

81. Ignition Coils

The ignition coils consist of primary and secondary windings wound concentrically about a laminated soft iron core, the secondary winding being next to the core. The primary winding usually consists of some 300 turns of enamel covered wire and the secondary some 17,000–26,000 turns of much finer wire—also enamel covered. Each layer is paper insulated from the next in both primary and secondary windings.

To test the ignition coil on the machine, first ensure that the low tension circuit is in order as described in Subsection 79 then disconnect the high tension leads from the left and right sparking plugs. Turn the ignition switch to the "IGN" position and crank the engine until the contacts (those with the black/yellow lead from the ignition coil) for the right cylinder are closed. Flick the contact breaker lever open a number of times whilst the high tension lead from the right ignition coil is held about $\frac{3}{16}$ in. away from the cylinder head. If the ignition coil is in good condition a strong spark should be obtained. If no spark occurs this indicates the ignition coil to be faulty.

Repeat this test for the left high tension lead and coil by cranking the engine until the contacts with the black/white lead from the left ignition coil are closed.

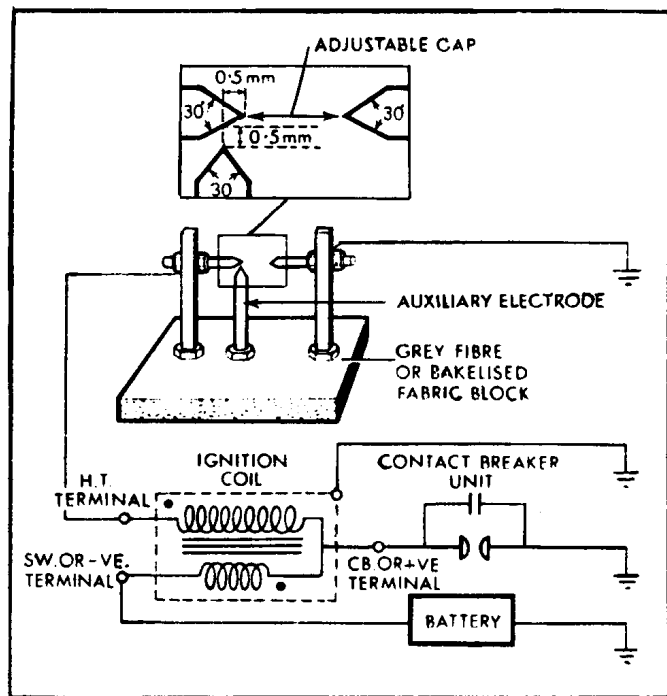
Before a fault can be attributed to an ignition coil it must be ascertained that the high tension cables are not cracked or showing signs of deterioration, as this may often be the cause of mis-firing etc. It should also be checked that the ignition points are actually making good electrical contact when closed and that the moving contact is insulated from earth (ground) when open. It is advisable to remove the ignition coils and test them by the method described below.

82. Bench Testing an Ignition Coil

Connect the ignition coil into the circuit shown in Fig. 25 and set the adjustable gap to 9 mm. for the MA12 Type and 8 mm. for the 17M12 Type.

With the contact breaker running at 600 r.p.m. for a single lobe cam and the coil in good condition, not more than 5% missing should occur at the spark gap over a period of 15 seconds. The primary winding can be checked for short-circuit coils by connecting an ohmmeter across the low tension terminals. The reading obtained should be within the figures quoted below (at 20°C.)

Coil	Primary Resistance	
	Min.	Max.
MA12	3.0 ohms.	3.4 ohms.
17M12	3.3 ohms.	3.8 ohms.



IGNITION COIL TEST RIG

Fig. 25

83. Contact Breaker

Faults occurring at the contact breaker are in the main due to, incorrect adjustment of the contacts or the efficiency being impaired by piling, pitting or oxidation of the contacts due to oil etc. Therefore, always ensure that the points are clean and that the gap is adjusted to the correct working clearance.

To test for a faulty capacitor, first turn the ignition switch to "IGN" position and then take voltage readings across each set of contacts with the contacts open. No reading indicates that the capacitor internal insulation has broken down. Should the fault be due to a capacitor having a reduction in capacity, indicated by excessive arcing when in use, and overheating of the contact faces, a check should be made by substitution.

Particular attention is called to the periodic lubrication procedure for the contact breaker. When lubricating the parts ensure that no oil or grease gets onto the contacts.

Note—Under no circumstances should the shaft and action plate and the cam shaft be lubricated.

If it is felt that the contacts require surface grinding then the complete contact breaker unit should be removed and the moving contacts disconnected by unscrewing the securing nuts from the capacitor terminals. Grinding is best achieved by using a fine carborundum stone or very fine