Helpful Car Care Definitions

Alternator
Back in the day when your car's electrical accessories consisted of lights, a horn, and the heater blower, the alternator (or generator for you real old-timers) had it pretty easy: 50 or 60 amps usually did the trick, leaving you with power to spare. Not anymore! The high-output car and truck alternators in modern vehicles have a much harder life, with luxury items like heated seats, high-amp stereos, HID headlights, and moon-roofs all competing for the alternator's power. Those goodies need lots of juice, and 100+ amp alternators are becoming more and more common. If your car or truck's alternator isn't up to snuff, you and your fancy DVD system may end up along the side of the road.

Cap & Rotor
Solid-state, electronic ignition systems have made diddling with breaker points and setting dwell obsolete. Thankfully, points-style distributors can now be updated with aftermarket solid-state ignition modules.
Although electronic ignitions are lower maintenance than their points-style predecessors, the distributor cap and rotor still degrade over time—oxidation and carbon deposits weaken the spark's strength and timing.

Carburetor
A device through which air and fuel are atomized and drawn into the engine. It meters the proper proportions of fuel and air to form a combustible mixture and varies the ratio according to the engine operation. Air blowing over the fuel nozzles (jets) results in an air-fuel mixture burned in the cylinders. Carburetors were common on most vehicles before 1985. Currently, most vehicles use some form of fuel injection instead.

Catalytic Converter
Often simply called a "catalyst", this device is a stainless-steel canister fitted to a car's exhaust system that contains a thin layer of catalytic material spread over a large area of inert supports. The material used is some combination of platinum, rhodium, and palladium. It induces chemical reactions that convert an engine's exhaust emissions into less harmful products. So-called three-way catalysts are particularly efficient. Their operation, however, demands very precise combustion control, which can be produced only by a feedback fuel-air-ratio control system.

Chassis
A general term that refers to all of the mechanical parts of a car attached to a structural frame. In cars with unitized construction, the chassis comprises everything but the body of the car -- the basic-strength auto frame including the engine, suspension, wheels, brakes and drive train. Also known as a car without its body or coachwork. In monocoque, or unit construction, it is integral with the body.

Crankcase
A pan or box that encloses the bottom of the engine, supports the crankshaft, and contains the oil for the engine.

Crankshaft
The shaft that converts the linear motion of the pistons into rotation. The crankshaft is connected to the transmission. A shaft with one or more cranks, or "throws," that are coupled by connecting rods to the engine's pistons.

Differential
A differential allows the right and left wheels to rotate at different RPM. This is necessary because as a car goes around a curve, the outside wheel rotates faster than the inside wheel to "keep up". The differential allows the outside wheel to spin faster to compensate for the greater distance it travels. A special gearbox designed so that the torque fed into it is split and delivered to two outputs that can turn at different speeds. Differentials within axles are designed to split torque evenly; however, when used between the front and rear axles in four-wheel-drive systems (a center differential), they can be designed to apportion torque unevenly.

Differential Gears
The gears that convey engine power to the driving axles and are arranged so as to permit the rear wheels to turn at different speeds as required when the vehicle is negotiating a turn.

Distributor
A device that transfers voltage to the spark plug. A rotor in the distributor spins and touches contacts that are connected to spark plug wires. The wires then conduct the voltage to the spark plug. The moving part of the internal-combustion engine ignition system that directs the high-voltage current from the coil to the spark plugs in the proper firing order.

DOHC
Acronym for Dual/Double Overhead Cam, a DOHC engine has two camshafts in each cylinder head; one camshaft operates the intake valves, the other actuates the exhaust valves.

Drive Shaft
A rotating shaft that transfers power from the transmission to the rear wheels.

EGR Valve
The exhaust gas re-circulation (EGR) valve uses exhaust to reduce cylinder temperature, which in turn reduces nitrogen emissions. Engine pinging is one symptom of a faulty EGR, as is a failed emissions test. The valve can be checked with an external vacuum pump to make sure it's properly functioning.

Exhaust
The system of exhausting the burned gases from an internal-combustion engine consisting of piping or tubing, silencers, and, at times, resonators.

Exhaust Gas-Recirculation (EGR)
A method of reducing NOX (oxides of nitrogen) exhaust emissions by re-circulating some of the engine's exhaust gas into the intake manifold. The exhaust gas serves as inert filler that absorbs heat during the combustion process and reduces the peak temperature reached during combustion.

Exhaust Manifold
The network of passages that gathers the exhaust gases from the various exhaust ports and routes them toward the catalysts and mufflers of the exhaust system. A manifold with free-flowing passages of a carefully designed configuration, called a "header," can improve breathing.

Four Wheel Drive (4WD)
A part time system that transfers engine power to all four wheels. 4WD systems usually lack a center differential that allows use in dry conditions. 4WD provides superior traction compared with front or rear-wheel drive.

Front Wheel Drive (FWD)
The front wheels receive engine power. FWD provides more traction than rear-wheel drive (RWD) in poor road conditions because more weight is over the drive wheels. FWD also allows better use of interior space than RWD because all drive-train component

Fuel Injector
A fuel injector is nothing but an electronically controlled valve. It is supplied with pressurized fuel by the fuel pump in your car, and it is capable of opening and closing many times per second. When the injector is energized, an electromagnet moves a plunger that opens the valve, allowing the pressurized fuel to squirt out through a tiny nozzle. The nozzle is designed to atomize the fuel -- to make as fine a mist as possible so that it can burn easily. The amount of fuel supplied to the engine is determined by the amount of time the fuel injector stays open. This is called the pulse width, and it is controlled by the ECU. The injectors are mounted in the intake manifold so that they spray fuel directly at the intake valves. A pipe called the fuel rail supplies pressurized fuel to all of the injectors.

I-Head
Both valves located directly over the piston. Also called valve-in-head or overhead valve engine (SOHC Single overhead camshaft).

Intake Manifold
The network of passages that direct air or air-fuel mixture from the throttle body to the intake ports in the cylinder head. The flow typically proceeds from the throttle body into a chamber called the plenum, which in turn feeds individual tubes, called runners, leading to each intake port. Engine breathing is enhanced if the intake manifold is configured to optimize the pressure pulses in the intake system.

Limited Slip Differential (LSD)
A differential that reduces speed differences between wheels. LSD improves traction by preventing a slipping wheel from receiving all the engine power. The differential uses cone or disc clutches to lock the two separate axle shafts. This forces both driving wheels to transmit the same drive torque regardless of the traction available. It still allows differential action under normal driving conditions but improves traction in mud and snow. Limited slip ensures that some torque is always distributed to both wheels, even when one is on very slippery pavement.

Mass Air Flow Sensors
Mass air flow sensors unlock hidden horsepower and torque in your motor. Replacing your restrictive stock sensor with a mass air flow sensor delivers immediate acceleration and passing boosts. And, mass air flow sensors are custom-tuned to your vehicle

PCV Valve
The positive-crankcase ventilation (PCV) valve filters gasses emitted by hot oil before they're re-circulated back to the air cleaner. The Positive Crankcase Ventilation valve is an emissions control device that routes unburned crankcase blow-by gases back into the intake manifold where they can be re-burned. The PCV system is one of the oldest emission control devices, and also one of the most beneficial. Besides totally eliminating crankcase emissions as a source of air pollution, the constant re-circulation of air through the crankcase helps remove moisture which otherwise would cause sludge to form. Thus the PCV valve extends the life of the oil and engine. The PCV valve requires little maintenance. The valve and filter should be replaced somewhere around 30,000 to 50,000 miles (see the vehicle owners manual for service intervals).

Plugs & Wires
Plug wires that have external cracks should be replaced. Faulty wires will also show visible sparks in the dark with the engine running.

T.P.S
A little gadget on the carburetor throttle linkage or fuel injection throttle body that keeps the engine control computer informed about the throttle opening. The TPS is a variable resistor that changes resistance as the throttle opens wider. The computer needs this information to change the air/fuel mixture. Adjustment is very critical and is best left to a qualified professional. The throttle position sensor, shift lever, and throttle valve cable are critical to proper operation of the transmission. If one or more of these are out of adjustment or if the TPS is noisy, shifting will be erratic. Before performing any adjustments, check the transmission fluid level and sniff the fluid. Do not make any adjustments until the fluid level is correct, and burned fluid has been replaced.

Engine Sensors
In order to provide the correct amount of fuel for every operating condition, the engine control unit (ECU) has to monitor a huge number of input sensors. Here are just a few:

- **Mass Airflow Sensor**
  Tells the ECU the mass of air entering the engine.
- **Oxygen Sensor(s)**
  Monitors the amount of oxygen in the exhaust so the ECU can determine how rich or lean the fuel mixture is and make adjustments accordingly.
- **Throttle Position Sensor**
  Monitors the throttle valve position (which determines how much air goes into the engine) so the ECU can respond quickly to changes, increasing or decreasing the fuel rate as necessary.
- **Coolant Temperature Sensor**
  Allows the ECU to determine when the engine has reached its proper operating temperature.
- **Voltage Sensor**
  Monitors the system voltage in the car so the ECU can raise the idle speed if voltage is dropping (which would indicate a high electrical load).
- **Manifold Absolute Pressure Sensor**
  Monitors the pressure of the air in the intake manifold. The amount of air being drawn into the engine is a good indication of how much power it is producing. The more air that goes into the engine, the lower the manifold pressure, so this reading is used to gauge how much power is being produced.
- **Engine Speed Sensor**
  Monitors engine speed, which is one of the factors used to calculate the pulse width.
- **OBD II (O2 Sensor)**
  The oxygen sensor monitors emissions and "tells" the vehicle's computer how to adjust the air/fuel ratio for optimal efficiency. Over time, the sensor's "sniffers" become clogged with carbon, which can produce faulty readings.