2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
Mass Air Flow Sensor	P0101	Rationality check	difference between measured and	< see table		difference between both	<	0.6	%	3 sec	0.1 sec	50 sec	two driving
			calculated air mass flow	GRDSMSS + DGRDSDMSS		throttle signals						cumulative	cycles
						throttle 1 / throttle 2	<	0.5	-				50 sec
			gradient of above signal	> see GRDSGDMSS		Intake manifold pressure							cumulative
						/ front of throttle	<	0.95	-				
						WOT	not set	not set	-				
						integartor stop	not set	not set	-				
						time	>	3	sec				
	P0102	range check low	Measured value	< see table KFMLDMN		battery voltage	>	10.5	V	0.6sec	0.01 sec		
				> 0.6	sec	time after start	>	0.6	sec				
	P0103	range check high	Measured value	> see table KFMLDMX		Error: throttle position	not set		-	0.6sec	0.01 sec		
			time	> 0.6	sec								
Intake air temperature sensor	P0112	range check high	temperature > threshold	139.5	°C	time after start	>	180	sec	2 sec	0.1 sec	50 sec	two driving
	P0113	range check low	temperature < threshold	-42.75	°C	time in idle	>	10	sec			cumulative	cycles
						time	>	2	sec				50 sec
													cumulative
Coolant temperature sensor	P0116	plausibility check	(modeled coolant temperature	12	°C	engine speed	>	20	rpm	2 sec	0.1 sec	50 sec	two driving
			- measured coolant temperature)									cumulative	cycles
	P0117	range check high	temperature	139.5	°C								50 sec
	P0118	range check low	temperature	-42.75	°C								cumulative
	P0125	signal check	timer depending on airflow			time after engine start	>	120 … 300	sec				
						(timer depending on airflow)							
Engine Coolant	P0128	Coolant Temperature	(modeled coolant temperature	> 10.5	°C	debouncing time	>	20	sec	about 1000 se	0.1 sec	50 sec	two driving
Thermostat Monitoring		Below Thermostat	- measured coolant temperature) >			fuel cut-off	not set		-	during		cumulative	cycles
		Regulating Temperature				error: engine coolant temp	not set		-	warm up			50 sec
		(plausibility check)	Calculated reference coolant model Limit	87	°C	error: vehicle speed	not set		-				cumulative
						ambient temperature	>	-10.5	°C				
						ambient temperature	<	45	°C				
						vehicle speed	>	9.38	mph				
						engine speed	>	960	rpm				
						engine coolant temp at start	<	50.3	°C				
						integrated air mass flow	>	3000	g				
						engine soaking time	>	600	sec				
						engine block heating	not detected	-	-				
						or engine running	>	25	sec				
Throttle Position													
Sensor 1 (primary)	P0121	range check poti voltage	sensor performance	> 9	%	battery voltage	>	7	V	continuous	0.01 sec	50 sec	two driving
	P0122	plausibility to other poti	sensor circuit low voltage	< 0,195	V							cumulative	cycles
	P0123		sensor circuit high voltage	> 4,609	V								50 sec
													cumulative
Sensor 2 (redundant)	P0221	range check poti voltage,	sensor performance	> 9	%	battery voltage	>	7	V				
	P0222	plausibility to other poti	sensor circuit low voltage	< 0,156	V								
	P0223		sensor circuit high voltage	> 4,805	V								
Primary A/F sensor		circuit continuity	sensor signal voltage for time	> 4.81	V	none				2 sec	0.01 sec	50 sec	two driving
Bank 1	P0130		or			error: primary A/F heating	not set	-	-			cumulative	cycles
Bank 2	P0150					error: secondary O2 sensor	not set	-	-	2 … 16 sec			50 sec
						error: secondary O2 aging	not set	-	-				cumulative
			sensor signal value for time	> 0.995		indicator self adjust							
			sensor signal value for time	< 1.005		secondary O2 sensor voltage	>	0.85	V				
						secondary O2 sensor voltage	<	0.103	V				
						secondary O2 sensor voltage	>	0.85	V	2 … 16 sec			
			or			error: secondary O2 sensor	not set	-	-				
			sensor signal value	> 1.2		error: secondary O2 aging	not set	-	-				
						secondary O2 sensor voltage	<	0.103	V	2 … 16 sec			
			or			error: secondary O2 sensor	not set	-	-				
			sensor signal value	< 0.8		error: secondary O2 aging	not set	-	-				
Primary A/F sensor		range check low	standardized dynamic value	< 0.75	ratio	volumetric efficiency	>	23.25	%	approx.	0.01 sec	50 sec	two driving
Bank 1	P0133		/ modeled expected value <			volumetric efficiency	<	45	%	500 sec		cumulative	cycles
Bank 2	P0153					engine speed	>	1400	rpm				50s

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
						engine speed	<	2520	rpm				cumulative
						lambda value	>	0.96					
						lambda value	<	1.04					
						event counter	>	80	events				
						error: misfire	not set	-	-				
						error: purge valve	not set	-	-				
						error: evap system	not set	-	-				
						error: fuel trim	not set	-	-				
						high canister loading factor	not detected	-	-				
						closed loop control maximum							
						closed loop control minimum							
Primary A/F sensor		range check high	lambda offset	0.03		engine				2 sec	0.01 sec	50 sec	two driving
Bank 1	P0132					error: secondary O2 sensor	not set					cumulative	cycles
Bank 2	P0152					error: secondary O2 aging	not set		-				50s
						secondary O2 sensor							cumulative
						aging diagnosis	complete						
Primary A/F sensor		no activity detected	lambda value	0.1		event counter	>	30	-	approx.	0.01 sec	50 sec	two driving
Bank 1	P0134					timer	>	0.5	sec	100 sec		cumulative	cycles
Bank 2	P0154					exhaut gas model temp.	>	460	°C				50s
						time after engine start	>	25	sec				cumulative
						forced lambda amplitude	active	active	-				
						high canister loading factor	FALSE		-				
						O2 sensor max value exceede	FALSE		-				
Secondary A/F sensor			sensor signal voltage	< 0.040	V	engine	running			20 sec	0.02 sec	50 sec	two driving
Bank 1	P0137	plausibility check of	time			Catalyst temperature model	<	800	°C			cumulative	cycles
Bank 2	P0157	sensor signal				battery voltage	>	10.5	V				50s
			or			lambda target value	=	1		600 sec			cumulative
						time after dew-point	>	90	sec	additional			
						engine coolant temperature	<	143	°C	if fuel level			
						coolant temp at engine stop	>	-48	°C	is valid and			
						error: engine coolant temp	not set	-	-	low			
Secondary A/F sensor						engine	running			5.1 sec	0.02 sec	50 sec	two driving
Bank 1	P0138	range check high	sensor signal voltage	> 1.5	V	modeled catalyst temperature	<	800	°C			cumulative	cycles
Bank 2	P0158		time			battery voltage	>	10.5	V				50s
						lambda target value	=	1					cumulative
						time after dew-point	>	90	sec				
	P0138	oscillation check high/low		< see table KFUSHK	V	Secondary closed loop control	active		-	approx.			
	P0158									1000 sec			
Secondary A/F sensor		oscillation check high/low	stuck sensor voltage	< see table KFUSHK	V	Secondary closed loop control	active			approx.	0.01 sec	50 sec	two driving
Bank 1	P0139									1000 sec		cumulative	cycles
Bank 2	P0159			> 0.2	V	fuel cut-off	active						50s
													cumulative
Secondary A/F sensor		no activity detected	sensor signal voltage >	> 0.421	V	engine	running			60 sec	0.02 sec	50 sec	two driving
Bank 1	P0140		sensor signal voltage <	< 0.479	V	modeled catalyst temperature	<	800	°C			cumulative	cycles
Bank 2	P0160					battery voltage	>	10.5	V	1150 sec			50s
						lambda target value	=	1					cumulative
						time after exhaust dew-point	>	90	sec				
Secondary heater	P0141	sensor element impedance	measured sensor impedance >	> see tables KFRINH1 *	Ohms	modeled catalyst temperature	>	400	°C	15 sec	0.1 sec	50 sec	two driving
Bank 1				FRINH1		modeled catalyst temperature	<	580	°C			cumulative	cycles
Bank 2	P0161		measured sensor impedance >	> see tables KFRINH2 *		error: O2 heater circuit	not set	-	-				50s
				FRINH2		time after exhaust dew-point	>	15	sec				cumulative
Secondary heater power stage check				IC internal		engine speed	>	40	rpm	0.5 sec	0.1 sec	50 sec	two driving
Bank 1	P0036	open circuit	Voltage			battery voltage	>	7.5	V			cumulative	cycles
Bank 2	P0056					battery voltage	<	17.3	V				50s
						output	activated and deactivated for complete checking						cumulative
	P0037	range check low											
	P0057												
	P0038	range check high											
	P0058												
Heater front													
Bank 1	P0030	signal check	heater voltage	> 2.34	V	battery voltage	>	10.5	V	0.04 sec	0.01 sec	50 sec	two driving
Bank 2	P0050			< 3.6	V		<	17.3	V			cumulative	cycles

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
						heater output stage	not active						50s
						engine speed	running						cumulative
	P0031	range check low	heater voltage	> 2.34	V	battery voltage	>	10.5	V				
	P0051						<	17.3	V				
	P0032	range check high	heater voltage	< 3.6	V	heater output stage	active		-				
	P0052					engine speed	running		-				
	P0135	plausibility check	time after heater on	> 20	sec	battery voltage	>	10.5	V	20 sec			
	P0155						<	17.3	V				
						heater output stage	active		-				
						engine speed	running		-				
Fuel system													
Bank 1	P0171	fuel trim limits exceeded	additive or multiplicative	> 7.70	%	fuel system status	closed loop		closed loop	30 sec	0.2 sec	50 sec	two driving
				> 24.0	%	fuel trim adaptation	active		-			cumulative	cycles
				> 24.0	%					once			50s
										adaptation			cumulative
Bank 1	P0172			< -7.7	%					has exceeded			
				< -24	%					the limit			
				<-24	%								
Bank 2	P0174												
				> 7.70	%								
				> 24.0	%								
				> 24.0	%								
Bank 2	P0175			< -7.7	%								
				< -24	%								
				<-24	%								
Fuel Injector													
Cylinder 1	P0201	open circuit	voltage	IC internal	IC internal	engine speed	>	40	rpm	0.5 sec	0.1 sec	50 sec	two driving
Cylinder 2	P0202					battery voltage	>	7.5	V			cumulative	cycles
Cylinder 3	P0203					battery voltage	<	17.3	V				50s
Cylinder 4	P0204					output	activated and deactivated for complete checking						cumulative
Cylinder 5	P0205												
Cylinder 6	P0206												
Cylinder 1	P0261	range check low											
Cylinder 2	P0264												
Cylinder 3	P0267												
Cylinder 4	P0270												
Cylinder 5	P0273												
Cylinder 6	P0276												
Cylinder 1	P0262	range check high											
Cylinder 2	P0265												
Cylinder 3	P0268												
Cylinder 4	P0271												
Cylinder 5	P0274												
Cylinder 6	P0277												
Misfire		crankshaft speed	Emissions relevant misfire rate	1	%	engine speed	>	480	rpm	1000 revs	continuously	detected	Fault during
Multiple Cylinder	P0300	fluctuation cylinder 1 to				engine speed	<	6520	rpm		monitored	during	1st interval:
Cylinder 1	P0301	cylinder 6				relative load (idle, no drive)	>	13.9	%			1st interval:	2 faults in
Cylinder 2	P0302					relative load (drive)	>	13.5…33.8	%		3X per rev	1 fault	2 different
Cylinder 3	P0303					engine speed change	<	4000	rpm/sec				drive cycles.
Cylinder 4	P0304					load change	<	300	%/segment				
Cylinder 5	P0305					ignitions after engine start	>	5	ignitions				Fault during
Cylinder 6	P0306					air temperature	>	-30	°C			detected	remaining
						rough road	not detected	-	-			during	intervals:
						traction control	off	-	-			remaining	8 faults in 2
						leak detection	off	-	-			intervals:	different

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
						ABS	not active	-	-			4 faults	drive cycles
						engine drag control	not active	-	-				with at least
						fuel cut off	not active	-	-				4 faults in
						fuel level	>=	11.6	%				each.
						OR fuel level	<	11.6	%				
						AND solid misfire MIL	on	-	-				
						OR fuel level error	set	-	-				
						error: throttle position	not set	-	-				
						error: crankshaft sensor	not set	-	-			OR	
						error: canister purge valve	not set	-	-				
			OR										
			Catalyst damaging misfire rate			Includes all the above with the				1000 revs		1 fault	First
						following exceptions:				First interval			occurrence:
						First interval extention	<	48	°C	200 revs			immediate
						fuel level	>=	11.6	%	all remaining			flashing
						OR fuel level	<	11.6	%	intervals			while error
				16000	weighted	AND blinking MIL	-	-	-				present, then
				(see table KFKSWF)	counts	AND NOT first blink	-	-	-				no MIL
													with no error,
				3200	weighted								
				(see table KFKSWF)	counts								Second
													occurrence:
													immediate
													flashing
													while error
													present, then
													solid MIL
													with no error,
Fault with low fuel	P0313	OBD error with low fuel	fuel level <	11.6	%	error: misfire	active	-	-	10 sec	1.0 sec	50 sec	no
						OR error: fuel trim	active	-	-			cumulative	
Rough Road Signal	P0318	signal missing	signal missing		-	no	-	-	-	1.0 sec	0.1 sec	50 sec	no
												cumulative	
Knock control module	P0324	rationality	IC output voltage	> 44.983	V/s	engine coolant temperature	>	39.8	°C	continuous	0.1 sec	50 sec	two driving
				> 0.215	V	knock control	active					cumulative	cycles
				< 3.691	V				rpm				50s
													cumulative
Knock sensor										approx.	0.1 sec	50 sec	two driving
Bank 1	P0327	range check low	voltage <	< see table UDKSNU	V	engine coolant temperature	>	39.75	°C	300 sec		cumulative	cycles
	P0328	range check high	voltage >	> see table UDKSNO	V	engine speed	>	2000	rpm				50s
													cumulative
Bank 2	P0332	range check low	voltage <	< see table UDKSNU	V								
	P0333	range check high	voltage >	> see table UDKSNO	V								
Crankshaft Position sensor	P0335	malfunction	no signal from crank sensor	-	-	number of cam rotations >	8	-	-	approx.	0.01 sec	50 sec	two driving
						camshaft sensor signal	active		-	5 sec		cumulative	cycles
													50s
													cumulative
Camshaft position sensor	P0341	rationality	inconsistent cam high / low state	>= 5	times	engine speed	>	20	rpm	5 sec	0.1 sec	50 sec	two driving
	P0342	range check low	cam continuously low									cumulative	cycles
	P0343	range check high	cam continuously high										50s
													cumulative
Catalyst monitoring		Determining the oxygen	Catalyst quality factor	> 0.625	-	engine speed	>	1000	rpm	approx.	0.05 sec	1 fault	two driving
Bank 1	P0421	storage capability by					<	2120	rpm	500 sec	once per		cycles
Bank 2	P0431	comparing the amplitude				volumetric efficiency	>	20 …. 24	%		driving cycle		
		obtained from secondary					<	30 …. 45	%				
		O2 sensor to a modeled				fuel system status							
		sensor signal				cumulative monitoring time	=>	65	sec				
						modeled catalyst temperature	>	350	°C				
						modeled signal amplitude	>	0.36					
						catalyst load value	<	10 … 30	1/sec				
						canister loading factor	<	6					
						error: primary A/F sensor	not set		-				
						error: secondary O2 sensor	not set						

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
						error: misfire	not set						
						error: mass air flow	not set						
						error: throttle position	not set						
						error: evap system	not set						
						error: fuel trim	not set						
Evaporative system and leak monitor													
Small Leak - 0.020 "	P0442	natural pressure/vacuum	filtered fault index >	0.75	-	estimated ambient air temp	>	1.5	° C	approx.	0.1 sec	filter	one driving
		in tank				estimated ambient air temp	<	32	° C	600 sec	once per	value	cycle
			based on:			coolant temp at engine stop	>	80	° C	each test	engine off	must	
			pressure detected >	30	Pa	engine run time	>	600	sec		cycle	be	once filter
						distance travelled	>	5	miles	approx.		exceeded	value
						above vehicle speed	>	1.5625	mph	6 test			has
			then			fuel volatility	<	7	-	average			been
			vacuum detected <	30	Pa	fuel level	>	11.6	%	run length			exceeded
						fuel level	<	88.5	%				
						current fuel level - initial key off	>	10	%				
						error: vehicle speed	not set	-	-				
						error: engine coolant temp	not set	-	-				
						error: purge valve	not set	-	-				
						error: fuel tank pressure	not set	-	-				
						error: system voltage	not set	-	-				
						error: canister vent valve	not set	-	-				
						altitude adaption	valid	-	-				
						tank vacuum out of range	FALSE	-	-				
						vacuum pull down suspect	small leak	-	-				
						Vacuum pull down	complete	-	-				
						intake air temp - eng start temp	<	10	° C				
						engine coolant temp at start	<	40	° C				
						intake air temperature	>	1.5	° C				
						intake air temperature	<	40	° C				
						time since previous test	>	0	sec				
						ambient pressure	>	68	kPa				
						battery voltage	>	10.5	v				
						last driving cycle distance trav.	>	12.4	miles				
Tank vent valve	P0446	underpressure in tank	tank pressure	>-1800	Pa	fuel system status	closed loop	-	-	approx.	0.1 sec	50 sec	two driving
						vehicle speed	<	1.875	mph	20 sec		cumulative	cycles
						engine	idling	-	-		only one		50 sec
						battery voltage	>	10.5	V		completed		cumulative
						calculated HC concentration	<	20	factor		test per		
						fuel tank pressure	>	-3800	Pa		driving cycle		
						fuel tank pressure	<	1000	Pa		is allowed.		
						ratio MAP/Baro	<	0.555	-				
						intake air temp	>	3.8	° C				
						intake air temp	<	35	° C				
						fuel level	>	11.6	%		The test		
						fuel level	<	88.5	%		will attempt		
						eng. start temp - amb. temp	<	10	° C		to run up to		
						number of attempts	<	10	-		the maximum		
						error: mass air flow	not set				number of		
						error: throttle position	not set				attempts		
						error: engine coolant temp	not set				allowed		
						error: intake air temperature	not set				until		
						error: fuel tank pressure	not set				successfully		
						error: system voltage	not set				completed.		
						error: purge valve circuit	not set						
						error: vehicle speed	not set						
						error: canister vent valve	not set						
						error: purge valve flow	not set						
						error: accelerator pedal	not set						
Leaking purge valve	P0496	underpressure in tank	tank pressure	-60	Pa	fuel system status	closed loop	-	-	approx.	0.1 sec	50 sec	two driving
			& within the time elapsed	4	sec	vehicle speed	<	1.875	mph	20 sec		cumulative	cycles
						engine	idling	-	-		only one		50 sec
						battery voltage	>	10.5	V		completed		cumulative
						battery voltage	<	17.3	V		test per		

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
						calculated HC conc. of	<	20	-		driving cycle		
						fuel tank pressure	>	-3800	Pa		is allowed.		
						fuel tank pressure	<	1000	Pa				
						ratio MAP/Baro	<	0.555	-				
						intake air temperature	>	3.8	° C				
						intake air temperature	<	35	° C		The test		
						eng. start temp - ambient temp	<	10	° C		will attempt		
						number of attempts	<	10	-		to run up to		
						error: mass air flow	not set				the maximum		
						error: engine coolant temp	not set				number of		
						error: intake air temperature	not set				attempts		
						error: purge valve flow	not set				allowed		
						error: fuel tank pressure	not set				until		
						error: throttle position	not set				successfully		
						error: system voltage	not set				completed.		
						error: canister vent valve	not set						
						error: purge valve circuit	not set						
						error: accelerator pedal	not set						
						error: vehicle speed	not set						
						engine	idling	-	-				40 sec
						fuel level	>	11.6	%				
						fuel level	<	88.5	%				
						fuel mixture adaptation	stable	-	-				
Purge control valve circuit	P0443	open circuit	voltage	IC internal		engine speed	>	40	rpm	0.5 sec	0.1 sec	50 sec	two driving
	P0444	range check low				battery voltage	>	7.5	V			cumulative	cycles
	P0445	range check high				battery voltage	<	17.3	V				50s
						output	activated and deactivated for complete checking						cumulative
Evaporative emission control	P0447	range check low	voltage	IC internal		engine speed	>	40	rpm	0.5 sec	0.1 sec	50 sec	two driving
system vent valve	P0448	range check high				battery voltage	>	7.5	V			cumulative	cycles
	P0449	open circuit				battery voltage	<	17.3	V				50s
						output	activated and deactivated for complete checking						cumulative
Tank System pressure sensor	P0451	rationality	sensor signal value	>= 2500	Pa	engine status	idle	-	-	3 sec	0.1 sec	50 sec	two driving
												cumulative	cycles
	P0452	range check low	sensor signal value	< - 2812.5	Pa	coolant temperature at start	<=	33	° C				50s
						time after start	>	1	sec				cumulative
	P0453	range check high	sensor signal value	> 2937.5	Pa	-	-	-	-				
Rough leak	P0455	vacuum pulldown slope	absolute value of vacuum pulldown slope	500	Pa/s	fuel system status	closed loop	-	-	approx.	0.1 sec	50 sec	two driving
						vehicle speed	<	1.875	mph	20 sec		cumulative	cycles
						engine	idling	-	-		only one		50 sec
						battery voltage	>	10.5	V		completed		cumulative
						battery voltage	<	17.3	V		test per		
						calculated HC conc. of	<	20	-		driving cycle		
						fuel tank pressure	>	-3800	Pa		is allowed.		
						fuel tank pressure	<	1000	Pa				
						ratio MAP/Baro	<	0.555	-				
						intake air temp	>	3.8	° C				
						intake air temp	<	35	° C		The test		
						fuel level	>	11.6	%		will attempt		
						fuel level	<	88.5	%		to run up to		
						engine start temp - amb. temp	<	10	° C		the maximum		
						fuel mixture adapt stable	set				number of		
						number of attempts	<	10	-		attempts		
						error: mass air flow	not set				allowed		
						error: throttle position	not set				until		
						error: coolant temp	not set				successfully		
						error: intake air temp	not set				completed.		
						error: fuel tank pres	not set						
						error: system voltage	not set						
						error: purge valve	not set						
						error: vehicle speed	not set						
						error: canister vent valve	not set						
						error: purge valve flow	not set						
						error: accelerator pedal	not set						
Fuel level sensor	P0462	range check low		< 0.35	V	-	-	-	-	5 sec	0.1 sec	50 sec	no

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
	P0463	range check high	voltage	> 4.49	V							cumulative	
	P0461	rationality	Liter	more than +/- 15 L	-								
				difference between									
				calculated and									
				measured fuel level after									
				calculating a fuel									
				consumption of 20 L									
Cooling fan control ciruit	P0480	open circuit	voltage	IC internal		engine speed	>	40	rpm	0.5 sec	0.1 sec	50 sec	two driving
Fan A	P0691	range check low				battery voltage	>	7.5	V			cumulative	cycles
	P0692	range check high				battery voltage	<	17.3	V				50s
						output	activated and deactivated for complete checking						cumulative
Fan B	P0481	open circuit											
	P0693	range check low							-				
	P0694	range check high											
vehicle speed sensor	P0500	rationality	vehicle speed	< 12.4	mph	engaged gear	=	4		1 sec	0.1 sec	50 sec	two driving
						error: transmission gear state	FALSE	-	-			cumulative	cycles
						coolant temperature	>	64.5	° C				50s
						engine speed	>	1800	rpm				cumulative
						engine speed	<	6500	rpm				
idle speed control	P0506	functional check	actual - desired rpm >	> 100	rpm	coolant temperature	>	80.25	° C	2 sec	0.2 sec	50 sec	two driving
			actual - desired rpm <	< -200	rpm	intake air temperature	>	34.5	° C			cumulative	cycles
	P0507		or			vehicle speed	=	0	mph				50s
			fuel cut off during this idle	> 3	times	high canister loading factor	not detected						cumulative
						evap diagnostic intrusive test	not active						
						error: throttle position	not set	-	-				
						error: vehicle speed	not set	-	-				
						error: engine coolant temp	not set	-	-				
						error: intake air temperature	not set	-	-				
						error: evap. System leak	not set	-	-				
						error: canister purge valve	not set	-	-				
						volumetric efficiency	<	50.25	%				
system voltage	P0560	open circuit	system voltage <	2.5	V					0.2 sec	0.01 sec	50 sec	no
	P0562	range check low	system voltage <	9	V	time after start	>	180	sec			cumulative	
	P0563	range check high	system voltage >	17.3	V	vehicle speed	>	0	mph				
calculator monitoring	P0601	ROM check	check sum ROM error			no				30 sec	0.01 sec	5 sec	5 sec
calculator monitoring	P0603	calculator check	calculator check			no				0.05 sec	0.01 sec	5 sec	5 sec
calculator monitoring	P0604	RAM check	Read- and write-test			no				0.05 sec	0.01 sec	5 sec	5 sec
function monitoring	P0606	monitoring torque safety	torque out of range calculator error			engine speed	>	1120	rpm	0.05 sec	0.01 sec	5 sec	5 sec
		fuel cut off	in function										
Electronic Throttle Control	P0638	range check low	powerstage duty cycle <	-80	%	battery voltage	>	7	V	0.6 sec		5.0 sec	5 sec
										reversible			
		range check high	powerstage duty cycle >	80	%	battery voltage				5.0 sec			
										latched			
Malfunction indicator (MIL) request	P0700	MIL control request from	OBD2 failure			time	>	5	sec	2 sec	1 sec	5 sec	5 sec
		TCM				no TCM failure	not set		-				
		(Specific TCM DTC shown											
		in freeze frame)											
DV-E limp home air position	P1551	limp-home throttle position	throttle position	< 1.699	%	vehicle speed	<=	0	mph	0.5 sec	0.01 sec	50 sec	two driving
		out of range	OR			engine speed	<	40	rpm			cumulative	cycles
			throttle position	> 11.73	%	engine coolant temperature	>=	5.3	° C				50 sec
						engine coolant temperature	<=	99.8	° C				cumulative
						intake air temperature	>=	5.3	° C				
						battery voltage	>	10	V				
						accelerator pedal position	<	14.9	%				
DV-E power stage switch off	P2100	powerstage circuit	output circuits not deactivated	-	-	-	-	-	-	0.1 sec	0.01 sec	5 sec	5 sec
		switch-off	as commanded										
DV-E position throttle blade	P2101	difference between set	difference between set and actual positior	typical 4% to 50%		electronic throttle adaptation	not active	-	-	0.5 sec	0.001 sec	5 sec	5 sec
		and actual position		dependent on		battery voltage	>	7	V				
		of throttle blade		rate of change									

2004 3.0L (L81) and 3.2L (LA3)
ENGINE DIAGNOSTIC PARAMETERS

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
DV-E return spring check	P2119	functionality of return spring	throttle blade return response	0.56	sec	vehicle speed	<=	0	mph	0.5 sec	0.01 sec	5 sec	5 sec
						engine speed	<	40	rpm				
						engine coolant temperature	>=	5.3	° C				
						engine coolant temperature	<=	99.8	° C				
						intake air temperature	>=	5.3	° C				
						battery voltage	>	10	V				
						accelerator pedal position	<	14.9	%				
Accelerator Pedal Position Sensor 1	P2122	range check low	voltage <	0.879	V	battery voltage	>	7	V	0.14 sec	0.01 sec	5 sec	5 sec
	P2123	range check high	or voltage >	4.824	V								
Accelerator Pedal Position 1 vs. 2	P2138	plausibility	voltage difference - idle range >	0.234	V								
			voltage difference - pedal partial press >	0.273	V								
			voltage difference - pedal fully pressed >	1.074	V								
		plausibility when leaving idle	pedal 2 voltage delta from filtered volts <	0.039	V	pedal 1 voltage increase from	<	1.133	V	0.1 sec	0.01 sec	50 sec	no
						to	>	1.289	V			cumulative	
Accelerator Pedal Position Sensor 2	P2127	range check low	voltage <	0.664	V	battery voltage	>	7	V	0.14 sec	0.01 sec	5 sec	5 sec
	P2128	range check high	or voltage >	4.824	V								
DV-E lower mechanical stop	P2176	throttle replacement				vehicle speed	<=	0	mph	0.5 sec	0.01 sec	50 sec	no
throttle blade		detected and no re-learn				engine speed	<	40	rpm			cumulative	
						engine coolant temperature	>=	5.3	° C				
		learning prohibited due to	range check poti1 value at lower stop <	0.2356	V	engine coolant temperature	<=	99.8	° C				
		secondary params not met	range check poti1 value at lower stop >	0.8215	V	intake air temperature	>=	5.3	° C				
		minimum throttle position	range check poti2 value at lower stop <	4.204	V	battery voltage	>	10	V				
		out of range	range check poti2 value at lower stop >	4.77	V	accelerator pedal position	<	14.9	%				
	P2176	initial throttle learn failed											two driving
													cycles
													50 sec
													cumulative
CAN-BUS	U2100	CAN-BUS circuit	common not identified bus error	-	-	engine speed	>	25	rpm	25 sec	0.1 sec	50 sec	no
communication malfuction												cumulative	
CAN-BUS	U2103	CAN-BUS circuit	Fewer controllers on bus	-	-	engine speed	>	25	rpm	25 sec	0.1 sec	50 sec	no
fewer controllers on Bus than			than programmed in the									cumulative	
specified			vehicle CAN configuration list										
CAN-BUS	U2104	CAN-BUS circuit	Reset counter	-	-	engine speed	>	25	rpm	25 sec	0.1 sec	50 sec	no
Reset counter overrun												cumulative	
CAN-BUS	U2106	CAN-BUS circuit	no communication with TCM	-	-	engine speed	>	25	rpm	25 sec	0.1 sec	5 sec	5 sec
lost communication with TCM													
CAN-BUS	U2107	CAN-BUS circuit	no communication with BCM	-	-	engine speed	>	25	rpm	25 sec	0.1 sec	50 sec	no
lost communication with BCM												cumulative	
The below DTCs are specific to the 3.2L engine applications:													
Primary / Secondary Oxygen Sensor													
Bank 1	P2096	lean - secondary trim	secondary trim of primary (shift time) <	-1.23	sec	long term adaptation	enabled			approx.	0.1 sec	50 sec	two driving
		of primary sensor				high caniter loading factor	not active			1000 sec		cumulative	cycles
	P2097	rich -	secondary trim of primary (shift time) >	1.23	sec	intrusive evap test	active						50 sec
						secondary O2 trim	enabled						cumulative
Bank 2	P2098	lean - secondary trim	secondary trim of primary (shift time) <	-1.23	sec	for cumulative time	>=	200 (auto)	sec				
		of primary sensor						150 (man)	sec				
	P2099	rich -	secondary trim of primary (shift time) >	1.23	sec	error: mass air flow	not set						
						error: eng. cool. temp.	not set						
						error: misfire	not set						
						error: secondary O2 heater	not set						
						error: camshaft	not set						
						error: canister purge valve	not set						
						error: fuel system	not set						
						error: degraded catalyst	not set						