AVON.

HIGH ENERGY IGNITER SYSTEM.

GENERAL.

The standard method of lighting up a jet engine has been to utilise a torch igniter consisting of a small combustion chamber in which was mounted a suitable sparking plug and atomisers. To feed this igniter it was necessary to have an electrical system and a secondary fuel system consisting of pump, valves and associated pipe work.

The advent of the high energy igniter system means that the fuel system for the ignition can be dispensed with, thus saving a considerable amount of complication and weight. An added improvement is that these high energy igniter plugs can be mounted in the flame tube suspension tubes (No. 3 & 6 combustion chambers). All flame tubes can therefore be identical. Development of this system also provides improvement in relighting at high altitude and with comparatively high windmilling speeds.

CONSTRUCTION.

The igniter plug differs from the conventional sparking plug and is a high energy surface discharge plug with ceramic insulation and steel electrodes. The business end of the plug is made up solid with centre electrode, insulator and outer metal housing, which is earthed. Plug gap is .040".

OPERATION.

A trembler coil interrupts the normal aircraft battery supply and transforms this to a higher voltage. This higher voltage supply is passed through a rectifier to a storage condenser, the rectifier acting as a non-return valve, thus preventing the condenser discharging back into the winding of the trembler coil. When the potential across the storage condenser reaches a predetermined value (2000 volts), the sealed spark gap operates. The condenser then discharges and its stored energy is dissipated in a flashover on the surface of the discharge igniter plug. The process is repeated at a frequency of at least one discharge every second. Resistances are fitted to limit the value to which the condenser can be charged in the event of an open circuit occurring in the H.T. circuit and to dissipate the stored energy if the unit is stored.

SERVICING.

Because of the high speed discharge the instantaneous current flow rises to an extremely high value, thus all connections must be firmly made by either soldered joints or high pressure contacts, otherwise serious losses in resultant output energy at the igniter plug will be experienced. It is therefore most essential that the lead between the igniter plug and the igniter unit is making good contact and that the securing nuts are tight. If care is taken to see that this condition is fulfilled, no trouble should be experienced during normal life of the system.

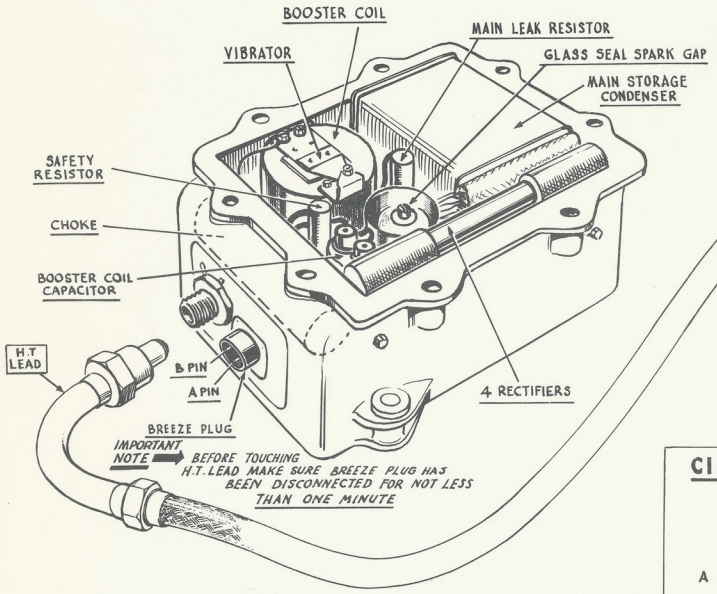
The maximum and minimum operating voltages of the igniter unit are through the range from 29 down to 16 volts on the aircraft battery supply.

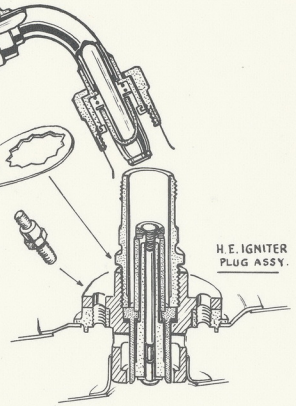
In practice a heavily carboned igniter will give a better spark than a clean one. This is because the initial electrical leakage is more positive and decisive.

NOTE.

The energy stored in the condenser can under certain circumstances be dangerous. It is therefore recommended that when the low tension breeze plug is disconnected, one minute should be allowed before handling the unit for servicing or maintenance.

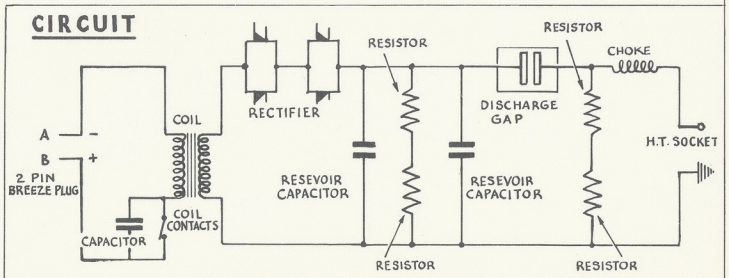
30.7.53.





H.E. IGNITER DIAGRAM

(SINGLE UNIT)



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