1997 3.0L (L81) V-car Catera Engine Diagnostic Parameters

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Fault code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illum.
P0100	range check low range check high	value value	< 4 kg/h see table MLDMXN (304...904 kg/h)	engine speed or while cranking: engine speed for time	> 400 rpm > 120 rpm > 0,1 s	continuous	two driving cycles
P0101	rationality (load-, throttlepositionsensor, idlecontroller)	load signal	< -3,3 or > 2,0 ms	engine speed coolanttemp for time time after start Errorflags (look left)	> 520 rpm > 80,25°C > 2,0 s > 5 s not set		
P0110	range check high range check low	temperature	> 139,75°C < -42,75°C	 only for low: time after start time in idle	 >180 s > 10 s	continuous	two driving cycles cycles
P0115	range check low range check high	temperature	< -42,75°C > 139,75°C	Errorflag (intake air temp.)	not set	continuous	two driving cycles
P0116	rationality or	temperature temperature for closed loop control not reached after time	< model temp.-20°K timer depending on airflow				
P0120	range check low range check high	TPS value TPS value	< 3,906 % > 96,09%	engine speed time time while cranking	> 400 rpm > 0,15 s > 2,0 s	continuous	two driving cycles
P0130 **P0150**	circuit continuity (Secondary air-, evapvalve, secondary air -,evapsystem)	sensor signal voltage for time	0,062<... < 0,399 > 20 s	sensor heater for time Errorflags (look left) secondary air diagnostic secondary air	on > 200 s not set off off	continuous	two driving cycles
P0131 **P0151**	range check low	sensor signal voltage for time	< -0,148 V >0,2 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0132 **P0152**	range check high	sensor signal voltage for time	> 1,083 V >0,2 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0133 **P0153**	response rate	sensor signal period (average over 25 periods)	> 3,3 s	engine speed load	1000...2000 rpm 1,3...3,0 ms	25 periods continuous	two driving cycles

				catalyst temp. model time after purge starts fuel system status	> 352 °C > 6s closed loop		
	(load-, throttlepos.-, camshaftsensor,batteryvoltage,evapvalve, fueltrim,secondary air-, evapsystem)			Errorflags (look left)	not set		
P0134 **P0154**	no activity detected	sensor signal voltage for time	0,35<...<0,555 V > 3,5 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0135 **P0155**	Heater current	calculated resistance	<2,45 or >9,56	sensor heater time after dewpoint (from exhaust temp. model)	on 180 s	continuous	two driving cycles
P0136 **P0156**	circuit continuity	sensor signal voltage for time	-0,0398<...<0,0383 > 225 s	sensor heater for time	on > 200 s	continuous	two driving cycles
	(Secondary air-, evapvalve, secondary air -,evapsystem)			Errorflags (look left) secondary air diagnostic secondary air	not set off off		
P0137 **P0157**	range check low	sensor signal voltage for time	<-0,148 V > 0,2 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0138 **P0158**	range check high	sensor signal voltage for time	> 1,083 > 0,2 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0140 **P0160**	no activity detected	sensor signal voltage for time	-0,0398<...<0,0383 > 225 s	sensor heater for time	on > 200 s	continuous	two driving cycles
P0141 **P0161**	Heater current	calculated resistance	<2,45 or >9,56	sensor heater time after dewpoint (from catalyst temp. model)	on 180 s	continuous	two driving cycles
P0171 **P0172** **P0174** **P0175**	fuel trim limits exceeded	additional or multiplicational	>0,550 ms or >23 % <-0,550 ms or<-21% >0,550 ms or >23 % <-0,550 ms or<-21%	fuel system status fuel trim adaption	closed loop active	continuous	two driving cycles
P0201 **to** **P0206**	circuit continuity	voltage	IC internal	stage had to be battery voltage	aktiv > 9 V	continuous	two driving cycles
P0230	range check low	voltage	IC internal	stage had to be	aktiv	continuous	two driving

	range check high			battery voltage	> 9 V		cycles
P0301 to P0306	Crankshaft speed fluctuation	FTP Emission Threshold I/M Emission Threshold	> 1,6% > 1,6%	engine speed engine speed change load change intake air temp	520...6400rpm < 4000 rpm/s < 1,5 ms/s > -8,25°C	1000 revs continuous	two driving cycles
P0300	Multiple misfire			time from engine start up rough road traction control evap-system check	> 5 s < 1,011 m/s² off off		
	(coolanttemp-, loadsignal-, throttleposition-, chrankshaftsensor)			Errorflags (look left)	not set		
P1460	misfire with low fuel	Catalyst Damage	map rpm/load (KFKSWF 1,04...12,5%) fuellevel > 6,82V	misfire	yes	200 revs	immediately no MIL
P0335	malfunction	while cranking		engine speed	> 2000 rpm	200 revs continuous	two driving cycles
P0336	range	compare with camshaft marker not in window one tooth to much		no			
P0340	rationality	bit pattern at chrankshaft marker	not plausible	revs time	> 100 > 0,5 s	continuous	two driving cycles
P0411	functional check	no flow	Fr<FRSLA+0.281 for time > 6s	secondary air (normally on when starting coolant temp.) fuel system status altitude evap purge valve intake air coolant temp. engine status	on at start 0°C<...< 36°C closed loop <2750 m off > 5,25°C > 18,75 °C idle	20 s in idle once per trip	two driving cycles
	(load-, throttlepos.-, intakeair-, coolant-, oxygensensor, misfire, evapvalve, batteryvoltage,misfire)			Errorflags (look left)	not set		
P0412	circuit continuity	voltage	IC internal	stage had to be battery voltage	aktiv > 9 V	continuous	two driving cycles
P0422 P0432	comparison of the amplitude ration (AR) of upstream	AR in 3 areas of matrix	AR > 0,35 - 0,60	engine speed load fuel system status catalyst temp. model	1200...2200 rpm 1,6...3,2 ms closed loop > 352 °C	200 sec in active map area ones per	two driving cycles

	Malfunction criteria: 1.5 x standard (load-, throttle pos.-, intake air-, coolant-, oxygen sensor, fuel trim, evap system, evap valve, battery voltage, mifire)			intake air temp. canister purge value time after start Errorflags (look left)	> -8°C < 5 >100 s not set	driving cycle	
P0440	pressure control or or or	tank pressure while compensation gradient messurement tank pressure after large leak detection tank pressure while opening purge solenoid tank pressure for time period	< -5,98 hPa < -14,95 hPa < -5,06 hPa < -14,26 hPa > 20s	vehicle speed engine status fuel system status canister load factor tank pressure engine load intake airflow eng. temperature at start intake air temperature engine temperature battery voltage time after start altitude secondary air secondary air diagnose Errorflags (look left)	= 0 mph idle closed loop < 6 < 10hPa < 2,7ms < 27 kg/h < 99,75°C > -8,25°C -8,25°C<...<120,75°C > 11,03 V > 1005 s < 2750 m inactive inactive not set	40 s if okay once per driving cycle, max. 3 times per driving cycle	two driving cycles
	(load-, throttle pos.-, coolant-, vehicle speed-, tank pressure-, oxygen sensor, idle controller,misfire, purge valve-, vent control valve outputstage battery voltage)						
P0443	circuit continuity	voltage	IC internal	stage had to be battery voltage	aktiv > 9 V	continuous	two driving cycles
P0446	pressure control	voltage	IC internal	stage had to be battery voltage	aktiv > 9V	continuous	two driving cycles
P0450	range check low range check high or	sensor signal value sensor signal value sensor signal value	< -28,29 hPa > 27,6 hPa >= 14,95 hPa	time or time engine status eng. temperature at start time after start	> 5s > 3 s idle <= 33°C 2s<...< 10s	continuous	two driving cycles
P0455	pressure control	tank pressure gradient or	< 0,15 hPa/s	vehicle speed engine status	= 0 mph idle	40 s if okay once per	two driving

		time for large leak detection	> 13 s	fuel system status	closed loop	driving	cycles
				canister load factor	< 6	cycle, max.	
				tank pressure	< 14,95hPa	3 times per	
				engine load	< 2,7ms	driving	
				intake airflow	< 33 kg/h	cycle	
				eng. temperature at start	< 99,75°C		
				intake air temperature	> -8,25°C		
				engine temperature	-8,25°C<...<120,75°C		
				battery voltage	> 11,03 V		
				time after start	> 1005 s		
				altitude	< 2750 m		
				secondary air	inactive		
				secondary air diagnose	inactive		
	(load-, throttle pos.-, coolant-, vehicle speed-, tank pressure-, oxygen sensor, idle controller,misfire, purge valve-, vent control valve outputstage battery voltage) circuit continuity		Errorflags (look left)	not set		
P0501	rationality	speed	< 5 km/h	engine speed	> 1960 rpm	continuous	two driving cycles
				load	3,2<...<4,2 ms		
				time	> 5 s		
P0505	range check low	voltage	IC internal	stage had to be	aktiv	continuous	two driving cycles
	range check high			battery voltage	> 9 V		
P0506	functional check	actual - desired rpm	< -100 rpm	coolant temp.	> 80,25 °C	22 s	
P0507			> 200 rpm	vehicle speed	= 0 km/h	once	
	or	fuel cut offs during this idle	>3			per trip	
	(vehicle speed-, throttle position-, coolanttempsensor, idle control, evap system, evapvalve)			Errorflags (look left)	not set		
				evap	off		
				evap diagnotic	off		
				altitude	< 2750 m		
				intake air temp.	> -8,25°C		
			only for: >200 rpm	load	< 2 ms		
P0601	Check Sum Error	check sum		at engine turn off		< 4 s	two driving cycles
P0602	Seed and key	not armed		at starting			
P0604	RAM Error	bit pattern not correct		at starting			
P1700	TCM	OBDII failure				continuous	immediately
P1701	circuit continuity			engine speed (cranking)	< 100 rpm	< 2,5 s	two driving cycles