

checkenginecodes.org — Diagnostic Cheat Sheet

Quick reference guide for the top 50 most common OBD-II check engine trouble codes, compiled from certified technician sources.

Code	Description & System	Severity	Safe to Drive?	Common Causes & Fixes
P0011	A Camshaft Position - Timing Over-Advanced or System Performance Bank 1 Powertrain	Severe	No - Tow	Causes: Low engine oil level or dirty engine oil (clogging oil passages).; Failed VVT control solenoid (oil control valve). Fixes: Performing oil and filter change.; Replacing VVT control solenoid.
P0016	Crankshaft Position - Camshaft Position Correlation Bank 1 Sensor A Powertrain	Severe	Yes	Causes: Stretched timing chain or timing belt.; Failed timing chain tensioner or guides. Fixes: Replacing the timing chain/belt, tensioners, and guides.; Replacing the VVT phaser.
P0101	Mass or Volume Air Flow Sensor A Circuit Range/Performance Powertrain	Moderate	Yes	Causes: Dirty MAF sensor hot wire (often caused by over-oiled air filters).; Intake air leaks downstream of the MAF sensor. Fixes: Cleaning the MAF sensor hot wire using dedicated MAF cleaning spray.; Replacing cracked intake boots.
P0128	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature) Powertrain	Low	Yes	Causes: Thermostat stuck open (primary cause).; Failed Engine Coolant Temperature (ECT) sensor. Fixes: Replacing the engine thermostat and housing.; Topping off engine coolant.
P0131	O2 Sensor Circuit Low Voltage Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Faulty upstream oxygen sensor (Bank 1 Sensor 1).; Intake vacuum leak. Fixes: Replacing the primary Bank 1 Sensor 1 oxygen sensor.; Repairing exhaust or vacuum leaks.
P0132	O2 Sensor Circuit High Voltage Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Faulty upstream oxygen sensor.; Failed fuel pressure regulator (high fuel pressure). Fixes: Replacing the Bank 1 Sensor 1 oxygen sensor to clear high voltage.; Repairing wiring harness short circuit.
P0133	O2 Sensor Circuit Slow Response Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Aged or contaminated upstream O2 sensor (silicone, soot, coolant).; Exhaust leaks upstream of O2 sensor. Fixes: Replacing the Bank 1 Sensor 1 oxygen sensor to resolve slow switching response.; Cleaning the MAF sensor to restore O2 response rate.
P0135	O2 Sensor Heater Circuit Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Failed internal heating element in the O2 sensor.; Blown O2 sensor heater fuse. Fixes: Replacing the Bank 1 Sensor 1 oxygen sensor to resolve heater coil failure.; Replacing a blown O2 heater circuit fuse.
P0171	System Too Lean Bank 1 Powertrain	Moderate	No - Tow	Causes: Vacuum leaks (cracked PCV hoses, leaking intake manifold gaskets, disconnected vacuum lines).; Dirty or failing Mass Air Flow (MAF) sensor reporting low airflow. Fixes: Replacing leaking intake gaskets, PCV hoses, or vacuum lines.; Cleaning or replacing the Mass Air Flow (MAF) sensor for Bank 1.
P0172	System Too Rich Bank 1 Powertrain	Moderate	Yes	Causes: Stuck-open or leaking fuel injector on Bank 1.; Failed fuel pressure regulator (causing excessively high fuel pressure). Fixes: Replacing a leaking or stuck fuel injector on Bank 1.; Replacing the fuel pressure regulator to fix Bank 1 rich condition.

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P0174	System Too Lean Bank 2 Powertrain	Moderate	No - Tow	Causes: Vacuum leaks on the Bank 2 side of the intake manifold or gasket surfaces.; Dirty or failing Mass Air Flow (MAF) sensor. Fixes: Fixing Bank 2 vacuum leaks or cracked hoses.; Replacing Bank 2 intake manifold gaskets.
P0175	System Too Rich Bank 2 Powertrain	Moderate	Yes	Causes: Leaking fuel injector on Bank 2.; Failed fuel pressure regulator. Fixes: Replacing leaking fuel injectors on Bank 2.; Replacing the fuel pressure regulator to fix Bank 2 rich condition.
P0300	Random/Multiple Cylinder Misfire Detected Powertrain	Severe	No (Misfire)	Causes: Worn, fouled, or incorrectly gapped spark plugs.; Failing ignition coils or deteriorated spark plug wires. Fixes: Replacing worn spark plugs and ignition coils.; Repairing intake vacuum leaks.
P0301	Cylinder 1 Misfire Detected Powertrain	Severe	No (Misfire)	Causes: Bad spark plug in cylinder 1.; Failed ignition coil or spark plug wire for cylinder 1. Fixes: Replacing the cylinder 1 ignition coil or spark plug.; Replacing the cylinder 1 fuel injector.
P0302	Cylinder 2 Misfire Detected Powertrain	Severe	No (Misfire)	Causes: Worn or cracked spark plug in cylinder 2.; Failed ignition coil for cylinder 2. Fixes: Replacing the ignition coil or spark plug on cylinder 2.; Replacing the cylinder 2 fuel injector.
P0303	Cylinder 3 Misfire Detected Powertrain	Severe	No (Misfire)	Causes: Faulty ignition coil for cylinder 3.; Worn or fouled spark plug in cylinder 3. Fixes: Replacing cylinder 3 spark plug or ignition coil.; Replacing the cylinder 3 fuel injector.
P0304	Cylinder 4 Misfire Detected Powertrain	Severe	No (Misfire)	Causes: Burnt or fouled spark plug in cylinder 4.; Failed cylinder 4 ignition coil. Fixes: Replacing the ignition coil or spark plug in cylinder 4.; Replacing the cylinder 4 fuel injector.
P0305	Cylinder 5 Misfire Detected Powertrain	Severe	No - Tow	Causes: Bad cylinder 5 spark plug.; Failed cylinder 5 ignition coil. Fixes: Replacing the ignition coil or spark plug for cylinder 5.; Replacing the cylinder 5 fuel injector.
P0306	Cylinder 6 Misfire Detected Powertrain	Severe	Yes	Causes: Faulty ignition coil on cylinder 6.; Worn or fouled spark plug on cylinder 6. Fixes: Replacing the ignition coil or spark plug on cylinder 6.; Replacing the cylinder 6 fuel injector.
P0401	EGR A Flow Insufficient Detected Powertrain	Moderate	Yes	Causes: Carbon buildup clogging the EGR ports/passages (most common).; Defective EGR valve stuck closed. Fixes: Cleaning carbon blockages from the EGR ports and intake.; Replacing the EGR valve.
P0420	Catalyst System Efficiency Below Threshold Bank 1 Powertrain	Severe	No - Tow	Causes: Degraded, worn-out, or melted catalytic converter (primary cause).; Exhaust leaks upstream of the catalytic converter or at the exhaust manifold joints. Fixes: Replacing the catalytic converter with an OEM or high-quality EPA-compliant unit.; Repairing any exhaust leaks or cracked manifolds upstream of the converter.
P0430	Catalyst System Efficiency Below Threshold Bank 2 Powertrain	Severe	Yes	Causes: Failed Bank 2 catalytic converter assembly (primary cause).; Exhaust leak near the Bank 2 exhaust manifold or pipe joints. Fixes: Replacing the Bank 2 catalytic converter assembly.; Fixing exhaust joint leaks near Bank 2.

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P0442	EVAP System Leak Detected (small leak) Powertrain	Low	Yes	Causes: Loose, dirty, or cracked gas cap gasket (most common).; Small crack in EVAP vacuum lines or carbon canister. Fixes: Tightening or replacing the gas cap.; Replacing cracked EVAP hoses.
P0455	EVAP System Leak Detected - Large Leak Powertrain	Low	No - Tow	Causes: Gas cap completely loose, missing, or damaged.; Disconnected or large crack in EVAP lines. Fixes: Securing or replacing the gas cap.; Replacing broken EVAP hoses.
P0456	EVAP System Leak Detected (very small leak) Powertrain	Low	Yes	Causes: Minor leak in the gas cap seal.; Hairline cracks in EVAP hoses. Fixes: Cleaning or replacing the gas cap.; Replacing aged/cracked EVAP lines.
P0012	A Camshaft Position - Timing Over-Retarded Bank 1 Powertrain	Severe	No - Tow	Causes: Low engine oil level or insufficient oil pressure to advance the Bank 1 intake camshaft.; VVT oil control solenoid stuck closed or failing on Bank 1. Fixes: Checking and topping off engine oil, or performing an oil change.; Replacing the Bank 1 intake VVT oil control solenoid.
P0013	B Camshaft Position Actuator A Control Circuit/Open Bank 1 Powertrain	Severe	No - Tow	Causes: Low engine oil level or dirty engine oil affecting camshaft phaser control.; Failed VVT control solenoid (oil control valve). Fixes: Performing an engine oil and filter change.; Replacing the VVT oil control solenoid.
P0014	B Camshaft Position - Timing Over-Advanced or System Performance Bank 1 Powertrain	Severe	No - Tow	Causes: VVT oil control solenoid stuck open for the Bank 1 exhaust camshaft.; Camshaft phaser gear mechanical lock pin failing to engage on Bank 1. Fixes: Replacing the Bank 1 exhaust VVT solenoid.; Replacing the Bank 1 exhaust camshaft phaser assembly.
P0015	B Camshaft Position - Timing Over-Retarded Bank 1 Powertrain	Severe	No - Tow	Causes: Low engine oil level or insufficient oil pressure to advance the Bank 1 exhaust camshaft.; VVT oil control solenoid stuck closed or failing on Bank 1. Fixes: Checking and topping off engine oil, or performing an oil change.; Replacing the Bank 1 exhaust VVT oil control solenoid.
P0021	A Camshaft Position - Timing Over-Advanced or System Performance Bank 2 Powertrain	Severe	No - Tow	Causes: VVT oil control solenoid stuck open for the Bank 2 intake camshaft.; Camshaft phaser gear mechanical lock pin failing to engage on Bank 2. Fixes: Replacing the Bank 2 intake VVT solenoid.; Replacing the Bank 2 intake camshaft phaser assembly.
P0022	A Camshaft Position - Timing Over-Retarded Bank 2 Powertrain	Severe	No - Tow	Causes: Low engine oil level or insufficient oil pressure to advance the Bank 2 intake camshaft.; VVT oil control solenoid stuck closed or failing on Bank 2. Fixes: Checking and topping off engine oil, or performing an oil change.; Replacing the Bank 2 intake VVT oil control solenoid.
P0100	Mass or Volume Air Flow Sensor A Circuit Powertrain	Moderate	Yes	Causes: Dirty or contaminated MAF sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the MAF sensor elements.; Replacing the cracked intake air tube.
P0102	Mass or Volume Air Flow Sensor A Circuit Low Powertrain	Moderate	Yes	Causes: Dirty or contaminated MAF sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the MAF sensor elements.; Replacing the cracked intake air tube.

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P0103	Mass or Volume Air Flow Sensor A Circuit High Powertrain	Moderate	Yes	Causes: Dirty or contaminated MAF sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the MAF sensor elements.; Replacing the cracked intake air tube.
P0110	Intake Air Temperature Sensor 1 Circuit Bank 1 Powertrain	Moderate	Yes	Causes: Dirty or contaminated IAT sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the IAT sensor elements.; Replacing the cracked intake air tube.
P0111	Intake Air Temperature Sensor 1 Circuit Range/Performance Bank 1 Powertrain	Moderate	Yes	Causes: Dirty or contaminated IAT sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the IAT sensor elements.; Replacing the cracked intake air tube.
P0112	Intake Air Temperature Sensor 1 Circuit Low Bank 1 Powertrain	Moderate	Yes	Causes: Dirty or contaminated IAT sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the IAT sensor elements.; Replacing the cracked intake air tube.
P0113	Intake Air Temperature Sensor 1 Circuit High Bank 1 Powertrain	Moderate	Yes	Causes: Dirty or contaminated IAT sensor elements.; Intake air leaks or cracked intake boot downstream of the sensor. Fixes: Cleaning the IAT sensor elements.; Replacing the cracked intake air tube.
P0115	Engine Coolant Temperature Sensor 1 Circuit Powertrain	Severe	Caution	Causes: Failed Engine Coolant Temperature (ECT) sensor.; Corroded connector terminals or damaged wiring for the sensor. Fixes: Replacing the Engine Coolant Temperature (ECT) sensor.; Repairing connector wiring damage on the sensor harness.
P0116	Engine Coolant Temperature Sensor 1 Circuit Range/Performance Powertrain	Severe	Caution	Causes: Failed Engine Coolant Temperature (ECT) sensor.; Corroded connector terminals or damaged wiring for the sensor. Fixes: Replacing the Engine Coolant Temperature (ECT) sensor.; Repairing connector wiring damage on the sensor harness.
P0117	Engine Coolant Temperature Sensor 1 Circuit Low Powertrain	Severe	Caution	Causes: Failed Engine Coolant Temperature (ECT) sensor.; Corroded connector terminals or damaged wiring for the sensor. Fixes: Replacing the Engine Coolant Temperature (ECT) sensor.; Repairing connector wiring damage on the sensor harness.
P0118	Engine Coolant Temperature Sensor 1 Circuit High Powertrain	Severe	Caution	Causes: Failed Engine Coolant Temperature (ECT) sensor.; Corroded connector terminals or damaged wiring for the sensor. Fixes: Replacing the Engine Coolant Temperature (ECT) sensor.; Repairing connector wiring damage on the sensor harness.
P0119	Engine Coolant Temperature Sensor 1 Circuit Intermittent/Erratic Powertrain	Severe	Caution	Causes: Failed Engine Coolant Temperature (ECT) sensor.; Corroded connector terminals or damaged wiring for the sensor. Fixes: Replacing the Engine Coolant Temperature (ECT) sensor.; Repairing connector wiring damage on the sensor harness.
P0120	Throttle/Pedal Position Sensor/Switch A Circuit Powertrain	Severe	No - Tow	Causes: Failed Throttle Position Sensor or throttle body assembly.; Corroded throttle body wiring connector pins. Fixes: Replacing the Throttle Position Sensor or the throttle body assembly.; Cleaning and repairing the wiring harness connector.

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P0121	Throttle/Pedal Position Sensor/Switch A Circuit Range/Performance Powertrain	Severe	No - Tow	Causes: Failed Throttle Position Sensor or throttle body assembly.; Corroded throttle body wiring connector pins. Fixes: Replacing the Throttle Position Sensor or the throttle body assembly.; Cleaning and repairing the wiring harness connector.
P0122	Throttle/Pedal Position Sensor/Switch A Circuit Low Powertrain	Severe	No - Tow	Causes: Failed Throttle Position Sensor or throttle body assembly.; Corroded throttle body wiring connector pins. Fixes: Replacing the Throttle Position Sensor or the throttle body assembly.; Cleaning and repairing the wiring harness connector.
P0123	Throttle/Pedal Position Sensor/Switch A Circuit High Powertrain	Severe	No - Tow	Causes: Failed Throttle Position Sensor or throttle body assembly.; Corroded throttle body wiring connector pins. Fixes: Replacing the Throttle Position Sensor or the throttle body assembly.; Cleaning and repairing the wiring harness connector.
P0125	Insufficient Coolant Temperature for Closed Loop Fuel Control Powertrain	Moderate	Yes	Causes: Thermostat stuck open, allowing coolant to circulate constantly (primary cause).; Failing Engine Coolant Temperature (ECT) sensor reporting low values. Fixes: Replacing the engine thermostat and housing.; Topping off coolant and bleeding air from the cooling system.
P0130	O2 Sensor Circuit Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Failed oxygen sensor (Sensor 1 on Bank 1).; Corroded wiring or loose electrical connector at the sensor plug. Fixes: Replacing the oxygen sensor (Sensor 1 on Bank 1).; Repairing damaged wiring harness or connector plugs at the sensor.
P0134	O2 Sensor Circuit No Activity Detected Bank 1 Sensor 1 Powertrain	Moderate	Yes	Causes: Failed oxygen sensor (Sensor 1 on Bank 1).; Corroded wiring or loose electrical connector at the sensor plug. Fixes: Replacing the oxygen sensor (Sensor 1 on Bank 1).; Repairing damaged wiring harness or connector plugs at the sensor.