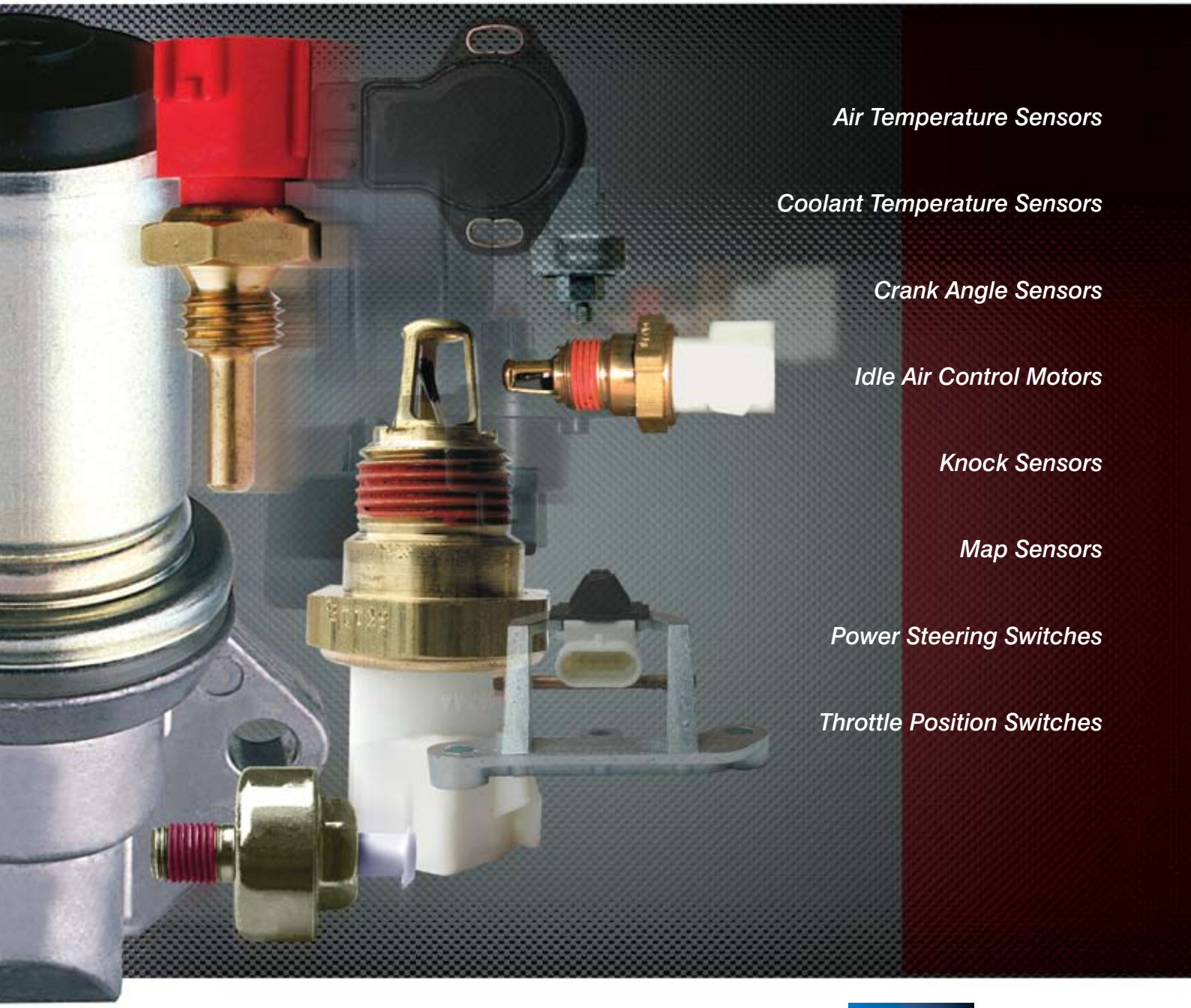
ACA

Engine Management Solutions®



Air Temperature Sensors

Coolant Temperature Sensors

Crank Angle Sensors

Idle Air Control Motors

Knock Sensors

Map Sensors

Power Steering Switches

Throttle Position Switches

Sensor Catalogue

Oem Quality - Direct Replacement

Sensor Catalogue

Edition 2

Engine Management Solutions®

Electronics

Automotive Components & Accessories designs and manufactures electronics to meet the stringent requirements of todays high tech vehicle systems. Our strength is creating innovative solutions to often complex problems.

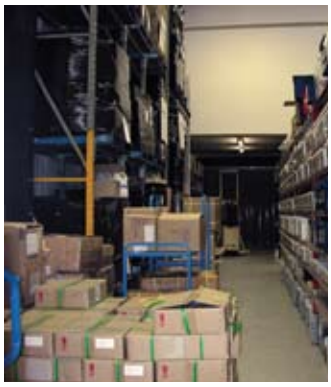
With todays vehicles relying heavily on the information relayed from a large range of sensors, it is vital that the data is accurate and that the sensors continue to operate in the harsh conditions and high temperatures of todays engines.

Testing & Quality Control

To be a manufacturer and supplier in the automotive industry, quality control of manufactured products is essential. It is also the policy of ACA to stringently test products purchased from other suppliers to make sure the quality is consistent and meets the high levels of the ACA brand.

Design Capabilities

The design and development capabilities at Automotive Components & Accessories are extensive and draws on many years of EFI experience. ACA have several products that have been developed and tested from concept to manufacturing to market solution.



Warehousing and Logistics

One of the keys to the ACA success is the sophisticated warehousing and logistics operation. Working closely with the manufacturing division, stock is continually monitored to meet the ongoing needs of the automotive industry.

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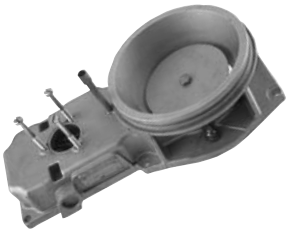
Component Identification Glossary



CIS/ K-Jetronic Air Flow Sensor

Function: This style of Air Flow Sensor was popular on early model European vehicles such as Audi, BMW, Mercedes Benz, Saab and Volvo.
This style of air flow sensor measures the total volume of air being drawn in by the engine and in turn, controls the movement of the main metering plunger in the fuel distributor head, thus delivering the precise amount of fuel to each cylinder via the injectors.

Air Flow Meter (Vane Air Flow)

Function: This air flow meter or vane air flow meter measures the total volume of air being drawn in by the engine and in turn provides the electronic control unit (ECU) with an analogue signal as a measurement of inducted air volume. This signal is known as a load signal of which, the electronic control unit uses to calculate the injector millisecond time and duty cycle.

Air Mass Meter (Mass Air Flow Sensor)

Function: To provide an electronic signal to the electronic control unit (ECU) as a measurement of the incoming air mass as controlled by the engine load. Air passes over a very thin platinum wire that is heated to maintain an accurate and constant temperature. As the air mass increases or decreases the current is varied to maintain the wire temperature, thus resulting in an increase or decrease in the voltage signal provided to the ECU, to determine the appropriate amount of fuel injected into the engine (and in some cases, the amount of ignition timing advance) for correct engine operation.

Pressure Sensor (Map Sensor)

Function: These two units operate primarily the same even though they appear to be totally different in appearance. The aluminium unit displayed in this section was used on very early fuel injection systems commonly known as D-Jetronic and was fitted to vehicles such as Mercedes Benz, Volvo and Volkswagen.
In simple terms both units supply an electrical signal to the electronic control unit (ECU) as changes in the intake manifold pressure occur resulting from changes in engine load, speed and atmospheric pressure. Manifold Absolute Pressure is the difference between barometric pressure and manifold vacuum. The sensors contain a pressure-sensing element and electronic circuitry which converts pressure sensed by the unit, into an electronic signal for the ECU to process.

Air Temperature Sensor

Function: This unit is used in the fuel injection systems to measure the temperature of the air being drawn into the engine and supplies a signal to the electronic control unit. The unit has an internal resistor (known as a NTC) and as temperature increases, the resistance of the unit decreases varying the signal to the ECU. This is used as an additional correction value for fuel delivery and in some cases timing (advance).

Component Identification Glossary

Cold Start Valve/Injector

Function: This unit is used to provide additional fuel which is required to overcome fuel condensation and increased friction which is present during all engine cold start conditions. As mentioned previously, this unit will only operate in cold start conditions and is wired in series with a thermo time switch, that is temperature sensitive, and will not allow fuel to be injected during normal engine operating temperature e.g. 80°.

Fuel Injector (Solenoid Type)

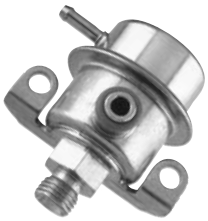
Function: The fuel injector is of a simple operation that precisely meters the fuel into the engine intake ports or plenums. The fuel injector is totally dependent on the electronic control unit (ECU) to operate. In most cases the ECU provides a negative or earth signal to the injector and a needle valve or pintle will lift within the solenoid body to deliver a predetermined fuel quantity.

Fuel Injector (CIS/K-Jetronic Type)

Function: This style of fuel injector is known as a K-Jetronic injector and is not electronically operated at all. Used in K-Jet, KE-Jet and KE Motronic systems, this unit continuously atomises the fuel through the oscillations of the internal needle valve.
Note: These particular injectors are a non-serviceable unit. They cannot be cleaned, they must be replaced with new units (ACA Part# FI614, FI623 and FI625).

Fuel Injector (TBI-Throttle Body Type)

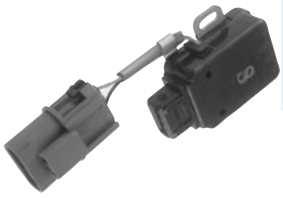
Function: This style of fuel injector operates in a similar way to the previously mentioned pintle type. It delivers a predetermined fuel quantity, but does not have a pintle to create the spray pattern. The atomisation of the fuel is achieved via a swirling motion and the rebounding action. This unit is also operated at a much higher frequency.



Fuel Pressure Regulator

Function: The fuel pressure regulator is used to maintain a specific fuel pressure to the fuel rail. This unit also works in a different relationship with fuel pressure and intake manifold vacuum. In simple terms, this unit redirects excess fuel back to the fuel tank.
The unit is vacuum assisted meaning that as manifold vacuum increases e.g. at idle conditions, the fuel pressure is dropped and as manifold vacuum decreases acceleration or cruising, the fuel pressure increases to compensate for increase in engine load.

Component Identification Glossary



TPS-Throttle Position Switch

Function: This unit is commonly mounted on the throttle body and is actuated by the throttle shaft. It monitors idle and full load position and relays an electronic signal to the electronic control unit (ECU) depending on what position it is in. It has one set of contacts for idle position and an additional set for full load. This unit plays a major role in overrun, fuel shut-off and idle speed control functions. This full load can action acceleration enrichment and additional fuel under full throttle.

Oxygen Sensor

Function: To measure the amount of unburned oxygen in the exhaust system.
The outside of this coated ceramic is exposed to the oxygen remaining after combustion. The inner part is vented to the oxygen contained in the atmosphere. The difference between these oxygen contents causes the oxygen sensor to create a voltage. This voltage ranges from 0.2 volts to 1.0 volts. A high content means a lean mixture and a lower voltage signal to the computer, whereas low oxygen content means a rich mixture and a higher output signal to the computer. The computer uses this information to regulate the air/fuel mixture which is optimum at 14.7/1.

Electronic Fuel Pump / High Pressure

Function: To create a continual pressurised fuel supply of predetermined volume and pressure to the main distribution point on the fuel injection system. The majority of electric fuel pumps used in today's market are of roller cell design and are capable of delivering extremely high pressures and large volumes of fuel. This high pressure exits the pump outlet one-way check valve as a result of the centrifugal sealing actions that are created via the roller cells within the pump chamber.

Fuel Distributor Head (K-Jetronic Systems)

Function: This particular unit is only used on K-Jetronic systems and was fitted to European vehicles such as Audi, Mercedes Benz, Porsche, Saab and Volvo. Its function is to distribute metered amounts of fuel to all the fuel injectors.
The unit is mounted on a sensor plate that senses the amount of air being drawn in by the engine and in turn controls the rise and fall of the main metering plunger inside the fuel distributor head. As the plunger is moved, it in turn uncovers small fuel delivery slits which control the basic volume of fuel to all the fuel injectors.

Fuel Accumulator (K-Jetronic Systems)

Function: To maintain a continuous supply of fuel pressure within the system after the vehicle is shut off. This ensures positive restart characteristics of the engine. This is achieved by a spring-loaded diaphragm within the unit that is compressed during the pump operation. Once shut-off occurs, the spring pressure will hold a continuous fuel pressure within the system.

Component Identification Glossary

Idle Air Control Motor (IAC Motor)

Function: The idle air control motor is incorporated within the fuel injection system to stabilise and hold idle speed to a specific predetermined value. This is dependent on the engine temperature, electrical load, engine load at idle conditions and many other variables.

The IAC Motor achieves this by continually adjusting an air bypass passage around the throttle plate, that in turn will govern the amount of air passing through it, dependent on any of the variables mentioned above.

Coolant Temperature Sensor

Function: This device is used within the engine and supplies a signal back to the ECU to indicate engine temperature.

The unit has an internal resistor (known as a NTC). As engine temperature increases, the resistance of the unit decreases and is continually sending a signal to the ECU. This signal is used as an additional correction value for fuel injector delivery, and in some cases timing (advance).

Knock Sensor

Function: The knock sensor is used to detect engine detonation or pinging and will send this information electronically to the ECU.

The unit is capable of detecting vibrations caused by detonation and once this occurs the crystal inside the unit compresses, thus resulting in a voltage. This voltage signal is used by the ECU to immediately retard ignition timing as necessary.

Speed and Reference Mark Sensor

Function: This sensor is used to determine the engine speed, RPM and the crankshaft position which are used by the ECU to calculate and optimise the fuel injector delivery and ignition timing (advance) along with many other related variables. The sensor is installed next to the engine flywheel and will generate a voltage signal that is capable of providing highly accurate RPM and top dead centre (TDC) information back to the ECU.

Warm Up Regulator (K-Jetronic Systems)

Function: This regulator controls after starting warm up fuel enrichment by reducing the amount of fuel pressure for a set time period, depending on engine temperature.

It performs by lowering the fuel pressure on top of the metering plunger in the fuel distributor head, allowing a richer fuel mixture for cold running conditions. As the engine slowly reaches operating temperature the fuel pressure increases accordingly on top of the meter plunger. This will slowly lean the fuel mixture out to a predetermined value.

Component Identification Glossary

Optical Type Crank Angle Sensor

Function: To provide an electronic signal (usually a square wave train) to the electronic control unit (ECU) as a measurement of engine speed and crankshaft position. The ECU utilises this signal, along with those from other engine sensors to determine the amount of fuel to inject into the engine. This signal is also used by the ECU to vary ignition timing.

Magnetic Hall Type Crank Angle Sensor

Function: This sensor determines the engine RPM and crankshaft position, of which are used by the electronic control unit (ECU) to calculate and optimise ignition timing and fuel delivery, in addition to other related functions. Installed at the front of the motor and mounted behind the harmonic balancer, the sensor generates a square wave signal providing accurate RPM and top dead centre (TDC) information, relaying it back to the ECU.

Combined Crank Angle Sensor & Coil Igniter

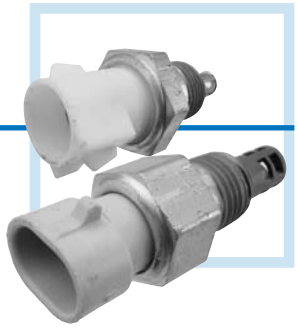
Function: This unit determines the engine RPM and crankshaft position, of which are used by the electronic control unit (ECU) to calculate and optimise ignition timing and fuel delivery, in addition to other related functions. This unit is installed inside the engines distributor. The sensor generates a square wave signal and relays this signal back to the ECU. This is where this style of crank angle sensor is totally different to all other previously explained. This unit has a coil igniter built into it, which is controlled by the ECU. Once the ECU receives the RPM and crankshaft position signal the ECU then returns the signal to the coil igniter to fire the ignition coil mounted under the sensor.

ECU - Electronic Control Unit

Function: The electronic control unit calculates all of the engine management control parameters based on all of the signal data received from various sensors used by the vehicle manufacturer. The unit responds to measured variables and all of the sensor input signals, making a calculation depending on its predetermined parameters to control and adjust the fuel delivery and timing (advance).

Sensor Catalogue

Intake Air Temperature Sensors (IAT)



Function: This unit is used in the fuel injection systems to measure temperature of the air being drawn into the engine and supplies a signal to the electronic control unit. The unit has an internal resistor (known as a NTC) and as temperature increases the resistance of the unit decreases varying the signal to the ECU. This is used as an additional correction value for fuel delivery and in some cases timing (advance).

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford						
Corsair UA	KA24E	89-92	2.4	4	MPI	AT315
Courier PC	G6	89-96	2.6	4	EGI	AT302
Courier PD	G6	96-99	2.6	4	EGI	AT302
Courier PE	G6	99-	2.6	4	EGI	AT302
Explorer OHV (Round Air Cleaner)	VZA	96-98	4.0	V6	EEC-5	AT303
Explorer OHV	VZA	98-	4.0	V6	EEC-5	AT318
Explorer SOHC	VZA	96-98	4.0	V6	EEC-5	AT317
Explorer SOHC	VZA	98-	4.0	V6	EEC-5	AT318
Falcon EA	D/P	88-91	3.9/4.0	6	EEC-4	AT301
Falcon EB/EB II (Inc. XR6)	D/P	91-93	3.9/4.0	6	EEC-4	AT301
Falcon ED (Inc. XR6)	H	93-94	4.0	6	EEC-4	AT301
Falcon EB/EB II (Inc. XR8)	Z	91-93	5.0	V8	EEC-4	AT301
Falcon ED (Inc. XR8)	Z	93-94	5.0	V8	EEC-4	AT301
Falcon EF/EF II (Inc. XR8)	H	94-96	4.0	6	EEC-4	AT301
Falcon EF (Inc. XR8)	Z	94-96	5.0	V8	EEC-4	AT301
Falcon EL (Inc. XR6)	-	96-98	4.0	6	EEC-5	AT301
Falcon EL (Inc. XR8)	-	96-98	5.0	V8	EEC-5	AT301
Falcon AU	H	98-00	4.0	6	EEC-5	AT319
Falcon AU II (Inc. XR6)	H	00-	4.0	6	EEC-5	AT316
Falcon AU (Inc. XR8)	X	98-	5.0	V8	EEC-5	AT318
Falcon (ute) XG	H	93-96	4.0	6	EEC-4	AT301
Falcon (ute) XH	H	96-99	4.0	6	EEC-4	AT301
Falcon (ute) XH	Z	96-99	5.0	V8	EEC-5	AT301
Fairlane NA	P	88-91	3.9/4.0	6	EEC-4	AT301
Fairlane NC	P	91-94	3.9/4.0	6	EEC-4	AT301
Fairlane NF	H	95-96	4.0	6	EEC-4	AT301
Fairlane NL	Z	96-98	5.0	V8	EEC-5	AT301
Festiva WD	B3	97-00	1.3	4	Siemens	AT313
Festiva WD	B5	97-00	1.5	4	Siemens	AT313
Laser KN	FP	98-	1.8	4	EGI	AT314
Telstar AX	FS	92-96	2.0	4	EGI	AT321
Transit VF	4EB	96-97	2.5	4	LUC	AT301
Transit VF	4GB	96-97	2.0	4	Siemens	AT301
Transit VG	4DA	97-	2.0	4	Siemens	AT301
Bronco	ALTFC	85-87	4.9	V8	EEC-4	AT301
F100 Series	FK	85-87	5.0	V8	EEC-4	AT301
F150 Series	AL1J	87-90	5.0	V8	EEC-4	AT301
F250 Series	AH2J	90-93	5.8	V8	EEC-4	AT301
F350 Series	AH2JK	90-93	5.8	V8	EEC-4	AT301
LTD DA	P	88-91	3.9/4.0	6	EEC-4	AT301
LTD DC	P	91-94	3.9/4.0	6	EEC-4	AT301
LTD DF	P	95-96	4.0	6	EEC-4	AT301
LTD DL	Z	96-98	5.0	V8	EEC-5	AT301

Intake Air Temperature Sensors (IAT)

ACA

Vehicle Application Listing

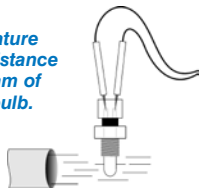
Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH						
Astra LD	16LF	87-89	1.6	4	GM-MPI	AT305
Astra LD	18LF	87-89	1.8	4	GM-MPI	AT305
Astra TS	X18XE	8/98 on	1.8L	4	MPI	AT330
Astra TS	C22SEL	8/98 on	2.2L	4	MPI	AT330
Astra TS	C22SEL	01-03	2.2L	4	MPI	AT330
Astra TS Sri	Z22SE	12/01-7/04	2.2L	4	MPI	AT330
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	AT332
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	AT332
Barina TK	F16D3	12/05 on	1.6L	4	MPI	AT327
Barina SB w/TBI	C12NZ	94-00	1.2L	4	MPI	AT329
Barina SB w/TBI	C14NZ	94-00	1.4L	4	MPI	AT329
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	AT329
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	AT329
Barina XC	X14XEP	3/01 on	1.4L	4	MPI	AT329
Barina XC	X16SE	3/01 on	1.6L	4	MPI	AT329
Barina XC	X18XE	3/01 on	1.8L	4	MPI	AT329
Camira JD 1.8	18JC	84-87	1.8	4	GM-MPI	AT305
Commodore VL (Auto)	RB30E	86-89	3.0	6	ECCS	Integrated in Air Mass Meter
Commodore VL (Man)	RB30E	86-89	3.0	6	ECCS	Integrated in Air Mass Meter
Commodore VL Group A SS	VT	88	5.0	V8	Delphi	AT305
Commodore VN	VH	88-90	3.8	V6	GM-MPI	AT305
Commodore VN SV89	VU	89-90	5.0	V8	GM-MPI	AT305
Commodore VN (Club Sport)	VU	90-91	5.0	V8	GM-MPI	AT305
Commodore VN SV5000	VU	89-90	5.0	V8	GM-MPI	AT305
Commodore VP	VH	91-93	3.8	V6	GM-MPI	AT305
Commodore VP (Opt. V8)	VU	91-93	5.0	V8	GM-MPI	AT305
Commodore VR (Police Pack) Auto	VH	93-95	3.8	V6	GM-MPI	AT305
Commodore VR (Police Pack) 180KW (Auto)	VU	93-95	5.0	V8	GM-MPI	AT305
Commodore VR (Auto)	VH	93-95	3.8	V6	GM-MPI	AT305
Commodore VR (Man)	VH	93-95	3.8	V6	GM-MPI	AT305
Commodore VG/VP Ute (Man)	VH	90-93	3.8	V6	GM-MPI	AT305
Commodore VG/VP Ute (Auto)	VU	90-93	5.0	V8	GM-MPI	AT305
Commodore VR Ute (Man/Auto)	VH	93-95	3.8	V6	GM-MPI	AT305
Commodore VR Ute (Man/Auto)	VU	93-95	5.0	V8	GM-MPI	AT305
Commodore VS High Perf. (Opt. Police Pack) Auto	VU	95-	5.0	V8	GM-MPI	AT305
Commodore VS HSV	VU	96-	5.7	V8	GM-MPI	AT305
Commodore VS Ute Auto	VH	95-	3.8	V6	GM-MPI	AT305
Commodore VS - VX	VA	95-02	3.8	6	GM-MPI	AT323
Commodore VS - VX (Gas)	VA	95-02	3.8	6	GM-MPI	AT323
Commodore VS - VX S/Charge	VR	95-02	3.8	6	GM-MPI	AT323
Commodore VT Chev Motor LSI	VM	99-01	5.7	V8	GM-MPI	AT323
Commodore VT Chev Motor LSI	VM	01-	5.7	V8	GM-MPI	AT324
Statesman (Man/Auto)	VH	95-	3.8	V6	GM-MPI	AT305
Statesman VS High Perf. (Man/Auto)	VU	95-	5.0	V8	GM-MPI	AT305
Statesman VQ Caprice Series I+II	VU	90-94	5.0	V8	GM-MPI	AT305

Intake Air Temperature Sensors (IAT)

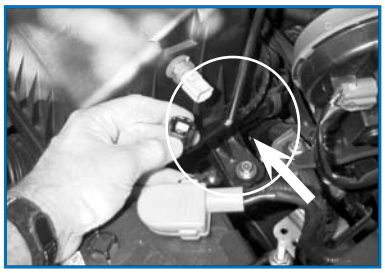
Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH Continued						
Statesman VQ 5.0 Series II High Perf.	VU	92-94	5.0	V8	GM-MPI	AT305
Statesman VQ/Caprice	VH	91-93	3.8	V6	GM-MPI	AT305
Statesman VR 180KW (Auto)	VU	93-95	5.0	V8	GM-MPI	AT305
Statesman VR 180KW (Man)	VU	93-95	5.0	V8	GM-MPI	AT305
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	AT326
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	AT326
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	AT332
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	AT332
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	AT332
Honda						
Accord SI CA5	A20B	87-89	2.0	4	PGM-FI	AT310
Accord EXI CB7	F22A	89-90	2.2	4	PGM-FI	AT307
Accord EXI CB7+4WS	F22A	91-93	2.2	4	PGM-FI	AT307
Civic EG EEI VTEC	D15Z1	93-96	1.5	4	PGM-FI	AT307
Civic EH	D16A8	91-93	1.6	4	PGM-FI	AT307
Concerto	D16Z2	91-93	1.6	4	PGM-FI	AT307
CRX	D16A88	87-92	1.6	4	PGM-FI	AT307
CRX	B16A2	92-98	1.6	4	PGM-FI	AT307
Integra	B18A1	89-93	1.8	4	PGM-FI	AT307
Prelude (4WS)	B20A6	88-91	2.0	4	PGM-FI	AT307
Prelude	F22A1	91-99	2.2	4	PGM-FI	AT307
Prelude VTI	H22A1	94-96	2.2	4	PGM-FI	AT307
Prelude 4WS	H23A1	91-96	2.3	4	PGM-FI	AT307
Hyundai						
Excel-X2	G4DJ	91-94	1.5	4	MITSU	AT306
Excel-X3 SOHC	G4EK	96-97	1.5	4	MITSU	AT309
Excel-X3 DOHC (Alpha)	G4FK	98-00	1.5	4	Siemens	AT306
Lantra J2	G4GM	95-	1.8	4	Siemens	AT309
Sonata EF	G4JPV	98-00	2.0	4	MITSU	AT306
Nissan						
Pulsar N13	18LF	87-91	1.8	4	GM-MPI	AT305
Pintara U12	KA24	89-90	2.4	4	ECCS	AT315
Toyota						
Lexcen VN GLX	VH	89-91	3.8	V6	GM-MPI	AT305
Lexcen VP CSI	VH	91-93	3.8	V6	GM-MPI	AT305
Lexcen VR Newport	VH	93-94	3.8	V6	GM-MPI	AT305
Lexcen VR T4 (Ecotec)	VH	95-97	3.8	V6	GM-MPI	AT305

To test the air temperature sensor, check the resistance while directing a stream of hot air at the sensor bulb.



The air temperature sensor is usually located on the air cleaner housing, or on the air intake ducting.



Air Temperature Sensor

The air temperature sensor is usually located somewhere in the intake air system, either on the air cleaner housing or in the ducting. The sensor signals the ambient air temperature to the ECU. The sensor contains a negative temperature coefficient resistor which reduces resistance as temperature increases. The ECU supplies a 5 volt reference voltage to the sensor, and measures the voltage drop through the resistor to calculate air temperature.

To Check

1.Check that the air temperature sensor voltage signal increases as the ambient air temperature increases.

2.Remove the sensor from the engine and apply a stream of heated air using a heat gun. Measure the resistance across the sensor terminals. The resistance should decrease as the temperature increases. On most sensors, the resistance at 20°C is around 2,000-3,000 ohms, while at 80°C, the resistance falls to around 300 ohms. However, some sensors may vary greatly from this. On Ford Falcons fitted with EECIV and EECV systems, sensor resistances will range from 37,300 ohms at 20°C to 3,800 ohms at 80°C.

Product Illustration Guide

Part No. AT301

FORD

Part No. AT302

FORD

Part No. AT303

FORD

Part No. AT305

GMH, TOYOTA, NISSAN

Part No. AT306

HYUNDAI

Part No. AT307

HONDA

Part No. AT309

HYUNDAI

Part No. AT310

HONDA

Intake Air Temperature Sensors (IAT)

Product Illustration Guide

Part No. AT313

FORD

Part No. AT314

FORD

Part No. AT315

FORD, NISSAN

Part No. AT316

FORD

Part No. AT317

FORD

Part No. AT318

FORD

Part No. AT319

FORD

Part No. AT321

FORD

Part No. AT323

GMH

Part No. AT324

GMH

Part No. AT326

GMH

Part No. AT327

GMH

Part No. AT329

GMH

Part No. AT330

GMH

Part No. AT332

GMH

Engine Coolant Temperature Sensors (CS)

Function: This device is used within the engine and supplies a signal back to the ECU to indicate engine temperature.
The unit has an internal resistor (known as a NTC). As engine temperature increases, the resistance of the unit decreases and is continually sending a signal to the ECU. This signal is used as an additional correction value for fuel injector delivery, and in some cases timing (advance).

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Audi						
Audi 80 (3A Engine)	3A	90-92	2.0	4	Motronic	CS839
Audi 80 ABK	ABK	92-96	2.0	4	Motronic	CS839
Audi 90 NG	NG	90-92	2.3	4	Motronic	CS839
Audi 200T	MC	86-91	2.2	5	Motronic	CS839
Audi A4	ADR	95-99	1.8	4	Motronic	CS839
Audi A4 (Turbo)	AEB	95-99	1.8	4	Motronic	CS839
Daewoo						
1.5i	G15MF	94-95	1.5	4	MPI	CS841
Cielo	G15MF	95-97	1.5	4	MPI	CS841
Daihatsu						
Charade	G100	87-93	1.3	4	Denso	CS836
Feroza	F3000	88-92	1.6	4	Denso	CS836
Eunos						
30X DOHC	KB	92-96	1.8	V6	-	CS840
500 DOHC	KF	92-96	2.0	V6	-	CS840
800 DOHC	KL	94-96	2.5	V6	-	CS840
Ford						
Bronco	Z	85-87	4.9	V8	EEC-4	CS822
Capri SA, SC, SE	B6/B6T	89-94	1.6	4	EGI	CS822
Corsair UA	CA20	89-92	2.0	4	MPI	CS833
Corsair UA	KA24	89-92	2.4	4	MPI	CS833
Courier PC	G6	89-96	2.6	4	EGI	CS837
Courier PD	G6	96-99	2.6	4	EGI	CS837
Courier PE	G6	99-	2.6	4	EGI	CS837
Explorer OHV/OHC	VZA	96-98	4.0	V6	EEC-5	CS831
Explorer OHV/OHC	VZA	98-	4.0	V6	EEC-5	CS848
F100-F350	FK/ALIG	85-92	5.0	V8	EEC-4	CS822
F100-F350	AH2JK	85-92	5.8	V8	EEC-4	CS822
Falcon XE	N	82-84	4.1	6	LE-jet	CS826
Falcon XF	N	84-87	4.1	6	EEC-4	CS822
Falcon EA	P	88-91	3.9/4.0	6	EEC-4	CS822
Falcon EB (Inc.XR6)	H	91-93	4.0	6	EEC-4	CS822
Falcon ED (Inc.XR6)	H	93-94	4.0	6	EEC-4	CS822
Falcon EF (Inc.XR6)	H	94-96	4.0	6	EEC-4	CS822
Falcon EL (Inc.XR6)	H	96-98	4.0	6	EEC-5	CS822
Falcon AU Series I (Inc.XR6)	H	98-	4.0	6	EEC-5	CS831
Falcon EB-ED (Inc.XR8)	X	91-94	5.0	V8	EEC-4	CS831
Falcon EF-EL (Inc.XR8)	X	94-98	5.0	V8	EEC-5	CS831

Engine Coolant Temperature Sensors (CS)

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford Continued						
Falcon AU Series I (Inc.XR8)	X	98-	5.0	V8	EEC-5	CS831
Fairlane ZK	X	82-84	4.1	6	LE-JET	CS826
Fairlane ZL	X	84-88	4.1	6	EEC-4	CS822
Fairlane NA	P	88-91	3.9/4.0	6	EEC-4	CS822
Fairlane NC	P	91-95	3.9/4.0	6	EEC-4	CS822
Fairlane NF/NL	H	95-99	4.0	6	EEC-4	CS822
Fairlane AU/AU II	Y	99-	4.0	6	EEC-5	CS831
Fairlane NU	X	98-	5.0	V8	EEC-5	CS831
Falcon ute XG-XH	H	93-99	4.0	6	EEC-4	CS822
Festiva WB	B3	94-97	1.3	4	MITSU	CS845
Festiva WB II	B5	96-97	1.5	4	MITSU	CS845
Festiva WD/WF	B3	97-00	1.3	4	MITSU	CS845
Festiva WD/WF	B5	97-00	1.5	4	MITSU	CS833
Laser KC-KE	B6	85-89	1.6	4	EGI	CS833
Laser KF-KH	BP	90-94	1.8	4	EGI	CS833
Laser KJ	B6	94-96	1.6	4	EGI	CS833
Laser KJ	BP	94-96	1.8	4	EGI	CS840
Laser KL KJ II	B6	97-99	1.6	4	EGI	CS840
Laser KL KJ III	BP	97-99	1.8	4	EGI	CS844
Laser KN	ZM	99-	1.6	4	EGI	CS844
Laser KN	ZP	99-	1.8	4	EGI	CS840
Mondeo HA-HB	SD	95-96	2.0	4	EEC-4	CS831
Mondeo HC	SD	96-96	2.0	4	EEC-4	CS831
Mondeo HD	SD	96-99	2.0	4	EEC-4	CS847
Mondeo HE	SD	99-	2.0	4	EEC-4	CS849
Mondeo HE	KL	99-	2.5	V6	EEC-5	CS831
Probe ST/SV	KL	94-98	2.5	V6	EEC-5	CS833
Taurus DN	TA	96-98	3.0	V6	EGI	CS831
Telstar AS	FE	86-87	2.0	4	EGI	CS833
Telstar AT	FE	87-89	2.2	4	EGI	CS833
Telstar AV	F2	90-92	2.2	4	EGI	CS833
Telstar AX	F5	92-94	2.0	4	EGI	CS840
Telstar AX	KL	92-94	2.5	V6	EGI	CS840
Transit VE (Diesel)	4D	94-96	2.5	4	TDI	CS822
Transit VF-VG (Turbo Diesel)	4DANY	96-97	2.5	4T	TDI	CS822
Transit VF-VG (Turbo Diesel)	4DANY	97-00	2.5	4T	MPI	CS831
Transit VF-VG	NSJ	96-	2.0	4	Siemens	CS822
GMH						
Apollo JK	3S	89-91	2.0	4	TCCS	CS840
Apollo JL	3S	91-93	2.0	4	TCCS	CS840
Apollo JM-JP	5S	93-97	2.2	4	TCCS	CS840
Apollo JM/JP	3VZ	93-97	3.0	V6	TCCS	CS840
Astra AH (147kw)	Z20LER	10/04 on	2.0L	4	MPI	CS862
Astra AH	Z18XE	10/04 on	1.8L	4	MPI	CS863
Astra AH (110kw)	Z22YH	10/04 on	2.2L	4	MPI	CS862
IAC Valve						
Astra LD	18LE	87-89	1.8	4	GM-MPI	CS826
Astra TS	X18XE	8/98 on	1.8L	4	MPI	CS858
Astra TR	C16SEO	9/96-8/98	1.6L	4	MPI	CS826

Engine Coolant Temperature Sensors (CS)

ACA

Vehicle Application Listing

GMH Continued

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Astra TR	C16SEO	9/96-8/98	1.6L	4	MPI	IAC410
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	IAC442
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	IAC442
Astra TR	C16SE	96-98	1.6	4	MPI	CS826
Astra TR	C18SE	96-98	1.8	4	MPI	CS853
Astra TR	X20XE	96-98	2.0	4	MPI	CS853
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	CS853
Astra TS	X18XE	98-	1.8	4	MPI	CS851
Astra TS	C22SEL	8/98 on	2.2L	4	MPI	CS857
Astra TS	C22SEL	01-03	2.2L	4	MPI	CS857
Astra TS	C22SEL	01-03	2.2L	4	MPI	CS857
Astra TS Sri	Z22SE	12/01-7/04	2.2L	4	MPI	CS857
Astra TS Sri	Z22SE	12/01-7/04	2.2L	4	MPI	CS857
Barina SB	C12NZ/C14NZ	94-97	1.2/1.4	4	GM-TBI	CS826
Barina SB w/TBI	C12NZ	94-00	1.2L	4	MPI	CS826
Barina SB w/TBI	C14NZ	94-00	1.4L	4	MPI	CS826
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	CS826
Barina SB w/MPI	C16XE	4/94-12/95	1.6L	4	MPI	CS826
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	CS826
Barina TK	F16D3	12/05 on	1.6L	4	MPI	CS865
Barina XC	Z14XE	2001-2004	1.4	4	up to vin 24999999	CS869
Barina XC	Z14XE	2005-2008	1.4	4	MPI	CS870
Barina XC	Z16SE	2001-2004	1.6	4	MPI	CS869
Calibra (SOHC)	C20 NE	94-97	2.0	4	Motronic	CS826
Calibra (Turbo)	C20 LET	94-97	2.0	4	Motronic	CS826
Calibra (SOHC)	X20 XEV	91-97	2.0	4	Motronic	CS853
Camira JD	18JC	84-87	1.8	4	LE-jet	CS826
Commodore VG Ute	VH	90-91	3.8	V6	GM-MPI	CS826
Commodore VK (EFI/EST)	VL	84-86	3.3	6	MPI	CS826
Commodore VL	RB30E	86-88	3.0	6	ECCS	CS833
Commodore VL	VJ	86-88	5.0	V8	GM-MPI	CS826
Commodore VN	VH	88-91	3.8	V6	GM-MPI	CS826
Commodore VN (Inc.Group A)	VU	88-91	5.0	V8	GM-MPI	CS826
Commodore VP	VH	91-93	3.8	V6	GM-MPI	CS826
Commodore VP	VU	91-93	5.0	V8	GM-MPI	CS826
Commodore VR	VU	93-95	5.0	V8	GM-MPI	CS826
Commodore VR	VH	93-95	3.8	V6	GM-MPI	CS826
Commodore VS	VU	95-97	5.0	V8	GM-MPI	CS826
Commodore VT	VU	97-	5.0	V8	GM-MPI	CS826
Commodore VP Ute	VH	91-93	3.8	V6	GM-MPI	CS826
Commodore VR	VH	93-95	3.8	V6	GM-MPI	CS826
Commodore VS (Ecotec)	VH	95-97	3.8	V6	GM-MPI	CS824
Commodore VS Ute	VH	95-99	3.8	V6	GM-MPI	CS824
Commodore VT (Inc. Super Charged)	VH	97-	3.8	V6	GM-MPI	CS824
Frontera	X20SE	95-99	2.0	4	Motronic	CS826
Frontera MX	X22SE	99-	2.2	4	Motronic	CS843
Nova LF	4AFE	91-94	1.6	4	TCCS	CS840
Nova LF	7AFE	91-94	1.8	4	TCCS	CS840
Nova LG	4AFE	94-96	1.6	4	Motronic	CS840

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH Continued						
Nova LG	7AFE	94-96	1.8	4	Motronic	CS840
Vectra JR	C20 SEL	97-	2.0	4	MPI	CS853
Vectra ZC	Z22SE	3/03 on	2.2L	4	MPI	CS858
Vectra ZC	Z22SE	3/03 on	2.2L	4	MPI	CS858
Vectra ZC	Z32SE	3/03 on	3.2L	V6	MPI	CS866
Vectra JR	C20 SEL	97-	2.0	4	MPI	CS852
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	CS826
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	CS853
Vectra JS	C20 SEL	97-98	2.0	4	MPI	CS852
Vectra JS	C22 SEL	98-	2.2	4	MPI	CS852
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	CS826
Vectra JS	Y26SE	11/00-03	2.6L	V6	MPI	CS862
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	CS852
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	CS852
Honda						
Accord EXI	F22A	89-90	2.2	4	PGM-FI	CS821
Accord EXI	F22A	89-93	2.2	4	PGM-FI	CS821
Accord SI	A20B	86-89	2.0	4	PGM-FI	CS829
Accord 4WS	F22A	89-93	2.2	4	PGM-FI	CS821
Accord VTEC	F22 B1/F22B3	93-97	2.2	4	PGM-FI	CS821
Accord VTI	F23A1	97-	2.3	4	PGM-FI	CS821
Civic	D16AB	91-93	1.6	4	PGM-FI	CS821
Civic VTEC	D15Z1	93-96	1.5	4	PGM-FI	CS821
Concerto	D16Z2	91-93	1.6	4	PGM-FI	CS821
CRX	D16AB	87-92	1.6	4	PGM-FI	CS821
CRX	B16A2	92-98	1.6	4	PGM-FI	CS821
Integra	B18A1	89-93	1.8	4	PGM-FI	CS821
Integra VTEC G.S.I	B18B2	93-	1.8	4	PGM-FI	CS821
Integra VTEC-R	B18C2	93-	1.8	4	PGM-FI	CS821
Legend	CS25A1	86-88	2.5	V6	PGM-FI	CS829
Legend	C27A1	88-91	2.7	V6	PGM-FI	CS829
Legend	C32A3	91-96	3.2	V6	PGM-FI	CS821
Legend	C35A3	96-	3.5	V6	PGM-FI	CS821
Prelude	F22A1	91-96	2.2	4	PGM-FI	CS821
Prelude (4WS)	B20A6	88-91	2.0	4	PGM-FI	CS821
Prelude VTI	H22A1	91-96	2.2	4	PGM-FI	CS821
Prelude	H23A1	91-96	2.3	4	PGM-FI	CS821
Hyundai						
Excel-X2	G4DJ	90-95	1.5	4	MITSU	CS827
Excel-X3 SOHC	G4EK	94-98	1.5	4	MITSU	CS826
Excel-X3 DOHC (Alpha)	G4FK	98-00	1.5	4	Siemens	CS826
Lantra KF	G4CR	91-92	1.6	4	MPI	CS854
Lantra	G4CN	92-93	1.8	4	MPI	CS854
Lantra (Beta)	G4GM	-	1.8	4	MPI	CS826
S Coupe	G4DJ	90-91	1.5	4	MPI	CS827
S Coupe (Inc. Turbo)	G4EK	91-96	1.5	4	Motronic	CS826
Sonata SOHC	G4CS	89-92	2.4	4	MPI	CS827
Sonata	G4CP	93-98	2.0	4	MPI	CS854

Engine Coolant Temperature Sensors (CS)

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Hyundai Continued						
Sonata	G6AT	90-98	3.0	V6	MPI	CS854
Sonata EF Series	G4JP	98-	2.0	4	MPI	CS838
Mazda						
121	B3/B5	90-97	1.3/1.5	4	EGI	CS840
323	B6	85-90	1.6	4	EGI	CS833
323	BP	89-95	1.8	4	EGI	CS833
323	B6	94-98	1.6	4	EGI	CS840
323	BP	94-98	1.8	4	EGI	CS840
323 Astina	B6	87-90	1.6	4	EGI	CS833
323	ZM	99-	1.6	4	EGI	CS840
323	FP	99-	1.8	4	EGI	CS844
626 (Inc. Turbo)	FE	85-87	2.0	4	EGI	CS833
626 (Inc. Turbo)	F2	87-91	2.2	4	EGI	CS833
626	FS	92-97	2.0	4	EGI	CS840
626	KL	92-97	2.5	V6	EGI	CS840
929 SOHC	JE	87-91	3.0	V6	EGI	CS833
929 DOHC	JE	90-91	3.0	V6	EGI	CS833
929 DOHC	JE	91-95	3.0	V6	EGI	CS833
929 DOHC	JE	96-97	3.0	V6	EGI	CS840
B2600	G6	91-99	2.6	4	EGI	CS837
MX5	B6	89-93	1.6	4	EGI	CS833
MX5	BP	93-97	1.8	4	EGI	CS840
MX6 Turbo	F2	89-91	2.2	4	EGI	CS833
MX6 2WS	KL	91-97	2.5	V6	EGI	CS840
MX6 4WS	KL	91-97	2.5	V6	EGI	CS840
RX7	13B	86-89	1.3	2	EGI	CS833
RX7	13B	89-92	1.3	2	EGI	CS833
RX7	P	92-93	1.3	2	EGI	CS833
RX7	P	93-99	1.3	2	EGI	CS840
RX7	JE	93-99	3.0	V6	EGI	CS840
Mitsubishi						
Cordia AC FI Turbo	4G62	86-89	1.8	4	ECI	CS827
Express SF/SG	4G64	86-91	2.4	4	ECI	CS827
Express SH	4G64	91-94	2.4	4	ECI	CS827
Express SJ (12 Valve)	4G64	94-00	2.4	4	ECI	CS838
Galant HG DOHC/OHC	4G63	89-90	2.0	4	ECI	CS827
Galant HH DOHC (Inc. Turbo)	4G63	90-93	2.0	4	ECI	CS827
Galant HH OHC	4G66	90-93	2.0	4	ECI	CS827
Galant HJ SOHC	4G63	93-96	2.0	4	ECI	CS827
Galant HJ DOHC (Turbo)	6A12	93-96	2.0	V6	ECI	CS838
Lancer CA FI	4G15	88-90	1.5	4	ECI	CS827
Lancer CB FI	4G15	90-92	1.5	4	ECI	CS823
Lancer CB DOHC (16V)	4G15	90-92	1.6	4	ECI	CS827
Lancer CC FI	4G92	92-96	1.6	4	ECI	CS838
Lancer CC FI	4G93	92-96	1.8	4	ECI	CS838
Lancer CC (Turbo)	4G93	94-96	1.8	4	ECI	CS838
Lancer CE FI	4G15	96-98	1.5	4	ECI	CS838
Lancer CE FI	4G93	96-98	1.8	4	ECI	CS838

Engine Coolant Temperature Sensors (CS)

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Mitsubishi Continued						
Lancer CE II	4G15	98-00	1.5	4	ECI	CS838
Lancer CE II	4G93	98-00	1.8	4	ECI	CS838
Magna TN EFI	VS71V	87-89	2.6	4	ECI	CS826
Magna TP EFI	V571V	89-91	2.6	4	ECI	CS826
Magna TR EFI	W592Y/W532Y/W531Y	91-94	2.6	4	ECI	CS826
Magna TS EFI	W531Y/W532A	94-97	2.6	4	ECI	CS826
Magna TR	Y721A	91-94	3.0	V6	ECI	CS823
Magna TS EFI	Y721A	94-97	3.0	V6	ECI	CS823
Magna TE EFI	4G64	96-97	2.4	4	ECI	CS838
Magna TE EFI	6G72	96-97	3.0	V6	ECI	CS838
Magna TF EFI	4G64	97-98	2.4	4	ECI	CS838
Magna TF EFI	6G72	97-98	3.0	V6	ECI	CS838
Mirage CE	4G15	96-00	1.5	4	ECI	CS838
Mirage CE	4G15	96-00	1.8	4	ECI	CS838
Nimbus UF (8 Valve)	4G64	91-92	2.4	4	ECI	CS823
Nimbus UF (16 Valve)	4G64	92-98	2.4	4	ECI	CS838
Pajero NF	6G72	88-89	3.0	V6	ECI	CS827
Pajero NG	6G72	89-91	3.0	V6	ECI	CS827
Pajero NH	6G72	91-93	3.0	V6	ECI	CS823
Pajero NJ	6G72	93-96	3.0	V6	ECI	CS823
Pajero NJ	6G74	94-96	3.5	V6	ECI	CS838
Starwagon SE, SG, SH	4G64	86-94	2.4	4	ECI	CS827
Starwagon WA	4G64	94-00	2.4	4	ECI	CS838
Starwagon WA	6G72	94-00	3.0	V6	ECI	CS838
Triton MH (4WD)	6G72	90-92	3.0	V6	ECI	CS823
Triton MJ (4WD)	6G72	92-96	3.0	V6	ECI	CS823
Triton MK	6G72	96-00	3.0	V6	ECI	CS838
Verada KR	Y721A	91-93	3.0	V6	ECI	CS823
Verada KS	Y721A	94-96	3.0	V6	ECI	CS823
Verada KE	6G74	96-96	3.5	V6	ECI	CS838
Verada KF	6G74	97-98	3.5	V6	ECI	CS838
Nissan						
Bluebird	KA24DE	93-95	2.4	4	ECCS	CS833
EXA	CA16DE	87-91	1.6	4	ECCS	CS833
EXA	CA18DE	87-91	1.8	4	ECCS	CS833
Gazelle	CA20E	86-89	2.0	4	ECCS	CS833
Maxima	VG30E	90-95	3.0	V6	ECCS	CS833
Maxima	VQ30DE	95-99	3.0	V6	ECCS	CS833
Maxima A33	VQ30DE	99-	3.0	V6	ECCS	CS833
Micra	CG13DE	5/95-12/95	1.3	4	ECCS	CS830
Micra	CG13DE	95-98	1.3	4	ECCS	CS830
Navara	VG30E	92-97	3.0	V6	ECCS	CS833
NX Coupe	SR20DE	91-95	2.0	4	ECCS	CS833
Pathfinder	VG30E	92-95	3.0	V6	ECCS	CS833
Patrol GU	RD28T	97-00	2.8	6	ECCS	CS835
Pintara U12	CA20E	86-90	2.0	4	ECCS	CS833
Pintara U12	KA24E	89-93	2.4	4	ECCS	CS833
Pulsar N13	16LF	87-91	1.6	4	GM-MPI	CS835
Pulsar N13	18LF	87-91	1.8	4	GM-MPI	CS835

Engine Coolant Temperature Sensors (CS)

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Nissan Continued						
Pulsar N14	CA16DE	91-95	1.6	4	ECCS	CS833
Pulsar N14	SR20DE	91-95	2.0	4	ECCS	CS833
Pulsar N15	SR20DE	95-	1.6	4	ECCS	CS830
Pulsar N15	CA16DE	95-	2.0	4	ECCS	CS830
Skyline	RB30E	86-90	3.0	6	ECCS	CS833
200 SX	SR20DET	94-96	2.0	4	ECCS	CS833
200 SX	SR20DET	96-	2.0	4	ECCS	CS830
300 ZX Z32	VG30DE	88-89	3.0	V6	ECCS	CS833
300 ZX Z32	VG30DE	89-96	3.0	V6	ECCS	CS833
Subaru						
Impreza	EJ16	93-99	1.6	4	Subaru-MPFI	CS820
Impreza	EJ18	93-99	1.8	4	Subaru-MPFI	CS820
Impreza	EJ20	96-99	2.0	4	Subaru-MPFI	CS820
Impreza WRX (Turbo)	EG20	94-99	2.0	4	Subaru-MPFI	CS820
Leone RX	EA82	86-87	1.8	4	Subaru-MPFI	CS835
Leone RX (Turbo)	EA82	86-90	1.8	4	Subaru-MPFI	CS835
Liberty (Turbo)	EJ20	91-94	2.0	4	Subaru-L	CS820
Liberty	EJ22	89-99	2.2	4	Subaru-MPFI	CS820
Liberty	EJ25	96-	2.5	4	Subaru-MPFI	CS820
SVX	EG33	92-93	3.3	4	Subaru-MPFI	CS820
Vortex	EA82	86-88	1.8	4	Subaru-MPFI	CS835
Vortex RX (Turbo)	EA82	86-87	1.8	4	Subaru-MPFI	CS835
Vortex XT (Turbo)	EA82	88-89	1.8	4	Subaru-L	CS835
Suzuki						
Suzuki Swift	G13B	86-88	1.3	4	Suzuki-MPFI	CS828
Suzuki Swift SF	G16B	89-	1.6	4	Suzuki-MPFI	CS840
Vitara	G16B	88-99	1.6	4	Suzuki-MPFI	CS840
Toyota						
Avalon MCX10	1MZFE	99-	3.0	V6	Toyota-JECS	CS840
Camry SV11 SOHC	2SEC	86-87	2.0	4	Toyota-L/PFI	CS840
Camry SV20 SOHC	1SEC	87-90	1.8	4	Toyota-L/PFI	CS840
Camry SV21 DOHC	3SFE	87-93	2.0	4	Toyota-L/PFI	CS840
Camry SV21 DOHC	2VZFE	88-93	2.5	4	Toyota-L/PFI	CS840
Camry SXV 20	5SFE	97-99	2.2	4	Toyota-L/PFI	CS840
Camry VZV 21	2VZFE	88-91	2.5	V6	Toyota-L/PFI	CS840
Camry SDV 10	5SFE	92-95	2.2	4	Toyota-L/PFI	CS840
Camry SXV 10	5SFE	95-97	2.2	4	Toyota-L/PFI	CS840
Camry VDV 10	3VZFE	92-95	3.0	V6	Toyota-L/PFI	CS840
Camry VCV 10	3VZFE	95-97	3.0	V6	Toyota-L/PFI	CS840
Camry SV 21	3SF	89-92	2.0	4	Toyota-L/PFI	CS840
Camry MCV 20	1MZFE	97-99	3.0	V6	Toyota-L/PFI	CS840
Camry/Vienta VDV10	3VZFE	93-95	3.0	V6	Toyota-L/PFI	CS840
Camry/Vienta SDV10	3VZFE	95-96	3.0	V6	Toyota-L/PFI	CS840
Celica ST162	3SGE	86-88	2.0	4	Toyota-L/PFI	CS840
Celica ST162	3SFE	88-89	2.0	4	Toyota-L/PFI	CS840
Celica ST162	3SGELC	88-89	2.0	4	Toyota-L/PFI	CS840

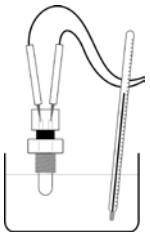
Vehicle Application Listing

Make & Model		Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Toyota Continued							
Celica ST184		5SFE	89-91	2.2	4	Toyota-L/PFI	CS840
Celica ST185 (Turbo)		3SGTE	89-91	2.0	4	Toyota-L/PFI	CS840
Celica ZZT231		2ZZGE	98-99	1.8	4	Toyota-L/PFI	CS840
Celica ST184		5SFE	91-93	2.2	4	Toyota-L/PFI	CS840
Celica ST185 (Turbo)		3SGTE	91-93	2.0	4	Toyota-L/PFI	CS840
Celica ST204		5SFE	93-99	2.2	4	Toyota-L/PFI	CS840
Celica ST205 (Turbo)		3SGTE	93-99	2.0	4	Toyota-L/PFI	CS840
Corolla AE 95 (4WD)		4AFE	87-88	1.6	4	Toyota-L/PFI	CS840
Corolla AE 82		4AGELC	87-88	1.6	4	Toyota-L/PFI	CS840
Corolla AE 95		4AFE	88-93	1.6	4	Toyota-L/PFI	CS840
Corolla AE 95		4AFE	90-95	1.6	4	Toyota-L/PFI	CS840
Corolla AE 92		4AF	91-94	1.6	4	Toyota-L/PFI	CS840
Corolla AE 92		4AF	89-91	1.6	4	Toyota-L/PFI	CS840
Corolla AE 93		4AGE	89-91	1.6	4	Toyota-L/PFI	CS840
Corolla AE 112		7AFE	95-99	1.8	4	Toyota-L/PFI	CS840
Corolla AE 102		4AFE	94-99	1.6	4	Toyota-L/PFI	CS840
Corolla AE 102		7AFE	94-99	1.8	4	Toyota-L/PFI	CS840
Corolla AE 93		7AFE	92-94	1.8	4	Toyota-L/PFI	CS840
4 Runner	**YN63**	4YEC	86-89	2.2	4	Toyota-L/PFI	CS840
4 Runner	**YN130**	4YE	89-90	2.2	4	Toyota-L/PFI	CS840
4 Runner	**VZN130**	3VZE	90-91	3.0	V6	Toyota-L/PFI	CS840
4 Runner	**VZN130**	3VZE	91-96	3.0	V6	Toyota-L/PFI	CS840
Hi-ace	**L4113**	3L	89-99	2.8D	4	Toyota-L/PFI	CS840
Hi-ace	**RZH113**	2RZ	95-99	2.4	4	Toyota-L/PFI	CS840
Hi-ace	**SBV**	2RZE	95-99	2.4	4	Toyota-L/PFI	CS840
Hi-lux	**LN106**	22R	88-97	2.4	4	Toyota-L/PFI	CS840
Hi-lux	**UN130**	4YE	88-97	2.2	4	Toyota-L/PFI	CS840
Landcruiser		1HZ	90-99	4.2D	6	Toyota-L/PFI	CS840
Landcruiser	**HDJ80 Turbo**	1HDT	90-95	4.2D	6	Toyota-L/PFI	CS840
Landcruiser	**HDJ80 Turbo**	1HDFT	95-98	4.2D	6	Toyota-L/PFI	CS840
Landcruiser	**FJ80**	3F	90-92	4.0	6	Toyota-L/PFI	CS840
Landcruiser	**FZJ100**	1FZFE	92-98	4.5	6	Toyota-JECS	CS840
Landcruiser	**FZJ70**	1FZFE	92-98	4.5	6	Toyota-JECS	CS840
Landcruiser	**FZJ80**	1FZFE	92-98	4.5	6	Toyota-JECS	CS840
Landcruiser	**FZJ70**	1PZ	90-98	3.5D	5	Toyota-JECS	CS840
Landcruiser	**LJ70**	2LT	90-98	2.4	6	Toyota-JECS	CS840
Landcruiser	**UZJ100**	2UZFE	98-99	4.7	V8	Toyota-JECS	CS840
Lexcen VN		VH	89-90	3.8	V6	GM-MPI	CS826
Lexcen VN VP		VH	90-93	3.8	V6	GM-MPI	CS826
Lexcen VR		VH	93-95	3.8	V6	GM-MPI	CS826
Lexcen VR T4 (Ecotec)		VH	95-	3.8	V6	GM-MPI	CS824
MR2	**AW11**	4AGELC	88-89	1.6	4	Toyota-JECS	CS840
MR2	**SW20**	3SGE	93-99	2.0	4	Toyota-JECS	CS840
MR2	**ZZW30**	1ZZFE	99-	1.8	4	Toyota-JECS	CS840
Paseo	**EL44**	5EFE	91-95	1.5	4	Toyota-JECS	CS840
Paseo	**EL54**	5EFE	96-99	1.5	4	Toyota-JECS	CS840
Prado	**VZJ 95**	5VZFE	96-99	3.4	4	Toyota-JECS	CS840
Prado	**RZJ 95**	3RZFE	96-99	2.7	4	Toyota-JECS	CS840
Rav 4		3SFE	94-97	2.0	4	Toyota-L/PFI	CS840
Rav 4		3SFE	97-99	2.0	4	Toyota-L/PFI	CS840
Rav 4		1AZFE	99-	2.0	4	Toyota-JECS	CS840

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Toyota Continued						
Starlet EP91	4EFE	96-97	1.3	4	Toyota-L/PFI	CS840
Sprinter AE102	7AFE	94-96	1.8	4	Toyota-L/PFI	CS840
Supra MA70	7MGE	88-93	3.0	6	Toyota-L/PFI	CS840
Spacia YR22	4YEC	92-96	2.2	4	Toyota-L/PFI	CS840
Tarago YR22/YR31	4YEC	88-90	2.2	4	Toyota-L/PFI	CS840
Townace KR42	7K	98-99	1.8	4	Toyota-Jetronic	CS840
Volkswagen						
Commercial	MV	88-92	2.1	4	Siemens	CS839

To test the coolant temperature sensor, check the resistance as the sensor is heated in a container of water.



Coolant Temperature Sensor

The coolant temperature sensor is located so that the bulb can access the water jacket of the engine and signals engine coolant temperature to the ECU. The sensor contains a negative temperature coefficient resistor which reduces resistance as temperature increases. The ECU supplies a 5 volt reference voltage to the sensor, and measures the voltage drop through the resistor to calculate engine temperature.

To Check

1.Check that the coolant temperature sensor voltage signal increases as the engine temperature increases.

2.Remove the sensor from the engine and suspend it in water. Heat the water and measure the resistance across the sensor terminals. The resistance should decrease as the temperature increases. On most sensors, the resistance at 20°C is around 2,000-3,000 ohms, while at 80°C, the resistance falls to around 300 ohms. However, some sensors may vary greatly from this. On Ford Falcons fitted with EECIV and EECV systems, sensor resistances will range from 37,300 ohms at 20°C to 3,800 ohms at 80°C.

The coolant temperature sensor is positioned so that the bulb can access the engine water jacket.

Engine Coolant Temperature Sensors (CS)

ACA

Product Illustration Guide

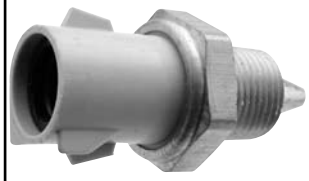
Part No. CS820

SUBARU

Part No. CS821

HONDA

Part No. CS822



FORD

Part No. CS823

MITSUBISHI

Part No. CS824

GMH/TOYOTA

Part No. CS826

GMH/FORD/HYUNDAI/
TOYOTA/MITSUBISHI

Part No. CS827

HYUNDAI/MITSUBISHI

Part No. CS828

SUZUKI

Part No. CS829

HONDA

Part No. CS830

NISSAN

Part No. CS831

FORD

Part No. CS833

GMH/FORD/NISSAN/MAZDA

Part No. CS834

VOLKSWAGEN

Part No. CS835

NISSAN/SUBARU

Part No. CS836

DAIHATSU

Part No. CS837

FORD/MAZDA

Engine Coolant Temperature Sensors (CS)

ACA

Product Illustration Guide

Part No. CS838

MITSUBISHI/HYUNDAI

Part No. CS839

AUDI/VOLKSWAGEN

Part No. CS840

SUZUKI/GMH/EUNOS/
TOYOTA /FORD/MAZDA

Part No. CS841

DAEWOO

Part No. CS843

GMH

Part No. CS844

MAZDA/FORD

Part No. CS845

FORD

Part No. CS847

FORD

Part No. CS848

FORD

Part No. CS849

FORD

Part No. CS850

MITSUBISHI

Part No. CS851

GMH

Part No. CS852

GMH

Part No. CS853

GMH

Part No. CS854

HYUNDAI

Part No. CS857

GMH

Engine Coolant Temperature Sensors (CS)

ACA

Product Illustration Guide

Part No. CS858

GMH

Part No. CS862

GMH

Part No. CS863

GMH

Part No. CS865

GMH

Part No. CS866

GMH

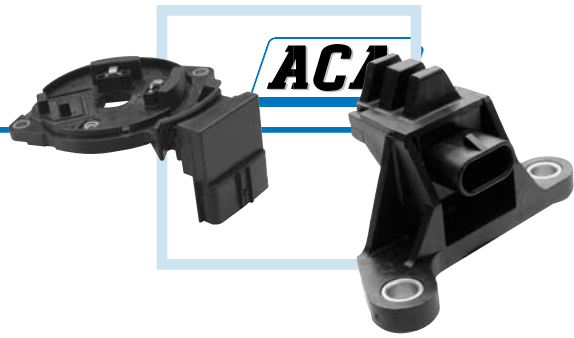
Part No. CS869

GMH

Part No. CS870

GMH

Crank Angle Sensors (CAS)



Function: To provide an electronic signal (usually a square wave train) to the electronic control unit (ECU) as a measurement of engine speed and crankshaft position. The ECU utilises this signal, along with those from other engine sensors to determine the amount of fuel to inject into the engine. This signal is also used by the ECU to vary ignition timing.

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Audi							
2.6E	ABC	92-95	2.6	V6	-	2CS4063N	-
2.8E	AAH	92-94	2.8	V6	-	2CS4063N	-
A3	AEH	97-03	1.6	4	-	2CS4064N	-
A3	AGN	97-03	1.8	4	-	2CS4064N	-
A3 (Turbo)	AGU	97-03	1.8	4	-	2CS4064N	-
A4 2.4	AGA	98-03	2.4	V6	-	2CS4064N	-
A4 2.8 Quattro	ACK	97-99	2.8	V6	-	2CS4064N	-
A6 2.6 Quattro	ABC	95-97	2.6	V6	-	2CS4063N	-
A8 2.8E	AAH	94-96	2.8	V6	-	2CS4063N	-
TT Quattro (Turbo)	AJL	99-03	1.8	4	-	2CS4064N	-
BMW							
316I E36	M43	95-99	1.6	4	-	2CS4066N	-
318I	M43	94-98	1.8	4	-	2CS4066N	-
318I	M44	98-03	1.9	4	-	2CS4066N	-
318I	M43	92-98	1.8	4	-	2CS4066N	-
Citroen							
Xantia	XUIDJ2C	94-98	2.0	4	-	2CS4067N	-
Xantia 16V	XUIDJ4D	96-00	2.0	4	-	2CS4067N	-
Xantia (Turbo)	XUIDJ2TE	96-00	2.0	4	-	2CS4067N	-
Xsara	XU7J	98-01	1.8	4	-	2CS4067N	-
Xsara	XUIOJ4	98-94	2.0	4	-	2CS4067N	-
Daewoo							
Leganza	T22SED	99-	2.2	4	-	2CS4068N	-
Eunos							
30X	K8	92-96	1.8	V6	MPFI	2CS4029N	2CS4029
30X	K8ZE	92-97	1.8	V6	-	2CS4069N	-
30X	K8	11/93-	2.0	V6	MPFI	2CS4057N	2CS4057
500	KF	92-98	2.0	V6	MPFI	2CS4029N	2CS4029
800	KL	93-96	2.5	V6	MPFI	2CS4029N	2CS4029
800M	KJ	95-99	2.3	V6		2CS4069N	-
800 Late Model	KL	96-00	2.5	V6	MPFI	2CS4057N	2CS4057
Ford							
Capri SA/SC/SE DOHC	B6	89-94	1.6	4	EGI	2CS4010N	2CS4010
Capri SA SOHC	B6/B6T	89-92	1.6	4	EGI	2CS4014N	2CS4014
Corsair UA	KA24	89-92	2.4	4	MPI	2CS405N	-
Courier PC	G6	90-95	2.6	4	EGI	2CS4010N	2CS4010
Courier 4WD PD	G6	96-98	2.6	4	EGI	2CS4010N	2CS4010
Courier PD	G6	96-98	2.6	4	EGI	2CS4040N	-

Vehicle Application Listing

Ford Continued

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Econovan	FE	97-	2.0	4	EGI	2CS4010N	2CS4010
Explorer OHV	VZA	96-01	4.0	V6	-	2CS4102N	-
Falcon EB	Z	91-93	5.0	V8	EEC-4	2CS4053N	-
Falcon ED	Z	93-94	5.0	V8	EEC-4	2CS4053N	-
Falcon EF	Z	94-96	5.0	V8	EEC-5	2CS4053N	-
Falcon EF	H	94-96	4.0	6	EEC-5	2CS4054N	-
Falcon EF	Z	94-96	5.0	V8	EEC-5	2CS4052N	-
Falcon EL	Z	96-98	5.0	V8	EEC-5	2CS4052N	-
Falcon EL	Z	96-98	5.0	V8	EEC-5	2CS4053N	-
Falcon AU	Y	98-	4.0	6	EEC-5	2CS4054N	-
Fairlane NC	Z	91-94	5.0	V8	EEC-4	2CS4053N	-
Fairlane NF	Z	94-96	5.0	V8	EEC-4	2CS4053N	-
Fairlane NF	H	94-96	4.0	6	EEC-4	2CS4054N	-
Fairlane NL	Z	96-98	5.0	V8	EEC-5	2CS4053N	-
Fairlane NU	Y	98-	4.0	6	EEC-5	2CS4054N	-
Festiva WB	B3	94-96	1.3	4	MITSU	2CS4026N	2CS4026
Festiva WF	B5	98-01	1.5	4	-	2CS4049N	-
LTD DC	Z	91-94	5.0	V8	EEC-4	2CS4053N	-
LTD DF	Z	94-96	5.0	V8	EEC-4	2CS4053N	-
LTD DF	H	94-96	4.0	6	EEC-4	2CS4054N	-
LTD DL	Z	96-98	5.0	V8	EEC-5	2CS4053N	-
LTD DU	X	98-	4.0	6	EEC-5	2CS4054N	-
Laser KF Auto SOHC	UK8	90-91	1.8	4	EGI	2CS4014N	2CS4014
Laser KF DOHC	UK5	90-91	1.8	4	EGI	2CS4010N	2CS4010
Laser KF Turbo 4WD	BP	90-91	1.8	4	EGI	2CS4010N	2CS4010
Laser KH SOHC Auto	BP	91-94	1.8	4	EGI	2CS4014N	2CS4014
Laser KH SOHC Man	BP	91-94	1.8	4	EGI	2CS4014N	2CS4014
Laser KH DOHC	BP	91-94	1.8	4	EGI	2CS4010N	2CS4010
Laser KH TX3 Turbo	BP	91-93	1.8	4	EGI	2CS4010N	2CS4010
Laser KJ	B6	94-96	1.6	4	EGI	2CS4043N	2CS4043
Laser KJ	B6	94-96	1.8	4	EGI	2CS4043N	2CS4043
Laser KL	B6	96-99	1.6	4	EGI	2CS4039N	2CS4039
Laser KL	BP	96-99	1.8	4	EGI	2CS4039N	2CS4039
Probe	-	1/95-	2.5	V6	EEC-5	2CS4027N	2CS4027
Probe Auto/Man	KL	92-94	2.5	V6	EEC-5	2CS4029N	2CS4029
Probe ST/SU/SV	KL	94-98	2.5	V6	-	2CS4070N	-
Raider	G6	91-95	2.6	4	EGI	2CS4010N	2CS4010
Raider	G6	96-98	2.6	4	EGI	2CS4040N	-
Raider 4WD	G6	91-95	2.6	4	EGI	2CS4010N	2CS4010
Raider 4WD	G6	96-98	2.6	4	EGI	2CS4040N	-
Telstar	KL	92-96	2.5	V6	-	2CS4070N	-
Telstar	KL	94-96	2.5	V6	EGI	2CS4027N	2CS4027
Telstar (distributor #S9)	FS	94-96	2.0	4	EGI	2CS4047N	-
Telstar AX	KL	92-94	2.5	V6	EGI	2CS4057N	2CS4057
Telstar AX (distributor #S5)	FS	92-94	2.0	4	EGI	2CS4046N	-
Telstar AX Auto	FS	91-94	2.5	V6	EGI	2CS4029N	2CS4029
Telstar AX Manual	FS	91-94	2.5	V6	EGI	2CS4029N	2CS4029
Telstar AX	KL	92-94	2.5	V6	EGI	2CS4029N	2CS4029
Telstar AX, AY, TX, TX5 GHIA	FS	92-96	2.0	4	EGI	2CS4028N	2CS4028

Vehicle Application Listing

GMH

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Astra AH	Z18XE	10/04 on	1.8L	4	MPI	2CS4079N	
Astra AH	Z18XE	10/04 on	1.8L	4	MPI	2CS4130N	Cam Angle Sensor
Astra AH (147kw)	Z20LER	10/04 on	2.0L	4	MPI	2CS4140N	
Astra AH (147kw)	Z20LER	10/04 on	2.0L	4	MPI	2CS4118N	Cam Angle Sensor
Astra TR	C16SE	96-98	1.6	4	-	2CS4071N	-
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	2CS4081N	
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	2CS4081N	
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	2CS4142N	
Astra TR	C16SEO	9/96-8/98	1.6L	4	MPI	2CS4071N	
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	2CS4132N	Cam Angle Sensor
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	2CS4132N	Cam Angle Sensor
Astra TS	X18XE1	98-00	1.8	4	-	2CS4078N	-
Astra TS	Z18XE	01-03	1.8	4	-	2CS4079N	-
Astra TS	X18XEI	98-2001	1.8	4	MPI	2CS4078N	
Astra TS	X18XE	8/98 on	1.8L	4	MPI	2CS4130N	Cam Angle Sensor
Barina SB	C16XE	94-95	1.6	4	-	2CS4072N	-
Barina SB	X16XE	94-99	1.6	4	-	2CS4075N	-
Barina SB	C14SE	97-01	1.4	4	-	2CS4071N	-
Barina SB w/TBI	C12NZ	94-00	1.2L	4	MPI	2CS4071N	
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	2CS4071N	
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	2CS4075N	
Barina TK	F16D3	12/05 on	1.6L	4	MPI	2CS4121N	Cam Angle Sensor
Barina TK	F16D3	12/05 on	1.6L	4	MPI	2CS4141N	
Barina XC	X14XEP	3/01 on	1.4L	4	MPI	2CS4122N	Cam Angle Sensor
Barina XC	X14XEP	3/01 on	1.4L	4	MPI	2CS4124N	Cam Angle Sensor
Barina XC	X16SE	3/01 on	1.6L	4	MPI	2CS4125N	Cam Angle Sensor
Barina XC	X18XE	3/01 on	1.8L	4	MPI	2CS4130N	Cam Angle Sensor
Barina XC	X18XE	3/01 on	1.8L	4	MPI	2CS4079N	
Barina XC	X14XEP	3/01 on	1.4L	4	MPI	2CS4137N	
Barina XC	X14XEP	3/01 on	1.4L	4	MPI	2CS4147N	
Barina XC	X16SE	3/01 on	1.6L	4	MPI	2CS4147N	
Calais VR	VH	93-95	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Calais VS	VH	96-00	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Calais VT	VH	97	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Calais VX	VA	00-	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Calibra YE	C20XE/C20LET/C20NE	91-98	2.0	4	-	2CS4074N	-
Commodore VL							Includes
Auto/Manual (Inc. Turbo)	RB30E	86-88	3.0	6	EECS	2CS401N	Crank Sensor Only
Commodore VL							
Auto/Manual (Inc. Turbo)	RB30E	86-88	3.0	6	EECS	2CS401NM	Boot Kit & Bearing
Commodore VN	VH	89-90	3.8	V6	GM-MPI	2CS4020N	-
Commodore VP	VH	91-93	3.8	V6	GM-MPI	2CS4021N	-
Commodore VR	VH	93-95	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Commodore VR/VS							
Police Pack (Auto)	VH	93-95	3.8	V6	GM-MPI	2CS4021N	-
Commodore VR/VS Manual	VH	93-97	3.8	V6	GM-MPI	2CS4021N	-
Commodore VS	VH	96-00	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Commodore VS/VT/Super Charged	VH	93-97	3.8	V6	GM-MPI	2CS4021N	-
Commodore VR/VS ute Auto	VH	93-97	3.8	V6	GM-MPI	2CS4021N	-
Commodore VR/VS ute Man	VH	93-97	3.8	V6	GM-MPI	2CS4021N	-

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Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
GMH Continued							
Commodore VT/ Super Charged	VH	97-00	3.8	V6	GM-MPI	2CS4021N	-
Commodore VT	VH	97-99	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Commodore VT	VH	97-	3.8	V6	GM-MPI	2CS4021N	-
Commodore VT (Chev Motor) LS1	VM	99-	5.7	V8	GM-MPI	2CS4055N	-
Commodore VX	VA	00-	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Frontera	X20SE	95-99	2.0	4	-	2CS4074N	-
Jackaroo	4ZEI	88-92	2.6	4	I-TEC	2CS405N	-
Jackaroo	4ZEI	88-92	2.6	4	I-TEC	2CS402N	-
Rodeo	4ZE	88-91	2.6	4	I-TEC	2CS402N	-
Rodeo 4WD	4ZE	88-91	2.6	4	I-TEC	2CS402N	-
Rodeo	4ZE	92-93	2.6	4	I-TEC	2CS402N	-
Rodeo 4WD	4ZE	92-93	2.6	4	I-TEC	2CS402N	-
Rodeo TF	C22NE	98-02	2.2	4	-	2CS4076N	-
Statesman/Caprice VQ	VH	91-93	3.8	V6	GM-MPI	2CS4021N	-
Statesman VR	VH	93-95	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Statesman VS	VH	95-99	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Statesman WH	VH	99-	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Vectra JR	C22SEL	97-99	2.2	4	-	2CS4081N	-
Vectra JR	X25XE	97-03	2.5	V6	-	2CS4084N	-
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	2CS4128N	Cam Angle Sensor
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	2CS4132N	Cam Angle Sensor
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	2CS4081N	
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	2CS4084N	
Vectra JS	C22SEL	00-	2.2	4	-	2CS4082N	-
Vectra JS	Y26SE	11/00-03	2.6L	V6	MPI	2CS4117N	Cam Angle Sensor
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	2CS4128N	Cam Angle Sensor
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	2CS4132N	Cam Angle Sensor
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	2CS4132N	Cam Angle Sensor
Vectra JS	Y26SE	11/00-03	2.6L	V6	MPI	2CS4136N	
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	2CS4081N	
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	2CS4081N	
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	2CS4084N	
Vectra ZC	Z32SE	3/03 on	3.2L	V6	MPI	2CS4136N	
Vectra ZC	Z32SE	3/03 on	3.2L	V6	MPI	2CS4117N	Cam Angle Sensor
Hyundai							
Accent	G4FK	00-03	1.5	4	-	2CS4086N	-
Coupe SFX, SX, FX	G4GMT	96-00	1.8	4	-	2CS4089N	-
Coupe SFX, SX, FX	G4GFT	96-00	2.0	4	-	2CS4089N	-
Excel X1	G4AJ	86-89	1.5	4	MITSU	2CS4016N	2CS4016
Excel X2 (SOHC)	G4DJ	8/89-7/92	1.5	4	MITSU	2CS408N	-
Excel X2 (SOHC)	G4DJ	7/92-2/94	1.5	4	MITSU	2CS4016N	2CS4016
Excel Single Cam X3	G4EKR	-5/96	1.5	4	-	2CS4089N	-
Excel Single Cam X3	G4EKR	5/96-	1.5	4	-	2CS4091N	-
Excel Twin Cam X3	G4FKR	-5/96	1.5	4	-	2CS4089N	-
Excel Twin Cam X3	G4FKR	5/96-	1.5	4	-	2CS4091N	-
Lantra J1	G4CN/G4CR	91-95	1.6/1.8	4	MPI	-	2CS406
Lantra GL, GLS	G4GMR	95-99	1.8	4	-	2CS4089N	-
S Coupe	G4EKM	90-94	1.5	4	MITSU	2CS408N	-
S Coupe	G4EKM	90-94	1.5	4	MITSU	2CS4093N	-
S Coupe	G4EK	91-4/94	1.5	4	MITSU	2CS408N	-

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Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Hyundai Continued							
Sonata Series 1	C4C	2/89-4/93	2.4	4	MPI	2CS4016N	2CS4016
Sonata	G4CP	4/93-4/94	2.0	4	MPI	-	2CS406
Sonata	G4CP	4/94-98-	2.0	-	MPI	-	2CS4019
Sonata Series 1	4GCS	2/89-4/93	3.0	V6	MPI	2CS4016N	2CS4016
Mazda							
121		92-	1.3	4	EGI	2CS4045N	-
323 BF DOHC	B6	87-89	1.6	4	EGI	2CS4010N	2CS4010
323 BG DOHC	B6	89-94	1.6	4	EGI	2CS4014N	2CS4014
323	B6	95-	1.6	4	EGI	2CS4043N	2CS4043
323 BG Auto/Man SOHC	BP	90-94	1.8	4	EGI	2CS4014N	2CS4014
323 BG (Turbo) DOHC	BP	90-94	1.6	4	EGI	2CS4010N	2CS4010
323 Protege	B6	94-	1.6	4	EGI	2CS4010N	2CS4010
323	B6	98-	1.6	4	EGI	2CS4039N	2CS4039
323	BP	98-	1.8	4	EGI	2CS4039N	2CS4039
Astina	B6	98-	1.6	4	EGI	2CS4039N	2CS4039
Astina	BP	98-	1.8	4	EGI	2CS4039N	2CS4039
Astina	KF	94-96	2.0	V6	EGI	2CS4029N	2CS4029
Astina	KL	96-98	2.5	V6	EGI	2CS4027N	2CS4027
Astina 323	KF	94-98	2.0	V6	-	2CS4094N	-
626	FS	93-	2.0	4	EGI	2CS4028N	2CS4028
626 GE	FS	92-96	2.0	4	EGI	2CS4028N	2CS4028
626 GE	KL	91-6/94	2.5	V6	EGI	2CS4029N	2CS4029
626 GE	KL	6/94-	2.5	V6	EGI	2CS4057N	2CS4057
626 GE	KL	94-97	2.5	V6	EGI	2CS4094N	-
626 Series II	-	-	2.5	V6	EGI	2CS4027N	2CS4027
626 GE (distributor #S5)	FS	92-94	2.0	4	EGI	2CS4046N	-
E2200	FE	7/89-	2.6	4	EGI	2CS4010N	2CS4010
B2600 (SOHC) (4X2, 4X4)	G6	89-10/91	2.6	4	EGI	2CS4010N	2CS4010
B2600 (SOHC) (4X2, 4X4)	G6	11/91-96	2.6	4	EGI	2CS4040N	-
B2600 12 Valve (SOHC) (4x2, 4x4)	G6E	96-99	2.6	4	EGI	2CS4031N	-
MX5	B6	89-93	1.6	4	EGI	2CS4031N	-
MX6	KL	91-6/94	2.5	V6	EGI	2CS4029N	2CS4029
MX6	KL	94-97	2.5	V6	EGI	2CS4094N	-
MX6 (Turbo)	F2	87-91	2.2	4	EGI	2CS4028N	2CS4028
Mitsubishi							
Express L300 SF, SH, SJ, SE (Inc. 4x4)	4G64	86-94	2.4	4	EGI	2CS408N	2CS408
Express L300 SH/SJ	4G63	94-00	2.0	4	EGI	2CS4033N	-
Galant HG (DOHC)	4G63	88-92	2.0	4	EGI	2CS4013N	2CS4013
Galant HH (SOHC)	4G63	11/88-93	2.0	4	EGI	2CS4013N	2CS4013
Galant HH (Turbo DOHC) VR4	4G63	90-93	2.0	4	EGI	2CS4013N	2CS4013
Galant CC	4G63	95-	2.0	4	EGI	2CS4044N	2CS4044
Galant CC	4G63	95-	2.0	4	EGI	2CS4036N	2CS4036
Lancer CA	4G15	88-90	1.5	4	EGI	2CS408N	-
Lancer CB	4G15	91-92	1.5	4	EGI	2CS4012N	2CS4012
Lancer CB	4G15	91-92	1.5	4	EGI	2CS4036N	2CS4036
Lancer CB (DOHC)	4G61	91-3/92	1.6	4	EGI	2CS4013N	2CS4013
Lancer CC (Distributor # T6T57671)	4G93	5/92-96	1.6	4	EGI	2CS4036N	2CS4036
Lancer CC (Distributor # T6T57671A)	4G93	5/92-96	1.8	4	EGI	2CS4044N	2CS4044

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Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Mitsubishi Continued							
Lancer CC (DOHC Turbo)	4G93	10/92-	1.8	4	EGI	2CS4036N	2CS4036
Lancer CC (Turbo GSR)	4G93	94-	1.8	4	EGI	2CS4044N	2CS4044
Lancer CE	4G15	96-01	1.5	4	EGI	2CS4058N	2CS4058
Lancer CE (Wagon)	4G93	96-99	1.8	4	EGI	2CS4059N	2CS4059
Mirage CE	4G15	96-	1.5	4	EGI	2CS4058N	2CS4058
Magna TR, TS	YZ21A	91-96	3.0	V6	EGI	2CS4013N	2CS4013
Magna TE, TH	6G72	96-00	3.0	V6	EGI	2CS4042N	2CS4042
Magna TE, TH	6G74	96-00	3.5	V6	EGI	2CS4042N	2CS4042
Magna TE	6G72	96-97	3.0	V6	-	2CS4095N	-
Magna TE, TF	4G64	96-97	2.4	4	-	2CS4050N	-
Magna TE	6G72	96-97	3.0	V6	EGI	2CS4042N	2CS4042
Magna TF, TH	6G72S4	97-99	3.0	V6	EGI	2CS4042N	2CS4042
Magna TF 24V	6G72	97-99	3.0	V6	-	2CS4095N	-
Magna TH 24V	6G72	99-00	3.0	V6	-	2CS4095N	-
Magna TH 24V	6G74	99-00	3.5	V6	-	2CS4095N	-
Magna TJ	6G72	00-03	3.0	V6	-	2CS4095N	-
Magna TJ	6G74	00-03	3.5	V6	-	2CS4095N	-
Nimbus UF	4G64	91-92	2.4	4	EGI	2CS4013N	2CS4013
Nimbus UF	4G64	92-95	2.4	4	EGI	2CS4044N	2CS4044
Nimbus UF	4G64	94-95	2.4	4	EGI	2CS4036N	2CS4036
Nimbus UG	4G64	99-04	2.4	4	EGI	2CS4107N	-
Pajero NF	6G72	88-89	3.0	V6	EGI	2CS4016N	2CS4016
Pajero NG	6G72	89-90	3.0	V6	EGI	2CS403N	2CS403
Pajero NG	6G72	90-91	3.0	V6	EGI	2CS4016N	2CS4016
Pajero NH	4G54	91-93	2.6	4	EGI	2CS4016N	2CS4016
Pajero NH	6G72	91-1/94	3.0	V6	EGI	2CS4013N	2CS4013
Pajero NJ	6G74	94-96	3.5	V6	EGI	2CS4033N	-
Pajero NK	6G72	96-00	3.0	V6	EGI	2CS4040N	-
Pajero NJ, NK	6G74	93-97	3.5	V6	-	2CS4103N	Crank Sensor
Pajero NJ, NK	6G74	93-97	3.5	V6	-	2CS4105N	Cam Angle Sensor
Pajero NL	6G74	97-00	3.5	V6	-	2CS4104N	Crank Sensor
Pajero NL	6G74	97-00	3.5	V6	-	2CS4106N	Cam Angle Sensor
Triton NF, NG	6G72	10/88-90	3.0	V6	EGI	2CS4016N	2CS4016
Triton MH, MJ, MK	6G72	90-96	3.0	V6	EGI	2CS4013N	2CS4013
Triton MK	6G72	96-00	3.0	V6	EGI	2CS4040N	-
Triton MK	4G64	96-00	2.4	4	EGI	2CS4033N	-
Verada KR, KS	YZ21	91-96	3.0	V6	EGI	2CS4013N	2CS4013
Verada KE, KH	6G72	96-00	3.0	V6	EGI	2CS4042N	2CS4042
Verada KE, KH	6G74	96-00	3.5	V6	EGI	2CS4042N	2CS4042
Verada KE, KF, KH, KJ	6G74	96-03	3.5	V6	-	2CS4095N	-
Nissan							
300ZX Z31 Turbo	VG30ET	85-90	3.0	V6	ECCS	2CS405N	-
300ZX Z31 Non Turbo	VG30E	85-90	3.0	V6	ECCS	2CS405N	-
300ZX Z32 (Auto/Man)	VG30DE	10/89-1/94	3.0	V6	ECCS	-	2CS4018
300ZX Z32 (Auto/Man)	VG30DE	1/94-	3.0	V6	ECCS	-	2CS4017
300ZX VG30 (Auto)Import Only	VG30	86-87	3.0	V6	ECCS	-	2CS4030
300ZX VG30 (Man)Import Only	VG30	86-87	3.0	V6	ECCS	-	2CS4030
300C Y30	VG30	84-88	3.0	V6	ECCS	2CS405N	-
Bluebird U13 (Auto/Man)	KA24	93-97	2.4	4	ECCS	2CS405N	-
Bluebird U13	KA24	93-97	2.4	4	ECCS	2CS404N	

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Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Nissan Continued							
EXA (DOHC)	CA16	11/86-87	1.6	4	ECCS	-	2CS409
EXA (DOHC)	CA18	10/87-91	1.8	4	ECCS	-	2CS409
Maxima J30	VG30	90-95	3.0	V6	ECCS	2CS405N	-
Navara D21 Auto	VG30	93-95	3.0	V6	ECCS	2CS405N	-
Navara Man	VG30	93-95	3.0	V6	ECCS	2CS405N	-
Pathfinder 4WD Man	VG30	92-94	3.0	V6	ECCS	2CS405N	-
Pathfinder 4WD Auto	VG30	92-94	3.0	V6	ECCS	2CS405N	-
Patrol	SP35	85-87	3.3	6	ECCS	2CS4043N	-
Patrol Y60 Series	TB42S	88-96	4.2	6	ECCS	2CS4011N	2CS4011
Pintara U12	KA24E	89-92	2.4	4	ECCS	2CS405N	-
Pulsar EXA N12 Turbo (Leaded)	E15T	84-85	1.5	4	ECCS	2CS407N	-
Pulsar EXA N12 Turbo (Unleaded)	E15T	85-87	1.5	4	ECCS	2CS407N	-
Pulsar N14 DOHC (Auto/Man)	SR20	91-95	2.0	4	ECCS	2CS405N	-
Pulsar N14 Man/Auto	GA16	91-95	1.6	4	ECCS	2CS4015N	-
Pulsar N15	GA16	95-00	1.6	4	ECCS	2CS4034N	-
Pulsar N15	SR20	95-00	2.0	4	ECCS	2CS4043N	-
Pulsar N15	GA16	95-	1.6	4	ECCS	2CS4043N	-
Skyline GTR (Import Only)	R34	-	3.0	6	ECCS	2CS4048N	2CS4048
Skyline R31	RB30	86-89	3.0	6	ECCS	2CS403N	2CS403
Peugeot							
306	XU7JP	94-97	1.8	4	-	2CS4097N	-
306	XUIOJ4	85-90	3.0	4	-	2CS4097N	-
306	XUIOJ2	95-97	2.0	4	-	2CS4097N	-
306	XUIOJ4RS	97-03	2.0	4	-	2CS4097N	-
405 M16	XUIOJ4	93-96	2.0	4	-	2CS4097N	-
406	XUIOJR4	96-98	2.0	4	-	2CS4097N	-
Subaru							
Liberty	EJ22	90-93	2.2	4	SUBARU-MPFI	2CS4022N	Crank Sensor
Liberty A.S.	EJ20	92-93	2.0	4	SUBARU-L	2CS4022N	Crank Sensor
Liberty	EJ22	94-98	2.2	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Liberty	EJ20	94-98	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Liberty	EJ25	97-98	2.5	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Liberty	EJ20	99-00	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Liberty	EJ25	99-00	2.5	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Forester	EJ20	97-00	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Forester (Quad Cam Turbo)	E205	99-00	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Impreza	E16J	93-00	1.6	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Impreza	E18J	93-00	1.8	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Impreza	E20J	93-00	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Impreza (Quad Cam Turbo)	EJ20G	93-00	2.0	4	SUBARU-MPFI	2CS4024N	Crank Sensor
Liberty	EJ20	94-98	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Liberty	EJ22	94-98	2.2	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Liberty (Quad Cam)	EJ25D	97-98	2.5	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Forester	EJ20	97-00	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Forester (Quad Cam Turbo)	EJ205	99-00	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Liberty	EJ202	99-00	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Liberty	EJ251	99-00	2.5	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Impreza	EJ16J	93-00	1.6	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Subaru Continued							
Impreza	EJ18J	93-00	1.8	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Impreza	EJ20	93-00	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Impreza (Quad Cam Turbo)	EJ20	94-	2.0	4	SUBARU-MPFI	2CS4023N	Cam Angle Sensor
Suzuki							
Baleno/Baleno Hatch	G16B	99-03	1.6	4	-	2CS4098N	-
Baleno GTX	J18A	99-03	1.8	4	-	2CS4098N	-
Cino	613B	94-00	1.3	4	-	2CS4098N	-
Toyota							
Lexcen	VH	89-90	3.8	6	GM-MPI	2CS4020N	Crank Sensor
Lexcen	VH	91-95	3.8	6	GM-MPI	2CS4021N	Crank Sensor
Lexcen VR	VH	93-95	3.8	V6	GM-MPI	2CS4056N	Cam Angle Sensor
Volvo							
240	B230E	83-84	2.3	4	-	2CS4099N	-
240	B230F	87-93	2.3	4	-	2CS4099N	-
740	B234F	89-90	2.3	4	-	2CS4099N	-
S40	B418	97-03	1.8	4	-	2CS4101N	-
S40	B4204S	97-03	2.0	4	-	2CS4101N	-
V40 (Wagon)	B418	97-03	1.8	4	-	2CS4101N	-
V40 (Wagon)	B420	97-03	2.0	4	-	2CS4101N	-

New Zealand Applications

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Ford							
Capri DOHC	BP	89-	1.6	4	EGI	2CS4010N	2CS4010
Capri SOHC	BG/BGT	89-	1.8	4	EGI	2CS4014N	2CS4014
Courier	G6	89-93	2.6	4	EGI	2CS4050N	2CS4050
Courier	G6	89-	2.6	4	EGI	2CS4010N	2CS4010
Econovan	-	89-	1.6	4	EGI	2CS4010N	2CS4010
Festiva 121	B3	94-	1.3	4	EGI	2CS4026N	2CS4026
Laser	-	-	-	4	EGI	2CS4026N	2CS4026
Laser DOHC	BP	89-	1.8	4	EGI	2CS4010N	2CS4010
Laser SOHC	UK8	90-	1.8	4	EGI	2CS4014N	2CS4014
Laser TX3	BP	90-	1.6	4	EGI	2CS403N	2CS403
Telstar	KF/KL	94-	2.0/2.5	V6	EGI	2CS4027N	2CS4027
Telstar	FS	91-96	2.0	4	EGI	2CS4028N	2CS4028
Telstar	KL/K8	91-	2.5/1.8	V6	EGI	2CS4029N	2CS4029
GMH							
VL Commodore	RB30E	86-89	3.0	6	EECS	2CS401N	-
VN Commodore	BUICK	88-90	3.8	V6	GM-MPI	2CS4020N	-
VP-VS Commodore	BUICK	91-96	3.8	6	GM-MPI	2CS4021N	-
Hyundai							
Excel	-	-	-	-	-	2CS403N	2CS403
Sonata	-	-	-	-	-	2CS403N	2CS403
Sonata	-	-	-	-	-	2CS4013N	2CS4013

Crank Angle Sensors (CAS)

New Zealand Applications

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA New	ACA Reman
Mazda							
323	B3	94-96	1.3	4	MITSU	2CS4026N	2CS4026
323 DOHC	B5/BP	89-	1.5/1.8	4	EGI	2CS4010N	2CS4010
323 SOHC	BP	90-94	1.8	4	EGI	2CS4014N	2CS4014
323 SOHC	-	91-	1.5/1.8	4	EGI	2CS403N	2CS403
626	FS	91-96	2.0	4	EGI	2CS4028N	2CS4028
626	KL/K8	91-	2.5/1.8	V6	EGI	2CS4029N	2CS4029
B2600	G6	89-93	2.6	4	EGI	2CS4050N	2CS4050
B2600	G6	89-	2.6	4	EGI	2CS4010N	2CS4010
E2200	FE	89-	2.6	4	EGI	2CS4010N	2CS4010
Eunos	KL/K8	91-	2.5/1.8	V6	MPFI	2CS4029N	2CS4029
Eunos	FP/FS		1.8/2.0	V6	MPFI	2CS4043N	2CS4043
Eunos	K8	94-	1.8	V6	MPFI	2CS4029N	2CS4029
Eunos	KF/KL	92	2.0/2.5	V6	MPFI	2CS4027N	2CS4027
Eunos 500	K8/KF/KL	93-98	1.6/2.0/2.5	4/V6	MPFI	2CS4032N	-
Familia GT-X	B5/BP	90-	1.5/1.8	4	EGI	2CS4010N	2CS4010
Lantis	KF/KL	-	2.0/2.5	V6	EGI	2CS4027N	2CS4027
MS-6	K8/KF/KL	-	1.6/2.0/2.5	4/V6	EGI	2CS4032N	-
MS-8	K8/KF/KL	-	1.6/2.0/2.5	4/V6	EGI	2CS4032N	-
MX6	K8/KF/KL	-	1.6/2.0/2.5	4/V6	EGI	2CS4032N	-
MX6	KL/K8	91-	2.5/1.8	V6	EGI	2CS4029N	2CS4029
V6	KL/K8	91-	2.5/1.8	V6	EGI	2CS4029N	2CS4029
Mitsubishi							
Chariot	4G93	91-96	1.8	4	EGI	2CS4044N	2CS4044
Galant V6	6A10/11/12	91-97	1.6/1.8/2.0	4	EGI	2CS4044N	2CS4044
Galant VR4	4G63BT	90-93	2.0	4	EGI	2CS4013N	2CS4013
L300	4G15	87-92	1.5	4	EGI	2CS408N	2CS408
L300 V6	6G72	88-89	3.0	V6	EGI	2CS403N	2CS403
Lancer	-	-	-	-	EGI	2CS4051N	2CS4051
Lancer	4G93/15/37	89-95	1.3/1.5/1.6	4	EGI	2CS4044N	2CS4044
Lancer	4G93	91-96	1.8	4	EGI	2CS4044N	2CS4044
Lancer C52/C62A	4G15	87-92	1.5	4	EGI	2CS408N	2CS408
Magna TR V6	6G71/72	90-93	3.0	V6	EGI	2CS4013N	2CS4013
Mirage	4G13/15/37	89-95	1.3/1.5/1.6	4	EGI	2CS4044N	2CS4044
Pajero NG	6G72	89-91	3.0	V6	EGI	2CS403N	2CS403
Pajero NH	6G72	90-93	3.0	V6	EGI	2CS4013N	2CS4013
Pajero V6 NF	6G72	88-89	3.0	V6	EGI	2CS403N	2CS403
RVR	4G93	91-96	1.8	4	EGI	2CS4044N	2CS4044
Triton V6	6G72	90-93	3.0	6	EGI	2CS4013N	2CS4013
V3000	6G71/72	90-93	3.0	6	EGI	2CS4013N	2CS4013
Nissan							
300C Y30	VG30E	85-89	3.0	6	EECS	2CS405N	-
300ZX Z31	VG30E	84-85	3.0	6	-	2CS405N	-
300ZX Z31T	VG30ET	85-89	3.0	6	EECS	2CS405N	-
Bluebird U13	KA24DE	93-	2.4	4	EECS	2CS405N	-
Cefiro	-	-	-	-	EECS	2CS403N	2CS403
EXA	E15-ET	83-87	1.5	4	EECS	2CS407N	-
EXA Twin Turbo	-	-	-	-	EECS	2CS403N	2CS403
Maxima V6	VG30E	90-	3.0	6	EECS	2CS405N	-
Navara V6	VG30E	92-	3.0	6	EECS	2CS405N	-
Pathfinder V6	VG30E	92-	3.0	6	EECS	2CS405N	-
Patrol	-	-	-	-	EECS	2CS403N	2CS403
Pintara U12	KA24E	89-92	2.4	4	EECS	2CS405N	-
Primera	-	-	-	-	EECS	2CS4034N	-
Primera	SR20DE	90-92	2.0	4	EECS	2CS405N	-
Pulsar N12	E15-ET	84-87	1.5	4	EECS	2CS407N	-
Serena	SR20DE	-	2.0	-	EECS	2CS403N	2CS403
Skyline R31	RB30E	86-89	3.0	6	EECS	2CS401N	-

Product Illustration Guide

Part No. 2CS401NM

Note:Bearing in distributor must be replaced when replacing crank sensor.

GMH/NISSAN

Part No. 2CS402N

GMH/ISUZU

Part No. 2CS403N

Note:Bearing in distributor must be replaced when replacing crank sensor.

NISSAN

Part No. 2CS404N

Do not remove sensor from main housing

NISSAN

Part No. 2CS405N

FORD/NISSAN

Part No. 2CS406

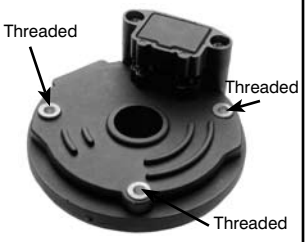
Reman Only

Do not remove sensor from main housing

Casting#39310-33010

HYUNDAI

Part No. 2CS407N



NISSAN

Part No. 2CS408N

HYUNDAI/MITSUBISHI

Part No. 2CS409

Reman Only

Do not remove sensor from main housing

NISSAN 4 CYL.

Part No. 2CS4010N

FORD/MAZDA

Part No. 2CS4011N

NISSAN

Part No. 2CS4012N

MITSUBISHI

Part No. 2CS4013N

MITSUBISHI

Part No. 2CS4014N

FORD/MAZDA

Part No. 2CS4015N

NISSAN

Part No. 2CS4016N

HYUNDAI/MITSUBISHI

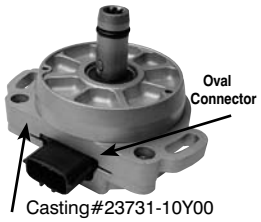
Crank Angle Sensors (CAS)

ACA

Product Illustration Guide

Part No. 2CS4017

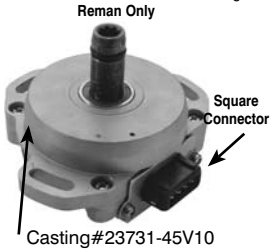
Do not remove sensor from main housing
Reman Only



Casting#23731-10Y00
NISSAN 6 CYL.

Part No. 2CS4018

Do not remove sensor from main housing
Reman Only



Casting#23731-45V10
NISSAN 6 CYL.

Part No. 2CS4019

Do not remove sensor from main housing
Reman Only

Casting#39310-33020
HYUNDAI

Part No. 2CS4020N

GMH/TOYOTA

Part No. 2CS4020NX

Picture Illustration Only
GMH/TOYOTA

Part No. 2CS4021N

GMH/TOYOTA

Part No. 2CS4022N

Crank Angle Sensor
SUBARU

Part No. 2CS4023N

Cam Sensor
SUBARU

Part No. 2CS4024N

Crank Angle Sensor
SUBARU

Part No. 2CS4025N

Picture Illustration Only
MITSUBISHI

Part No. 2CS4026N

FORD/MAZDA

Part No. 2CS4027N

FORD/MAZDA

Part No. 2CS4028N

FORD/MAZDA

Part No. 2CS4029N

FORD/MAZDA/EUNOS

Part No. 2CS4030N

NISSAN IMPORTS ONLY

Part No. 2CS4031N

MAZDA

Product Illustration Guide

Part No. 2CS4032N

EUNOS

Part No. 2CS4033N

MITSUBISHI

Part No. 2CS4034N

NISSAN

Part No. 2CS4035N

Picture Illustration Only

Part No. 2CS4036N

MITSUBISHI

Part No. 2CS4037N

Can be used to replace 2CS403N

NISSAN

Part No. 2CS4038N

Picture Illustration Only

MAZDA

Part No. 2CS4039N

FORD/MAZDA

Part No. 2CS4040N

FORD/MAZDA/MITSUBISHI

Part No. 2CS4041N

Picture Illustration Only

MAZDA

Part No. 2CS4042N

MITSUBISHI

Part No. 2CS4043N

MAZDA

Part No. 2CS4044N

MITSUBISHI

Part No. 2CS4045N

Picture Illustration Only

MAZDA

Part No. 2CS4046N

FORD/MAZDA

Part No. 2CS4047N

FORD

Crank Angle Sensors (CAS)

ACA

Product Illustration Guide

Part No. 2CS4048N

NISSAN

PartNo.2CS4049N

Picture Illustration Only
MITSUBISHI

Part No. 2CS4050N

FORD/MAZDA/MITSUBISHI

Part No. 2CS4051N

MITSUBISHI

Part No. 2CS4052N

Distributor Sensor EF & EL V8
FORD

Part No. 2CS4053N

Distributor Sensor EB - EL V8
FORD

Part No. 2CS4054N

Crank Sensor EF - AU 6 Cyl Auto
FORD

Part No. 2CS4055N

GMH

Part No. 2CS4056N

GMH/TOYOTA

Part No. 2CS4057N

EUNOS/FORD/MAZDA

Part No. 2CS4058N

MITSUBISHI

Part No. 2CS4059N

MITSUBISHI

Part No. 2CS4063N

AUDI

Part No. 2CS4064N

AUDI

Part No. 2CS4066N

BMW

Part No. 2CS4067N

CITROEN

Product Illustration Guide

Part No. 2CS4068N

DAEWOO

Part No. 2CS4069N

EUNOS

Part No. 2CS4070N

FORD

Part No. 2CS4071N

GMH

Part No. 2CS4072N

GMH

Part No. 2CS4074N

GMH

Part No. 2CS4075N

GMH

Part No. 2CS4076N

GMH

Part No. 2CS4078N

GMH

Part No. 2CS4079N

GMH

Part No. 2CS4081N

GMH

Part No. 2CS4084N

GMH

Part No. 2CS4086N

HYUNDAI

Part No. 2CS4089N

HYUNDAI

Part No. 2CS4091N

HYUNDAI

Part No. 2CS4093N

HYUNDAI

Crank Angle Sensors (CAS)

ACA

Product Illustration Guide

Part No. 2CS4094N

MAZDA

Part No. 2CS4095N

MITSUBISHI

Part No. 2CS4097N

PEUGEOT

Part No. 2CS4098N

SUZUKI

Part No. 2CS4099N

VOLVO

Part No. 2CS4101N

VOLVO

Part No. 2CS4102N

FORD

Part No. 2CS4103N

MITSUBISHI

Part No. 2CS4104N

MITSUBISHI

Part No. 2CS4105N

MITSUBISHI

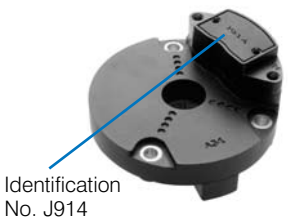
Part No. 2CS4106N

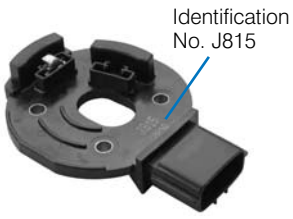
MITSUBISHI

Part No. 2CS4107N

MITSUBISHI

Crank Angle Sensor Identification





Product Illustration Guide

Part No. 2CS4075N

GMH

Part No. 2CS4117N

GMH

Part No. 2CS4118N

GMH

Part No. 2CS4121N

GMH

Part No. 2CS4122N

GMH

Part No. 2CS4124N

GMH

Part No. 2CS4125N

GMH

Part No. 2CS4128N

GMH

Part No. 2CS4130N

GMH

Part No. 2CS4132N

GMH

Part No. 2CS4136N

GMH

Part No. 2CS4137N

GMH

Part No. 2CS4140N

GMH

Part No. 2CS4141N

GMH

Part No. 2CS4142N

GMH

Part No. 2CS4147N

GMH

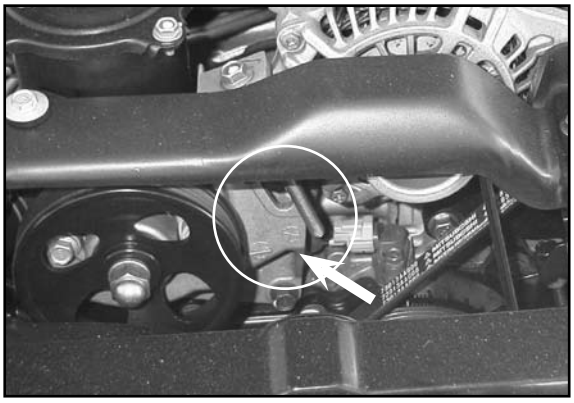
Crank Angle Sensors

Crank Angle Sensor

The crank angle sensor or crankshaft position sensor, monitors the position of the crankshaft and pistons so that the ECU can determine when to inject fuel into the cylinders. It also monitors the engine speed. There are three main types of sensors.
The first is a hall effect sensor which uses a permanent magnet on one side of the sensor to trigger the switch within the other side of the sensor. A signal ring has sections cut out of it and passes between the magnet and switch in the sensor. When the cut out section of the signal ring passes between the sensor and magnet, the magnet closes the switch completing a circuit. Once the cut out section of the signal ring passes from between the sensor, the magnetic field is broken and the switch opens.
The second is a pulse generator. This works similarly to the hall effect sensor with the main difference being that instead of the magnet closing a switch contact it produces a small voltage. This small voltage is then transmitted to the ignition module where it is converted into a square wave form pattern and is then used by the engine ECU.
The third is also similar to the previous two. This sensor uses LED's instead of a magnet and a photo-electric cell instead of the switch. As the cut-out portion of the signal ring passes between the LED and the photo-electric cell, the light from the LED is transmitted to the cell. From there a signal is passed to either an ignition module to be converted into a square wave form pattern, or straight to the engine ECU. The signal is broken once the cut-out portion of the signal ring passes from between the LED and photo-electric cell.
Crank angle sensors on distributor-less ignition systems run directly from the crankshaft and can be mounted to the front, side or rear of the engine, while on earlier model vehicles with distributors, the crank angle sensor is incorporated within the distributor.

To Test

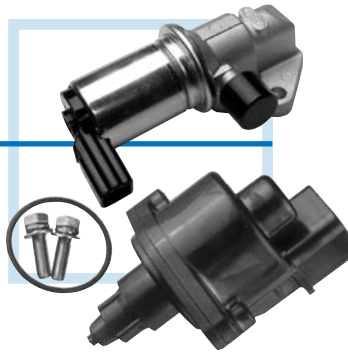
1.Generally, a faulty crank angle sensor will cause an engine not to start. As the crank angle sensor controls the injection of fuel, the easiest way to check for a faulty sensor is to crank the engine and listen to the injectors, or check for spark using a dummy spark plug.
2.If no injection can be heard or there is no spark, disconnect the wiring from the crank angle sensor and check for either 5 volts or battery voltage at one or more of the terminals.
Power can be supplied to the crank angle sensor from either the ignition module, ECU or power relay, or the engine ECU. If no power is available at the sensor, trace and repair the fault as necessary.
On models with a distributor, also check that the distributor rotor rotates as the engine is cranked. A stripped distributor drive gear or broken timing belt will not allow the signal rings to rotate and trigger the sensor.
3.With the wiring connected to the crank angle sensor, backprobe the signal wires with an LED test lamp.
If the sensor is triggered by battery power, which would have been established in Step 1., connect the test lamp lead to earth and check that the test lamp flashes as the engine is cranked. Some crank angle sensors pulse the signal wire to earth. In this case, connect the test lamp lead to battery power.
If the sensor is triggered by 5 volts, connect the test lamp lead to earth and check that the test lamp flashes as the engine is cranked.
4.Some crank angle sensors have two pickup coils and signal rings. These will be distinguished by having 4 wires.
In this case, repeat step 3 on the second signal wire. The test lamp may only flash once per crankshaft revolution. This will be a TDC signal. Renew the sensor if faulty.



Distributorless engines will usually have the crank angle sensor located to read from the crankshaft, either near the crankshaft pulley or the flywheel.

Crank angle sensors on engines with distributors are usually located within the distributor.

Idle Air Control Motors (IAC) Throttle Air By-Pass Valves



Function: The idle air control motor is incorporated within the fuel injection system to stabilise and hold idle speed to a specific predetermined value. This is dependent on the engine temperature, electrical load, engine load at idle conditions and many other variables.

The IAC Motor achieves this by continually adjusting an air bypass passage around the throttle plate, that in turn will govern the amount of air passing through it, dependent on any of the variables mentioned above.

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford						
Falcon XF	-	84-88	4.1	6	EEC-4	IAC423
Falcon EA CFI	-	88-91	3.9	6	EEC-4	IAC425
Falcon EA M.P.I	P	88-91	3.9	6	EEC-4	IAC421
Falcon EB (Inc. XR6)	D/P	91-92	4.0	6	EEC-4	IAC421
Falcon EB II (Inc.XR6)	Z	92-93	4.0	6	EEC-4	IAC421
Falcon EB (Inc.XR8)	Z	91-92	5.0	V8	EEC-4	IAC422
Falcon EB II (Inc.XR8)	Z	92-93	5.0	V8	EEC-4	IAC422
Falcon ED (Inc.XR6)	H	93-94	4.0	6	EEC-4	IAC421
Falcon ED (Inc.XR8)	Z	93-94	5.0	V8	EEC-4	IAC422
Falcon EF (Inc.XR6)	H	94-95	4.0	6	EEC-5	IAC424
Falcon EF II (Inc.XR6)	H	95-96	4.0	6	EEC-5	IAC424
Falcon EF (Inc.XR8)	Z	94-95	5.0	V8	EEC-5	IAC422
Falcon EF II (Inc.XR8)	Z	95-96	5.0	V8	EEC-5	IAC422
Falcon EL XR6	-	96-98	4.0	6	EEC-5	IAC424
Falcon EL (Inc.XR8)	-	96-98	5.0	V8	EEC-5	IAC422
Falcon AU + AU II XR6 (only)	-	98-99	4.0	6	EEC-5	IAC428
Falcon AU + AU II XR8 (only)	-	98-99	5.0	V8	EEC-5	IAC426
Falcon EG Longreach ute+Van	H	91-94	4.0	6	EEC-4	IAC421
Falcon XH Longreach ute+Van	H	96-97	4.0	6	EEC-4	IAC424
Falcon XH II Longreach ute+Van	Z	97-99	5.0	V8	EEC-5	IAC422
Falcon AU ute	X	99-	5.0	V8	EEC-5	IAC428
Fairlane ZL	6I	84-88	4.1	6	EEC-4	IAC423
Fairlane NA	H	88-91	4.0	6	EEC-4	IAC425
Fairlane NC	H	91-94	4.0	6	EEC-4	IAC421
Fairlane NF	H	95-96	4.0	6	EEC-4	IAC424
Fairlane NF	Z	95-96	5.0	V8	EEC-4	IAC422
Fairlane NL	H	96-99	4.0	6	EEC-5	IAC424
Fairlane NL	Z	96-99	5.0	V8	EEC-5	IAC422
Fairlane AU/AU II	X	99-	5.0	V8	EEC-5	IAC426
LTD FE	6I	84-85	4.1	6	EEC-4	IAC423
LTD FE II	6I	85-88	4.1	6	EEC-4	IAC423
LTD DA	H	88-89	4.0	6	EEC-4	IAC425
LTD DA II	H	89-91	4.0	6	EEC-4	IAC425
LTD DC	H	91-94	4.0	6	EEC-4	IAC421
LTD DC	Z	91-94	5.0	V8	EEC-4	IAC422
LTD DF	H	95-96	4.0	6	EEC-4	IAC424
LTD DF	Z	95-96	5.0	V8	EEC-4	IAC422
LTD DL	H	96-98	4.0	6	EEC-5	IAC424
LTD DL	Z	96-98	5.0	V8	EEC-5	IAC422
LTD AU	X	99-	5.0	V8	EEC-5	IAC428

Idle Air Control Motors (IAC) Throttle Air By-Pass Valves

ACA

Vehicle Application Listing

GMH

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Astra LD 16LF	16LF	87-89	1.6	4	GM-MPI	IAC405
Astra LD 18LE	18LF	87-89	1.8	4	GM-MPI	IAC401
BarinaSB C12NZ	C12NZ	94-	1.2	4	GM-TBI	IAC400
Barina SB C14NZ (Auto)	C14NZ	94-	1.4	4	GM-TBI	IAC400
Barina SB C14NZ (Manual)	C14NZ	94-	1.4	4	GM-TBI	IAC405
Barina SB DOHC	C16XE	94-	1.6	4	GM	IAC410
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	IAC410
Barina SB w/MPI	C16XE	4/94-12/95	1.6L	4	MPI	IAC410
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	IAC410
Barina SB w/TBI	C12NZ	94-00	1.2L	4	automatic only	IAC400
Barina SB w/TBI	C12NZ	94-00	1.2L	4	manual only	IAC405
Barina TK	F16D3	12/05 on	1.6L	4	IAC438	
Camira JD (Unleaded)	18JC	84-87	1.8	4	GM-TBI	IAC427
Camira JE	-	87-88	2.0	4	MPI	IAC401
Commodore VL	RB30E	86-88	3.0	6	GM-MPI	IAC418
Commodore VN	VH	88-90	3.8	6	GM-MPI	IAC407
Commodore VN V8/SV89	VU	89-90	5.0	8	GM-MPI	IAC409
Commodore VN (Club Sport)	VU	90-91	5.0	8	GM-MPI	IAC409
Commodore VN SV5000	VU	89-90	5.0	8	GM-MPI	IAC409
Commodore VP	VH	91-93	3.8	6	GM-MPI	IAC407
Commodore VP	VU	91-93	5.0	8	GM-MPI	IAC407
Commodore VR (Police Pack) Auto	VH	93-95	3.8	6	GM-MPI	IAC403
Commodore VR 180kw Opt. V8 Police Pack (Auto)	VU	93-95	5.0	8	GM-MPI	IAC409
Commodore/Statesman VR Auto	VH	93-95	3.8	6	GM-MPI	IAC403
Commodore/Statesman VR	VH	93-95	3.8	6	GM-MPI	IAC403
Commodore/Statesman VR 180kw V8 option (Man)	VU	93-95	5.0	8	GM-MPI	IAC409
Commodore VS High Perf. Police Pack Auto	VU	95-	5.0	8	GM-MPI	IAC409
Commodore VS HSV	VU	96-	5.7	8	GM-MPI	IAC409
Commodore/Statesman VS (Auto)	VH	95-	3.8	6	GM-MPI	IAC407
Commodore/Statesman VS (Man)	VH	95-	3.8	6	GM-MPI	IAC407
Commodore/Statesman VS High Perf. option (Auto)	VU	95-	5.0	8	GM-MPI	IAC403
Commodore/Statesman VS High Perf. option (Man)	VU	95-	5.0	8	GM-MPI	IAC409
Commodore VT	VM	99-01	5.7	V8	GM-MPI	IAC435
Commodore VX	VM	01-	5.7	V8	GM-MPI	IAC435
Commodore VX II	VM	02-	5.7	V8	GM-MPI	IAC435
Statesman/Caprice	-	01-	5.7	V8	GM-MPI	IAC435
Statesman/Caprice VQ Ser. I+II / High Perf.	VU	90-93	5.0	8	GM-MPI	IAC403
Statesman /Caprice VQ Ser. II	VH	90-93	3.8	6	GM-MPI	IAC407
VG/VT Utility/Sedan	VH	90-93	3.8	6	ECCS	IAC407
VG/VT Utility	VU	90-93	5.0	8	GM-MPI	IAC409
VR Utility (Auto/Man)	VH	93-95	3.8	6	GM-MPI	IAC407
VR Utility (Auto/Man)	VU	93-95	5.0	8	GM-MPI	IAC409
VS Utility Auto	VH	95-	3.8	6	GM-MPI	IAC407
VU Utility	VM	02-	5.7	V8	GM-MPI	IAC435
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	IAC443

Idle Air Control Motors (IAC) Throttle Air By-Pass Valves

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH Continued						
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	IAC443
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	IAC445
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	IAC445
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	IAC445
Hyundai						
Excel X2	G4DJ	7/90-92	1.5	4	MPI	IAC411
Excel X3 16v DOHC	G4FK	98-00	1.5	4	MPI	IAC402
Grandeur	G6CTX	00-	3.0	V6	MPI	IAC420
Lantra J1	G4CRL/C4CNM	3/91-5/95	1.6/1.8	4	MPI	IAC408N
S Coupe	4GDJ	7/90	1.5	4	MPI	IAC411
Sonata	G4CSK	90-92	2.4	4	MPI	IAC411
Sonata	G4CP	92-94	2.0	4	MPI	IAC408N
Sonata	G4CP	94-6/96	2.0	4	MPI	IAC408N
Sonata	G4CP	6/96-	2.0	4	MPI	IAC408N
Sonata	G4JPV	5/98-	2.0	4	MPI	IAC402
Sonata	4GCSK	2/92-9/93	3.0	V6	MPI	IAC419N
Sonata	G6ATP	9/93-1/95	3.0	V6	MPI	IAC419N
Sonata	G6ATF	1/95-3/97	3.0	V6	MPI	IAC419N
Sonata	G6BVV	5/98-	3.0	V6	MPI	IAC402
Sonata	G4JP	99-01	2.0	4	MPI	IAC437
Mitsubishi						
3000 GT	6G72	93-97	3.0	V6	ECI	IAC419N
Challenger PA	6G72	98-02	3.0	V6	ECI	IAC434
Galant HG	4G63	89-90	2.0	4	ECI	IAC416N
Galant HH (Inc. Twin Cam)	4G63	88-92	2.0	4	ECI	IAC411
Galant HH VR4 (Turbo)	4G63	88-92	2.0	4	ECI	IAC411
Lancer CA CB	4G15	88-92	1.5	4	ECI	IAC429
Lancer CC	4G16	92-93	1.6	4	ECI	IAC430
Lancer CC	4G93	92-93	1.8	4	ECI	IAC430
Magna TN-TP	V572	88-92	2.6	4	ECI	IAC414
Magna TR	Y721A	91-94	3.0	V6	ECI	IAC419N
Magna TR	W532	91-94	2.6	4	ECI	IAC416N
Magna TS	Y721	94-97	3.0	V6	ECI	IAC419N
Magna TS	W532	94-97	2.6	4	ECI	IAC416N
Magna TE	6G72	96-97	3.0	V6	ECI	IAC434
Magna TF	6G72	97-98	3.0	V6	ECI	IAC434
Magna TJ	6G72	00-	3.0	V6	ECI	IAC434
Magna TJ	6G74	00-	3.5	V6	ECI	IAC434
Magna TH	6G72	99-00	3.0	V6	ECI	IAC434
Magna TH	6G74	99-00	3.5	V6	ECI	IAC434
Pajero NF - NG	6G72	88-90	3.0	V6	ECI	IAC419N
Pajero NH	6G72	91-93	3.0	V6	ECI	IAC419N
Pajero NJ	6G72	93-96	3.0	V6	ECI	IAC419N
Pajero NJ	6G74	93-96	3.5	V6	ECI	IAC434
Pajero NK	6G72	96-97	3.0	V6	ECI	IAC419N
Pajero NK	6G74	96-97	3.5	V6	ECI	IAC434
Pajero NL	6G74	97-00	3.5	V6	ECI	IAC434
Starwagon WA L400	6G72	94-97	3.0	V6	ECI	IAC434

Idle Air Control Motors (IAC) Throttle Air By-Pass Valves

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Mitsubishi Continued						
Triton ME	6G72	86-88	3.0	V6	ECI	IAC419N
Triton MF	6G72	88-89	3.0	V6	ECI	IAC419N
Triton MG	6G72	89-90	3.0	V6	ECI	IAC419N
Triton MH	6G72	90-92	3.0	V6	ECI	IAC419N
Triton MJ	6G72	92-96	3.0	V6	ECI	IAC419N
Triton MK	6G72	96-00	3.0	V6	ECI	IAC434
Verada KR	6G72	91-94	3.0	V6	ECI	IAC419N
Verada KS	6G72	94-96	3.0	V6	ECI	IAC419N
Verada KE	6G74	96-96	3.5	V6	ECI	IAC434
Verada KF	6G74	96-98	3.5	V6	ECI	IAC434
Verada KH	6G74	99-00	3.5	V6	ECI	IAC434
Nissan						
Pulsar N13	16LF	87-91	1.6	4	GM-MPI	IAC405
Pulsar N13	18LF	87-91	1.8	4	GM-MPI	IAC401
Skyline RB30E	RB30	86-	3.0	6	ECCS	IAC415
Toyota						
Corolla AE82	4AGELC	86-88	1.6	4	TOYOTA-L/PFI	IAC406
Corolla AE95	4AFE	88-93	1.6	4	TOYOTA-L/PFI	IAC404
Corona RT142	22REC	84-86	2.4	4	TOYOTA-L/PFI	IAC412
Crown MS123	5ME	83-87	2.8	4	TOYOTA-L/PFI	IAC417
Cressida MX6	5ME	83-85	2.8	4	TOYOTA-L/PFI	IAC417
Cressida MX7	5ME	84-88	2.8	4	TOYOTA-L/PFI	IAC417
Lexcen VN	VH	89-91	3.8	V6	GM-MPI	IAC407
Lexcen VP	VH	91-93	3.8	V6	GM-MPI	IAC407
Lexcen VR	VH	93-95	3.8	V6	GM-MPI	IAC407
Lexcen T4 (Ecotec)	VH	95-97	3.8	V6	GM-MPI	IAC407
Supra MA61	5ME	83-86	2.8	4	TOYOTA-L/PFI	IAC417

Cleaning Kit Instructions

Part No. CT28

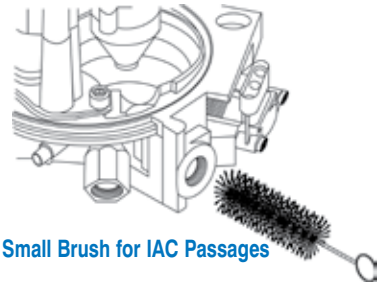
Cleaning the throttle plate, bore and IAC passages has become an important service on todays' fuel injected vehicles. The CT28 cleaning kit has been designed to aid in this much needed service procedure.

Cautions

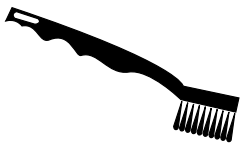
- **Do not install kit while engine is running.**
- **Use only approved cleaner for cleaning these areas.**
- **Follow the precautions on the cleaner being used.**
- **Have an ABC fire extinguisher nearby.**
- **Refer to the appropriate service manual for special procedures when performing these services.**

Cleaning Kit Instructions

1. Disconnect the negative battery cable.
2. Remove air induction tube, the air filter or MAF to gain access to the throttle bore.
3. Remove the IAC motor.
4. Hold the throttle plate open.
5. Spray an approved cleaner into the throttle bore and IAC passages.
   Note: Be careful to keep the cleaner away from the TPS area, as the cleaner could cause damage to the TPS.
6. Using the large round brush clean the throttle bore and plate.
   Note: From time to time you may need to spray more cleaner into the bore to aid in the cleaning process. Be careful not to use too much cleaner.
7. If the deposits are really baked on, use the smaller rectangular shaped brush to clean these areas.
8. Use the small round brush to clean out the IAC passages.
9. Use a shop towel to wipe out the extra cleaner and loosened carbon in the bore and passages.
   Note: A shop towel wrapped around a large round brush can be used to clean out the throttle bore. Be careful not to lose any of the towel, or foreign debris inside the throttle body area.
10. Clean the IAC pintle. Be careful not to get any cleaner or debris in the IAC motor.
11. After the throttle body, IAC passages and IAC are clean, reinstall the IAC motor using new gaskets or o-rings.



Small Brush for IAC Passages



Hard Bristle Brush for Hard Deposits

Large Brush for Throttle Passages

Idle Air Control Motors (IAC) Throttle Air By-Pass Valves

ACA

Idle Air Control Valves

To maintain engine idle speed during the engine warm-up period and to compensate for varying engine loads at idle, most engine management systems use some sort of idle air control valve.

One of the most common devices used on early model vehicles is the auxiliary air valve. The valve contains a plate that is open at low engine temperatures, allowing air to flow through the valve port, bypassing the throttle valve and increasing the idle speed. As electric current is applied to the heating coil inside the valve, a bimetal strip deflects causing the plate to close the port, gradually lowering the idle speed to the base setting.

On more recent models, idle speed is controlled more precisely through pulsed solenoid valves or stepper motors.

The pulsed solenoid valves are controlled by the engine electronic control unit (ECU), and will alter the idle speed by varying amounts through an air bypass. The solenoid plunger acts on a tapered seat, the plunger position being controlled by variation of the current or electrical pulse frequency to the solenoid windings.

With stepper motors, an electric motor withdraws or extends a plunger, which can either open and close an air bypass passage, or can act directly on the throttle linkage to open the throttle valve, as on early Magna models and EA Falcons with throttle body injection. The ECU controls the operation of the stepper motor by sending signals to independent windings in the motor.

To Check

1.Check the passages of the idle air control valve and the throttle body for carbon build-up. If cleaning is necessary, some form of carburettor cleaner is usually the best for this job, although this type of cleaner should not be used near wax pellets as they can be damaged.

2.Check that the throttle valve moves smoothly through its range of operation, and make sure that it closes against the throttle stop. Small amounts of carbon in the throttle body bore can prevent the throttle valve from closing completely.

3.Check all vacuum hoses for deterioration, such as cracks and hardening. It is important that these hoses seal correctly. On systems which use engine coolant to heat the auxiliary air valve, ensure that the hoses are serviceable, and that the coolant passages in the housing are not blocked.

4.Auxiliary air valves can be checked by closing off one of the hoses when the engine is cold. The idle speed should drop. When the engine is at operating temperature, the idle speed should be unaffected.

5.Check the resistance of the windings on solenoids and stepper motors, remembering that the motors will have two separate windings to extend and retract the plunger. Typically, the windings should have a low resistance of under 100 ohms.

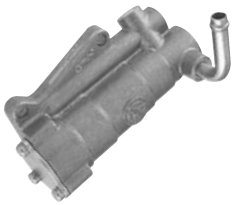
Check the resistance of the idle air control valve.

Product Illustration Guide

Part No. IAC400	Part No. IAC401	Part No. IAC402	Part No. IAC403
			
GMH	GMH/NISSAN	HYUNDAI	GMH

Idle Air Control Motors (IAC)
Throttle Air By-Pass Valves

Product Illustration Guide

Part No. IAC404

TOYOTA

Part No. IAC405

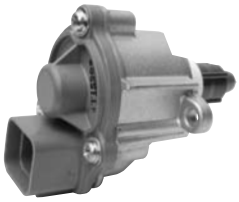
GMH/NISSAN

Part No. IAC406

TOYOTA

Part No. IAC407

GMH/TOYOTA

Part No. IAC408R

(4CYL)
HYUNDAI

Part No. IAC409

GMH

Part No. IAC410

GMH

Part No. IAC411

HYUNDAI

Part No. IAC412

TOYOTA

Part No. IAC414

MITSUBISHI

Part No. IAC415

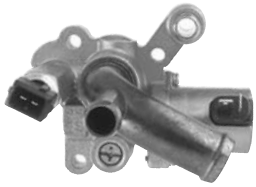
NISSAN

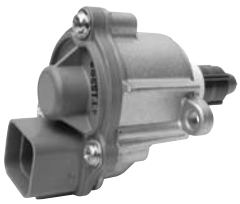
Part No. IAC416R

(4 CYL)
MITSUBISHI

Part No. IAC417

TOYOTA

Part No. IAC418

GMH

Part No. IAC419R

6 CYL
MITSUBISHI

Part No. IAC421

Supplied with gasket
FORD

Idle Air Control Motors (IAC)
Throttle Air By-Pass Valves

ACA

Product Illustration Guide

Part No. IAC422

Supplied with gasket

FORD

Part No. IAC423


FORD

Part No. IAC424

Supplied with gasket

FORD

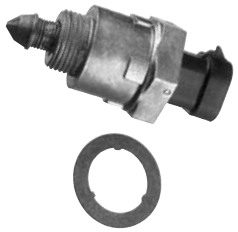
Part No. IAC425


FORD

Part No. IAC426

Supplied with gasket

FORD

Part No. IAC427


GMH

Part No. IAC428

Supplied with gasket

FORD

Part No. IAC429


MITSUBISHI

Part No. IAC430


MITSUBISHI

Part No. IAC434


MITSUBISHI

Part No. IAC435


GMH

Part No. IAC437


HYUNDAI

Part No. IAC438


GMH

Part No. IAC442


GMH

Part No. IAC443


GMH

Part No. IAC445


GMH

Knock Sensors

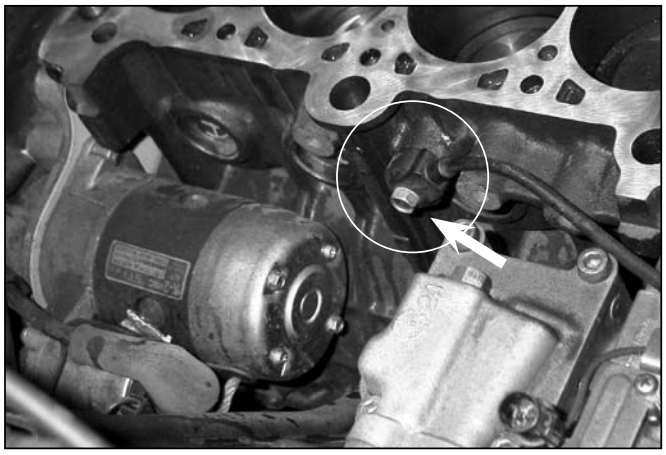
The knock sensor, or detonation sensor is a piezo-electric accelerometer. The piezo crystal, when exposed to sufficient vibration will produce a small AC voltage. This is similar to the operation of a microphone.
The knock sensor is mounted to the engine, usually on the cylinder block. When the engine begins to knock, the sensor picks up the frequency of the knock, produces a voltage and sends the signal back to the ECU. The ECU retards the timing to eliminate the knock. The ECU will then start to advance the ignition timing until the knock sensor detects knock. It will again signal the ECU to retard the timing. This process repeats itself the whole time the vehicle is being driven.

To Test

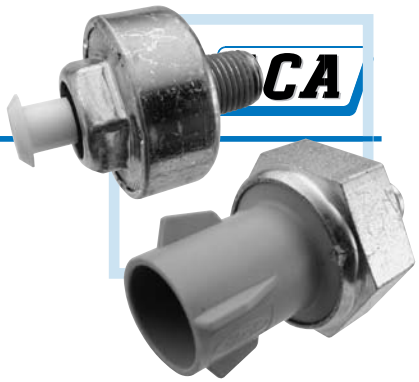
1.Disconnect the wiring from the knock sensor and check that there is a voltage of approximately 5 volts available at the knock sensor wire with the ignition on. If there is no voltage, check the wiring back to the ECU and the ECU power supply and earth circuits. If no fault can be found, a problem with the ECU is indicated.
Some models may have a second wire, this will be an earth and should have less than 5 ohms resistance to earth.
2.Check that there is approximately 1 Mega Ohm resistance between the knock sensor terminal and earth.
On models with two terminals, check that there is resistance between the two terminals and also check that there is no continuity between earth and each terminal. If there is, the sensor is faulty.
3.Connect a timing light to the vehicle.
4.Connect the wiring to the knock sensor and start the engine.
5.While someone watches the timing light against the timing marks on the engine, tap the cylinder block lightly with a hammer near the knock sensor location. The timing will retard on some models.

Note: This test does not work on all vehicles as on some models, the knock sensor will only work in a set frequency. If tapping the cylinder block with a hammer is not a similar frequency to that of engine knock, it will have no effect on the sensor.

The knock sensor is bolted to the side of the cylinder block.



Knock Sensors



Function: The knock sensor is used to detect engine detonation or pinging and will send this information electronically to the ECU.
The unit is capable of detecting vibrations caused by detonation and once this occurs the crystal inside the unit compresses, thus resulting in a voltage. This voltage signal is used by the ECU to immediately retard ignition timing as necessary.

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford						
Falcon EF (Inc. XR6)	6I	94-96	4.0	6	EEC-5	K1508
Falcon AU (Inc. XR6)	Y	98-00	4.0	6	EEC-5	K1511
Falcon AU 2 (Inc. XR8)	X	00-	5.0	V8	EEC-5	K1511
Falcon AU (Inc. XR6)	Y	98-00	4.0	6	EEC-5	K1511
Falcon AU 2 (Inc. XR8)	X	00-	5.0	V8	EEC-5	K1511
GMH						
Commodore VN	VH	88-91	3.8	V6	MPI	K1509
Commodore VN	VH	88-91	3.8	V6	MPI	K1509
Commodore VN SS+Group A	VU	88-91	5.0	V8	GM-MPI	K1509
Commodore VP+VP Series II	VH	91-93	3.8	V6	GM-MPI	K1509
Commodore VP+VP Series II	VU	91-93	5.0	V8	GM-MPI	K1509
Commodore VR	VU	93-95	5.0	V8	GM-MPI	K1509
Commodore VS (Ecotec)	VH	95-96	3.8	V6	GM-MPI	K1507
Commodore VT	VH	97-00	3.8	V6	GM-MPI	K1507
Commodore VT (Supercharged)	VH	97-00	3.8	V6	GM-MPI	K1507
Commodore VT	VU	97-00	5.0	V8	GM-MPI	K1507
Commodore VG (ute)	VH	90-91	3.8	V6	GM-MPI	K1509
Commodore VG (ute)	VU	90-91	5.0	V8	GM-MPI	K1509
Commodore VP (ute)	VH	92-93	3.8	V6	GM-MPI	K1509
Commodore VP (ute)	VU	92-93	5.0	V8	GM-MPI	K1509
Commodore VR (ute)	VH	93-97	3.8	V6	GM-MPI	K1509
Commodore VR (ute)	VU	93-97	5.0	V8	GM-MPI	K1509
Commodore VS (ute)	VH	97-98	3.8	V6	GM-MPI	K1507
Commodore VS (ute)	VU	97-98	5.0	V8	GM-MPI	K1507
Statesman/Caprice	VH	90-92	3.8	V6	GM-MPI	K1509
Statesman/Caprice VQ	VU	90-92	5.0	V8	GM-MPI	K1509
Statesman/Caprice VQ Series II	VH	92-94	3.8	V6	GM-MPI	K1509
Statesman/Caprice VQ Series II	VU	92-94	5.0	V8	GM-MPI	K1509
Statesman/Caprice VR	VH	94-95	3.8	V6	GM-MPI	K1509
Statesman/Caprice VR	VU	94-95	5.0	V8	GM-MPI	K1509
Statesman/Caprice VS Series I	VH	95-99	3.8	V6	GM-MPI	K1507
Statesman/Caprice VS Series I	VU	95-99	5.0	V8	GM-MPI	K1507
Statesman/Caprice WH	VH	99-	3.8	V6	GM-MPI	K1507
Vectra JA/JS	C20SEL	97-99	2.0	4	GM-MPI	K1514
Vectra JA/JS	C22SEL	97-99	2.2	4	GM-MPI	K1514

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Subaru						
Liberty	EJ22E	90-93	2.2	4	Subaru-MPFI	K1510
Liberty RS Quad Cam (Turbo)	EJ20	92-93	2.0	4	Subaru-MPFI	K1510
Liberty	EJ20	94-96	2.0	4	Subaru-MPFI	K1510
Liberty	EJ22	94-96	2.2	4	Subaru-MPFI	K1510
Impreza	EJ20	93-96	2.0	4	Subaru-MPFI	K1510
Impreza Quad Cam (Turbo)	EJ20	93-96	2.0	4	Subaru-MPFI	K1510
Toyota						
Lexcen VN GLX	VH	89-91	3.8	V6	GM-MPI	K1509
Lexcen VP CSI	VH	91-93	3.8	V6	GM-MPI	K1509
Lexcen VR Newport	VH	93-94	3.8	V6	GM-MPI	K1509
Lexcen VR T4 (Ecotec)	VH	95-97	3.8	V6	GM-MPI	K1507

Product Illustration Guide

Part No. K1507

GMH/TOYOTA

Part No. K1508

FORD

Part No. K1509

GMH/TOYOTA

Part No. K1510

SUBARU

Part No. K1511

FORD

Part No. K1514

GMH

Manifold Absolute Pressure Sensors (MAP)

Sensor Catalogue

Function: These two units operate primarily the same even though they appear to be totally different. The aluminium unit displayed in this section was used on very early fuel injection systems commonly known as D-Jetronic and was fitted to vehicles such as Mercedes Benz, Volvo and Volkswagen. Both units supply an electrical signal to the electronic control unit (ECU) as the intake manifold pressure changes due to fluctuations in engine load, speed or atmospheric pressure. Manifold Absolute Pressure is the difference between barometric pressure and manifold vacuum. The sensors contain a pressure-sensing element and electronic circuitry which converts pressure sensed by the unit into an electronic signal for the ECU to process.

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford						
Falcon XF (EST only)	N	86-88	4.1	6	EST	9M110N
Falcon EB-ED (Inc.XR6)	H	91-94	4.0	6	EEC-4	9M106N
Falcon EF-EL (Inc.XR6)	H	94-98	4.0	6	EEC-4/5	9M106N
Falcon AU XR6	Y	98-00	4.0	6	EEC-5	9M118N
Falcon AU II XR6	Y	00-	4.0	6	EEC-5	9M115N
Falcon/Fairmont EA	D/P	88-91	3.2/3.9	6	EEC-4	9M106N
Falcon/Fairmont EB (Inc.XR6)	H	91-92	4.0	6	EEC-4	9M106N
Falcon/Fairmont EBII (Inc.XR6)	H	92-93	4.0	6	EEC-4	9M106N
Falcon/Fairmont ED (Inc.XR6)	H	93-94	4.0	6	EEC-4	9M106N
Falcon/Fairmont EF (Inc.XR6)	H	94-95	4.0	6	EEC-4	9M106N
Falcon/Fairmont EFII (Inc.XR6)	H	95-96	4.0	6	EEC-4	9M106N
Falcon/Fairmont EL (Inc.XR6)	H	96-98	4.0	6	EEC-5	9M106N
* Falcon/Fairmont AU M.P.F.I. (Inc.XR6)	Y	98-00	4.0	6	EEC-5	9M118N
* Falcon/Fairmont AUII M.P.F.I (Inc.XR6)	Y	00-	4.0	6	EEC-5	9M115N
Fairlane ZL	6I	84-88	4.1	6	EEC-4	9M110N
Fairlane NA	P	88-91	4.0	6	EEC-4	9M106N
Fairlane NC	P	91-94	4.0	6	EEC-4	9M106N
Fairlane NF	H	95-96	4.0	6	EEC-4	9M106N
Fairlane NL	H	96-99	4.0	6	EEC-5	9M106N
* Fairlane AU	Y	99-00	4.0	6	EEC-5	9M118N
* Fairlane AUII	Y	00-	4.0	6	EEC-5	9M115N
LTD FE	6I	84-88	4.0	6	EEC-4	9M110N
LTD DA	P	88-91	4.0	6	EEC-4	9M106N
LTD DC	P	91-94	4.0	6	EEC-4	9M106N
LTD DF	H	95-96	4.0	6	EEC-4	9M106N
LTD DL	H	96-98	4.0	6	EEC-5	9M106N
* LTD DU	Y	99-00	4.0	6	EEC-5	9M118N
* LTD DUII	Y	00-	4.0	6	EEC-5	9M115N
Falcon XF ute (EST only)	6I	86-88	3.3	6	EST	9M110N
Falcon XF ute (EST only)	N	86-88	4.1	6	EST	9M110N
Falcon XG ute (Longreach)	H	91-94	4.0	6	EEC-4	9M106N
Falcon XH ute (Longreach)	H	94-98	4.0	6	EEC-4	9M106N
* Falcon AU ute	Y	99	4.0	6	EEC-5	9M118N
* Falcon AU II	Y	00-	4.0	6	EEC-5	9M115N
F100 Series	T	85-87	5.0	V8	EEC-4	9M108N
F150 Series	T	87-92	5.0	V8	EEC-4	9M108N
F150 Series	A	87-92	5.8	V8	EEC-4	9M108N
F250 Series	T	87-92	5.0	V8	EEC-4	9M108N
F250 Series	A	87-92	5.8	V8	EEC-4	9M108N
F350 Series	T	87-92	5.0	V8	EEC-4	9M108N
F350 Series	A	87-92	5.8	V8	EEC-4	9M108N

* THESE SENSORS ARE BOTH AIT & MAP SENSORS

Manifold Absolute Pressure Sensors (MAP)

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH						
Astra LD	16LF	87-89	1.6	4	GM-MPI	9M111N
Astra LD	18LE	87-89	1.8	4	GM-MPI	9M111N
Astra TR	C16SEO	9/96-8/98	1.6L	4	MPI	9M111N
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	9M111N
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	9M111N
Astra TS	C22	98-01	2.2	4	GM-MPI	9M141N
Astra TS II	C22	2002-	2.2	4	GM-MPI	9M141N
Astra TS	X18XE	8/98 on	1.8L	4	MPI	9M141N
Astra TS	C22SEL	01-03	2.2L	4	MPI	9M141N
Astra TS Sri	Z22SE	12/01-7/04	2.2L	4	MPI	9M141N
Barina SB	C12NZ	94-97	1.2	4	GM-MPI	9M109N
Barina SB	C14NZ	94-97	1.4	4	GM-MPI	9M109N
Barina SB	C14SE	97-00	1.4	4	GM-MPI	9M107N
Barina SB	C16XE	94-00	1.6	4	GM-MPI	9M107N
Barina SB w/TBI	C12NZ	94-00	1.2L	4	MPI	9M111N
Barina SB w/TBI	C14NZ	94-00	1.4L	4	MPI	9M111N
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	9M111N
Barina SB w/MPI	C16XE	4/94-12/95	1.6L	4	MPI	9M111N
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	9M111N
Barina TK	F16D3	12/05 on	1.6L	4	MPI	9M145N
Barina XC	Z14X	2001-	1.4	4	GM-MPI	9M141N
Commodore VK EST only	-	84-86	3.3	6	CARBY	9M109N
Commodore VN	VH	88-91	3.8	V6	GM-MPI	9M107N
Commodore VN (Group A)	VU	90-91	5.0	V8	GM-MPI	9M107N
Commodore VP	VH	91-93	3.8	V6	GM-MPI	9M107N
Commodore VP	VU	91-93	5.0	V8	GM-MPI	9M107N
Commodore VR	VH	93-95	3.8	V6	GM-MPI	9M107N
Commodore VR	VU	93-95	5.0	V8	GM-MPI	9M107N
Commodore VT	VF	99-00	5.7	V8	GM-MPI	9M141N
Commodore VU	VF	01-02	5.7	V8	GM-MPI	9M141N
Commodore VX	VF	01-02	5.7	V8	GM-MPI	9M141N
Commodore VG ute	VH	90-91	3.8	V6	GM-MPI	9M107N
Commodore VG ute	VU	90-91	5.0	V8	GM-MPI	9M107N
Commodore VP ute	VH	92-93	3.8	V6	GM-MPI	9M107N
Commodore VP ute	VU	92-93	5.0	V8	GM-MPI	9M107N
Commodore VR ute	VH	93-97	3.8	V6	GM-MPI	9M107N
Commodore VR ute	VU	93-97	5.0	V8	GM-MPI	9M107N
Commodore VS ute	VH	97-98	3.8	V6	GM-MPI	9M107N
Commodore VS ute	VU	97-98	5.0	V8	GM-MPI	9M107N
Frontera UES	X22SE	99-01	2.2	4	GM-MPI	9M141N
Monaro	VF	2002-	5.7	V8	GM-MPI	9M141N
Rodeo TF	C22NE	99-02	2.2	4	GM-MPI	9M141N
Statesman	VF	99-	5.7	V8	GM-MPI	9M141N
Statesman/Caprice VQ	VH	90-92	3.8	V6	GM-MPI	9M107N
Statesman/Caprice VQ	VU	90-92	5.0	V8	GM-MPI	9M107N
Statesman/Caprice VQ II	VH	92-94	3.8	V6	GM-MPI	9M107N
Statesman/Caprice VQ II	VU	92-94	5.0	V8	GM-MPI	9M107N
Statesman/Caprice VR	VH	94-95	3.8	V6	GM-MPI	9M107N
Statesman/Caprice VR	VU	94-95	5.0	V8	GM-MPI	9M107N
Statesman/Caprice VS	VH	95-96	3.8	V6	GM-MPI	9M107N
Statesman/Caprice VS	VU	95-96	5.0	V8	GM-MPI	9M107N

Manifold Absolute Pressure Sensors (MAP)

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH Continued						
Statesman/Caprice VS Series II+III	VH	96-99	3.8	V6	GM-MPI	9M107N
Statesman/Caprice VS Series II+III	VU	99-99	5.0	V8	GM-MPI	9M107N
Zaffira TT	Z22SE	2001-	2.2	4	GM-MPI	9M141N
Honda						
Accord EXI	F22A9	89-93	2.2	4	PGM-FI	9M130N
Accord (4WS)	F22A9	89-93	2.2	4	PGM-FI	9M130N
Accord CEI VTEC	F22B	94-97	2.2	4	PGM-FI	9M134N
Accord VTI	F23A	97-	2.3	4	PGM-FI	9M133N
Accord VTEC	J30A1	97-	3.0	V6	PGM-FI	9M133N
Civic	D16A	92-95	1.6	4	PGM-FI	9M134N
Civic EH Series	D16A	91-93	1.6	4	PGM-FI	9M140N
Concerto	D16Z	98.93	1.6	4	PGM-FI	9M127N
CRX	D16A	87-92	1.6	4	PGM-FI	9M127N
CRX	D16A	92-98	1.6	4	PGM-FI	9M132N
Integra	B18A1	86-89	1.6	4	PGM-FI	9M139N
Integra	B18A1	89-93	1.8	4	PGM-FI	9M130N
Integra (DC4 Series)	B18B2	93-	1.8	4	PGM-FI	9M132N
Integra VTI	B18C2	93-	1.8	4	PGM-FI	9M132N
Legend	C32A3	91-96	3.2	V6	PGM-FI	9M130N
Legend	C35A3	96-	3.5	V6	PGM-FI	9M138N
Odyssey	F22B3	95-97	2.2	4	PGM-FI	9M132N
Odyssey	F23A1	98-	2.3	4	PGM-FI	9M132N
Prelude	B20A	88-91	2.0	4	PGM-FI	9M127N
Hyundai						
Excel X2	G4DJ	90-95	1.5	4	MPI	9M112N
Excel X3 DOHC	G4FK (Alpha)	97-	1.5	4	MPI	9M128N
Lantra J2	G4GM (Beta)	95-	1.8	4	MPI	9M112N
Sonata EF (Sirius II)	G4JP	98-	2.0	4	MPI	9M112N
Nissan						
Pulsar N13	16LF	87-91	1.6	4	GM-MPI	9M111N
Pulsar N13	18LF	87-91	1.8	4	GM-MPI	9M111N
Toyota						
Hi-Ace SBV RCH12	2RZE	96-00	2.4	4	Toyota-L/MPI	9M125N
Corolla AE111	4AFE	98-99	1.6	4	Toyota-L/MPI	9M122N
Corolla AE112	7AFE	98-99	1.8	4	Toyota-L/MPI	9M122N
Corolla AE82 (Twin Cam)	4AGELC	86-88	1.6		Toyota-L/MPI	9M119N
Celica ST184	5SFE	89-93	2.2	4	Toyota-L/MPI	9M122N
Landcruiser FZ100	IFZFE	98-99	4.5	6	Toyota-JECS	9M122N
Landcruiser FZJ78	IFZFE	99-	4.5	6	Toyota-JECS	9M122N
MR 2 SW20	3SGE	89-99	2.0	4	Toyota-JECS	9M123N
Tarago TR 10	2TZFE	96-99	2.4	4	Toyota-JECS	9M124N
Tarago TR 20	2TZFE	96-99	2.4	4	Toyota-JECS	9M124N
Lexcen VN GLX	VH	89-91	3.8	V6	GM-MPI	9M107N
Lexcen VP CSI	VH	91-93	3.8	V6	GM-MPI	9M107N
Lexcen VR Newport	VH	93-94	3.8	V6	GM-MPI	9M107N
Lexcen VR T4 (Ecotec)	VH	95-97	3.8	V6	GM-MPI	9M107N

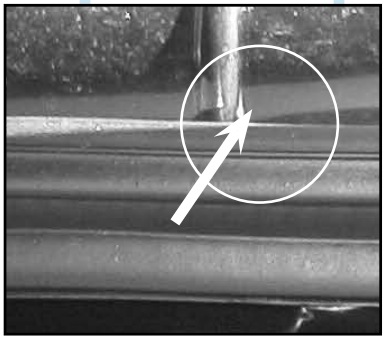
Manifold Absolute Pressure Sensors (MAP)

ACA

MAP Sensors

To Test (MAP Sensors)

1.Check that the vacuum hose (where used) is securely connected to both the sensor and the engine. Also make sure that the hose is not deteriorated, cracked or blocked.
2.Most sensors run a 5 volt supply from the ECU to the sensor. Disconnect the wiring from the MAP sensor, switch the ignition On and check that one of the terminals has got 5 volts. If not, check the wiring back to the ECU, and the ECU power supply and earth circuits. If no fault can be found, a problem with the ECU is indicated.
3.While the wiring is still disconnected from the MAP sensor, switch the ignition off and check for continuity to earth at one of the other wires. These earth wires are generally from the engine ECU, so as in step 2, if there is a bad earth, trace the wiring back to the ECU and check the ECU power supply and earth circuits. If no fault can be found, a problem with the ECU is indicated.
4.Connect the wiring to the MAP sensor and start the engine. Backprobe the only wire left with a digital multimeter. This will be your signal wire to the ECU.
Check the voltage at the wire with the engine idling. Most models should show around 1-2 volts at idle and up to 4-5 volts with the throttle open.
Some models may not show a voltage on this circuit. In this case, switch the multimeter to AC Hz and check the frequencies being shown on the multimeter.
The main thing to look for is that there is a steady increase in voltage or a steady change in Hz as the engine speed is increased. Also ensure that at no time during the test the meter reads 0 volts or 0 Hz. This can indicate an intermittent open circuit within the sensor, rendering it faulty.
Renew the MAP sensor if necessary.



The manifold absolute pressure (MAP) sensor is usually located on the firewall, but can also be mounted to the inlet manifold or suspension tower. Check the condition of the vacuum hose for cracks and deterioration.

Component Identification Glossary

Part No. 9M106N

FORD

Part No. 9M107N

GMH/TOYOTA

Part No. 9M108N

FORD

Part No. 9M109N

GMH

Part No. 9M110N

FORD

Part No. 9M111N

GMH/NISSAN

Part No. 9M112N

HYUNDAI

Part No. 9M113N

2 BAR SENSOR
UNIVERSAL PERFORMANCE
APPLICATION

Part No. 9M114N

3 BAR SENSOR
UNIVERSAL PERFORMANCE
APPLICATION

Part No. 9M115N

FORD

Manifold Absolute Pressure Sensors (MAP)

ACA

Product Illustration Guide

Part No. 9M118N

FORD

Part No. 9M119N

TOYOTA

Part No. 9M122N

TOYOTA

Part No. 9M123N

TOYOTA

Part No. 9M124N

TOYOTA

Part No. 9M125N

TOYOTA

Part No. 9M127N

HONDA

Part No. 9M128N

HYUNDAI

Part No. 9M130N

HONDA

Part No. 9M132N

HONDA

Part No. 9M133N

HONDA

Part No. 9M134N

HONDA

Part No. 9M138N

HONDA

Part No. 9M139N

HONDA

Part No. 9M140N

HONDA

Part No. 9M141N

GMH

Manifold Absolute Pressure Sensors (MAP)

Product Illustration Guide

Part No. 9M141NN

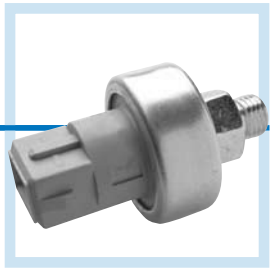
GMH

Part No. 9M145N

GMH

NOTES

Power Steering Pressure Switch



Function: The power steering pressure switch provides the ECU with information on steering load. It is a simple on/off switch, activated by changes in the power steering fluid. It can be located on the steering rack, power steering pump or in one of the fluid lines.

Vehicle Application Listing

Make & Model		Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford							
Falcon EA		D/P	88-90	4.0	6	EEC-4	PSI703
Falcon EB-EB II	**(Inc. XR6)**	D/P	91-93	4.0	6	EEC-4	PSI703
Falcon ED	**(Inc. XR6)**	H	93-94	4.0	6	EEC-4	PSI703
Falcon EF-EF II	**(Inc. XR6)**	H	94-96	4.0	6	EEC-4	PSI703
Falcon EL	**(Inc. XR6)**	-	96-98	4.0	6	EEC-5	PSI703
Fairlane NA		D/P	88-91	4.0	6	EEC-4	PSI703
Fairlane NC		P	91-94	4.0	6	EEC-4	PSI703
Fairlane NF		H	95-96	4.0	6	EEC-4	PSI703
Fairlane NL		H	96-99	4.0	6	EEC-5	PSI703
LTD DA		D/P	89-91	4.0	6	EEC-4	PSI703
LTD DC		P	91-94	4.0	6	EEC-4	PSI703
LTD DF		H	95-96	4.0	6	EEC-4	PSI703
LTD DL		H	96-98	4.0	6	EEC-5	PSI703

Power Steering Pressure Switch

1.Disconnect the wiring from the pressure switch and check that 12 volts is available between the wiring harness terminals with the ignition On.

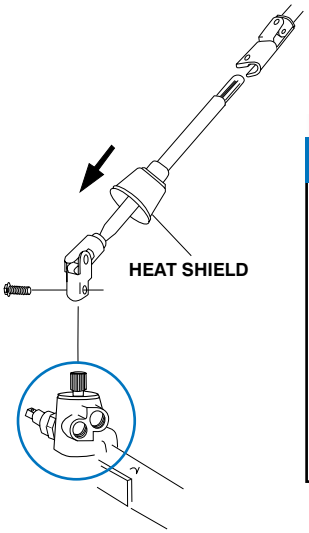
2.If the voltage is not correct, check the wiring between the pressure switch and the ECU for continuity and shorts. Also check the ECU power supply and earth circuits. If no fault can be found, renew the ECU.

3.With the engine idling, measure the resistance between the pressure switch terminals. When the steering wheel is stationary, the maximum resistance should be 25 ohms. When the steering wheel is turning, an open circuit should be indicated.

To Check

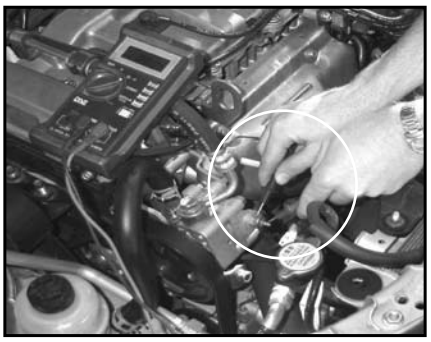
1.Disconnect the wiring from the power steering pressure switch.
2.Measure the resistance across the power steering pressure switch with the engine running and the steering wheel stationary. Note whether the reading is open circuit or closed circuit.
3.As the steering wheel is turned and steering load is applied, the switch should be activated. Check whether this has occurred by noting whether the reading has changed from that noted in step 2. Note that this test should be done with the road wheels on the ground to put load on the power steering system.
4.Check that power is available at the sensor wiring harness with the ignition On. Check the circuit between the ECU and the power steering switch.

Check the continuity of the power steering pressure switch
The switch can be located on the pump, steering rack or in the fluid line.



Part No. PS1703

FORD



Throttle Position Sensors (TPS)

Function: This unit is commonly mounted on the throttle body and is actuated by the throttle shaft. It monitors idle and full load position and relays an electronic signal to the electronic control unit (ECU) depending on what position it is in. It has one set of contacts for idle position and an additional set for full load. This unit plays a major role in overrun, fuel shut-off and idle speed control functions. This full load can action acceleration enrichment and additional fuel under full throttle.

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Ford						
Falcon XF	-	84-88	4.1	6	EEC-4	TPS011
Falcon EA (3 Speed) CFI	D	88-89	3.9	6	EEC-4	TPS010
Falcon EA (3 Speed) M.P.I	P	88-89	3.9	6	EEC-4	TPS013
Falcon EA-EB (Inner) (4 Speed)	P TRANS	89-92	3.9	6	EEC-4	TPS012
Falcon EA-EB (Outer) (4 Speed)	P ENG	89-92	3.9	6	EEC-4	TPS015
Falcon EB II - AU1 (Inc. XR6)	P/H	92-00	4.0	6	EEC-4	TPS014
Falcon EB-EL (Upper) (Inc. XR8)	Z ENG	92-98	5.0	8	EEC-4/5	TPS019
Falcon EB-EL (Lower) (Inc. XR8)	Z TRANS	92-98	5.0	8	EEC-4/5	TPS016
Falcon AU (Inc. XR8)	X	98-	5.0	8	EEC-5	TPS018
Falcon AU Series II+III	-	3/2000 on	4.0	6	EEC-5	TPS050
Fairlane Series II+III	-	3/2000 on	4.0	6	EEC-5	TPS050
Fairlane ZL	-	84-88	4.1	6	EEC-4	TPS011
Fairlane NA (3 Speed) CFI	D	88-89	3.9	6	EEC-4	TPS010
Fairlane NA (3 Speed) M.P.I	P	88-89	3.9	6	EEC-4	TPS013
Fairlane NA-NC (Inner) (4 Speed)	P	89-92	3.9	6	EEC-4	TPS012
Fairlane NA-NC (Outer) (4 Speed)	P	89-92	3.9	6	EEC-4	TPS015
Fairlane NC II+NU	P/H	92-	4.0	6	EEC-4	TPS014
Fairlane NC-NF (Upper)	Z	92-98	5.0	8	EEC-4/5	TPS019
Fairlane NC-NF (Lower)	Z	92-98	5.0	8	EEC-4/5	TPS016
Fairlane NU	X	98-	5.0	8	EEC-5	TPS018
LTD Series II+III	-	3/2000 on	4.0	6	EEC-5	TPS050
LTD FE	-	84-88	4.1	6	EEC-4	TPS011
LTD DA (3 Speed) CFI	D	88-89	3.9	6	EEC-4	TPS010
LTD DA (3 Speed) M.P.I	P	88-89	3.9	6	EEC-4	TPS013
LTD DA-DC (Inner) (4 Speed)	P	89-92	3.9	6	EEC-4	TPS012
LTD DA-DC (Outer) (4 Speed)	P	89-92	3.9	6	EEC-4	TPS015
LTD DC II+DU	P/H	92-	4.0	6	EEC-4/5	TPS014
LTD DC-DL (Upper)	Z	92-98	5.0	8	EEC-4/5	TPS019
LTD DC-DL (Lower)	Z	92-98	5.0	8	EEC-4/5	TPS016
LTD DU	X	98-	5.0	8	EEC-5	TPS018
All F Series	T	85-87	5.0	8	EEC-4	TPS017
All F Series	T	87-92	5.0	8	EEC-4	TPS020
GMH						
Astra LD	16LF	87-89	1.6	4	GM-MPI	TPS025
Astra LD	18LF	87-89	1.8	4	GM-MPI	TPS022
Astra TR	C16SEO	9/96-8/98	1.6L	4	MPI	TPS055
Astra TR	C18SEL	9/96-8/98	1.8L	4	MPI	TPS057
Astra TR	X20XEV	9/96-8/98	2.0L	4	MPI	TPS057
Apollo JM	5SFE	10/94-	2.2	4	TCCS	TPS024
Apollo JP	5SFE	10/94-	2.2	4	TCCS	TPS024
Barina SB	C12NZ	94-	1.2	4	GM-TBI	TPS023
Barina SB	C14NZ	94-	1.4	4	GM-TBI	TPS023

Throttle Position Sensors (TPS)

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
GMH						
Barina SB (DOHC)	C16XE	94-	1.6	4	GM	TPS021
Barina SB	C14SE	96-	1.4	4	GM	TPS022
Barina SB w/MPI	C14SE	97-01	1.4L	4	MPI	TPS055
Barina SB w/MPI	C16XE	4/94-12/95	1.6L	4	MPI	TPS055
Barina SB w/MPI	X16XE	12/95-8/98	1.6L	4	MPI	TPS055
Barina TK	F16D3	12/05 on	1.6L	4	MPI	TPS059
Barina SB w/TBI	C12NZ	94-00	1.2L	4	MPI	TPS023 / TPS025
Barina SB w/TBI	C14NZ	94-00	1.4L	4	MPI	TPS023 / TPS025
Caprice/Statesman/WH	VF	01-	5.7	V8	GM-MPI	TPS049
Commodore VL (Auto)	RB30E	86-89	3.0	6	EECS	TPS030
Commodore VL (Man)	RB30E	86-89	3.0	6	ECCS	TPS031
Commodore VL Group A SS	VJ	88-89	5.0	V8	GM-MPI	TPS011
Commodore VN	VH	88-90	3.8	V6	GM-MPI	TPS023
Commodore VN SV89	VU	89-90	5.0	V8	GM-MPI	TPS023
Commodore VN (Club Sport)	VU	90-91	5.0	V8	GM-MPI	TPS011
Commodore VN SV 5000	VU	89-90	5.0	V8	GM-MPI	TPS011
Commodore VP	VH	91-93	3.8	V6	GM-MPI	TPS023
Commodore VP	VU	91-93	5.0	V8	GM-MPI	TPS023
Statesman/Caprice VQ Series I	VU	90-92	5-0	V8	GM-MPI	TPS023
Statesman/Caprice VQ	VH	90-92	3.8	V6	GM-MPI	TPS023
Commodore VR (Police Pack) Auto	VH	93-95	3.8	V6	GM-MPI	TPS023
Commodore VR (Police Pack) 180KW (Auto)	VU	93-95	5.0	V8	GM-MPI	TPS023
Commodore VR (Auto)	VH	93-95	3.8	V6	GM-MPI	TPS023
Commodore VR (Manual)	VH	93-95	3.8	V6	GM-MPI	TPS023
Commodore/Statesman VR 180KW (Auto)	VU	93-95	5.0	V8	GM-MPI	TPS023
Commodore/Statesman VR 180KW (Man)	VU	93-95	5.0	V8	GM-MPI	TPS023
Commodore VS High Perf opt. (Police Pack) Auto	VU	95-	5.0	V8	GM-MPI	TPS023
Commodore VS HSV	VU	96-	5.7	V8	GM-MPI	TPS023
Commodore/Statesman VS	VH	95-	3.8	V6	GM-MPI	TPS021
Commodore/Statesman VS High Perf (Auto)	VU	95-	5.0	V8	GM-MPI	TPS023
Commodore/Statesman VS High Perf (Man)	VU	95-	5.0	V8	GM-MPI	TPS023
Commodore VT	VH	97-	3.8	V6	GM-MPI	TPS021
Commodore VT (Supercharged)	VH	97-	3.8	V6	GM-MPI	TPS021
Commodore VT	VU	97-	5.0	V8	GM-MPI	TPS023
Commodore VT	VF	99-01	5.7	V8	GM-MPI	TPS049
Commodore VX	VF	01-	5.7	V8	GM-MPI	TPS049
Commodore VX II	VF	02-	5.7	V8	GM-MPI	TPS049
VG/VP Utility (Man)	VH	90-93	3.8	V6	GM-MPI	TPS023
VG/VP Utility (Auto)	VU	90-93	5.0	V8	GM-MPI	TPS023
VR Utility (Man)	VH	93-95	3.8	V6	GM-MPI	TPS023
VR Utility (Auto)	VH	93-95	3.8	V6	GM-MPI	TPS023
VR Utility (Man)	VU	93-95	5.0	V8	GM-MPI	TPS023
VR Utility (Auto)	VU	93-95	5.0	V8	GM-MPI	TPS023
VS Utility Auto	VH	95-	3.8	V6	GM-MPI	TPS021
VU Utility	VF	02-	5.7	V8	GM-MPI	TPS049
Vectra JR	C20SEL	6/97-98	2.0L	4	MPI	TPS057
Vectra JR	X25XE	6/97-98	2.5L	V6	MPI	TPS057
Vectra JS	C20SEL	8/98-01	2.0L	4	MPI	TPS057
Vectra JS,JS Ser.II	C22SEL	8/98-2/03	2.2L	4	MPI	TPS057
Vectra JS	X25XE	8/98-01	2.5L	V6	MPI	TPS057

Throttle Position Sensors (TPS)

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Hyundai						
Accent	-	99-	1.5/1.6	4	MPI	TPS051
Excel X3 SOHC	G4EK	94-00	1.5	4	MPI	TPS036
Excel X3 DOHC	G4FK	94-00	1.5	4	MPI	TPS036
Sonata	G4CS	89-90	2.4	4	MPI	TPS035
Sonata SOHC	G6AT	96-98	3.0	V6	MPI	TPS037
Sonata	4GCS	90-93	2.4	4	MPI	TPS038
Sonata EF	G4JS	99-01	2.0	4	MPI	TPS052
Sonata EF	G6BA	98-	2.5/2.7	V6	MPI	TPS053
Mitsubishi						
Challenger	6G72	97-00	3.0	V6	ECI	TPS046
Challenger PA (with cruise cont.)	6G72	00-01	3.0	V6	ECI	TPS046
Challenger PA	6G72	01-	3.0	V6	ECI	TPS047
Galant HH DOHC	4G63	6/90-4/91	2.0	4	ECI	TPS045
Galant HH VR4 Turbo	4G63	6/90-4/91	2.0	4	ECI	TPS045
Galant HJ	4G63	8/93-5/96	2.0	4	ECI	TPS044
Lancer CA-CB	4G15	1/89-5/90	1.5	4	ECI	TPS039
Lancer CA-CB-CC Hatch	4G15	6/89-5/90	1.5	4	ECI	TPS039
Lancer CC-CE Wagon	4G93	8/93-	1.8	4	ECI	TPS044
Lancer CC Hatch	4G93	8/93-4/96	1.8	4	ECI	TPS044
Lancer CC Sedan	4G93	8/93-4/96	1.8	4	ECI	TPS044
Lancer CC Hatch	4G92	6/90-4/91	1.6	4	ECI	TPS045
Lancer CA-CB	4G15	6/90-4/91	1.5	4	ECI	TPS045
Lancer CB GSR	4G16	6/90-4/91	1.6	4	ECI	TPS045
Magna TR-TS	Y721	91-97	3.0	V6	ECI	TPS048
Magna TR	W531	91-94	2.6	4	ECI	TPS048
Magna TH-TJ	6G72	99-	3.0	V6	ECI	TPS046
Magna TH-TJ	6G74	99-	3.5	V6	ECI	TPS046
Nimbus UF	4G64	92-98	2.4	4	ECI	TPS040
Pajero NF-NK	6G72	89-97	3.0	V6	ECI	TPS040
Triton ME-MJ	6G72	90-96	3.0	V6	ECI	TPS040
Verada KR	6G72	91-94	3.0	V6	ECI	TPS048
Verada KS	6G72	94-97	3.0	V6	ECI	TPS048
Verada KH KJ	6G74	99-	3.5	V6	ECI	TPS043
Nissan						
Skyline (Man)	RB30	86-90	3.0	6	ECCS	TPS026
Skyline (Auto)	RB30	86-87	3.0	6	ECCS	TPS029
Skyline (Auto)	RB30	88-91	3.0	6	ECCS	TPS029
Pulsar N13	16LF	87-91	1.6	4	GM-MPI	TPS027
Pulsar N13	18LF	87-91	1.8	4	GM-MPI	TPS022

Throttle Position Sensors (TPS)

ACA

Vehicle Application Listing

Make & Model	Engine Code	Year	Engine Size	No.of Cyl	System	ACA
Toyota						
Camry SV11	2SELC	83-89	2.0	4	TOYOTA L/PFI	TPS033
Camry SV21	3SFE	87-92	2.0	4	TOYOTA L/PFI	TPS033
Camry SDV10	5SFE	94-95	2.2	4	TOYOTA L/PFI	TPS028
Camry SXV10	5SFE	95-97	2.2	4	TOYOTA L/PFI	TPS028
Celica SV11	3SFE	86-89	2.0	4	TOYOTA L/PFI	TPS033
Celica ST 184	5SFE	91-93	2.2	4	TOYOTA L/PFI	TPS032
Celica ST 20#	5SFE	93-99	2.2	4	TOYOTA L/PFI	TPS032
Corolla AE95	4AFE	88-95	1.6	4	TOYOTA L/PFI	TPS033
Corolla AE112	7AFE	97-99	1.8	4	TOYOTA L/PFI	TPS028
Corolla AE10#	4AFE	94-99	1.6	4	TOYOTA L/PFI	TPS028
Corolla AE10#	7AFE	94-99	1.8	4	TOYOTA L/PFI	TPS028
Corolla AE 102	7AFE	94-96	1.8	4	TOYOTA L/PFI	TPS028
Corolla AE93	7AFE	92-94	1.8	4	TOYOTA L/PFI	TPS028
Hi-Ace RZHI	2RZ	98-99	2.4	4	TOYOTA L/PFI	TPS032
Hi-Lux KZN165	IKZTE	99-	3.0TD	4	TOYOTA-JEC5	TPS032
Landcruiser FZJ7	IFZFE	92-99	4.5	6	TOYOTA-JEC5	TPS028
Landcruiser FZJ80	IFZFE	92-99	4.5	6	TOYOTA-JEC5	TPS028
Lexcen VN GLX	VH	89-91	3.8	V6	GM-MPI	TPS023
Lexcen VP CSL	VH	91-93	3.8	V6	GM-MPI	TPS023
Lexcen VR VXI	VH	93-95	3.8	V6	GM-MPI	TPS023
Lexcen VR T4	(ECOTEC)	95-97	3.8	V6	GM-MPI	TPS023
MR 2 SW 20	3SGE	89-92	2.0	4	TOYOTA L/PFI	TPS033
MR 2 SW 20	3SGE	93-99	2.0	4	TOYOTA-JEC5	TPS032
Paseo EL54	5EFE	95-96	1.5	4	TOYOTA L/PFI	TPS034
Paseo EL44	5EFE	91-95	1.5	4	TOYOTA L/PFI	TPS034
Rav 4	3S	94-97	2.0	4	TOYOTA L/PFI	TPS032
Tarago TCRI	2TZFE	-	-	-	TOYOTA L/PFI	TPS032
Tarago TCR2	2TZFE	94-96	2.4	4	TOYOTA L/PFI	TPS032

Throttle Position Sensor (TPS)

The throttle position sensor is a potentiometer that measures in volts the amount the throttle plate is open. Most sensors have three wires. Two wires supply 5 volts and earth to the resistor coil within the sensor. The third wire is a pickup wire that moves along the coil as the throttle plate is moved. This wire takes the voltage from the resistor coil and sends it back to the ECU. At idle the resistance is high, so the voltage will be low; usually around 0.5 volt. As the throttle moves to full throttle, the voltage will increase to around 4.5 volts. Some sensors have a fourth wire which is an idle switch that closes a circuit and sends a signal to the ECU when the throttle plate is closed. It is important that the sensor is correctly adjusted to ensure the TPS is working correctly.

To Test

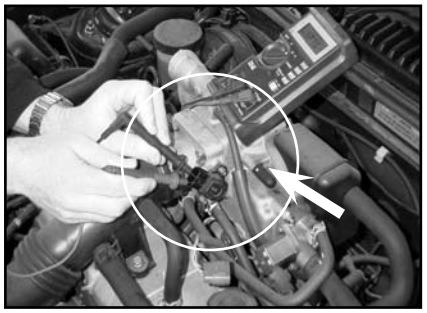
1.Disconnect the wiring from the TPS and check that one of the wires has a 5 volt power supply. If there is no voltage, check the wiring back to the ECU and the ECU power supply and earth circuits. If no fault can be found, a problem with the ECU is indicated.

2.Also check that there is continuity to earth at another one of the wires. As in step 1, if there is not, check the wiring back to the ECU and the ECU power supply and earth circuits. If no fault can be found, a problem with the ECU is indicated.

3.In steps 1 and 2, we have established which wires are the sensor power supply and earth circuits. With an ohmmeter, check the resistance between the corresponding terminals on the sensor. There should be a resistance. If there is an open circuit, the sensor is faulty and should be renewed.

4.Check the resistance between one of the terminals from step 3 and the third terminal. The resistance should alter as the throttle is moved. The main thing to check for is that there is a smooth transition in resistance as the throttle is opened and that there is no intermittent open circuits. Renew the sensor if necessary.

5.On models with an idle switch in the sensor (4 terminals), check that there is continuity between the idle terminal and the 5 volt power supply terminal, when the throttle is closed.



Test the resistance of the throttle position sensor.

Throttle Position Sensors (TPS)

Product Illustration Guide

Part No. TPS010

FORD

Part No. TPS011

GMH/FORD

Part No. TPS012

FORD

Part No. TPS013

FORD

Part No. TPS014

FORD

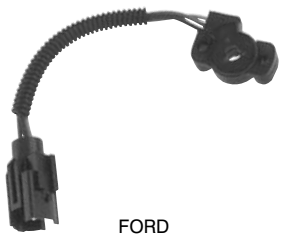
Part No. TPS015

FORD

Part No. TPS016

FORD

Part No. TPS017



FORD

Part No. TPS018

FORD

Part No. TPS019

FORD

Part No. TPS020

FORD

Part No. TPS021

GMH

Part No. TPS022

GMH/NISSAN

Part No. TPS023

GMH/TOYOTA

Part No. TPS024

GMH

Part No. TPS025

GMH

Throttle Position Sensors (TPS)

ACA

Product Illustration Guide

Part No. TPS026

NISSAN

Part No. TPS027

NISSAN

Part No. TPS028

TOYOTA

Part No. TPS029

NISSAN

Part No. TPS030

GMH

Part No. TPS031

GMH

Part No. TPS032

TOYOTA

Part No. TPS033

TOYOTA

Part No. TPS034

TOYOTA

Part No. TPS035

HYUNDAI

Part No. TPS036

HYUNDAI

Part No. TPS037

HYUNDAI

Part No. TPS038

HYUNDAI

Part No. TPS039

MITSUBISHI

Part No. TPS040

MITSUBISHI

Part No. TPS043

MITSUBISHI

Throttle Position Sensors (TPS)

Product Illustration Guide

Part No. TPS044

MITSUBISHI

Part No. TPS045

MITSUBISHI

Part No. TPS046

MITSUBISHI

Part No. TPS047

MITSUBISHI

Part No. TPS048

MITSUBISHI

Part No. TPS049

GMH

Part No. TPS050

FORD

Part No. TPS051

HYUNDAI

Part No. TPS052

HYUNDAI

Part No. TPS053

HYUNDAI

Part No. TPS055

GMH

Part No. TPS057

GMH

Part No. TPS059

GMH

Air Temperature Sensors

Part Number	Vehicle Make	Page Number
AT301	FORD	7, 8
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AT303	FORD	7
AT305	GMH/NISSAN/TOYOTA	8, 9
AT306	HYUNDAI	9
AT307	HONDA	9
AT309	HYUNDAI	9
AT310	HONDA	9
AT313	FORD	7
AT314	FORD	7
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AT316	FORD	7
AT317	FORD	7
AT318	FORD	7
AT319	FORD	7
AT321	FORD	7
AT323	GMH	8
AT324	GMH	8

Coolant Temperature Sensors

Part Number	Vehicle Make	Page Number
CS820	SUBARU	16
CS821	HONDA	13, 14
CS822	FORD	12
CS823	MITSUBISHI	15
CS824	TOYOTA/GMH	13, 18
CS826	FORD/GMH/HYUNDAI/MITSUBISHI/TOYOTA	12-15, 18
CS827	HYUNDAI/MITSUBISHI	14, 15
CS828	SUZUKI	16
CS829	HONDA	13
CS830	NISSAN	16
CS831	FORD	12
CS833	FORD/GMH/MAZDA/NISSAN	12, 14, 16
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CS836	DAIHATSU	11
CS837	FORD/MAZDA	11, 14
CS838	HYUNDAI/MITSUBISHI	14, 15
CS839	AUDI/VW	11, 18
CS840	EUNOS//FORD/GMH MAZDA/SUZUKI/TOYOTA	11-14, 16-18
CS841	DAEWOO	11
CS843	GMH	13
CS844	FORD/MAZDA	12, 14
CS845	FORD	12
CS847	FORD	12
CS848	FORD	11
CS849	FORD	12
CS851	GMH	13
CS852	GMH	13
CS853	GMH	13
CS854	HYUNDAI	14

Idle Air Control Valves

Part Number	Vehicle Make	Page Number
IAC400	GMH	38
IAC401	GMH/NISSAN	38, 40
IAC402	HYUNDAI	38-39
IAC403	GMH	38
IAC404	TOYOTA	40
IAC405	GMH/NISSAN	38. 40
IAC406	TOYOTA	40
IAC407	GMH/TOYOTA	38, 40
IAC408N	HYUNDAI (4 CYL)	38-39
IAC409	GMH	38
IAC410	GMH	38
IAC411	HYUNDAI	38
IAC412	TOYOTA	40
IAC414	MITSUBISHI	39
IAC415	NISSAN	40
IAC416N	MITSUBISHI (4 CYL)	39
IAC417	TOYOTA	40
IAC418	GMH	38
IAC419N	MITSUBISHI (6 CYL)	39
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IAC424	FORD	37
IAC425	FORD	37
IAC426	FORD	37
IAC427	GMH	38
IAC428	FORD	37
IAC429	MITSUBISHI	39
IAC430	MITSUBISHI	39
IAC434	MITSUBISHI	39
IAC435	GMH	38
IAC437	HYUNDAI	39

Knock Sensors

Part Number	Vehicle Make	Page Number
K1507	GMH/TOYOTA	45-46
K1508	FORD	45
K1509	GMH/TOYOTA	45-46
K1510	SUBARU	46
K1511	FORD	45
K1514	GMH	45

Power Steering Pressure Switch

Part Number	Vehicle Make	Page Number
PS1703	FORD	52

Crank Angle Sensors

Part Number	Vehicle Make	Page Number
2CS401NM	GMH/NISSAN	23, 26
2CS402N	GMH	23
2CS403	NISSAN	26
2CS403N	NISSAN	26
2CS404N	NISSAN	26
2CS405N	FORD/NISSAN	21, 26
2CS406	HYUNDAI	24
2CS407N	NISSAN	26
2CS408	HYUNDAI/MITSUBISHI	24-25
2CS408N	HYUNDAI/MITSUBISHI	24
2CS409	NISSAN	26
2CS4010	FORD/MAZDA	21-22, 24
2CS4010N	FORD/MAZDA	21-22, 24
2CS4011	NISSAN	26
2CS4011N	NISSAN	26
2CS4012	MITSUBISHI	25
2CS4012N	MITSUBISHI	25
2CS4013	MITSUBISHI	25
2CS4013N	MITSUBISHI	25
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2CS4014N	FORD/MAZDA	21-22, 24
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2CS4016	HYUNDAI	24
2CS4016N	HYUNDAI/MITSUBISHI	24-25
2CS4017	NISSAN	26
2CS4018	NISSAN	26
2CS4019	HYUNDAI	24
2CS4020N	GMH/TOYOTA	23-27
2CS4020NX	GMH - Picture Illustration Only	-
2CS4021N	GMH/TOYOTA	23, 27
2CS4022N	SUBARU	26
2CS4023N	SUBARU	27
2CS4024N	SUBARU	26-27
2CS4025N	MITSUBISHI - Picture Illustration Only	-
2CS4026	FORD	22
2CS4026N	FORD/MAZDA NZ	22,28
2CS4027	FORD/MAZDA	22, 24
2CS4027N	FORD/MAZDA	22, 24
2CS4028	FORD/MAZDA	22, 24
2CS4028N	FORD/MAZDA	22, 24
2CS4029N	FORD/MAZDA	21-22, 24
2CS4029	FORD/MAZDA	21-22, 24
2CS4030N	NISSAN	26
2CS4031N	MAZDA	24
2CS4032N	MAZDA NZ	28
2CS4033N	MITSUBISHI	25
2CS4034N	NISSAN	26
2CS4035N	Picture Illustration Only	-
2CS4036	MITSUBISHI	25
2CS4036N	MITSUBISHI	25
2CS4037N	Picture Illustration Only	-
2CS4038N	Picture Illustration Only	-
2CS4039	FORD/MAZDA	22, 24
2CS4039N	FORD/MAZDA	22, 24
2CS4040N	FORD/MAZDA/MITSUBISHI	21-22,24, –25-26

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2CS4042	MITSUBISHI	25
2CS4042N	MITSUBISHI	25
2CS4043	MAZDA	24
2CS4043N	MAZDA	24
2CS4044	MITSUBISHI	25
2CS4044N	MITSUBISHI	25
2CS4045N	MAZDA	24
2CS4046N	FORD/MAZDA	22, 24
2CS4047N	FORD	22
2CS4048N	NISSAN	26
2CS4049N	Picture Illustration Only	-
2CS4050	FORD	28
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2CS4051	MITSUBISHI	29
2CS4051N	MITSUBISHI	29
2CS4052N	FORD	22
2CS4053N	FORD	22
2CS4054N	FORD	22
2CS4055N	GMH	23
2CS4056N	GMH/TOYOTA	23, 27
2CS4057N	EUNOS/FORD/MAZDA	21-22, 24
2CS4058N	MITSUBISHI	25
2CS4059N	MITSUBISHI	25
2CS4063N	AUDI	21
2CS4064N	AUDI	21
2CS4066N	BMW	21
2CS4067N	CITROEN	21
2CS4068N	DAEWOO	21
2CS4069N	EUNOS	21
2CS4070N	FORD	22
2CS4071N	GMH	23
2CS4072N	GMH	23
2CS4074N	GMH	23
2CS4075N	GMH	23
2CS4076N	GMH	23
2CS4078N	GMH	23
2CS4079N	GMH	23
2CS4081N	GMH	23
2CS4082N	GMH	23
2CS4084N	GMH	23
2CS4086N	HYUNDAI	24
2CS4089N	HYUNDAI	24
2CS4091N	HYUNDAI	24
2CS4093N	HYUNDAI	24
2CS4094N	MAZDA	24
2CS4095N	MITSUBISHI	25
2CS4097N	PEUGEOT	26
2CS4098N	SUZUKI	27
2CS4099N	VOLVO	27
2CS4101N	VOLVO	27
2CS4102N	FORD	22
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2CS4104N	MITSUBISHI	25
2CS4105N	MITSUBISHI	25
2CS4106N	MITSUBISHI	25
2CS4107N	MITSUBISHI	25

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9M110N	FORD	47
9M111N	GMH/NISSAN	48-49
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9M113N	2BAR HIGH PERF. Picture Illustration Only	50
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9M118N	FORD	47
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9M122N	TOYOTA	49
9M123N	TOYOTA	49
9M124N	TOYOTA	49
9M125N	TOYOTA	49
9M127N	HONDA	49
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9M130N	HONDA	49
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9M133N	HONDA	49
9M134N	HONDA	49
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9M139N	HONDA	49
9M140N	HONDA	49
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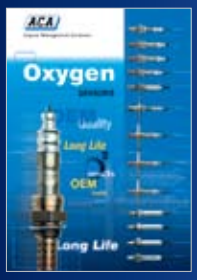

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