

METRICS

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Index/ Important Information

The primary class is an Arabic numeral designating the first SAE English grade system.
The length of all bolts is measured from the outer face of the head to threads.

Metrics

INTRODUCTION

Most threaded fasteners are covered by specifications that define required mechanical properties, such as tensile strength, yield strength, proof load and hardness. These specifications are carefully considered in initial selection of fasteners for a given application. To assure continued satisfactory vehicle performance, replacement fasteners used should be of the correct strength, as well as the correct nominal diameter, thread pitch, length, and finish.

Most original equipment fasteners (English system or Metric) are identified with markings or numbers indicating the strength of the fastener. These markings are described in the pages that follow. Attention to these markings is important in assuring that the proper replacement fasteners are used.

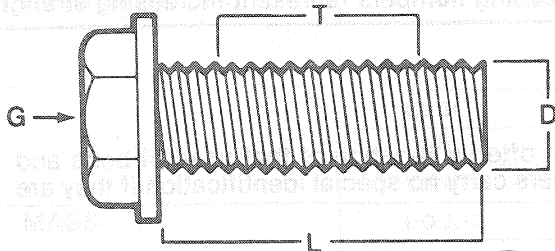
Further, some metric fasteners, especially nuts, are colored blue. This metric blue identification is in most cases a temporary aid for production start-up, and color will generally revert to normal black or bright after start-up.

English system and metric system fasteners are available through your Ford Parts and Service operation.

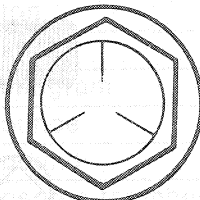
NOMENCLATURE FOR BOLTS

(ENGLISH) INCH SYSTEM

Bolt, 1/2-13x1

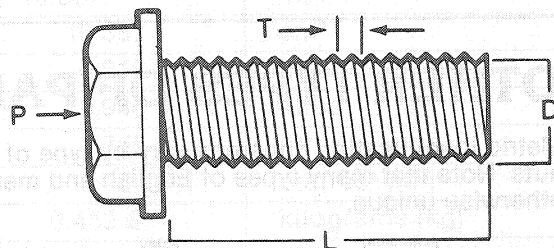


- G—Grade Marking
(bolt strength)
- L—Length, (inches)**
- T—Thread Pitch
(thread/inch)
- D—Nominal Diameter
(inches)

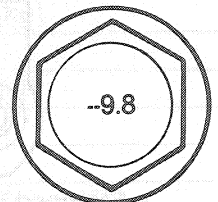


METRIC SYSTEM

Bolt M12-1.75x25



- P—Property Class*
(bolt strength)
- L—Length (millimeters)**
- T—Thread Pitch (thread width
crest to crest mm)
- D—Nominal Diameter
(millimeters)



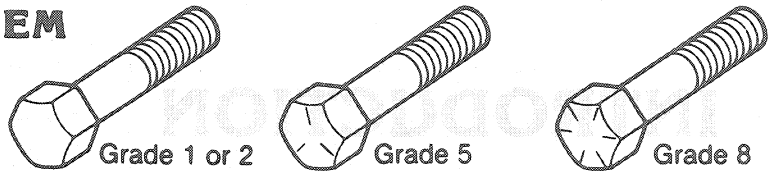
*The property class is an Arabic numeral distinguishable from the slash SAE English grade system.

**The length of all bolts is measured from the underside of the head to the end.

Metrics

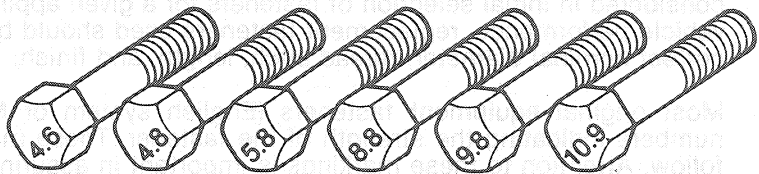
BOLT STRENGTH IDENTIFICATION

(ENGLISH) INCH SYSTEM



English (Inch) bolts—Identification marks correspond to bolt strength—increasing number of slashes represent increasing strength.

METRIC SYSTEM



Metric bolts—Identification class numbers correspond to bolt strength—increasing numbers represent increasing strength. Common metric fastener bolt strength property are 9.8 and 10.9 with the class identification embossed on the bolt head.

HEX NUT STRENGTH IDENTIFICATION

(ENGLISH) INCH SYSTEM

METRIC SYSTEM

Grade	Hex Nut Grade 5	Hex Nut Grade 8
Identification		
	3 Dots	6 Dots

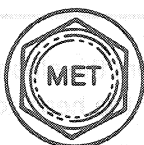
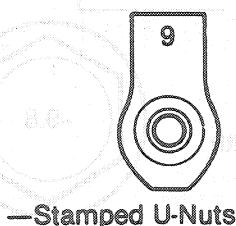
Increasing dots represent increasing strength.

Class	Hex Nut Property Class 9	Hex Nut Property Class 10
Identification		
	Arabic 9	Arabic 10

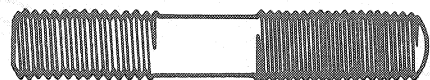
May also have blue finish or paint daub on hex flat. Increasing numbers represent increasing strength.

OTHER TYPES OF PARTS

Metric identification schemes vary by type of part, most often a variation of that used of bolts and nuts. Note that many types of English and metric fasteners carry no special identification if they are otherwise unique.



—Tapping, thread forming and certain other case hardened screws



CLASS 10.9

CLASS 9.8

CLASS 8.8

—Studs, Large studs may carry the property class number. Smaller studs use a geometric code on the end.

Metrics

ENGLISH METRIC CONVERSION

Description	Multiply	By	For Metric Equivalent
ACCELERATION	Foot/sec ²	0.304 8	metre/sec ² (m/s ²)
	Inch/sec ²	0.025 4	metre/sec ²
TORQUE	Pound-inch	0.112 98	newton-metres (N·m)
	Pound-foot	1.355 8	newton-metres
POWER	horsepower	0.746	kilowatts (kw)
PRESSURE or STRESS	inches of water	0.2491	kilopascals (kPa)
	pounds/sq. in.	6.895	kilopascals (kPa)
	pounds/sq. in.	0.069	bar
ENERGY or WORK	BTU	1 055.	joules (J)
	foot-pound	1.355 8	joules (J)
	kilowatt-hour	3 600 000. or 3.6×10^6	joules (J = one W's)
LIGHT	foot candle	10.764	lumens/metre ² (lm/m ²)
FUEL PERFORMANCE	miles/gal	0.425 1	kilometres/litre (km/l)
	gal/mile	2.352 7	litres/kilometre (l/km)
VELOCITY	miles/hour	1.609 3	kilometres/hr. (km/h)
LENGTH	inch	25.4	millimetres (mm)
	foot	0.304 8	metres (m)
	yard	0.914 4	metres (m)
	mile	1.609	kilometres (km)
AREA	inch ²	645.2	millimetres ² (mm ²)
		6.45	centimetres ² (cm ²)
	foot ²	0.092 9	metres ² (m ²)
	yard ²	0.836 1	metres ²
VOLUME	inch ³	16 387.	mm ³
		16.387	cm ³
		0.016 4	litres (l)
	quart	0.946 4	litres
	gallon	3.785 4	litres
	yard ³	0.764 6	metres ³ (m ³)
MASS	pound	0.453 6	kilograms (kg)
	ton	907.18	kilogram (kg)
	ton	0.90718	tonne (t)
FORCE	kilogram	9.807	newtons (N)
	ounce	0.278 0	newtons
	pound	4.448	newtons
TEMPERATURE	degree fahrenheit	(°F - 32) 0.556	degree Celsius (°C)

Metrics

DECIMAL AND METRIC EQUIVALENTS

Fractions	Decimal Inch	Metric mm
1/64	.015625	.397
1/32	.03125	.794
3/64	.046875	1.191
1/16	.0625	1.588
5/64	.078125	1.984
3/32	.09375	2.381
7/64	.109375	2.778
1/8	.125	3.175
9/64	.140625	3.572
5/32	.15625	3.969
11/64	.171875	4.366
3/16	.1875	4.763
13/64	.203125	5.159
7/32	.21875	5.556
15/64	.234375	5.953
1/4	.250	6.35
17/64	.265625	6.747
9/32	.28125	7.144
19/64	.296875	7.54
5/16	.3125	7.938
21/64	.328125	8.334
11/32	.34375	8.731
23/64	.359375	9.128
3/8	.375	9.525
25/64	.390625	9.922
13/32	.40625	10.319
27/64	.421875	10.716
7/16	.4375	11.113
29/64	.453125	11.509
15/32	.46875	11.906
31/64	.484375	12.303
1/2	.500	12.7

Fractions	Decimal Inch	Metric mm
33/64	.515625	13.097
17/32	.53125	13.494
35/64	.546875	13.891
9/16	.5625	14.288
37/64	.578125	14.684
19/32	.59375	15.081
39/64	.609375	15.478
5/8	.625	15.875
41/64	.640625	16.272
21/32	.65625	16.669
43/64	.671875	17.066
11/16	.6875	17.463
45/64	.703125	17.859
23/32	.71875	18.256
47/64	.734375	18.653
3/4	.750	19.05
49/64	.765625	19.447
25/32	.78125	19.844
51/64	.796875	20.241
13/16	.8125	20.638
53/64	.828125	21.034
27/32	.84375	21.431
55/64	.859375	21.828
7/8	.875	22.225
57/64	.890625	22.622
29/32	.90625	23.019
59/64	.921875	23.416
15/16	.9375	23.813
61/64	.953125	24.209
31/32	.96875	24.606
63/64	.984375	25.003
1	1.00	25.4

Metrics

TORQUE CONVERSION

NEWTON METRES (N·m)	POUND-FEET (LB·FT)
1	0.7376
2	1.5
3	2.2
4	3.0
5	3.7
6	4.4
7	5.2
8	5.9
9	6.6
10	7.4
15	11.1
20	14.8
25	18.4
30	22.1
35	25.8
40	29.5
50	36.9
60	44.3
70	51.6
80	59.0
90	66.4
100	73.8
110	81.1
120	88.5
130	95.9
140	103.3
150	110.6
160	118.0
170	125.4
180	132.8
190	140.1
200	147.5
225	166.0
250	184.4

POUND-FEET (LB·FT)	NEWTON METRES (N·m)
1	1.356
2	2.7
3	4.0
4	5.4
5	6.8
6	8.1
7	9.5
8	10.8
9	12.2
10	13.6
15	20.3
20	27.1
25	33.9
30	40.7
35	47.5
40	54.2
45	61.0
50	67.8
55	74.6
60	81.4
65	88.1
70	94.9
75	101.7
80	108.5
90	122.0
100	135.6
110	149.1
120	162.7
130	176.3
140	189.8
150	203.4
160	216.9
170	230.5
180	244.0

J1930 Terminology List

NOTE: Certain Ford component names have been changed in this Service Manual to conform to Society of Automotive Engineers (SAE) directive J1930.

SAE J1930 standardizes automotive component names for all vehicle manufacturers.

This chart lists new 1993 SAE J1930 component names and the obsolete 1992 component names.

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
4X4 Low	4X4L	- 4X4L - 4X4 Low
Air Conditioning	A/C	- A/C - Air Conditioning
Air Conditioning Clutch	ACC	- ACC - Air Conditioning Clutch
Air Conditioning Cyclic Switch	ACCS	- ACCS - Air Conditioning Cyclic Switch
Air Conditioning Demand	ACD	- ACD - Air Conditioning Demand
Air Conditioning On	ACON	- ACON - Air Conditioning On
Automatic Ride Control	ARC	- ACL - Acceleration Signal
Barometric Pressure	BARO	- BP - Barometric Pressure
Battery Positive Voltage	B+	- BATT+ - Battery Positive
Blower	BLR	- BLR - Blower
Brake On/Off	BOO	- BOO - Brake On/Off
Bypass Air	BPA	- BPA - Bypass Air
Canister Purge	CANP	- CANP - Canister Purge
Charge Air Cooler	CAC	- Intercooler
Clutch Pedal Position switch	CPP switch	- CES - CIS - Clutch Engage Switch - Clutch Interlock Switch
Coast Clutch Solenoid	CCS	- CCS - Coast Clutch Solenoid
Computer Control Dwell	CCD	- CCD - Computer Control Dwell
Constant Control Relay Module	CCRM	- IRCM - Integrated Relay Control Module
Crankshaft Position sensor	CKP sensor	- CPS - VRS - Variable Reluctance Sensor

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Cylinder Identification	CID	- CID - Cylinder Identification
Data Link Connector	DLC	- Self-Test connector
Data Negative	DATA-	- DATA- - Data Negative
Data Output Line	DOL	- DOL - Data Output Line
Data Positive	DATA+	- DATA+ - Data Positive
Daytime Running Lamps	DRL	- DRL - Daytime Running Lamps
Defroster	DEF	- DEF - Defroster
Diagnostic Test Mode	DTM	- Self-Test mode
Diagnostic Trouble Code	DTC	- Self-Test code
Differential Pressure Feedback EGR	DPFE	- DPFE - Differential Pressure Feedback EGR
Distributor Ignition	DI	- CBD - DS - TFI - Closed Bowl Distributor - Duraspark Ignition - Thick Film Ignition
Dual Overhead Cam	DOHC	- DOHC - Dual Overhead Cam
Dual Plug Inhibit	DPI	- DPI - Dual Plug Inhibit
EGR Pressure Transducer	EPT	- EPT - EGR Pressure Transducer
EGR Temperature	EGRT	- EGRT - EGR Temperature
EGR Vacuum Regulator	EVR	- EVR - EGR Vacuum Regulator
EGR Valve Position	EVP	- EVP - EGR Valve Position
Electronic Air Pump	EAP	- EAP - Electronic Air Pump
Electronic Engine Control	EEC	- EEC - Electronic Engine Control
Electronic Ignition	EI	- DIS - EDIS - Distributorless Ignition System - Electronic Distributorless Ignition System
Electronic Pressure Control	EPC	- EPC - Electronic Pressure Control
Electronic Secondary Air Injection	EAIR	- EAM - Electronic Air Management

J1930 Terminology List

New Term	New Acronyms/ Abbreviations	Old Acronyms/ Term
Engine Coolant Temperature	ECT	– ECT – Engine Coolant Temperature
Engine RPM sensor	RPM sensor	– RPMS – Engine RPM sensor
Exhaust Gas Recirculation	EGR	– EGR – Exhaust Gas Recirculation
Fan Control	FC	– EDF – Electro-Drive Fan
Flexible Fuel sensor	FF sensor	– FCS – FFS – FFV – Fuel Compensation Sensor – Flex Fuel Sensor
Flexible Fuel vehicle	FF vehicle	– FFV – Flexible Fuel Vehicle
Fuel Pressure Regulator Control	FPRC	– FPRC – Fuel Pressure Regulator Control
Fuel Pump	FP	– FP – Fuel Pump
Fuel Pump Monitor	FPM	– FPM – Fuel Pump Monitor
Governor Control Module	GCM	– GEM – Governor Electronic Module
Ground	GND	– GND – Ground
Headlamp	HDL	– HDL – Headlamp
Heated Oxygen Sensor	HO2S	– HEGO – Heated Exhaust Gas Oxygen Sensor
High Fan Control	HFC	– HEDF – High Speed Electro-Drive Fan
High Fuel Pump	HFP	– HFP – High Fuel Pump
High Output	HO	– HO – High Output
High Swirl Combustion	HSC	– HSC – High Swirl Combustion
Idle Air Control	IAC	– ISC – Idle Speed Control
Idle Air Control Bypass Air	IAC BPA	– ISC-BPA – Idle Speed Control — Bypass Air
Ignition Control Module	ICM	– DIS module – EDIS module – TFI module
Ignition Diagnostic Monitor	IDM	– IDM – Ignition Diagnostic Monitor
Inertia Fuel Shutoff switch	IFS switch	– Inertia Switch

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Intake Air Temperature	IAT	– ACT – Air Charge Temperature
Intake Manifold Runner Control	IMRC	– IAC – Inlet Air Control
Keep Alive Memory	KAM	– KAM – Keep Alive Memory
Keep Alive Power	KAPWR	– KAPWR – Keep Alive Power
Knock Sensor	KS	– KS – Knock Sensor
Low Fan Control	LFC	– EDF – Electro-Drive Fan
Low Fuel Pump	LFP	– LFP – Low Fuel Pump
Malfunction Indicator Lamp	MIL	– CEL – “CHECK ENGINE” Light – “SERVICE ENGINE SOON” Light
Manifold Absolute Pressure	MAP	– MAP – Manifold Absolute Pressure
Manifold Absolute Pressure Per Altitude	MAPP	– GMAPP – Governor Manifold Absolute Pressure Per Altitude
Manual Lever Position	MLP	– MLP – Manual Lever Position
Mass Air Flow	MAF	– MAF – Mass Air Flow
Mass Air Flow Return	MAF RTN	– MAF RTN – Mass Air Flow Return
Multiport Fuel Injection	MFI	– EFI – Electronic Fuel Injection
Octane Adjust	OCT ADJ	– OCT ADJ – Octane Adjust
Overhead Cam	OHC	– OHC – Overhead Cam
Oxidation Catalytic Converter	OC	– COC – Conventional Oxidation Catalyst
Park/Neutral Position switch	PNP switch	– NDS – NGS – TSN – Neutral Drive Switch – Neutral Gear Switch – Transmission Select Switch Neutral
Positive Crankcase Ventilation	PCV	– PCV – Positive Crankcase Ventilation
Power Ground	PWR GND	– PWR GND – Power Ground

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Power Steering Pressure switch	PSP switch	- PSPS - Power Steering Pressure Switch
Powertrain Control Module	PCM	- ECA - ECM - ECU - EEC processor - Engine Control Assembly - Engine Control Module - Engine Control Unit
Pressure Feedback EGR	PFE	- EPT - Exhaust Pressure Transducer
Profile Ignition Pickup	PIP	- PIP - Profile Ignition Pickup
Programmable Speedometer/Odometer Module	PSOM	- PSOM - Programmable Speedometer/Odometer Module
Pulsed Secondary Air Injection	PAIR	- MPA - PA - Thermactor II - Managed Pulse Air - Pulse Air
Reduction Oxidation Catalytic Converter	REDOX	- REDOX - Reduction Oxidation Catalytic Converter
Scan Tool	ST	- GST - NGS - Generic Scan Tool - New Generation STAR Tester
Secondary Air Injection	AIR	- AM - CT - MTA - Air Management - Conventional Thermactor - Managed Thermactor Air - Thermactor
Secondary Air Injection Bypass	AIRB	- AM1 - TAB - Air Management 1 - Thermactor Air Bypass
Secondary Air Injection Diverter	AIRD	- AM2 - TAD - Air Management 2 - Thermactor Air Diverter
Self-Test Input	STI	- STI - Self-Test Input
Self-Test Output	STO	- STO - Self-Test Output
Sequential Multiport Fuel Injection	SFI	- SEFI - Sequential Electronic Fuel Injection

J1930 Terminology List

New Term	New Acronyms/ Abbreviations	Old Acronyms/ Term
Shift Indicator Lamp	SIL	- SIL - Shift Indicator Lamp
Shift Solenoid	SS	- SS - Shift Solenoid
Signal Return	SIG RTN	- SIG RTN - Signal Return
Solid State Relay	SSR	- SSR - Solid State Relay
Spark Output	SPOUT	- SAW - Spark Angle Word
Speed Density	SD	- SD - Speed Density
Super High Output	SHO	- SHO - Super High Output
Supercharger/Supercharged	SC	- SC - Supercharger/Supercharged
Tachometer	TACH	- TACH - Tachometer
Three Way Catalytic Converter	TWC	- TWC - Three Way Catalytic Converter
Three Way + Oxidation Catalytic Converter	TWC+OC	- TWC & COC - Three Way Catalyst and Conventional Oxidation Catalyst
Throttle Body	TB	- TB - Throttle Body
Throttle Body Injection	TBI	- CFI - Central Fuel Injection
Throttle Position	TP	- TP - Throttle Position
Throttle Position Output	TPOUT	- TPOUT - Throttle Position Output
Torque Converter Clutch	TCC	- CCC - CCO - MCCC - Converter Clutch Control - Converter Clutch Override - Modulated Converter Clutch Control
Torque Converter Clutch solenoid	TCC solenoid	- LUS - MLUS - Lock Up Solenoid - Modulated Lock Up Solenoid
Transmission Control Module	TCM	- 4EAT Module
Transmission Control Switch	TCS	- TCS - Transmission Control Switch

J1930 Terminology List

New Term	New Acronyms/ Abbreviations	Old Acronyms/ Term
Transmission Control Indicator Lamp	TCIL	- TCIL - Transmission Control Indicator Lamp
Transmission Oil Temperature	TOT	- TOT - Transmission Oil Temperature
Transmission Range Reverse	TRR	- TSR - Transmission Select Switch Reverse
Transmission Range Overdrive	TROD	- TSOD - Transmission Select Switch Overdrive
Transmission Range Drive	TRD	- TSD - Transmission Select Switch Drive
Transmission Range Low	TRL	- TSL - Transmission Select Switch Low
Transmission Speed Sensor	TSS	- TSS - Transmission Speed Sensor
Turbocharger/Turbocharged	TC	- TC - Turbocharger/Turbocharged
Variable Control Relay Module	VCRM	- VRCM - Variable Relay Control Module
Vehicle Power	VPWR	- VPWR - Vehicle Power
Vehicle Speed Sensor	VSS	- VSS - Vehicle Speed Sensor
Wide Open Throttle	WOT	- WOT - Wide Open Throttle

Glossary

The glossary is a list of technical terms or acronyms and their definitions. It is not intended to be a dictionary of components and their functions. If you desire a detailed description of a specific component, refer to the related Service Manual Group.

2V: Two Valve.

4EAT: 4-speed Electronic Automatic Transaxle.

4V: Four Valve.

4x4 Low (4x4L): Indicates that the 4x4 Low range of the transfer case has been selected.

4x4L: 4x4 Low.

A/C: Air Conditioning.

A/T: Automatic Transmission/Transaxle.

A4LD: Automatic 4-speed Lock-up-convertor Drive transmission.

Absolute Pressure: The pressure referenced to a perfect vacuum.

ACC: Air Conditioning Clutch.

ACCS: Air Conditioning Cyclic Switch.

ACD: Air Conditioning Demand.

ACON: Air Conditioning On.

ACP: Air Conditioning Pressure.

Actuator: A mechanism for moving or controlling something indirectly instead of by hand.

Air Conditioning (A/C): A vehicular accessory system that modifies the passenger compartment air by cooling and drying the air.

Air Conditioning Clutch (ACC): Indicates status of the A/C clutch.

Air Conditioning Cyclic Switch (ACCS): Indicates status of the A/C cyclic switch.

Air Conditioning Demand (ACD): Indicates status of the A/C demand switch.

Air Conditioning On (ACON): Indicates status of the A/C system.

Air Conditioning Pressure (ACP): Indicates pressure in the A/C system.

AIR: Secondary Air Injection.

AIRB: Secondary Air Injection Bypass.

Glossary

AIRD: Secondary Air Injection Diverter.

Ambient Temperature: Temperature of the air surrounding an object.

AOD: Automatic Overdrive transmission.

AODE: Automatic Overdrive Electronic transmission.

AODE-W: Automatic Overdrive Electronic Wide-ratio transmission.

ARC: Automatic Ride Control.

ATDC: After Top Dead Center.

Automatic Ride Control (ARC): A system that automatically adjusts the suspension system to accommodate varying road and driving conditions.

AVOM: Analog Volt-Ohm Meter.

AX4S: Automatic 4-speed Synchronous transaxle.

AXODE: Automatic Overdrive Electronic transaxle.

B+: Battery Positive Voltage.

BARO: Barometric Pressure.

Barometric Pressure (BARO): *formerly BP* The pressure of the surrounding air at any given temperature and altitude.

Base Idle: Idle rpm determined by the throttle lever hardset on the throttle body with the IAC solenoid disconnected.

Base Timing: Spark advance in degrees before top dead center of the base engine without any control from the PCM or ICM.

Battery: An electrical storage device designed to produce a DC voltage by means of an electrochemical reaction.

Battery Positive Voltage (B+): *formerly VBATT or BATT+* The positive voltage from the battery or any circuit connected directly to the battery. Compare "Vehicle Power (VPWR)."

Blower (BLR): A device designed to supply a current of air at a moderate pressure. A blower usually consists of an impeller assembly, a motor and a suitable case. The blower case is designed as part of the ventilation system.

BLR: Blower.

BOO: Brake On/Off.

BPA: Bypass Air.

Glossary

Brake On/ Off (BOO): Indicates the position of the brake pedal.

Breakout Box: A service tool that "tees" between the PCM and the 60-pin harness connector. The breakout box contains 60 test pins that can be probed for EEC system testing.

BTDC: Before Top Dead Center.

Bypass Air (BPA): Mechanical control of throttle bypass air.

CAC: Charge Air Cooler.

Camshaft: A shaft on which phased cams are mounted. The camshaft is used to regulate the opening and closing of the intake and exhaust valves.

Camshaft Position (CMP): *formerly CID sensor, hall sensor, or dual hall sensor* Indicates camshaft position.

Canister: A device designed to hold dry material. An evaporative emission canister contains activated charcoal which absorbs fuel vapors and holds them to be purged at an appropriate time.

Canister Purge (CANP): Controls purging of the EVAP canister.

CANP: Canister Purge.

Case Ground (CSE GND): PCM case ground.

Catalytic Converter: An in-line, exhaust system device used to reduce the level of engine exhaust emissions.

CCD: Computer Controlled Dwell.

CCRM: Constant Control Relay Module.

CCS: Coast Clutch Solenoid.

Charge Air Cooler (CAC): *formerly Intercooler* A device that lowers the temperature of the pressurized intake air.

CID: Cylinder Identification.

Circuit: A complete electrical path or channel, usually includes the source of electrical energy. Circuit may also describe the electrical path between two or more components. May also be used with fluids, air or liquids.

CKP: Crankshaft Position.

Clutch: A mechanical device which uses mechanical, magnetic or friction type connections to facilitate engaging or disengaging of two shafts or rotating members.

Clutch Pedal Position (CPP): *formerly CES or CIS* Indicates clutch pedal position.

CMP: Camshaft Position.

Glossary

CO: Carbon Monoxide.

CO₂: Carbon Dioxide.

Coast Clutch Solenoid (CCS): Controls the coast clutch in the transmission.

Computed Timing: The total spark advance in degrees before top dead center. Equals base timing plus / minus an additional factor calculated by the PCM based on input from a number of sensors.

Constant Control Relay Module (CCRM): *formerly IRCM* A relay module that provides on-off control of various EEC components.

Continuous Memory: The portion of KAM used to store DTC's generated during Continuous Self-Test.

Continuous Self-Test: A continuous test of the EEC system conducted by the PCM whenever the vehicle is operating.

Control: A means or a device to direct and regulate a process or guide the operation of a machine, apparatus or system.

Coolant: A fluid used for heat transfer. Coolants usually contain additives such as rust inhibitors and antifreeze.

CPP: Clutch Pedal Position.

Crankshaft: The part of an engine which converts the reciprocating motion of the pistons to rotary motion.

Crankshaft Position (CKP): *formerly CPS or VRS* Indicates crankshaft position.

CSE GND: Case Ground.

Curb Idle: PCM controlled idle rpm.

Cylinder Identification (CID): Provides crankshaft or camshaft position information for fuel injection synchronization.

Data: General term for information, usually represented by numbers, letters, or symbols.

Data Link Connector (DLC): *formerly Self-Test connector* Connector providing access and / or control of the vehicle information, operating conditions, and diagnostic information.

Data Output Line (DOL): A circuit that sends certain information from the PCM to the instrument cluster.

Data Positive or Negative (DATA+ or DATA-): Circuits that carry data to the DLC, Message Center, or VCRM.

DATA+ or DATA-: Data Positive or Negative.

Daytime Running Lamps (DRL): A system that keeps the vehicle running lamps on at all times while the vehicle is operating.

Glossary

DEF: Defroster.

Defroster (DEF): An electrically heated device designed to remove frost, ice, or snow from the rear window of the vehicle.

DI: Distributor Ignition.

Diagnostic Test Mode (DTM): *formerly Self-Test mode* A level of capability in an On-Board Diagnostic (OBD) system. This may include different functional states to observe signals, a base level to read Diagnostic Trouble Codes, a monitor level which includes information on signal levels, bi-directional control with on / off board aids, and the ability to interface with remote diagnosis.

Diagnostic Trouble Code (DTC): *formerly Self-Test code* An alpha / numeric identifier for a fault condition identified by the On-Board Diagnostic System.

Differential Pressure: The pressure difference between two regions, such as between the intake manifold and the atmospheric pressures.

Differential Pressure Feedback EGR (DPFE): An EGR system that monitors differential EGR pressure across a remote orifice to control EGR flow.

Distributor: A mechanical device designed to switch a high voltage secondary circuit from an ignition coil to spark plugs in the proper firing sequence.

Distributor Ignition (DI): *formerly TFI, CBD, or Duraspark* A system in which the ignition coil secondary circuit is switched by a distributor in proper sequence to various spark plugs.

DLC: Data Link Connector.

DOHC: Dual Overhead Cam.

DOL: Data Output Line.

DPFE: Differential Pressure Feedback EGR.

DPI: Dual Plug Inhibit.

DRL: Daytime Running Lamps.

DTC: Diagnostic Trouble Code.

DTM: Diagnostic Test Mode.

Dual Overhead Cam (DOHC): An engine configuration that uses two camshafts positioned above the valves.

Dual Plug Inhibit (DPI): A circuit that inhibits the operation of the second plug in each cylinder on dual plug vehicles.

DVOM: Digital Volt-Ohm Meter.

Glossary

E4OD: Electronic 4-speed Overdrive transmission.

EAIR: Electronic Secondary Air Injection.

EAP: Electric Air Pump.

ECT: Engine Coolant Temperature.

EEC: Electronic Engine Control.

EEC-IV: Ford's fourth generation EEC system.

EGR: Exhaust Gas Recirculation.

EGR Pressure Transducer (EPT): An EGR system that uses a mechanical pressure transducer to control EGR flow.

EGR Temperature (EGRT): Sensing EGR function based on temperature change. Primarily in systems with mechanical flow control devices.

EGR Vacuum Regulator (EVR): Controls EGR flow by changing vacuum to the EGR valve.

EGR Valve Position (EVP): An EGR system that directly monitors EGR valve position to control EGR flow.

EGRT: EGR Temperature.

EI: Electronic Ignition.

Electric Air Pump (EAP): An electric pump used in EAIR systems.

Electronic Engine Control (EEC): The system that provides electronic control of engine operation.

Electronic Ignition (EI): *formerly DIS or EDIS* A system in which the ignition coil secondary circuit is dedicated to specific spark plugs without the use of a distributor. Ford currently has two types of EI systems, Low Data Rate (formerly DIS) and High Data Rate (formerly EDIS).

Electronic Pressure Control (EPC): Controls fluid pressure in the transmission.

Electronic Secondary Air Injection (EAIR): A pump-driven system for providing secondary air using an electric air pump.

Engine: A machine designed to convert thermal energy into mechanical energy to produce force or motion.

Engine Coolant Temperature (ECT): The temperature of the engine coolant.

Engine RPM (RPM): *formerly RPMS* Indicates engine rpm.

Engine Running Self-Test: A test of the EEC system conducted by the PCM with the engine running and the vehicle at rest.

Glossary

EPC: Electronic Pressure Control.

EPT: EGR Pressure Transducer.

EVAP: Evaporative Emission.

Evaporative Emission (EVAP): A system to prevent fuel vapor from escaping into the atmosphere. Typically includes a charcoal canister to store fuel vapors.

EVP: EGR Valve Position.

EVR: EGR Vacuum Regulator.

Exhaust Gas Recirculation (EGR): Reducing NOx emissions levels by adding exhaust gas to the incoming air / fuel mixture.

Failure Mode Effects Management (FMEM): An alternative vehicle operation strategy that protects vehicle function from the adverse effect of an EEC system failure.

Fan: A device designed to supply a current of air. A fan may also have a frame, motor, wiring harness and the like.

Fan Control (FC): *formerly EDF* Controlling the engine cooling fan.

FC: Fan Control.

FF: Flexible Fuel.

Flexible Fuel (FF): *formerly Flex Fuel or FFV* A system capable of using a variety of fuels for vehicle operation.

FMEM: Failure Mode Effects Management.

Four Valve (4V): Four valves, two intake and two exhaust, per cylinder.

FP: Fuel Pump.

FPM: Fuel Pump Monitor.

FPRC: Fuel Pressure Regulator Control.

Fuel: Any combustible substance burned to provide heat or power. Typical fuels include gasoline and diesel fuel. Other types of fuel include ethanol, methanol, natural gas, propane or in combination.

Fuel Pressure Regulator Control (FPRC): Controls the fuel pressure regulator. Used primarily to provide extra fuel during cold starts.

Fuel Pump (FP): A pump used to deliver fuel to the engine.

Fuel Pump Monitor (FPM): Monitors operation of the fuel pump.

Glossary

Fuel Rich/Lean: A qualitative evaluation of air / fuel ratio based on an A / F ratio known as stoichiometry or 14.7:1. In the EEC system, rich/lean is determined by a voltage signal from the HO2S. An excess of oxygen (lean) is indicated by an HO2S voltage of less than .4 volts; a rich condition is indicated by an HO2S voltage of greater than .6 volts.

FWD: Front Wheel Drive.

GCM: Governor Control Module.

GEN: Generator.

Generator (GEN): *formerly Alternator* A rotating machine designed to convert mechanical energy into electrical energy.

GND: Ground.

Goose: A brief opening and closing of the throttle (Dynamic Response test).

Governor: A device designed to automatically limit engine speed.

Governor Control Module (GCM): *formerly GEM* The module that controls the governor.

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

GVW: Gross Vehicle Weight.

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.

Hard Fault: A fault currently present in the system.

Hardware Limited Operating Strategy (HLOS): A mode of operation where the PCM replaces output commands with fixed values in response to certain PCM malfunctions.

HC: Hydrocarbon.

HDL: Headlamp.

Headlamp (HDL): Indicates status of the headlamps.

Heated Oxygen Sensor (HO2S): *formerly HEGO* An Oxygen Sensor (O2S) that is electrically heated.

HFC: High Fan Control.

HFP: High Fuel Pump.

High Fan Control (HFC): *formerly HEDF* Controlling the high speed cooling fan.

High Fuel Pump (HFP): Controls the high speed fuel pump.

Glossary

High Swirl Combustion (HSC): A cylinder and piston configuration that causes swirling of the air / fuel mixture in the cylinder.

HLOS: Hardware Limited Operating Strategy.

HO: High Output.

HO2S: Heated Oxygen Sensor.

HSC: High Swirl Combustion.

IAC: Idle Air Control.

IAT: Intake Air Temperature.

ICM: Ignition Control Module.

Idle Air Control (IAC): *formerly ISC* Electrical control of throttle bypass air.

IDM: Ignition Diagnostic Monitor.

IFS: Inertia Fuel Shutoff.

IGN GND: Ignition Ground.

Ignition: System used to provide high voltage spark for internal combustion engines.

Ignition Control Module (ICM): *formerly TFI module, DIS module, or EDIS module* The module that controls the ignition system.

Ignition Diagnostic Monitor (IDM): Monitors operation of the ignition system.

IMRC: Intake Manifold Runner Control.

Inertia Fuel Shutoff (IFS): *formerly Inertia switch* An inertia system that shuts off the fuel delivery system when activated by predetermined force limits.

Injector: A device for delivering metered pressurized fuel to the intake system or the cylinders.

Intake Air: Air drawn through a cleaner and distributed to each cylinder for use in combustion.

Intake Air Temperature (IAT): *formerly ACT* The temperature of the intake air.

Intake Manifold Runner Control (IMRC): *formerly IAC* Controls airflow through runners in the intake manifold.

Intermittent: A fault that may not be present or identifiable at the present time.

KAM: Keep Alive Memory.

KAPWR: Keep Alive Power.

Glossary

Keep Alive Memory (KAM): A portion of the memory within the PCM that must maintain power even when the vehicle is not operating.

Keep Alive Power (KAPWR): Dedicated, unswitched power circuit that maintains KAM.

Key On Engine Off Self-Test: A test of the EEC system conducted by the PCM with power applied and the engine at rest.

Knock: The sharp metallic sound produced when two pressure fronts collide in the combustion chamber of an engine.

Knock Sensor (KS): Detects engine knock.

KOEO: Key On Engine Off.

KOER: Key On Engine Running.

KS: Knock Sensor.

L: Liters.

LFC: Low Fan Control.

LFP: Low Fuel Pump.

Low Fan Control (LFC): *formerly EDF* Controlling the low speed cooling fan.

Low Fuel Pump (LFP): Controls the low speed fuel pump.

M/T: Manual Transmission / Transaxle.

MAF: Mass Air Flow.

MAF RTN: Mass Air Flow Return.

Malfunction Indicator Lamp (MIL): A required on-board indicator to alert the driver of an emission related malfunction. May read either "CHECK ENGINE" or "SERVICE ENGINE SOON."

Manifold: A device designed to collect or distribute fluid, air or the like.

Manifold Absolute Pressure (MAP): The absolute pressure of the intake manifold air.

Manifold Absolute Pressure Per Altitude (MAPPA): *formerly GMAPPA* Manifold absolute pressure value adjusted for altitude.

Manual Lever Position (MLP): Indicates the position of the manual lever in electronically controlled transmissions.

MAP: Manifold Absolute Pressure.

Glossary

MAPPA: Manifold Absolute Pressure Per Altitude.

Mass Air Flow (MAF): A system which provides information on the mass flow rate of the intake air to the engine.

Mass Air Flow Return (MAF RTN): A return circuit for the MAF sensor.

MFI: Multiport Fuel Injection.

MIL: Malfunction Indicator Lamp.

MLP: Manual Lever Position.

Module: A self-contained group of electrical / electronic components, which is designed as a single replaceable unit.

Monitor Box: An optional EEC system test device which connects in series with the PCM and its harness and permits measurements of PCM inputs and outputs.

Multiport Fuel Injection (MFI): *formerly EFI* A fuel-delivery system in which each cylinder is individually fueled.

NAAO: North American Automotive Operations.

NC: Normally Closed.

NO: Normally Open.

NOx: Nitrous Oxides.

O2S: Oxygen Sensor.

OASIS: On-line Automotive Service Information System.

OBD: On-Board Diagnostic.

OC: Oxidation Catalytic Convertor.

OCT ADJ: Octane Adjust.

Octane Adjust (OCT ADJ): Can alter engine strategy to compensate for changes in fuel octane.

OHC: Overhead Cam.

On-Board Diagnostic (OBD): A system that monitors some or all computer input and control signals. Signal(s) outside of the predetermined limits imply a fault in the system or in a related system.

Open Circuit: A circuit which does not provide a complete path for flow of current.

Overhead Cam (OHC): An engine configuration that uses a single camshaft positioned above the valves.

Glossary

Overlay Card: A plastic card used with the monitor box to identify EEC signals for each engine. The card also programs the monitor box for auto mode measurements.

Oxidation Catalytic Converter (OC): *formerly COC* A catalytic converter system that reduces levels of HC and CO.

Oxygen Sensor (O2S): *formerly EGO* A sensor which detects oxygen (O2) content in the exhaust gases.

PAIR: Pulsed Secondary Air Injection.

Park/Neutral Position (PNP): *formerly NDS, NGS, or TSN* Indicates the selected non-drive modes of the transmission.

PCM: Powertrain Control Module.

PCV: Positive Crankcase Ventilation.

PFE: Pressure Feedback EGR.

PIP: Profile Ignition Pickup.

PNP: Park/Neutral Position.

Positive Crankcase Ventilation (PCV): A system that vents vapors from the crankcase.

Power Ground (PWR GND): The main ground circuit in the EEC system.

Power Steering: A system which provides additional force to the steering mechanism, reducing the driver's steering effort.

Power Steering Pressure (PSP): *formerly PSPS* Indicates the pressure in the power steering system.

Powertrain: The elements of a vehicle by which motive power is generated and transmitted to the driven axles.

Powertrain Control Module (PCM): *formerly EEC processor, ECA, ECM, or ECU* The module that controls the EEC system.

Pressure Feedback EGR (PFE): An EGR system that monitors EGR pressure across a remote orifice to control EGR flow.

Profile Ignition Pickup (PIP): Provides crankshaft or camshaft position information for ignition synchronization.

Programmable Speedometer/Odometer Module (PSOM): A module that processes vehicle speed information for use in various electronic systems. The PSOM can be programmed to accommodate various tire and axle combinations.

PSOM: Programmable Speedometer/Odometer Module.

PSP: Power Steering Pressure.

Glossary

Pulsed Secondary Air Injection (PAIR): *formerly Thermactor II* A pulse-driven system for providing secondary air without an air pump by using the engine exhaust system pressure fluctuations or pulses.

Pump: A device used to raise, transfer, or compress fluids by suction, pressure or both.

PWR GND: Power Ground.

QSB: Quarterly Service Bulletin.

Quick Test: A functional diagnostic test of the EEC system consisting of vehicle preparation and hookup, KOEO and KOER Self-Tests.

RABS: Rear Antilock Brake System.

Recorder: An optional EEC system test device which works jointly with the monitor box. It allows up to eight EEC signals to be electronically recorded over a 50 second period.

REDOX: Reduction Oxidation Catalytic Converter.

Reduction Oxidation Catalytic Converter (REDOX): A catalytic converter system that is designed to operate at high temperatures. At low temperatures, it reduces levels of HC and CO. At high temperatures, it reduces levels of HC, CO, and NOx.

Reference Voltage (VREF): A dedicated circuit that provides a 5.0 volt signal used as a reference by certain sensors.

Relay: A generally electromechanical device in which connections in one circuit are opened or closed by changes in another circuit.

Relay Module (RM): A module containing two or more relays.

Return (RTN): A dedicated sensor ground circuit.

RM: Relay Module.

RPM: Engine RPM.

RTN: Return.

RWD: Rear Wheel Drive.

SC: Supercharged.

Scan Tool (ST): A device that interfaces with and communicates information on a data link.

SD: Speed Density.

Secondary Air: Air provided to the exhaust system.

Glossary

Secondary Air Injection (AIR): *formerly Thermactor or Air Management* A pump driven system for providing secondary air.

Secondary Air Injection Bypass (AIRB): *formerly TAB or AM1* Vents secondary air to atmosphere.

Secondary Air Injection Diverter (AIRD): *formerly TAD or AM2* Diverts secondary air to either the catalyst or the exhaust manifold.

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

Self-Test Input (STI): A dedicated circuit used to initiate the PCM Self-Test.

Self-Test Output (STO): A dedicated circuit used to output PCM diagnostic information pulses.

Sensor: The generic name for a device that senses either the absolute value or a change in a physical quantity such as temperature, pressure or flow rate, and converts that change into an electrical quantity signal.

Sequential Multiport Fuel Injection (SFI): *formerly SEFI* A multiport fuel delivery system in which each injector is individually energized and timed relative to its cylinder intake event. Normally fuel is delivered to each cylinder once per two crankshaft revolutions in four cycle engines and once per crankshaft revolution in two cycle engines.

SFI: Sequential Multiport Fuel Injection.

Shift Indicator Lamp (SIL): A lamp that indicates the preferred shift points for manual transmission/transaxle vehicles.

Shift Solenoid (SS): Controls shifting in an automatic transmission/transaxle.

SHO: Super High Output.

Short Circuit: An undesirable connection between a circuit and any other point.

SIG RTN: Signal Return.

Signal Return (SIG RTN): A dedicated sensor ground circuit that is common to two or more sensors.

SIL: Shift Indicator Lamp.

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.

Spark Output (SPOUT): Desired spark timing information sent from the PCM to the ICM.

Speed: The magnitude of velocity (regardless of direction).

Speed Density (SD): A system which infers information from various sensor inputs on the flow rate of the intake air to the engine.

Glossary

SPOUT: Spark Output.

SS: Shift Solenoid.

ST: Scan Tool.

STI: Self-Test Input.

STO: Self-Test Output.

Supercharged (SC): An intake system that utilizes a supercharger.

Supercharger: A mechanically driven device that pressurizes the intake air, thereby increasing the density of charge air and the consequent power output from a given engine displacement.

Switch: A device for making breaking, or changing the connections in an electrical circuit.

System: A group of interacting mechanical or electrical components serving a common purpose.

TACH: Tachometer.

Tachometer (TACH): A circuit that provides input for an electronic tachometer display.

TB: Throttle Body.

TCC: Torque Converter Clutch.

TCIL: Transmission Control Indicator Lamp.

TCS: Transmission Control Switch.

Test: A procedure whereby the performance of a product is measured under various conditions.

Three Way + Oxidation Catalytic Converter (TWC+OC):*formerly TWC & COC* A catalytic converter system that has both Three Way Catalyst (TWC) and Oxidation Catalyst (OC). Usually secondary air is introduced between the two catalysts.

Three Way Catalytic Converter (TWC): A catalytic converter system that reduces levels of HC, CO, and NOx.

Throttle: A valve for regulating the supply of a fluid, usually air or an air / fuel mix, to an engine.

Throttle Body (TB): The device containing the throttle.

Throttle Position (TP): Indicates the position of the throttle plate.

Throttle Position Output (TPOUT): Communicates throttle position information from the PCM to the GCM.

Timing: Relationship between spark plug firing and piston position usually expressed in crankshaft degrees before (BTDC) or after (ATDC) top dead center of the compression stroke.

Glossary

Torque Converter: A device which by its design multiplies the torque in a fluid coupling between an engine and transmission/transaxle.

Torque Converter Clutch (TCC): *formerly CCC, CCO, LUS, MLUS, or MCCC* Controlling the torque converter clutch.

TOT: Transmission Oil Temperature.

TP: Throttle Position.

TPOUT: Throttle Position Output.

TR: Transmission Range.

Transaxle: A device consisting of a transmission and axle drive gears assembled in the same case. Compare "Transmission."

Transmission: A device which selectively increases or decreases the ratio of relative rotation between its input and output shafts. Compare "Transaxle."

Transmission Control Indicator Lamp (TCIL): Indicates that the TCS has been activated.

Transmission Control Switch (TCS): Modifies the operation of electronically controlled transmissions.

Transmission Oil Temperature (TOT): Indicates temperature of transmission fluid.

Transmission Range (TR): The range in which the transmission is operating.

Transmission Range Drive (TRD): *formerly TSD* Indicates operator selection of the Drive transmission range.

Transmission Range Low (TRL): *formerly TSL* Indicates operator selection of the Low transmission range.

Transmission Range Overdrive (TROD): *formerly TSOD* Indicates operator selection of the Overdrive transmission range.

Transmission Range Reverse (TRR): *formerly TSR* Indicates operator selection of the Reverse transmission range.

Transmission Speed Sensor (TSS): Indicates rotational speed of the transmission output shaft or turbine shaft.

TRD: Transmission Range Drive.

TRL: Transmission Range Low.

TROD: Transmission Range Overdrive.

TRR: Transmission Range Reverse.

TSB: Technical Service Bulletin.

Glossary

TSS: Transmission Speed Sensor.

TWC: Three Way Catalytic Convertor.

TWC+OC: Three Way + Oxidation Catalytic Converter.

Two Valve (2V): Two valves, one intake and one exhaust, per cylinder.

Valve: A device by which the flow of liquid, gas, vacuum, or loose material in bulk may be started, stopped or regulated by a movable part that opens, shuts or partially obstructs one or more ports or passageways. A "Valve" is also the moveable part of such a device.

Variable Control Relay Module (VCRM): A relay module that provides variable control of various EEC components.

VCRM: Variable Control Relay Module.

VECI Label: Vehicle Emission Control Information Label.

Vehicle Power (VPWR): A switched circuit that provides power to the EEC system. Compare "Battery Positive Voltage (B+)."

Vehicle Speed Sensor (VSS): A sensor which provides vehicle speed information.

VOM: Volt-Ohm Meter.

VPWR: Vehicle Power.

VREF: Reference Voltage.

VSS: Vehicle Speed Sensor.

WAC: Wide Open Throttle A/C Cutoff.

Warm Up Oxidation Catalytic Convertor (WU-OC): A catalytic convertor system designed to lower HC and CO emissions during engine warm up. Usually located in or near the exhaust manifold.

Warm Up Three-Way Catalytic Convertor (WU-TWC): A catalytic convertor system designed to lower HC, CO, and NOx emissions during engine warm up. Usually located in or near the exhaust manifold.

Wide Open Throttle (WOT): A condition of maximum airflow through the throttle body.

Wide Open Throttle A/C Cutoff (WAC): Turns A/C system off during wide open throttle or certain other operating conditions.

WOT: Wide Open Throttle.

WU-OC: Warm Up Oxidation Catalytic Converter.

WU-TWC: Warm Up Three-Way Catalytic Converter.

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