < Airflow< 6.5 g/sec (M/T)				
7-4LT-105C BARO-72KPA 30°C < Calayst temp < 90°C OL OL Idle time < 1min Veh.speed-3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80rpm or A/C state changed or Insufficient A/F shift None of the following DTC's: Can Sensor P0341, P0342 Coolant System P0115, P0128, P0217. Crark Sensor P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0537. EGR P0402,P0404, P0488, P0405, P0406, EST P0537. EGR P0402,P0404, P0488, P0405, P0406, EST P0537. P0322, P0224 Hue Trim P0171, P0172 Ide Diagnosic P0506, P0507 Injector P0221, P022,P0203,P024 MAP rationality P0106					TPS<1.5%				
 - -<					70 <ec1<109c< th=""><th></th><th></th><th></th><th></th></ec1<109c<>				
DARCS / 2K/A 30°C < Catalyst temp < 900°C C/L Integrator change<0.05 Ide time < 1min Veh.speed<3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80pm or A/C state changed or Insufticient A/F shitt None of the following DTC's: Camposition of the following DTC's: Camposition System P015, P0128, P0217. Crank Sensor P0341, P0342 Coolant System P015, P0128, P0217. Crank Sensor P0341, P0342 Coolant System P015, P0128, P0217. Crank Resor P0336, P0337. EGR P0402, P0404, P0408, P0406, EST P0351, P0322. EVAP Purge P0441 Fuel Trim P0171, P0172 Ide Edingstic P0606, P0507 Injector P0201, P0202, P0204, P0204									
Sub C = Catalyst temp > 300°C CL Integrator change=0.05 Idle time < 1min Veh.speed<3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this Idle if: D engine speed > 80rpm or AC state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0314, P0342 Coolart Sensor P0314, P0342 Coolart Sensor P0337, Ep128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0408, P0406, EST P031, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0202, P0220, 20204 MAP Furge P0466					BARO>72KPA				
Chilling attor Uninger-0.03 Idle time < 1 min Veh.speed-3KPH BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80rpm or A/C State changed or FAN state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Coalma Sensor P034, P0342 Coolant System P0115, P0128, P0128, P0217. Corlank Sensor P0330, P0337. EGR P0402, P0404, P0488, P0405, P0406, EST F0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202, P0203, P0204 MAP rationality P0106					S00 C < Catalyst temp < 900 C				
Image: Content of the image of the imag					C/L Integrator change<0.05				
Veriableut Schn BLM learned Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80rpm or A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P01341, P0342 Coolant System P0115, P0128, P0217. Crank Sensor P01341, P0348, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Tim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204									
Above stabilized for 4.5 sec. Test is aborted for this idle if: D engine speed > 80rpm or A/C state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant System P0115, P0125, P0217. Crank Sensor P0356, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Time P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203, P0204 MAP rationality P0106					BI M learned				
Test is aborted for this idle if: D engine speed > 80 pm or A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant System P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crark Sensor P0336, P0207. EGR P0402, P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Time P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0204 MAP Tationality P0106					Above stabilized for 4.5 sec				
Test is aborted for this idle if: Dengine speed > 80pm or A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0341, P0342 Coolant Sensor P017, P0118 Coolant System P0115, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0331, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					7150V0 Stabilized for 4.0 500.				
D engine speed > 80rpm or A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant System P0115, P0128, P0217. Crank Sensor P0354, P0382, P037. EGR P0402,P0404, P0488, P0405, P0128, P0217. Crank Sensor P0337, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203, P0204 MAP rationality P0106					Test is aborted for this idle if:				
A/C state changed or FAN state changed or Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402, P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202, P0203, P0204 MAP rationality P0106					D engine speed > 80rpm or				
FAN state changed or Insufficient A/F shift Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0341, P0342 Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402, P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202, P0203, P0204 MAP rationality P0106 MAP rationality P0106					A/C state changed or				
Insufficient A/F shift None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402, P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					FAN state changed or				
None of the following DTC's: Cam Sensor P0341, P0342 Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Insufficient A/F shift				
None of the following D1Cs: Cam Sensor P0341, P0342 Coolant Sensor P017, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106									
Cam Sensor P0341, P0342 Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402, P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					None of the following DTC's:				
Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Cam Sensor P0341, P0342				
Coolant System P0115, P0128, P0217. Crank Sensor P0336, P0337. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Coolant Sensor P0117, P0118				
EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Cooldnii Systeini F0115, F0125, F0126, F0217. Crank Sonsor P0226, P0227				
EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					EGR P0402 P0404 P0488 P0405 P0406				
EVAP Purge P0441 EVAP Purge P0441 Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					EST P0351 P0352				
Fuel Trim P0171, P0172 Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					EVAP Purge P0441				
Idle Diagnostic P0506, P0507 Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Fuel Trim P0171, P0172				
Injector P0201, P0202,P0203,P0204 MAP rationality P0106					Idle Diagnostic P0506, P0507				
MAP rationality P0106					Injector P0201, P0202.P0203.P0204				
					MAP rationality P0106				
MAP Sensor P0107, P0108					MAP Sensor P0107, P0108				
Misfire P0300					Misfire P0300				
O2 Front P0131, P0132, P0133, P0134, P2196, P2195					O2 Front P0131, P0132, P0133, P0134, P2196	6, P2195			
O2 front heater P0135					O2 front heater P0135				

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
				O2 rear heater P0137, P0138, P0140, P0141 Purge solenoid P0443 System Voltage Low P0562 TPS P0122, P0123 VSS P0502.				
EVAP System	P0455	This diagnostic will detect	Test is failed if tank	None of the following DTC's:	Once per ignition	Tank	Туре В	Software
Malf/Large Leak		a large leak by monitoring the level of vacuum in the Evap system while the canister vent line is closed. As the engine purges the Evap system, tank vacuum should rise.	vacuum <10 inches of H2O after sufficient purge vol.	Coolant Sensor P0117, P0118 EGR P0402,P0404, P0488, P0405, P0406 Fuel Lvl P0462, P0463 IAT P0112, P0113 Idle P0506,P0507 Injector P0201,P0202,P0203, P0204 MAP P0107, P0108 MAP rationality P0106 Misfire P0300 O2 Front P0131, P0132, P0133, P0134, P219 O2 Front heater P0135 O2 Rear Heater P0141 O2 Rear P0137, P0138, P0140 Purge solenoid P0443 Tank Pressure P0452, P0453 TPS P0122, P0123 VSS P0502 Common EVPD Enable Criteria: 9V < Ignition Volt < 16V Baro>72 kPa { Soak Time > 720 minutes OR (Startup IAT-Startup ECT < 12°C AND Startup ECT - Startup IAT < 50°C) }	6, P2195	vacuum sensor (differential pressure) and software	diagnostic, but report to executive as Type A.	Contware
				Note: If Soak Time Fault set, Startup temp cond must be met (but MIL will be on) -5°C < Startup ECT and IAT < 42°C Start-up IAT-IAT<3°C Purge enable time < timer based on Startup C 24% < Vapor space < 94% 1s < Engine Run Time < 360s + Purge enable	ditions oolant time			

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Evap Continuous Purge Flow	P0441	This diagnostic will detect a 0.020" leak in the purge tank vacuum with the vent commanded close and the purge solenoid closed. If tank vacuum is greater than a cal for a period of time, the purge solenoid test is failed.	Test is failed if tank vacuum> Threshold for 2 second.	No related malfs (See P0455) (See P0455) Continuous Purge Flow Enable Criteria: 1s < Engine Run Time < 100s	Once per ignition cycle Evaluated at 125 msec	Tank vacuum (differential pressure) and software	Type B diagnostic, executive as Type A.	Software
EVAP Small Leak	P0442	This diagnostic will detect the level of vacuum in the Evap system while vapor pressure slope is also calculated and subtracted from the vacuum decay slope. The corrected vacuum decay slope is compared to a threshold to determine if the leak size is > 0.040".	If a 10 second decay slope is > a slope threshold based on fuel present.	No related malfs (See P0455) Common EVPD Enable Critieria (See P0455) Small Leak Enable Criteria: Idle { RPM< 1200 rpm, Vehicle Speed<3km/h, Creep { RPM<1300rpm, Vehicle Speed<6km/h Creep TPS<2%, Delta MAP < 10 kPa, 50% c creep decay time is allowed per 1 test }	Once per ignition cycle TPS<1% }	Tank sensor (differential and software	Type B but report to executive as	Software
EVAP Very Small Leak	P0456	This diagnostic will detect a small leak by monitoring the Evap system while the system is sealed. A vapor pressure slope is subtracted from the vacuum decay slope. The corrected vacuum decay slope is compared to a threshold to determine if the leak size is > 0.020".	If a 25 second corrected vacuum threshold based on fuel level, a very small leak is present.	No related malfs (See P0455) (See P0455) Small Leak Enable Criteria	Once per ignition cycle Evaluated at 125 msec	Tank vacuum (differential pressure) and	Type B diagnostic, executive as Type A.	Software
EVAP Vent Blocked	P0446	This diagnostic will detect a vent control failure by monitoring tank vacuum vent commanded open. If tank vacuum is > cal for a period of time, a failed vent is detected. Start-up tank vacuum is outside a window.	Test is failed if tank vacuum > 8 "H20 for 2 seconds. Test is passed met.	No related malfs (See P0455) Common EVPD Enable Critieria Vent Blocked Enable Criteria: Restricted Path Test Time < 120s	Once per ignition cycle Evaluated at 125 msec	Tank vacuum sensor pressure) and software	Type B diagnostic, but report to Type A.	Analog

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
EVAP Purge Solenoid Control Circuit	P0443	Detects open and shorted circuits.	Read the fault feedback signal from the output driver to determine short vbatt/gnd faults.	Ignition on. IGN V > 11V None of the following DTC's: SPI PSVI P0606 SPI SIDM P0606	30 test failures within 60 test samples Continuous monitoring every 125 msec	Output driver Feedback Voltage	Туре В	Digital
Vent Solenoid Circuit Fault	P0449	Detects open and shorted circuits	Read the fault feedback signal from the output driver to determine short vbatt/gnd faults.	Ignition on. IGN V > 11 V None of the following DTC's: SPI PSVI P0606 SPI SIDM P0606	10 test failures within 20 test samples Contiuous monitoring every 125 msec	Output driver Feedback Voltage	Туре А.	Digital
Tank Pressure LO	P0452	0.3 to 4.7volts This DTC detects a short to low sensor	0.3 to 4.7volts This DTC detects a short to low sensor	Test is fail if sensor output<1% of Vrefvolts	100 test failures within 200 test samples. (125msec/test) Continuous monitoring	Absolute pressure sensor	Туре А.	Analog
Tank Pressure HI	P0453	0.3 to 4.7volts This DTC detects a short to low sensor	0.3 to 4.7volts This DTC detects a short to low sensor	Test is fail if sensor output>99% ofVref	100 test failures within 200 test samples. (125msec/test)	Absolute pressure sensor	Туре А.	Analog
Fuel Level Stuck	P0461	10 to 244 counts This DTC detects a stuck fuel level sender	Raw fuel level sender output D <3.5% after driving for 250 km	Ignition on None of the following DTC's: Fuel LvI Sensor P0462, P0463 VSS 502	Continuous monitoring (125msec/test)	Potentiometer	Туре В	Analog
Fuel Level LO Volts	P0462	0 to 5 volts This DTC detects a continuous short to low or open in either the signal circuit or the fuel level sender	Raw fuel level sender output < 5% of sensor reading scale	Ignition on	80 test failures within a 160 test sample (10 sec./20 sec.) Continuous monitoring every 125msec.	Potentiometer	Туре А	Analog
Fuel Level HI Volts	P0463	0 to 5 volts This DTC detects a continuous short to high in either the signal circuit or the fuel level sender	Raw fuel level sender output > 85% of sensor reading scale	Ignition on	80 test failures within a 160 test sample (10 sec./20 sec.) Continuous monitoring every 125msec.	Potentiometer	Туре А	Analog

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Fuel Level Sensor Intermittent- Noisy	P0464	0 to 5 volts Detects a noisy fuel level signal	Fuel Level Sensor Output change > 3.9%	None of the following DTC's: IAT Sensor P0112, P0113 MAP Sensor P0107, P0108 TPS P0122, P0123 VSS P0502 Engine Running Delay 5 sec if Delta MAP > 10 kPa or Delta RPM > 50 rpm or VSS > 1 kph or Delta TPS > 2%	50 test failures in 80 test samples Continuous monitoring every 125msec.	Potentiometer	Туре В	Analog
VSS (engine side) Digital Hall Switch No Signal (MT only)	P0502	0 - 255 kph Detects an abnormal vehicle speed sensor output	Power Test : Indicated Vehicle speed < 5 kph Decel Test : Indicated Vehicle speed < 5 kph	IAT > -10°CEngine running Coolant > 60° C11 <voltage<16 volts<br=""></voltage<16> Power TestA) RPM within (1200,4000) TPS within (25%, 60%) MAP > 60 kPa Decel test:B) MAP < 30 kPa Delta RPM of cycle £ 50 TPS £ 0.8% 1800 < RPM < 6000 None of the following DTC's: Coolant Sensor P0117, P0118 Coolant System P0115, P0125, P0128, P0217. EGR P0402,P0404, P0488, P0405, P0406, EST P0351, P0352. Injector P0201, P0202,P0203,P0204 MAP Sensor P0107, P0108 MAP rationality P0106 Misfire P0300 TPS P0122, P0123	Power test: 280 tests failed within a 300 test sample size (35 sec./37.5sec.) Decel test: 280 tests failed within a 300 test sample size (35 sec./37.5sec.) Continuous monitoring every 125msec.	Hall Sensor	Туре В	Digital

(Indicate Application) Code Range & Rationality Detection Parameters Parameters & Conditions and Frequency of Check Method Storage & Mill Type AD Idle speed RPM low P0506 Determines if a low idle Idle engines expeed errors- toondition exists. A low into exists. A low into the following DTCs: Came the parameters & Conditions Software Type B Software Type B Software Type B Software Software Type B Software Software Type B Software Software Type B Software Software Software Software Type B Software Software Type B Software Software Software Software Type B Software	Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
Idle speed RPM low P0506 Determines # a low idle condition exists. A low idle is defined as 100 RPM below the desired idle RPM Idle engine speed error- 100 RPM for 10 seconds Type B Software No intrusive tests are active below the desired idle RPM No intrusive tests are active below the desired idle RPM Continuous monitoring at idle is defined as 100 RPM below the desired idle RPM Software Type B Software Intrusive tests are active below the desired idle RPM No intrusive tests are active below the desired idle RPM Software Type B Software Intrusive tests are active below the desired idle RPM Intrusive tests are active below the desired idle RPM Software Type B Software Intrusive tests are active RPM Intrusive tests are active RPM Intrusive tests are active RPM Software Type B Software Intrusive tests are active RPM Intrusive tests are active RPM Intrusive tests are active RPM Software Type B Software Intrusive tests are active RPM Intrusive tests are active RPM Intrusive tests are active RPM Software Intrusive tests are active RPM Software Type B Software Intrusive tests are active RPM Intrusive tests are active RPM Intrusive tests are active RPM Software Type B	(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Claim General Control Contecont Control Control Control Control Control Control	Idle speed RPM low	P0506	Determines if a low idle condition exists. A low idle is defined as 100 RPM below the desired idle RPM	Idle engine speed error> 100 RPM for 10 seconds	Test Enable: No intrusive tests are active None of the following DTC's: Cam P0341, P0342 Coolant System P0115, P0125 Coolant Sensor P0117, P0118 Crapt Sensor P0336, P0337	Continous monitoring at idle condition every 125 msec	Software	Туре В	Software
					Crank Sensor P0336, P0337. EGR P0402,P0404,P0488,P0405,P0406 EST P0351, P0352. EVAP Purge P0441 Fuel Trim P0171, P0172 IAT P0112, P0113 Injector P0201, P0202,P0203,P0204 MAP P0107, P0108 MAP rationality P0106 Misfire P0300 O2 front heater P0135 O2 Front P0131, P0132, P0133, P0134, P219 O2 rear heater P0141 Purge solenoid P0443 TPS P0122, P0123 VSS P0502. Engine run time > 60 sec Baro > 72 kpa Coolant temp > 60°C 11.0 < Ignition Volt < 16.0V IAT > -20 C IAC valve is controlled fully open Above met for a time > 5 sec to each ta diagnostice	6, P2195			

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Idle speed RPM high	P0507	Determines if a high idle condition exists. A high idle is defined as 200 RPM above the desired idle	Idle engine speed error> 200 RPM for 10 sec.	Test Enable: No intrusive tests are active No related malfs (See P0506)	Continous monitoring at idle condition every 125 msec	Software	Туре В	Software
		KPIVI		Engine run time > 60 sec Baro > 72 kpa Coolant temp > 60°C 11.0 < Ignition Volt < 16.0V IAT > -20 C IAC valve is controlled fully closed Above met for a time > 5 sec to enable the diagnostic MAP>22 kpa				
A/C Refrigerant Pressure Low Volts	P0532	0 to 5 Volts This code detects a continuous short to ground in either the circuit or the sensor	Raw A/C pressure<1% of sensor readig scale	Engine running	80 test failures within a 160 test sample (10 sec./20 sec.) Continuous monitoring every 125msec	Pressure Sensor	Type Cnl	Analog
A/C Refrigerant Pressure High Volts	P0533	0 to 5 Volts This code detects a continuous short to high in either the circuit or the sensor	Raw A/C pressure>99% of sensor readig scale	Engine running	80 test failures within a 160 test sample (10 sec./20 sec.) Continuous monitoring every 125msec	Pressure Sensor	Type Cnl	Analog
A/C Clutch Output Circuit Fault	P0645	Detects open and shorted circuits	Read the fault feedback signal from the output driver to determine short vbatt/gnd faults.	Ignition on. IGN V > 11 V None of the following DTC's: SPI SIDM P0606	10 test failures within 20 test samples every 125msec	Output driver Feedback Voltage	Type Cnl	Digital
System Voltage Too Low (engine side)	P0562	11.0-16.0 volts This code checks if the system voltage is too low	System voltage < 11.0 v	Ignition on	Test failed if fail conditions last for 300sec within 360sec Monitored every 1 sec	Software	Type Cnl	Analog
System Voltage Too High (engine side)	P0563	11.0-16.0 volts This code checks if the system voltage is too high	System voltage > 16 volts	Ignition on	Test failed if fail conditions last for 300sec within 360sec Monitored every 1 sec	Software	Туре В	Analog
ECM Checksum Error	P0601	Checksum of s/w and calibrations match expected checksum. No data errors.	Checksum of s/w or calibrations does not match expected checksum	S/w major ID not equal to value in S/W	Once per key cycle Monitored at 125 msec	16 bit checksum	Туре А	Software
Control module programming error	P0602	Calibration ID matches software level.	Calibration ID does not match software level.		Once per key cycle Monitored at 125 msec	16 bit checksum	Туре А	Software

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Lower Power Counter Error	P2610	Verifies operation of	Monitors spi bits and	Ignition on.	Performed once per key	Software	Туре В	Software
		LPC I/C and communciation	countdown rate of I/C.	IGN V > 11V	cycle.			
		between LPC and main		Engine run timer >10 sec	If test fails, code will be set.			
		cpu.	Expected-Actual > 3 sec		Monitored at 500 msec			
Lower Power Counter Reset	P2610	Detects if LPC I/C has bee	Monitors LPC I/C overflow bit.	Ignition on.	Performed once per key	Software	Туре В	Software
		reset due to		Engine not running	cycle.			
		LPC I/C malfunction.		No NVM Reset occurred	If test fails, code will be set.			
					Monitored at 500 msec			
SPI Communications	U0101	Detects if CAN	Monitors periodic TCM	Ignition on.	20 test failures		Type Z for M/T	Digital
Between ECM and TCM		communication between	status message.	BATT V > 11V.	within 30 test samples		Type B for A/T	
		engine and transmission	If message not received	RUNTIME > 2sec				
		products are corrupted.	fail counter incremented.	Device Control not active.	Continuous monitoring			
					executed every 15.6 msec.			
SPI Communications	P0606	Detects if SPI	Monitors specific bits in the	Ignition on.	20 test failures		Туре А	Digital
Error with SIDM chip		communication between	spi message structure.	BATT V > 11V.	within 40 test samples			
		main cpu and output	If bits are corrupted,					
		driver I/C is corrupted	fail counter incremented.		Continuous monitoring			
					executed every 125 msec.			
SPI Communications	P0606	Detects if SPI	Monitors specific bits in the	Ignition on.	20 test failures		Туре В	Digital
Error with PSVI chip		communication between	spi message structure.	BATT V > 11V.	within 40 test samples			
		main cpu and output	If bits are corrupted,					
		driver I/C is corrupted	fail counter incremented.		Continuous monitoring			
					executed every 125 msec.			
Transmission Fault	P0700	Indicate failure code	Received message from	none	Message received regularly	Software	Refer to TCM	Software
General TCM Malfunction		is detected by TCM	TCM indicating malfunction		from TCM through CAN			
A/T Application ONLY			is detected in TCM.					

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
Sensed Parameter (Indicate Application) Intake Air System Leak	Fault Code P2279	Acceptable Operating Range & Rationality Determines if an engine vacuum leak exists. Under idle conditions, the MAP estimate correction is a weighted difference between the predicted MAP and the actual MAP reading.	Primary Malf Detection Parameters MAP estimate correction > threshold for 20 seconds Threshold = A/T: 8.0 if AC on in P/N 6.5 if AC on in gear 8.5 if AC off in P/N 7.5 if AC off in gear M/T 8.5 if AC on 9 if AC off	Secondary Monitoring Parameters & ConditionsTest Enable:No intrusive tests are activeNone of the following DTC'spresent: $58X$ DTC's P0336, P0337Cam DTC's P0341, P0342Coolant sensor DTC's: P0117, P0118Coolant sensor DTC's: P0117, P0118Coolant System P0115, P0125EGR DTC's P0402, P0404P0488, P0405, P0406.EST DTC's P0351, P0352EVAP Cont.Purge Flow DTC: P0441Fuel System DTC's: P0171,P0172IAT DTC's: P0107, P0108MAP DTCs: P0107, P0108MAP rationality P0106Misfire DTC P0300O2 Front P0131, P0132, P0133, P0134, P219O2 heater DTC's: P0122, P0123VSS DTC: P0502Engine run time > 60 secBaro > 72 kpaCoolant temp > 60°C11.0 < Ignition Volt < 16.0V	Monitoring Time, Length and Frequency of Check Continous monitoring at idle condition every 125 msec 	Monitoring Method Software	Fault Code Storage & MIL Type B	Signal Type A/D Software
ABS PWM Rough Road Rough Road Data	P1380	Determine if the PWM signal from ABS module	ABS controller indicates an ABS system fault	No IAC reset Crank to run c/l delay expired) Above met for a time > 5 sec Engine Run Time ³ 10 seconds	15 test failures within 31 test samples	ABS PWM input	Type Cnl	Software
Invalid		indicates there is a ABS system fault			Continuous monitoring every 125 msec.			

Sensed Parameter	Fault	Acceptable Operating	Primary Malf	Secondary Monitoring	Monitoring Time, Length	Monitoring	Fault Code	Signal
(Indicate Application)	Code	Range & Rationality	Detection Parameters	Parameters & Conditions	and Frequency of Check	Method	Storage & MIL	Type A/D
ABS Rough Road	P1381	Determine if the PWM	5% <pwm<98% a<="" indicates="" td=""><td>Engine Run Time ³ 10 seconds</td><td>15 test failures within 31</td><td>ABS PWM</td><td>Type Cnl</td><td>Software</td></pwm<98%>	Engine Run Time ³ 10 seconds	15 test failures within 31	ABS PWM	Type Cnl	Software
Serial Data Fault		signal from ABS module	serial data fault		test samples	input		
		for rough road is too hi or						
		too low			Continuous monitoring			
					every 125 msec.			
VGIS Solenoid	P0660	check if VGIS solenoid	Monitor fault feedback	Engine run time > 0	Faults condition lasts	GFD	Type Cnl	Digital
Circuit		circuit is OK	signal from FETS to	IG Voltage > 10	10 seconds	feedback		
			GFD I/C.		Continuous monitoring	voltage		
					every 125 msec			
Anti-Theft, No Response	U0167	Detects communication	No immobilizer message ID	Ignition on	Keyword 2000	Software	Type Cnl	
		link failure between ECM	for ECM release time	Immobilizer option autodetected	serial data			
		and Immobilizer	window (1.5 or 2.0 sec)	ECM release time window				
				expired				
				VSS < 512 kph				
Anti-Theft	U426	Detects incorrect message	Wrong immobilizer message	Ignition on	Keyword 2000	Software	Type Cnl	
Incorrect Response		identification received	received	Immobilizer option selected	serial data			
				ECM release time window				
				expired				
				VSS < 512 kph				