5 Ignition system - general information

Warning:
Because of the high voltage generated by the ignition system, be extremely careful when performing any procedure involving ignition components.

General information

The ignition system is controlled by the engine management system (see Chapter 6), known as DME (Digital Motor Electronics). The DME system controls all ignition and fuel injection functions using a central ECM (Electronic Control Module).

The ignition timing is based on inputs provided to the ECM by various sensors supplying information on engine load, engine speed, coolant temperature and inlet air temperature (see Chapter 6).

Some engines are equipped with knock sensors to detect knocking (also known as pinging or detonation). The knock sensors are sensitive to vibration and detect the knocking which occurs when a cylinder starts to detonate. The knock sensor provides a signal to the ECM which in turn retards the ignition advance setting until the knocking ceases.

A distributorless ignition system is used, with a separate ignition coil for each cylinder. No distributor is used, and the coils provide the high voltage signal directly to each spark plug.

The ECM uses the inputs from the various sensors to calculate the required ignition advance and the coil charging time.

Precautions

Refer to the precautions in Section 1 .

Testing of ignition system components should be entrusted to a BMW dealer or other qualified repair shop. Improvised testing techniques are time-consuming and run the risk of damaging the engine management ECM.