

# Auto Terms

## Actual Cash Value

The amount of money invested in the purchase and repairs of a used vehicle. Also known as ACV, this represents the amount of out of pocket expense a dealer or broker is "into" a car.

## Air Bag

The air bag is a passive safety device, supplemental to safety belts, that inflates to provide a cushion to absorb impact forces during moderate to severe frontal collisions. This system can help to lessen the chance of contact with the steering wheel, instrument panel and windshield. The air bag is actuated automatically by sensors located in the front of the vehicle. To maximize effectiveness, seat and shoulder belts must always be used in conjunction with this system

## Air Injection

A system that injects air into the exhaust ports of the engine for combustion of unburned hydrocarbons in the exhaust gases, thus producing "cleaner" exhaust emissions.

## Alignment

Generally refers to wheel alignment, which is the proper adjustment of the car's front and rear suspension for camber, toe, caster and ride height.

## Alloy Wheels

A generic term used to describe any non-steel road wheel. The most common alloy wheels are cast aluminum. Technically, an alloy is a mixture of two or more metals. These wheels are known for their light weight and strength.

## All-Wheel Drive

Often confused with Four-Wheel Drive, this drive system features four, full-time active drive wheels to reduce wheel slippage and provide greater driver control over the vehicle. All-Wheel Drive automatically splits engine torque between the front and rear wheels as needed, improving on-road traction in unfavorable road conditions. Unlike Four-Wheel Drive, All-Wheel Drive is an on-road system and is not designed for off-road use. AWD does not require the driver to actively engage the system. It is operational at all times, and requires no switches, lights or visor instructions for system operation.

## Anti-Lock Brake System (ABS)

On a vehicle equipped with Anti-Lock Brakes, the wheels are equipped with speed sensors. When a sensor determines that a wheel is decelerating so rapidly that lockup may occur, the electro-Hydraulic Control Unit is activated. The EHCUC then modulates the brake pressure in the appropriate brake lines by means of the solenoid-operated valves. This is intended to prevent wheel lockup and help the vehicle maintain directional stability during potentially hazardous braking situations.

Found in some four-wheel drive vehicles, this allows the driver to engage, or "lock," the front axle hubs without leaving the vehicle.

## Axle Ratio

The ratio between the rotational speed (RPM) of the drive shaft and that of the

driven wheel. Gear reduction in final drive is determined by dividing the number of teeth on the ring gear by the number of teeth on the pinion gear.

### **Balance Shaft**

A shaft designed so that, as it turns, it counter rotates the rotational direction of the engine crankshaft in a manner that reduces or cancels out some of the vibration produced by the engine.

### **Ball Joint**

A flexible joint consisting of a ball within a socket. Ball joints act as pivots which allow turning of the front wheels and compensate for changes in the wheel and steering geometries that occur while driving.

### **Base-Coat/Clear Coat**

A paint system that adds a final clear-coat paint layer over primer and color coats to provide a deep, "wet-look" shine that resists fading.

### **Belted Radial Tires**

A reinforcing band, normally textile, fiberglass or steel, running around the circumference of a tire and strengthening the tread area.

### **Brake Pads**

In a disc system, they are the replaceable flat segments consisting of a rigid backing plate plus frictional lining that takes the place of the shoe and lining in a drum brake. Brake pads are sometimes referred to as brake pucks.

### **Brake Shoe**

The arc-shaped carrier to which the brake linings are mounted in a drum brake. They also force the lining against the rotating drum during braking.

### **Caliper**

In a disk brake, a housing for cylinder, pistons and brake shoes, connected to the hydraulic system. The caliper holds the brake shoes so they straddle the brake disc.

### **Camshaft**

The shaft in the engine which is driven by gears, belts or chain from the crankshaft. The camshaft has a series of cams that opens and closes intake and exhaust valves as it turns.

### **Catalytic Converter**

Often simply called a "catalyst", this is a stainless steel canister that is part of a vehicle's exhaust system and contains a thin layer of catalytic material spread over a large area of inert supports. It induces chemical reactions that convert an engine's exhaust emissions into less harmful products prior to entering the environment.

### **Center of Gravity**

Point where the weight of a vehicle appears to be concentrated and if suspended at that point would balance front and rear.

### **Combustion Chamber**

The volume of space at the top of the cylinder where burning of the air/fuel mixture begins.

### **Compression Ratio**

The volume of the combustion chamber and cylinder when the piston is at the bottom of its stroke, divided by the volume of the combustion chamber and cylinder when the piston is at the top of its stroke. Higher compression ratios tend to increase engine efficiency.

### **Compressor**

The mechanism is an air conditioner that pumps vaporized refrigerant out of the evaporator, compresses it to a relatively high pressure, and then delivers it to the condenser.

### **Control Arm**

A suspension element that has one joint at one end and two joints at the other end, typically on the chassis side. Also known as a wishbone or an A-arm.

### **Coolant**

The mixture of water and anti-freeze that picks up heat from the engine and transfers it to the air passing through the radiator. This transfer of heat keeps the engine operating within its optimum temperature range preventing premature engine wear.

### **Cooling System**

The system that removes heat from the engine by the forced circulation of coolant and thereby prevents engine overheating. In a liquid-cooled engine, it includes the water jackets, water pump, radiator, and thermostat.

### **Crankcase**

A case that encloses the crankshaft. In most engines, the oil pan and the lower portion of the cylinder block form the crankcase.

### **Crossmember**

One of several horizontal members in a vehicle frame which join the side members and add to overall strength and stability.

### **Cylinder Block**

The basic part of the engine to which other engine parts are attached. It is usually a casting and includes engine cylinders and the upper part of the crankcase.

### **Cylinder Head**

The removable part of the engine that attaches to the cylinder block directly above the cylinders. The head is cast from aluminum or iron and houses the combustion chambers, the intake and exhaust ports, spark plugs and much or all of the valve train. It has oil and water passages for cooling and lubrication.

### **Diesel Engine**

A diesel engine uses heavier weight components than gas engines to handle higher compression ratios. Typically, diesel engines run with greater efficiency and higher torque than similar size gas engines. These attributes lead to better fuel economy and towing performance. Diesel engines do not have spark plugs or carburetors. Instead glow plugs are used to preheat air in the cylinders to ensure easy starts. Once the engine is started, compression heats the fuel in the cylinders for combustion.

### **Differential**

The gear assembly connected to the drive shaft that permits the wheels to turn at different speeds when going around a corner, while transmitting power from the drive shaft to the wheel axles.

### **Directional Stability**

A vehicle's ability to maintain a true course of travel despite bumps, crosswinds, uneven road surfaces.

### **Disc Brakes**

Properly called caliper disc brakes, a type of brake that consists of a rotor that rotates at wheel speed, straddled by a caliper that can squeeze the surfaces of the rotor with brake pads near its edge. Disc brakes provide a more linear response and operate more efficiently at high temperatures and during wet weather than drum brakes.

### **Distributor**

A component of the ignition system, usually driven by the camshaft that directs high-voltage surges to the spark plugs in the proper sequence.

### **Double Wishbone Suspension**

A system of independent suspension in which each wheel is located on a "knuckle" that is connected by ball joints to an upper A arm and a lower A arm. Usually, the lower A arms are longer. This system provides minimal changes in track and camber when the suspension is under load, as when going over bumps or in hard cornering.

### **Drive Shaft**

The shaft that transmits power from the transmission to the differential in a rear-drive power train.

### **Drivetrain**

The power-transmitting components in a car, including clutch, gearbox (or automatic transmission), driveshaft, universal joints, differential and axle shafts.

### **Dynamometer**

A device which absorbs and measures the power derived by an internal combustion engine.

### **Exhaust Manifold**

The network of passages that gathers the exhaust gases from the various exhaust ports and routes them toward the catalyst, the muffler and the exhaust system.

### **Factory Equipment**

In used vehicles: the combination of original standard equipment and production options that make up the equipment of a used vehicle. May also be referred to as "base" equipment.

### **Fifth Wheel**

Load supporting plate mounted to the frame of a vehicle. Pivot mounted, it contains provision for accepting and holding the kingpin of a trailer, providing a flexible connection between the tractor and the trailer. Center of the fifth wheel

should always be located ahead of the centerline of the rear axle.

### **Four Wheel Drive**

In a Four Wheel Drive system, a secondary transmission assembly, called a transfer case, is driven from the main transmission. The transfer case distributes power to both axles to drive all four wheels. It is the heart of the Four-Wheel Drive system. Four-Wheel Drive can be full-time, in which power is delivered to both axles at all times or part-time, where the driver selects two or four wheel drive. Four wheel drive is often combined with independent suspension systems and off-road type tires to enhance driveability on rough, off-road terrain, or on-road driveability in unfavorable driving conditions.

### **Four Wheel Independent Suspension**

A type of suspension in which all wheels are mounted to separate suspension members with no rigid axle connecting them. Therefore a disturbance affecting one wheel has no effect on the opposite wheel. Four wheel independent suspension reduces the un-sprung weight, improves ride and handling over rough surfaces and permits room for a larger trunk.

### **Front-Wheel Drive**

A drive system where the engine and transaxle components apply the driving force to the front wheels rather than the rear wheels. Benefits of Front-Wheel drive include: Maximized passenger space. Enhanced cargo area. excellent drive traction; particularly on wet or slippery surfaces, since the drive is through the front wheels, which carry a heavier load.

### **Fuel Injection**

A method of delivering fuel under pressure into an engine's combustion chamber. Fuel injection systems can be single-point, multi-point, etc.. Replaces carbureted system.

### **Fuel Pump**

A mechanical or electrical device that draws fuel from the fuel tank and delivers it to the carburetor or injectors

### **Galvanized Steel**

A specially zinc-coated steel used on many major painted panels and in key unpainted areas of a vehicle to help prevent rust and corrosion.

### **Gap Insurance**

Insurance that will cover the difference between the replacement cost paid by conventional insurance and what is owed on the lease in the case the car is totaled or stolen.

### **Gas Filled Shock Absorbers**

A nitrogen gas chamber is used to pressurize the shock absorber in place of the traditional air/oil combination. Gas filled shock absorbers provide more stable damping in a variety of conditions and thus improves ride and road contact.

### **Gear Ratio**

The number of revolutions a driving (pinion) gear requires to turn a driven (ring) gear through one complete revolution. For a pair of gears, the ratio is found by dividing the number of teeth on the driven gear by the number of teeth on the

driving pinion gear.

### **Generator**

A device that converts mechanical energy into electrical energy. It can produce either AC or DC electricity. Seldom used in automotive applications, it has been replaced by the alternator.

### **Halogen Headlamp**

A sealed-beam headlamp with a small inner bulb filled with halogen which surrounds a tungsten filament. Halogen headlamps may increase luminous intensity at the road surface by 50 to 80 percent, as compared to the long-conventional sealed-beam headlamp systems. Many halogen headlamp systems incorporate high-beam and low-beam in one element, enhancing their serviceability.

### **Heads Up Display**

The digital projection of pertinent instrument data onto the lower portion of the windshield on the driver's side. The driver does not have to take his eyes off the road to read his instrument panel.

### **Independent Suspension**

A term used to refer to any type of suspension system that allows each of the two wheels of a given axle to move up and down independently of each other.

### **Lease**

A contract granting the use of a car for a specified period of time in return for a set fee. Leases may be classified as open ended or closed ended.

### **Limited Slip Differential**

A differential in a rear-drive vehicle fitted with a mechanism that limits the speed and torque differences between its two outputs. Limited slip ensures that some torque is always distributed to both wheels, even when one is on a very slippery surface.

### **Lock Up Torque Converter**

A torque converter that contains a special clutch that forms a solid connection between the engine output shaft and the transmission input shaft when a certain, pre-set speed is attained. This reduces transmission friction losses and increases efficiency.

### **MacPherson Strut**

A suspension system that consists of a combination coil spring and shock absorber in one compact unit at each wheel. With this "independent" suspension design, road shocks at one wheel are not transferred to the opposite wheel. MacPherson struts use fewer parts, meaning a reduction on weight and fewer elements that could wear out.

### **MSRP**

Manufacturer's Suggested Price. MSRPs do not include applicable destination charges, state and local taxes, license fees, optional equipment or special items or services.

### **Multi-Port Fuel Injection**

Multi-Port Fuel Injection uses individual fuel injectors to spray fuel into each intake port, bypassing the intake manifold.

### **Octane Rating**

A unit of measurement on a scale intended to indicate the tendency of a fuel to detonate or knock based on the percentage of isooctane in the fuel. The higher the rating, the higher the percentage of isooctane and therefore the greater the resistance to detonation offered by the fuel.

### **Overdrive**

A transmission in which the highest gear ratio is less than a one-to-one ratio. This means the drive shaft turns faster than the engine crankshaft. The overdrive feature saves fuel and, because the engine runs slower, engine wear and noise are reduced.

### **Overhead Valve Engine**

An engine with both intake and exhaust valves placed directly over the piston. In this design, the camshaft is located in the block, and the valves are actuated by pushrods and rocker arms.

### **Pearl Paint**

A type of paint that is similar to metallic paint, but instead of minute metal particles it uses mica. Mica is a kind of semi transparent, crystalline mineral that absorbs and reflects light in prismatic fashion. This gives a dramatic, multi-dimensional effect to the paint. Sometimes called "pearl coat."

### **Pinion**

A gear with a small number of teeth designed to mesh with a larger geared wheel or a rack. Used in rack and pinion steering and the differential ring and pinion.

### **Pitch**

The up and down movement along an imaginary axis between the front and rear of a vehicle. Often during hard braking, the vehicle's nose will "dive" or pitch down in front. During acceleration the back end will "squat" or pitch down in the rear.

### **Piston**

A partly hollow cylindrical part closed at one end, fitted to each of the engine's cylinders and attached to the crankshaft by a connecting rod. Each piston moves up and down in its cylinder, transmitting power created by the exploding fuel to the crankshaft via a connecting rod.

### **Powertrain**

A name applied to the group of components used to transmit engine power to the driving wheels. It can consist of engine, clutch, transmission, universal joints,

drive shaft, differential gear, and axle shafts. Powertrain components are matched according to driver needs such as high torque, fuel economy, or convenience.

### **Pushrod**

A general term for any rod that transfers force in compression. In a conventional overhead valve layout, pushrods are used to transfer reciprocating motion from the cam followers to a more distant part of a valve train, typically the rocker arms. Pushrods are eliminated in overhead camshaft designs.

### **Quarter Panel**

A sheet metal panel that covers the area from the rear-door opening to the taillight area, and from the bottom of the surface to the base of the roof, or from the headlamp area to the front-door opening, and from the bottom of the surface to the base of the hood.

### **Quartz Halogen Headlamps**

A headlamp bulb having a quartz envelope holding the tungsten filament and filled with an inert gas containing iodine or another of the five halogen gases. The gas serves to remove the tungsten deposits from the bulb wall and redeposit them on the filament, preventing blackening of the bulb surface and reduction of light output. This kind of cycle requires very high filament operation temperatures which necessitates the use of quartz instead of glass. These lamps produce more lighting power per watt of electrical power than standard sealed beam headlamps.

### **Rack and Pinion Steering**

A steering gear in which a pinion on the end of the steering shaft merges with a rack of gear teeth on the major cross member of the steering linkage. When the steering wheel is turned, the pinion gear turns, moving the rack to the left or right, thus steering the wheels.

### **Residual**

A conservative projection of the market value of a vehicle at the end of a lease. Residual values are provided by major auto manufacturers or independent companies that specialize in auto valuation.

A higher residual value will lower the monthly payment. However, the vehicle must be resalable at the residual amount or the lessor will lose money.

Conversely, adjusting the residual too low will increase the monthly payment and may make the lease payment unattractive. Adjustments to residual may be made for excess mileage or wear and tear.

### **Resonator**

A small auxiliary muffler that assists the main muffler in reducing exhaust noise.

### **Rolling Resistance**

This is motion resisting force that is present from the instant the wheels begin to turn. On normal road surfaces, rolling resistance decreases with increased tire

pressure and increases with vehicle weight. Rolling resistance can also be affected by tire construction and tread design.

### **Spoiler**

An aerodynamic device, normally on the rear of the vehicle, that changes the direction of airflow in order to reduce lift aerodynamic drag. A spoiler either reduces drag or create a downward force on the car. It is called a spoiler because it "spoils" the normal air flow over the car.

### **Steering Ratio**

A predetermined ratio of the steering gears. Usually, the lower the steering ratio, the quicker the response.

### **Strut**

The main support member in a MacPherson suspension system. The strut also serves as the shock absorber.

### **Supercharger**

Supercharging is the compression of an engine's intake charge above atmospheric pressure by means of an air pump driven by a crankshaft. This is not to be confused with a turbocharger which is an air pump that is exhaust driven.

A supercharger can provide boost faster than a turbo and over a much broader engine rpm range. The disadvantages of supercharging are higher power demands, more mechanical noise and more complex control requirements.

### **Suspension System**

Includes springs, shock absorbers/struts, and linkage used to suspend a vehicle's frame, body, engine and drivetrain above the wheels.

### **Tachometer**

An instrument for measuring the speed of the engine crankshaft in revolutions per minute.

### **Timing**

Timing refers to the crankshaft angles at which the valves open and close and at which time the ignition system fires the spark plugs.

### **Toe In**

The amount by which the front of a front wheel points inward or outward. A slight amount of toe in is usually specified to keep the front wheels running parallel on the road by offsetting other forces that tend to spread the wheels apart.

### **Torque**

A force that produces a twisting or rotating motion.

### **Torque Converter Clutch**

An electronically controlled lockup clutch that is automatically engaged at certain speeds to eliminate the slip between the torque converter's input and output, thereby improving fuel efficiency and performance.

### **Traction Control**

Traction control helps provide smoother, more controlled acceleration by reducing the amount of wheel spin during reduced traction conditions. Traction control utilizes the vehicle's anti-lock braking system and is usually activated only at low vehicle speeds.

### **Turbocharger**

Rotary compressor or pump that pressurizes engine intake air. It is driven by the flow of exhaust gases. The increased pressure forces more air into the cylinder than it could normally draw, allowing the engine to burn more fuel and in turn produce more power.

### **Unibody Construction**

A type of body construction that doesn't require a separate frame to provide structural strength or support for the vehicle's mechanical components. Also called "unitized."

### **Universal Joint**

A joint that transmits rotary motion between two shafts that aren't in a straight line.

### **Valve**

A device that can be opened or closed to allow or prevent the flow of a liquid or gas from one place to another. Most internal combustion engines use intake and exhaust valves to allow fuel/air mixture into the cylinders and to exhaust burnt gases. Some engines have four valves per cylinder, which increases total valve area for increased efficiency and performance.

### **Valve Lifter**

The cylindrical component that presses against the lobe of a camshaft and moves up and down as the cam lobe rotates, opening and closing an intake or exhaust valve. Virtually all modern valve lifters are of an hydraulic design that uses a cushion foil to promote quiet operation.

### **Valve Train**

The collection of parts that make the valves operate, allowing fuel intake, compression and exhaust. Includes the camshaft(s) and all related drive components, and the various parts that convert the camshaft's rotary motion into reciprocating motion at the valves.

### **Weight Distribution**

That portion of the total weight of a vehicle, including equipment and payload, that will be supported by each axle and tire. Proper distribution of total vehicle weight is critical to the service life of components such as the frame, axles, springs, bearings, and tires and therefore one of the most important requirements in selecting the right truck for your customer's particular job.

### **Wheelbase**

Distance, center to center, from front axle to rear axle. Wheelbase is important because it indicates available body length and weight distribution between front and rear axles.

### **Wholesale Value**

The price, based on auction results or retailer trade reports, that a retailer expects to pay for a vehicle.