

IGNITION COILS
BOBINAS DE ENCENDIDO
BOBINES D'ALLUMAGE



TECHNICAL INFORMATION

STARTING SYSTEMS

In order to be operated, internal combustion engines require a system able to ignite the mixture of air and gasoline which is put into the engine and gets compressed inside of its cylinders. This is achieved by an electric spark that is set off in the spark plug, which ignites the mixture, thereby beginning combustion. There are different elements in such systems: a set of coils (monocoils), ignition wires and DIS type coils.

TYPES OF IGNITION

There are different types of ignition, and each corresponds to a different type of ignition coil:

Conventional ignition (using a switch).

Electronic discharge of the ignition capacitor.

Contactless electronic ignition, also known as “transistorised” ignition.

Full electronic ignition. The DIS (direct ignition system) ignition system.

IGNITION COILS

DESCRIPTION: The ignition coil is an electromagnetic induction device, or inductor, that forms part of an Otto or Wankel cycle alternative internal combustion engine's ignition. It performs the function of raising the normal on-board voltage (6V, 12V or 24V, depending on each case) by a value approximately 1,000 times greater in order to create the electric arc or spark in the spark plug, which allows for ignition of the air/fuel mixture in the combustion chamber.

TECHNICAL INFORMATION: The cyclical interruption of the primary is synchronised with the engine, at one rotation in two strokes (2T) or one for every two rotations in four strokes (4T), though there are 4T systems in engines with more than one cylinder, with a spark on each rotation (lost spark system, or DIS). This interruption was formerly mechanical, performed by the contact breaker or disks, but today it is performed through an electronic circuit, with a power transistor which uses a controller associated with the running of the engine through an engine sensor.

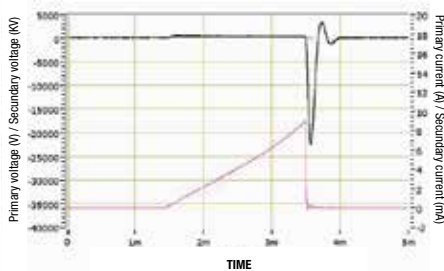


Fig. 1. Secondary voltage and primary current.

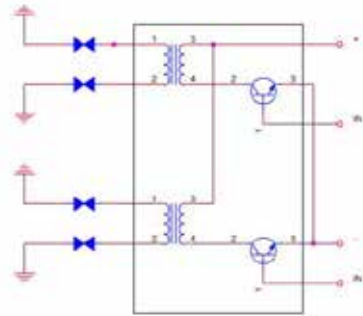


Fig. 2. Electric scheme.

COMPOSITION: It consists of two winding parts, the primary and secondary, with a loop ratio of approximately 1 to 1,000, with thicknesses inversely proportional to their lengths, and a ferromagnetic core. It is equipped with two connections for the primary, one for positive power from the engine ignition contact, and one for negative power connected to the cyclical interruption device of the primary. The secondary has a ground wire, and another for high voltage output to the spark plug or, where appropriate, to the distributor, and further along, to the engine spark plugs.

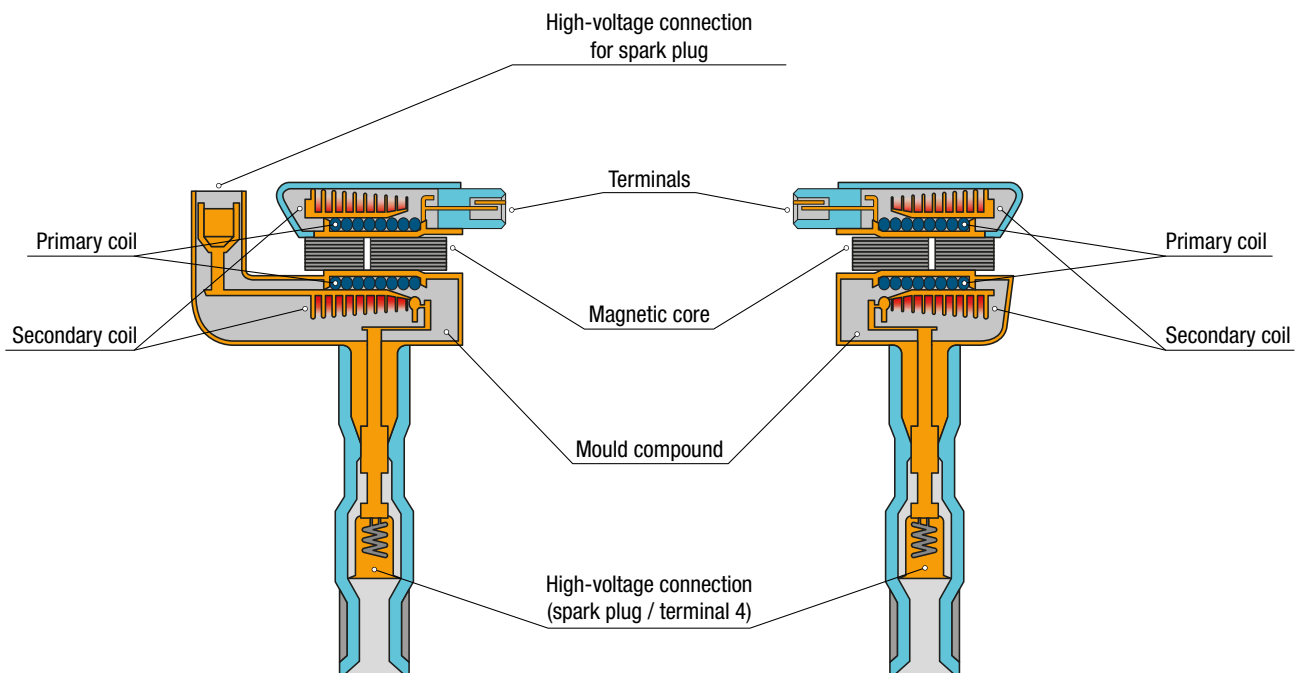


Fig. 3. Pencil coil - Internal structure.



TECHNICAL INFORMATION

TYPES OF COILS

Cartridge/asphalt coils (Bottle coils)

Characteristics:

- Extreme thermal resistance.
- High voltage rotation resistance.
- For old generation vehicles, with battery ignition controlled by contact.



Single-ended coils

Characteristics:

- Extreme thermal resistance.
- For vehicles with ignition by transistor.
- High-quality materials for an optimal weight-volume ratio.
- With installed or integrated electronic module.



Coils in a block/plastic coils/multiple coils (DIS systems)

Characteristics:

- Extreme thermal resistance.
- High voltage powering at rest.
- Twin-spark ignition coils, with and without integrated electronic module, for vehicles with 4, 5 or 6 cylinders.



Coil rails

Characteristics:

- Simple to mount in the engine.
- With twin or single-spark technology.



Plug top coils

Characteristics:

- Directly mounted in the ignition spark plug .
- Extreme thermal resistance.
- With or without spark plug connector and electronic module, depending on vehicle type.



Pencil coils

Characteristics:

- Directly mounted in the ignition spark plug.
- Extreme thermal resistance.
- High-quality materials for an optimal weight-volume ratio.
- With or without electronic module, depending on vehicle type.

