This leaf issued in reprint, September 1947

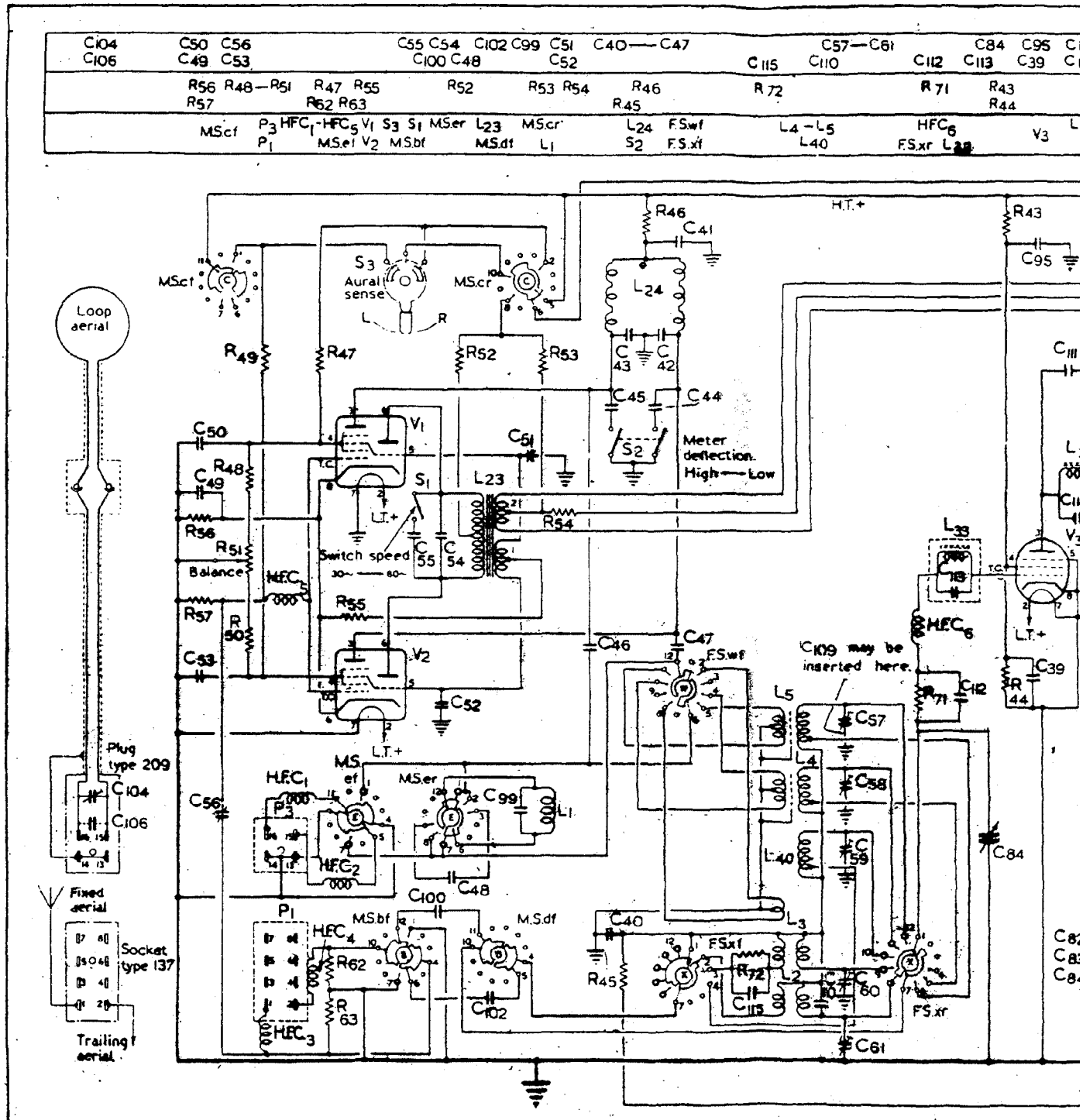
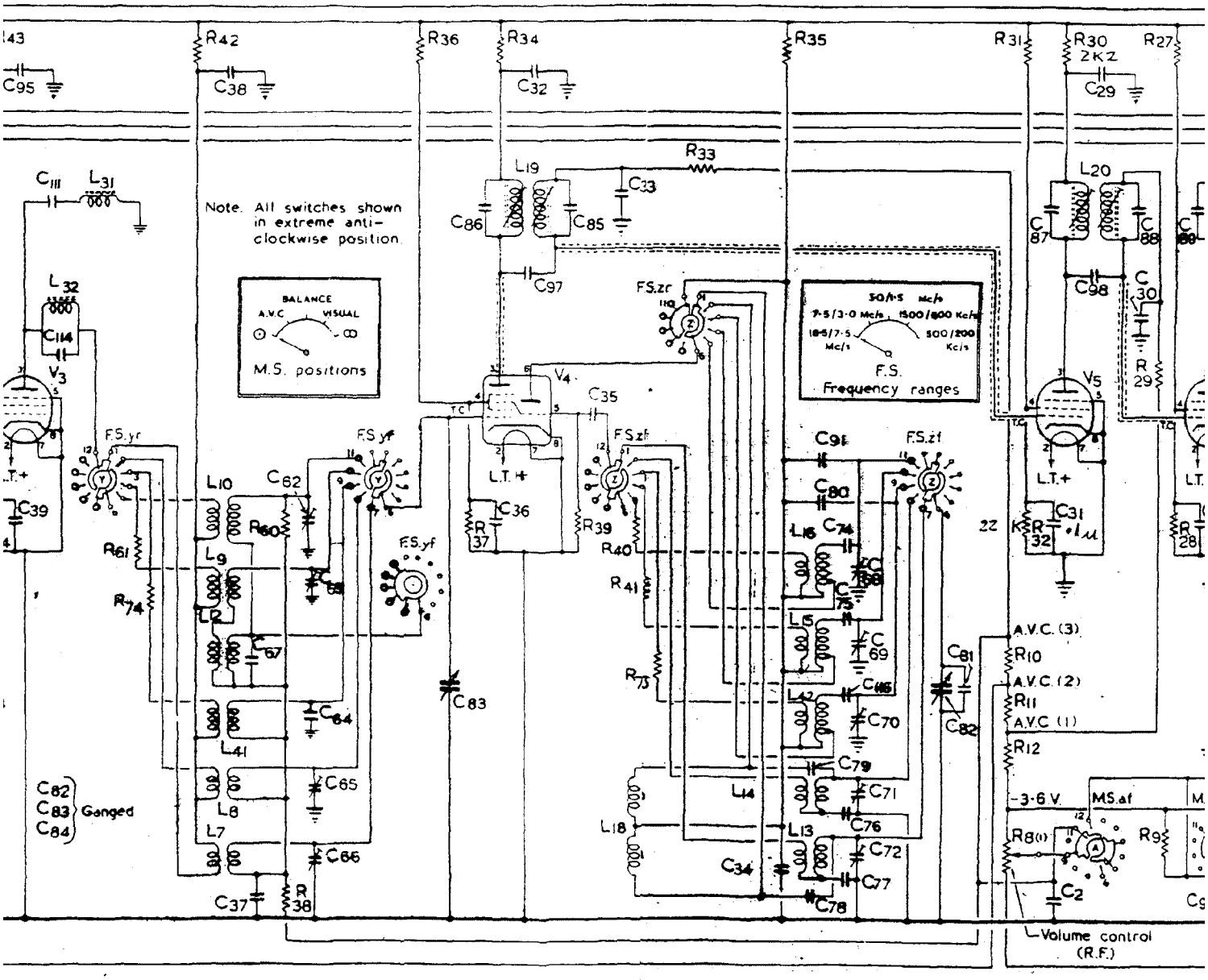



FIG. 4




# R 1155 L AND R 1155 N CIRCUIT DIAGRAM

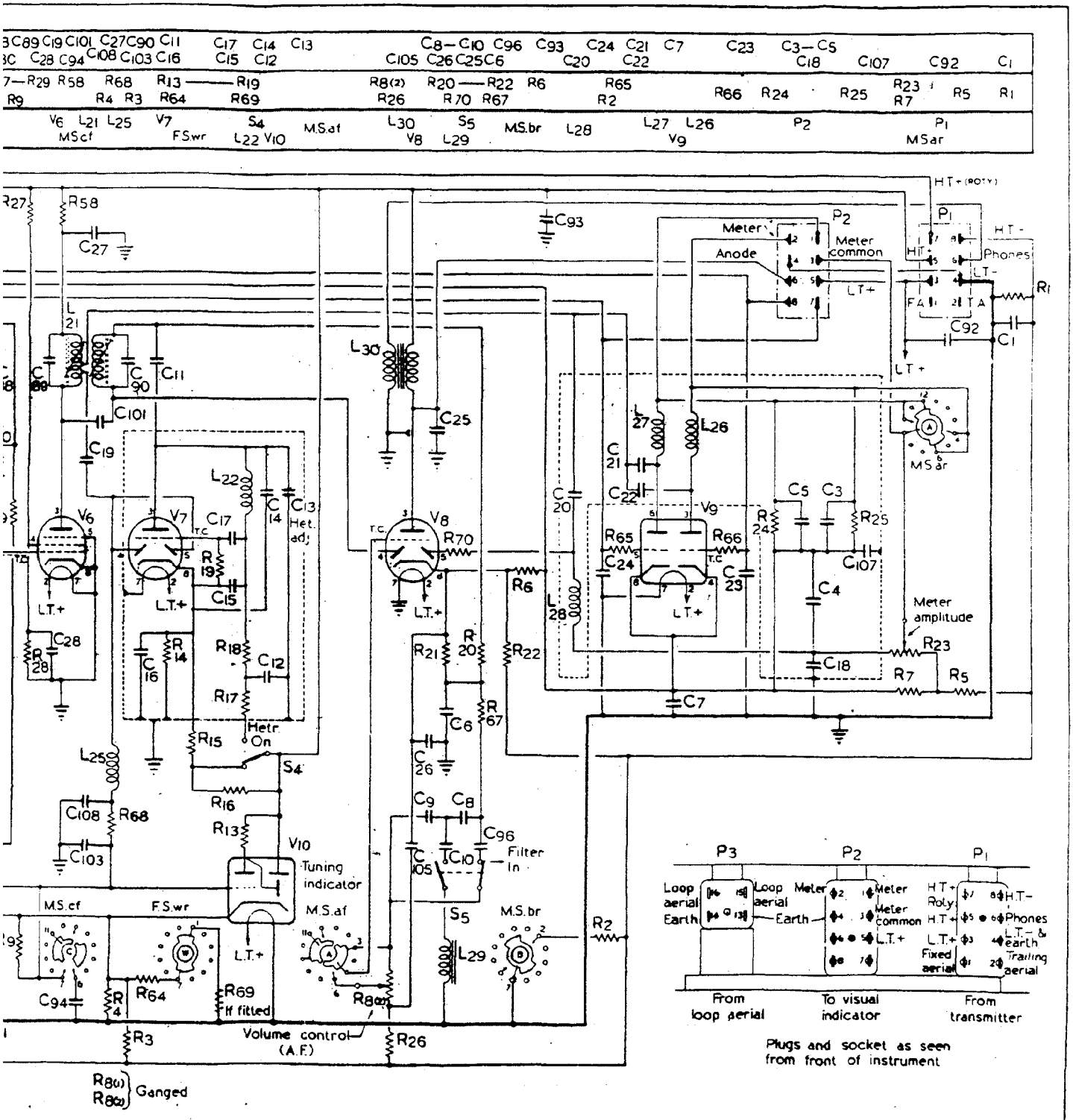



FIG. 4

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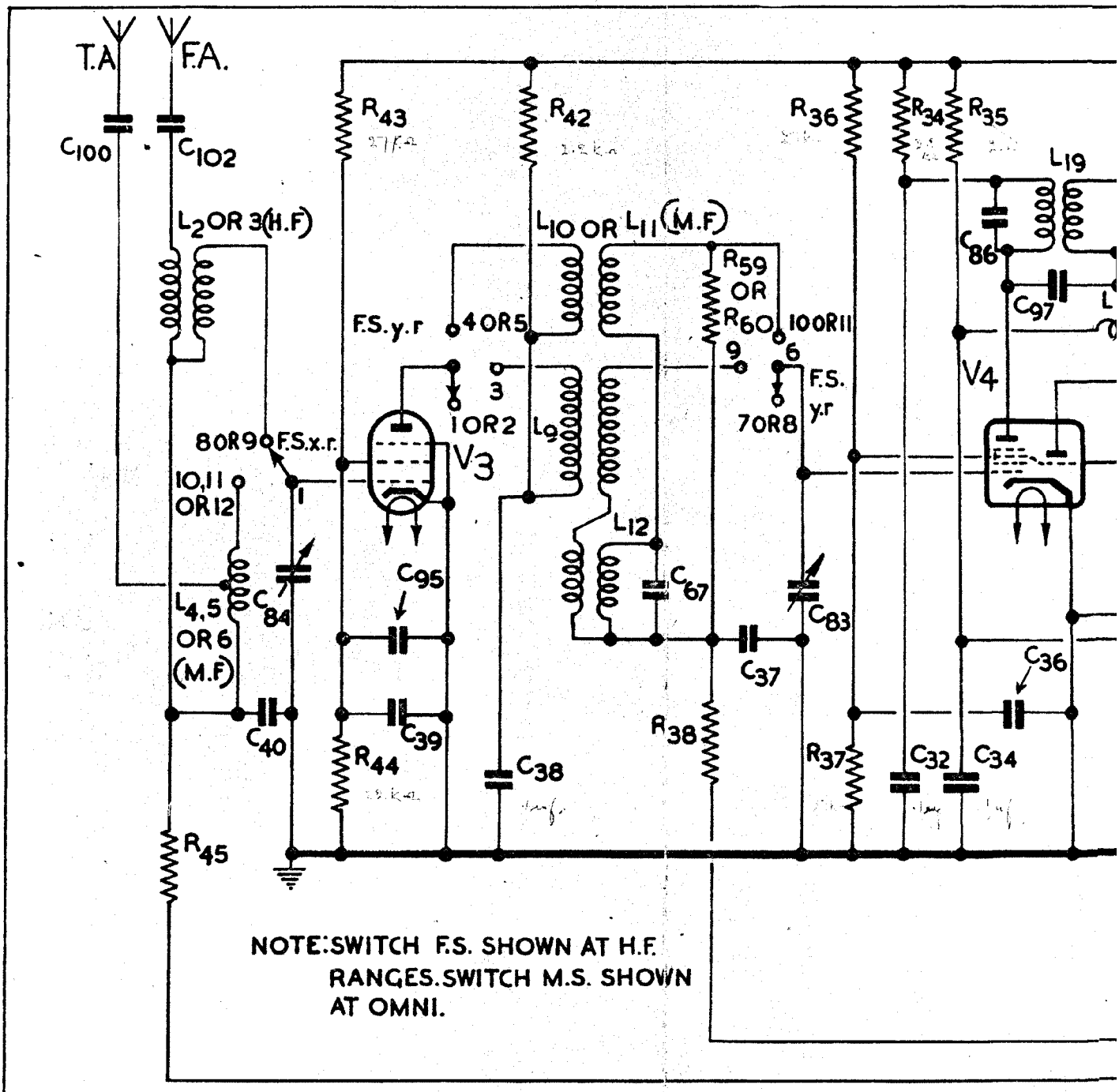
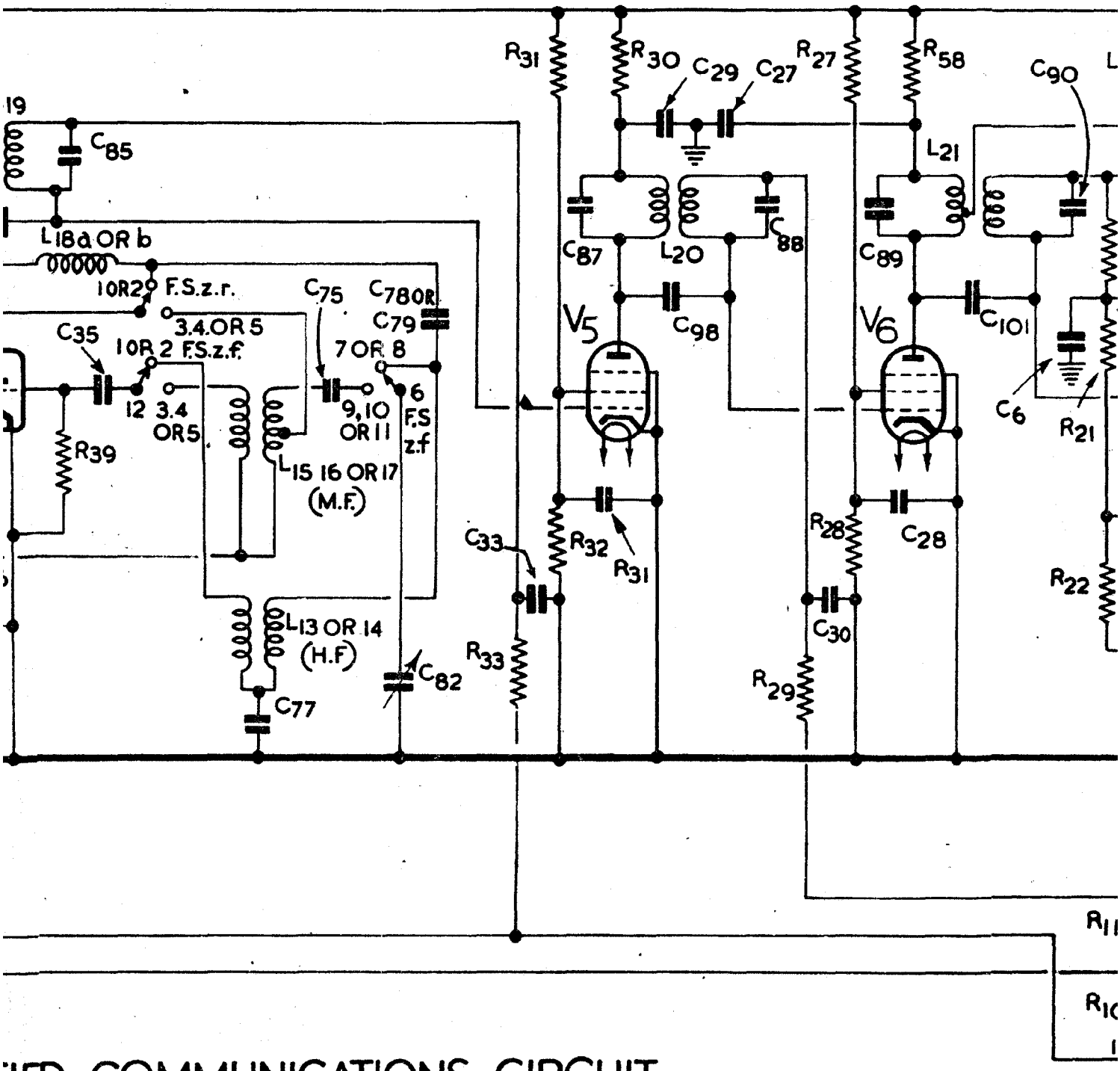



R.1155 SIMPLIFIED

FIG.5




IED COMMUNICATIONS CIRCUIT.

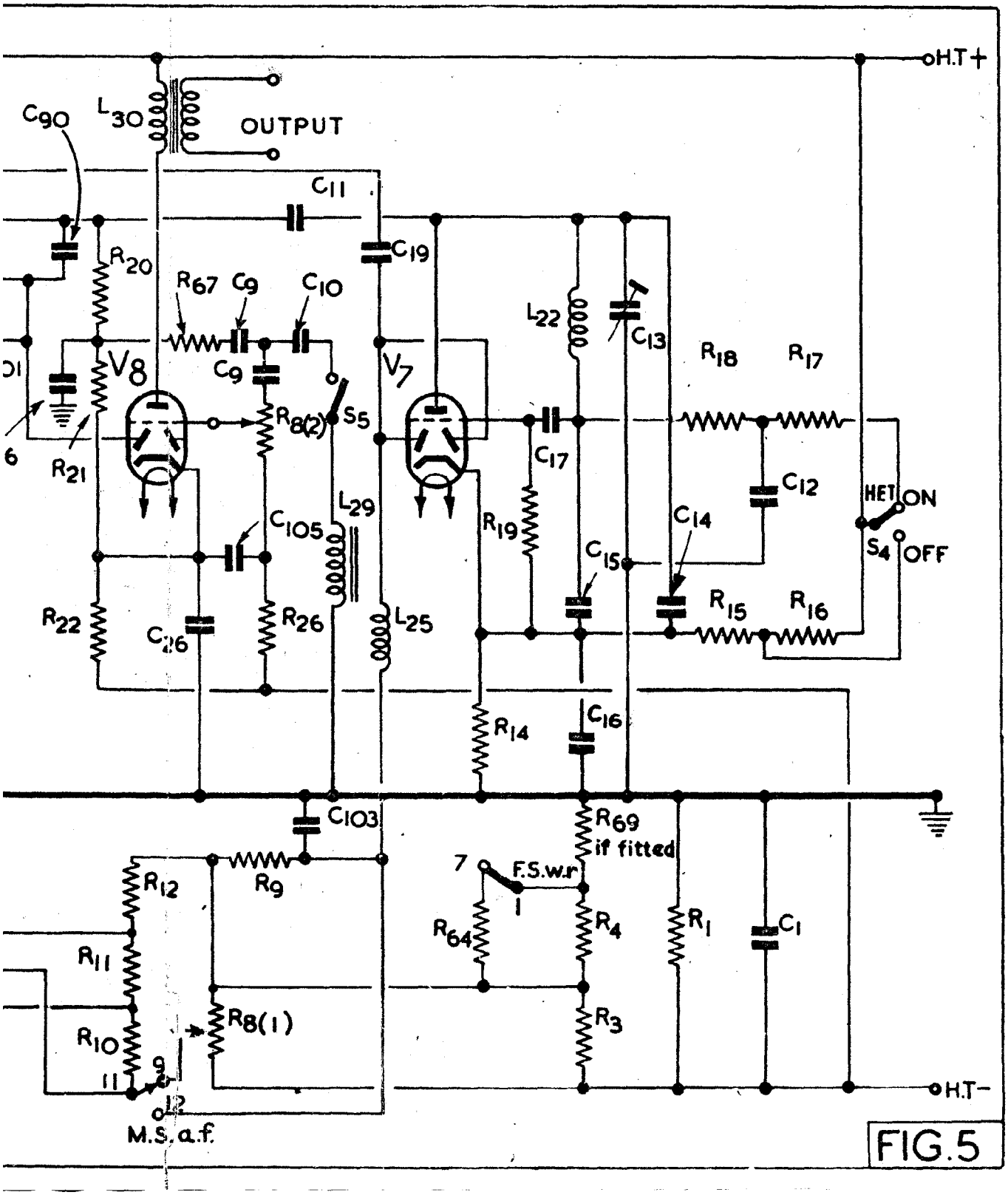

H.T+
C90
L30
OUTPUT
C11
C19
R20
R67
C9
C10
L22
C13
R18
R17
V8
V7
C9
R8(2)
S5
C17
C12
HET ON
S4 OFF
R21
L29
C105
R19
C14
C15
R22
C26
R26
L25
R15
R16
R14
C16
C103
R69
if fitted
7
F.S.w.r
1
R12
R9
R64
R4
R1
C1
R11
R8(1)
R3
R10
9
11
12
M.S. a.f.
H.T-

FIG.5

electronically mixed in the hexode portion and voltages at the difference frequency (560 kc/s) are developed across the anode load, which consists of the coil $L_{19}$ and the condenser $C_{86}$. The screen derives its voltage from the potential divider comprised of $R_{36}$, $R_{37}$, and $R_1$, with the associated condensers $C_{36}$ and $C_1$.

*Triode section*

15. The triode section of the valve operates as an R.F. oscillator and consists of a tuned anode circuit loosely coupled to an untuned grid circuit. The grid windings of the coils $L_{13}$, $L_{14}$, $L_{15}$, $L_{16}$, and $L_{17}$ are selected for each range by the switch $FS_{zf}$. The anode windings of $L_{13}$ to $L_{17}$ are similarly switched into the anode circuit by switch sections $FS_{zr}$ and $FS_{zf}$. On ranges 3, 4, and 5 the oscillator is series-fed, the anode being connected to a tap on the secondary of the coil $L_{15}$, $L_{16}$, or $L_{17}$. On ranges 1 and 2 the oscillator is parallel-fed through the choke $L_{18a}$ or $L_{18b}$ and coupling condenser $C_{78}$ or $C_{79}$. $L_{18a}$ and $L_{18b}$ resonate at a frequency just below the lowest frequency in their respective bands. Each tuned circuit is tracked to the signal circuits with pre-set parallel trimming condensers $C_{68}$ to $C_{72}$, and fixed series padding condensers $C_{73}$ to $C_{77}$. $C_{81}$ determines the minimum capacitance of $C_{82}$.

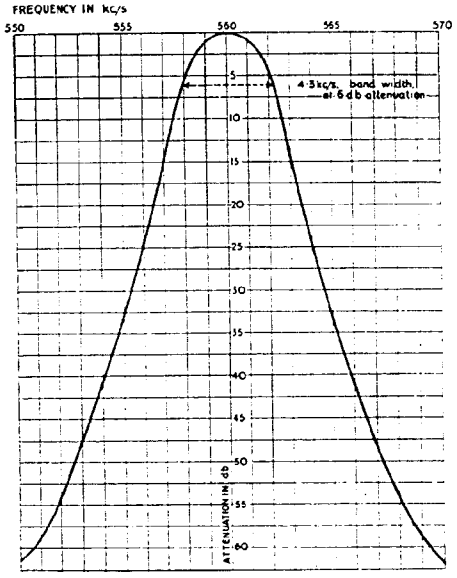



FIG. 6.—I.F. RESPONSE CURVE

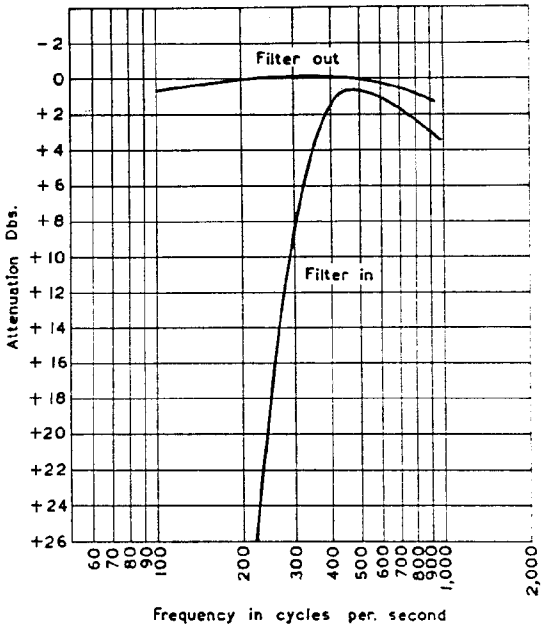



FIG. 7.—A.F. FILTER CHARACTERISTICS

## I.F. stages

16. The receiver includes two stages of I.F. amplification employing three band-pass coupling units. The peaked response of this coupling is shown in the curve in fig. 6. Very little inductive coupling exists between the tuned circuits of the band-pass units, the coupling being effected by the small condensers $C_{97}$, $C_{98}$, and $C_{101}$. The coils are adjusted to the I.F. of 560 kc/s by means of iron-dust cores. The primary of the first I.F. transformer, with its associated fixed condenser $C_{86}$ forms the anode load of the hexode portion of the valve $V_4$. Decoupling is effected by the resistor $R_{34}$ and condenser $C_{32}$. The secondary is connected as the grid circuit of $V_5$, the resistor $R_{33}$ and condenser $C_{33}$ providing decoupling of the grid bias. The two I.F. valves, $V_5$ and $V_6$, are variable-mu H.F. pentodes, and on A.V.C. their control grids are biased to full and one-tenth A.V.C. voltages respectively. The I.F. transformer units between $V_5$ and $V_6$ and between $V_6$ and $V_8$ are similar to that already described for the $V_4$–$V_5$ coupling.

## Detector and output stages

17. The output from the I.F. amplifier valve $V_6$ passes to the I.F. transformer unit $L_{21}$ and is taken to one diode of a double-diode-triode valve $V_8$. This diode acts as a detector, and the triode section functions as the output valve. The use of a second diode will be dealt with in describing the D.F circuits (see para. 48). The rectified voltage from the diode detector is developed across two resistors $R_{20}$ and $R_{21}$. The resistor $R_{20}$, in conjunction with a condenser $C_6$, forms part of a

R.F. filter system to prevent R.F. being passed to the A.F. circuit. A condenser $C_{28}$ with $R_{22}$ decouples the cathode. The A.F. passes through a network comprising the resistor $R_{67}$ and two series condensers $C_8$ and $C_9$ to a potentiometer $R_{8(2)}$, the moving contact of which is connected to the grid of the valve $V_8$. The voltage developed across $R_{8(2)}$ is admitted at the grid of $V_8$, the anode load of which is the primary of the output transformer $L_{30}$, by-passed by a condenser $C_{25}$ and connected direct to the H.T. positive input pin 5 of plug $P_1$.

18. Before the potentiometer $R_{8(2)}$ there is an A.F. filter network composed of the condenser $C_{10}$, and an A.F. choke coil $L_{29}$. The A.F. filter network, which may be switched in or out of circuit by the switch $S_5$, prevents the greater proportion of the frequencies below 300 c/s from reaching the volume control $R_{8(2)}$ and the output stage. The filter removes part of the noises due to the aircraft electrical and ignition systems. The A.F. filter characteristics are given in fig. 7 and the input/output characteristics in fig. 9.

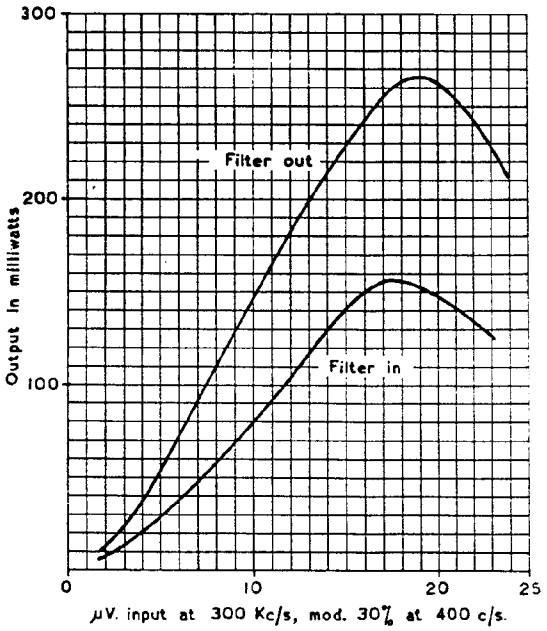



FIG. 9.—INPUT/OUTPUT CHARACTERISTICS

**Manual volume control**

19. Manual control of the gain of the R.F. and I.F. valves $V_3$, $V_4$, $V_5$, and $V_6$ is effected by the application of varying degrees of grid bias to their respective grids by the potentiometer $R_{8(1)}$. When the master switch MS is in the OMNI position the grid of the output valve $V_8$ is joined through the section $MS_{af}$ to the top end, that is, further from the H.T. negative, of the A.F. volume control $R_{8(2)}$ and the variable slider is out of circuit. The full A.F. voltage is therefore applied to the grid of $V_8$. The automatic volume control (A.V.C.) system is inoperative.

20. With the switch at OMNI the circuits are:—

(i) A fixed potentiometer, consisting of the resistors $R_{10}$, $R_{11}$, and $R_{12}$, is connected, through the switch contacts $MS_{af}$, to the slider of the manual R.F. gain control $R_{8(1)}$.

(ii) The A.V.C. diodes of $V_7$ (strapped together) are connected, through the load resistor $R_9$, to a point 3·6 volts negative along the resistors $R_3$ and $R_4$, the rectified voltage across $R_9$ operating the tuning indicator $V_{10}$.

(iii) On ranges 1 and 2 the switch $FS_{WT}$ connects $R_{64}$, (and $R_{69}$ if fitted) across $R_4$ to reduce the minimum bias voltage and also the delay on the operating voltage of the indicator $V_{10}$.

21. The chassis is approximately 30 volts positive with respect to H.T. negative. The method by which this figure and that of the 3·6 volts negative, previously mentioned, are assessed may be understood from fig. 8. The effective resistance of the potentiometer networks across the supply, having regard to the switch positions, gives a basis for calculation. (Effective resistance should not be confused with the values given in the list of components.) The resistor $R_1$ has, at a minimum, $R_3 + R_4$ in parallel with it and these form a potential divider so that 26·4 volts are across $R_3$ and 3·6