AMBASSADOR PA146

Seven-valve radio-amplifier in green-cellulosed metal cabinet. Gives 20W output and incorporates 3-band radio receiver. Made by R. N. Fitton, Ltd., Hutchinson Lane, Brighouse, Yorks.

CIRCUIT consists of a triode-hexode frequency-changer V1 feeding a VM screened pentode IF amplifier V2. A DD triode V3 is used as rectifier, AVC and microphone amplifier.

A high gain HF pentode V4 is used as a driver for the push-pull output V5 and V6, which are beam power amplifiers, and deliver 20W. V7 is an indirectly heated rectifier.

Aerial Circuits.—Aerial is fed via C1 to bottom end of L1 (MW) and L2 (LW), aerial coils. S1 switches grid of V1 to top end of L1 and L2. VC1 is the aerial tuning. R28 is grid stopper. AVC is fed to V1 grid in series with aerial coils. R2, C2 are AVC decoupling. C33 is additional capacity across trimmer T2 (LW). R6 provides cathode bias, decoupled by C5. Screen voltage is obtained from R7, decoupled by C25.

Oscillator is in a parallel fed anode tuned circuit. S2 switches anode coils L3 (MW) and L5 (LW) which are tuned by VC2. C3 is the anode coupling capacitor and R3 the oscillator anode load. S3 switches grid reaction coils L4 (MW) and L6 (LW). C4 is grid coupling capacitor. R5 with C4 provides leak-condenser bias for oscillator grid. R4 is a limiter. C23 and C24 are fixed padders and C32 additional capacity across T4 (LW).

IF amplifier (465 Kc).—IFT1, primary of which is in anode circuit of V1, transfers signal to V2. AVC is fed to V2 grid in series with secondary of IFT1, and is decoupled by R9, C6. Cathode bias is provided by R8, C7. Screen voltage is obtained from R7, which also supplies screen of V1.

Detection and AVC is by one diode, from secondary of IFT2, the other being earthed. R30, volume control and diode load, is switched by the radio-gram. switch S4. R10, C9 and C10 constitute an IF filter. AVC line is taken from the top of the diode-load R30. Rectified signal is taken from R30 by C11 and fed to the grid of V4 *via* R14.

Microphone amplifier uses the triode section of V3. With crystal microphone, the mic. transformer should be unplugged. Mic. output is then fed to grid of V3 through R27 and C13.

With carbon or moving coil mic. the transformer must be plugged in. Mic. output is then applied across a portion of the auto-transformer winding. The stepped-up voltage is applied to the grid through C13, R27 being left shunted across part of the mic. transformer. Self bias for V3 is developed by R12, C13.

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INDUCTORS

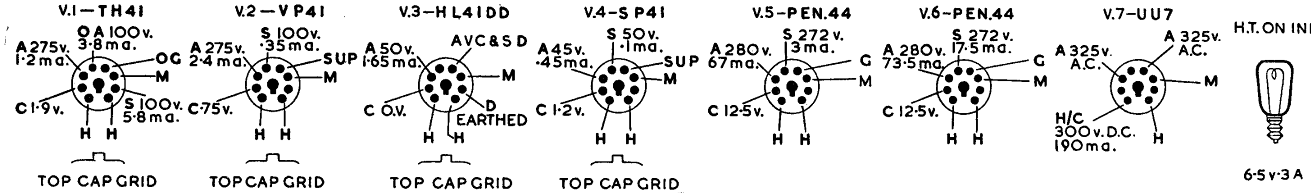
L		Ohms.	L		Ohms.
1	..	2.25	13	..	2500 Centre tapped
2	..	10	14	..	450
3	..	3	15	..	140 Centre tapped
4	..	.5	16	..	.9
5	..	4.75	17	..	1.5 Total secondary
6	..	1.25	18	..	Very low
7	..	10.5	19	..	194 Centre tapped
8	..	10.5	20	..	Very low
9	..	10.5	21	..	12.5 Total secondary
10	..	10.5	22	..	2.5
11	..	Not fitted on model tested			
12	..	750			

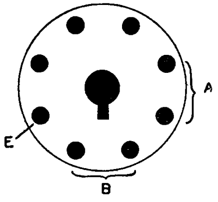
RESISTORS

R	Ohms.	W
1	56K	$\frac{1}{4}$W
2	47K	$\frac{1}{2}$W
3	39K	$\frac{1}{2}$W
4	47	$\frac{1}{4}$W
5	47K	$\frac{1}{2}$W
6	150	$\frac{1}{8}$W
7	22K	2W
8	330	$\frac{1}{8}$W
9	1 meg	$\frac{1}{4}$W
10	47K	$\frac{1}{4}$W
11	100K	$\frac{1}{8}$W
12	4.7 meg	$\frac{1}{8}$W
13	1 meg	$\frac{1}{8}$W
14	1 meg	$\frac{1}{8}$W
15	3.3K	$\frac{1}{4}$W
16	47K	$\frac{1}{2}$W
17	220K	$\frac{1}{8}$W
18	1 meg	$\frac{1}{2}$W
19	1K	$\frac{1}{2}$W
20	10K	$\frac{1}{2}$W
21	1K	$\frac{1}{2}$W
22	68	2W
23, 24	Not fitted on model tested	
25	68	1W
26	22	1W
27	470K	$\frac{1}{8}$W
28	47	$\frac{1}{4}$W
29	68	2W
30	500K	Potentiometer
31	500K	Potentiometer

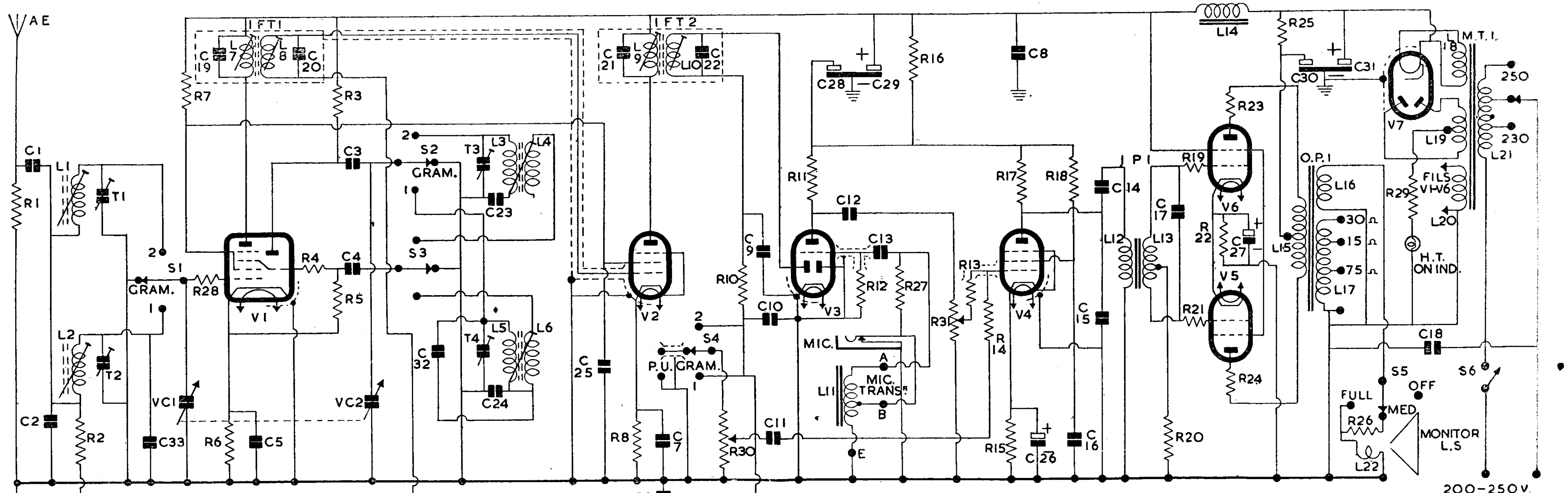
CAPACITORS

C	mfds.
1	.0006 mica
2	2400pF silver mica
3	100pF mica
4	100pF mica
5	.1 tubular 350v
6	.1 tubular 350v
7	.1 tubular 350v
8	.1 tubular 500v
9	200pF mica
10	200pF mica
11	.02 tubular 350v
12	.02 tubular 350v
13	.02 tubular 350v
14	.1 tubular 500v
15	200pF mica
16	.1 tubular 500v
17	100pF silver mica
18	.002 tubular 500v
19	100pF silver mica
20	100pF silver mica
21	100pF silver mica
22	100pF silver mica
23	405pF silver mica
24	220pF silver mica
25	.1 tubular 500v
26	25 electrolytic 25v
27	25 electrolytic 25v
28, 29	8 + 8 electrolytic 450v
30, 31	8 + 8 electrolytic 450v
32	100 pF silver mica
33	25pF ceramic tubular





MIC. TRANS. SOCKET



CORRECTION.—Bottom end of L4 should be shown connected to bottom end of L3.

AMBASSADOR PA146
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R11 is the anode load of V3. C12 feeds the signal to R31, the mic. volume control, and thence via R13 to grid of V4.

Driver valve is an HF pentode, fed from either microphone or radiogram. volume controls. Bias comes from R15, C26 ; screen voltage from R18, decoupled by C16. R17 is anode load and C15 anode HF by-pass. HT for V3 and V4 is decoupled by R16 and C28. C14 applies output from V4 to primary of IP1, push-pull input transformer.

Output stage.—Input to the beam power push-pull output valves is from the ends of the secondary of IP1, centre tap of which is earthed through R20, which reduces any unbalance in the two halves of the secondary winding. R19, R21 are grid stoppers, and C17 further prevents parasitic oscillation.

Bias for both valves is developed across R22, C27. Screen voltage is from V1-V4 HT line and is smoothed and decoupled by L14 and C29. C8 is HF by-pass.

HT for V5 and V6 which is smoothed by R25, C30, is taken to centre tap of OP1, output transformer, and thence via the primary winding to the anodes. R23 and R24 are anode stoppers.

Secondary L17 of OP1 is tapped for speakers of 7.5, 15 or 30 ohms. A separate secondary L16 drives a monitor speaker on the chassis ; S6 switches the monitor on/off at medium or full output.

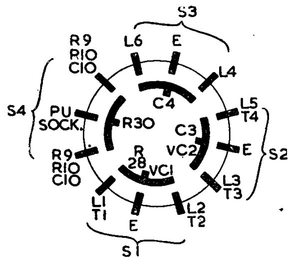
HT supply is from V7. L19, HT secondary of MT1 (mains input transformer) supplies anode voltages. L18 is rectifier heater secondary and smoothing is by R25, C30, C31, L14, C29. HT indicator lamp is in the earth return of the HT supply, and acts as a fuse. R29 is surge limiter.

Heaters of V1–V6 are fed from secondary winding L20.

Mains input.—Primary of MT1 is tapped for 200–250v, AC. C18 is to prevent modulation hum. S6 is the main's on/off switch.

TRIMMING INSTRUCTIONS

Apply Signal as stated below	Tune Receiver to Meters	Trim in order stated for maximum output
(1) 465 Kc to top cap V1, *via* .01 capacitor	—	Core of L10, L9, L8, L7
(2) 1.2 Mc to AE Socket *via* Dummy Aerial	250	T3, T1
(3) 545 Kc. as above	550	Core of L3, L1 and repeat (2)
(4) 330Kc as above	910	T4, T2
(5) 160Kc as above	1,875	Core of L5, L2 and repeat (4)



W/C & GRAM. SWITCH from front, chassis inverted.