

IGNITION, ALTERNATOR AND STARTER SYSTEMS

CONSTANT ENERGY IGNITION

Operation

A voltage signal generated by the reluctor and pick up assembly is interpreted by the amplifier which switches on and off the current flowing in the primary winding of the HT coils. When a reluctor tooth passes across the pick up limb, the magnetic field strength around the pick up winding is intensified creating a voltage in the winding. The rise and fall of this voltage is sensed by the amplifier and is used to trigger the output of the transistorised amplifier.

Two HT coils are incorporated on the V12 HE engines. The main coil primary winding is connected in parallel with the primary winding of the auxiliary coil. The HT section of the auxiliary coil is not used and the HT outlet is sealed.

The auxiliary coil enables the ignition system to achieve the required performance at high engine speeds under load.

The coils used in this system are a nominal 6 volts. There is no separate ballast resistor in the circuit. The amplifier controls the maximum current flowing in the primary circuit.

The fuel injection lead to the ECU and the lead to the tachometer are taken from the amplifier.

The distributor incorporates the standard automatic advance system. The traditional cam and contact breaker are replaced by an anti-flash shield, reluctor, and pick up assembly. The reluctor is a gear like component with as many teeth as there are cylinders to the engine and is mounted on the distributor shaft in place of the cam. The pick up consists of a winding around a pole piece attached to a permanent magnet, and is prewired with two leads terminating in a moulded two pin inhibited connector. During normal service the air gap between the reluctor and the pick-up does not alter and will only require re-setting if it has been tampered with. The normal setting is 0.20 to 0.35 mm (0.008 to .014 in).

The pick-up resistance should be 2 to 5 K ohms.

DISTRIBUTOR

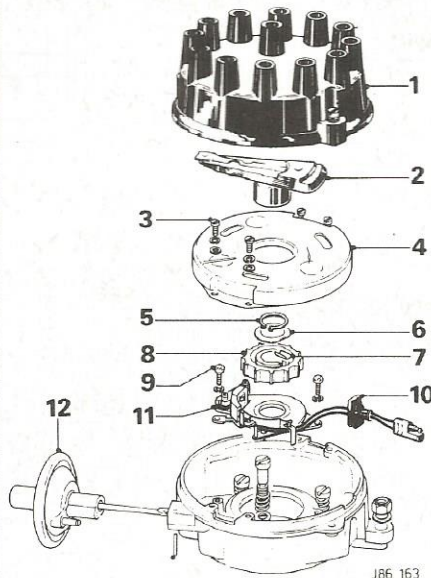


Fig. 7

KEY TO DISTRIBUTOR

1. Distributor Cap
2. Rotor
3. Flash Shield Screw
4. Flash Shield
5. Circlip
6. Flat Washer
7. Reluctor Key
8. Reluctor
9. Pick-up Screw
10. Grommet
11. Pick-up
12. Vacuum Unit

FAULT FINDING

Test 1

Check battery. A heavy discharge test applied to the battery terminals will determine whether the battery is capable of supplying the heavy currents required by the starter motor.

Check the specific gravity of the electrolyte in each cell. A variation of 0.040 in any cell means the battery is suspect.

Test 2

Check for HT spark. Remove the HT lead from the centre of the distributor cap 'A' and position the end of the lead approximately 6 mm (0.25 in) from a good earth on the engine. Crank the engine and if a spark is obtained, check the HT leads, spark plugs, distributor cover, and the rotor.

Test 3

With the ignition switched on. The voltage at the positive terminal of the MAIN coil 'C' should be 12 volts. If the voltage is below 11 volts check the wiring to/from the ignition switch 'G'.

Test 4

Disconnect the leads from the negative terminal of the MAIN coil 'C'. With the ignition switched on a 12 volt reading should be obtained from the negative terminal 'A'. A zero reading would indicate a faulty MAIN coil. If a 12 volt reading is obtained, reconnect the disconnected leads to the main coil and repeat Test 3 and 4 at the AUXILIARY coil 'D'.

Test 5

Disconnect the distributor pick-up leads from the amplifier 'B'. Measure the resistance of the distributor pick-up 'A'. It should be 2.2 to 4.8 K ohms. An incorrect reading indicates a faulty pick-up coil.

Test 6

Connect a voltmeter between the positive terminal of the battery and the negative terminal of the main coil 'C'. Switch on the ignition and the voltmeter should indicate a zero reading. Crank the engine and the voltmeter reading should rise to between 2 and 3 volts. If the voltmeter remains at zero the amplifier 'B' is suspect.

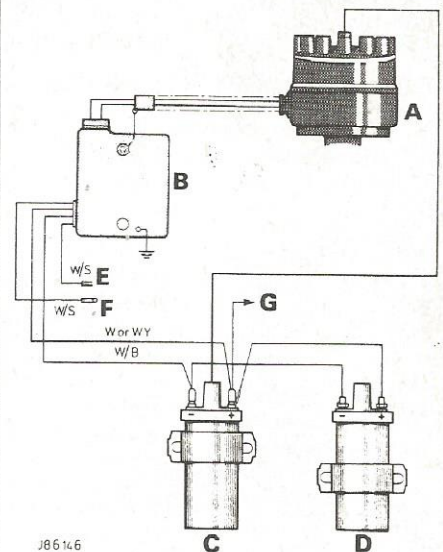


Fig. 8