Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
Circuit Continuity	P0035	circuit continuity - voltage	voltage	IC Internal	V	engine speed	>	80	rpm	0.01 sec	continuous	4 sec	two driving
		circuit continuity - voltage	voitage	IC IIIterriai	V	battery voltage	<	18.1	V	0.01 Sec	Continuous	4 360	cycles each
	P0033	circuit continuity - open				battery voltage	>	9.99	V				with: 4 sec
													continuous or 50 sec
													cumulative
Air / Fuel Ratio Sensor Heating													
heater circuits - electrical bank 1 sensor 1 (primary)	P0030	circuit continuity - open	Voltage	IC Internal	_	engine	running			0.01 sec	0.01 sec	4 sec	two driving
bank i sensor i (pinnary)		circuit continuity - ground	voltage	10 internal		battery voltage	>	10.5	V	0.01 300	continuous	continuous	cycles each
	P0032	circuit continuity - voltage				battery voltage	<	18.1	V			or 50 sec	with: 4 sec
						output	activated and	deactivated for	complete che	cking		cumulative	continuous or 50 sec
				ļ								†	cumulative
heater performance	Boose			15	0.			40.5	1			1	
bank 1 sensor 1	P0053	correction value for A/F sensor internal resistance measurement	absolute value of correction value for A/F sensor internal resistance >	45	Ohms	battery voltage battery voltage	>	10.5 18.1	V	40 sec	0.1 sec continuous	4 sec continuous	two driving cycles each
		too much	Per sensor internal resistance >			engine starting	complete	-	-		Continuous	or 50 sec	with: 4 sec
												cumulative	continuous
													or 50 sec cumulative
Intake Air Temperature Sensor 2	(Boost Pres	sure Temperature Sensor)											
Rationality	P0096	response check	temperature delta during evaluation period:	1.5	° C	drive period - count	>=	10	count	2 sec	0.1 sec	4 sec	two driving
			(max intake air temp min intake air temp.) <			each with					continuous	continuous	cycles each
	-					coolant temperature at start Intake Air Temperature Sensor 2	<=	110.3	° C			or 50 sec	with: 4 sec continuous
						Electrical Failure	FALSE					cumulative	or 50 sec
						Mass Air Flow Mass Air Flow	>	111.1	g/sec				cumulative
						Vehicle speed	>	6.7 25	g / sec mph				
						idle period - count	>=	4	count				
						each with coolant temperature at start	<=	110.3	°C				
						Intake Air Temperature Sensor 2		110.0					
						Electrical Failure	FALSE		,				
						Mass Air Flow Vehicle speed	< <	5.6 9.4	g / sec mph				
						engine coolant temperature	>	60	° C				
Intoko Air Tomporoturo Concor 2	(Reset Dree	oura Tamparatura Canaar)											
Intake Air Temperature Sensor 2 Circuit Continuity Check													
		circuit continuity - high circuit continuity - low	Intake Air Temperature Sensor 2 Voltage > Intake Air Temperature Sensor 2 Voltage <	4.76 0.156	V	Engine Coolant Temperature Mass air flow	>	-10.5 27.8	° C g / sec	2 sec	0.01 sec	4 sec continuous	two driving cycles each
	F 0031	Circuit continuity - low	intake Ali Temperature Sensor 2 Voltage C	0.130	· ·	Vehicle speed	<	2.5	mph				
	P0099					verlicie speed						or 50 sec	with: 4 sec
	. 0000	intermittent (discontinuity)	difference >		.,							or 50 sec cumulative	continuous
	1 0000	intermittent (discontinuity)	difference > (Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)	0.4	V	Intermittent (discontinuous) time	>	1	sec				
Mass Air Flow (MAF) Sensor	1 0000	intermittent (discontinuity)	(Intake Air Temperature Sensor 2 Raw Voltage -	0.4	V		>	1	sec				continuous
Mass Air Flow (MAF) Sensor Ratoinality			(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)			Intermittent (discontinuous) time				1200	0.1 000	cumulative	continuous or 50 sec
		intermittent (discontinuity) range check low comparison to MAP based model	(Intake Air Temperature Sensor 2 Raw Voltage -	0.4	V -	Intermittent (discontinuous) time min / max MAP sensor air flow ratio battery voltage	>	0.35 10.5	- V	1.2 sec	0.1 sec		continuous or 50 sec two driving cycles each
		range check low	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)			Intermittent (discontinuous) time min / max MAP sensor air flow ratio battery voltage for time	< > >	0.35 10.5 0.1	- V sec	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec
		range check low	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)			Intermittent (discontinuous) time min / max MAP sensor air flow ratio battery voltage for time time after start	< >	0.35 10.5 0.1 0.3	- V sec sec	1.2 sec	0.1 sec	cumulative	two driving cycles each with: 4 sec continuous
		range check low	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)			Intermittent (discontinuous) time min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed	< > > > > > > TRUE	0.35 10.5 0.1	V sec sec rev -	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec
		range check low comparison to MAP based model	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or	1.12	-	Intermittent (discontinuous) time min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation		0.35 10.5 0.1 0.3	- V sec sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage)			min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor electrical		0.35 10.5 0.1 0.3 150	- V Sec Sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction >	1.12	- %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error : ambient pressure sensor electrical error : ambient pressure sensor electrical error : ambient pressure sensor electrical error : ambient pressure sensor rationality	> > > > TRUE FALSE not set not set not set	0.35 10.5 0.1 0.3 150	- V sec sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or	1.12	-	min / max MAP sensor air flow ratio battery voltage for time time after start furnhouse voltage for time turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error : ambient pressure sensor relectrical error : into pressure sensor resorrationality error : throttle position sensor error : brottle position sensor electrical	> > > > > TRUE FALSE not set not se	0.35 10.5 0.1 0.3 150	V Sec Sec rev -	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction >	1.12	- %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor #2 error : ambient pressure sensor electrical error : motter pressure sensor rationality error : boost pressure sensor electrical error : boost pressure sensor electrical error : boost pressure sensor electrical error : borst pressure sensor electrical error : borst pressure sensor rationality	> > > > TRUE FALSE not set	0.35 10.5 0.1 0.3 150	V Sec Sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction >	1.12	- %	min / max MAP sensor air flow ratio battery voltage for time time after start furnhouse voltage for time turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error : ambient pressure sensor relectrical error : into pressure sensor resorrationality error : throttle position sensor error : brottle position sensor electrical	> > > > > TRUE FALSE not set not se	0.35 10.5 0.1 0.3 150 -	V Sec Sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter)	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > correction factor air mass <	1.12	%	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error; ambient pressure sensor rationality error; throtte position sensor electrical error; about pressure sensor electrical error; boost pressure sensor rationality error; throtte position sensor electrical error; boost pressure sensor rationality error; MAP pressure sensor rationality error; MAP pressure sensor rationality besides are maje valid.		0.35 10.5 0.3 150 	V sec sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high -	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > correction factor air mass <	1.12	%	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor #2 error : ambient pressure sensor reloctrical error : mother types and the pressure sensor rationality error : boost pressure sensor rationality error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality	> > > > TRUE FALSE not set not	0.35 10.5 0.1 0.3 150	V Sec Sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or	20 80 0.88	%	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error: intake air temperature sensor #2 error: ambient pressure sensor rationality error: throttle position sensor electrical error: boost pressure sensor retoral error: boost pressure sensor rationality error: MAP pressure sensor rationality error: MAP pressure sensor rationality besired cam angle valid Long term fuel trim enabled Fuel trim stabilized Fuel trim stabilized MAF sensor signal valid (until detection)		0.35 10.5 0.1 0.3 150 	V Sec sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction <	1.12 20 80 0.88	% %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error : ambient pressure sensor electrical error : ambient pressure sensor rationality error : throttle position sensor error : boost pressure sensor retorial error : boost pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient	> > > > TRUE FALSE not set not set not set not set not set not set TRUE TRUE TRUE TRUE TRUE	0.35 10.5 0.1 0.3 150 	- V V Sec Sec rev	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or	20 80 0.88	%	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor electrical error - ambient pressure sensor rationality error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine coolant temperature	> > > > TRUE FALSE not set TRUE TRUE TRUE TRUE C < < > > > > > > > > > > > > > > > > >	0.35 10.5 0.1 0.3 150 	- V V Sec Sec Sec FeV	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction <	1.12 20 80 0.88	% %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error - intake air temperature sensor #2 error : ambient pressure sensor electrical error : ambient pressure sensor electrical error : boost pressure sensor electrical error : boost pressure sensor rationality error : thorett position sensor error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine coolant temperature Engine coolant temperature		0.35 10.5 0.1 0.3 150 	- V V Sec Sec Sec FeV	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction <	1.12 20 80 0.88	% %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor electrical error - ambient pressure sensor rationality error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine coolant temperature	> > > > TRUE FALSE not set TRUE TRUE TRUE TRUE C < < > > > > > > > > > > > > > > > > >	0.35 10.5 0.1 0.3 150 	- V V Sec Sec Sec FeV	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
		range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction <	1.12 20 80 0.88	% %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor electrical error : ambient pressure sensor electrical error : ambient pressure sensor electrical error : boost pressure sensor electrical error : boost pressure sensor rationality error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throtte position gradient Engine coolant temperature Engine running time	S S S S S S S S S S S S S S S S S S S	0.35 10.5 0.1 0.3 150 	- V V Sec Sec Sec	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
	P0101	range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) range check high - comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass	(Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction > MAF sensor mass air flow * THRESHOLD > model or delta lambda correction <	1.12 20 80 0.88	% %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error: intake air temperature sensor #2 error: ambient pressure sensor rationality error: ambient pressure sensor electrical error: boost pressure sensor rationality error: boost pressure sensor rationality error: MAP pressure sensor rationality error: MAP pressure sensor rationality besired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine coolant temperature Engine running time Pressure ratio across throttle for time	S S S S S S S S S S S S S S S S S S S	0.35 10.5 0.1 0.3 150 	- V V Sec Sec Sec	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
	P0101	range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter)	Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > correction factor air mass < MAF sensor mass air flow * THRESHOLD > model or delta lambda correction < correction factor air mass >	20 80 0.88 -20	% % %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure socillation error - intake air temperature sensor #2 error - ambient pressure sensor relectrical error - imbeint pressure sensor rationality error : boost pressure sensor rationality error : boost pressure sensor rationality error : boost pressure sensor rationality error : MAP pressure sensor rationality error : MAP pressure sensor rationality Desired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine colonat temperature Engine running time Pressure ratio across throttle for time	S S S S S S S S S S S S S S S S S S S	0.35 10.5 10.5 0.1 0.3 150	- V V Sec Sec Sec FeV	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
	P0101	range check low comparison to MAP based model fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter) fuel trim limits exceded range - multiplicative and correction factor (modeled air mass at throttle / air mass measured by air mass flow meter)	Intake Air Temperature Sensor 2 Raw Voltage - Intake Air Temperature Sensor 2 Filtered Voltage) MAF sensor mass air flow * THRESHOLD < model or delta lambda correction > correction factor air mass < MAF sensor mass air flow * THRESHOLD > model or delta lambda correction < correction factor air mass >	20 80 0.88 -20	% % %	min / max MAP sensor air flow ratio battery voltage for time time after start crankshaft revolution counter turbocharger bypass valve closed no boost pressure oscillation error: intake air temperature sensor #2 error: ambient pressure sensor rationality error: ambient pressure sensor electrical error: boost pressure sensor rationality error: boost pressure sensor rationality error: MAP pressure sensor rationality error: MAP pressure sensor rationality besired cam angle valid Long term fuel trim enabled Fuel trim stabilized MAF sensor signal valid (until detection) Air flow error gradient Throttle position gradient Engine coolant temperature Engine running time Pressure ratio across throttle for time	<pre></pre>	0.35 10.5 10.5 0.1 0.3 150	- V V Sec Sec Sec FeV	1.2 sec	0.1 sec	cumulative	continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec

Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
	P0103	range check high	sensor signal time period >	2480	uS								
Manifold Absolute Pressure Sensor Rationality	or												
,	P0106	range check high	sensor signal >	255.0	KPa	error : MAP sensor electrical	not set	-	-	3 sec	continuous	4 sec	two driving cycles each
			or										with: 4 sec
		range check low	sensor signal <	12.4	KPa	error : MAP sensor electrical	not set	-	-	3 sec	continuous	4 sec	continuous or 50 sec
		rationality check low - model	or sensor signal + THRESHOLD < model	3.0	KPa	error : initial throttle learn failed	not set	-	-	3 sec	continuous	4 sec	cumulative
			or			error : throttle potentiometer fault error : intake air temperature sensor fault	not set not set	-	-				
		rationality check high - model	sensor signal - THRESHOLD > model	3.0	KPa	error : under pressure in fuel tank	not set		-				
						error : intake / exhaust camshaft control error : intake / exhaust camshaft electrical	not set not set	-	-				
						error : ambient pressure sensor electrical error : ambient pressure sensor rationality	not set	-	-				
						error : boost pressure sensor electrical	not set	-	-				
						error : boost pressure sensor rationality error : MAP sensor electrical	not set not set	-	-				
						crankshaft revolution counter since engine start block diagnosis if :	>	200	counts				
						start-up coolant temperature	<	-7.5	С				
						until engine coolant temperature	>	30	С				
						conditions met once during drive cycle throttle position	<	25	%				
						engine speed	>	1500	rpm				
			or			MAP sensor reading change	>	10	KPa				
		rationality check high: 3 sensor check	sensor signal - THRESHOLD > mean sensor output	7.5	KPa	engine speed engine off timer	<	400	rpm sec	200 ms	during engine cranking	4 sec	two driving cycles each
		rationality check low: 3 sensor check	sensor signal + THRESHOLD < mean sensor output	7.5	KPa	error : ambient pressure sensor electrical	not set	-	-		only		with: 4 sec
						error : boost pressure sensor electrical error : MAP sensor electrical	not set not set	-	-				or 50 sec
													cumulative
Manifold Absolute Pressure Senso	or									1	1		
Electrical				1005	.,,					4.0			
	P0108 P0107	circuit continuity - voltage circuit continuity - ground	MAP sensor output voltage > MAP sensor output voltage <	4.805 0.1855	V	engine speed	>	80	rpm	1.0 sec	continuous	4 sec	two driving cycles each
			-										with: 4 sec continuous
													or 50 sec
													cumulative
Intake Air Temperature Sensor 1 ((MAF Intake	e Air Temperature Sensor)											
Electrical		circuit continuity - high	Intake Air Temperature Sensor 1 Voltage >	4.76	V	Engine Coolant Temperature	>	-10.5	°C	2 sec	0.01 sec	4 sec	turo debrio a
		circuit continuity - light	Intake Air Temperature Sensor 1 Voltage >	0.175	V	Engine Coolant Temperature	,	-10.5	C	2 Sec	0.01 Sec	4 Sec	two driving cycles each
	P0114	intermittent (discontinuity)	Intake Air Temperature Sensor 1 Raw Voltage -	0.4	V	Intermittent (discontinuous) time	>	1	sec	2 sec			with: 4 sec continuous
			Intake Air Temperature Sensor 1 Filtered Voltage			, ,							or 50 sec cumulative
													cumulative
Air / Fuel Ratio Sensor (primary A	/F)												
integrated circuit interface bank 1	P0130	A/F sensor voltage	absolute value of A/F sensor voltage			battery voltage	<	18.1	V	0.1 sec	0.1 sec	4 sec	two driving
		IC correction too high	IC corrective value >	0.15	V	battery voltage	>	10.7	V		continuous	continuous	cycles each
						engine engine starting	running complete	-	-			or 50 sec cumulative	with: 4 sec continuous
													or 50 sec cumulative
Air / Fuel Ratio Sensor (primary A	/F)				1		1						
reference ground circuit; referen	ce voltage	circuit; or measuring current circuit	IC Circuit Status shorted law	IC Interes!		hottonyvoltogo		10.1	V	20.000	0.1.000	4 000	turo debrio a
bank 1 sensor 1 - low volt	P0131	A/F sensor signal at VM (reference ground) below lower limit	IC Circuit Status shorted low	IC Internal	-	battery voltage battery voltage	>	18.1 10.7	V	20 sec	0.1 sec continuous	4 sec continuous	two driving cycles each
		or A/F sensor signal at UN (reference voltage [Nernst voltage]) belo	IC Circuit Status shorted low ow lower limit	IC Internal	-	engine engine starting	running complete	-	-			or 50 sec cumulative	with: 4 sec continuous
		or A/F sensor signal at IA (measuring current trim circuit) below lo	IC Circuit Status shorted low	IC Internal	-								or 50 sec cumulative
	De : - :	,		10.1									cultiulative
bank 1 sensor 1 - high volt	P0132	A/F sensor signal at VM (reference ground) above upper limit	IC Circuit Status shorted high	IC Internal	<u> </u>				<u> </u>				
		or A/F sensor signal at UN (reference voltage [Nernst voltage]) abo	IC Circuit Status shorted high	IC Internal	-								
		or A/F sensor signal at IA	IC Circuit Status shorted high	IC Internal	-								
		(measuring current trim circuit) above up	oper limit										
Air / Fuel Ratio Sensor (primary A	/F)				1				1			I	
response		di mamia sagnanga	A/E appear the parties value	0.0	gg-41-	fuel trim forced amplitude	neti			16	0.04	4	turo dell'ile
Bank 1 Sensor 1	FU133	dynamic response	A/F sensor dynamic value <	0.3	ratio	fuel trim forced amplitude	active	· -	-	1.6 sec	0.01 sec	4 sec	two driving

Section Control Cont			•	•										
Mary	Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
1 1000 100			alam as lam assaltanta	<u> </u>		1	IA/F		1		1			aveler seek
Control Cont			slow or low amplitude			(versus			1.25	factor		continuous		
Control Cont														continuous
Company Comp						sensor)		<	1.08	lambda				
Company Comp								,	0.92	lambda				cumulative
Mary									0.02	idilibad				
Martin							engine speed	<						
March Marc														
March Marc								>						
Medical color for contemporary 0 0 0 0 0 0 0 0 0							volumetric efficiency gradient	<	100					
Marca protection Marca M								-						
Company Comp														
March Marc							or evap purge	,	-	-				
Martin M							all fuel injectors active		-	-				
Comparison Com									-	-				
Company Comp														
Profess profession 19														
Part							scheduled by System Manager		-	-				
Amount Section Port Amount Section Amount							heater reached set temperature	TRUE	-	-				
April Control Prince Prince April										·				
Second S		F)	A/E concer coloulated	A/E ganger temperature gal-vi-t	600		hotton voltage		10.5	37	70	0.1	4677	true dei in-
Prince and product of the company AP Prince	pank 1 sensor 1	P0135		A/F sensor temperature calculation <	620	, C				-	/U sec			
Section Sect		1	IOO IOW									CONTINUOUS		
A								TRUE	-	-				continuous
The contract primary AP The contract pri								FALSE	-	-				or 50 sec
Profession of the profession								_	300	202				cumulative
Absence Abse														
Compared primary AT Compared personne (primary AT) Compared personn								TRUE						
Name Continued (primary AD) PSTS Aff sensor relationated Aff														
AP Service contained AP service integrate solution < 76							scheduled by System Manager	TRUE	-	-				
Service Select Processed Processes P		F)												
Since regions withing during DCPO Since regions after either > 20 sec or 50 sec with 4 sec controlled	bank 1 sensor 1 (primary)	P0135		A/F sensor temperature calculation <		° C		TRUE			20 sec			two driving
Secondary C2 services Seco			temperature below threshold		TKERDCMN							continuous		
Since response voltage during DCPD Since response voltage during								>						
Instruction								-	-	-			cumulative	
AF Feater control that set of 1								>	10.5					cumulative
Company Common									18.1					
Secondary C2 sensor)									-	-				
Deliver response voltage during DCFO Secondary DCF general voltage P013A Secon									-	-				
Deliver response voltage during DCFO Secondary DCF general voltage P013A Secon	0 0 0								ı					
Date 1 Service 2 P015A	Delayed response voltage during	a DCFO							0.55	V	4sec			
Secondary O2 sensor readments Secondary O2 sensor readment			secondary O2 sensor	time from start of DCFO till secondary O2 sensor	3	sec			0.00	•			Continuouo	with: 4 sec
Company Comp			delayed response to DFCO	voltage below the lower threshold						V				continuous
## de voyage mass integration from start of DCFO 8 9 secondary O2 sensor temperature														
exceeded upper threshold before the voltage below the secondary C2 sensor internal resistance				the oxygen mass integration from start of DCFO	8	0		,	500	C				cumulative
Tubcharger boost control system Tubcharger boost control system P0294 actual boost pressure above desired Tubcharger boost control system P0294 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system Tubcharger boost control system Tubcharger boost control system P0299 actual boost pressure above desired Tubcharger boost control system Tubcharger boost c				exceeded upper threshold before the voltage below		9	secondary O2 sensor internal resistance		500	Ohms				
Slow response voltage during DCFO bank 1 sensor 2 P013A secondary O2 sensor voltage crosses bank 1 sensor 2 P13A secondary O2 sensor voltage crosses bank 1 sensor 2 Voltage upper threshold ill it corsses lower threshold bank 1 sensor 2 Voltage upper threshold Voltage up					-					ļ -				
Slow response voltage during DCFO Since DCFO, secondary O2 sensor voltage P013A secondary O2 sensor inne from secondary O2 sensor voltage orosses A secondary O2 sensor voltage A sec		1	-	voltage lower threshold	0.45	1/			5.56	g/s		 		
Slow response voltage during DCFO bank 1 sensor 2 P013A secondary O2 sensor voltage crosses bank 1 sensor 2 P013A secondary O2 sensor voltage crosses slow response to DFCO upper threshold till it corsses lower threshold slow response to DFCO upper threshold till it corsses lower threshold slow response to DFCO upper threshold till it corsses lower threshold secondary O2 sensor readiness secondary O2 sensor readiness TRUE voltage upper threshold secondary O2 sensor readiness secondary O2 sensor internal resistance voltage lower threshold secondary O2 sensor internal resistance voltage lower threshold secondary O2 sensor internal resistance secondary O2 sensor readiness secondary O2 sensor		1	1	voltage lower unestion	0.15	v			3	lambda				
Dank 1 sensor 2														
Dank 1 sensor 2	Clow recognes veltage during	CEO		1	1	ı	Since DCEO, secondary C3 sensor voltage		0.50	V				
Slow response to DFCO upper threshold illi to corsses lower threshold battery voltage Secondary O2 sensor readiness TRUE Secondary O2 sensor temperature S	bank 1 sensor 2	P013A	secondary O2 sensor	time from secondary O2 sensor voltage crosses	0.4	sec		>	0.59	V		 	1	
secondary OZ sensor readiness TRUE	_ann 1 5011051 Z	. 310/1	slow response to DFCO		2	300		>	11	V				
secondary O2 sensor temperature voltage lower threshold 0.2 V secondary O2 sensor temperature secondary O2 sensor internal resistance secondary O2 sensor in					_		secondary O2 sensor readiness		-					
Voltage lower threshold 0.2 V		1	+	voltage upper threshold	0.4	V		>	500	°C		1		
Secondary O2 sensor has measured lean and rich Rationality P0234 actual boost pressure above desired Implication of the filtered deviation P0299 actual boost pressure below desired Implication of the filtered deviation P0290 actual boost pressure below desired Implication of the filtered deviation Implication of the filtred deviation Implication of the filtred deviation				voltage lower threshold	0.2	V		<	500	Ohms				
Exhaust gas mass flow rate S									-	-				
Turbocharger boost control system Rationality P0234 actual boost pressure above desired difference (desired versus actual boost pressure) < -12820							exhaust gas mass flow rate	>						
Rationality P0234 actual boost pressure above desired difference (desired versus actual boost pressure) < -12820 kPa error : electrical diagnosis of boost pressure sensor not set 3.2 sec continuous 4 sec two driving error : rationale diagnosis of boost pressure sensor not set 0.2 sec continuous 4 sec continuous 4 sec continuous 4 sec continuous 4 sec continuous 6 control set 0.2 sec continuous 4 sec continuous 6 control set 0.2 sec continuous 4 sec continuous 6 control set 0.2 sec continuous 6 control set 0.3 sec continuous 6 control set							primary A/F sensor							
Rationality P0234 actual boost pressure above desired difference (desired versus actual boost pressure) < -12820		_					primary rvi sorisor measured lambda		3	iaiiibua				
P0234 actual boost pressure above desired difference (desired versus actual boost pressure) < -12820		n												
error : rationale diagnosis of boost pressure sensor not set 0.2 sec continuous 4 sec continuous 6 sec continuous 6 sec continuous 6 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 6 sec continuous 6 sec continuous 7 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 7 sec continuous 8 sec continuous 8 sec continuous 8 sec continuous 9 sec c	Rauonality	P0234	actual boost pressure above desired	difference (desired versus actual boost pressure) <	-12820	kPa	error : electrical diagnosis of boost pressure sensor	not set	-	-	3.2 sec	continuous	4 sec	two driving
P099 actual boost pressure below desired time filtered deviation 20 kPa error : electrical diagnosis of boost pressure sensor not set 0.2 sec continuous 4 sec construous error : turbocharger boost control system not set 0.2 sec continuous 4 sec construous or 50 sec error : turbocharger boost control system not set			,	7,000010 / 1					-					cycles each
Continue		1											<u> </u>	with: 4 sec
error : turbocharger boost control system not set Cumulative error : limp home mode activated not set Cumulative error : limp home mode activated with safety fuel cut- engine speed > 26003520 rpm		P0299	actual boost pressure below desired	time tiltered deviation	20	kPa	error : retionale diagnosis of boost pressure sensor				0.2 sec	continuous	4 sec	
error : limp home mode activated not set -		1		(desired versus actual boost pressure) >								 		
error : limp home mode activated with safety fuel cut- engine speed 26003520 rpm					<u> </u>									
							error : limp home mode activated with safety fuel cut-							
desired manifold pressure > base boost pressure > 110.130 KPa		1	+									1		
		1			1		desired manifold pressure > base boost pressure ambient barometric pressure					 		

Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
Boost Pressure Sensor Rationality													
Rationality	P0236	range check low	sensor signal <	13	KPa	error : boost pressure sensor electrical	not set	-	-	3 sec	continuous	4 sec	two driving cycles each
		rationality check low - baro comparison	or sensor signal + THRESHOLD < baro pressure	23	KPa	crankshaft revolution counter since engine start	>	3	counts				with: 4 sec
		Tationality of Jook for Baro companion	or	20	10.0	error : throttle potentiometer fault error : limp home mode	not set not set	-	-				or 50 sec cumulative
		rationality check high - baro comparison	sensor signal - THRESHOLD > baro pressure	18	KPa	error : imp none mode error : boost pressure sensor electrical error : ambient pressure sensor electrical	not set not set	-	-				cumulative
						error : ambient pressure sensor rationality	not set	1000	- rpm				
			or.			engine speed throttle position	<	24	%				
		rationality check high - 3 sensor check	sensor signal - THRESHOLD > mean sensor output	4.5	KPa	engine speed engine off timer	< >	400 4	rpm sec	200 ms	during engine cranking	4 sec	two driving cycles each
		rationality check low - 3 sensor check	or sensor signal + THRESHOLD < mean sensor output	4.5	KPa	error : ambient pressure sensor electrical	not set	-	-		only		with: 4 sec
		rationality check low - 3 sensor check	Sensor signar + THRESHOLD < mean sensor output	4.5	Nra	error : boost pressure sensor electrical error : MAP sensor electrical	not set not set	-	-				or 50 sec
													cumulative
Boost Pressure Sensor													
Electrical		circuit continuity - voltage	Boost sensor output voltage >	4.85	V	engine speed	>	80	rpm	0.20 sec	continuous	4 sec	two driving
	P0237	circuit continuity - ground	Boost sensor output voltage <	0.1855	V								cycles each with: 4 sec
													or 50 sec
													cumulative
Turbocharger Boost Control Actua	ator												
Circuit Continuity		circuit continuity - voltage	voltage	IC Internal	V	engine speed	>	80	rpm	0.01 sec	continuous	4 sec	two driving
		circuit continuity - ground circuit continuity - open				battery voltage battery voltage	>	18.1 9.99	V				cycles each with: 4 sec
													or 50 sec
													cumulative
Catalyst System Performance	P0420	oxygen storage of catalyst	EWMA filtered catalyst aging factor less than catalyst aging factor	0.2	factor	exhaust gas mass flow exhaust gas mass flow	> <	10 42	g/sec g/sec	approx.	0.2 sec	4 sec	immediate
			of a limit catalyst <			catalyst temp. model catalyst temp. model	< >	750 525	°C	1000 sec during	continuous	additional after block	once code has
						engine speed engine speed	>	1320 2840	rpm rpm	active driving			been set
						engine load engine load	>	21 34 50 68	%	Fast Initialization	on nhace	Up to 4	approx.
						modeled catalyst temp. gradient relative exhaust gas mass flow gradient	< <	30	° C / sec %	T ast mitalizati	on phase	samples per driving cycle	3 test average
						fuel system closed loop	active	- 20	-	Step Change p	hase	Up to 4	run length
						time after secondary O2 sensor exceeded dewpoint	>		sec	Otablia adabaa		driving cycle	(6 samples)
						ambient temperature measured lambda	>	-15 0.96	° C	Stablized phas	e	1 sample per driving cycle	
						measured lambda catalyst damaging misfire rate exceeded	not set	1.04	-				
						error: fuel system closed loop control at limit	not set not set	-	-				
						strong transient compenstation present catalyst clear out active (after fuel cutoff)	not set not set	-	-				
						Trigger condition for step change							
						Measured OSC < % of EWMA normalized filtered OSC	<	0.73	-				
Electronic Throttle Control													
<u> </u>	P1551	limp-home throttle position out of range	throttle position < OR	13.1	%	vehicle speed engine speed	<= <	0 40	mph rpm	5 sec	0.01 sec at key on	4 sec continuous	code set then 5 sec
			throttle position >	42.8	%	engine coolant temperature engine coolant temperature	>= <=	5.25 100.5	°C			or 50 sec cumulative	
						intake air temperature intake air temperature	>= <=	5.25 143.8	°C				
						battery voltage accelerator pedal position	>	10.0	V %				
						Param Parametri	1		1 7	1	1	1	
									_				
Air / Fuel Ratio Sensor (primary A	/F)												
Air / Fuel Ratio Sensor (primary A integrated circuit interface		AF sensor IC operating voltage	low voltage	TRUE	-	battery voltage	>	10.7	V	10 sec	0.1 sec	4 sec	two driving
		too low A/F sensor IC SPI interface	low voltage communication error	TRUE	-	battery voltage battery voltage engine	> < running	10.7	V V	10 sec 0.1 sec	0.1 sec continuous	continuous or 50 sec	cycles each with: 4 sec
		too low			-	battery voltage	<					continuous	cycles each

Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
Oxygen Sensor (secondary O2)	Trim of Air /	Fuel Ratio Sensor (primary A/F)											
Bank 1	P2096	A/F sensor long term secondary	secondary O2 sensor trim	-0.03	lambda	engine starting	TRUE	1	-		0.1 sec	4 sec	two driving
		trim - rich shift - correction below threshold	integral control <			secondary O2 trim active and secondary O2 oscillation	TRUE TRUE	-	-		continuous	or 50 sec	cycles each with: 4 sec
						check finished						cumulative	continuous
Bank 1	P2097	A/F sensor long term secondary	secondary O2 sensor trim	0.03	lambda	then timer scheduled by System Manager	> TRUE	60	sec				or 50 sec cumulative
Dunit 1	1 2001	trim - lean shift	integral control >	0.00	iambaa	sec. O2 trim - fast lean correction	FALSE						Carrataire
		- correction above threshold				sec. O2 trim - fast rich correction suspicion A/F sensor lean shift	FALSE FALSE						
						secondary O2 oscillation test	checked OK						
Accelerator Pedal Position		range check low	voltage	0.74	V	battery voltage	>	7	V	0.2 sec	0.01 sec	4 sec cont.	code set
Sensor 1	P2123	range check high		4.82	V						continuous	or 50 sec cumulative	then 5 sec
				1				_					
Accelerator Pedal Position Sensor 2		range check low range check high	voltage	0.68 4.82	V	battery voltage	>	7	V	0.2 sec			
CONTOOL	1 2 120	range checkings		1.02									
Accelerator Pedal	P2138	plausibility	voltage difference >	0.18	V	L	1 -	_	1 -	0.24 sec			
Position 1 versus Position 2	1 2 100	plausibility	idle range	0.29	V					0.24 300			
	1		voltage difference pedal partially pressed >	0.29	V								
			voltage difference >	1.72	V								
			pedal fully pressed					-				1	
	_	<u> </u>			<u> </u>			_					
Oxygen Sensor (secondary O2)	Trim of Air /	Fuel Ratio Sensor (primary A/F)											
Bank 1	P2195	A/F sensor offset calculation	A/F sensor offset correction <	-0.07	lambda	engine starting	TRUE	-	-		0.1 sec	4 sec	two driving
		rich shift				secondary O2 trim active	TRUE		-		continuous	continuous	cycles each
		- correction below threshold				and secondary O2 oscillation check finished	TRUE	-	-			or 50 sec cumulative	with: 4 sec continuous
	D0100	N= 7				then timer	>	60	sec				or 50 sec
Bank 1	P2196	A/F sensor offset calculation lean shift	A/F sensor offset correction >	0.07	lambda	scheduled by System Manager sec. O2 trim - fast lean correction	TRUE FALSE						cumulative
		- correction above threshold				sec. O2 trim - fast rich correction	FALSE						
		- correction above threshold				suspicion A/F sensor lean shift	FALSE						
		- correction above threshold											
Intake Air Temperature Sensor	(MAF Intake					suspicion A/F sensor lean shift	FALSE						
Intake Air Temperature Sensor Rationality		e Air Temperature Sensor)				suspicion A/F sensor lean shift	FALSE						
			Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 >	24.8	°C	suspicion A/F sensor lean shift	FALSE	6.7	g/sec	25 sec	0.01 sec	5 seconds	two driving
		e Air Temperature Sensor) Intake Air Temperature Correlation		24.8	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow	FALSE checked OK	6.7 83.3	g/sec g/sec	25 sec	0.01 sec	after enable	two driving cycles each
		e Air Temperature Sensor) Intake Air Temperature Correlation		24.8	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed	FALSE checked OK		g/sec g/sec mph	25 sec	0.01 sec		cycles each with: 4 sec
		e Air Temperature Sensor) Intake Air Temperature Correlation		24.8	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow	FALSE checked OK	83.3	g / sec	25 sec	0.01 sec	after enable	cycles each
		e Air Temperature Sensor) Intake Air Temperature Correlation Check	Temperature Sensor 2 >	24.8	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure	FALSE checked OK	83.3 34.4	g / sec mph	25 sec	0.01 sec	after enable	cycles each with: 4 sec continuous
		e Air Temperature Sensor) Intake Air Temperature Correlation		24.8	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure	FALSE checked OK	83.3 34.4	g / sec mph	25 sec	0.01 sec	after enable	cycles each with: 4 sec continuous
		e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air			suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure	FALSE checked OK	83.3 34.4	g / sec mph	25 sec	0.01 sec	after enable	cycles each with: 4 sec continuous
Rationality Barometric Pressure Sensor		e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air			suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure	FALSE checked OK	83.3 34.4	g / sec mph	25 sec	0.01 sec	after enable	cycles each with: 4 sec continuous
Rationality	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 <	20.3	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio	FALSE checked OK	83.3 34.4 1.4	g / sec mph ratio			after enable condition	cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air			suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure	FALSE checked OK	83.3 34.4	g / sec mph	25 sec 2 sec 2 sec	0.01 sec	after enable	cycles each with: 4 sec continuous or 50 sec two driving cycles each
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or	20.3	° C	suspicion A/F sensor lean shift secondary O2 oscillation test secondary O2 oscillation test mass air flow mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio serior to ambient pressure ratio	FALSE checked OK	83.3 34.4 1.4	g / sec mph ratio	2 sec	continuous	after enable condition	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal >	20.3	°C	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio	FALSE checked OK	83.3 34.4 1.4	g / sec mph ratio			after enable condition	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Temperature Sensor 2 > Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or	20.3	° С КРа	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical	FALSE checked OK	83.3 34.4 1.4	g / sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or sensor output change within 20 sec period > OR	20.3	° C KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow mass air flow wehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical	FALSE checked OK >	83.3 34.4 1.4	g / sec mph ratio	2 sec	continuous	after enable condition	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 3 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 3 - Intake Air Temperature Sensor 3 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 2 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 2 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 2 - Intake Air Temperature Sensor 3 - Intake Air Temperature Sensor	20.3	° С КРа	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start	FALSE checked OK	83.3 34.4 1.4	g / sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor signal > Or Sensor signal < Or Sensor output change within 20 sec period > OR Barometric pressure signal pressure jump from previous key off > AND	20.3 112 60.5 5	° C KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4	g/sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD <	20.3	° C KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start	FALSE checked OK	83.3 34.4 1.4 1.4 	g / sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor signal > Or Sensor signal < Or Sensor output change within 20 sec period > OR Barometric pressure signal pressure jump from previous key off > AND	20.3 112 60.5 5	° C KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4	g/sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD < boost pressure sensor output or	20.3 112 60.5 5 10	° C KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed	rALSE checked OK	83.3 34.4 1.4 1.4 	g/sec mph ratio	2 sec 2 sec 2 sec	continuous	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD < boost pressure sensor output or sensor output change within 20 sec period > OR	20.3 112 60.5 5 10	KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow whice speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical error : barometric pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4 1.4 5 5 1000 23.99	g/sec mph ratio	2 sec	continuous	after enable condition 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 3 - Intake Air Temperature Sensor signal > Or Sensor output change within 20 sec period > OR Decorative Sensor	20.3 112 60.5 5 10	° C KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed engine start	rALSE checked OK	83.3 34.4 1.4 1.4 	g / sec mph ratio ratio sec	2 sec 2 sec 2 sec	continuous	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 3 - Intake Air Temperature Sensor output change within 20 sec period > OR Interpretative Sensor S	20.3 112 60.5 5 10 5	KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow whice speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical error : barometric pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	g/sec mph ratio	2 sec 2 sec 2 sec	continuous	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Interperature Sensor 3 - Intake Air Temperature Sensor signal > Interperature Sensor 3 - Intake Air Temperature Sensor output change within 20 sec period > Interperature Sensor 3 - Intake Air Temperature Sensor 0 - Interperature Sensor 0 - In	20.3 112 60.5 5 10	KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio serror : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed	rALSE checked OK	83.3 34.4 1.4 1.4 	g/sec mph ratio ratio	2 sec 2 sec 2 sec	continuous	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 2 < Interpretative Sensor 3 - Intake Air Temperature Sensor output change within 20 sec period > OR Interpretative Sensor S	20.3 112 60.5 5 10 5	KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed engine start error : barometric pressure sensor electrical engine speed e	rALSE checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	g/sec mph ratio	2 sec 2 sec 2 sec	continuous	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD < boost pressure sensor output or sensor output change within 20 sec period > OR sensor output + THRESHOLD < boost pressure sensor output or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output - THRESHOLD > boost pressure sensor output or sensor output - THRESHOLD > boost pressure sensor output or sensor output - THRESHOLD > boost pressure sensor output or	20.3 112 60.5 5 10 5 10	KPa KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical error : barometric pressure sensor electrical error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical error : barometric pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.5 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	g/sec mph ratio ratio sec	2 sec 2 sec 2 sec 2 sec 2 sec	continuous continuous continuous continuous	4 sec 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Interperature Sensor 3 - Intake Air Temperature Sensor signal > Interperature Sensor 3 - Intake Air Temperature Sensor output change within 20 sec period > Interperature Sensor 3 - Intake Air Temperature Sensor 0 - Interperature Sensor 0 - In	20.3 112 60.5 5 10 5	KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical time since engine speed throttle position error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed	rALSE checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	g/sec mph ratio ratio ratio	2 sec 2 sec 2 sec	continuous continuous continuous continuous during engine	4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low sensor offset / jump test high	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor signal < or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD < boost pressure sensor output or sensor output tor sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output - THRESHOLD > boost pressure sensor output or sensor signal - THRESHOLD > mean sensor output or sensor signal - THRESHOLD > mean sensor output	20.3 112 60.5 5 10 5 4.52	KPa KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed engine speed engine speed engine off timer error : ambient pressure sensor electrical engine speed engine off timer error : ambient pressure sensor electrical engine speed engine off timer error : ambient pressure sensor electrical	rALSE checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	g / sec mph ratio rpm %	2 sec 2 sec 2 sec 2 sec 2 sec	continuous continuous continuous continuous	4 sec 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Rationality Barometric Pressure Sensor	P2199	e Air Temperature Sensor) Intake Air Temperature Correlation Check Intake Air Temperature Correlation Check range check high range check low sensor offset / jump test low	Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 1 - Intake Air Temperature Sensor 2 < sensor signal > or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output + THRESHOLD < boost pressure sensor output or sensor output change within 20 sec period > OR sensor output + THRESHOLD < boost pressure sensor output or sensor output change within 20 sec period > OR barometric pressure signal pressure jump from previous key off > AND sensor output - THRESHOLD > boost pressure sensor output or sensor output - THRESHOLD > boost pressure sensor output or sensor output - THRESHOLD > boost pressure sensor output or	20.3 112 60.5 5 10 5 10	KPa KPa KPa KPa KPa KPa KPa KPa	suspicion A/F sensor lean shift secondary O2 oscillation test mass air flow mass air flow vehicle speed boost pressure to ambient pressure ratio error : barometric pressure sensor electrical error : barometric pressure sensor electrical time since engine start error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed throttle position error : barometric pressure sensor electrical engine speed engine off timer	rALSE checked OK > checked OK	83.3 34.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	g / sec mph ratio ratio ratio sec	2 sec 2 sec 2 sec 2 sec 2 sec	continuous continuous continuous continuous during engine cranking	4 sec 4 sec 4 sec	cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec

Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
Barometric Pressure Sensor									l				
Electrical	P2228	range check low	voltage <	0.332	V	enabled by scheduler for time	>	2	sec	2 sec	continuous	4 sec	
		range check high	voltage >	4.708	V	enabled by scheduler for time	>	2	sec	2 sec	continuous	4 sec	
	1 2220	nango oncok nign	vollage 2		·	Chables by eshedder for time			550	2 000	CONTRIBUTION	1 000	
Air / Fuel Ratio Sensor (primary / pumping current circuit open	\/F)	lambda control factor change	absolute value of lambda control factor	0.075	lambda	battery voltage	<	18.1	V	1.5 sec	0.1 sec	4 sec	two driving
pumping current circuit open	P2237	above threshold	change from the point when the	0.073	lambda	battery voltage	>	10.7	V	1.0 300	continuous	continuous	cycles each
			secondary conditions are met >			engine engine starting	running complete	-	-			or 50 sec cumulative	with: 4 sec continuous
						A/F sensor voltage	<	1.51	V			cumulative	or 50 sec
						A/F sensor voltage A/F sensor electrical trimming	> not active	1.48	V				cumulative
						A/F sensor heater at op.temp.	TRUE	-	-				
						A/F sensor warm up control	complete	-	-				
						lambda closed loop control forced fuel trim amplitude	TRUE TRUE	-	-				
						fuel trim forced amplitude	>	0.01	lambda				
						catalyst warm up control	stable	-	-				
						sec. O2 sensor proportional trim lean mixture inhibit	stable stable	-	-				
						lambda closed loop control init	FALSE	-	-				
						closed loop control startup	FALSE	-	-				
Air / Fuel Ratio Sensor (primary / pumping current circuit open	VF)	A/F sensor voltage within upper	A/F sensor voltage <	1.51	V	battery voltage	<	18.1	V	approx.	0.1 sec	4 sec	two driving
pumping current circuit open	P2237	and lower thresholds	and A/F sensor voltage >	1.48	V	battery voltage	>	10.7	V	8 sec	continuous	continuous	cycles each
		and desired lambda is outside				engine	running	-	-	once the		or 50 sec	with: 4 sec
		of upper or lower threshold				engine starting target lambda above upper limit	complete >	1.03	lambda	driving condition		cumulative	continuous or 50 sec
						or below lower limit	<	0.97	lambda	is met			cumulative
						closed loop control A/F sensor heater	TRUE TRUE	-	-				
						at operating temperature	TRUL	-	_				
						A/F sensor electrical trimming	active	-	-				
						A/F sensor dynamic response error: A/F sensor heating	not slow not set	-	-				
						integrated exhaust gas mass	>	200	g				
Air / Fuel Ratio Sensor (primary A	A/F)											1	
pumping current circuit open		A/F sensor not lean enough	A/F sensor voltage <	1.7	V	battery voltage	<	18.1	V	2 sec	0.1 sec	4 sec	two driving
	P2237	during fuel shut off operation				battery voltage engine	> running	10.7	V		continuous	or 50 sec	cycles each with: 4 sec
						engine starting	complete	-	-			cumulative	continuous
						time after fuel shut off	> TRUE	3	sec				or 50 sec
						A/F sensor heater at operating temperature	IRUE	-	-				cumulative
Air / Fuel Ratio Sensor (primary / reference voltage circuit open	4/F)												
Total Control		A/F sensor voltage	A/F sensor voltage <	0.2	V	battery voltage	<	18.1	V	2 sec	0.1 sec	4 sec	two driving
		A/F sensor voltage above upper threshold	A/F sensor voltage < A/F sensor voltage >	0.2 4.7	V V	battery voltage battery voltage	< >	18.1 10.7	V	2 sec	0.1 sec	4 sec continuous	two driving cycles each
						battery voltage engine	> running	10.7	V -	2 sec		or 50 sec	cycles each with: 4 sec
		above upper threshold				battery voltage engine engine starting A/F sensor heating normal	>	10.7	V	2 sec		continuous	cycles each
		above upper threshold	A/F sensor voltage >	4.7	V	battery voltage engine engine starting A/F sensor heating normal operation range for time	running complete	10.7	V - -	2 sec		or 50 sec	cycles each with: 4 sec continuous
		above upper threshold	A/F sensor voltage >	4.7	V	battery voltage engine engine starting A/F sensor heating normal	> running complete	10.7	V - -	2 sec		or 50 sec	cycles each with: 4 sec continuous or 50 sec
Air (Fuel Datis C	P2243	above upper threshold	A/F sensor voltage >	4.7	V	battery voltage engine engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit	running complete >	10.7 - - 10	V sec -	2 sec		or 50 sec	cycles each with: 4 sec continuous or 50 sec
Air / Fuel Ratio Sensor (primary / reference ground circuit open	P2243	above upper threshold	A/F sensor voltage > for time	4.7	V	battery voltage engine engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit A/F sensor internal resistance	running complete >	10.7 - - 10	V sec -	2 sec	continuous	or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative
Air / Fuel Ratio Sensor (primary / reference ground circuit open	P2243	above upper threshold or below lower threshold	A/F sensor voltage >	1.480	V sec	battery voltage engine engine engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit A/F sensor internal resistance battery voltage battery voltage	> running complete > not set >	10.7 - - 10 - 950	V sec - Ohms			continuous or 50 sec cumulative 4 sec continuous	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1	V	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine	> running complete > not set >	10.7 - - 10 - 950	V - sec - Ohms		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine engine engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit A/F sensor internal resistance battery voltage battery voltage	> running complete > not set >	10.7 - - 10 - 950	V - sec - Ohms		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine engine starting	> running complete > not set > complete > not set > complete > complete > complete > complete > complete > complete	10.7 - - 10 - 950 - 18.1 10.7 -	V - sec Ohms		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine	> running complete > not set >	10.7 - - 10 - 950	V - sec - Ohms		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit A/F sensor internal resistance battery voltage battery voltage battery voltage engine engine starting The following conditions met for A/F sensor heating normal operation range for time	running complete not set not set running complete running complete >	10.7 - - 10 - 950 - 18.1 10.7 - - - - - - - - - - - - - - - - - - -	V Sec - Ohms V V V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor internal resistance	> running complete > not set > running complete > not set > > complete > > complete > > complete > > complete	10.7 - - 10 - 950 18.1 10.7 - - 5	V - sec Ohms		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting A/F sensor heating normal operation range for time error: A/F sensor heater circuit A/F sensor internal resistance battery voltage battery voltage engine starting The following conditions met for A/F sensor heating normal operation range for time A/F sensor internal resistance error: A/F sensor heater circuit The following conditions met for A/F sensor heater circuit The following conditions met for for sensor internal resistance error: A/F sensor heater circuit The following conditions met for	> running complete > leading complete leading com	10.7 - - 10 - 950 - 18.1 10.7 - - - - - - - - - - - - - - - - - - -	V Sec - Ohms V V V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage battery voltage engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit	> running complete > not set >	10.7 	V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The dolowing conditions met for AF sensor heating ready and AF heater control shut off	> running complete > leading complete leading com	10.7	V sec - Ohms - V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
	P2243	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage battery voltage engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heating ready and engine and AF heater control shut off and finisheater control shut off	running complete not set not set running complete running complete not set not set running complete running complete running complete running complete	10.7 - 10 10 - 950 18.1 10.7 - 10 950 20 2	V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
reference ground circuit open	P2243 NF) P2251	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The dolowing conditions met for AF sensor heating ready and AF heater control shut off	> running complete > not set > running complete > not set > Trunning complete > Trunning complete > Trunning complete	10.7	V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
reference ground circuit open	P2243 NF) P2251	above upper threshold or below lower threshold	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage battery voltage engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heating ready and engine and AF heater control shut off and finisheater control shut off	running complete not set not set running complete running complete not set not set running complete running complete running complete running complete	10.7 - 10 10 - 950 18.1 10.7 - 10 950 20 - 2	V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec
reference ground circuit open	P2243 WF) P2251 chanical)	above upper threshold or below lower threshold A/F sensor voltage within range	A/F sensor voltage > for time	1.480	V sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage battery voltage engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit and engine and AF heater control shut off and finished a DFCO longer than and battery voltage	running complete not set not set running complete running complete not set not set running complete running complete running complete running complete	10.7 - 10 10 - 950 18.1 10.7 - 10 950 20 - 2	V		continuous 0.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec cumulative
reference ground circuit open	P2243 WF) P2251 chanical)	above upper threshold or below lower threshold A/F sensor voltage within range	A/F sensor voltage > A/F sensor voltage A/F sensor voltage	1.480	V Sec	battery voltage engine starting AF sensor heating normal operation range for time error: AF sensor heater circuit AF sensor internal resistance battery voltage battery voltage engine engine starting The following conditions met for AF sensor heating normal operation range for time AF sensor internal resistance error: AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit The following conditions met for AF sensor heater circuit af Fensor heating ready and engine and AF heater control shut off and finished a DFCO longer than and battery voltage	> running complete > not set > running complete > not set > running complete > running complete > running running running running complete > prunning complete > prunning running	10.7	V	5sec	0.1 sec continuous	continuous or 50 sec cumulative 4 sec continuous or 50 sec cumulative	cycles each with: 4 sec continuous or 50 sec cumulative two driving cycles each with: 4 sec continuous or 50 sec cumulative

•		** ** ** **	D: W # #			• •				-	-		
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specified Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
System	Code	Description	Signal and Criteria	value	Units	Parameters	Condition	value		Required	Of Checks	Tor Code	illumination
		1				error : MAF electrical	not set	-	- 1				or 50 sec
						error : MAF rationality	not set	-	_				cumulative
						error : ambient pressure sensor electrical	not set		-				cumulative
						error : ambient pressure sensor rationality	not set		_				
						error : battery voltage	not set	-	-				
						error : turbocharger bypass valve electrical	not set	_	_				
						error : throttle valve potentiometer	not set						
						error : boost pressure sensor electrical	not set	_	_				
						error : boost pressure sensor rationality	not set	-	-				
						error : intake air temperature sensor 2	not set		_				
						error : MAP sensor electrical	not set	_	_				
						error : MAP sensor rationality	not set		_				
						Citor : Wird Scrisor rationality	Hot set						
		1				•			1			1	
r / Fuel Ratio Sensor (primar	v A/F)												
sensor voltage		A/F sensor voltage	A/F sensor voltage >	3.7	V	A/F sensor heater	TRUE		_	10 sec	0.1 sec	4 sec	two driving
concer venage	P2297	exceeds threshold	and	0.7	·	at operating temperature				10 000	continuous	continuous	cycles each
	1 2237	but not out of full range	A/F sensor voltage <	4.81	V	engine starting	complete	-	-	additional	continuous	or 50 sec	with: 4 sec
		Dat not out or rail railigo	771 Concor Vollage 4	1.01	·	desired A/F	<	1.6	lambda	time if		cumulative	continuous
			or			all injectors activated	TRUE	-	-	fuel level		Carridiativo	or 50 sec
			0.			scheduled by System Manager	TRUE	_	_	is low and			cumulative
			AF sensor voltage >	2.5	V	A/F sensor	ready		_	not failed			oumaiativo
			and	2.0	·	suspicion A/F sensor lean shift	FALSE	_	_	600 sec			
			A/F sensor voltage <	3.06	V	Cacpiolott 741 Concor tour crim	171202			000 000			
			(if using rich calibration	5.00									
			curve characteristic)										
			curve characteristic)										
r / Fuel Ratio Sensor (primar	v A/F)									ĺ			
measuring (trim) current		A/F sensor voltage	A/F sensor voltage >	4.81	V	battery voltage	<	18.1	V	2 sec	0.1 sec	4 sec	two driving
circuit open	1 2020	above threshold	771 Concor Vollago 2	1.01		battery voltage	>	10.7	v	2 000	continuous	continuous	cycles each
опоситорон						engine	running			additional		or 50 sec	with: 4 sec
						engine starting	complete	-	-	time if		cumulative	continuous
						fuel cut off	TRUE		-	fuel level			or 50 sec
						modeled exhaust temp	- TKOL	780	°C	is low and			cumulative
						in front of catalyst		. 50		not failed			22
						A/F sensor heater	TRUE	-	-	ot idilod			
						at operating temperature				600 sec			
										300 000			
						<u></u>			<u> </u>				
nd LNF Unique													

LOOK-UP TABLES (LNF)

P0234 KLDLUL (internal manufacturer cross reference)

Pressure deviation for overboost detection

	Difference	: Desired ma	anifold pres	sure - base	(mechanica	al) boost lev	el (KPa)	
	-10	-5	0	25	50	75	100	120
Delta Pressure (kPa)	-127.5	-127.5	-60	-30	-23	-20	-18	-18

Section Column				U8 GR	<u> P02 LN</u>	NF E								
Column C	Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction	Threshold	Specifie	Secondary	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
Column		Couc	2 coonpact	organi and ornoria	valuo	- Cinto	, dramotore	Contaction	ruido		rtoquirou	OI OIIOOIIO	101 0000	marini acion
Property	Electrical													
March 1968 Add and with column March	Bank 1 Intake			Voltage	IC Internal	-					0.01 sec			two driving cycles each
Sept								<	18.1	V		Continuodo		with: 4 sec
Bird 1985 Fig. State of the control of the co	Bank 1 Exhaust						output	activated and dead	tivated for complete	e checking			cumulative	continuous
March 1985					-	-						-		or 50 sec cumulative
Page Column Page Column Page Column Page P	Bank 2 Intake	P0020	circuit continuity - open											
March Property P			circuit continuity - ground			ļ								
Property Control Con	Bank 2 Exhaust					-	·		1			 		
Speech		P2094	circuit continuity - ground											
Section Control Cont	0	P2095	circuit continuity - voltage									1		
Second Profit P		P0011	rationality low / high	difference to start test. (filtered actual	6.0 11.0	degrees	engine speed	>	480	rom	approx	0.01 sec	4 sec	two driving
Septembor Profess Profess Septembor Septembo	Bank 1 Exhaust	P0014		angle versus filtered desired angle) >	KFDWNWDMXE	/2	engine run time	>	1				continuous	cycles each
Second Continue					KFDWNWDMXA	/2			-	-	(0.1)			with: 4 sec
A	Bank 2 Exhaust	P0024			0	degrees			143	° C			cumulative	or 50 sec
Compared to the company of the com						dogrood								cumulative
March Marc				filtered actual angle			engine oil temperature			°C				
Mathematical Math					2.5	sec			-48					
					2.5	360	Carr-Crark alignment adaptation	complete						
				for multiple activation occurrences	10	count	ļ							
Section Continue							quired" column)					<u> </u>		
Section Sect				no difference is seen between desired										
Affection (Control Augment)		-			1	count	ļ			-				
		 		same as above, but during cold start only:	4	Count	1					-		
Control of the proposes responsed Control of the proposes responsed Control of the proposes and the proposes are stored Control of the proposes and the					1.5	degrees	1							
## And Common and Shown from table 200-100		-			-									
Second Count Agricult Fig. Count of the property of the		 			+	-				l				
				at time	2.5	sec								
Professor Prof		ļ		(overlaps with time to detect above)		ļ				ļ				
Professor Prof		-		(passes after multiple good activations	+	ļ	-			-		-		
Bas H Tribate														
Bas H Tribate	System Com Cronk Alignment	-							1			1		-
Base 1.6 Pour		P0016	cam-crank adapted angle	adapted angle >	9.9	degrees	engine run time >	>	50	sec	approx.	0.2 sec	4 sec	two driving
Base 1 Feed Sprocket POIGS Section POIGS Section POIGS Section POIGS		P0017	limit check	or adapted angle <	9.9	degrees	engine coolant temp >		0				continuous	cycles each
Bas N 1 / Half Sprocket P0000 September			(applies for each camshaft)								fail after			with: 4 sec continuous
Base 2 / James Specoded P0000 Indicated ages for both cares < Indicated ages for both cares													cumulative	or 50 sec
A Fiel Ratio Sensor Heating and Dispose Sensor Heating Possor Control of Possor Sensor Heating and Dispose Sensor Associated Sensor S					0.0	ucgrees			-	-	cycles -			cumulative
Paster central Paster Pa											required			
Dan't 1 sersor 2 (secondary) PXXXX		ygen Sensor	Heating			ļ								
P0027 Circular continuity - regional control control systems P0027 Circular continuity - regional control control systems P0027 Circular control systems P0028 Circular control		P0036	circuit continuity - open	Voltage	IC Internal		engine speed		80	rnm	0.01 sec	0.01 sec	4 sec	two driving
Data Possor Control Control Possor Possor Control Control Possor Pos	bank i consor 2 (coochdary)			Totago	TO IIIIOIIII						0.01 000			cycles each
P0057 P0058 circut controll, y-updage									18.1	V				with: 4 sec
High Pressure Fuel Control System Rationality Pro08 Pressure deviation from desired - over pressure Pro08 Pr	bank 2 sensor 2 (secondary)				+	-				-			cumulative	or 50 sec
Rationality P0688 pressure deviation from desired - over pressure P0688 pressure deviation from desired - over pressure P0688 pressure deviation from desired - p0688 pressure field pressure field pressure from pressure f									tivated for complete	e checking				cumulative
Poose Poos														
Propose Prop	Rationality	P0088	pressure deviation from desired -	difference (desired versus actual fuel rail pressur	e -2000	Kna	error: electrical diagnosis of fuel volume of	not set	-	l	2 sec	continuous	4 sec	Immdediate once
Under pressure		1 0000		amerones (decired versus detain last lain pressu	2000	Тфи				l - 1	2 000	Continuodo		code has been se
P089 Cit. controller output value - above Controller output value ("p" part plus "" part) > 2500 Kpa part per part call part per part		P0087		difference (desired versus actual fuel rail pressur	e 1500	Kpa			-	- 1	2 sec	continuous	4 sec	
P0099 C/L controller output value - below Controller output value (*p* part plus "i* part) < .2500 Kpa Feature injected fuel mass > .5016 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature injected fuel mass > .500 % 2 sec continuous 4 sec Feature inject		Pnnsa		Controller output value ("n" part plus "i" part) >	2500	Kna	lairbag deployed		18.1		2 sec	continuous	1 500	ļ
Ergine coolant P0116 Office from Engine Internative sensor P0116 Office from Engine P0116		1 0000		Controller curput value (p part place) part) s	2000	Тфи	relative injected fuel mass				2 000	COMMIGGG		
POS2 POS3		P0089		Controller output value ("p" part plus "i" part) <	-2500	Kpa					2 sec	continuous	4 sec	
engine speed > 25 pm syncronsation reference mark detected TRUE High Pressure Fuel Volume Control Valve Circuit rationality P0092 circuit rationality - feed-back voltage voltage test pulse - on command > 4.502 V battery voltage = > 6 V 0.5 sec Continuous 4 sec P0091 circuit rationality - feed-back voltage voltage test pulse - off command < 2.749 V battery voltage = > 6 V 0.5 sec Continuous 4 sec Voltage Voltage test pulse - off command within window voltage test pulse - off command voltage voltage c 4.5 V battery		-	expected		+	-			-			-		-
High Pressure Fuel Volume Control Valve Circuit rationality P0092 circuit rationality - feed-back voltage									25	rpm				
High Pressure Fuel Volume Control Valve Circuit rationality P0092 circuit rationality - feed-back voltage									40					
Circuit rationality P0092 Circuit rationality - feed-back voltage voltage test pulse - off command < 4.502 V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V 0.5 sec continuous 4 sec V battery voltage > 6 V battery voltage S V battery voltage S V battery voltage	High Pressure Fire! Volume Control Vol	lve	1	-			rengine start temperature	>	-48			+	l I	
P092 circuit rationality - feed-back voltage voltage test pulse - of command > 4.502 V battery voltage > 6 V 0.5 sec continuous 4 sec voltage test pulse - of command < 2.749 V battery voltage > 6 V 0.5 sec continuous 4 sec voltage test pulse - of command viltage test pulse - of command viltage voltage test pulse - of command viltage voltage test pulse - of command viltage voltage est pulse - of continuous additional after block previous engine run time est pulse - of continuous est previous engine run time est pulse - of continuous est pulse - of continuous est previous engine run time est pulse - of continuous est previous engine run time est pulse - of continuous est pul		146												
P0090 circuit rationality - feed-back voltage voltage test pulse - off command within window 49 < Voltage < 4.5 V battery voltage							battery voltage				0.5 sec	continuous	4 sec	Immdediate once
Engine coolant P0116 difference from Engine Engine coolant perature model after soaking Engine coolant perature model after soaking Engine coolant model (cooled down) Engine coolant model cooled down) Engine coolant model cooled down Engine cooled down Engine coolant model cooled down Engine coolant model cooled down Engine coolant model cooled down Engine co			circuit rationality - feed-back voltage	voltage test pulse - off command <								+		code has been se
temperature model after soaking (ECT at key on - ECTmodel at key on) 14.3 °C Soaking time after shut down > 19800 sec for block continuous additional previous accumulated air mass AND > 6000 g check of previous accumulated air mass AND > 6000 sec on feet of previous accumulated air mass AND o		. 5050			.o . voltage < 4.] ·			-	,				
temperature model after soaking (ECT at key on - ECTmodel at key on) 14.3 °C Soaking time after shut down > 19800 sec for block continuous additional previous accumulated air mass AND > 6000 g check on previous accumulated air mass AND > 6000 sec on filter dealer or previous engine run time > 600 sec on filter dealer update per check when the standard difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle difference (ECTmodel at key on - ECT at key on - ECT at key on ot detected difference (ECTmodel at key on - ECT at key														
previous accumulated air mass AND > 6000 g check or previous engine run time > 600 sec one filter heater or previous engine run time > 600 sec one filter heater or previous engine run time > 81.75 °C condistant filtered difference (ECT at shut down > 81.75 °C condistant difference (ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle		P0116			14.3	° C								immediate once code
previous accumulated air mass AND > 6000 g check or previous engine run time > 600 sec one filter heater or Update per check when filtered difference ECT at shut down Sec one filtered Sec on the filtered difference ECT at shut down Sec on the filtered Sec on the filter		†	tomporators model andi souning	(201 at noy on 201 model at key on)	.7.0	T -					heating	Continuous		has
respond to the state of the sta							previous accumulated air mass AND				check			been set
ECT at shut down > 81.75 °C cold start filtered				or	+	-		>	600	sec				
(ECTmodel at key on - ECT at key on) 14.3 °C Controller Shut Down at end of last cycle Error - Engine Off Timer				filtered difference	1	-	ECT at shut down	>	81.75	°C				approx.
Powerfail during previous drive not detected threshold Block Heater not detected				(ECTmodel at key on - ECT at key on)	14.3	° C	Controller Shut Down at end of last cycle	-	-	- 1			difference	6 test
Block Heater not detected					-							-		average run length
		 				1						1	uncondu	(15°C delta)
Engine coolant P0117 range check high														
	Engine coolant	P0117	range check high	coolant temperature >	140.3	° C	if Startup IAT	>	72	°C	0.1 sec	0.1 sec	4 sec	two driving

			08 GR	PO2 LN	NF E	ingine							
Component/	Fault Code	Monitor Strategy	Primary Malfunction	Threshold Value	Specifie Units	Secondary	Enable Condition	Enable Value	Units	Time	Frequency of Checks	Criteria	MIL Illumination
System	Code	Description	Signal and Criteria	value	Units	Parameters hot restart timer	>=	60	500	Required		for Code	
temperature sensor	P0118	range check low	coolant temperature <	-42	°C	- Hot restart timer	>=	-	sec -		continuous	or 50 sec	cycles each with: 4 sec
	1	rango oncorriow	Joseph Composition C									cumulative	cont. or 50
					-				-				sec cum.
	P0119	intermittent (discontinuity)	delta coolant temp. during evaluation period <	-4.5	°C	1	-	-	· .	0.1 sec	0.01 sec		
		(2333 ,	delta coolant temp. during evaluation period >	4.5	° C						continuous		
			weighted counter >	60000	count								
			(up 5,000 w/jump; down 1 with steady)		1		<u> </u>	-	 		<u> </u>		
Throttle Position	P0121	range check poti voltage	sensor difference >	9	%	battery voltage	>	7	V	continuous	0.1 sec	4 sec	two driving
Sensor 1 (primary)					 						continuous	continuous	cycles each
					-		· · · · · · · · · · · · · · · · · · ·		1			or 50 sec cumulative	with: 4 sec cont. or 50
	P0122 P0123	plausibility to other poti	sensor circuit low voltage < sensor circuit high voltage >	0.176 4.629	V	battery voltage	>	7	V	continuous	0.1 sec continuous	4 sec continuous	Immdediate once code has been set
	1 0120		Sonor aroun riigh vallage y	1.020							Continuodo	or 50 sec	- COGO FIGO DOGIT GOT
					ļ				 			cumulative	
Sensor 2 (redundant)	P0221	range check poti voltage,	sensor difference >	9	%	battery voltage	>	7	l v	continuous	0.1 sec	4 sec	two driving
		- gg-				yy					continuous	continuous	cycles each
	-				-		-		-			or 50 sec	with: 4 sec
					1		<u> </u>			<u> </u>		cumulative	cont. or 50
	P0222	plausibility to other poti	sensor circuit low voltage <	0.156	V	battery voltage	>	7	V	continuous	0.1 sec	4 sec	Immdediate once
	P0223	-	sensor circuit high voltage >	4.883	V		 	-	-		continuous	or 50 sec	code has been set
							<u> </u>					cumulative	
Engine Coolant Thermostat Monitoring	P0128	Coolant Temperature Below	(calculated reference model coolant temp	10.5	° C	error: engine coolant temp	not set	-	-	5 sec	0.1 sec continuous	4 sec	two driving
Thermostat Monitoring	 	Thermostat Regulating Temperature (plausibility check)	minus measured coolant temperature) >		-	error: vehicle speed sensor est. ambient temperature	not set	-10.5	°C		continuous	or 50 sec	cycles each with: 4 sec
			reference model calculation limit	89.3	°C	est. ambient temperature	<	70	°C			cumulative	continuous
			(development vehicles indicated			vehicle speed engine speed	>=	9.375 960	mph rpm	typical fault detection time for			or 50 sec cumulative
			steady thermostat regulating			coolant temperature at start	<	60.8	°C	stuck open t-stat =			cumulative
	ļ	<u> </u>	temperatures of 89°C, as measured		<u> </u>	integrated air mass flow	>	3000	g	~ 700 sec	1		
			by the engine coolant temp. sensor. The thermostat opening temp.		-				-				
			is 82°C. The thermostat is fully open		ļ								
			by 95°C. All critical OBD and emission functions are enabled		ļ								
			above 60°C.)										
					ļ		ļ		 	1	1		
Engine coolant		plausibility check	calculated coolant temperature model	9.8	°C	the model temperature increases				120 to 300			
temperature sensor		piadobiny oriook	minus measured temperature >	0.0		depending on air flow				sec			
					-	coolant temp at start ECT Electrical Failure	< not set	40.5	°C	approx. 500 sec			
						Blockheater Detection	not set	-	-	300 300			
Oxygen Sensor sensor circuit (secondary O2)	+								+				
bank 1 sensor 2		short circuit to ground	secondary O2 sensor voltage <	0.06	V	secondary O2 heating stable	TRUE		-	0.1 sec	0.1 sec	4 sec	two driving
bank 2 sensor 2	P0157				 	and secondary O2 dew point end for time	TRUE	90	sec		continuous	or 50 sec	cycles each with: 4 sec
					-	engine running	TRUE	- 50	- 360			cumulative	continuous
						battery voltage	>	10.4	V				or 50 sec
	-				-	mod. exhaust-gas temp. time after start	< <	800	° C				cumulative
						engine temp at stop	>	60	° C				
	-				-	engine temp error: engine coolant temp	not set	40	°C				
bank 1 sensor 2	P0138	short circuit to battery voltage	secondary O2 sensor voltage >	1.15	V	secondary O2 heating stable	TRUE		-	5.1 sec			
bank 2 sensor 2	P0158				 	and secondary O2 dew point end for time	TRUE >	90	sec				
						engine running	TRUE	-	-				
	+	+			ļ	battery voltage mod. exhaust-gas temp.	> <	10.4 800	° C	1	ļ		
bank 1 sensor 2	P0140	sensor line disconnection	secondary O2 sensor voltage >	0.401	V	secondary O2 heating stable	TRUE	-	1 -	60 sec			
bank 2 sensor 2	P0160		and secondary O2 sensor voltage <	0.519	V	and secondary O2 dew point end	TRUE						
l	+		or		-	for time engine running	> TRUE	90	sec -	-			
			secondary O2 sensor internal resistance >	40000	Ohm	battery voltage	>	10.4	V				
			when modeled exhaust gas temperature >	450	°C	mod. exhaust-gas temp.	<	800	°C				
					1				1	1			
Oxygen Sensor Heating					+				1				L
Oxygen Sensor Heating heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	secondary O2 sensor	measured secondary O2 sensor internal			battery voltage	>	10.5	V	approx.	0.1 sec	4 sec	two driving
heater performance (secondary O2)	P0141 P0161	internal resistance	resistance >	404		battery voltage	<	18.1	V	approx. 100 sec	0.1 sec continuous	continuous	cycles each
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141			104 296	Ohms	battery voltage engine running	< TRUE					continuous or 50 sec	cycles each with: 4 sec
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	internal resistance	resistance >	104 296		battery voltage engine running engine starting fuel cut off	TRUE complete FALSE	18.1	- - -			continuous	cycles each with: 4 sec continuous or 50 sec
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	internal resistance	resistance > nominal internal resistance multipy times degradation factor	3.5 7.5	factor	battery voltage engine running engine starting fuel cut off sec. O2 internal resistance	TRUE complete FALSE valid	18.1 - - -	- - -			continuous or 50 sec	cycles each with: 4 sec continuous
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	internal resistance	resistance > nominal internal resistance			battery voltage engine running engine starting fuel cut off sec. O2 internal resistance intake air temperature	TRUE complete FALSE	18.1 - - - - - - - 30 120	- - -			continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	internal resistance	resistance > nominal internal resistance multipy times degradation factor	3.5 7.5	factor	battery voltage engine running engine starting fuel cut off sec. O2 internal resistance intake air temperature engine off soak time modeled exhaust temp.	TRUE complete FALSE valid >	18.1 - - - - - - -30	C			continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec
heater performance (secondary O2) bank 1 sensor 2 (secondary)	P0141	internal resistance	resistance > nominal internal resistance multipy times degradation factor	3.5 7.5	factor	battery voltage engine running engine starting fuel cut off sec. O2 internal resistance intake air temperature engine off soak time	TRUE complete FALSE valid >	18.1 - - - - - - - 30 120	V C sec			continuous or 50 sec	cycles each with: 4 sec continuous or 50 sec

V			U8 GF	RP02 LN	NF E	ngine							
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specifie Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
			-			secondary O2 voltage supply	ON		İ				
	-			+		from the deactivation for time	>	120	sec				
Fuel Rail Pressure Sensor	i		i		i e								
Rationality	D0101	rationality check low	Eucl proceure during power up init	250	KPa	engine speed	>	25	rpm	0.1 sec	During	4 sec	two driving
	0191	Tationality Creck low	Fuel pressure during power up init. < AND	230	Kra	for time	>	0.5	sec	0.1 Sec	engine	continuous	cycles each
			Fuel system fault exists:			engine run time	>	30	sec		start only		with: 4 sec
	+		P0087 or P2188 or P2187	-	-				+		+		or 50 sec
													cumulative
	-	rationality check high	or Fuel pressure during power up init. >	1500	KPa	engine speed	>	25	rpm				
		rationality checkings	AND	1300	IXI a	engine speed for time	>	30	sec				
			Fuel system faults exist: P0088 or P2187 or P2177			block heater active	<u>-</u>	FALSE 84.5	- c				
			F0000 01 F2107 01 F2177		-	engine coolant at shutdown engine coolant at start	> <	54.8	C				
						difference : engine coolant at start -	<	35.3	С				
						intake air temperature differenec : intake air temperature -	<	9.75	С		-		
						engine coolant at start							
	-					engine off time during soak	>>	16000	sec		-		
			or										
	+	rationality check high	Fuel pressure during power up init. > AND	1500	KPa	engine speed for time	>	25 30	rpm sec				
			Fuel pressure rise during fuel pump prime >	3500	KPa	block heater active		FALSE					
	+					engine coolant at shutdown	>	84.5 54.8	C				
	+			+	1	engine coolant at start difference : engine coolant at start -	<	35.3	C		+		
						intake air temperature							
	+			+	-	differenec : intake air temperature - engine coolant at start	<	9.75	C	-	-		
						engine off time during soak		16000	sec				
	_			-							-		
Fuel Rail Pressure Sensor Electrical	-			-	-				-		+		
	P0193	circuit continuity - high	Fuel pressure sensor output voltage >	4.70	V		-	-	ļ	0.5 sec	0.01 sec	4 sec	Immdediate once
	P0192	circuit continuity - low	Fuel pressure sensor output voltage <	0.30	V		-	-	 	0.5 sec	0.01 sec	4 sec	code has been set
High Pressure Fuel Injection Valve													
Circuit Continuity - High side (HS	and Low Sid	e (LS)											
Cylinder #1	P0201 P0261	circuit continuity - open LS or HS circuit continuity - ground LS	Voltage	IC Internal	-	engine speed battery voltage	>	80	rpm	0.01 sec	0.01 sec	4 sec	two driving cycles each
	P0262	circuit continuity - battery LS				battery voltage	-	18.1	v				with: 4 sec
	P2146	circuit continuity - ground or battery HS											continuous
Cylinder #2	P0202	circuit continuity - open LS or HS			-				+		 		or 50 sec cumulative
	P0264	circuit continuity - ground LS											
	P0265 P2149	circuit continuity - battery LS circuit continuity - ground or battery HS		+	-				+		+		
Cylinider #3	P0203 P0267	circuit continuity - open LS or HS circuit continuity - ground LS			-				-		1		
	P0268	circuit continuity - battery LS											
	P2152	circuit continuity - ground or battery HS		-	-				-				
Cylinder #4	P0204	circuit continuity - open LS or HS							-		<u> </u>		
	P0270 P0271	circuit continuity - ground LS											
	P2155	circuit continuity - battery LS circuit continuity - ground or battery HS							-				
0.41-4	Dooos												
Cylinder #5	P0205 P0273	circuit continuity - open LS or HS circuit continuity - ground LS		+	-				+		-		
	P0274	circuit continuity - battery LS							T				
	P216A	circuit continuity - ground or battery HS		+	-				+	-	-		
Cylinder #6	P0206	circuit continuity - open LS or HS											
	P0276 P0277	circuit continuity - ground LS circuit continuity - battery LS		-	1				+				
	P216D	circuit continuity - ground or battery HS											
SPI Communication	Doese	Internal CDI Communication Fault		IC Internal	1	longing appeal	-	90	1	1.10.005	0.01.00	4.000	
SPI COHIMUNICATION	P062B	Internal SPI Communication Fault or			1	engine speed battery voltage	>	80	rpm v	1.10 sec	0.01 sec	4 sec	
	1	Internal ADC Voltage Booster Failure		IC Internal		battery voltage	<	18.1	v	0.50 sec	0.01 sec	4 sec	
Diagnosis of Stuck Open Fuel Injector	+		1	+	1					ļ. 1			
Rationality													
	P029D	fuel injector stuck open - cylinder #1	fuel pressure deviation from desired - under pressure (P0087)	set		misfire monitor active (see P0300 details		1520	-	200 ms	continuous	4 sec	Immdediate once code has been set
			and P0087)			engine speed engine speed	> <	4520	rpm				code has been set
	1		cylinder # 1 misfire counts >	100	counts	relative engine load	<	114.8	%				
	P02A1	fuel injector stuck open - cylinder #2	fuel pressure deviation from desired -	set	+	misfire counters accumulate within period <	<	80	rev		-		
	1		under pressure (P0087)										
	+		and cylinder # 2 misfire counts >	100	counts				+		-		
	1												
	P02A5	fuel injector stuck open - cylinder #3	fuel pressure deviation from desired - under pressure (P0087)	set	1				+		-		
			and										
	+		cylinder # 3 misfire counts >	100	counts				-				
L	1	1		1	1	l .		1		l	1		

	1	11 to 00 to	08 GRP			1191110				_			
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specifie Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
	P02A9	fuel injector stuck open - cylinder #4	fuel pressure deviation from desired -	set									
	_		under pressure (P0087) and						-				
			cylinder # 4 misfire counts >	100	counts								
	P02AD	fuel injector stuck open - cylinder #5	fuel pressure deviation from desired -	set									
			under pressure (P0087) and										
			cylinder # 5 misfire counts >	100	counts								
	P02B1	fuel injector stuck open - cylinder #6	fuel pressure deviation from desired -	set									
			under pressure (P0087) and				ļ						
			cylinder # 6 misfire counts >	100	counts								
Misfire													
Emission Level Multiple Cylinder	D0200	avantahaft ana ad	aminoiana ralaviant miafira rata	1.00	0/	anaina anaad		420		1000 roug	a dia das	4000	Foult during
Cylinder #1	P0300 P0301	crankshaft speed fluctuation cylinder 1 to	emissions relevant misfire rate	1.82	%	engine speed engine speed	> <	420 7000	rpm	1000 revs	cylinder	4 sec continuous	Fault during 1st interval:
Cylinder #2 Cylinder #3	P0302 P0303	cylinder 6				indicated torque (idle, no drive) indicated torque (drive) (MISALUN)	>	5.86 7.05 29.3	%		frequency	After	2 faults in 2 different
Cylinder #4	P0304					engine speed gradient	<	2500 4600	rpm/sec		continuous	detection,	drive cycles.
Cylinder #5 Cylinder #6	P0305 P0306					volumetric efficiency gradient cylinder events after engine start	>	225 1350	%/rev ignitions			the diagnostic	Fault during
						air temperature	>	-30	° C			can only	remaining
						rough road (GMX295 only) clutch switch press / release	not detected transition	FALSE				pass if similar	intervals: 8 faults in 2
						leak detection pull-down phase fuel cut off	off not active	-	-			conditions	different
						fuel level	>	11.4				encountered	drive cycles with at least
						OR fuel level AND solid misfire MIL	< on	11.4	%				4 faults in each.
						OR fuel level error	set	-					00011
						error: throttle position error: crankshaft sensor	not set	-	 				
						error: ref.mark of crank sensor	not set		-				
			OR										
Catalyst Damaging Level Multiple Cylinder	P0300		Catalyst damaging misfire rate			Includes all the above with the following exceptions:				1000 revs First interval			First occurance:
Cylinder #1	P0301					First interval extention				200 revs			immediate
Cylinder #2 Cylinder #3	P0302 P0303					engine coolant temperature fuel level	< >=	47 11.4	°C %	all remaining intervals			flashing while error
Cylinder #4	P0304			18.1 5	%	OR fuel level	<	11.4	%				present, then
Cylinder #5 Cylinder #6	P0305 P0306			see Misfire supplemental		AND blinking MIL AND NOT first blink event	blinking -	-					no MIL with no error.
				data (h) (2.5.1)									Second
				(1) (2.3.1)									occurance:
													immediate flashing
													while error
											ļ		
													present, then solid MIL
													present, then
Knock Control													present, then solid MIL
Knock Control Circuit	P0324	test pulse	test pulse integral <	4	V	annine contant term.		60	0.0	0.1 sec	0.1 sec	4 sec	present, then solid MIL with no error. two driving
	P0324	test pulse	test pulse integral < for consecutive events	4 4		engine coolant temp. knock control	> active	60	° C	0.1 sec	0.1 sec continuous	continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec
	P0324	test pulse				knock control zero test , parity fault assumptions		60		0.1 sec		continuous	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
	P0324					knock control zero test , parity fault assumptions measuring window engine coolant temp.	active not set	-	- ms	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec
	P0324	or	absolute value (integrator gradient) >	200	v / sec	knock control zero test , parity fault assumptions measuring window engine coolant temp. knock control	active not set > active	- - 1	- ms	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
	P0324	or null test (zero test)	for consecutive events absolute value (integrator gradient) > for consecutive events	200	V / sec	knock control zero test , parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions	active not set	1 60	ms ° C	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
	P0324	or null test (zero test)	absolute value (integrator gradient) >	200	v / sec	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp.	active not set > active not set	- - 1 60	- - ms ° C	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
	P0324	or null test (zero test) or parity check	for consecutive events absolute value (integrator gradient) > for consecutive events	200	V / sec	knock control zero test , parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions	active not set > active	1 60	ms ° C	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
	P0324	or null test (zero test) or parity check or	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy	200	V / sec count count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp.	active not set > active not set	1 60	ms ° C	0.1 sec		continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous
Circuit		or null test (zero test) or parity check or SPI communication	for consecutive events absolute value (integrator gradient) > for consecutive events fficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy	200 4 5 25	V/sec count count count	knock control zero test, parily fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temp.	active not set > > active not set > not set > active not set	- 1 60 - - 60			continuous	continuous or 50 sec cumulative	present, then solid MIL with no error. With order or cycles each with: 4 sec continuous or 50 sec
Circuit Bank 1 Circuit check	P0326	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work	200 4 5 25	V/sec count count count count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temp.	active not set	60 60 2200		approx.	continuous O.1 sec	continuous or 50 sec cumulative	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous or 50 sec
Circuit	P0326	or null test (zero test) or parity check or SPI communication	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work	200 4 5 25	V/sec count count count count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	- 1 60 - - 60		approx. 20 sec	continuous	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Circuit Bank 1 Circuit check	P0326	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work	200 4 5 25 25 055 0.221 UDKSNU	V/sec count count count count	knock control zero test, parily fault assumptions measuring window engine coolant temp. knock control test pulse , parily fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed engine speed gradient (NGKRWN)	active not set	60 60 2200 5002300		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous	present, then solid MIL with no error. Itwo driving cycles each with: 4 sec continuous or 50 sec
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work	200 4 5 25 25 	V/sec count count count count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. With no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous cycles each with: 4 sec continuous cycles each with: 4 sec
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < 0.	200 4 5 25 25 .055 0.221 UDKSNU	count V/sec count count count v count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events reference voltage >	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO	count V/sec count count count v count V	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with a sec cycles each with a sec cycles eac
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < 0.	200 4 5 25 25 0.221 UDKSNU 30 3.1 39.1	count V/sec count count count v count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 50 sec
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low range check high	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events for consecutive events for consecutive events	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO 30	count V/ sec count count count V count V count V count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with a sec cycles each with a sec cycles eac
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events reference voltage >	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO 30	count V/ sec count count count V count V count V count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 50 sec
Bank 1 Circuit theck Performance	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low range check high	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events for consecutive events for consecutive events	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO 30	count V/ sec count count count V count V count V count	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse, parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed engine speed gradient (NGKRWN) engine load gradient error: knock control circuit (IC)	active not set	60 60 2200 5002300 50100	"C" "C" "C" "C" "pm" "rpm / sec kPa / sec	approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. Two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 50 sec
Circuit Bank 1 Circuit check	P0326 P0327	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low range check high	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events for consecutive events for consecutive events	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO 30	v/sec count v/sec count count v count co	knock control zero test, parity fault assumptions measuring window engine coolant temp. knock control test pulse , parity fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. engine coolant temperature engine speed gradient (NGKRWN) engine load gradient	active not set	60 60 2200 5002300 50100		approx. 20 sec	continuous O.1 sec	continuous or 50 sec cumulative 4 sec continuous or 50 sec	present, then solid MIL with no error. two driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec
Bank 1 Circuit check Performance	P0326 P0327 P0328	or null test (zero test) or parity check or SPI communication short circuit to B+ or GND range check low range check high	for consecutive events absolute value (integrator gradient) > for consecutive events ficient RAM errors in knock IC, per 250 working cy check word errors in knock IC, per 250 working cy faults detected on knock sensor pins, per 250 work reference voltage < for consecutive events reference voltage > for consecutive events faults detected on knock sensor pins, per 250 working faults detected on knock sensor pins, per 250 working faults detected on knock sensor pins, per 250 working	200 4 5 25 25 055 0.221 UDKSNU 30 3.1 39.1 UDKSNO 30 g cycles (zkrks)	count V/sec count count count v count v count v count	knock control zero test, parily fault assumptions measuring window engine coolant temp. knock control test pulse , parily fault assumptions engine coolant temp. test pulse fault assumption engine coolant temp. test pulse fault assumption engine coolant temperature engine speed engine speed gradient (NGKRWN) engine load gradient error: knock control circuit (IC)	active not set	60 60 60 2200 5002300 50100	"C C rpm rpm / sec kPa / sec -	approx. 20 sec	0.1 sec continuous	continuous or 50 sec cumulative 4 sec continuous or 50 sec cumulative	present, then solid MIL with no error. Itwo driving cycles each with: 4 sec continuous or 50 sec two driving cycles each with: 4 sec continuous or 50 sec cycles each with: 5 cycles each with: 6 cycles each each each each each each each each

				RP02 LI						_			
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specifie Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	of Checks	Criteria for Code	MIL Illumination
			for consecutive events	100	count								or 50 sec
	P0333	range check high											cumulative
	+		reference voltage >	3.1 39.1 UDKSNO	V		-	-					
			for consecutive events	100	count								
Crankshaft Position Sensor	P0335	circuit continuity	no engine signal	0	rpm	camshaft revolutions detected	>	12	counts	approx.	0.01 sec	4 sec	immediate
Oranica art i osition ochsor	1 0000	Circuit Continuity	but phase signals available		Ipili	carristant revolutions detected		12	Counts	5 sec	continuous	continuous	once code
		rationality check	reference gap missing >	6	gaps							or 50 sec	has
	P0336	rationality check	(sensor signal but no reference) unexpected re-synchronization >	2600	count						+	cumulative	been set
			(loss of reference mark)										
	Doogo	rationality check	intermittent loss of engine speed signal >	28	count						4		
	P0338	rationality check	difference in counted teeth between reference gap position events >	250	teeth				1	approx. 2 sec	1 per rev continuous		
Camshaft Position Sensor Bank 1 Intake	P0341	plausibility check	signal erratic or out of position		count	engine in synchronized mode	TRUE	-		10	1 per rev	4 sec	two driving
Barik T Thake	P0342	circuit low	signal permanently low	5	count	ongino in cynonicinzad mode				revolutions	continuous	continuous	cycles each
	P0343	circuit continuity or high	signal permanently high	5	count						ļ	or 50 sec cumulative	with: 4 sec continuous
Bank 2 Intake	P0346	plausibility check	signal erratic or out of position						1				or 50 sec
	P0347 P0348	circuit low circuit continuity or high	signal permanently low signal permanently high		-			+	+		ļ		cumulative
Deal of Esternal													
Bank 1 Exhaust	P0366 P0367	plausibility check circuit low	signal erratic or out of position signal permanently low	-	-		+	+	-		-		
	P0368	circuit continuity or high	signal permanently high		ļ								
Bank 2 Exhaust	P0391	plausibility check	signal erratic or out of position		1								
	P0392 P0393	circuit low circuit continuity or high	signal permanently low signal permanently high		-			1	-				
	P0393	Circuit continuity or night	signal permanently high										
Ignition Coil							1						
circuit continuity Cylinder #1	P0351	circuit continuity - open	Voltage	IC Internal	l -	engine speed	<	6000	rpm	approx.	engine	4 sec	two driving
	P2300	circuit continuity - ground				engine speed	>	9.99	V	1 sec	cycle	continuous	cycles each
Cylinder #2	P2301 P0352	circuit continuity - voltage circuit continuity - open			-	battery voltage battery voltage	<	18.1	V		frequency	or 50 sec cumulative	with: 4 sec continuous
	P2303	circuit continuity - ground									continuous		or 50 sec
Cylinder #3	P2304 P0353	circuit continuity - voltage circuit continuity - open			-				+		<u> </u>		cumulative
	P2306	circuit continuity - ground											
Cylinder #4	P2307 P0354	circuit continuity - voltage circuit continuity - open						+					
	P2309 P2310	circuit continuity - ground circuit continuity - voltage			-								
Cylinder #5	P0355	circuit continuity - voltage											
	P2312 P2313	circuit continuity - ground circuit continuity - voltage			-						-		
Cylinder #6	P0356	circuit continuity - open											
	P2315 P2316	circuit continuity - ground circuit continuity - voltage			1								
Ignition Coil Driver Circuit Serial Communication	P167D	Internal SPI communication fault	IC Internal		ļ	battery voltage battery voltage	< >	18.1	V V	0.01 sec			
Certai Communication						engine speed		6000	rpm				
	ļ												
Evaporative System and Leak Monitor Small Leak - 0.020 "	P0442	natural pressure/vacuum	filtered fault index >	0.6		Eng. Running Vac. pull down	not set	(see P0455 for d	etails)	approx.	0.1 sec	filtered	immediate
		in tank	based on:			or vac. pulldown suspect leak	0.020" leak	(see P0455 for d		600 sec each test	once per	value exceeds	once code has
	1		(peak pressure - peak vacuum) <	540 1430	Pa	est amb air temp est amb air temp	> <	32.25	°C	eacritest	engine off cycle	threshold	been set
	1		[Table KFEONVPT]			Engine stop coolant temp engine run time	>	74.25 600	° C	approx. 6 test		then 4 sec	
	<u> </u>					trip distance travelled	>	5.1	miles	average		continuous	approx.
	-				ļ	@ vehicle speed above evap fuel volatility factor	> <	1.6	mph factor	run length	-		6 test average
	1				1	fuel level	>	11.0	%				run length
	-				-	fuel level fuel level change from keyoff	< <	88.1 10.2	%		-		(The MIL
	1				1	error: vehicle speed	not set	- 10.2	-				actually is
	+				-	error: engine coolant temp error: purge valve	not set		-		-		requested during shut
	1				1	error: fuel tank pressure	not set	-	<u> </u>				down soak.
					-	error: system voltage error: air mass meter	not set not set	-	-		-		It becomes visible on
	-					error: intake air temp error: canister vent valve	not set	-					the
							not set	-	-	I .	1		following
					<u> </u>	altitude adaption	valid	-	1				drive.)
						altitude adaption tank vacuum out of range	valid FALSE	-	I -				
						altitude adaption	valid						
						altitude adaption tank vacuum out of range start (coolant - intake air) start engine coolant temp Start intake air temp	valid FALSE < < > > >	9.75 42 1.5	- ° C ° C				
						altitude adaption tank vacuum out of range start (coolant - intake air) start engine coolant temp	valid FALSE <	9.75 42 1.5 32.3 0	- ° C ° C ° C ° C sec				
						altitude adaption tank vacuum out of range start (coolant - intake air) start engine coolant temp Start intake air temp Start intake air temp Start intake air temp time since previous test amb pressure	valid FALSE < < < > > > > > > > > > > >	9.75 42 1.5 32.3 0 68	- ° C ° C ° C ° C ° C sec kPa				
						altitude adaption tank vacuum out of range start (coolant - intake air) start engine coolant temp Start intake air temp Start intake air temp time since previous test	valid FALSE < < > > > > >	9.75 42 1.5 32.3 0	- ° C ° C ° C ° C sec				

Component/	Fault	Monitor Strategy	Primary Malfunction	RP02 LI	Specifie	Secondary	Enable	Enable	Units	Time	Frequency	Criteria	MIL
System Purge Solenoid	Code P0443	Description circuit continuity - open	Signal and Criteria Voltage	IC Internal	Units	Parameters engine speed	Condition >	Value 80	rpm	0.01 sec	0.01 sec	for Code 4 sec	Illumination two driving
Control Circuit	P0458 P0459	circuit continuity - ground circuit continuity - voltage				battery voltage battery voltage	> <	9.99 18.1	V		continuous	continuous or 50 sec	cycles each with: 4 sec
	1 0433	Circuit Continuity - Voltage				output	activated and deact					cumulative	continuous
									1				or 50 sec cumulative
Evaporative System and Leak Monito	or												
Canister Vent Valve	P0446	underpressure in tank	tank pressure <	-800	Pa	fuel system status	closed loop			approx.	0.1 sec	4 sec	two driving
						vehicle speed engine	idling	1.9	mph -	5 sec	one	continuous	cycles each with: 4 sec
						battery voltage battery voltage	> <	10.5 18.1	V	Only one test per	completed test per		or 50 sec
						fuel tank pressure	>	-2500	Pa	will be	driving		cumulative
					-	fuel tank pressure ratio: (MAP Model / Baro)	< <	1300 0.812	Pa -	completed.	cycle		
						est amb air temp	>	1.5	°C	The test			
					-	est amb air temp fuel level	>	32.25 11.2	° C	will attempt to run up			
						fuel level	< <	91.2 9.75	% ° C	to 10 times until it			
						engine start temp - amb. temp time after engine start	>	600	sec	successfully			
						or fuel mixture adaptation amb pressure	stable >	- 68	kPa	completes a test			
						maximum number of attempts	<	10	-				
1					-	error: mass air flow error: coolant temp	not set	-					
						error: intake air temp	not set	-					
						error: fuel tank pres error: system voltage	not set		-				
						error: purge valve error: vehicle speed	not set not set	-					
						error: canister vent valve	not set						
					ļ	error: purge valve flow error: accelerator pedal	not set		 		ļ		
Evap Vent Solenoid	P0449	circuit continuity - open	Voltage	IC Internal	-	engine speed	>	80	rpm	0.01 sec	0.01 sec	4 sec	two driving
Control Circuit	P0498 P0499	circuit continuity - ground circuit continuity - voltage				battery voltage battery voltage	>	9.99 18.1	V	Only one	continuous	or 50 sec	cycles each with: 4 sec
	1 0433	Circuit Continuity - Voltage				output	activated and deact			test per		cumulative	continuous
									-				or 50 sec cumulative
Fuel Tank	P0450	rationality - signal oscillation	delta pressure signal	813	Pa	ambient temperature model	>	-7.5	°C	25.5	0.1 sec	4 sec	two driving
Pressure Sensor			(= current pressure - old pressure) >			vehicle speed >= time after canister vent valve open	<=	18.75 4	mph sec	sec	continuous	or 50 sec	cycles each with: 4 sec
						unic arter carrister vent valve open			300			01 30 300	or 50 sec
	DO454	resignation along the street	anner signal -	1750	Do	himo ofter engine stort	-	1	1	25.5	0.1.000	4000	cumulative
	P0451	rationality - signal range check	sensor signal >= sensor signal >=	-3500	Pa Pa	time after engine start time after canister vent valve open	> >	4	sec	25.5 sec	0.1 sec continuous	4 sec continuous	two driving cycles each
		or			ļ		-		+			or 50 sec	with: 4 sec or 50 sec
		rationality - drift check	delta pressure signal	344	Pa	Vent solenoid valve open	TRUE		-				cumulative
			(= current pressure - reference pressure at start) >		-	Caniter purge flow (closed) ambient pressure	<= >	0.0 68000	g / sec Pa				
						fuel level	<	88.4 11.2	%				
						fuel level fuel level	> <	150	%				
						Or fuel level valid for running			-				
						Evap. leak detection	TRUE		-				
						Vehicle speed Vehicle speed	> <	93.75	mph mph				
						Or			°c				
						ambient temperature model ambient temperature model	<= >=		°C				
						time	>	3	sec				
	P0452	circuit continuity - ground	sensor signal voltage <	0.1514	V	engine running	TRUE	TRUE		10 sec	0.1 sec	4 sec	two driving
	P0453	circuit continuity - voltage	sensor signal voltage >	4.702	V		1		1		continuous	or 50 sec	cycles each with: 4 sec
							1		1				or 50 sec
							 		1				cumulative
Large leak	P0455	vacuum pulldown slope	absolute value			fuel system status	closed loop		-	11 sec	0.1 sec	4 sec	two driving
			of vacuum pulldown slope <	4.5 7.6	Pa/sec		idling	1.9	mph -	Only one	one	continuous	cycles each with: 4 sec
				[KLTLDSFS05]]	battery voltage battery voltage	>	10.5 18.1	V	test per	completed test per		continuous or 50 sec
						fuel tank pressure	>	-2500	Pa	driving cycle completed.	driving		cumulative
						fuel tank pressure ratio: (MAP Model / Baro)	< <	1300 0.81	Pa -	The test	cycle		
						est amb air temp	>	1.5	°C	will attempt			
						est amb air temp fuel level	>	32.25 11.4	° C	to run up to 10 times			
						fuel level	<	88.1 9.75	% ° C	until it successfully			
						engine start temp - amb. temp time after engine start	>	9.75 600	sec	completes			
						or fuel mixture adaptation amb pressure	stable >	- 68	- kPa	a test			
						error: mass air flow	not set	-	-				
	-					error: coolant temp error: intake air temp	not set not set	-	-				
						error: fuel tank pres	not set	-	-				
		<u> </u>			1	error: system voltage	not set	-	-		L		

			08 GI	RP02 LN	FE	ingine							
Component/	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specifie Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
System	Code	Description	Signal and Criteria	value	Units	error: purge valve	not set	value -		Kequireu	OI CHECKS	101 Code	mummation
						error: vehicle speed	not set		-				
						error: canister vent valve error: purge valve flow	not set not set				-		
						error: accelerator pedal	not set		-				
						<u> </u>			<u> </u>				
Fuel Level Sensor Circuit fuel level sensor 1	P0461	rationality	fuel level change < and	4.6	%	Primary fuel level Secondary fuel level	< <=	41.1 6.2	% liter		0.1 sec continuous	4 sec continuous	no
idel level selisti i			cumulative driving distance >	120.0	km	Or Or	ζ-	0.2	iilei		continuous	or 50 sec	
						Primary fuel level	<	41.1 6.2	liter liter			cumulative	
						Secondary fuel level and	>	0.2	illei				
						battery voltage	>=	10.5	V				
						battery voltage engine starting	<= TRUE	18.1	· ·				
						electrical fuel level sensor(s)							
						without failure	TRUE	-	-				
			Or			OR							
			cumulative driving distance >=	162.0	km	Primary fuel level Secondary fuel level	>= <	41.1 6.2	% %				
						battery voltage	>=	10.5	V				
						battery voltage	<= TDUE	18.1	V				
						engine starting electrical fuel level sensor(s)	TRUE	-	-				
						without failure	TRUE	-	-				
	P0462	range check low	voltage <	0.25	V	battery voltage	>=	10.5	V	60 sec	0.1 sec	4 sec cont.	no
						battery voltage engine started	<= TRUE	18	V		continuous	or 50 sec cumulative	
	P0463	range check high	voltage >	3.2	V	battery voltage	>=	10.5	V	60 sec	0.1 sec	4 sec cont.	no
		3	3			battery voltage	<=	18	V		continuous	or 50 sec	
						engine started	TRUE	-	-			cumulative	
Cooling fan 1 relay	P0480	circuit continuity - open	Voltage	IC Internal	-	engine speed	>	80	rpm	0.01 sec	0.01 sec	4 sec	two driving
Control Circuit	P0691	circuit continuity - ground	Tonage	TO INCOME.		battery voltage	>	9.99	V	0.01000	continuous	continuous	cycles each
	P0692	circuit continuity - voltage				battery voltage	<	18.1	V		-	or 50 sec	with: 4 sec
Cooling fan 2 relay	P0481	circuit continuity - open	Voltage	IC Internal	-							cumulative	or 50 sec
Control Circuit	P0693	circuit continuity - ground	ronago	10 millionidi		 			†		<u> </u>		cumulative
	P0694	circuit continuity - voltage											
Evaporative System and Leak Monito	or												
Leaking purge valve	P0496	underpressure in tank	tank pressure loss gradient <	-60	Pa	fuel system status	closed loop		-	about 4 sec	0.1 sec	4 sec	two driving
						vehicle speed engine	< idling	1.9	mph -	Only one	one	continuous	cycles with: 4 sec
						battery voltage	>	10.5	V	test per	completed		continuous
						battery voltage	< >	18.1	V	driving cycle	test per		or 50 sec
						fuel tank pressure fuel tank pressure	> <	-2500 1300	Pa Pa	completed.	driving cycle		cumulative
						ratio: (MAP Model / Baro)	<	0.81	-	The test			
						fuel level fuel level	> <	11.4 88.1	%	will attempt to run up	-		
						engine start temp - amb. temp	<	9.75	°C	to 10 times			
						time after engine start	> atable	600	sec	until it	-		
						or fuel mixture adaptation amb pressure	stable >	68	kPa	successfully completes	-		
						maximum number of attempts	<	10		a test			
						est amb air temp est amb air temp	> <	1.5 32.25	° C		-		
						error: mass air flow	not set	- 32.23	-		1		
						error: coolant temp	not set	-					
						error: intake air temp error: fuel tank pres	not set not set				-		
						error: system voltage	not set						
						error: purge valve	not set		-		-		
	-			-		error: vehicle speed error: canister vent valve	not set not set				-		
						error: purge valve flow	not set		-				
						error: accelerator pedal	not set						
	1	The state of the s		-		fuel system status	closed loop		-	11 sec	0.1 sec	4 sec	two driving
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >						mph			continuous	cycles each
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1.221	Pa	vehicle speed	< idling	1.9		Onlyana			
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1.221	Pa	engine battery voltage	idling	1.9 - 10.5	- V	Only one test per	one completed		with: 4 sec continuous
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage	idling > <	10.5 18.1	- V V	test per driving cycle	completed test per		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure	idling > < >> >	10.5 18.1 -2500	V V Pa	test per	completed test per driving		continuous
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro)	idling > <	10.5 18.1 -2500 1300 0.81	V V Pa Pa	test per driving cycle completed.	completed test per		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp	idling > < < > < < < < < < < < < < < < < < <	- 10.5 18.1 -2500 1300 0.81 1.5	- V V Pa Pa Pa - ° C	test per driving cycle completed. The test will attempt	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage battery voltage fuel tank pressure fuel tank pressure fatio: (MAP Model / Baro) est amb air temp est amb air temp	idling > < > < > > >	10.5 18.1 -2500 1300 0.81 1.5 32.25	- V V Pa Pa - • C • C	test per driving cycle completed. The test will attempt to run up	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel level	idling > < < > < < < < < < < < < < < < < < <	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1	- V V Pa Pa ° C ° C %	test per driving cycle completed. The test will attempt to run up to 10 times until it	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage total transpressure fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp fuel level fuel level engine start temp - amb. temp	idling >	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75	- V V Pa Pa Pa ° C ° C ° C % % % ° C	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vaeuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel level fuel erengine start temp lime after engine start	idling > < > > < > > > <p< td=""><td>10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1</td><td>- V V Pa Pa ° C ° C %</td><td>test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes</td><td>completed test per driving</td><td></td><td>or 50 sec</td></p<>	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1	- V V Pa Pa ° C ° C %	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel level engine start temp - amb. temp time after engine start or fuel mixture adaptation amb pressure	idling >	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75 600	- V V Pa Pa ° C ° C % % % ° C Sec	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1,221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratior. (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel level fuel level engine start temp - amb. temp time after engine start or fuel mixture adaptation amb pressure error: mass air flow	idling >	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75 600	- V V Pa Pa Pa ° C ° C ° C ° C ° C * 6 ° C * 8 ° C	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulldown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp est amb air temp fuel level engine start temp - amb. temp time after engine start of tuel mixture adaptation amb pressure error: mass air flow error: coolant temp	idling >	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75 600	- V V V Pa Pa Pa ° C ° C % % % ° C sec - kPa	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vaeuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratior. (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel level fuel level engine start temp - amb. temp time after engine start or fuel mixture adaptation amb pressure error: mass air flow	idling >	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75 600	- V V Pa Pa Pa ° C ° C ° C ° C ° C * 6 ° C * 8 ° C	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes	completed test per driving		or 50 sec
Stuck Closed Purge valve	P0497	vacuum pulidown slope	tank vacuum >	-1.221	Pa	engine battery voltage battery voltage fuel tank pressure fuel tank pressure ratio: (MAP Model / Baro) est amb air temp est amb air temp fuel level fuel evel fuel even start temp - amb. temp time after engine start or fuel mixture adaptation amb pressure error: mass air flow error: coolant temp error: coolant temp	idling	10.5 18.1 -2500 1300 0.81 1.5 32.25 11.4 88.1 9.75 600	- V V Pa Pa Pa Pa C Sec Pa	test per driving cycle completed. The test will attempt to run up to 10 times until it successfully completes	completed test per driving		or 50 sec

Composabl	Fault	Manitor Strategy		RP02 LN	NF E	ngne	Enable	Enable	Unite	Time	Francis	Critorio	MIL
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Units	Secondary Parameters	Condition	Value	Units	Time Required	Frequency of Checks	Criteria for Code	Illumination
						error: vehicle speed error: canister vent valve	not set not set		-				
						error: purge valve flow	not set	-	-				
						error: accelerator pedal	not set	-	-				
Idle Speed System	P0506	functional check	desired rpm - actual rpm >	100	rom	load (for underspeed only)		99.9 99.9	%	10.000	0.1.000	4.000	two driving
(disabled during cold start)		Tunctional check		100	rpm	load (for underspeed only) coolant temp.	>	-11.3	°C	10 sec	0.1 sec continuous	4 sec continuous	two driving cycles each
	P0507		desired rpm - actual rpm < or	-200	rpm	intake air temp vehicle	at idle	-11.3	°C			or 50 sec cumulative	with: 4 sec continuous
			fuel cut off due to overspeed > during this idle	3	count	altitude factor (sea level = 1.0) time after engine start	>	0.594 3.84	factor sec				or 50 sec
			during anotato			evap purge (high HC conc.)	FALSE	0.01					cumulative
						cold start idle speed control intrusive evap test	FALSE not active						
	-		<u> </u>			intrusive secondary air test (=not applicab error: throttle position	not active not set						
						error: vehicle speed error: coolant temperature	not set not set						
						error: intake air temperature	not set						
						error: evap system error: evap purge valve	not set not set				1		
Idla Canad Cristom	-												
Idle Speed System (enabled during cold start)	P050A	functional check	desired rpm - actual rpm >	100	rpm	Engine coolant start temp.	>	-10 +40	°C	7 sec	0.1 sec	4 sec	two driving
			during catalyst heating on desired rpm - actual rpm <	-200	rpm	vehicle altitude factor (sea level = 1.0)	at idle >	0.594	factor		continuous	or 50 sec	cycles each with: 4 sec
			during catalyst heating on			Engine coolant start temp.	<	80	°C			cumulative	continuous
						catalyst heating evap purge (high HC conc.)	TRUE FALSE	-	-				or 50 sec cumulative
						idle speed control catalyst heating intrusive evap test	TRUE not set		-				
						error: throttle position	not set		-				
						error: vehicle speed error: coolant temperature	not set	-	-				
						error: intake air temperature error: evap system	not set not set	-	-				
						error: evap purge valve	not set	-	-				
System Voltage			powertrain supply relay feedback input					<u> </u>					
bystem voltage	P0562	range check low	voltage	9.99	٧	time after engine start	>	180	sec	2 sec	0.1 sec	4 sec	no
	P0563	range check high	voltage	18.1	V	time after engine start	>	180	sec		continuous	or 50 sec	
						vehicle speed	>	3.1	mph			cumulative	
ECM monitoring	P0601	rationality	wrong ROM checksum during initialization	5	times	checksum calculation at power	TRUE	-	-	30 sec	0.01 sec	4 sec	code set
			reaches ROMRSTA_UM times.								ļ		
						down in the last driving cycle completely finished					at key off	continuous	then 5 sec
		rationality	wrong cyclic ROM checksum of critical regions	-		partial checksum on critical variables				30 sec	0.01 sec at key on	4 sec continuous	code set then 5 sec
	P0602	rationality -	service ECU bit set in calibration	service ECU bit s	ė -	-	-	-	-	1 sec	0.01 sec	4 sec	code set
	P0603	programming incomplete ETC monitoring controller reset	SW internal. Error from shut-down path test	3	timon	navar davin calculation	aamalath.	-	-	F 000	at key on 0.01 sec	continuous 4 sec	then 5 sec
	P0003	ETC monitoring controller reset	reaches DURNPRST_A times	3	times	power down calculation	completly			5 sec	ļ		code set
						in the last driving cycle	finished				continuous	or 50 sec	then 5 sec
												cumulative	
	P0604	functional check	RAM writeability check		-	power down calculation	completly	-	-	5 sec	0.01 sec	4 sec	code set
		cyclic RAM-check	read and write test writeability check of RAM			in the last driving cycle	finished				at key off	continuous	then 5 sec
					1	1			-	5 sec	0.01 sec	4 sec	code set
	P0606	Electronic Throttle Control (ETC) checks	SW internal	SW internal		power down calculation	completly	-					
	P0606	ETC monitoring torque comparison	SW internal	SW internal		power down calculation in the last driving cycle	completly finished	-			continuous	continuous	then 5 sec
	P0606	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal		SW internal		power down calculation in the last driving cycle		-					then 5 sec
	P0606	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck	tion crosscheck	SW internal		power down calculation in the last driving cycle		-				or 50 sec	then 5 sec
	P0606	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply v	tion crosscheck	SW internal		power down calculation in the last driving cycle		-				or 50 sec	then 5 sec
	P0606	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply v ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks	tion crosscheck	SW Internal		power down calculation in the last driving cycle		-				or 50 sec	then 5 sec
	P0606	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring engine speed signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply of the converge speed signal speed signal engine speed spe	tion crosscheck			power down calculation in the last driving cycle		-				or 50 sec	then 5 sec
Euol Bump Polon Control		ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage	tion crosscheck	SW Internal		in the last driving cycle		-			continuous	continuous or 50 sec cumulative	
Fuel Pump Relay Control Circuit	P0627	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply of the converted provided the converted supply of the converted throttle control (ETC) checks SPI failure of throttle output stage circuit continuity - open	tion crosscheck	SW Internal 2.74 2.21	V	in the last driving cycle pump command off engine speed	finished	- 80	- rpm	0.1 sec		continuous or 50 sec cumulative	two driving cycles each
Fuel Pump Relay Control Circuit		ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage	tion crosscheck I oltage crosscheck SW internal	SW Internal		pump command off engine speed battery voltage	finished	9.99	rpm V		continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec
	P0627	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply of the converted provided the converted supply of the converted throttle control (ETC) checks SPI failure of throttle output stage circuit continuity - open	tion crosscheck	SW Internal 2.74 2.21	V	in the last driving cycle pump command off engine speed	finished		rpm		continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous or 50 sec
	P0627 P0629	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply of the converted provided the converted supply of the converted throttle control (ETC) checks SPI failure of throttle output stage circuit continuity - open	tion crosscheck	SW Internal 2.74 2.21	V	pump command off engine speed battery voltage	finished	9.99	rpm V		continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous
	P0627 P0629	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply is ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage circuit continuity - open circuit continuity - voltage	tion crosscheck	2.74 2.21 2.21	V	pump command off engine speed battery voltage pump command on engine speed	finished	9.99 18.1	rpm V V	0.1 sec	continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous or 50 sec
	P0627 P0629	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply is ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage circuit continuity - open circuit continuity - voltage	tion crosscheck	2.74 2.21 2.21	V	pump command off engine speed battery voltage battery voltage	finished	9.99 18.1	rpm V V	0.1 sec	continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous or 50 sec
Circuit	P0627 P0629	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply is ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage circuit continuity - open circuit continuity - voltage	tion crosscheck	2.74 2.21 2.21	V	pump command off engine speed battery voltage pump command on engine speed battery voltage	finished	9.99 18.1 - 80 9.99	rpm V V	0.1 sec	continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous or 50 sec
	P0627 P0629 P0628	ETC monitoring torque comparison ETC monitoring engine speed signal ETC monitoring engine speed signal ETC monitoring volumetric efficiency signal ETC mon. vol. Eff., spark advance, A/D conv. grp. A, reac ETC monitoring throttle crosscheck ETC monitoring A/D conv group B, A/D converter supply is ETC monitoring redundant pedal signal Electronic Throttle Control (ETC) checks SPI failure of throttle output stage circuit continuity - open circuit continuity - voltage	tion crosscheck	2.74 2.21 2.21	V	pump command off engine speed battery voltage pump command on engine speed battery voltage	finished	9.99 18.1 - 80 9.99	rpm V V	0.1 sec	continuous	continuous or 50 sec cumulative	two driving cycles each with: 4 sec continuous or 50 sec

				SKP02 LI					I				
Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
		motor control range check			Ĭ.					5.0 sec		cumulative	
		long term			-					(latched)			
5V reference voltage								,					
monitoring	P0641	circuit continuity - open	Voltage	IC Internal	-	ignition key on	TRUE			3 sec	0.01 sec	4 sec	code set
	P0642 P0643	circuit continuity - ground circuit continuity - voltage			-	ECM power relay	TRUE		+	-	+	continuous	then 5 sec
			N-h	10 1-1									
	P0651 P0652	circuit continuity - open circuit continuity - ground	Voltage	IC Internal	 		-		+	 	+		
	P0653	circuit continuity - voltage											
	P0697	circuit continuity - open	Voltage	IC Internal	-				1				
	P0698	circuit continuity - ground			-								
	P0699	circuit continuity - voltage			-				+				
MIL Control Circuit	P0650	circuit continuity - open	Voltage	IC Internal	-	engine speed	>	80	rpm	0.01 sec	0.01 sec	4 sec	no
	-	circuit continuity - ground circuit continuity - voltage			-	battery voltage battery voltage	>	10 18.1	V		continuous	or 50 sec	(but is shown in
		Circuit Continuity - Voltage				output	activated and deacti					cumulative	Mode \$03)
Transmission Control Module MIL Illumination Request	P0700	OBD emission fault detected by the TCM	signal input		-	ļ .			-	0.01 sec	0.01 sec continuous	4 sec cont. or 50 sec	code set then 5 sec
III III III III III III III III III II	(Specific TC	M DTC shown in freeze frame)									COMMITTED	cumulative	
Mahiata and a same	-								-				
Vehicle speed sensor Manual Transmission	P0501	rationality	vehicle speed	171.9	mph	-	-	-	-	2 sec	0.1 sec	4 sec	two driving
		(high range check)									continuous	continuous	cycles each
	P0502	rationality (low range check)	vehicle speed	3.1	mph	engine speed engine speed	>	1800 3520	rpm	3 sec	+	or 50 sec cumulative	with: 4 sec continuous
						fuel shut off	TRUE	-	-				or 50 sec
					-	coolant temperature	>	40	°C				cumulative
Clutch Pedal Position Sensor	P0806	rationality -	detected clutch pedal press count <	2	count -	gear changes detected	>	20	count	approx.	0.1 sec	4 sec	code set
Manual Transmission		input cltuth pos. state changes			senso	(ratio of engine speed to				500 sec	continuous	continuous	then 5 sec
	+				presses detected	vehicle speed range change) Delay between shift detections	>	10	sec	-		or 50 sec cumulative	
						vehicle speed	>	25.0	mph				
	-				-	between gear change detects				 			
	P0807	Circuit Continuity - Ground	Voltage <	0.249	V								
	P0808	Circuit Continuity - Voltage	Voltage >	4.75	V				+	-	+		
Ignition Coil Driver Circuit Serial Com	munication												
	P167D	Internal SPI communication fault		IC Internal		hottonivoltogo		18.1	v	0.01 sec	0.01 sec	4 sec	tuo dei dos
	PIOID	internal SPI communication fault		IC Internal	-	battery voltage battery voltage	>	9	v	0.01 Sec	0.01 Sec	4 Sec	two driving cycles each
	1					engine speed	<	6000	rpm	-			with: 4 sec continuous
	1				-					-			or 50 sec
										-			cumulative
Electronic Throttle Control									+				
Electronic Throtae Control	P2100	circuit switch-off	output circuits not deactivated			-			-	0.1 sec	0.01 sec	4 sec	code set
	D2404	difference between est and	as commanded			1							then 5 sec
	P2101	difference between set and		4 50	0/	Late attended the court of a deceasing	and notice			0.5	at key on	continuous	anda ant
		actual position of throttle blade	difference between set and actual position of throttle blade >	4 50 dep. on rate of ch	% nange	electronic throttle adaptation battery voltage	not active >	7	- V	0.5 sec	at key on 0.01 sec continuous	4 sec cont. or 50 sec	code set then 5 sec
						battery voltage	>	7	V		0.01 sec continuous	4 sec cont. or 50 sec cumulative	then 5 sec
	P2105	Electronic Throttle Control (ETC) checks	actual position of throttle blade >			battery voltage power down processing	> completly			0.5 sec 5 sec	0.01 sec continuous 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec	then 5 sec
	P2105		actual position of throttle blade >			battery voltage	>	7 - 0	V		0.01 sec continuous	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed	completly finished <= <	7 - 0 40	V - mph rpm	5 sec 0.56 sec	0.01 sec continuous 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous	then 5 sec code set then 5 sec
		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature	completly finished	7 - 0 40 5.25 100.5	rpm ° C ° C	5 sec 0.56 sec once per	0.01 sec continuous 0.01 sec at key on 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature	> completly finished <= <	7 0 40 5.25 100.5 5.25	rpm °C °C °C	5 sec 0.56 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine colant temperature intake air temperature intake air temperature battery voltage	> completly finished <=	7 0 40 5.25 100.5 5.25 143.8 10.0	- mph rpm ° C ° C ° C C ° C V	5 sec 0.56 sec once per	0.01 sec continuous 0.01 sec at key on 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature	> completly finished	7 0 40 5.25 100.5 5.25 143.8	V - mph rpm ° C	5 sec 0.56 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
Electronic Throttle Control		Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path	actual position of throttle blade > [Table DWDKSBAMX]	dep. on rate of ch	nange	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine colant temperature intake air temperature intake air temperature battery voltage	> completly finished <=	7 0 40 5.25 100.5 5.25 143.8 10.0	- mph rpm ° C ° C ° C C ° C V	5 sec 0.56 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec	code set then 5 sec code set
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response	dep. on rate of ch	sec	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine speed engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position	> completly finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9	mph rpm ° C ° C ° C V %	5 sec 0.56 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response	dep. on rate of ch	sec	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed	> complety finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9	mph rpm ° C ° C ° C ° C ° C ° C ° C ° C ° C °	5 sec 0.56 sec once per ignition on	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous	then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fall or initial throttle learn failed	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check potif value at lower stop throttle potentiometer 1 voltage <	dep. on rate of ch	sec	battery voltage power down processing in the last driving cycle vehicle speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature engine coolant temperature battery voltage accelerator pedal position	> complety finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9	V	5 sec 0.56 sec once per ignition on 1 sec once	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fall or initial throttle learn failed or	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poli1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage >	0.56	sec	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine speed engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position	> completly finished <	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9	mph rpm ° C	5 sec 0.56 sec once per ignition on 1 sec once	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or secondary parameters not met	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response throttle blade return response range check potif value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage <	0.56	sec	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature intake air temperature intake air temperature engine coolant temperature intake air temperature intake air temperature intake air temperature intake air temperature battery voltage	> completly finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 100.5 143.8 10.0 14.9	mph rpm ° C ° C ° C ° C ° C ° C ° C V V	5 sec 0.56 sec once per ignition on 1 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or learning prohibited due to secondary parameters not met or	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or or	4.12 4.55	sec	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine speed engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine coolant temperature intake air temperature intake air temperature intake air temperature intake air temperature	> complety finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 143.8	mph rpm ° C ° C ° C V % mph rpm ° C °	5 sec 0.56 sec once per ignition on 1 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Electronic Throttle Control	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or secondary parameters not met	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response throttle blade return response range check potif value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage <	0.56 0.56 4.12 4.55	sec V V V	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature intake air temperature intake air temperature engine coolant temperature intake air temperature intake air temperature intake air temperature intake air temperature battery voltage	> completly finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 100.5 143.8 10.0 14.9	mph rpm ° C ° C ° C ° C ° C ° C ° C V V	5 sec 0.56 sec once per ignition on 1 sec once per ignition	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec 4 sec 4 sec	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or relarning prohibited due to secondary parameters not met or minimum throttle position	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or or	4.12 4.55	sec V V V	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine speed engine speed engine speed engine speed engine speed intake air temperature intake air temperature intake air temperature intake air temperature battery voltage accelerator pedal position	Complety finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 100.5 143.8	mph rpm ° C ° C ° C V V % % C ° C ° C ° C ° C ° C ° C ° C ° C °	5 sec 0.56 sec once per ignition on 1 sec once per ignition on	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous 4 sec continuous 4 sec continuous	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec
Fuel System Lean/Rich	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or relarning prohibited due to secondary parameters not met or minimum throttle position	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or or	4.12 4.55	sec V V V	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature intake air temperature intake air temperature engine coolant temperature intake air temperature intake air temperature intake air temperature intake air temperature battery voltage	> completly finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 100.5 143.8 10.0 14.9	V	5 sec 0.56 sec once per ignition on 1 sec once per ignition on approx.	0.01 sec continuous 0.01 sec at key on 0.01 sec at key on 0.01 sec on the sec	4 sec cont. or 50 sec cumulative 4 sec continuous	then 5 sec code set then 5 sec
Fuel System Lean/Rich Multiplicative	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or learning prohibited due to secondary parameters not met or minimum throttle position out of range	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response throttle blade return response ange check potif value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or throttle potentiometer 2 voltage < or throttle potentiometer 2 voltage >	4.12 4.55 0.988	sec V V V V V	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature intake air temperature intake air temperature intake air temperature accelerator pedal position air mass flow air mass flow air mass flow engine load	> completly finished	7 - 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 5.25 100.5 5.25 100.5 143.8 10.0 40 6.25 100.5 6.26 41.7 18.0	V	5 sec 0.56 sec once per ignition on 1 sec once per ignition on approx. 300 sec	0.01 sec continuous 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous 5 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 9 sec continuous	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec two driving cycles each with: 4 sec
Fuel System Lean/Rich Multiplicative	P2119	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or or learning prohibited due to secondary parameters not met or minimum throttle position out of range	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or or	4.12 4.55	sec V V V	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine speed engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine coolant temperature intake air temperature intake air temperature intake air temperature battery voltage accelerator pedal position air mass flow air mass flow engine load engine load engine load	Complety Finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 40 5.25 100.5 5.25 110.5 5.25 110.5 6.9 41.7	V - mph rpm ° C ° C ° C V V % mph rpm ° C ° C ° C ° C ° C ° C ° C ° C ° C °	5 sec 0.56 sec once per ignition on 1 sec once per ignition on 300 sec from engine start (after	0.01 sec continuous 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec then 5 sec then 5 sec code set then 5 sec
Fuel System Lean/Rich Multiplicative Bank 1	P2119 P2176 P2177 P2177	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or learning prohibited due to secondary parameters not met or minimum throttle position out of range	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or or throttle potentiometer 2 voltage < or or throttle potentiometer 2 voltage > delta lambda correction > or delta lambda correction <	4.12 4.55 0.341 0.988	sec V V V factor factor	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine speed engine coolant temperature intake air temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine speed engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature engine coolant temperature intake air t	> completly finished	7 0 40 5.25 100.5 5.25 143.8 10.0 14.9 0 40 40 5.25 100.5 5.25 100.1 14.9	v mph rpm °C °C °C V % mph rpm °C °C °C °C °C °C °C °C °C % % % mph rpm % % % % mph rpm % % % mph rpm % % % mph rpm rpm % % % % mph rpm rpm % % % % mph rpm rpm rpm rpm % % % mph rpm	5 sec 0.56 sec once per ignition on 1 sec once per ignition on approx. 300 sec	0.01 sec continuous 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous 5 sec continuous 6 sec continuous 7 sec continuous 7 sec continuous 9 sec continuous	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec two driving cycles each with: 4 sec
Fuel System Lean/Rich Multiplicative	P2119 P2176 P2177	Electronic Throttle Control (ETC) checks ETC monitoring watchdog shutdown path functionality of return spring throttle exchange detection learn fail or initial throttle learn failed or learning prohibited due to secondary parameters not met or minimum throttle position out of range	actual position of throttle blade > [Table DWDKSBAMX] throttle blade return response throttle blade return response range check poti1 value at lower stop throttle potentiometer 1 voltage < or throttle potentiometer 1 voltage > range check poti2 value at lower stop throttle potentiometer 2 voltage < or throttle potentiometer 2 voltage < or throttle potentiometer 2 voltage > delta lambda correction >	4.12 4.55 0.341 0.988	sec V V V V T V T Factor	battery voltage power down processing in the last driving cycle vehicle speed engine speed engine coolant temperature engine coolant temperature intake air temperature battery voltage accelerator pedal position vehicle speed engine speed engine speed engine coolant temperature battery voltage accelerator pedal position vehicle speed engine coolant temperature intake air temperature battery voltage accelerator pedal position air mass flow air mass flow engine load engine speed	> complety finished	7	mph rpm ° C ° C ° C V W % W W W W W W W W W W W W W W W W W	5 sec 0.56 sec once per ignition on 1 sec once per ignition on approx. 300 sec from engine start (after	0.01 sec continuous 0.01 sec at key on	4 sec cont. or 50 sec cumulative 4 sec continuous 5 sec continuous 6 sec continuous 6 sec cumulative	then 5 sec code set then 5 sec code set then 5 sec code set then 5 sec two driving cycles each with: 4 sec continuous or 50 sec

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Component/ System	Fault Code	Monitor Strategy Description	Primary Malfunction Signal and Criteria	Threshold Value	Specifie Units	Secondary Parameters	Enable Condition	Enable Value	Units	Time Required	Frequency of Checks	Criteria for Code	MIL Illumination
- Jotelii	Joue	Безоприон	Ognarana Omena	Value	United	intake air temperature	<= <=	60	°C	rioquilou	U. Ullocks	.c. 5000	auon
						primary A/F sensor 1 readiness	TRUE	-	-				
						primary A/F sensor 2 readiness	TRUE	-	-				
	+				-	command lambda catalyst heating	> not set	0.83	-				
						critical misfire rate detected	not set	-	<u> </u>				
	-				-	deceleration fuel cut-off	not set	-					
	+				+	transient compensation wide open throttle	not set		 		 		
						integrated fuel mass	>	700.0	g				
	+					and empty-valid fuel level	not set	-			-		
					1	error: cam control diagnosis error: inection value fault	not set	-	 -		1		
						error: catalyst damaging misfire	not set						
	-				+								
Fuel System Lean/Rich additive	+				-				 				
Bank 1	P2187	range - additive	delta fuel load correction >	6.1	%	air mass flow	>=	1.7	g/sec		-		
	P2188	low speed and low load	or delta fuel load correction <	-6.0	%	air mass flow engine load	<= >=	7.8 11.0	g/sec %				
Bank 2	P2189		delta fuel load correction >	6.1	%	engine load	<=	45.0	%				
	P2190		or delta fuel load correction <	-6.0	%	engine speed	>=	520.0	rpm				
	+					engine speed	<= TRUE	1120.0	rpm -		 		
						closed loop control engine coolant temperature	>	60	°C				
						intake air temperature	<=	60	°C				
	+	 			+	primary A/F sensor 1 readiness	TRUE	-			1		
	+	<u> </u>			+	primary A/F sensor 2 readiness command lambda	> TRUE	0.83	-		1	<u> </u>	
						catalyst heating	not set	-					ļ
						critical misfire rate detected	not set	-	ļ		-		
	+				-	deceleration fuel cut-off transient compensation	not set	-					
						wide open throttle	not set	-	<u> </u>				
					<u> </u>	integrated fuel mass	>	700.0	g				
	-				-	and empty-valid fuel level error: cam control diagnosis	not set	-	-		-		
						error: inection value fault	not set	-	T -				
						error: catalyst damaging misfire	not set	-					
	-				-								
Owigen Sener	+				+								
Oxygen Sensor sensor circuit (secondary O2)					-				+		1		
bank 1 sensor 2	P2232	sensor line short circuit	secondary O2 sensor			secondary O2 heating stable	TRUE		-	10 sec	0.01 sec	4 sec	two driving
bank 2 sensor 2	P2235	to heater output line	voltage gradient >	0.04	V	and secondary O2 dew point end	TRUE	90	ļ		continuous		cycles each
	+		within time after heater turn off < for occurrences >	4	count	for time engine running	TRUE	90	sec		· · · · · · · · · · · · · · · · · · ·	or 50 sec cumulative	with: 4 sec continuous
			out of heater turn offs	6	count	battery voltage	>	10.4	V				or 50 sec
						mod. exhaust-gas temp.	<	800	° C		ļ		cumulative
						time after dew point exceeded	>	10	sec				
Oxygen Sensor sensor response (secondary O2)	-				-	engine running battery voltage	TRUE >	10.4	- V				
bank 1 sensor 2	P2270	oscillation check low	secondary O2 sensor voltage <	0.582 0.661	V	secondary O2 sensor	ready	-	†	approx.	0.1 sec	4 sec	two driving
bank 2 sensor 2	P2272		for time >	100	sec	for time	>	10	sec	600 sec	continuous	continuous	cycles each
	-		then	0.2	lambda	secondary O2 closed loop control DFCO	FALSE	-		additional		or 50 sec	with: 4 sec
	+		ramping in enrichment by at gradient	0.017	λ/sec	engine air flow (intrusive test)	>	5.56	g/sec	time if	<u> </u>	cumulative	continuous or 50 sec
			for time (after enrichment limit reached)	10	sec	and engine air flow	<	33.33	g/sec	fuel level			cumulative
	+				-	for time		9.72	sec	is low and	-		
	+				+	lengine air flow (passive monitor) sec. O2 trim - fast lean correction	FALSE	9.72	g/sec	not failed 600 sec			
						sec. O2 trim - fast rich correction	FALSE						
	+	<u> </u>			+	sec. O2 trim - slow correction sec. O2 aging DFCO test failed	FALSE FALSE	-			1		
	+	<u> </u>			+	engine	running		1		1		
						scheduled by System Manager	TRUE						ļ
bank 1 sensor 2	P2271	oscillation check high	secondary O2 sensor voltage >	0.582 0.661		engine running	TRUE		1				
bank 2 sensor 2	P2273		for time >	100	sec	secondary O2 sensor	> ready	10.4	V -				
	+		ramping in enleanment by	0.07	lambda	for time	ready >	10	sec		1		
			at gradient	0.017	λ/sec	secondary O2 closed loop control	active						
	+		for time (after enleanment limit reached)	10	sec	DFCO engine air flow (intrusive test)	FALSE >	5.56	g/sec				
	+				+	and engine air flow	~	33.33	g/sec		1		
						for time	>	3	sec				
	+				+	engine air flow (passive monitor)	> FALSE	9.72	g/sec		1	ļ	
	+				+	sec. O2 trim - fast lean correction sec. O2 trim - fast rich correction	FALSE		+		1		
						sec. O2 trim - slow correction	FALSE						
	+				+	sec. O2 aging DFCO test failed	FALSE	-	+		 		
	+	1			+	scheduled by System Manager	running TRUE		+		1		
Real time clock	i	· 							i				
Engine Off Timer Status	P2610	engine off timer signal check	engine off timer not valid	3.0		engine start successful during previous dr	TRUE		<u> </u>	0.1 sec	0.1 sec	4 sec	two driving
(performed during	+				+	real time clock active	TRUE	-			continuous		cycles each
engine off operation)	+				+			-	+			or 50 sec cumulative	with: 4 sec continuous
													or 50 sec
													cumulative
Real time clock	Pooto	anning off times in grown and all	reference electrification de la			anging start guassorf d	TDUE	-		0.4	0.4	4677	huo del de e
Engine Off Timer Rationality	P2610	engine off timer incremental	reference clock time delta -	6	counts	engine start successful	TRUE	L	<u> </u>	0.1 sec	0.1 sec	4 sec	two driving

				INI OZ LI									
Component/	Fault	Monitor Strategy	Primary Malfunction	Threshold	Specifie	Secondary	Enable	Enable	Units	Time	Frequency	Criteria	MIL
System	Code	Description	Signal and Criteria	Value	Units	Parameters	Condition	Value		Required	of Checks	for Code	Illumination
(performed during		check	engine off timer delta >			failure counts	>=	3	3		continuous	continuous	cycles each
engine running operation)												or 50 sec	with: 4 sec
	İ											cumulative	continuous
(reference clock = independently			reference clock time delta -	6	counts	engine start successful	TRUE	-	-				or 50 sec
captured time value)			engine off timer delta <		-	failure counts	>=	3	counts				cumulative
OBD ISO-15765 Communication Bus					1								
	U0073	ISO-15765 Bus Error	Invalid Message Received			CAN Bus	initialized			1 sec	0.01 sec	4 sec	code set
			or Dual Port Ram Hardware Error;			consisting of:	and ready			0.01 sec	continuous	continuous	then 5 sec
			or No Communication / Bus Off			ignition on for	>	3	sec	0.02 sec		or 50 sec	
						battery voltage	>	9.9	V			cumulative	
						battery voltage	<	18.1	V				
						normal bus communication	running	-	-				
	U0101	Communication with TCM	TCM Message Timeout	message		Automatic Transmission	equipped	-	-	2.5 sec	0.01 sec	4 sec	code set
				missing,		CAN Bus	initialized	-	-		continuous	continuous	then 5 sec
				delayed,		consisting of:	and ready					or 50 sec	
				or		ignition on for	>	3	sec			cumulative	
				invalid		battery voltage	>	9.9	V				
				content		battery voltage	<	18.1	V				
1	1				1	normal bus communication	running	-					

LOOK-UP TABLES (COMMON)

P0011, P0021

KFDWNWDMXE / 2 (internal manufacturer cross reference)

Maximum Allowed Deviation - Intake Camshaft Position

maximum Anowed Deviation - intake Gamshart i Gstdon											
degrees crank	Modeled Engin	e Oil Temperat	ure (° C)								
Engine Speed (rpm)	0	60	80	100	130						
800	6.00	6.00	7.00	9.00	11.00						
1200	6.00	6.00	6.00	6.00	7.00						
1600	6.00	6.00	6.00	6.00	7.00						
2000	6.00	6.00	6.00	6.00	6.00						
2500	6.00	6.00	6.00	6.00	6.00						
4000	6.00	6.00	6.00	6.00	6.00						

P0116

KLTCWCSTAB

(internal manufacturer cross reference)

Engine coolant temperature model based on ambient temperature + engine off timer output

Time (seconds)	1000	7200	10800	14400	21600	32400	43200	50400
Coefficient:	0.996	0.488	0.270	0.191	0.106	0.063	0.031	0.008

P0141, P0161

KFRINH / 2

(internal manufacturer cross reference)

Sensor Element (Ceramic) Impedance, Nominal Value - Secondary O2 Sensor

Ohms	Modeled Exha	ust Gas Tempe	rature at Secon	dary O2 Senso	r(°C)
O2 Heater Power (watts)	300	360	420	480	540
0.7	344	328	304	272	224
0.8	248	240	232	200	168
1.0	200	184	168	152	128

296

FRINH1/2

(internal manufacturer cross reference)

Multiplication Factor for Internal Resistance KFRINH Nominal Value - Secondary O2 Sensor

	Modeled Exha	ust Gas Tempe	rature at Secon	dary O2 Senso	r (° C)
	300	360	420	480	540
factor	15.00	10.00	6.00	4.00	2.50

LOOK-UP TABLES (COMMON)

P0327, P0332, P0328, P0333

NGKRWN (internal manufacturer cross reference)

RPM dynamic threshold for disabling knock diagnosis

RPM	400.0	800.0	1200.0	1600.0	2000.0	2400.0	2800	3200	3600	4000	4400	4800	5200
RPM per second	500.01	600.01	800.01	1000.01	1200.02	1400.02	1600.02	1700.02	1800	1900	2000	2100	2100

P0327, P0332

UDKSNU (internal manufacturer cross reference)

Reference voltage threshold for knock sensor diagnosis - Lower Limit

Engine Speed (rpm)													
	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200
Peak RMS Voltage (V)	0.056	0.060	0.067	0.079	0.089	0.104	0.121	0.132	0.139	0.145	0.155	0.181	0.192

P0328, P0333

UDKSNO (internal manufacturer cross reference)

Reference voltage threshold for knock sensor diagnosis - Upper Limit

Engine Speed (rpm)													
	400	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800	5200
Peak RMS Voltage (V)	3.120	4.904	5.796	6.815	7.834	9.108	10.000	11.911	18.790	22.714	25.287	27.197	30.637

P0442

KFEONVPT (internal manufacturer cross reference)

Vacuum / Pressure Threshold for Fuel Tank Leak Detection

Vacuum / Pressure (hPa)	Ambient Temp	erature (Model)	(C)						
Fuel Level (%)	0	5.3	9.8	15	20.3	24.8	30	34.5	39.8
5%	10.61	12.07	12.60	11.25	9.92	9.67	12.24	14.02	14.32
16%	10.94	12.67	13.19	11.57	10.03	10.08	12.58	14.16	14.22
27%	8.27	9.99	10.91	10.24	9.59	8.29	10.29	12.17	13.60
38%	6.93	8.24	8.14	8.64	9.83	7.44	7.82	8.67	8.95
49%	7.32	8.11	6.36	6.43	7.50	5.24	7.80	8.91	8.76
60%	7.09	7.29	7.01	6.53	5.82	5.60	7.57	8.95	8.78
71%	5.03	4.72	5.71	7.15	6.68	6.16	7.72	8.91	8.78
82%	5.48	5.53	5.30	6.80	6.15	5.67	7.62	8.94	8.78
93%	5.36	5.35	5.40	6.83	6.16	5.63	7.61	8.94	8.78

Tank Capacity 65.8 Liters

Vacuum / Pressure (Pa)	Ambient Temp	erature (Model)	(C)						
Fuel Level (%)	0	5.3	9.8	15	20.3	24.8	30	34.5	39.8
5%	1061	1207	1260	1125	992	967	1224	1402	1432
16%	1094	1267	1319	1157	1003	1008	1258	1416	1422
27%	827	999	1091	1024	959	829	1029	1217	1360
38%	693	824	814	864	983	744	782	867	895
49%	732	811	636	643	750	524	780	891	876
60%	709	729	701	653	582	560	757	895	878
71%	503	472	571	715	668	616	772	891	878
82%	548	553	530	680	615	567	762	894	878
93%	536	535	540	683	616	563	761	894	878

LOOK-UP TABLES (COMMON)

P0455 KLTLDSFS05 (internal manufacturer cross reference)

Vacuum Gradient Threshold for Fuel Tank Leak Detection

Fuel Level liters	0	10	20	25	30	35	40	45	50	60
hPa / sec	0.045	0.045	0.052	0.054	0.055	0.056	0.068	0.076	0.076	0.076
	Tank Capacity	68.1	Liters							
Fuel Level (%)	0	14.7	29.4	36.7	44.1	51.4	58.7	66.1	73.4	88.1
Pa / sec	4.5	4.5	5.2	5.4	5.5	5.6	6.8	7.6	7.6	7.6

P2101 DWDKSBAMX (internal manufacturer cross reference)

Maximum Throttle Angle Deviation per computation cycle

	Percent Throttl	Percent Throttle Opening (%)							
	0	0.3	1	5	15				
Percent Throttle Delta (%)	4	6	11	20	50				