

Ignition Coils

Components of an ignition coil

An ignition coil normally consists of a primary winding, a secondary winding, the iron core and the body with an insulating material – nowadays a two-component epoxy resin.

Functionality

The primary current causes energy storage in the magnetic core. A fast shutdown of the current source via the ignition power stage causes the magnetic field collapse abruptly and thereby generates a high induced voltage (up to 600 V) on the primary side. This voltage is transformed to the secondary side and converted via the relation between the numbers of secondary windings compared to primary windings. At the same time, a high voltage discharge is generated at the spark plug, which leads to an ionization of the spark gap and creates a current flow, until the stored energy is vanished. The ignition spark fires the fuel-air-mixture.

Definition

Coil P50, P65, P65-T and PS-T are passenger car ignition coils. The “P” stands for production (passenger car); the number indicates the maximum spark energy in millijoule (mJ). The “T” stands for an ignition powerstage which is integrated in the ignition coil. The letter “S” stands for Stabspule (pencil coil).

The coil P50-M is based on a production ignition coil, which is modified for motorsport purposes.

In case of the coils P65 and P65-T, the length of the spark plug connector can be adjusted according to the customer's wishes (max. 225 mm). It's then called P65-Ex respectively P65-TEx.

Motorsport ignition coils

The ignition coils S22 and S22-T are the up to date generation of motorsport ignition coils. These coils are especially designed for application in high-performance racing engines. The number indicates the external diameter of the ignition coil's outer core (22 mm). Like in the case of serial ignition coils, the „S“ stands for Stabspule (pencil coil).

The ignition coil S22-T has an integrated powerstage. This powerstage is a special IGBT-transistor with logic-level-entrance (5 V).

The single fire coil C90i-pro is designed for direct-injection and turbocharged high performance engines. The C90i has a special core material along with high quality windings and custom magnets. These features provide high energy output, but in a small package. The C stands for Compact coil and the 90 for the guaranteed secondary energy (mJ).

Like at the coils P65 and P65-T, the length of the C90i-pro spark plug connector can be adjusted according to the customer's wishes (max. 225 mm).

For all motorsports coils the customer can (within certain limits) freely choose the primary- and secondary-sided ignition coil connector.