









Trouble code identification

Flash type	Fault location	Probable cause
111	No fault found	-
112	<u>Engine control module (ECM)</u>	<u>ECM</u>
113 	Early models: Injector(s)	Wiring, fuse, injector(s)
113 	Late models: Injectors 1, 2 & 4	Wiring, fuse, injector(s)
113 	1993: Short term fuel trim	No vacuum to MAP sensor, HO2S/signal short to earth, MAP sensor/earth wire
113 	1994 ➡ : Short term fuel trim - upper limit reached	Wiring, HO2S
115 	Injectors 3, 5 & 6	Wiring, fuse, injector(s)
115 	<u>Injector 1</u>	Wiring, injector
121	<u>Mass air flow (MAF) sensor/manifold absolute pressure (MAP) sensor</u>	Wiring, hose connection, MAF/MAP sensor
122	Intake air temperature (IAT) sensor	Wiring, IAT sensor
123	<u>Engine coolant temperature (ECT) sensor</u>	Wiring, ECT sensor
125	<u>Injector 2</u>	Wiring, injector
131	Engine speed (RPM) sensor - no signal	Wiring, RPM sensor
132	<u>Engine control module (ECM) - supply voltage low/high</u>	Battery, alternator
135	<u>Injector 3</u>	Wiring, injector
143	<u>Knock sensor (KS) 1</u>	Wiring, KS
145	<u>Injector 4</u>	Wiring, injector
152	Secondary air injection (AIR) solenoid	Wiring, AIR solenoid
153	<u>Heated oxygen sensor (HO2S) 2</u>	Wiring, heating inoperative, HO2S
154	<u>Exhaust gas recirculation (EGR) system - excessive flow detected</u>	Wiring, EGR valve, EGR control module, engine coolant thermostat
155	<u>Injector 5</u>	Wiring, injector
212	<u>Heated oxygen sensor (HO2S) 1</u>	Wiring, heating inoperative, MAF sensor, HO2S

214	Engine speed (RPM) sensor - intermittent signal	Wiring, flywheel/drive plate damaged, air gap, RPM sensor
221	Long term fuel trim, part load - upper limit reached	Intake/exhaust leak, fuel pressure low, injector(s) blocked, hose connection, wiring, MAF/MAP sensor, ECT sensor, HO2S
222	<u>Engine control relay</u>	Wiring, <u>Engine control relay</u>
223 	Early models: Idle air control (IAC) valve	Wiring, IAC valve
223 	Late models: Idle air control (IAC) valve - opening signal	Wiring, IAC valve
225	AC refrigerant pressure sensor	Wiring, AC refrigerant pressure sensor
231	Long term fuel trim, part load - lower limit reached	Fuel pressure high, excessive fuel in engine oil, engine oil level high, injector(s) leaking, EVAP canister purge valve, hose connection, wiring, MAF/MAP sensor, ECT sensor, HO2S
232	Long term fuel trim, idling	Intake/exhaust leak, fuel pressure, excessive fuel in engine oil, injector(s), EVAP canister purge valve, wiring, MAF sensor, ECT sensor, HO2S
233	Long term fuel trim, idle air adjustment	Intake leak/blockage, throttle valve adjustment, wiring, IAC valve
235	<u>Exhaust gas recirculation (EGR) solenoid</u>	Wiring, EGR solenoid
241	<u>Exhaust gas recirculation (EGR) system - incorrect flow detected</u>	Hose leak/blockage, wiring, EGR valve, EGR control module, engine coolant thermostat
243	<u>Throttle position (TP) sensor</u>	Wiring, TP sensor
245	<u>Idle air control (IAC) valve - closing signal</u>	Wiring, IAC valve
311	Vehicle speed sensor (VSS)	Wiring, speedometer, VSS
314	<u>Camshaft position (CMP) sensor</u>	Wiring, CMP sensor
315	Evaporative emission (EVAP) system	EVAP canister, hose leak/blockage, EVAP canister purge valve
322	<u>Mass air flow (MAF) sensor - no filament burn-off signal</u>	Wiring, ECM
323	Malfunction indicator lamp (MIL)	Wiring, MIL
325	<u>Engine control module (ECM) - supply voltage, battery</u>	Battery discharged/disconnected, wiring, ECM disconnected
335	Transmission control module (TCM) - MIL ON request	Wiring
342	AC relay	Wiring, AC relay
343	<u>Fuel pump relay</u>	Wiring, <u>Fuel pump relay</u>
411	<u>Throttle position (TP) sensor</u>	Wiring, TP sensor
413	Exhaust gas recirculation temperature (EGRT) sensor	Wiring, EGRT sensor
414	Turbocharger (TC) pressure - control	TC wastegate regulating valve hose leak/blockage, wiring, MAF sensor, TCM wire (TC boost reduction), TC wastegate regulating valve
416	Transmission control module (TCM) - TC boost reduction signal	Wiring short to earth
432	<u>Engine control module (ECM) - overheating</u>	Engine coolant blower motor, air supply blocked, module cooling fan
433	<u>Knock sensor (KS) 2</u>	Wiring, KS
435	<u>Heated oxygen sensor (HO2S) 1 - slow response</u>	Intake/exhaust leak, fuel pressure, compression, HO2S
436	<u>Heated oxygen sensor (HO2S) 2 - compensation</u>	Intake/exhaust leak, fuel pressure, compression, HO2S 1/2

442	Secondary air injection (AIR) pump relay	Wiring, AIR pump relay
443	Catalytic converter - efficiency	Intake/exhaust leak, fuel pressure, compression, catalytic converter
444	Accelerator pedal position (APP) sensor	Wiring, APP sensor
451	Cylinder 1 - misfire detected	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
452	Cylinder 2 - misfire detected	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
453	Cylinder 3 - misfire detected	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
454	Cylinder 4 - misfire detected	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
455	Cylinder 5 - misfire detected	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
511	Long term fuel trim, idling	Intake/exhaust leak, fuel pressure, excessive fuel in engine oil, injector(s), EVAP canister purge valve, wiring, MAF sensor, ECT sensor, HO2S
512 2	Short term fuel trim - lower limit reached	HO2S signal wire short to earth, EGR system leak, MAP sensor, HO2S, MAP sensor earth wire open circuit/poor connection
512 1	Short term fuel trim	<u>Fuel pressure, wiring, MAF sensor</u>
513	<u>Engine control module (ECM) - overheating</u>	Engine coolant blower motor, air supply blocked, module cooling fan
514	Engine coolant blower motor, low speed	Wiring, engine coolant blower motor relay
515	Engine coolant blower motor, high speed	Wiring, engine coolant blower motor relay
521	<u>Heated oxygen sensor (HO2S) 1 - heater control</u>	Wiring, HO2S
522	<u>Heated oxygen sensor (HO2S) 2 - heater control</u>	Wiring, HO2S
523	Module cooling fan	Wiring, module cooling fan
524	Transmission control module (TCM) - torque reduction signal	Wiring
531	<u>Engine control module (ECM) - power stage - group A</u>	Wiring, injector(s), EVAP canister purge valve, ECM
532	<u>Engine control module (ECM) - power stage - group B</u>	Wiring, IAC valve, TC wastegate regulating valve, engine coolant blower motor relay, ECM
533	<u>Engine control module (ECM) - power stage - group C</u>	Wiring short to positive, EGR control module, engine coolant blower motor relay, TCM (load signal), instrument panel (ECT/RPM/fuel consumption signals), ECM
534	<u>Engine control module (ECM) - power stage - group D</u>	Wiring short to positive, MIL, AC relay, fuel pump, ignition amplifier, ECM
535	Turbocharger (TC) wastegate regulating valve	Wiring, TC wastegate regulating valve
541	Evaporative emission (EVAP) canister purge valve	Wiring, EVAP canister purge valve
542	Misfire detected, more than 1 cylinder	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, fuel pressure, fuel pump/wiring, fuel level low, incorrect/contaminated fuel, engine oil level high, repeated cold starts (flooding), puncture in front tyre

543	Misfire detected, at least 1 cylinder	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
544	Misfire detected, more than 1 cylinder - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, fuel pressure, fuel pump/wiring, fuel level low, incorrect/contaminated fuel, engine oil level high, repeated cold starts (flooding), puncture in front tyre
545	Misfire detected - at least 1 cylinder - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
551	Cylinder 1, misfire detected - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
552	Cylinder 2, misfire detected - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
553	Cylinder 3, misfire detected - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
554	Cylinder 4, misfire detected - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre
555	Cylinder 5, misfire detected - TWC damage	Spark plug, HT lead, distributor rotor/cap, moisture ingress, injector/wiring, air leak, compression, head gasket, low-tension wiring, repeated cold starts (flooding), puncture in front tyre

1 Bosch Motronic 1.8

2 Siemens Fenix 5.2

3 Bosch Motronic 4.3

