Ignition Catalogue

Ignition Coils • Ignition Modules

Crank and Cam Angle Sensors • Pick Up Coils

TRIDON

Electronic ignition products for ultimate reliability!

Tridon Australia Pty Ltd is an Australian owned company and supplies an extensive range of the highest quality products to the automotive, original equipment, industrial and hardware markets in Australia and New Zealand. Quality and customer service are of the utmost importance. Tridon's distribution and manufacturing facility is ISO9001/TS16949 quality accredited and ISO14001 environmentally accredited.

Tridon offers an extensive range of electronic ignition products including Ignition Coils, Ignition Modules, Crank and Cam Angle Sensors and Pick Up Coils to suit Japanese, American, European, Korean and Australian built vehicles.

This catalogue has been carefully researched and compiled to ensure correct product selection and includes:

- **Vehicle Application List** with over 800 part numbers linked to more than 2000 vehicle lines within the Australian vehicle parc.
- **Part Number Identification Guides** with over 800 part numbers including photographs and technical data.
- **Technical Information** including a brief outline for each product type detailing styles, operation and associated technical data.

Tridon Australia Pty Ltd prides itself on delivering the most comprehensive range of products and the highest level of service to its customers.

For further information regarding Tridon products please contact your nearest Tridon stockist or Tridon Customer Service as listed on the back of this catalogue.

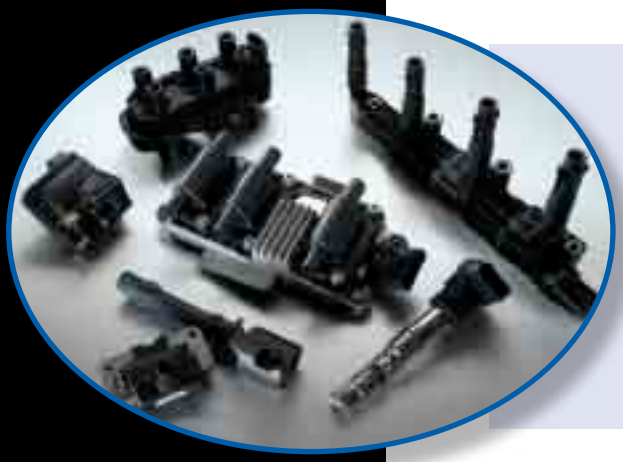
Tridon Guarantee

Tridon products listed in this catalogue are guaranteed to be free of defects in materials and workmanship for the following periods:
Tridon Ignition Coils – 1 year or 20,000km
Tridon Ignition Modules – 2 years or 40,000km
Tridon Crank Angle Sensors – 1 year or 20,000km
Tridon Cam Angle Sensors – 1 year or 20,000km
Tridon Pick Up Coils – 1 year or 20,000km

This guarantee does not apply to:
- Products that have been modified or altered in any way
- Products that have been physically damaged or misused
- Products that have not been fitted in the correct vehicle application
- Products that have been misdiagnosed
- Product failure due to alternate system component failure (e.g. high tension lead failure/fault)

Contents

Product Range



Ignition Coils

The ignition coil's primary function is to transform a low voltage supplied via the vehicle battery into a high voltage required to produce a spark at the vehicle spark plug.

Ignition Modules

The ignition module is designed to control the electronic switching (interruption) of the ignition coil's primary circuit. This enables the ignition coil to produce the output voltage required for production of a spark at the spark plug.

Crank and Cam Angle Sensors

The crank angle sensor is an electronic device that monitors the rotational speed and position of the vehicle crankshaft (pistons) required by the engine management system.
The cam angle sensor, not unlike the crank angle sensor, is an electronic device designed to monitor the rotational speed and position of the vehicle camshaft(s) (valves) required by the engine management system.

Pick Up Coils

The pick up coil (also known as the inductive pick up coil) uses principles of induced voltage to generate an electrical output signal required by the ignition module for the operation of the ignition system.

TRIDON

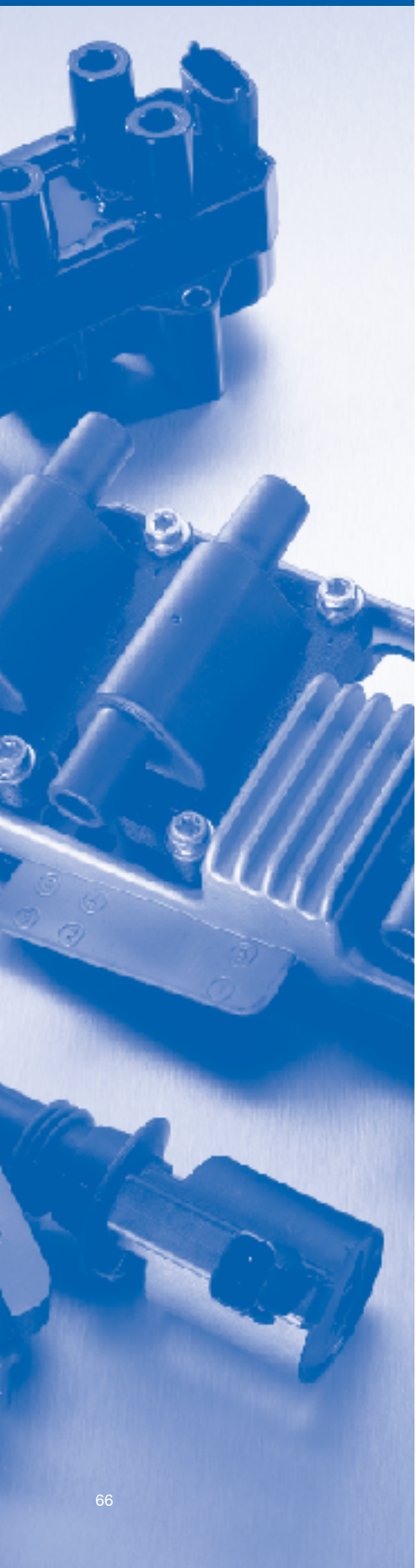
This section has been included to assist with the identification of Tridon's extensive range of ignition coils. Photographs and technical specifications are shown for each Tridon part number.

The Tridon ignition coil range has been developed to operate within original equipment manufacturer's specifications. As the ignition coil must be compatible with the vehicle ignition system, always refer to the vehicle application list to ensure the correct part number is selected.

Ignition Coils

Ignition Coils

Ignition Coils



Function

The ignition coil works on the principle of induced voltage and as such it is a type of induction coil (autotransformer).

An induction coil is designed to transform the low voltage supplied via the vehicle battery into a high voltage required to produce a spark at the vehicle spark plug.

Induction coils are a type of step up transformer and consist of two coils of wire known as the primary and secondary winding wrapped around an iron core.

The primary winding may have several hundred turns of heavy gauge wire, whereas the secondary winding has far more turns (many thousands) of much finer gauge wire.

Induction coils use electromagnetic induction to generate very high voltage from a low voltage source. The final output voltage of the coil is determined by the turns ratio between the primary and secondary windings.

How does the coil work?

During coil operation, DC current flows through the coil's primary winding producing a magnetic field. Electromagnetic induction occurs when the current flow through the primary winding is interrupted. The interruption of the current flow collapses the magnetic field and releases the stored energy in the form of a large voltage pulse across the primary winding. As a result a very high voltage is produced in the secondary winding. This delivers the coil output voltage (or peak voltage up to 50kV) required to produce the spark at the spark plug.

The interruption or switching of the current flow is achieved through mechanical switching, contact breakers (points) or electronically controlled devices such as ignition modules, pick up coils and/or crank angle sensors. These devices are designed to accurately time the operation of the coil to produce the spark when required during the combustion cycle.

For more information on ignition modules, pick up coils or crank angle sensors please refer to section start information.

Testing and Replacement

The ignition coil is an integral part of a vehicle ignition system. A faulty or inoperable ignition coil can result in no spark, difficult starting, misfiring, poor fuel economy and overall poor engine performance.

The ignition coil works in conjunction with many components of a vehicle ignition system. These include mechanical and electronic triggering devices (contact points, ignition module and pick up coil or crank angle sensor), engine management systems and high tension leads. It is important that all of these components are in good working order for the ignition system to operate correctly.

When an ignition coil malfunction or fault is suspected the entire ignition system should be checked with the faults diagnosed and repairs carried out by a trained professional.

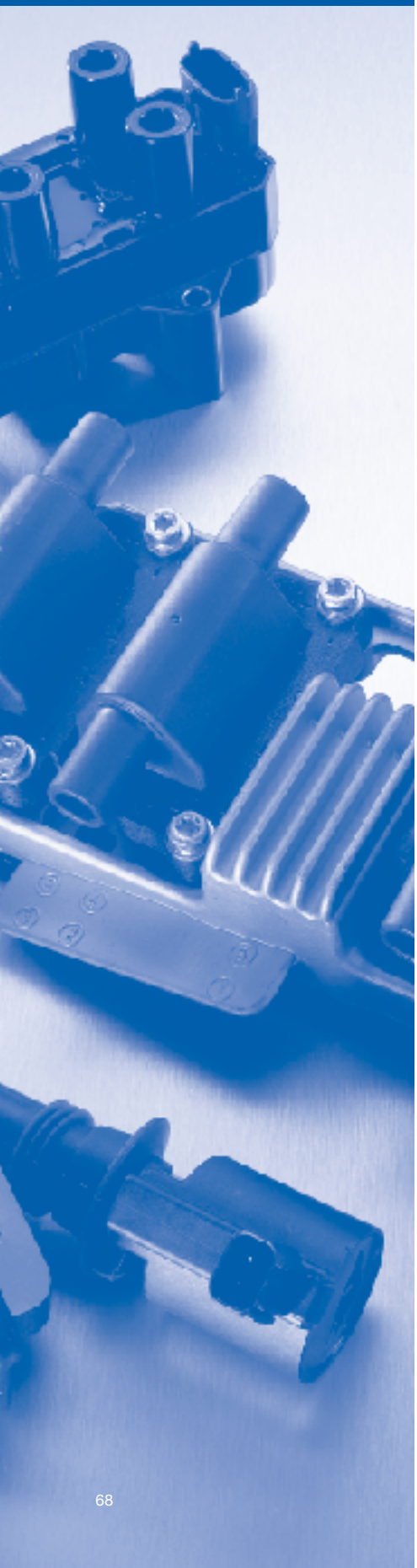
Premature Ignition Coil Failure - Tips on Prevention

Premature ignition coil failure can be caused by damaged high tension leads. Damaged high tension leads increase resistance between the ignition coil and spark plugs. As a result the output requirements of the ignition coil increase leading to premature failure.

It is recommended that high tension leads are replaced at the time of coil replacement. Failure to replace the ignition leads may result in premature failure of the new coil and therefore voiding warranty on the coil.

During installation ensure that the ignition coil is tightened to the correct torque settings (refer to vehicle manufacturer's specifications). Failure to tension to the correct setting may cause the ignition coil to fracture or crack. A failure of this type will void warranty on the coil.

Ignition Coils



Ignition Coil Styles

OIL Oil Filled Coils

- Used in early ignition systems with contact points and electronic controlled distributors.
- In most cases one coil is used to serve all spark plugs.
- Oil filled coils are commonly used in systems with 6V, 12V with ballast resistors and 12V.
- The windings and iron core are immersed in oil for effective cooling of the coil.
- TIC033 and TIC034R can be upgraded to transformer coils (TIC035, TIC036R).

TR Transformer Coils

- Used in early ignition systems with contact points and more modern ignition systems utilising electronic controlled distributors.
- The epoxy filled transformer coil protects coil windings from vibration and temperature. This design supersedes oil filled style coils.
- In most cases one coil is used to serve all spark plugs.
- In more modern applications one coil may be used to serve two spark plugs (waste spark).
- The iron core is an integral part of the design and is used in the mounting of the coil.

PAC Coil Pack

- Used in distributor-less ignition systems (DIS) with electronically controlled operation.
- One coil is used to serve two spark plugs.
- Each coil fires twice in each combustion cycle, often called “waste spark” ignition systems.
- The waste spark system is more reliable than a single coil system with a distributor. It is also more cost effective than coil-on-plug.
- Coils may all be contained in a single moulded block with multiple high-tension terminals or individually mounted to form a coil pack.
- Coil packs may also incorporate an ignition module, known as a **Coil and Module Assembly**.

INT Internal Coils

- Used in more modern ignition systems utilising electronic controlled distributors.
- The coil is incorporated into the internal design of the distributor.
- In most cases one coil is used to serve all spark plugs.
- The iron core is an integral part of the design and is used in the mounting of the coil.

CAS Cassette Assembly

- Used in distributor-less ignition systems (DIS) with electronically controlled operation.
- Individual coils are contained in a single moulded block to form a coil cassette assembly.
- Located directly on top of each spark plug eliminating the need for high tension leads.
- Enables finer levels of ignition control especially secondary voltages and increases in power output, thereby decreasing fuel consumption and emissions.

COP Coil on Plug

- Used in distributor-less ignition systems (DIS) with electronically controlled operation.
- In most cases one coil is used to serve one spark plug directly.
- Located very near to or directly on top of each spark plug eliminating the need for high tension leads.
- In some applications one coil is used to serve two spark plugs, one directly and one via high tension lead (waste spark)
- Enables finer levels of ignition control especially secondary voltages and increases in power output, thereby decreasing fuel consumption and emissions.

Note: Some ignition coils may look alike but are not interchangeable, refer to notes provided to enable correct identification and installation of these part numbers.

TRIDON

This section has been included to assist with the identification of Tridon's extensive range of ignition modules. Photographs and technical specifications are shown for each Tridon part number.

The Tridon ignition module range has been developed to operate within original equipment manufacturer's specifications. As ignition modules must be compatible with the vehicle ignition system, always refer to the vehicle application list to ensure the correct part number is selected.

Ignition Modules

Ignition Modules

Ignition Modules

Function

The ignition module is the electronic control unit for the ignition system and is designed to electronically switch (interrupt) the primary circuit of the ignition coil. This enables the ignition coil to produce the output voltage required for the production of a spark at the spark plug.

During operation the ignition module processes input voltage signals from a pulse generator such as an inductive pick up, Hall Effect or optical sensor, or through the ECU and delivers an amplified output voltage to the ignition coil.

Input signals from the pulse generator provide the ignition module with actual engine speed (RPM). This enables the ignition module to deliver changes in dwell time as required, delivering more accurate spark timing across the entire engine speed range.

In addition to switching, the ignition module also limits current to the ignition coil to prevent overheating and performance loss caused by excessive temperature. The ignition module is normally located inside or close to the distributor, mounted inside the engine bay, or for distributor-less ignition systems on the underside of the coil(s). In more modern applications, the ignition module may also be incorporated inside the coil assembly known as a **Coil and Module Assembly**.

Testing and Replacement

The ignition module is an integral part of a vehicle ignition system. A faulty or inoperable ignition module can result in no spark, difficult starting, misfiring, poor fuel economy and overall poor engine performance.

The ignition module works in conjunction with many components of a vehicle ignition system. These include electronic triggering devices (inductive pick ups or crank angle sensors), ignition coils, engine management systems and high tension leads. It is important that all of these components are in good working order for the ignition system to operate correctly.

When an ignition module malfunction or fault is suspected the entire ignition system should be checked, faults diagnosed and repairs carried out by a trained professional. Failure to correctly diagnose an ignition system fault may lead to premature failure of the new ignition module and therefore voiding the warranty of the ignition module.

Heat sink compound is included with the some Tridon ignition module part numbers. The heat sink compound ensures maximum heat transfer between the ignition module and the heat sink. Failure to use the heat sink compound may result in damage to the module due to excessive temperatures.

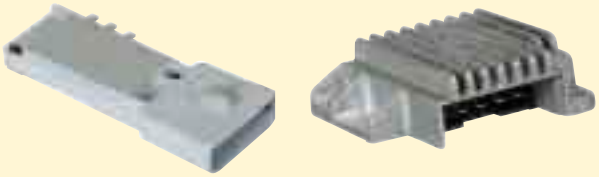
Note: Some ignition modules may look alike but are not interchangeable, refer to notes provided to enable correct identification and installation of these part numbers.

Ignition Modules

Module Variations

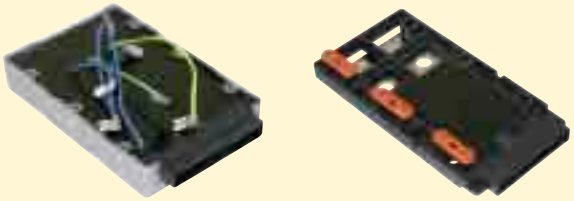
Internal Module and Inductive Pick Up

External Module



Distributor Mounted Module

Distributor-less Module Assembly



ECU Controlled Module

Coil and Module Assembly

TRIDON

This section has been included to assist with the identification of Tridon's extensive range of crank and cam angle sensors. Photographs and technical specifications are shown for each Tridon part number.

The Tridon crank and cam angle sensor range has been developed to operate within original equipment manufacturer's specifications. As crank and cam angle sensors must be compatible with the vehicle ignition system, always refer to the vehicle application list to ensure the correct part number is selected.

Crank and Cam Angle Sensors

Crank and Cam Angle Sensors

Function

Crank Angle Sensor Crank

The crank angle sensor (also known as the crank position sensor) is an electronic device designed to monitor the rotational speed and position of the vehicle crankshaft (pistons) required by the engine management system.

The sensor produces an electrical output signal voltage as a result of rotational speed and position of the vehicle crankshaft. The output signal voltage is processed by the engine management system to control ignition timing, fuel injection timing and other important functions.

Crank angle sensor locations may vary. Common locations include; the main crank pulley, the flywheel or in the distributor assembly connected to the crankshaft through a gear assembly.

The crank angle sensor may be used in combination with a similar sensor located on or near the vehicle camshaft(s), known as the cam angle sensor. The use of both crank and cam angle sensors enable monitoring of the relationship between the crankshaft (pistons) and the camshaft(s) (valves), particularly important in modern engines with variable valve timing.

Cam Angle Sensor Cam

The cam angle sensor (also known as the cam position sensor) is not unlike the crank angle sensor. It is an electronic device designed to monitor the rotational speed and position of the vehicle camshaft(s) (valves) required by the engine management system.

This sensor produces an electrical output signal voltage as a result of rotational speed and position of the vehicle camshaft(s). The output signal voltage is processed by the engine management to control ignition timing, fuel injection timing and other important functions.

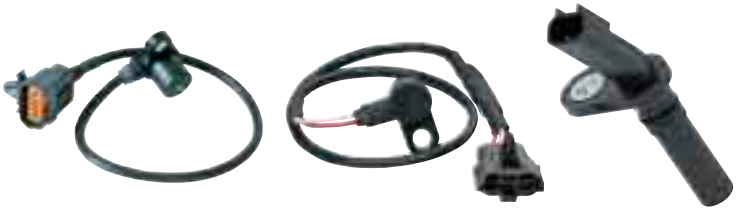
Cam angle sensor locations may vary. Common locations include; the main cam pulley, cylinder head or in the distributor assembly connected to the camshaft through a gear assembly.

Crank & Cam Angle Sensor Crank Cam

Crank and cam angle sensors provide the engine management system with accurate information required for the control of ignition timing, fuel injection timing and other important functions. In turn the modern systems deliver improvements in power output, fuel economy, reliability and emission performance.

There are several types of crank and cam angle sensors. These include inductive sensors, Hall Effect sensors or optical sensors.

Sensor Variations



Inductive Sensors use electromagnetic induction principles to generate an output voltage indicating crankshaft/camshaft speed and position. The sensor consists of a coil winding wrapped around an iron core and is located near the sensing surface (e.g. crankshaft pulse ring, flywheel teeth).

During operation, D.C. current is used to excite a magnetic field within the sensor. The operating principle is based on the changes to the electromagnetic field within the coil (crank/cam sensor) due to the proximity and rotation of the metal sensing surface (crankshaft/camshaft).

Hall Effect Sensors use Hall Effect principles to generate an output voltage indicating crankshaft/camshaft speed and position. The sensor consists of a permanent magnet and semi conductor incorporated into an integrated circuit (Hall I.C.), along with a steel vane driven by the crankshaft/camshaft.

During operation, current is supplied to the Hall I.C., and steel vane rotation (via crank/cam sensor), and is used to interrupt the magnetic field. An output signal or “Hall voltage” is then produced in the form of a square wave.

Optical Sensors use light switching to generate an output voltage signal indicating crankshaft/camshaft speed and position. The sensor consists of a light source positioned opposite a phototransistor, along with a slotted disc driven by the crankshaft/camshaft.

During operation, light is emitted from the light source and received by the phototransistor. Slotted disc rotation (via crank/cam sensor) is used to interrupt the light beam. An output signal voltage is produced by the phototransistor in the form of a square wave.

Crank and Cam Angle Sensors

Testing and Replacement

Crank and cam angle sensors are an integral part of a vehicle ignition system. A faulty or inoperable crank or cam angle sensor can result in no spark, difficult starting, misfiring, poor fuel economy and overall poor engine performance.

The crank/cam angle sensor works in conjunction with many components of a vehicle ignition system. These include electronic control modules, ignition coils, engine management systems and high tension leads. It is important that all of these components are in good working order for the ignition system to operate correctly.

When a crank/cam angle sensor malfunction or fault is suspected, the entire ignition system should be checked, faults diagnosed and repairs carried out by a trained professional.

Failure to correctly diagnose an ignition system fault may lead to premature failure of the new crank/cam angle sensor and therefore voiding the warranty on the sensor.

Note: Some crank/cam angle sensors may look alike but are not interchangeable, refer to notes provided to enable correct identification and installation of these part numbers.

TRIDON

This section has been included to assist with the identification of Tridon's extensive range of pick up coils. Photographs and technical specifications are shown for each Tridon part number.

The Tridon pick up coil range has been developed to operate within original equipment manufacturer's specifications. As pick up coils must be compatible with the vehicle ignition module and ignition system, always refer to the vehicle application list to ensure the correct part number is selected.

Pick Up Coils

Pick Up Coils

Pick Up Coils

Function

The pick up coil (also known as the inductive pick up coil) uses the principle of induced voltage to generate an electrical output signal required by the ignition module for the operation of the ignition system.

The pick up coil consists of a sensing coil winding used in conjunction with an ignition module and metal reluctor or vane assembly. This is normally located within the distributor assembly.

During operation, the rotation of the metal reluctor or vane assembly (via the vehicle crankshaft) enables the pick up coil to deliver output signals to the ignition module at the correct time and for the correct duration in relation to actual engine speed (RPM). As a result, the ignition module delivers changes in the dwell time required, providing more accurate spark timing across the entire engine speed range.

Testing and Replacement

Pick up coils are an integral part of a vehicle ignition system. A faulty or inoperable pick up coil can result in no spark, difficult starting, misfiring, poor fuel economy and overall poor engine performance.

A pick up coil works in conjunction with many components of a vehicle ignition system. These include electronic control modules, ignition coils, engine management systems and high tension leads. It is important that all of these components are in good working order for the ignition system to operate correctly.

When a pick up coil malfunction or fault is suspected, the entire ignition system should be checked, faults diagnosed and repairs carried out by a trained professional. Failure to correctly diagnose an ignition system fault may lead to premature failure of the new pick up coil and therefore voiding the warranty of the pick up coil.

Note: Some pick up coils may look alike but are not interchangeable, refer to notes provided to enable correct identification and installation of these part numbers.

Types

Sensing Coils

Inductive Pick Up Assemblies

electronic part finder

Additional vehicles and applications may have been introduced after the time of catalogue printing. For complete, up to date vehicle application listings refer to the Tridon website **www.tridon.com.au** (or **www.tridon.co.nz**) and go to **Tridon Part Finder**.

The Tridon Part Finder contains the most up to date vehicle information and parts applications. It is easy to use, just follow these steps to select the correct Tridon part:

Step 1: Go to **www.tridon.com.au** or **www.tridon.co.nz**

Step 2: Select Part Finder Tab

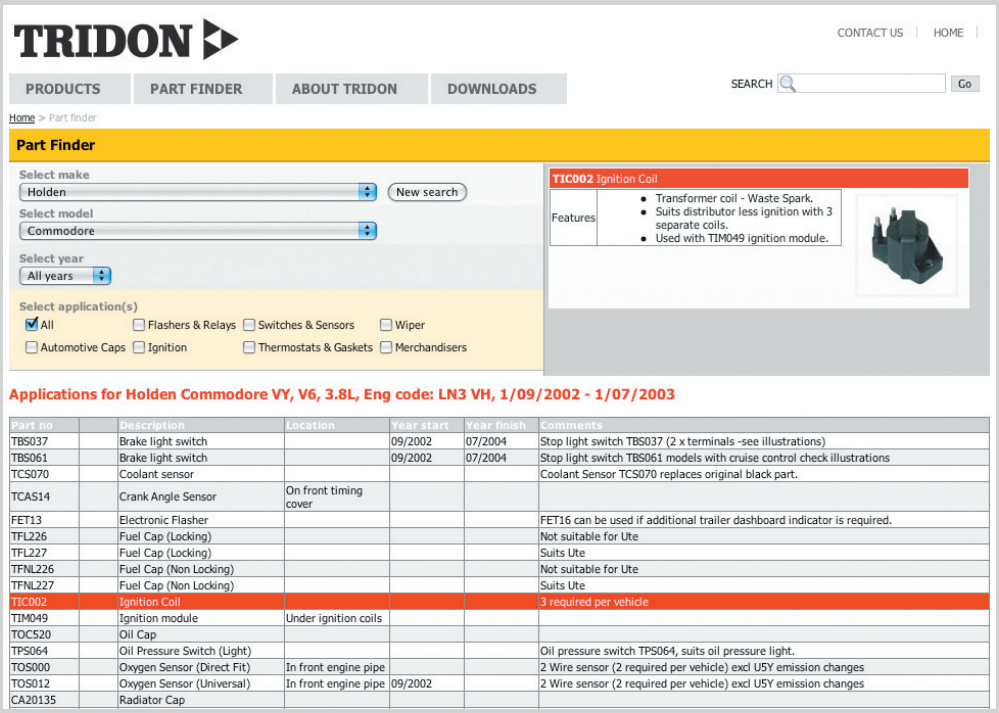
Step 3: Select Vehicle Make

Step 4: Select Vehicle Model

Step 5: Select Year

Step 6: Select the Series, Engine or Date

Step 7: Select the Tridon Part Required



Part no		Description	Location	Year start	Year finish	Comments
TBS037		Brake light switch		09/2002	07/2004	Stop light switch TBS037 (2 x terminals -see illustrations)
TBS061		Brake light switch		09/2002	07/2004	Stop light switch TBS061 models with cruise control check illustrations
TCS070		Coolant sensor				Coolant Sensor TCS070 replaces original black part.
TCAS14		Crank Angle Sensor	On front timing cover			
FET13		Electronic Flasher				FET16 can be used if additional trailer dashboard indicator is required.
TFL226		Fuel Cap (Locking)				Not suitable for Ute
TFL227		Fuel Cap (Locking)				Suits Ute
TFNL226		Fuel Cap (Non Locking)				Not suitable for Ute
TFNL227		Fuel Cap (Non Locking)				Suits Ute
TIC002		Ignition Coil				3 required per vehicle
TIM049		Ignition module	Under ignition coils			
TOC520		Oil Cap				
TPS064		Oil Pressure Switch (Light)				Oil pressure switch TPS064, suits oil pressure light.
TOS000		Oxygen Sensor (Direct Fit)	In front engine pipe			2 Wire sensor (2 required per vehicle) excl U5Y emission changes
TOS012		Oxygen Sensor (Universal)	In front engine pipe	09/2002		2 Wire sensor (2 required per vehicle) excl U5Y emission changes
CA20135		Radiator Cap				

For illustration purposes only. Please refer to Tridon website.