

Ignition Coil Testing



All late model Subaru four cylinder engines employ a “waste spark” ignition system. Each time the ignition coil fires, it provides a spark to two cylinders at exactly the same time. Since only one of the two cylinders is on the compression stroke when the coil fires, the spark to the second cylinder (which is on the exhaust stroke) is “wasted.”



Figure 1
Measuring Secondary Resistance Between Terminals 1 and 2



Figure 2
Measuring Secondary Resistance Between Terminals 3 and 4

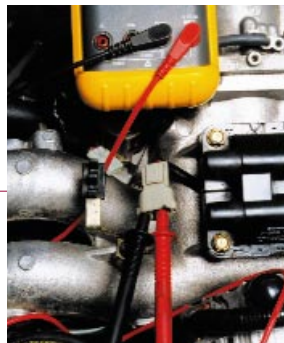


Figure 3
Measuring Primary Resistance Between Terminals 1 and 2



Figure 4
Measuring Primary Resistance Between Terminals 2 and 3

The ignition coil sits on top of the intake manifold and is divided into two halves. One half provides the spark to the number 1 and 2 cylinders, and the other half provides the spark to the number 3 and 4 cylinders. Instead of the familiar single secondary coil terminal, this coil has four secondary coil terminals.

Testing methods for this type of coil are slightly different from what you might be accustomed to as well. Using an accurate DMM, inspect the following items, and replace the ignition coil if it is found to be defective:

- Primary resistance
- Secondary resistance

Caution: *If the resistance is extremely low, this indicates the presence of a short circuit.*

Remove the secondary ignition wire as shown in **Figure 1**, set your DMM on the ohms scale, then insert the probes as shown. Secondary resistance between coil secondary terminal 1 and terminal 2 should be 21.0 K ohms ± 15 percent.

Move the DMM leads to coil secondary terminals 3 and 4. Resistance between these terminals should also be 21.0 K ohms ± 15 percent (**Figure 2**).

The next step is to measure the ignition coil primary resistance. Disconnect the ignition coil harness connector. The specified primary resistance between harness connector terminals 1 and 2 is 0.69 ohms ± 10 percent (**Figure 3**).

Move the DMM leads to terminals 2 and 3. Primary resistance between these terminals should also be 0.69 ohms ± 10 percent (**Figure 4**).

A resistance reading of the insulation between any primary terminal and the coil case should be 10M ohms or more. A lower resistance reading indicates that the coil primary windings are shorted to ground.