

APPLICATION NOTE

Measuring the Resistance of Ignition Coils

This application note contains information on measuring the resistance of ignition coils with a regular multimeter.

The application note is aimed at personnel tasked with the setup, operation, maintenance, and repair of gas engines. A certain level of technical knowledge with respect to the operation of gas engines and basic knowledge of electronic ignition systems are necessary.



High voltage! Danger to life!

During operation, an ignition coil can carry high voltage of up to 40,000V. Therefore, never measure the resistance of an ignition coil during operation.



Separate the ignition coil fully from the wiring.

If the ignition coil is not fully separated from the wiring, this may lead to wrong measuring values. Separate the ignition coil fully from the wiring prior to measuring the resistance.



Read the operating manual of your multimeter.

Wrong settings of the multimeter lead to useless measuring results. Read and understand the documentation of your multimeter prior to measuring the resistance.

Information on Measured Values

In the documentation of your ignition coil, find the regular primary and secondary resistance of the ignition coil. The measurements described in this document allow the following conclusions:

- A resistance that is too low, can be caused by short circuit in the winding.
- A resistance that is too high, can be caused by a broken wire.

You can carry out additional measurements with a MOTORTECH ignition coil tester. As an alternative, you can send your ignition coil to MOTORTECH or your nearest MOTORTECH representative.

Preparation

1. Set the multimeter to Ω .
2. Set the smallest possible ohmic measuring range.
3. Plug the measuring cable into the multimeter.
4. Carry out an adjustment by holding together the measuring tips.
 - ▶ A resistance of 0Ω is displayed.

Measuring the Resistance of the Primary Winding

1. Set the smallest possible ohmic measuring range.
2. Touch the positive terminal of the ignition coil with the red measuring tip and the negative terminal of the ignition coil with the black measuring tip.
 - ▶ The resistance of the primary winding is displayed.



Measuring the Resistance of the Secondary Winding

1. Set the multimeter to a measuring range of 0Ω to $10 \text{ k}\Omega$
2. Touch the negative terminal of the ignition coil with the red measuring tip and the high voltage terminal of the ignition coil with the black measuring tip.
 - ▶ The resistance of the secondary winding is displayed.
3. Touch the positive terminal of the ignition coil with the red measuring tip and the high voltage terminal of the ignition coil with the black measuring tip.
 - ▶ The resistance of the secondary winding is displayed. It must be identical to the value of the previous measurement.

