

Component/ System	Fault Path	Fault Type	Fault Code	Fault Class	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Enable Cond. Value	Time Required	MIL Illum.	Mode for preparation	Demonstra tion Test
Engine coolant temperature sensor	EV1	circuit Hi/Open circuit	P 0118	1	Engine Coolant Temperature Sensor Circuit High / Open Circuit	Circuit check	Voltage of Manifold absolute pressure sensor is higher than 4.9V.	Higher than 98%	None	Key on	None	larger than 10Min	5sec. after Fault	Vehicle Soak over 5Min	Idle
	EV1	circuit Lo	P 0117	1	Engine Coolant Temperature Sensor Circuit Low	Circuit check	Voltage of Manifold absolute pressure sensor is lower than 0.1V	Lower than 2%	None	Key on	None	larger than 10Min	5sec. after Fault	Vehicle Soak over 5Min	Idle
	EV1	Performance	P 0116	2	Engine Coolant Temperature Sensor signal performance	Circuit check	Signal value change is no larger than 20 degrees centigrade when engine is fully warmed up compared to the startup temperature	Lower than	Engine speed Fuel Mass	1. Vehicle soaktime 2.Engine is running 3. Accumulated Fuel mass meets the require	1.soaktime is larger than 240Min 2.Fuel Mass larger than 300g	larger than 260Min	5sec. after Fault	Vehicle Soak over 240Min	Driving cycle
	EV1	Out of Range	P 1116	2	Engine Coolant Temperature Sensor signal out of range	Circuit check	Startup coolant temperature is higher than 60 degrees centigrade compared to the ambient temperature	Higher than	Engine speed	1. Vehicle soaktime is larger than 240Min 2.Engine is running	soaktime is larger than 240Min	larger than 260Min	5sec. after Fault	Vehicle Soak over 240Min	Driving cycle
Crankshaft position sensor	EV1	Device not present	P 0335	1	Crankshaft Position Sensor "A" Circuit	Circuit check	the corresponding feedback is different from the command		None	Engine is turning	None	larger than 10S	5sec. after Fault	nothing	Engine Running
Ignition Coil "A" Primary Control Circuit	EV1	circuit Lo/Open circuit	P 2300	1	Ignition Coil "A" Primary Control Circuit Low / Open Circuit	Circuit check	the corresponding feedback is different from the command		None	Key on/Engine is turning	None	larger than 10S	5sec. after Fault	nothing	Key ON
Throttle position sensor	EV1	Short Hi	P 0123	1	Throttle Position Sensor/Switch "A" Circuit High	Circuit check	Voltage of throttle position sensor is higher than 4.75V.		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Engine Running
	EV1	Short Lo/Open	P 0122	1	Throttle Position Sensor/Switch "A" Circuit Low / Open Circuit	Circuit check	Voltage of throttle position sensor is lower than 0.25V.		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON

Fuel Pump	EV1	circuit Hi	P 0232	1	Fuel Pump circuit short High	Circuit check	the corresponding feedback is different from the command		None	Engine is turning	None	larger than 10S	5sec. after Fault	nothing	Engine Running
	EV1	circuit Lo/Open circuit	P 0231	1	Fuel Pump circuit short Low / Open Circuit	Circuit check	the corresponding feedback is different from the command		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
ECM	EV1	Memory Checksum	P 0601	1	Internal Control Module Memory Checksum Error	Software Check	CVN check		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
Cylinder 1 Fuel Injector	EV1	circuit Hi	P 0262	1	Cylinder 1 Fuel Injector "A" Circuit High	Circuit check	the corresponding feedback is different from the command		None	Engine is turning	None	larger than 10S	5sec. after Fault	nothing	Engine Running
	EV1	circuit Lo/Open circuit	P 0261	1	Cylinder 1 Fuel Injector "A" Circuit Low / Open Circuit	Circuit check	the corresponding feedback is different from the command		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
Manifold Absolute Pressure Sensor	EV1	circuit Hi	P 0108	1	Manifold Absolute Pressure Sensor Circuit High	Circuit check	Voltage of Manifold absolute pressure sensor is higher than 4.9V.	Higher than 98%	None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
	EV1	circuit Lo/Open circuit	P 0107	1	Manifold Absolute Pressure Sensor Circuit Low/Open Circuit	Circuit check	Voltage of Manifold absolute pressure sensor is lower than 0.1V	Lower than 2%	None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
	EV1	Performance	P 3106	2	Manifold Absolute Pressure Sensor rationality at low TPS	Circuit check	MAP Signal value is lower than some threshold during stable Running situation	Lower than 30KPA	Engine Speed	Engine is running	None	larger than 10S	5sec. after Fault	nothing	Driving cycle
	EV1	Signal Stuck	P 0105	2	Manifold Absolute Pressure Sensor signal stuck	Circuit check	MAP Signal change is lower than 10kpa during Crank to Run and Running situation	Delta Change lower than 10KPA	None	Engine is running	None	larger than 10S	5sec. after Fault	Vehicle Soak over 5Min	Engine Running
Intake Air Temperature Sensor	EV1	circuit Hi/Open circuit	P 0113	1	Intake Air Temperature Sensor Circuit High / Open Circuit	Circuit check	Voltage of Manifold absolute pressure sensor is higher than 4.9V.	Higher than 98% 高于 98%	None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON
	EV1	circuit Lo	P 0112	1	Intake Air Temperature Sensor Circuit Low	Circuit check	Voltage of Manifold absolute pressure sensor is lower than 0.1V	Lower than 2%	None	Key on	None	larger than 10S	5sec. after Fault	nothing	Key ON

	EV1	Signal Stuck	P 0111	2	Intake Air Temperature Sensor signal stuck	Circuit check	Intake Air Temperature value change is no larger than 2 degrees centigrade when engine is fully warmed up compared to the startup temperature	Lower than 2℃	Engine speed Air Mass	Engine is running Air Mass	Air Mass larger than 2000g	larger than 260Min	5sec. after Fault	Vehicle Soak over 240Min	Driving cycle
	EV1	Performance	P 0114	2	Intake Air Temperature Sensor Circuit Intermittent	Circuit check	Intake Air temperature Sensor signal erratic change rate is larger than 3.2degrees centigrade	Delta Change Higher than 2℃	None	Key on	None	3Min	5sec. after Fault	nothing	Key ON
O2 sensor 1 cylinder	EV1	circuit Hi	P 0132	1	O2 Sensor Circuit High Voltage Bank 1 Sensor 1	Circuit check	O2 voltage Higher than 1000mv	Higher than 1000mv	Engine speed, engine temperature	Engine is running	None	larger than 2Min	5sec. after Fault	nothing	Idle
	EV1	circuit Lo/Open circuit	P 0131	1	O2 Sensor Circuit Low Voltage Bank 1 Sensor 1 / Open Circuit	Circuit check	O2 voltage Lower than 30mv	Lower than 30mv	Engine speed, engine temperature	Engine is running	None	larger than 6Min	5sec. after Fault	nothing	Idle
	EV1	Out of Range	P 2195	2	O2 Sensor Signal Lean at PE Bank 1 Sensor 1	Circuit check	O2 signal is constantly lower than 400mv when PE mode is enabled	Lower than 400mv	Engine speed, TPS	1.Engine is running 2. PE mode is enabled	None	3Min	5sec. after Fault	nothing	Driving cycle
	EV1	Performance	P 014D	3	O2 Sensor Slow Response - Lean to Rich Bank 1 Sensor 1	Circuit check	O2 signal switching from lean state to rich state response rate time is longer than some calibrated value	Higher than 500ms	Engine speed, engine temperature	1.Engine is running 2. fuel close loop control is enabled	None	larger than 15Min	5sec. after Fault	2 WMTC Stage 3 test	WMTC Stage 3 test
	EV1	Performance	P 014C	3	O2 Sensor Slow Response - Rich to Lean Bank 1 Sensor 1	Circuit check	O2 signal switching from Rich state to Lean state response rate time is longer than some calibrated value	Higher than 500ms	Engine speed, engine temperature	1.Engine is running 2. fuel close loop control is enabled	None	larger than	5sec. after Fault	2 WMTC Stage 3 test	WMTC Stage 3 test
O2 sensor Heater 1 cylinder	EV1	circuit Hi	P 0032	1	O2 Sensor Heater Control Circuit High Bank 1 Sensor 1	Circuit check	the corresponding feedback is different from the command		Engine speed	Engine is running	None	larger than 10S	5sec. after Fault	nothing	Key ON
	EV1	circuit Lo/Open circuit	P 0031	1	O2 Sensor Heater Control Circuit Low Bank 1 Sensor 1 / Open Circuit	Circuit check	the corresponding feedback is different from the command		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Idle
	EV1	performance	P 00D1	2	O2 Sensor Heater current low Bank 1 Sensor 1	Circuit check	Low O2 heater current input	0.1A	Engine speed	Engine is running	None	larger than 4Min	5sec. after Fault	nothing	Idle

Misfire detection	EV1	performance	P 0301	3	Cylinder 1 Misfire Detected	Circuit check	Misfire incident creation	Misfire ratio determined by Emission	Engine speed, TPS	Engine is running	None	larger than 15Min	5sec. after Fault	2 WMTC Stage 3 test	WMTC Stage 3 test
Vehicle Speed Sensor detection	EV1	performance	P 0500	2	Vehicle Speed Sensor "A" Circuit	Circuit check	Vehicle speed plus signal input		Engine speed	Engine is running	None	2 Min	5sec. after Fault	nothing	Driving cycle
Catalyst Efficiency detection	EV1	performance	P 0420	3	Catalyst System Efficiency Below Threshold Bank 1	Circuit check	oxygen storage capacity	4.3S	Engine speed TPS	Engine is running	None	larger than 15Min	5sec. after Fault	2 WMTC Stage 3 test	WMTC Stage 3 test
Rear O2 sensor 1 cylinder	EV1	circuit Hi	P 1138	1	O2S Heater Control Circuit Low Bank 1 Sensor 2	Circuit check	O2 voltage Higher than 1000mv	Higher than 1000mv	Engine speed, engine temperature	Engine is running	None	larger than 2Min	5sec. after Fault	nothing	Idle
	EV1	circuit Lo/Open circuit	P 1137	1	O2S Heater Control Circuit High Bank 1 Sensor 2	Circuit check	O2 voltage Lower than 30mv	Lower than 30mv	Engine speed, engine temperature	Engine is running	None	larger than 6Min	5sec. after Fault	nothing	Idle
	EV1	Performance	P 2A01	2	O2 Sensor Circuit Range/Performance Bank 1 Sensor 2	Circuit check	the average response time of the rear O2 reaches a maximum limit during DFCO	Higher than 0.7S	Engine speed, TPS	1.Engine is running 2.DFCO mode is enabled	None	3Min	5sec. after Fault	nothing	Driving cycle
	EV1	Performance	P 013B	2	O2 Sensor Slow Response - Lean to Rich Bank 1 Sensor 2	Circuit check	the Rear O2 Sensor's response From Lean to Rich to a Power Enrichment event	Higher than 3.0S	Engine speed, engine temperature	1.Engine is running 2.PE mode is enabled	None	larger than 15Min	5sec. after Fault	nothing	Driving cycle
Rear O2 sensor Heater 1 cylinder	EV1	circuit Hi	P 1037	1	O2S Heater Control Circuit High Bank 1 Sensor 2	Circuit check	the corresponding feedback is different from the command		Engine speed	Engine is running	None	larger than 10S	5sec. after Fault	nothing	Key ON
	EV1	circuit Lo/Open circuit	P 1038	1	O2S Heater Control Circuit Low Bank 1 Sensor 2	Circuit check	the corresponding feedback is different from the command		None	Key on	None	larger than 10S	5sec. after Fault	nothing	Idle
	EV1	performance	P 00D2	2	H02S Heater Control Circuit Range/Performance Bank 1 Sensor 2	Circuit check	Low O2 heater current input	0.1A	Engine speed	Engine is running	None	larger than 4Min	5sec. after Fault	nothing	Idle
Idle air control system	EV1	performance	P 0505	2	Idle air control system error	Circuit check	Engine Speed higher than 500rpm comparing to the target warmed up engine speed	Idle speed higher than 500rpm to the target	Engine speed	Engine is running in idle mode	None	larger than 6Min	5sec. after Fault	nothing	Idle