DUAL PURPOSE GENERATOR

Date of design:- 1926.

Generator. The dual purpose generator is driven by a windmill and supplies the transmitting set with 1200 volts from one armature (46) for H.T. and 10 volts from the other armature (45) for filament lighting and for supply to the bobbin circuit of the magnetic or listening through key (3) (see page Y4).

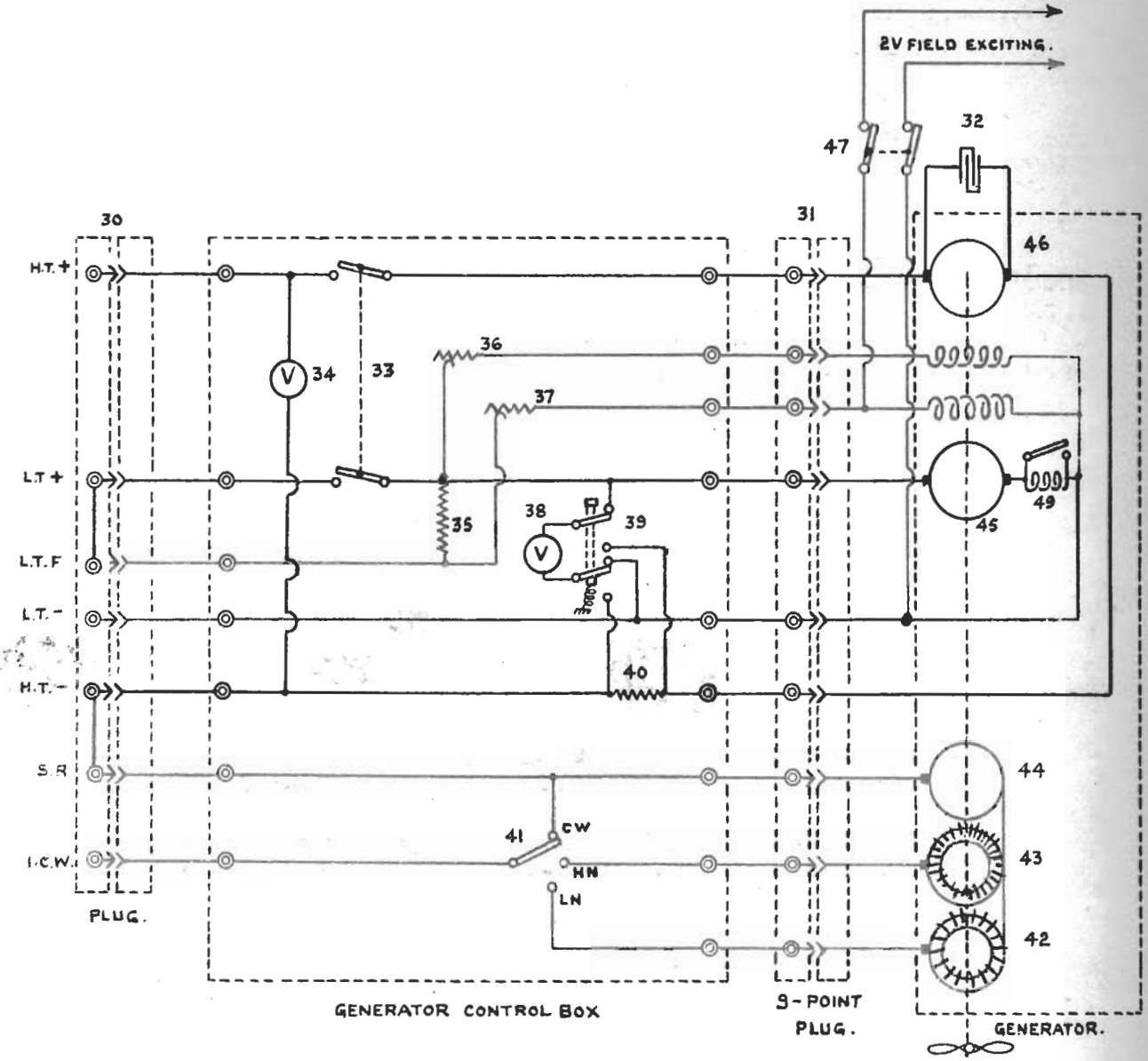
The generator is designed for speed of 3500 r.p.m. and a Mortley slipping clutch (50), centrifugally operated, is fitted to prevent this speed being exceeded, and the risk of the terminal voltage exceeding its normal value.

If it is desired to "motor" the generator, the series field (49) should be short circuited at the terminals fitted on the machine. A 2 volt field exciting battery (or a tapping from the L.T. receiving battery) can be connected across the L.T. field by a D.P. switch (47) if desired.

All leads from the generator are taken to a 9-point plug fitting (31) to which is connected the generator control box. This plug (31) should never be removed whilst the machine is running, as the polarity of the L.T. field will become reversed, or its residual magnetism so reduced that the generator will fail to excite. Should the polarity of the generator, through this, or any other cause, become reversed, the L.T. field should be separately excited by a 6 volt battery.

Attached to the shaft of the generator are two interrupter discs (42)(43) and a plain disc (44). Seven interrupter discs varying from 10 to 24 segments are provided, but only two can be fitted at a time. They are used to interrupt the grid-filament and the H.T. circuits at different frequencies (i.e.; High or Low Note for I.C.W. transmissions). The high note disc (24 segments) is permanently fitted, and gives a note frequency of 1400 cycles. The low note discs give a note frequency between 500 cycles (10 segments) and 1160 cycles (20 segments). The plain disc (44) is common to the interrupter discs fitted and is merely used to make a brush contact to complete the interrupter circuit.

The generator is mounted on a cradle (58) which is insulated from the earth of the aircraft. Failure to keep this insulation high, tends to increase commutation noises in the receiver, especially when using H/F. The generator is shown complete in figure b. and stripped in figure c.


2V FIELD EXCITING.
47
32
30
31
46
H.T.+
36
V
34
33
37
L.T.+
35
38
39
49
45
L.T.F
L.T.-
40
H.T.-
S.R
44
41
C.W.
I.C.W.
H.N.
L.N.
43
42
PLUG.
GENERATOR CONTROL BOX
9-POINT PLUG.
GENERATOR.

Generator Control Box. The generator control box is a separately mounted unit consisting of a base and plug-in top (figure d.). The base is secured to the aircraft and, by means of soldered connections, is the connecting link between generator and transmitter plugs (31) and (30). The top carries the H.T. and L.T. controlling and measuring instruments.

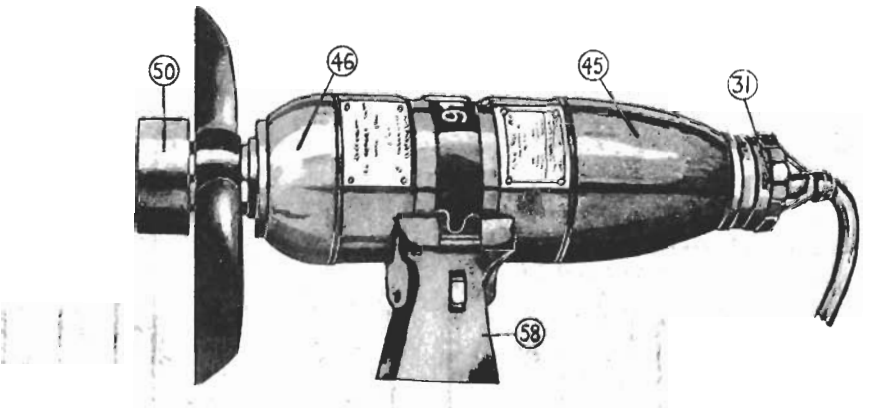


FIG. b

A field regulator of 9 ohms (36)(37) is connected in the field of each generator. An additional 150 ohm resistance(35) is connected across the generator fields to reduce generator interference in the receiver. As the movement of the filament regulator (37) affects H.T. output, care should be taken, when adjusting, to prevent H.T. voltage exceeding that laid down for the transmitter in use.

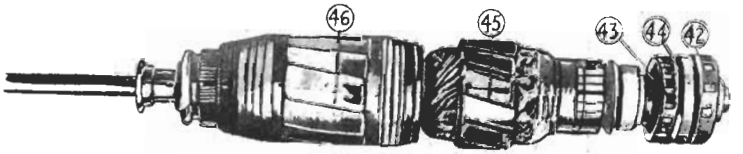


FIG c

A combined voltmeter and milliammeter(38) (0–15 volts or 0–150 milliamps) is connected across the 10 volt output by a spring switch (39). When the spring switch is pressed the instrument is connected across the 100 ohm resistance (40) in the negative H.T. supply, and therefore indicates the H.T. current.

A D.P. switch (33) controls the H.T. and L.T. supplies from the generator to the transmitter. A voltmeter (34) connected across the H.T. supply indicates the H.T. output voltage when the switch (33) is made.

A three way C.W. – I.C.W. switch (41) marked "C.W.", "H.N.", "L.N." is fitted. In the "C.W." position the grid and H.T. negative are connected direct to filament negative, and in the "H.N." and "L.N." positions through the required interrupter discs (43)(42) for High and Low Notes respectively. (see pages Y12 and Y16). With Transmitter T21C these discs are not used and therefore I.C.W. cannot be transmitted.

The outputs from the control box are connected to a plug fitting (30) to which the transmitter is connected.