

## 1. Suppliers

### Ford Products

Ford Motorsport Performance Equipment is available from selected Ford and Lincoln-Mercury dealers and selected automotive specialty performance outlets.

SVO catalog information, general inquiries and technical questions on products should be addressed to:

Ford Motorsport Performance Equipment  
44050 N. Groesbeck Highway  
Clinton Township, MI 48036-1108

or phone 313/337-1356

For official Ford Motor Company Shop Manuals and wiring diagrams, call "Helm Publications" at 1-800-782-4356.

### Aftermarket Suppliers

The following list of suppliers will give you a starting point for investigation of possible modifications to your system. Again, I list these without making any particular judgments about their merits.

Autotronics Controls Corp.  
1490 Henry Brennan Dr.  
El Paso TX 79936  
915/857-5200

BBK Performance  
1611 Railroad  
Corona CA 91720  
909/735-8892

Best Products/Pro-Flow  
1250 A. Rankin St.  
Troy, MI 48083  
313/585-6890

Charlie's Mustangs  
766-A N 9th  
San Jose CA 95112  
408/275-6511  
5.0 Performance Center

Crane Cams, Inc.  
530 Fentress Blvd.  
Daytona Beach FL 32114  
904/258-6174

Fairway  
1350 Yorba Linda Blvd.  
Placentia CA 92670  
714/528-4670  
ADS superchip

Flo-master  
22 Oak Ln.  
Stonington, CT 06378  
203/536-1700  
ECU not street legal, convert small block carb

Granatelli Performance  
21417 Ingomar #5  
Canoga Park CA 91304  
818/727-7122  
Superchargers

HKS USA  
20310 Gramercy Pl.  
Torrance CA 90501  
310/328-8100  
High performance for MEC engines

Hypertech, Inc.  
1910 Thomas Rd.  
Memphis TN 38134  
901/382-8888  
Power modules

Kaufman Products, Inc.  
12420 Benedict Ave.  
Downey CA 90242  
310/803-5531  
Hi-flow intake system

Kenne Bell  
10743 Bell Court  
Rancho Cucamonga, CA 91730  
909/941-6646

Nitrous Oxide Systems, Inc.  
5930 Lakeshore Drive  
Cypress CA 90630  
714/821-0580

Paxton Superchargers  
1260 Calle Suarte  
Camarillo CA 93012  
805/987-5555  
Street-legal superchargers

Salen  
3080 29th St.  
Long Beach CA 90806  
310/595-5964  
Throttle bod, other eng mods

Spearco Performance,  
14664 Titus  
Panorama City, CA 91402  
818/901-7851  
Twin turbo 5.0L, intercoolers

Specialty Equipment Market Association  
(SEMA)  
1575 South Valley Vista Dr.  
Diamond Bar, CA 91765  
909/396-0289

## 438 Suppliers

Steeda Autosports  
2241 Hammondville Rd.  
Pompano FL 33069  
305/960-0774  
Engine mods

Texas Turbo  
9703 Plainfield  
Houston TX 77036  
713/988-0541  
5.0 piggyback proc, removable chips, 4 stages

Turbo Tech  
6229 S. Adams  
Tacoma WA 98409  
206/475-8319  
Turbo, 5.0L

Vortech Engineering  
5351 Bonsai Ave.  
Moorpark CA 93021  
805/529-9330  
Centrifugal superchargers, street legal

## 1. CARB Exemption Order List

Table CARB Exemption Order Components

Manufacturer/Model Kit	Application	Model Year	General Exemption Order #
Autotronics Controls Corp. <i>MSD ignition components</i>	All	All	D-40
ACF Industries <i>Engine Knock Eliminator</i>	All single TFI coil		D-137
BBK Performance <i>Equal-Length Shorty Header</i>	5.0L Mustang, Capri, Mark VII		D-245
Crane Cams, Inc. <i>Interceptor ECU Digital Timing Control Modular Trigger Ignition Ignition Coil</i>	5.0L Mustang All EEC-IV TFI ignition	1990-On 1988-On	D-225
Edelbrock Corp. <i>Tubular Exhaust System</i>	5.0L passenger cars	1986-On	D-215
HKS USA, Inc. <i>Twin-Power CD Ignition Intercooler</i>	All 2.2L Probe	1988-On 1988-On	D-186
Hedman Mfg. Co. <i>Tubular Exhaust Manifold</i>	5.0L Mustang	1986-On	D-167
J. Bittle American <i>Shorty Headers</i>	5.0L Mustang 5.0L, 5.8L Trucks 5.0L T-Bird 5.0L Lincoln LSC 4.0L Trucks 5.7L F-150 Trucks	1985-91 1985-On 1990-On 1986-On 1990-On 1988-On	D-216
Kenne Bell <i>Twin Screw Whipplecharger TS 1000</i>			D-271
M.A.C. Products <i>Stubbie Header</i>	5.0L Mustang, Truck 5.0L T-Bird/Cougar	1986-On 1990-On	D-241
Nitrous Oxide Systems <i>NO2 Injection Kit</i>	5.0L	1986-On	D-266
Paxton Superchargers <i>Supercharger SN-89, V-1</i>	5.0L, 5.8L	1986-On	D-195
Professional Flow Tech <i>Pro-M Mass Air Flow Sensor</i>	5.0L Mustang 3.8L T-Bird	1988-On 1990-On	D-242
Spearco Performance Products <i>Intercooler</i>	2.3L Turbo	1988-On	D-140
Vortech Engineering <i>Supercharger Boost Timing Master</i>	5.0L Passenger cars	1986-On	D-213

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## Art courtesy of Ford Motor Company

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**Art courtesy of Turbo Tech**

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**Art courtesy of Vortech**

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Fig. 6-12

# Glossary

## NOTE —

This glossary list terms used by Ford up through 1992. For new terms instituted in 1993 (as per SAE J1930) see inside front cover.

**4EAT:** 4-Speed Electronic Automatic Transaxle.

**4X4L:** 4X4 Low input switch.

**A4LD:** Automatic 4-Speed Lock-up-converter Drive.

**ABSOLUTE PRESSURE:** Pressure measured from the point of total vacuum. For example, absolute atmospheric pressure at sea level is 14.5 psi (1 bar).

**A/C:** Air Conditioning.

**ACC:** A/C Clutch Compressor signal input to the EEC-IV control module relating status of the A/C clutch.

**ACCS:** A/C Cycling Switch.

**A/C P:** A/C Pressure Cut-out switch.

**ACL:** Automatic Adjustable Shock Controller.

**A/CL BIMET:** Air Cleaner Bimetal sensor.

**ACD:** Air Conditioner Demand switch.

**ACs:** Air Conditioner switch or its signal circuit.

**ACT:** Air Charge Temperature sensor or its signal circuit.

**ACV:** Air Control Valve (Thermactor).

**ADAPTIVE CONTROL:** The ability of the control module to adapt closed-loop control to changing operating conditions such as engine wear, fuel quality, or altitude to improve control of the air-fuel ratio, ignition timing, or idle rpm. Sometimes referred to as self-learning.

**AHFSS:** Air Condition/Heater Function Select Switch input to the EEC-IV control module relating status of the A/C heater function select switch.

**AIR BPV:** (Thermactor) Air Bypass Valve.

**AIR-FUEL RATIO:** The amount of air compared to the amount of fuel in the air-fuel mixture, almost always expressed in terms of mass. See also Stoichiometric Ratio.

**AM1:** Thermactor Air Management 1 (TAB).

**AM2:** Thermactor Air Management 2 (TAD).

**AMBIENT TEMPERATURE:** The temperature of the surrounding air.

**AMPERE (AMPS):** A measure of current flow. See also Milli-ampere (mA).

**ATMOSPHERIC PRESSURE:** Normal pressure in the surrounding atmosphere, generated by the weight of the air above us pressing down. At sea level, in average weather conditions, atmospheric pressure is approximately 100 kPa (about 14.5 psi) above vacuum or zero absolute pressure. See also Barometric Pressure.

**ANTI-BFV:** Anti-Backfire Valve.

**AOD:** Automatic Overdrive Transmission.

**A/T or ATX:** Automatic Transmission/Transaxle

**ATDC:** After Top Dead Center.

**AVOM:** Analog Volt-Ohm Meter.

**AXOD:** Automatic Transaxle Overdrive.

**AXOD-E:** Automatic Transaxle Overdrive, Electronically Controlled.

**BAROMETRIC PRESSURE:** Another term for atmospheric pressure. Expressed in inches of Mercury (in.Hg.): how high atmospheric pressure (relative to zero absolute pressure) forces Mercury up a glass tube. 14.5 psi = 29.92 in.Hg. See also Atmospheric Pressure.

**BASE IDLE:** Idle RPM when the throttle lever rest on the throttle stop and Idle Speed Control is fully retracted and disconnected.

**BATT:** Battery

**BATT (+):** Battery positive post or its circuit.

**BATT (-):** Battery negative post or its circuit.

**BOB:** Breakout Box. An EEC-IV test device that connects in series with the control module and the EEC-IV harness to permits measurements of control module inputs and outputs.

**BOO:** Brake On-Off input to the EEC-IV control module indicating braking.

**BOOST:** Condition of over-pressure (above atmospheric) in the intake manifold; caused by intake air being forced in by a turbocharger or supercharger.

**BP:** Barometric Pressure sensor or its signal circuit.

**BPA:** By-Pass Air Solenoid or Valve. Used to control idle speed and deceleration.

**BREAKOUT BOX:** See BOB.

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**BTDC:** Before Top Dead Center.

**BVT:** Back Pressure Variable Transducer.

**BYPASS:** A channel that permits passage (usually of air) around a closed valve such as the throttle.

**CANP:** Canister Purge solenoid or its control circuit.

**CSE GND:** Case Ground (EEC-IV control module case).

**CATALYST:** Material that starts or speeds up a chemical reaction without being consumed itself. The metal coatings inside a catalytic converter.

**CATALYTIC CONVERTER:** Device mounted in the exhaust system that converts harmful exhaust emissions into harmless gases. Works by catalytic action which promotes additional chemical reaction after combustion.

**CBD:** Closed Bowl Distributor.

**CCC:** Converter Clutch Control solenoid or its control circuit.

**CCD:** Computer Controlled Dwell.

**CCO:** Converter Clutch Override output from the EEC-IV control module to the transmission.

**CCS:** Coast Clutch Solenoid or its control circuit.

**CES:** Clutch Engage Switch.

**CFI:** Central Fuel Injection. A computer controlled fuel metering system which sprays atomized fuel into a throttle body mounted atop the intake manifold.

**CHECK ENGINE LIGHT:** A dash panel light used either to aid in the identification and diagnosis of EEC system problems or to indicate that maintenance is required on non-EEC equipped vehicles. See MIL.

**CID:** Cylinder Identification sensor or its signal circuit.

**CLC:** Converter Lock-up Clutch.

**CLOSED-LOOP CONTROL:** A feedback system that maintains a prescribed limit in another system by monitoring the output of that system.

**CLUTCH:** Clutch engagement switch or its control circuit.

**CO:** Carbon Monoxide. One of the harmful gases produced by combustion. CO in the exhaust is measured during a tune-up as an indication of combustion efficiency.

**COC:** Conventional Oxidation Catalyst.

**COLD-START:** Starting the engine when it is cold; when the engine has not run for several hours.

**COMBUSTION:** Controlled, rapid burning of the air-fuel mixture in the engine's cylinders.

**COMBUSTION CHAMBER:** Space left between the cylinder head and the top of the piston at TDC; where combustion of the air-fuel mixture takes place.

**COMPRESSION RATIO:** The ratio of maximum engine cylinder volume (when the piston is at the bottom of its stroke) to minimum engine cylinder volume (with the piston at TDC).

Thus, the theoretical amount that the air-fuel mixture is compressed in the cylinder.

**COMPUTED TIMING:** The total spark advance in degrees before top dead center. Calculated by the EEC-IV control module based on input from a number of sensors.

**CONTINUITY:** Little or no resistance in an electrical circuit to the flow of current. A solid electrical connection between two points in a circuit. The opposite of an open circuit.

**CONTINUOUS SELF-TEST:** A continuous test of the EEC-IV system conducted whenever the vehicle is in operation.

**CONTROL MODULE:** A transistorized device that processes electrical inputs and produces output signals to control various engine functions.

**CPS:** Crankshaft Position Sensor or its signal circuit.

**CTS:** Coolant Temperature Switch.

**CURB IDLE:** Computer controlled Idle RPM.

**CURRENT:** Amount or intensity of flow of electricity. Measured in Amperes.

**CWM:** Cold Weather Modulator.

**DCL:** Data Communications Link.

**DENSITY:** The ratio of the mass of something to the volume it occupies. Air has less density when it is warm, and less density at higher altitude.

**DFS:** Decel Fuel Shut-off.

**DIS:** Distributorless Ignition System (low data rate).

**DMIVA:** Distributor Mounted Ignition with Vacuum Advance.

**DOL:** Data Output Link. Fuel calculation data from the EEC-IV control module to the electronic trip minder.

**DPDIS:** Dual Plug Distributorless Ignition System.

**DPFE:** Delta Pressure Feedback EGR sensor or its signal circuit.

**DPH:** Dual Plug Head.

**DPI:** Dual Plug Inhibit.

**DRIVEABILITY:** Condition describing a car in which it starts easily and idles, accelerates, and shifts smoothly and with adequate power for varying temperatures.

**DUTY CYCLE:** In components which cycle on and off, measurement of the amount of time a component is on. The measurement is expressed in percent, with 100% the maximum. See also Dwell.

**DV:** Delay Valve.

**DVOM:** Digital Volt-Ohm Multimeter that displays voltage or resistance measurements in digital form on a liquid crystal display (LCD).

**DV TW:** Delay Valve Two-Way.

**DWELL:** The amount of time that primary voltage is applied to the ignition coil to energize it. Also, a measurement of the

duration of time a component is on relative to the time it is off. Dwell measurements are expressed in degrees, for example degrees of crankshaft rotation. See also Duty Cycle.

**EATC:** Electronic Automatic Temperature Control.

**E40D:** Electronic 4-Speed Overdrive transmission.

**ECA:** Electronic Control Assembly.

**ECT:** Engine Coolant Temperature sensor or its signal circuit.

**EDF:** Electro-Drive Fan relay or its control circuit.

**EDIS:** Electronic Distributorless Ignition System (high data rate).

**EEC:** Electronic Engine Control. A computer controlled system of engine control.

**EEGR:** Electronic EGR Valve (Sonic).

**EFI:** Electronic Fuel Injection. A computer controlled fuel system that distributes atomized fuel through an injector located in each intake port of the engine. The fuel injectors are fired using bank-to-bank circuitry.

**EGO:** Exhaust Gas Oxygen sensor or its signal circuit.

**EGOG:** EGO Ground.

**EGR:** Exhaust Gas Recirculation. The process of feeding a small amount of exhaust gas back into the intake manifold to reduce combustion temperatures as a method of controlling emissions.

**EGRC:** EGR Control vacuum solenoid valve or its control circuit.

**EGR S/O:** EGR Shut Off.

**EGRV:** EGR Vent vacuum solenoid valve or its control circuit.

**EHC:** Exhaust Heat Control vacuum solenoid valve or its control circuit.

**EMISSIONS:** By-products of combustion released in the exhaust. Refers mostly to carbon monoxide (CO), hydrocarbons (HC), and nitrous oxides (NO<sub>x</sub>).

**EMW:** Emission Maintenance Warning Module. the EEC-IV system conducted with the engine running and the vehicle at rest.

**ENGINE POWER:** Measure of the ability of the engine to move the car. See also Horsepower.

**ENGINE RUNNING SELF-TEST:** A test of the EEC-IV system conducted with power applied and the engine at rest.

**EPC:** Electronic Pressure Control solenoid or its control circuit.

**ER:** Engine Running Self-Test (same as KOER).

**ERS:** Engine RPM Sensor or its signal circuit.

**EVP:** EGR Valve Position sensor or its signal circuit.

**EVR:** EGR Vacuum Regulator solenoid or its control circuit.

**FALSE AIR:** Air that leaks into the intake system without being measured by the fuel injection system.

**FCS:** Fuel Control Solenoid or its control circuit.

**FI:** Fuel Injector or its control circuit.

**FIPL:** Fuel Injection Pump Lever sensor or its signal circuit.

**FLOODING:** An excess of fuel in the cylinder, from an over-rich mixture, that prevents combustion.

**FMEM:** Failure Mode Effects Management.

**FP:** Fuel Pump relay or its control circuit.

**FPM:** Fuel Pump Monitor. A circuit in the EEC system used to monitor the electric fuel pump operation on some EEC-IV equipped vehicles.

**FTO:** Filtered Tach Output. An output from the DIS TFI-IV module which provides a filtered ignition signal to the control module to control dwell.

**FUEL INJECTION:** Fuel delivery system that generally uses an air-flow sensing device as an input signal for precise metering of the fuel for a given air flow, injecting that fuel into the air stream at the intake ports of the engine. Replaces a carburetor or carburetors.

**FUEL METERING:** Control of the amount of fuel that is mixed with engine intake air to form a combustible mixture.

**FUEL RAIL:** Pipe on EFI systems delivering fuel at system pressure to the injectors. Storage volume of the fuel rail influences stability of fuel pressure in the system.

**FUEL RICH/LEAN:** A qualitative evaluation of air/fuel ratio based on an air-fuel value known as stoichiometry or 14.7. In the EEC-IV system rich/lean is determined by a voltage signal from the oxygen sensor. An excess of oxygen (lean) is a voltage of less than .4 volts. A rich condition is indicated by a voltage of greater than .6 volts.

**FWD:** Front Wheel Drive.

**GND or GRND:** The return path for current in a circuit. Because the negative terminal of the battery is connected to the car chassis, the metal parts of the car usually serve as this path.

**GOOSE:** A brief opening and closing of the throttle (Dynamic Response Test).

**HALL EFFECT:** A process where current is passed through a small slice of semi-conductor material at the same time as a magnetic field to produce a small voltage in the semi-conductor.

**HBV:** Heater Blower Voltage input to the EEC-IV control module reflecting heater blower voltage demand.

**HEDF:** High speed Electro-Drive Fan relay or its control circuit.

**HEGO:** Heated EGO sensor or its signal circuit.

**HEGOG:** Heated EGO Ground.

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**HERTZ:** Measure of frequency: cycles per second. Abbreviated as Hz.

**HIC:** Hot Idle Compensator.

**HLOS:** Hardware Limited Strategy. Certain types of malfunction will place the into HLOS mode. Output commands are replaced with fixed values.

**HO:** High Output.

**HORSEPOWER:** The rate of doing work. A common measure of engine output also expressed in metric kilowatts (Kw).

**HOT START:** Starting the engine when it is at or near normal operating temperature.

**HSC:** High Swirl Combustion.

**HSF:** High Speed Cooling Fan or its control circuit.

**HSIA:** High Speed Inlet Air.

**IAC:** Inlet Air Control solenoid or its circuit.

**IAS:** Inlet Air Solenoid valve or its control circuit.

**IBP:** Integral Back Pressure.

**IDEAL AIR-FUEL RATIO:** (See Stoichiometric Ratio)

**IDL:** Idle switch or its control circuit.

**IDLE LIMITER:** A device to control minimum and maximum idle fuel richness. The idle limiter is intended to prevent unauthorized persons from making overly rich idle adjustments.

**IDM:** Ignition Diagnostics Monitor. A continuous monitor of the ignition input to the EEC-IV control module used to detect intermittent ignition faults.

**IGN:** Ignition circuit or system.

**IGNITION:** The point at which the spark causes combustion to begin.

**IGNITION ADVANCE/RETARD:** Changing the moment of combustion in relation to the point of piston travel. Ignition advance begins combustion earlier; ignition retard begins combustion later.

**IMS:** Inferred Mileage Sensor. A circuit using an E-cell which deflates its state with the application of a current. As the vehicle ages (in terms of Key-On time) the EEC-IV control module compensates for aging of the vehicle by changing calibration parameters.

**In.Hg:** (See Barometric Pressure)

**INJ:** Injector (Fuel).

**INJ GND:** Injector Ground (Fuel).

**IRCM:** Integrated Relay Control Module.

**ISC:** Idle Speed Control. Currently there are two types of computer controlled idle speed control: D.C. motor ISC and air bypass ISC-BPA.

**ITS:** Idle Tracking Switch.

**KAM:** Keep Alive Memory. A series of vehicle battery powered memory locations in the microprocessor which allows the microprocessor to store input failures identified during normal operation for use in later diagnostic routines and adapts some calibration parameters to compensate for changes in the vehicle system.

**KAPWR:** Keep Alive Power.

**KC:** Knock Control circuit.

**KCU:** Knock Control Unit or its control circuit.

**KILOPASCALS (kPa):** 1,000 pascals, a unit of pressure. 100 kPa = Atmospheric Pressure at sea level.

**KNOCK:** Sudden increase in cylinder pressure caused by pre-ignition of some of the air-fuel mixture as the flame front moves from the spark-plug ignition point. Pressure waves in the combustion chamber crash into the piston or cylinder walls. This results in the sounds known as knock or ping. Strongly influenced by fuel-octane rating, ignition timing, and compression ratio. May be caused by hot carbon deposits on the piston or cylinder head.

**KNOCK SENSOR:** A vibration sensor attached to the cylinder block that generates voltage when knock occurs. The voltage signals a control unit that adjusts timing (and limits boost on turbocharged cars) to stop the knock.

**KOEO:** Key On Engine Off.

**KOER:** Key On Engine Running (same as Engine Running (ER)).

**kPa:** (See Kilopascals)

**KS:** Knock Sensor or its signal circuit

**LED:** Light Emitting Diode. A semiconductor that emits light when current is applied to it. Often used as an indicator in place of a light bulb.

**LFP:** Low Fuel Pump relay.

**LOAD:** The amount of work the engine must do. When the car accelerates quickly from a standstill, the engine is under a heavy load.

**LUS:** Lock-Up Solenoid.

**MAF:** Mass Air Flow Sensor or its signal circuit.

**MAP:** Manifold Absolute Pressure sensor or its signal circuit. Manifold pressure measured on the absolute pressure scale, an indication of engine load. At sea level, with the engine off, MAP = 100 kPa (14.5 psi).

**Map:** A pictorial representation of a series of data points stored in the control module memory. The control module refers to these maps to control different functions, including fuel injection and ignition timing.

**MASS:** The quantity of matter contained in an object. Also a measure of that object's resistance to acceleration. With normal earth gravity, it is equivalent to weight. In fuel injection, measured air volume must be corrected for temperature and density to determine its approximate mass.

**MCU:** Microprocessor Control Unit.

**MECS:** Mazda Engine Control System.

**MFI:** Multi-port Fuel Injection.

**MIL:** Malfunction Indicator Light or its control circuit. A light in the dash panel that indicates a malfunction in the EEC system. May read either CHECK ENGINE or SERVICE ENGINE SOON.

**MILLIAMPERE (mA):** One-one-thousandth of one ampere.

**MLP:** Manual Lever Position sensor or its signal circuit.

**MLUS:** Modulated Lock Up Solenoid or its control circuit.

**MONITOR BOX:** An EEC-IV test device which connects in series with the EEC-IV control module and its harness, and permits measurements of control module inputs and outputs.

**M/T or MTX:** Manual Transmission/Transaxle

**MULTI-PORT INJECTION:** An injection system where fuel is injected into the intake manifold at each manifold port near the intake valve.

**NDS:** Neutral Drive Switch and its signal circuit.

**NECCS:** Nissan Electronic Concentrated engine Control System.

**NGS:** Neutral Gear Switch or its signal circuit.

**NPS:** Neutral Pressure Switch or its signal circuit.

**NTC:** Negative Temperature Coefficient. Resistance decreases as temperature increases. See also Temperature Sensor.

**OASIS:** On-line Automotive Service Information System.

**OBI:** Overboost Indicator.

**OCC:** Output Circuit Check.

**OCIL:** Overdrive Cancel Indicator Light.

**OCT:** Octane Switch.

**OCT ADJ:** Octane Adjust device which modifies spark advance.

**OHC:** Overhead Cam.

**OHM:** Unit of measure of resistance to flow of electrical current. The more ohms of resistance the less current flow.

**OPEN CIRCUIT:** A circuit which does not provide a complete path for the flow of current.

**OPEN-LOOP CONTROL:** Control of an engine system based on fixed, pre-set values.

**OSC:** Output State Check.

**OVERLAY CARD:** A plastic card used with the Monitor box to identify EEC-IV signals for each engine. The card also programs the monitor for auto mode measurements.

**NO<sub>x</sub>:** Oxides of Nitrogen. One of the harmful gases produced by combustion. NO<sub>x</sub> formation is affected by combustion chamber temperatures.

**PART-LOAD:** Throttle opening between idle and fully-open.

**PCV:** Positive Crankcase Ventilation. A system which controls the flow of crankcase vapors into the engine intake manifold where they are burned in combustion rather than being discharged into the atmosphere.

**PFE:** Pressure Feedback EGR sensor or its signal circuit.

**PGC:** Power and Ground Connection.

**PINTLE:** The tip of the injector that opens to deliver fuel. Shape of the pintle determines the spray pattern of the atomized fuel.

**PIP:** Profile Ignition Pickup. A Hall-effect vane switch that furnishes crankshaft position data to the EEC-IV control module.

**PORT INJECTION:** A fuel-injection system where the fuel is injected into the intake manifold by individual injectors at each cylinder intake port, upstream of the intake valve.

**PRC:** Fuel Pressure Regulator Control.

**PRESSURE REGULATOR:** A spring-loaded relief valve that returns excess fuel to the fuel tank to maintain system pressure.

**PROCESSOR:** EEC-IV System electronic control unit (control module).

**PSI:** Abbreviation for Pounds-per-Square-Inch. PSI can be a measure of air or fluid pressure.

**PSPS:** Power Steering Pressure Switch. An EEC-IV control module input to regulate idle speed based on power steering load demand.

**PULSE AIR SYSTEM:** Part of the emission control system that utilizes a reed-type check valve which allows air to be drawn into the exhaust system as a result of exhaust pulses.

**PULSE PERIOD:** The available time, dependent on the speed of crankshaft rotation, for opening of pulsed solenoid injectors.

**PULSE TIME:** The amount of time that solenoid injectors are open to inject fuel. Also known as Pulse Width, especially when displayed on an oscilloscope as a voltage pattern.

**PULSE WIDTH:** (See Pulse Time)

**PVS:** Ported Vacuum Switch.

**PWR GND:** Power Ground.

**QUICK TEST:** A functional diagnostic test of the EEC system consisting of vehicle preparation and hookup, Key On Engine Off, Engine Running and Continuous self-tests.

**RECORDER:** An optional EEC-IV test device which works jointly with the Monitor box. It allows up to 8 EEC-IV signals to be electronically recorded over a 50-second period.



**RELATIVE PRESSURE:** In pulsed injection, the difference in pressure between fuel pressure in the injector, and pressure in the intake manifold.

**RELAY:** A switching device operated by a low current circuit which controls the opening and closing of another circuit of higher current capacity.

**RELIEF VALVE:** A pressure limiting valve located in the exhaust chamber of the thermactor air pump. It functions to relieve part of the exhaust air flow if the pressure exceeds a calibrated value.

**RICH MIXTURE:** A lack of air. Less air is drawn into the engine than is required for the stoichiometric ratio. There is still fuel left after all of the oxygen has burned. The air-fuel mixture is less than 14.7:1.

**RPM:** Revolutions-Per-Minute. The speed of crankshaft rotation.

**RWD:** Rear Wheel Drive.

**SAW:** Spark Angle Word. Timing information sent from EEC-IV to the EDIS module. This information is used by the EDIS module to calculate final ignition timing.

**SBS:** Supercharger Bypass Solenoid or its control circuit.

**SC:** Super Charged (Super Coupe).

**SFI:** Sequential Electronic Fuel Injection (also known as SEFI). Port fuel injection triggered off ignition timing that fires each injector separately.

**SELF-TEST:** One of three subsets of the EEC Quick Test; Key On Engine Off, Engine Running, and Continuous.

**SDV:** Spark Delay Valve.

**SHED:** Sealed Housing Evaporative Determination System.

**SHO:** Super High Output.

**SHORT CIRCUIT:** An undesirable connection between a circuit and any other point.

**SIG RTN:** Signal Return circuit for all sensor signals except HEGO.

**SIL:** Shift Indicator Light. A system that provides a visual indication to the driver of a vehicle when to shift to the next higher gear to obtain optimum fuel economy.

**SML:** Switch Monitor Lamp.

**SOLENOID:** An electromagnet that moves a plunger or metal strip when current is applied.

**SPOUT:** Spark Output Signal from the EEC-IV control module.

**SS1:** Shift Solenoid 1 or its control circuit.

**SS2:** Shift Solenoid 2 or its control circuit.

**SS 3/4-4/3:** Shift Solenoid 3/4-4/3. Output from the EEC-IV control module to the transmission that selects 3rd and 4th gears.

**STAR:** Self-Test Automatic Readout. A testing device in which the EEC and MCU systems output service codes in a digital format.

**STG:** Switch To Ground.

**STI:** Self Test Input circuit in the EEC and MCU systems used to initiate self test.

**STO:** Self Test Output circuit in the EEC and MCU systems that transmits service codes (pulses) to either a VOM or star tester.

**STOICHIOMETRIC RATIO:** An air-fuel ratio of 14.7:1. All of the air and all of the fuel is burned in the cylinder. The stoichiometric ratio is the best compromise between a rich air-fuel ratio for best power, and a lean air-fuel ratio for best economy. Also called the Ideal Air-Fuel Ratio.

**STP:** Switch To Power.

**SVO:** Special Vehicle Operations.

**SYSTEM PRESSURE:** Fuel pressure in the fuel lines and at the pressure regulator, created by the fuel pump.

**TAB/TAD:** Thermactor Air Bypass/ Thermactor Air Diverter vacuum solenoid valves or their control circuits.

**TCP:** Temperature Compensated (Acceleration) Pump.

**TEMPERATURE SENSOR:** A solid-state resistor, called a thermistor. Used to sense coolant (engine) temperature and air temperature. Sometimes referred to as an NTC sensor for its Negative Temperature Coefficient.

**TFI:** Thick Film Ignition. Distributor mounted module comprised of a custom integrated circuit, Darlington output device and associated thick film integrated components.

**TGS:** Top Gear Switch. A lock out mechanism that prevents the SIL from lighting when the vehicle is in top gear.

**THERMACTOR:** A system for injection of air into the exhaust system to aid in the control of hydrocarbon and carbon monoxide in the exhaust.

**THERMACTOR 11:** See Pulse Air System.

**THROTTLE VALVE:** The movable plate in the intake tract controlled by the accelerator pedal. It controls the amount of air drawn into the engine.

**THS:** Transmission Hydraulic Switch.

**THS 3/2:** Transmission Hydraulic Switch - 3rd/2nd gear.

**THS 4/3:** Transmission Hydraulic Switch - 4th/3rd gear.

**TIMING:** Relationship between spark plug firing and piston position usually expressed in crank shaft degrees before (BTDC) or after (ATDC) top dead center of the

**TIV:** Thermactor Idle Vacuum Valve.

**TK:** Throttle Kicker vacuum solenoid valve or its control circuit.

**TOT:** Transmission Oil Temperature Sensor or its signal circuit.

**TP:** Throttle Position sensor or its signal circuit.

**TPOUT:** Throttle Position Output.

**TSB:** Technical Service Bulletin.

**TSP:** Throttle Solenoid Positioner.

**TSS:** Transmission Speed Sensor.

**TTS:** Transmission Temperature Switch.

**TVS:** Temperature Vacuum Switch.

**TVV:** Thermal Vent Valve.

**TWC:** Three Way Catalyst.

**VACUUM:** Anything less than atmospheric pressure.

**VAF:** Vane Air Flow sensor or its signal circuit.

**VAPOR LOCK:** A situation where fuel in the fuel system becomes so hot that it vaporizes, slowing or stopping fuel flow.

**VAT:** Vane Air Temperature sensor or its signal circuit.

**VBAT:** Vehicle Battery voltage.

**VCK-V:** Vacuum Check Valve.

**VCV:** Vacuum Control Valve.

**VDV:** Vacuum Delay Valve.

**VM:** Vane Meter.

**VOLT:** Unit of measure of electrical force. Voltage causes current (electrons) to flow in a circuit.

**VOM:** Volt-Ohm Meter used to measure voltage and resistance. Readings are indicated by sweep hand on a printed scale rather than a digital display.

**VOTM:** Vacuum Operated Throttle Modulator.

**VPWR:** Vehicle Power supply voltage regulated to 10 to 14 volts.

**VR/S:** Vacuum Regulator/Solenoid.

**VRDV:** Vacuum Retard Delay Valve.

**VREF:** Reference voltage supplied by the EEC-IV control module to some sensors and regulated to 5 volts.

**VRESER:** Vacuum Reservoir.

**VREST:** Vacuum Restrictor.

**VR or VRS:** Variable Reluctance Sensor. A non-contact transducer that converts mechanical motion into electrical control signals.

**VRV:** Vacuum Regulator Valve.

**VSC:** Vehicle Speed Control sensor or its signal circuit.

**VSS:** Vehicle Speed Sensor or its signal circuit.

**VVA:** Venturi Vacuum Amplifier.

**VVC:** Variable Voltage Choke relay or its control circuit.

**VVV:** Vacuum Vent Valve.

**WAC:** Wide-open throttle A/C Cutoff.

**WOT:** Wide-Open Throttle.

**ZERO ABSOLUTE PRESSURE:** A total vacuum. Zero on the absolute pressure scale.



## About the Author

Charles O. Probst received his BSE (ME—Automotive) from the University of Michigan. His career specialty is technical communication, primarily in automotive subjects. He works as an instructional-system designer, writer and filmmaker, and has been responsible for numerous video and film productions, manuals, job guides, and other systems for improving human performance. He is also a writer/producer of many technician training videos, including "Dyno Diagnostics," and "Diagnostics by Scope and Scan Tool."

Probst was the Senior Author for Motor's Auto Engines & Electrical Systems, and also served as Technical Editor for a 60-volume set of self-instructional auto technology courses developed by the Commercial Trades Institute. He has been published in Automotive Engineering, Automobile Quarterly, Car Life, Consumer Digest, and Road Test.

He is active in the SAE as Chairman of the Technician Training Task Force, which is responsible for SAE Recommended Practices for technician-training systems.

In a second career, Probst served 27 years (with 8 on active duty) in the Air Force Reserve, concluding as a Colonel.

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