

**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
O2 Sensor Heater Circuit Power Stage Driver Check Bank 1 Bank 2	P0036 P0056	open circuit	Voltage	IC internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> </ul>	> 40 rpm 8.03 V > ... > 18 V	continuously monitored	Two driving cycles
Bank 1 Bank 2	P0037 P0057	range check low			<ul style="list-style-type: none"> <li>output had to be</li> </ul>	activated and deactivated for complete checking	fault present for 50 s cumulative during the drive cycle	
Bank 1 Bank 2	P0038 P0058	range check high						
O2 Sensor Heater Circuit Power Stage Driver Check Bank 1 Bank 2	P0030 P0050	open circuit	Voltage	IC internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> </ul>	> 40 rpm 8.03 V > ... > 18 V	continuously monitored	Two driving cycles
Bank 1 Bank 2	P0031 P0051	range check low			<ul style="list-style-type: none"> <li>output had to be</li> </ul>	activated and deactivated for complete checking	fault present for 50 s cumulative during the drive cycle	
Bank 1 Bank 2	P0032 P0052	range check high						
Mass Air Flow Sensor	P0101	rationality check	difference between measured and calculated air mass flow and gradient of above signal	see table > GRDSMSS + DGRDSMSS and > GRDSGDMSS  (see tables at end)	<ul style="list-style-type: none"> <li>difference between both throttle signals</li> <li>(throttle1/ throttle2)-1</li> <li>ratio: pressure intake manifold / pressure in front of throttle                             <ul style="list-style-type: none"> <li>wot</li> <li>integrator stop</li> </ul> </li> </ul>	< 0.9903%  < KLSWDTWDK (see table)  < 0.95  not detected not set	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Mass Air Flow Sensor	P0102	Circuit range check low	Mass air flow	< -25 kg/h	<ul style="list-style-type: none"> <li>Battery voltage</li> <li>time after start</li> <li>error flag throttle position sensor</li> <li>crank rev counter                             <ul style="list-style-type: none"> <li>timer</li> </ul> </li> <li>engine speed</li> </ul>	> 10 V > 0.5 s not set	continuously monitored	Two driving cycles
		Circuit range check low	or Mass air flow	< (see table KFMLDMN)		> 20 > 2 s > 300 rpm	fault present for 50 s cumulative during the drive cycle	
	P0103	Circuit range check high	Mass air flow	> 950 kg/h				

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		check high  Circuit range check high	or Mass air flow	> (see table KFMLDMX)  (see tables at end)			drive cycle	
Intake Air Temperature Sensor	P0113 P0112	range check low range check high	temperature temperature	< -42.75°C  > 139.50°C	<ul style="list-style-type: none"> <li>• time after start</li> <li>• time in idle</li>   <li>• time</li> </ul>	>180s >10 s  > 2s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Engine Coolant Temperature	P0116	Coolant temperature input too high (plausibility check)	(coolant temperature - calculated reference coolant temperature) > threshold	20.25°C	<ul style="list-style-type: none"> <li>• debounce time</li> <li>• other error flag engine coolant sensor</li> <li>• error flag intake air temperature sensor</li> <li>• engine running</li> <li>• engine speed</li> <li>• integration of consumed air mass</li> </ul>	> 200 s not set  not set  for 500 s > 400/min > 3 kg	continuously monitored	Two driving cycles
Engine Coolant Temperature Sensor	P0118 P0117	range check low range check high	temperature temperature	< -42.75°C  > 139.5 °C	<ul style="list-style-type: none"> <li>• time</li> </ul>	3.0 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Engine Coolant Temperature Sensor	P0125	signal check  plausibility check	temperature for closed loop control not reached after time  temperature	timer depending on airflow  < model temp. - 9.75°C	<ul style="list-style-type: none"> <li>• time after engine start (timer depending on airflow)</li>   <li>• engine</li> </ul>	2 min - 5 min  running	continuously monitored	Two driving cycles
Engine Cooling System Thermostat Monitoring	P0128	coolant temperature below thermostat regulating	(calculated reference coolant temperature - coolant temperature) > threshold	Model Limit = 87°C  10.5°C	<ul style="list-style-type: none"> <li>▪ debounce time</li> <li>▪ fuel cut off</li> <li>▪ error flag engine coolant sensor</li> </ul>	> 3.0s not set not set	continuously monitored	Two driving cycles

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
		temperature (plausibility check)		(development vehicles indicated steady thermostat regulating temperatures of 87°C, as measured by the engine coolant temperature sensor. The thermostat nominal regulating temperature is 90°C. All critical OBD and emission functions are enabled above 72°C.)	<ul style="list-style-type: none"> <li>▪ error flag vehicle speed sensor</li> <li>▪ engine block heating</li> <li>▪ ambient temperature</li> <li>▪ coolant temp. at start</li> <li>▪ estimated soak time                             <ul style="list-style-type: none"> <li>▪ vehicle speed</li> <li>▪ engine speed</li> <li>▪ integration of consumed air mass</li> </ul> </li> </ul>	not set  not detected or delay for 20 s -39.75°C < ... < 50.25°C  < 50.25°C >= 900 s > 15 km/h > 960/min > 3 kg		
Throttle Position Sensor	P0121	plaus. check poti1	TPS1 compared to TPS2 and TPS2 compared to TPS3 (value calculated from MAF)	> 6.275%  > 9.020%	<ul style="list-style-type: none"> <li>• battery voltage</li> </ul>	> 8 V	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
	P0122	range check low poti 1	voltage	< 0.1758 V				
	P0123	range check high poti 1	voltage	> 4.6289V				
	P0221	plaus. check poti 2	TPS2 compared to TPS1 and TPS2 compared to TPS3 (value calculated from MAF)	> 6.275%  > 9.020%				
	P0222	range check low poti 2	voltage	< 0.1758V				
P0223	range check high poti 2	voltage	> 4.8828V					
Oxygen Sensor Front Bank 1 Front Bank 2	P0130 P0150	rationality check  short circuit sensor wire to	sensor signal voltage  for	rising with heater ground turn off  16 / 24 heater test	<ul style="list-style-type: none"> <li>• engine</li> <li>• modeled exhaust gas temperature</li> <li>• battery voltage</li> </ul>	running < 800 °C  > 10.5 V	continuously monitored  fault present	Two driving cycles

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
		heater wire		pulses	<ul style="list-style-type: none"> <li>• lambda target value</li> <li>• time after dewpoint</li> </ul>	=1.0 >80 s	for 50 s cumulative during the drive cycle	
		signal biased high	sensor signal voltage	0.597 <... < 1.08 V				
			rear O2 sensor for time	< 0.104 V 10 s				
		cracked sensor element or poisons	sensor signal voltage for time rear O2 sensor	"restricted low" 0.06 <... < 0.4 V 10 s ≥ 0.499 V	evap leak check evap purge errors	intrusive test not active not set		
Oxygen Sensor Front Bank 1 Front Bank 2	P0131 P0151	range check low	sensor signal voltage and rear O2 voltage (rich) for time or sensor cold for time	< 0.040 ≥ 0.499 10 s ≥ 0.1 s	<ul style="list-style-type: none"> <li>• engine</li> <li>• modeled exhaust gas temperature</li> <li>• battery voltage</li> <li>• lambda target value</li> <li>• time after dewpoint</li> <li>• evap leak check</li> <li>• evap purge errors</li> </ul>	Running < 800 °C > 10.5 =1.0 > 80 s intrusive test not active not set	continuously monitored fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Front Bank 1 Front Bank 2	P0132 P0152	range check high	sensor signal voltage for time	> 1.08 V > 5.1 s	<ul style="list-style-type: none"> <li>• engine</li> <li>• modeled exhaust gas temperature</li> <li>• battery voltage</li> <li>• lambda target value</li> <li>• time after dewpoint</li> </ul>	Running < 800 °C > 10.5 V =1 > 80 s	continuously monitored fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Front Bank 1	P0133	slow response	continuously filtered normalized switching	> 1.3 s	<ul style="list-style-type: none"> <li>• closed loop</li> <li>• long term adapt</li> </ul>	active enabled	evaluated once per	Two driving

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Front Bank 2	P0153		cycle duration  21 valid closed loop switching cycles	occurred	<ul style="list-style-type: none"> <li>errors: mass air flow, eng. cool. temp., misfire, O2 heater, cam, purge valve, fuel sys.</li> <li>high purge vapor conc.                             <ul style="list-style-type: none"> <li>intrusive evap test                                     <ul style="list-style-type: none"> <li>engine speed</li> </ul> </li> <li>engine load</li> </ul> </li> <li>mod. exhaust gas temp.                             <ul style="list-style-type: none"> <li>O2 heater</li> </ul> </li> <li>purge off or has been on for time</li> </ul>	not set  not detected not active 1520 < ... < 3000  30% < ... < 69.75%  > 350°C diagnostic complete >= 10 s	driving cycle	cycles
Oxygen Sensor Front Bank 1 Front Bank 2	P0134 P0154	no activity detected  common sensor ground open  open circuit or heater fault	sensor signal voltage  for time  front and rear sensor signal voltage fuel shut off all for time  internal sensor element resistance	0.4 <... < 0.597 V  6.4 s  > 0.2 V  for >= 3 s >= 0.1 s  > 20 kOhm	<ul style="list-style-type: none"> <li>engine</li> <li>modeled exhaust gas temperature                             <ul style="list-style-type: none"> <li>battery voltage</li> <li>lambda target value</li> <li>time after dewpoint</li> </ul> </li> <li>above criteria and</li> <li>modeled exhaust gas temperature</li> </ul>	Running < 800 °C  > 10.5 V =1 > 80 s  > 600 °C	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Heater - Front Bank 1 Bank 2	P0135 P0155	heater circuit resistance high or open	actual sensor element resistance as influenced by sensor heating	> Map KFRINV * FRINV (see tables at end)	<ul style="list-style-type: none"> <li>catalytic converter temperature</li> <li>battery voltage</li> <li>error flag heater output stage</li> <li>dewpoint at sensor location                             <ul style="list-style-type: none"> <li>timer</li> </ul> </li> </ul>	330 <... < 600°C  10.5 <... < 16.0 V  not set  reached  > 15 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Rear Bank 1 Rear Bank 2	P0136 P0156	rationality check  short circuit sensor wire to heater wire	sensor signal voltage  for	rising with heater ground turn off  16 / 24 heater test pulses  (1 test pulse is delivered every	<ul style="list-style-type: none"> <li>engine</li> <li>modeled exhaust gas temperature                             <ul style="list-style-type: none"> <li>battery voltage</li> <li>time after dewpoint</li> </ul> </li> </ul>	running < 800 °C  > 10.5 V >80 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles

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				10 s)				
Oxygen Sensor Rear Bank 1 Rear Bank 2	P0137 P0157	range check low  oscillation check low	sensor signal voltage for time  sensor voltage for time  rich mixture	< 0.040 V 680 s  below reference value  400 s  intrusive control invoked once	<ul style="list-style-type: none"> <li>rear closed loop errors: evap system, purge valve                             <ul style="list-style-type: none"> <li>timer</li> </ul> </li> <li>flag tank empty                             <ul style="list-style-type: none"> <li>engine</li> </ul> </li> <li>modeled exhaust gas temp, rear sensor                             <ul style="list-style-type: none"> <li>battery voltage</li> </ul> </li> <li>time after dewpoint</li> </ul> <ul style="list-style-type: none"> <li>rear closed loop errors: misfire, O2 heater, cam, purge valve, fuel sys.</li> <li>intrusive evap test</li> <li>engine air flow</li> </ul>	active not set  > 60 s not set running < 800 °C  > 10.5 V > 80 s  active not set  not active > 35 kg/h	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Rear Bank 1 Rear Bank 2	P0138 P0158	range check high  oscillation check high	sensor signal voltage for time  sensor voltage for time  lean mixture  sensor voltage for time	> 1.08 V 5.1 s  Above Reference value  400 s  intrusive control invoked once  or >0.202 V  > 2.0 s	<ul style="list-style-type: none"> <li>engine</li> <li>modeled exhaust gas temp, rear sensor                             <ul style="list-style-type: none"> <li>battery voltage</li> </ul> </li> <li>time after dewpoint</li> </ul> <ul style="list-style-type: none"> <li>rear closed loop errors: misfire, O2 heater, cam, purge valve, fuel sys.</li> <li>intrusive evap test</li> <li>engine air flow</li> </ul> <ul style="list-style-type: none"> <li>fuel cut off</li> </ul>	Running < 800 °C  > 10.5 V > 80 s  Active not set  not active > 35 kg/h  Active for 0.5 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Oxygen Sensor Rear Bank 1 Rear Bank 2	P0140 P0160	no activity detected	sensor signal voltage for time	0.401 <... < 0. 519 V  600 s	<ul style="list-style-type: none"> <li>engine</li> <li>catalytic converter temperature</li> <li>battery voltage</li> <li>time after dewpoint</li> </ul>	Running < 800 °C  > 10.5 V > 80 s	continuously monitored  fault present for 50 s cumulative	Two driving cycles

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
		open circuit or heater fault	internal sensor element resistance	> 40 kOhm	<ul style="list-style-type: none"> <li>above criteria and</li> <li>modeled exhaust gas temperature</li> </ul>	> 600 °C	during the drive cycle	
Oxygen Sensor Heater Rear Bank 1 Rear Bank 2	P0141 P0161	heater circuit resistance high or open	actual sensor element resistance as influenced by sensor heating	> Map KFRINH * FRINH  (see tables at end)	<ul style="list-style-type: none"> <li>catalytic converter temperature</li> <li>battery voltage</li> <li>error flag heater output stage</li> <li>dewpoint at sensor location</li> <li>timer</li> </ul>	330 <... < 600°C  10.5 <... < 16.0 V  not set  reached  > 15 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Fuel System Bank 1 Bank 2	P0171 P0174	fuel trim limits exceeded	additive or multiplicative adaptation learn factors	> 8.5 % or > 23 %	<ul style="list-style-type: none"> <li>fuel system status</li> <li>fuel trim adaptation</li> <li>oxygen sensor errors</li> <li>mass air flow sensor errors</li> </ul>	closed loop active not set not set	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Bank 1 Bank 2	P0172 P0175		additive or multiplicative adaptation learn factors	< -8.5 % or < -23%				
Injection Valves 1 through.6 (Power Stage Check)	P0201 P0202 P0203 P0204 P0205 P0206  P0261 P0264 P0267 P0270 P0273 P0276  P0262 P0265 P0268 P0271 P0274 P0277	open circuit       range check low       range check high	voltage	IC Internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> <li>output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Engine Overspeed	P0219	Range check high	Measured engine speed (rpm)	> 7000	<ul style="list-style-type: none"> <li>Timer</li> </ul>	> 1 s	continuously monitored	No

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Misfire	P0301 P0302 P0303 P0304 P0305 P0306  P0300	crankshaft speed fluctuation cylinder 1 to cylinder 6  Multiple misfire	emission based misfire threshold  or  catalyst damage	2.33 %  Misfire counts weighted with table KFKSWF > 3000 first 1000 rev, then > 600 every 200 rev	<ul style="list-style-type: none"> <li>• engine running for</li> <li>• engine speed</li> <li>• load</li> <li>• engine speed change                             <ul style="list-style-type: none"> <li>• load change</li> <li>• intake air temp</li> <li>• rough road</li> <li>• traction control</li> <li>• ABS</li> </ul> </li> <li>• engine drag control</li> <li>• fuel cut off</li> <li>• errors: throttle position, crankshaft sensor, reference mark sensor, evap purge valve.</li> </ul> Includes all above, plus: <ul style="list-style-type: none"> <li>• first interval extended to 1000 rev if engine start temperature met (otherwise 200 rev)</li> </ul>	450 rpm + 6 ign. events  520 < ... < 6520 rpm  > table RLSALUNG or > table KLRLSALULL if idle (see tables at end)  < 4000 rpm/s < 250 %/seg > -30°C not detected not active not active not active not active not set  < 48°C	continuously monitored  first 1000 rev then 4 x 1000 rev  first 1000 rev then 200 rev	immediate if first 1000 rev, then 2 driving cycles  Immediate flashing  latches on 2 driving cycles
Misfire or Fuel System at Limit With Low Fuel	P0313	fuel level low	measured fuel level for time	< 3 liters  10 s	<ul style="list-style-type: none"> <li>• then</li> <li>• misfire detected or</li> <li>• fuel trim limits exceeded</li> </ul>	misfire and fuel trim malfunctions not set before fuel level became low	continuously monitored	No
Rough Road Signal	P0318	signal missing	signal missing for time	12 s	<ul style="list-style-type: none"> <li>• no</li> </ul>	-	continuously monitored	No
Knock Control Module	P0324	rationality	IC output voltage	> table DKROFN > 0.2148 V	<ul style="list-style-type: none"> <li>• coolant temp.</li> <li>• knock control active</li> </ul>	> 39.75°C load > table LKRN	continuously monitored	Two driving

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				< 3.6914 V (see table at end)	• engine speed	1000 < ... < 5520  (see table at end)	fault present for 50 s cumulative during the drive cycle	cycles
Knock Sensor 1	P0327 P0328	range check low range check high	voltage	table UDKSNU table UDKSNO	• coolant temp. • knock control active • engine speed	> 39.75°C load > table LKRN > 2000 rpm	continuously monitored	Two driving cycles
Knock Sensor 2	P0332 P0333	range check low range check high	voltage	table UDKSNU table UDKSNO  (see tables at end)	• coolant temp. • knock control active • engine speed	> 39.75°C load > table LKRN > 2000 rpm  (see table at end)	fault present for 50 s cumulative during the drive cycle	
Crankshaft Position Sensor	P0335	no signal	counter schedule of phase signal and no signal from crankshaft position sensor	> 8	• camshaft signal	Active	continuously monitored	Two driving cycles
	P0336	loss of sync	crankshaft position sensor edge counter resynchronization due to loss of reference gap	>= 1	• camshaft signal	Active	fault present for 50 s cumulative during the drive cycle	
	P0337 P0338	too few pulses too many pulses	counter for correction by plus/minus 1 tooth	>= 8	• camshaft signal	Active		
Camshaft Position Sensor	P0342 P0343 P0341	check low check high rationality	bit pattern at crankshaft marker high or low or marker not plausible	>= 12 times	• crankshaft signal	Active	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Catalyst, Bank 1 Catalyst, Bank 2	P0420 P0430	determining the oxygen storage capability by comparing the amplitude obtained from the downstream O2-sensor to a	individual bank catalyst quality factor  sum of both individual bank catalyst quality factors	>= 0.4  >= 0.6	• engine speed  • load  • fuel system status • rear O2 sensor • modeled catalyst temp. • high purge vapor conc.	>1200rpm; < 3000rpm  > 25 .. 30 % < 40 .. 45 % closed loop active 520 °C < ... < 720°C not detected	cumulative monitoring time of 50 s  evaluated once per driving cycle	Two driving cycles

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		modeled sensor-signal amplitude			<ul style="list-style-type: none"> <li>errors: O2-sensor upstream and downstream, misfire, air flow sensor, throttle pos. sensor, evap purge system, fuel system</li> </ul>	not set		
Evaporative Emission Control System (Large Leak)	P0440	pressure control  or	<p>evacuation time for large leak</p> <p>during evacuation no pressure change detected for a time of</p>	<p>&gt; 10 s &gt; -4.22 hPa</p> <p>&gt; 4 s</p>	<ul style="list-style-type: none"> <li>vehicle speed</li> <li>engine status</li> <li>fuel system status</li> <li>canister load factor</li> <li>tank pressure</li> <li>engine load</li> <li>intake low pressure</li> <li>engine temperature at start</li> <li>intake air temperature</li> <li>tank pressure while compensation gradient measurement</li> <li>battery voltage</li> <li>time after start</li> <li>altitude</li> <li>tank pressure while driving cycle</li> <li>fuel level</li> <li>errors: mass air flow sensor, electr. Throttle potentiometer, coolant temp., vehicle speed, tank pressure, oxygen sensor, idle control, purge valve, vent control output stage, battery voltage</li> </ul>	<p>= 0 mph idle closed loop &lt; 20% -18&lt;...&lt; 9 hPa</p> <p>&lt; 35 % &gt; 380 hPa 3.75 °C &lt; ... &lt; 55 °C</p> <p>3.75 °C&lt;...&lt; 65 °C &lt; 0.35 hPa</p> <p>&gt; 10.0 V &gt; 1000 s or fuel mixture adaptation OK</p> <p>&lt; 3000 m &lt; 9 hPa</p> <p>90%&lt; ... &lt; 10%</p> <p>not set</p>	<p>Test time will last a max of 30 s. Only one test per driving cycle will be performed. The test will attempt to run up to 10 times until it successfully completes a test.</p>	Two driving cycles
Evaporative Control System Leak Detected (small leak)	P0442	pressure control	leak air flow volume	<p>&gt; table VLTFDFH and time for vacuum decay &lt;4 s</p>	<ul style="list-style-type: none"> <li>vehicle speed</li> <li>engine status</li> <li>fuel system status</li> <li>canister load factor</li> <li>tank pressure</li> </ul>	<p>= 0 mph idle closed loop &lt; 20% -18&lt;...&lt; 9 hPa</p>	<p>Test time will last a max of 30 s. Only one test per driving cycle will be</p>	Two driving cycles

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
				(see table at end)	<ul style="list-style-type: none"> <li>engine load</li> <li>intake low pressure</li> <li>engine temperature at start</li> <li>intake air temperature</li> <li>tank pressure while compensation gradient measurement</li> <li>battery voltage</li> <li>time after start</li> </ul> <ul style="list-style-type: none"> <li>altitude</li> <li>tank pressure while driving cycle</li> <li>fuel level</li> </ul> <ul style="list-style-type: none"> <li>errors: mass air flow sensor, electr. Throttle potentiometer, coolant temp., vehicle speed, tank pressure, oxygen sensor, idle control, purge valve, vent control output stage, battery voltage</li> </ul>	<ul style="list-style-type: none"> <li>&lt; 35 %</li> <li>&gt; 380 hPa</li> <li>3.75 °C &lt; ... &lt; 55 °C</li> <li>3.75 °C&lt;...&lt; 65 °C</li> <li>&lt; 0.35 hPa</li> <li>&gt; 10.0 V</li> <li>&gt; 1000 s or fuel mixture adaptation OK</li> <li>&lt; 3000 m</li> <li>&lt; 9 hPa</li> <li>90%&lt; ... &lt; 10%</li> <li>not set</li> </ul>	performed. The test will attempt to run up to 10 times until it successfully completes a test.	
Evaporative Emission Control System Purge Control Valve Circuit	P0445 P0444 P0443	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> </ul> <ul style="list-style-type: none"> <li>output had to be</li> </ul>	<ul style="list-style-type: none"> <li>&gt; 40 rpm</li> <li>8.03 V &gt; ... &gt; 18 V</li> </ul> <ul style="list-style-type: none"> <li>activated and deactivated for complete checking</li> </ul>	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Evaporative Emission Control System Leak Detected (Blocked canister vent valve)	P0446	pressure control  or	during evacuation with canister vent open  tank pressure for time	<ul style="list-style-type: none"> <li>&lt; -0.8 hPa during time = 1.5 s</li> <li>&lt; -18 hPa 20 s</li> </ul>	<ul style="list-style-type: none"> <li>vehicle speed</li> <li>engine status</li> <li>fuel system status</li> <li>canister load factor</li> <li>tank pressure</li> </ul> <ul style="list-style-type: none"> <li>engine load</li> <li>intake low pressure</li> <li>engine temperature at</li> </ul>	<ul style="list-style-type: none"> <li>= 0 mph</li> <li>idle</li> <li>closed loop</li> <li>&lt; 20%</li> <li>-18&lt;...&lt; 9 hPa</li> <li>&lt; 35 %</li> <li>&gt; 380 hPa</li> <li>3.75 °C &lt; ... &lt; 55 °C</li> </ul>	Test time will last a max of 30 s. Only one test per driving cycle will be performed. The test will attempt to run	Two driving cycles

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
					<ul style="list-style-type: none"> <li>start</li> <li>• intake air temperature</li> <li>• tank pressure while compensation gradient measurement</li> <li>• battery voltage</li> <li>• time after start</li>   <li>• altitude</li> <li>• tank pressure while driving cycle</li> <li>• fuel level</li>   <li>• errors: mass air flow sensor, electr. Throttle potentiometer, coolant temp., vehicle speed, tank pressure, oxygen sensor, idle control, purge valve, vent control output stage, battery voltage</li> </ul>	3.75 °C<...< 65 °C < 0.35 hPa  > 10.0 V > 1000 s or fuel mixture adaptation OK  < 3000 m < 9 hPa  90%< ... < 10%  not set	up to 10 times until it successfully completes a test.	
Evaporative Emission Control System Vent Control Malfunction	P0448 P0447 P0449	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• battery voltage</li>   <li>• output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Evaporative Emission Control System Pressure Sensor	P0452 P0453 P0451	range check low range check high rationality	sensor signal value  sensor signal value or sensor signal value	< - 40.625 hPa  > 17.5 hPa  -18<...< 9 hPa	<ul style="list-style-type: none"> <li>• time</li>   <li>• engine status</li>   <li>• engine temperature at start time after start</li> </ul>	10 s  idle  <= 35 °C 1 s < ... < 12 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Fuel Level Sensor Circuit	P0463 P0462 P2068	range check high fuel sender 1 range check low fuel sender 1 range check high	Voltage  Voltage  Voltage	> 4.0 V  < 0.24 V  > 4.0 V	<ul style="list-style-type: none"> <li>• time</li>   <li>• time</li>   <li>• time</li> </ul>	> 60 s  > 60 s  > 60 s	continuously monitored	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
	P2067	fuel sender 2 range check low	Voltage	< 0.24 V	• time	> 60 s		
	P1172	fuel sender 2 transfer pump failure	Sensor signal values	fuel level 1 below 2 liters and fuel level 2 above 6 liters	• time	> 120 s		
	P0461	fuel sender 1 stuck	Sensor signal values	Requires 2 X (10) liter differences between engine consumed fuel and change of fuel level upon first 10 liter difference an error will be set in memory and fuel level has not moved by more than 0.4 liters	• time	> 300 s		
	P2066	fuel sender 2 stuck	Sensor signal values	Requires 2 X (10) liter differences between engine consumed fuel and change of fuel level upon first 10 liter difference an error will be set in memory and fuel level has not moved by more than 0.4 liters	• time	> 300 s		
		fuel level signals not plausible	Sensor signal values	Requires 2 X (10) liter differences between engine consumed fuel and change of fuel level upon first 10 liter difference an error	• time	> 300 s		

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
				will be set in memory				
Cooling Fan Control Circuit (DMLSE)	P0480 P0691 P0692 (Fan Relay A)  P0481 P0693 P0694 (Fan Relay B)	open circuit range check low range check high  open circuit range check low range check high	voltage	IC Internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> <li>output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored	No
Evaporative Emission Control System Leak Detected (Leaking purge valve)	P0496	pressure control	During compensation gradient check with purge valve and canister vent valve closed	< -0.6 hPa during time = 4 s	<ul style="list-style-type: none"> <li>vehicle speed</li> <li>engine status</li> <li>fuel system status</li> <li>canister load factor</li> <li>tank pressure</li> <li>engine load</li> <li>intake low pressure</li> <li>engine temperature at start</li> <li>intake air temperature</li> <li>tank pressure while compensation gradient measurement</li> <li>battery voltage</li> <li>time after start</li> <li>altitude</li> <li>tank pressure while driving cycle</li> <li>fuel level</li> <li>errors: mass air flow sensor, electr. Throttle potentiometer, coolant temp., vehicle speed,</li> </ul>	= 0 mph idle closed loop < 20% -18<...< 9 hPa  < 35 % > 380 hPa 3.75 °C < ... < 55 °C 3.75 °C<...< 65 °C < 0.35 hPa  > 10.0 V > 1000 s or fuel mixture adaptation OK  < 3000 m < 9 hPa  90%< ... < 10%  not set	Test time will last a max of 30 s. Only one test per driving cycle will be performed. The test will attempt to run up to 10 times until it successfully completes a test.	Two driving cycles

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
					tank pressure, oxygen sensor, idle control, purge valve, vent control output stage, battery voltage			
Vehicle Speed Sensor	P0500	rationality	speed	< 5 km/h	<ul style="list-style-type: none"> <li>• auto trans. and: engaged gear or no data rec'd ...or</li> <li>• decel fuel shutoff</li> <li>• engine coolant temperature</li> <li>• engine speed</li> <li>• for time</li> </ul>	= 4 = TRUE active > 64.5 °C 1800 <...< 2200 rpm > 3 s	continuously monitored fault present for 50 s cumulative during the drive cycle	Two driving cycles
Brake Switches	P0504	plausibility of brake light switch (BLS) and brake test switch (BTS)	several times BLS and BTS unplausible for a certain period	> 2 s > 10 times	<ul style="list-style-type: none"> <li>• no</li> </ul>	-	continuously monitored	No
Idle Control	P0506 P0507	functional check	actual desired rpm or fuel cut off due to overspeed, during this idle	> 100 rpm or < -200 rpm > 3 occurrences	<ul style="list-style-type: none"> <li>• coolant temp.</li> <li>• intake air temp</li> <li>• vehicle speed</li> <li>• evap (high canister load)</li> <li>• intrusive evap test</li> <li>• intrusive secondary air test (=not applicable)</li> <li>• errors: throttle position, vehicle speed, coolant temp. sensor, intake air sen., evap system, evap valve</li> <li>• load (for underspeed only)</li> </ul>	> 60°C > 0°C = 0 km/h off not active not active not set < 39.9990 %	continuously monitored fault present for 50 s cumulative during the drive cycle	Two driving cycles
A/C Refrigerant Pressure Sensor	P0532 P0533	Circuit range check low Circuit range check high	Sensor signal voltage Sensor signal voltage	< 0.1953 V > 4.8828 V	<ul style="list-style-type: none"> <li>▪ Engine running</li> <li>▪ Timer</li> </ul>	True >3 s	continuously monitored	No
System Voltage	P0560 P0562	rationality range check low	main relay input voltage voltage	< 2.55 V < 10.5 V	<ul style="list-style-type: none"> <li>• time</li> <li>• time after start</li> </ul>	3.0 s 180 s	continuously monitored	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
	P0563	range check high	voltage	> 18 V > 25 km/h	• time	3.0 s		
Calculator Monitoring	P0601	ROM check	check sum ROM error		• no		continuously monitored	5 s
ECM	P0602	engine controller information programming incomplete	VIN not programmed; Service-ECU; security access not armed - count down		• no		continuously monitored	No
Calculator Monitoring	P0603	calculator check	calculator check		• no		continuously monitored	5 s
Calculator Monitoring	P0604	RAM check	read- and write-test		• no		continuously monitored	5 s
ECM Function Monitoring	P0606	electronic throttle torque monitoring	torque out of range calculator error in function		• engine speed • time	> 1120 rpm > 5.5 s	continuously monitored	5 s
Speedometer Output Signal Circuit	P0608	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage  • output had to be	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored	No
ECM	P0610	vehicle option programming error	vehicle variation configuration not programmed		• no		continuously monitored	No
Engine Starter Relay Control Circuit (Automatic Trans. Only)	P0617 P0616 P0615	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage  • output had to be	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored	No
Generator F (Field) Terminal Circuit	P0625	range check low	duty cycle	<= 9.961 %	• engine speed • engine • ignition • time  • crank sensor errors	< 3000 rpm running on >= 30 s  not set	continuously monitored	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Generator F (Field) Terminal Circuit	P0626	range check high	duty cycle	>= 9.961 %	<ul style="list-style-type: none"> <li>• cam sensor errors</li> <li>• engine</li> <li>• ignition</li> <li>• time</li> <li>• crank sensor errors</li> <li>• cam sensor errors</li> </ul>	not set not running on >= 5.0 s not set not set	continuously monitored	No
Fuel Pump Relay Control Circuit	P0628  P0629	range check low  range check high	voltage	IC Internal	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• battery voltage</li> <li>• output had to be</li> <li>• intrusive pulse tests to check circuit which is normally always controlled high</li> </ul>	> 40 rpm 8.03 V > ... > 18 V activated and deactivated for complete checking up to 5 per ignition cycle of 0.8 ms duration with battery voltage at least 10.5 V	continuously monitored  evaluated once per driving cycle with up to 5 test pulses	No
Electronic Throttle Control Range	P0638	range check high range check low	PWM  /- PWM /	> 80 % PWM  > 80 % PWM	<ul style="list-style-type: none"> <li>• battery voltage</li> <li>• status electronic throttle adaptation</li> <li>• time</li> </ul>	> 7 V not active > 0.6 s (first threshold) or > 5 s (second threshold)	continuously monitored	5 s
A/C Compressor Relay Control Circuit	P0647 P0646 P0645	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• battery voltage</li> <li>• output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V activated and deactivated for complete checking	continuously monitored	No
Malfunction Indicator (Lamp) Control Circuit	P0650	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• battery voltage</li> <li>• output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V activated and deactivated for complete checking	continuously monitored	No
Intake Duct Switchover Valve	P0662 P0661 P0660	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• battery voltage</li> <li>• output had to be</li> </ul>	> 40 rpm 8.03 V > ... > 18 V activated and deactivated for complete checking	continuously monitored	No
Transmission MIL	P0700	TCM	OBD emission relevant	required by the	• no		continuously	5 s

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Request	(Specific TCM DTC shown in freeze frame)		failure	transmission control module (TCM)			monitored	
Clutch Switch	P0704	Circuit rationality check	Cumulative clutch presses detected	< 6	<ul style="list-style-type: none"> <li>• Brake switch</li> <li>• Manual transmission</li> <li>• Vehicle speed</li> <li>• Gear change detection delay</li> <li>• Cumulative filtered gear shifts detected</li> </ul>	False True > 15 km/hr > 4 s > 20	once per drive cycle	No
Park-Neutral Switches	P0850	plausibility of direct wired park neutral switch and park neutral switch message from transmission	switch states	do not correlate do not match	<ul style="list-style-type: none"> <li>• time</li> </ul>	> 100 s continuous	continuously monitored	No
PWM Vehicles incorporating an ABS unit	P0856	rationality	Monitoring of PWM signal from torque limitation request signal period duration  or  signal duty cycle	not within $f = 128\text{Hz} \pm 5\text{Hz}$  (< 7.4 ms, or > 8.3 ms )  < 5% > 95% for time > 0.1s	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• delay time</li> <li>• variant coding</li>   <li>• ignition switch</li> </ul>	> 160 rpm 2 s car incorporates an ABS unit - vehicle option selected   not in the "cranking" position	continuously monitored	No
Electronic Throttle Limp-Home Air Position	P1551	check of limp-home air position during electronic throttle adaptation	throttle position	< 0.3799 %  > 12.0928 %	<ul style="list-style-type: none"> <li>• vehicle speed</li> <li>• engine speed</li>   <li>• coolant temp.</li>   <li>• intake air temp.</li> <li>• battery voltage</li> <li>• pedal position</li> </ul>	= 0 km/h < 40 rpm  5.25°C <... < 100.5°C  > 5.25°C > 10 V < 14.9 %	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Vehicle Theft Deterrent (Immobilizer)	P1631 P1629 P1630	rationality	Wrong VTD pswd rec'd  Class2 failure w/ VTD  ECM stuck in		<ul style="list-style-type: none"> <li>• ignition ON</li> </ul>		continuously monitored	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Calculated Torque Limit Exceeded	P1845	range check high	LearnPassword Mode indexed torque	> maximum authorized indexed torque	• engine speed	> 40 rpm	continuously monitored	No
Intake Manifold Switchover Valve	P2010 P2009 P2008	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage  • output had to be	> 40 rpm 8.03 V > ... > 18 V  activated and deactivated for complete checking	continuously monitored	No
Oxygen Sensor Front / Rear Bank 1	P2096  P2097	lean - rear trim of front sensor  rich -	rear trim of front - shift time  rear trim of front - shift time	< -1.23 s  or > 1.23 s	• long term adaptation • errors: mass air flow, eng. cool. temp., misfire, O2 heater, cam, purge valve, fuel sys. • high purge vapor conc. • intrusive evap test • rear O2 trim • error: degraded catalyst • for time	enabled not set  not detected not active active not set 200 s	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
Front / Rear Bank 2	P2098  P2099	lean - rear trim of front sensor  rich -	rear trim of front - shift time  rear trim of front - shift time	< -1.23 s  ...or > 1.23 s				
Electronic Throttle Power Stage Switch Off	P2100	output	state	not set for time > 5 s	• status electronic throttle adaptation • duty cycle range check	not active  > 80 % PWM	continuously monitored	5 s
Electronic Throttle Blade Position	P2101	difference between set and actual position of throttle blade	difference value	> DWDKSBAMX for time > 0.5 s  (see table at end)	• status electronic throttle adaptation	not set	continuously monitored	5 s
Electronic Throttle Function Monitoring	P2105	electronic throttle monitoring - fuel shut off	torque out of range calculator error in function		• engine speed  • time	> 1120 rpm  > 5.5 s	continuously monitored	5 s
Electronic Throttle Amplifier Adjustment	P2107	range check of amplified actual throttle blade position signal	amplification value  offset value	< 3.9961 V  > 4.3242 V  < -0.1503 V  > 0.1503 V	• vehicle speed • engine speed • coolant temp.  • intake air temp. • battery voltage • pedal position	= 0 km/h < 40 rpm 5.25°C <...< 100.5°C  > 5.25°C > 10 V < 14.9 %	once per Electronic Throttle adaptation	No
Electronic Throttle Spring	P2119	check of Electronic Throttle return	active opening throttle blade, switch off power	> (angle limp-home + 3%)	• vehicle speed • engine speed	= 0 km/h < 250 rpm	once per Electronic	5 s

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Check		spring	stage and monitoring the throttle blade return	for time > 0.56 s	<ul style="list-style-type: none"> <li>coolant temp.</li> <li>intake air temp.</li> </ul>	5.25°C <...< 100°C > 5.25°C	Throttle adaptation	
Accelerator Pedal Position Sensor 1	P2123	range check high	voltage	> 4.8242 V	<ul style="list-style-type: none"> <li>battery voltage</li> <li>time</li> </ul>	> 7 V > 140 ms	continuously monitored	5 s
	P2122	range check low	voltage	< 0.8398 V				
	P2138	plausibility to poti 2	voltage difference: Idle range voltage difference: part throttle range voltage difference: full throttle range	>0.2148 V > 0.2734 V > 1.0547 V	<ul style="list-style-type: none"> <li>time</li> <li>no substitute operation of accelerator pedal position sensor</li> </ul>	> 160 ms		
Accelerator Pedal Position Sensor 2	P2128	range check high	voltage	> 4.8242 V	<ul style="list-style-type: none"> <li>battery voltage</li> <li>time</li> </ul>	> 7 V > 140 ms	continuously monitored	5 s
	P2127	range check low	voltage	< 0.6641 V	<ul style="list-style-type: none"> <li>time</li> </ul>	> 140 ms		
Throttle Position Sensor	P2135	general throttle check potentiometer 1 or potentiometer 2	condition	detected	No		continuously monitored	No
Accelerator Pedal Position (Pedal Moving Detection)	P2138	comparison of potentiometer 1 and potentiometer 2 when leaving idle range	voltage voltage difference: Idle range voltage difference: part throttle range voltage difference: full throttle range	> 4.8242 V < 0.8398 V >0.2148 V > 0.2734 V > 1.0547 V	<ul style="list-style-type: none"> <li>battery voltage</li> <li>time</li> <li>time</li> <li>no substitute operation of accelerator pedal position sensor</li> </ul>	> 7 V > 140 ms > 160 ms	continuously monitored	5 s
Electronic Throttle Lower Mechanical Stop Throttle Blade	P2176	range check lower mechanical stop throttle blade	range check high	< 0.2124 V > 0.8752 V	<ul style="list-style-type: none"> <li>vehicle speed</li> <li>engine speed</li> <li>coolant temp.</li> </ul>	= 0 km/h < 40 rpm 5.25°C <...< 100.5°C	once per Electronic Throttle adaptation	Two driving cycles

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
			range check low	< 4.2041V > 4.8413V	<ul style="list-style-type: none"> <li>intake air temp.</li> <li>battery voltage</li> <li>pedal position</li> </ul>	> 5.25°C > 10 V < 14.9 %	fault present for 50 s cumulative during the drive cycle	
Generator L (Lamp) Terminal Control Circuit	P2500	range check low	voltage	Generator L Terminal Status Off	<ul style="list-style-type: none"> <li>engine</li> <li>ignition</li> <li>time</li> <li>crank sensor errors</li> <li>cam sensor errors</li> </ul>	running on ≥ 15 s  not set not set	continuously monitored	No
Generator L (Lamp) Terminal Control Circuit	P2501	range check high	voltage	Generator L Terminal Status On	<ul style="list-style-type: none"> <li>engine</li> <li>ignition</li> <li>time</li> <li>crank sensor errors</li> <li>cam sensor errors</li> </ul>	not running on ≥ 5.0 s  not set not set	continuously monitored	No
Class2-BUS Lost Communication With ABS	U1040	Class2-BUS circuit	No communication with Anti-lock Brake System (ABS)		<ul style="list-style-type: none"> <li>ignition ON</li> <li>time</li> </ul>	> 5 s	continuously monitored	No
Class2-BUS Lost Communication With DIM	U1064	Class2-BUS circuit	No communication with Dash Integration Module (DIM)		<ul style="list-style-type: none"> <li>ignition ON</li> <li>time</li> </ul>	> 5 s	continuously monitored	No
Class2-Bus Lost Communication With CCP	U1153	Class2-BUS circuit	No communication with Climate Control Panel (CCP)		<ul style="list-style-type: none"> <li>ignition ON</li> <li>time</li> </ul>	> 5 s	continuously monitored	No
Class2-Bus Lost Communication With VTD	U1192	Class2-BUS circuit	No communication with Vehicle Theft Deterrent (VTD)		<ul style="list-style-type: none"> <li>ignition ON</li> <li>time</li> </ul>	> 5 s	continuously monitored	No
Class2-Bus Electric Circuitry	U1301 U1300	Class2-BUS circuit	short to power short to ground		<ul style="list-style-type: none"> <li>ignition ON</li> <li>time</li> </ul>	> 3 s	Continuously monitored	No
CAN-Bus Communication Malfunction	U2100	CAN-BUS circuit	common not identified Computer Area Network (CAN) bus error		<ul style="list-style-type: none"> <li>engine speed</li> <li>time</li> </ul>	> 25 / min > 5 s	continuously monitored	No
CAN-Bus No Controller On	U2102	ECM configuration	CAN controller list not programmed in CAN	CAN list = 255	<ul style="list-style-type: none"> <li>ignition ON</li> </ul>		continuously monitored	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Bus Programmed			communication option memory		• time	> 5 s		
CAN-Bus Reset Counter Overrun	U2104	CAN-BUS circuit	reset counter	> 5	• engine speed  • time	>25 U/min	continuously monitored  fault present for 50 s cumulative during the drive cycle	Two driving cycles
CAN-BUS Lost Communication With TCM	U2106	CAN-BUS circuit	no communication with Transmission Control Module (TCM)		• engine speed  • time	> 25 / min  > 5 s	continuously monitored	5 s
Intake Manifold Pressure Sensor (GGDSS)	*P0107 *P0108	range check low range check high	sensor signal voltage	< 0,14V (UADPSMN) > 4,88V (UADPSMX)	• time • engine	> 0.2 s (TDDSS) running	continuous	Two Driving Cycles
Rear Bank 1 Rear Bank 2 (DLSAHK)	*P0139 *P0159	sensor signal stuck rich or lean	sensor voltage for time	below or above reference value 0.35V for 110s (TTLASH + TUSLASH)  or >0,200V (USSCHUB) for 5s (TSALASH)	• rear closed loop fuel cut off test with additional enrichment / enleanment  • fuel cut off	active not active  completed  active	continuous	Two driving cycles
Fuel Pump Primary Circuit (DEKPE)	*P0230 *P0231 *P0232	open circuit range check low range check high	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
EGR (DAGRFC)	*P0401  *P0402	flow-check: comparison betw. Modelled and measured intake pressure after charging EGR-rate  flow-check low	Insufficient EGR-flow	< -0,70 (RFEAGRMMN)	• engine speed  • engine load  • engine load gradient • EGR partial pressure	1600<...>2200 rpm (NDAGRFMN<...> NDAGRFMX) 35<...>60 % (RLDAGRFN<...> RLDAGRFX) < 0,35% (DRLDAGMX) ≥ 25 hPa (PSAGRMMN) >0,5 kg (IMLATDAG)	≤ 15s once per driving cycle	Two driving cycles

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
		flow-check high	Excessive EGR-flow	>0,70 (RFEAGRMX)	<ul style="list-style-type: none"> <li>air mass since start</li> <li>altitude</li> </ul>	< 2750m		
EGR Power Stage (DAGRE)	*P0403 *P1403 *P1405	open circuit range check low range check high	voltage	IC Internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> <li>battery voltage</li> <li>time</li> <li>stage had to be</li> </ul>	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	Continuous	Two driving cycles
EGR Position Sensor (DAGRLS)	*P0406  *P0405   *P1406	Open valve pintle error  Closed valve pintle error  sticking valve	Position sensor voltage   difference between set and actual position of EGR-valve	> 4,8242 V (UAGRPMX) for time > =1s (TWUAGERR)  < 0,1367 V (UAGRPMN) for time >= 1s (TWUAGERR)  >20% (AGRDMX) for time >= 10s (TWAGRDI)	<ul style="list-style-type: none"> <li>errorflag: battery voltage</li> <li>engine</li> <li>EGR-System</li> </ul>	not present running   Active	Continuous	Two Driving Cycles
Brake Switches (GEGAS)	*P0571	plausibility of brake light switch (BLS) and brake test switch (BTS)	several times BLS and BTS unplausible for a certain period	> 1 s (TVERBR) > 10 times (ZERBR)	<ul style="list-style-type: none"> <li>no</li> </ul>	-	continuous	No
Generator L Terminal Control Circuit	*P0621 *P1637	open circuit range check low	voltage	Generator Terminal Status	<ul style="list-style-type: none"> <li>engine speed</li> <li>engine</li> <li>ignition</li> </ul>	> 40 rpm running active	continuous	No
Intake Plenum Switchover Valve	*P1245	range check high range check low open circuit	voltage	IC Internal	<ul style="list-style-type: none"> <li>engine speed</li> <li>battery voltage</li> <li>battery voltage</li> <li>time</li> <li>stage had to be</li> </ul>	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
Accelerator Pedal Position Sensor 1 (GGPED)  (Pedal Moving)	*P1278 *P1277 *P1271	range check high range check low plausibility to poti 2  or comparison of poti	voltage  volt. Part. throttle range  volt. Full throttle range	> 4,8242 V (UPWG1O) < 0,2930 V (UPWG1U) > 0,2734 V (DUPW12TG) > 0,9961 V (DUPW12VG) > 0,5273 V	<ul style="list-style-type: none"> <li>battery voltage</li> <li>no substitute operation</li> </ul>	> 7 V	continuous	5 s

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Detection)		1 and poti 2 when leaving idle range		(UPW1LLMX) <0,6836 V (UPWGU)	of accelerator pedal position sensor			
Accelerator Pedal Position Sensor 2 (GGPED)	*P1283 *P1282	range check high range check low	voltage	> 4,8242 V (UPWG2O) < 0,0977 V (UPWG2U)	• battery voltage	> 7 V	continuous	5 s
DV-E Limp-Home Air Position (BGDVE)	*P1511	check of limp-home air position	throttle position	< 1.7 % (WDKNLPMI) > 9,8405 % (WDKNLPMA)	• vehicle speed • engine speed  • coolant temp.  • intake air temp. • battery voltage • pedal position	= 0 km/h < 250 rpm (UANNMAX)  5°C <... < 100°C (UAN_U_MT, UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)	continuous	5 s
DV-E Position Throttle Blade (ADVE)	*P1516	difference between set and actual position of throttle blade	difference value	> DWDKSBAMX for time > 0,5 s extended threshold for low ambient start: DWDKSBAMX + 6.2%	• status DVE-E adaption  for extended threshold: engine coolant temp. engine speed	not set  < 5°C < 400 rpm	continuous	5 s
DV-E Spring Check (BGDVE)	*P1523	check of DV-E return spring	active opening throttle blade, switch off power stage and monitoring the throttle blade return	> (angle limp-home + 3%) for time > 0,56 s (FPRTIM2_T)	• vehicle speed • engine speed • coolant temp. • intake air temp. Battery voltage	= 0 km/h < 250 rpm (FPRNMAX) 5°C <... < 100°C (FPRMT) > 5°C (FPRAT) > 10 V (UB_UANL)	once per DV-E adap.	5 s
DV-E Lower Mechanical Stop Throttle Blade (BGDVE)	*P1526	range check lower mechanical stop throttle blade	range check high  range check low	< 0,24 V (UDKP1AMIN) > 0,820 V (UDKP1AMAX) < 4,20V (UDKP2AMIN) > 4,77V (UDKP2AMAX)	• vehicle speed • engine speed  • coolant temp.  • intake air temp. • battery voltage • pedal position	= 0 km/h < 250 rpm (UANNMAX)  5°C <... < 100°C (UAN_U_MT, UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)	once per DV-E adap.	5 s
DV-E Power Stage Switch Off (ADVE)	*P1519	output	state	not set for time > 5 s (DLRPID2T)	• status DVE-E adaption • duty cycle range check	not set > 80 % PWM	continuous	5 s
DV-E Amplifier Adjustment	*P1530	range check of amplified actual	amplification value	< 4,00 V (UDKP1VVM1)	• vehicle speed • engine speed	= 0 km/h < 250 rpm (UANNMAX)	once per DV-E adap.	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
(BGDVE)		throttle blade position signal	offset value	> 4,32 V (UDKP1VVMA) < -0,1503 V (UDKP1VOMI) > 0,1503 V (UDKP1VOMA)	<ul style="list-style-type: none"> <li>coolant temp.</li> <li>intake air temp.</li> <li>battery voltage</li> <li>pedal position vehicle speed</li> <li>engine speed</li> <li>coolant temp.</li> <li>intake air temp.</li> <li>battery voltage</li> <li>pedal position</li> </ul>	5°C <...< 100°C (UAN_U_MT UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)= 0 km/h < 250 rpm 5°C <...< 100°C > 5°C > 10 V < 15 %		
Immobilizer (WFS)	P1630 P1631  *P1632	rationality	not or wrong initialized wrong frequencycode received no frequencycode received		<ul style="list-style-type: none"> <li>at cranking</li> </ul>			No
PWM Vehicles incooperating an ABS unit	*P1669	rationality	Monitoring of PWM signal from MMR period duration  or pulse duty factor	not within f = 100Hz +/- 5Hz  < 8% (PCMDMN) for time > 0,1s (TPWMF)	<ul style="list-style-type: none"> <li>engine speed</li> <li>delay time</li> <li>variant coding</li> </ul>	> 160 rpm 2 s car incooperates an ABS unit (eeprom byte FZVAR, bit 6)	Continuous	No
DV-E Control Range (ADVE)	*P1510	range check high  range check low	PWM  /- PWM /  time	> 80 % PWM (DLRPIDMAX) > 80 % PWM (DLRPIDMIN) for time > 0,6 s first threshold (DLRPID1T) or > 5 s (second threshold (DLRPID2T)	<ul style="list-style-type: none"> <li>battery voltage</li> <li>status DVE-E adaption</li> </ul> first threshold is disabled during low ambient start: engine coolant temp engine speed	> 7 V not set    < 5°C < 400 rpm	Continuous	5 s
Transmission MIL Request (DMFB)	*P1780	TCM	OBD2 failure				continuous	Two Driving Cycles
CAN-BUS Fewer Controller On Bus Than Controlled (DCAN)	*U2103	CAN-BUS circuit	Fewer systems on bus than programmed in the maximum configuration list	< 3	<ul style="list-style-type: none"> <li>engine speed</li> <li>time</li> </ul>	>25 U/min (B_nmot= true) > 25 sec	continuous	No

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
CAN-BUS Reset Counter Overrun (DCAN)	*U2104	CAN-BUS circuit	Reset Counter	> 40	<ul style="list-style-type: none"> <li>• engine speed</li> <li>• time</li> </ul>	>25 U/min (B_nmot= true) > 25 sec	continuous	No
CAN-BUS Lost Communication With TCM (DCAN)	*U2106	CAN-BUS circuit	No communication with TCM		<ul style="list-style-type: none"> <li>• engine speed</li> <li>• time</li> </ul>	> 25 U/min (B_nmot=t rue) > 25 sec	continuous	5 s

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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Tables:

P0101:

GRDSDMSS

	related difference of air flow							
X: grdwdkba_w [-]	gradient of throttle angle							
W: GRDSDMSS [-]	related difference of air flow							
StNr.	0	1	2	3	4	5	6	7
grdwdkba_w	0.000000	0.049973	0.100021	0.149994	0.199966	0.299988	0.400009	0.999985
GRDSDMSS	0.799988	0.799988	0.799988	0.799988	0.799988	0.799988	0.799988	0.799988

GRDSGDMSS

	gradient of air flow			X: grdwdkba_w [-]				gradient of throttle angle
W: GRDSGDMSS [-]	gradient of air flow							
StNr.	0	1	2	3	4	5	6	7
grdwdkba_w	0.000000	0.049973	0.100021	0.149994	0.199966	0.299988	0.400009	0.999985
GRDSGDMSS	3.000031	3.199997	3.399963	3.600006	3.799973	4.000015	4.199982	4.999924

KLSWDTWDK

	threshold for comparison with throttle angle delta					
X: wdkba_w [-]	throttle angle with respect to lower mechanical stop					
W: KLSWDTWDK [-]	threshold for comparison with throttle angle delta					
StNr.	0	1	2	3	4	5
wdkba_w	0.000000	19.9951	39.9902	60.0098	80.0049	100.0000
KLSWDTWDK	1.2	0.800003	0.699997	0.600006	0.199997	0.199997

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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P0102

( 3.2L Engine )  
KFMLDMN

minimum air mass flow threshold

[kg/h]	0	1	2	3	4	5	6	7
StNo.	0.0000	14.0625	28.1250	42.1875	56.2500	70.3125	84.3750	99.6094
wdkbadmn_w								
nmot								
I: 6000.0	14.700	65.300	137.000	200.000	218.000	218.000	218.000	219.000
H: 5000.0	10.000	50.400	118.000	171.000	186.400	187.000	188.000	188.000
G: 4000.0	7.200	47.000	107.000	114.000	131.800	132.000	132.000	132.000
F: 3000.0	4.400	45.000	59.000	72.000	88.000	102.000	103.000	94.000
E: 2000.0	3.600	35.000	47.000	50.000	52.000	53.000	57.000	60.000
D: 1520.0	3.500	30.000	36.000	39.000	41.000	42.000	43.000	44.000
C: 1000.0	3.300	20.000	23.900	25.000	26.000	27.000	28.000	29.000
B: 520.0	2.800	6.500	14.000	15.000	16.000	17.000	18.000	19.000
A: 320.0	-25.000	-25.000	-25.000	-25.000	-25.000	-25.000	-25.000	-25.000

P0103

( 3.2L Engine )  
KFMLDMX

maximum air mass flow threshold

[kg/h]	0	1	2	3	4	5	6	7
StNo.	0.0000	14.0625	28.1250	42.1875	56.2500	70.3125	84.3750	99.6094
wdkbadmx_w								
nmot								
I: 6000.0	176.000	345.000	597.000	650.000	700.000	750.000	755.000	760.000
H: 5000.0	135.000	266.000	543.000	620.000	650.000	700.000	705.000	710.000
G: 4000.0	124.000	264.000	465.000	500.000	510.000	536.000	545.000	555.000
F: 3000.0	100.000	235.000	302.000	360.000	389.000	388.000	404.000	410.000
E: 2000.0	95.000	185.000	228.000	239.000	239.000	240.000	247.000	246.000
D: 1520.0	90.000	135.000	149.000	191.000	193.000	194.000	195.000	196.000
C: 1000.0	85.000	114.000	120.000	121.000	122.000	123.000	124.000	125.000
B: 520.0	80.000	105.000	112.000	113.000	114.000	115.000	116.000	117.000
A: 320.0	300.000	300.000	300.000	300.000	300.000	300.000	300.000	300.000

P0135, P0155:  
KFRINV

oxygen sensor element resistance - sensor 1

	0	1	2	3	4
X: tavsomf_w [Grad C]	370.0	460.0	540.0	620.0	700.0
Y: phlsnvf [-]					
W: KFRINV [Ohm]					
StNo.					
tavsomf_w					
phlsnvf					
C: 1.0000	200.00	184.00	160.00	152.00	144.00
B: 0.8000	224.00	200.00	184.00	160.00	152.00

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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A: 0.7000 320.00 304.00 248.00 200.00 184.00

FRINV multiplication factor for sensor 1 element resistance  
 X: tavsomf\_w [Grad C]  
 W: FRINV [-]

StNo.	0	1	2	3	4
tavsomf_w	200.0	300.0	400.0	500.0	600.0
FRINV	63.000	63.000	30.000	10.000	5.000

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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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P0141, P0161:  
KFRINH

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oxygen sensor element resistance - sensor 2
X: tkatmf      [Grad C]      modelled catalyst temperature

Y: phlsnhf     [-]          normalized heater output
W: KFRINH     [Ohm]         internal resistance
StNr.         0           1           2           3           4
tkatmf        200.00    300.00    400.00    500.00    600.00
phlsnhf
C:  1.0000    800.00    416.00    224.00    200.00    160.00
B:  0.8000    896.00    480.00    304.00    248.00    232.00
A:  0.7000    1200.00  1000.00   400.00    304.00    248.00
    
```

FRINH

```

multiplication factor for sensor 2 element resistance
X: tavsomf_w  [Grad C]
W: FRINH     [-]

StNo.         0           1           2           3           4
tavsomf_w     200.0    300.0    400.0    500.0    600.0
FRINH         63.000   63.000   30.000   10.000   5.000
    
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**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

2003file3.doc

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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P0300, P0301, P0302, P0303, P0304, P0305, P0306:

RLSALUNG

engine load threshold -misfire diagnosis (off idle)

X: gangi [ ]  
 Y: nmot [Upm]  
 W: RLSALUNG\_0\_ [%]

StNo.	0	1	2	3	4	5	6	7
gangi	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00
nmot								
H:	6400.0	33.000	33.000	33.000	33.000	33.000	33.000	33.000
G:	5400.0	30.000	30.000	30.000	30.000	30.000	30.000	30.000
F:	4800.0	26.250	26.250	26.250	26.250	26.250	26.250	26.250
E:	4200.0	20.250	20.250	20.250	20.250	20.250	20.250	20.250
D:	3000.0	15.750	15.750	15.750	15.750	15.750	15.750	15.750
C:	2000.0	17.250	17.250	17.250	17.250	17.250	17.250	17.250
B:	1200.0	18.750	18.750	18.750	18.750	18.750	18.750	18.750
A:	920.0	18.750	18.750	18.750	18.750	18.750	18.750	18.750

KLRLSALULL

engine load threshold -misfire diagnosis (idle)

X: nmot [Upm]  
 W: KLRLSALULL\_ [%]

StNo.	0	1	2	3	4	5	6	7
nmot	920.0	1200.0	2000.0	3000.0	4200.0	4800.0	5400.0	6400.0
KLRLSALULL_	11.250	15.000	18.000	21.000	24.000	26.250	27.000	27.750

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2003 3.2L (LA3) Cadillac CTS ,      3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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KFKSWF      weighting factor - engine load dependence - catalyst damage - misfire diagnosis

X: nmot		[Upm]						
Y: rl		[%]						
W: KFKSWF								
StNo.			0	1	2	3	4	5
nmot			1520.0	2520.0	3520.0	4520.0	5520.0	6320.0
rl								
F: 75.000			10.00	16.00	24.00	26.00	26.00	26.00
E: 65.250			10.00	16.00	22.00	24.00	24.00	24.00
D: 50.250			10.00	14.00	22.00	22.00	22.00	22.00
C: 39.750			8.00	12.00	20.00	22.00	22.00	22.00
B: 30.000			8.00	10.00	14.00	20.00	22.00	22.00
A: 20.250			8.00	8.00	12.00	16.00	18.00	20.00

P0324:  
DKROFN

signal rise rate limit - knock diagnosis

X: tmfln_w		[s]						
W: DKROFN		[V/s]						
StNo.			0	1	2	3	4	5
tmfln_w			0.0005000	0.0010000	0.0015000	0.0020000	0.0030000	0.0150000
DKROFN			80.013	70.030	60.047	50.064	45.892	44.998

LKRN

engine load threshold - knock diagnosis

X: nmot		[Upm]													
W: LKRN		[%]													
StNo.			0	1	2	3	4	5	6	7	8	9	10	11	12
nmot			400.0	800.0	1200.0	1600.0	2000.0	2400.0	2800.0	3200.0	3600.0	4000.0	4400.0	4800.0	5200.0
LKRN			39.750	39.750	39.750	39.750	39.750	39.750	39.750	39.750	39.750	39.750	36.000	35.250	34.500
StNo.				13	14	15									
nmot				5600.0	6000.0	6400.0									
LKRN				33.750	33.000	33.000									

\* These codes are not required with the 3.2L (LA3) engine but are used with the 3.0L applications within this OBD II Group



**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

2003file3.doc

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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P0327, P0328, P0332, P0333:

UDKSNO			upper reference voltage limit - knock diagnosis															
	X: nmot			[Upm]														
	W: UDKSNO			[V]														
	StNo.		0	1	2	3	4	5	6	7	8	9	10	11	12			
	nmot		400.0	800.0	1200.0	1600.0	2000.0	2400.0	2800.0	3200.0	3600.0	4000.0	4400.0	4800.0	5200.0			
UDKSNO			30.0001	30.0001	30.0001	30.0001	30.0001	30.0001	30.0001	41.9923	45.0001	50.0001	55.0197	56.5041	59.0041			
	StNo.		13	14	15													
	nmot		5600.0	6000.0	6400.0													
UDKSNO			63.9845	84.0237	90.0002													

UDKSNU			lower reference voltage limit - knock diagnosis															
	X: nmot			[Upm]														
	W: UDKSNU			[V]														
	StNo.		0	1	2	3	4	5	6	7	8	9	10	11	12			
	nmot		400.0	800.0	1200.0	1600.0	2000.0	2400.0	2800.0	3200.0	3600.0	4000.0	4400.0	4800.0	5200.0			
UDKSNU			0.0000	0.0000	0.0000	0.0000	0.5078	0.7031	0.7031	0.8008	0.8984	1.1719	1.4063	1.5234	1.9336			
	StNo.		13	14	15													
	nmot		5600.0	6000.0	6400.0													
UDKSNU			2.3633	2.7734	3.2813													

LKRN			engine load threshold - knock diagnosis															
	X: nmot			[Upm]														
	W: LKRN			[%]														
	StNo.		0	1	2	3	4	5	6	7	8	9	10	11	12			
	nmot		400.0	800.0	1200.0	1600.0	2000.0	2400.0	2800.0	3200.0	3600.0	4000.0	4400.0	4800.0	5200.0			
LKRN			39.750	39.750	39.750	39.750	39.750	39.750	39.750	39.750	39.750	36.000	35.250	34.500				
	StNo.		13	14	15													
	nmot		5600.0	6000.0	6400.0													
LKRN			33.750	33.000	33.000													

P0442: VLTEDFH			evaporative emission system leakage limit - evaporative emission control system diagnosis															
	X: fho_w			[-]														
	W: VLTEDFH			[ ]														
	StNr.			0	1	2	3	4	5									
	fho_w			0.700012	0.719971	0.750000	0.799988	0.900024	1.000000									
VLTEDFH			0.11000000	0.11000000	0.09000000	0.07200000	0.07200000	0.07200000	0.07200000									

\* These codes are not required with the 3.2L (LA3) engine but are used with the 3.0L applications within this OBD II Group

**2003 3.2L (LA3) Cadillac CTS , 3.0L (L81) Saturn VUE, L-series  
ENGINE DIAGNOSTIC PARAMETERS**

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Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
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\*P1516:

DWDKSBAMX

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X: dwdks_kge [% DK] change of commanded throttle angle
W: DWDKSBAMX [% DK] deviation of commanded and real throttle angle
StNr. 0 1 2 3 4
dwdks_kge 0.0000 0.3006 0.9995 5.0004 14.9996
DWDKSBAMX 4.0009 6.0014 11.0002 20.0000 30.0008
    
```

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