

Glossary

A/C:

Air Conditioner

A/D:

Analog to Digital

A/F:

Air/Fuel ratio. The proportion of air and fuel delivered to the cylinder for combustion. For example, an A/F ratio of 14:1 denotes 14 times as much air as fuel in the mixture. Ideally the A/F ratio is 14.7:1.

ABS:

Anti-lock Brake System

A/C Clutch Relay:

The PCM uses this relay to energize the A/C clutch, turning the A/C compressor ON or OFF.

A/C Pressure Sensor:

Measures air conditioning refrigerant pressure and sends a voltage signal to the PCM.

A/C Pressure Switch:

A mechanical switch connected to the A/C refrigerant line. The switch is activated (sending a signal to the PCM) when the A/C refrigerant pressure becomes too low or high.

Actuator:

Actuators such as relays, solenoids, and motors allow the PCM to control the operation of vehicle systems.

Air Injection Reaction (AIR) System:

An emission control system operated by the PCM. During cold starts, an air pump injects outside air into the exhaust manifold to help burn hot exhaust gases. This reduces pollution and speeds warm-up of oxygen sensors and catalytic converters. After the engine is warm, the air will either be dumped back to the atmosphere (or into the air cleaner assembly) or sent to the catalytic converter.

APP:

Acceleration Pedal Position (Sensor)

ASR:

Acceleration Slip Regulation

AFC:

Air Flow Control

ALDL:

Assembly Line Diagnostic Link. Former name for GM's (only) Data Link Connector, the connector socket into which the scan tool plug is inserted; sometimes used to refer to any pre-OBD II computer signals

Bank x:

The standard way of referring to the bank of cylinders containing cylinder #x. In-line engines have only one bank of cylinders. Most commonly used to identify the location of oxygen sensors. See **O₂S**, **Sensor x**, **Sensor x**.

BARO:

Barometric Pressure Sensor. See **MAP Sensor**.

BBV:

Brake Boost Vacuum Sensor

BCM:

Body Control Module

Boost Control Solenoid:

A solenoid that is energized by the PCM, in order to control turbo/supercharger boost pressure.

Brake Switch Signal:

An input signal to the PCM indicating that the brake pedal is being pressed. This signal is typically used to disengage Cruise Control systems and Torque Converter Clutch (TCC) solenoids. See also **TCC**.

CAM:

Camshaft Position Sensor. Sends a frequency signal to the PCM in order to synchronize fuel injector and spark plug firing.

Catalytic Converter:

Designed to reduce exhaust emissions.

CAN:

Controller Area Network

CARB:

California Air Resources Board. Governing body for emissions control in California.

CFI:

Central Fuel Injection (a.k.a. Throttle Body Fuel Injection TBI)

CFI:

Continuous Fuel Injection

CKP REF:

Crankshaft Position Reference.

CKP:

Crankshaft Position. See **CPS**.

CKT:

Circuit

Closed Loop (CL):

A feedback system that uses the O₂ Sensor(s) to monitor the results of combustion. Based on the signal(s) from the O₂ sensor(s), the PCM modifies the air/fuel mixture to maintain optimum performance with lowest emissions. In closed loop mode, the PCM can fine tune control of a system to achieve an exact result.

CMP:

Camshaft Position Sensor

CO:

Carbon Monoxide; an odorless gas produced by incomplete combustion.

Code Scanner:

A device that interfaces with and communicates information via a data link.

Continuous Memory Codes: See **Pending Codes**.

CPS:

Crankshaft Position Sensor. Sends a frequency signal to the PCM. It is used to as reference for fuel injector operation and synchronizes spark plug firing on distributorless ignition systems (DIS).

CTS:

Coolant Temperature Sensor. A resistance sensor that sends a voltage signal to the PCM indicating the temperature of the coolant. This signal tells the PCM whether the engine is cold or warm.

CVRTD:

Continuous Variable Real Time Damping

D/R:

Drive/Reverse

Data Link Connector (DLC):

Connector providing access and/or control of the vehicle information, operating conditions, and diagnostic information. Vehicles with OBD II use a 16-pin connector located in the passenger compartment.

Data Stream:

The actual (live) data communications sent from the vehicle's PCM to the data connector (DLC).

DEPS:

Digital Engine Position Sensor.

Detonation: See **Knock**.

DI/DIS:

Direct Ignition/Distributorless Ignition System. A system that produces the ignition spark without the use of a distributor.

DPFE:

Differential Pressure Feedback – Exhaust Gas Recirculation Sensor

Driving Cycle - A specific sequence of start-up, warm-up and driving tasks that

tests all OBD II functions

DTC:

Diagnostic Trouble Code. An alphanumeric identifier for a fault condition identified by the On Board Diagnostic System.

Duty Cycle:

A term applied to signals that switch between ON and OFF. Duty cycle is the percentage of time the signal is ON. For example, if the signal is ON only one fourth of the time, then the duty cycle is 25%. The PCM uses duty cycle type signals to maintain precise control of an actuator.

EBCM:

Electronic Brake Control Module

EBTCM:

Electronic Brake/Traction Control Module

ECM

Engine Control Module *or* Electronic Control Module

ECT:

Engine Coolant Temperature sensor. See **CTS**.

EEPROM or E²PROM

Electrically Erasable Programmable Read Only Memory

EFE:

Early Fuel Evaporation

EFI:

Electronic Fuel Injection. Any system where a computer controls fuel delivery to the engine by using fuel injectors.

EGR:

Exhaust Gas Recirculation. The PCM uses the EGR system to re-circulate exhaust gases back into the intake manifold to reduce emissions. EGR is used only during warm engine cruise conditions.

EMR:

Electronic Module Retard

EOP:

Engine Oil Pressure (Switch)

EOT

Engine Oil Temperature (Sensor)

EPA:

Environmental Protection Agency.

ESC:

Electronic Spark Control. An ignition system function that warns the PCM when knock is detected. The PCM then retards spark timing to eliminate the knocking condition.

EST:

Electronic Spark Timing. An ignition system that allows the PCM to control spark advance timing. The PCM determines optimum spark timing from sensors information — engine speed, throttle position, coolant temperature, engine load, vehicle speed, Park/Neutral switch position, and knock sensor condition.

EVAP:

Evaporative Emissions System.

FC:

Fan Control

Freeze Frame:

A block of memory containing DTCs of the vehicle operating conditions for a specific time.

FTP:

Federal Test Procedure. Strict test of vehicle's emissions.

Fuel Trim:

Engine computer function that keeps the air/fuel mixture as close to the ideal 14.7:1 stoichiometric ratio as possible.

Ground (GND):

An electrical conductor used as a common return for an electric circuit(s) and with a relative zero potential (voltage).

Hall Effect Sensor:

Any of a type of sensor utilizing a permanent magnet and a transistorized Hall Effect switch. Hall Effect type sensors may be used to measure speed and position of the crankshaft or camshaft — for spark timing and fuel injector control.

HC:

Hydrocarbons

HEI:

High Energy Ignition

HO₂S:

Heated Oxygen Sensor. See **O₂S**.

HVAC:

Heating, Ventilation & Air Conditioning (System)

I/M:

Inspection and Maintenance. An emission control program.

IAC:

Idle Air Control. A device mounted on the throttle body which adjusts the amount of air bypassing a closed throttle so that the PCM can control idle speed.

IAT:

Intake Air Temperature (Sensor)

ICM:

Ignition Control Module.

IMRC:

Intake Manifold Runner Control

IPC:

Instrument Panel Cluster

ISC:

Idle Speed Control. A small electric motor mounted on the throttle body and controlled by the PCM. The PCM can control idle speed by commanding the ISC to adjust its position.

ISO:

International Organization of Standardization also known as International Standards Organization.

ISO 9141:

International Standards Organization OBDII communication protocol, used by Chrysler and most foreign cars. One of three hardware layers defined by OBD II

J1850 PWM:

(Pulse Width Modulation) SAE-established OBD II communication protocol used by Ford domestic cars and light trucks. One of three hardware layers defined by OBD II

J1850 VPW:

(Variable Pulse Width Modulation) SAE-established OBD II communication protocol used by GM cars and light trucks. One of three hardware layers defined by OBD II

J1962 – SAE:

Established standard for the connector plug layout used for all OBD II scan tools

J1978 – SAE:

Established standard for OBD II scan tools

J1979 – SAE:

Established standard for diagnostic test modes

J2012 – SAE:

Established standard accepted by EPA as the standard test report language for emission tests

KAM:

Keep Alive Memory

Knock Sensor (KS):

Used to detect engine detonation or knock. The sensor contains a piezoelectric element and is threaded into the engine block. Special construction makes the element sensitive only to engine vibrations associated with detonation.

Knock:

Uncontrolled ignition of the air/fuel mixture in the cylinder. Also referred to as detonation or ping. Knock indicates extreme cylinder pressures or “hotspots” which are causing the air/fuel mixture to detonate prematurely.

KOEO:

Key On Engine Off. Turn the ignition key to on, but do not start engine.

KOER:

Key On Engine Running. Start engine and keep it running.

LCD:

Liquid Crystal Display

LTFT:

Long Term Fuel Trim

M/T:

Manual transmission or manual transaxle.

MAF:

Mass Air Flow (sensor). Measures the amount and density of air entering the engine and sends a frequency or voltage signal to the PCM. The PCM uses this signal in its fuel delivery calculations.

MAP:

Manifold Absolute Pressure (sensor). Measures intake manifold vacuum or pressure and sends a frequency or voltage signal (depending on sensor type) to the PCM. This gives the PCM information on engine load for control of fuel delivery, spark advance, and EGR flow.

MAT:

Manifold Air Temperature (sensor). A resistance sensor in the intake manifold that sends a voltage signal to the PCM indicating the temperature of the incoming air. The PCM uses this signal for fuel delivery calculations.

MIL:

Malfunction Indicator Lamp. The MIL is most commonly known as the Check Engine or Service Engine Soon light. A required on-board indicator to alert the driver of an emission-related malfunction.

Misfire:

Caused by the air/fuel ratio being incorrect.

Monitor:

A test performed by the on-board computer to verify proper operation of emission-related systems or components.

MPFI or MFI:

Multi-Port Fuel Injection. MPFI is a fuel injection system using one (or more) injector(s) for each cylinder. The injectors are mounted in the intake manifold, and fired in groups rather than individually.

NOx:

Oxides of Nitrogen. The system EGR and Camshafts injects exhaust gases into the intake manifold to reduce these gases at the tailpipe.

O₂S:

Oxygen Sensor. Generates a voltage of 0.6 to 1.1 volts when the exhaust gas is rich (low oxygen content). The voltage changes to 0.4 volts or less when the exhaust gas is lean (high oxygen content). This sensor only operates after it reaches a temperature of approximately 349°C (660°F). O₂ sensors are usually found both upstream and downstream of the catalytic converter. The PCM uses these sensors to fine tune the air-fuel ratio and to monitor the efficiency of the catalytic converter. See **Bank 1, Bank 2, Sensor 1, Sensor 2.**

OBD II:

On-Board Diagnostics, Second Generation. OBD II is a U.S. Government mandated standard requiring all cars and light trucks to have a common data connector, connector location, communication protocol, DTCs and code definitions. OBD II first appeared on vehicles in late 1994, and is required to be present on all cars sold in the US after January 1, 1996.

ODM:

Output Device Monitor.

Open Loop (OL):

A control system mode that does not monitor the output to verify if the desired results were achieved. A fuel delivery system usually operates in open loop mode during cold engine warm-up because the oxygen sensors are not yet ready to send a signal. Without the oxygen sensor signal, the computer cannot check the actual results of combustion.

PCM:

Powertrain Control Module. The brains of the engine and transmission control systems housed in a metal box with a number of sensors and actuators connected via a wiring harness. Its job is to control fuel delivery, idle speed, spark advance timing, and emission systems. The PCM receives information from sensors, then energizes various actuators to control the engine. The PCM is also known as the ECM (Engine Control Module).

PCV:

Positive Crankcase Ventilation

Pending Codes:

Also referred to as Continuous Memory codes and Maturing Diagnostic Trouble Codes. Pending Codes may be set by emission related powertrain components and systems. If the fault does not occur after a certain number of drive cycles, the code is erased from memory.

PID:

Parameter Identification. Identifies an address in memory which contains vehicle operating information.

PNP:

Park/Neutral Position. A switch that tells the PCM when the gear shift lever is in the Park or Neutral position. When in Park or Neutral, the PCM operates the engine in an idle mode.

PROM:

Programmable Read-Only Memory. The PROM contains programming information the PCM needs to operate a specific vehicle model/engine combination.

Proprietary Readings:

Parameters shown by on-board computers which are not required by OBD II, but included by manufacturer to assist in trouble-shooting specific vehicles.

PSPS:

Power Steering Pressure Switch

Purge Solenoid:

Controls the flow of fuel vapors from the carbon canister to the intake manifold. The canister collects vapors evaporating from the fuel tank, preventing them from escaping to the atmosphere and causing pollution. During warm engine cruise conditions, the PCM energizes the Purge Solenoid so the trapped vapors are drawn into the engine and burned.

PTC:

Pending Trouble Code

PWM:

Pulse Width Modulation

PZM:

Platform Zone Module

QDM:

Quad Driver Module

RAM:

Random Access Memory

Relay:

An electromechanical device in which connections in one circuit are switched.

Reluctance Sensor:

A type of sensor typically used to measure crankshaft or camshaft speed and/or position, driveshaft speed, and wheel speed.

ROM:

Read-Only Memory. Permanent programming information stored inside the PCM, containing the information the PCM needs to operate a specific vehicle model/engine combination.

RPM:

Revolutions Per Minute

SAE:

Society of Automotive Engineers.

Scan Tool:

A device that interfaces with and communicates information on a data link.

SDM:

Sensing and Diagnostic Module

Sensor x:

A standard term used to identify the location of oxygen sensors. Sensor 1 is located upstream of the catalytic converter. See **O₂S**, **Bank 1**, **Bank 2**.

Sensor:

Any device that reports information to the PCM. The job of the sensor is to convert a parameter such as engine temperature into an electrical signal that the PCM can understand.

SES:

Service Engine Soon dash light, now referred to as MIL

SFI or SEFI:

Sequential Fuel Injection or Sequential Electronic Fuel Injection. A fuel injection system that uses one or more injectors for each cylinder. The injectors are mounted in the intake manifold and are fired individually.

Solenoid:

A device consisting of an electrical coil which when energized, produces a magnetic field in a plunger, which is pulled to a central position. A solenoid may be used as an actuator in a valve or switch.

STFT:

Short Term Fuel Trim.

STS:

Service Throttle Soon

TAC:

Throttle Actuator Control

TBI:

Throttle Body Injection. A fuel injection system having one or more injectors mounted in a centrally located throttle body, as opposed to positioning the injectors close to an intake valve port. TBI is also called Central Fuel Injection (CFI) in some vehicles.

TCC:

Torque Converter Clutch

TCM:

Transmission Control Module

TCS:

Traction Control System for PCM and brakes

TDC:

Top Dead Center. When a piston is at its uppermost position in the cylinder.

TFP:

Transmission Fluid Pressure

TFT:

Transmission Fluid Temperature (Sensor)

Throttle Body:

A device which performs the same function as a carburetor in a fuel injection system. On a throttle body injection (TBI) system, the throttle body is both the air door and the location of the fuel injectors. On port fuel injection systems (PFI, MPFI, SFI, etc.), the throttle body is simply an air door. Fuel is not added until the injectors at each intake port are activated. In each case, the throttle body is attached to the accelerator pedal.

TPS:

Throttle Position Sensor. Potentiometer-type sensor connected to the throttle shaft. Its voltage signal output increases as the throttle is opened. The PCM uses this signal to control many systems such as idle speed, spark advance, fuel delivery, etc

Traction Assist:

Assist in traction with brakes only.

Trip:

Vehicle operation for a period of time so the systems can be monitored.

TTS:

Transmission Temperature Sensor. A resistance sensor mounted in the transmission housing in contact with the transmission fluid. It sends a voltage signal to the PCM indicating the temperature of the transmission.

VECI:

Vehicle Emission Control Information. A decal located in the engine compartment containing information about the emission control systems found on the vehicle. The VECI is the authoritative source for determining whether a vehicle is OBD II compliant.

VIN:

Vehicle Identification Number. This is the factory-assigned vehicle serial number. This number is stamped on a number of locations throughout the vehicle, but the most prominent location is on top of the dashboard on the driver's side, visible from outside the car. The VIN includes information about the car, including where it was built, body and engine codes, options, and a sequential build number.

VSS:

Vehicle Speed Sensor. Sends a frequency signal to the PCM. The frequency increases as the vehicle moves faster to give the PCM vehicle speed information used to determine shift points, engine load, and cruise control functions.

VTD:

Vehicle Theft Deterrent

Warm-up Cycle:

Warm-up cycle is when the engine coolant temperature rises at least 40 degrees above that at engine start up.

WOT:

Wide-Open Throttle. The vehicle operating condition brought about when the throttle is completely (or nearly) open. The PCM typically delivers extra fuel to the engine and de-energizes the A/C compressor at this time for acceleration purposes. The PCM uses a switch or the TPS to identify the WOT condition.