

PROVISIONAL SERVICE INSTRUCTIONS FORMcMichael Model MBP405

This is a superhetrodyne receiver designed for the reception of AM stations on the Long and Medium Wave bands. Power supply is from dry batteries or from an internal mains unit.

WAVEBAND COVERAGE

Medium	185— 570 metres
Long	1150—2000 metres

AERIAL

Internal Ferrite Rod type.

LOUDSPEAKER

5 in. permanent magnet—3 ohm voice coil impedance. 9000 lines flux density.

INTERMEDIATE FREQUENCY

470 Kcs.

MAINS INPUT

200-250 volts A.C. or D.C.

POWER CONSUMPTION

7-8 watts approx.

VALVES

V1 DK96	Frequency changer
V2 DF96	I.F. Amplifier
V3 DAF96	Detector and L.F. amplifier
V4 DL96	Output

MAINS RECTIFIER

Siemens 39 K6 half wave contact cooled type.

BATTERIES

H.T. 90 v.	Everready Batrymax B126. Drydex Drymax 526. Vidor L.5512.
L.T. 7.5 v.	Everready AD28. Drydex H1187. Vidor L5048.

CIRCUIT DESCRIPTION

The medium wave aerial circuit consists of L1, C6 and TR1 with S1a closed. On long wave S1a is open and the circuit consists of L1 and L2 in series and C1 C6 and TR1. The circuit in use is coupled to the grid of the frequency changer by C2 and AVC is applied via R1.

The medium wave oscillator circuit consists of L3 with C12, C7 and R2. R4 is shunted across the circuit to reduce the oscillator voltage which would otherwise cause noisy reception. On long wave, R4 is switched out by S1b and a 365 pF condenser C9 is brought in. The feedback winding is fed by C10 and injection is by electron coupling in the valve.

The 470 Kcs. signal appearing across L4 C3 is coupled to the grid of V2 by L5 C4. AVC is applied to this stage.

The I.F. transformer L6 C13 L7 C14 couples V2 to the diode of V3 and the rectified carrier with the audio component appears across P1. Filtering is effected by D1 and AVC is fed via R9.

The audio voltage is fed via C16 to the grid of the LF valve V3 and thence via C20 to the output valve V4. T1 is the output transformer and tone correction is supplied by C24.

POWER SUPPLY

The separate power supply chassis incorporates a mains/battery switch operated by the mains lead socket. Removal of this socket enables the batteries to be used. The H.T. supply is derived from the contact cooled rectifier MR1 and smoothed by R26A and C25. The filament current is drawn from the H.T. circuit via R26D and R25. The latter is adjusted to obtain the required 24 mA filament current for the filament chain at normal mains voltages.

D.C. MEASUREMENTS

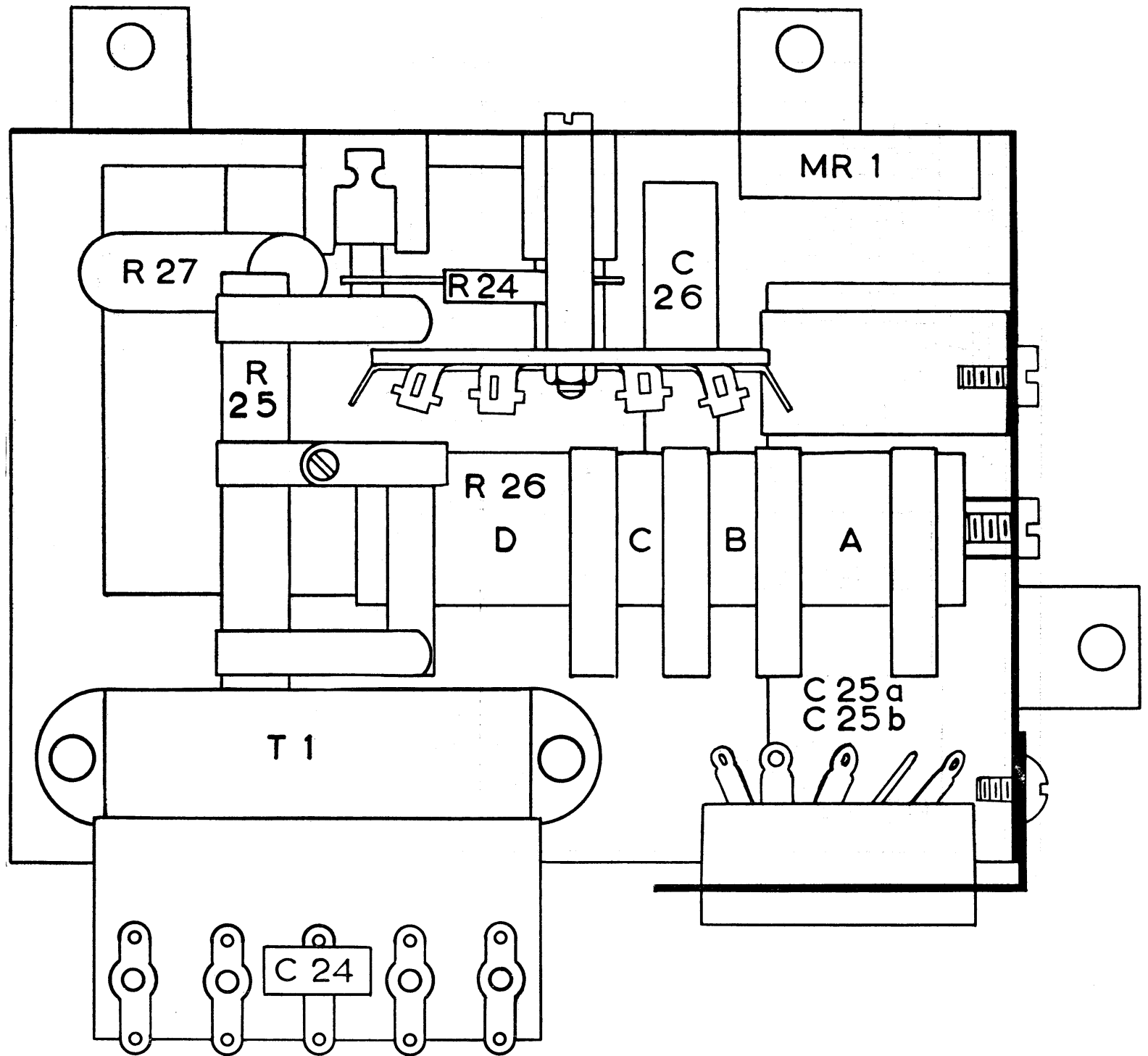
			<i>Mains Operation</i>	<i>Battery</i>
H.T. On Rectifier	...	...	206 Volts	—
H.T.1. (Pin 5 on socket)	...	...	94 Volts	90 Volts
H.T.2. (Junction of R16 and C21)			85 Volts	
Total D.C. Current	...	...	32.5 mA.	
Total H.T. Current	...	...	8 mA.	
Total Heater Current	...	...	24 mA.	

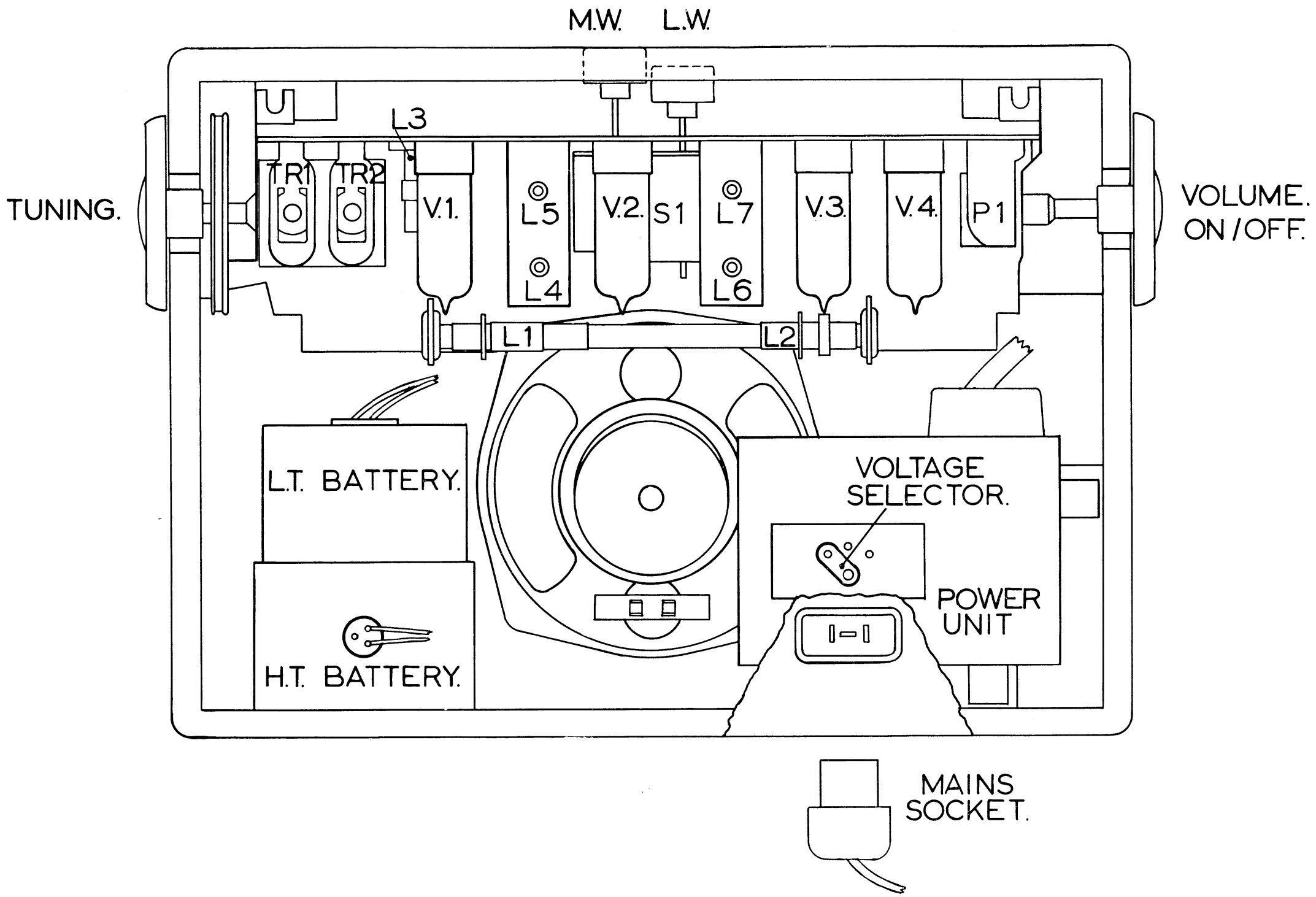
Valve	Stage	V _a V.	V _{sc} V.	V _{G₂}	V _{G₁}	I _a mA.
V1	Mixer & Osc.	85	70	36		
V2	I.F. Amplif.	85	70			
V3	Det. and LF Amp.	Very Low Reading	Very Low Reading			
V4	Output	97	80		- 4	4.1

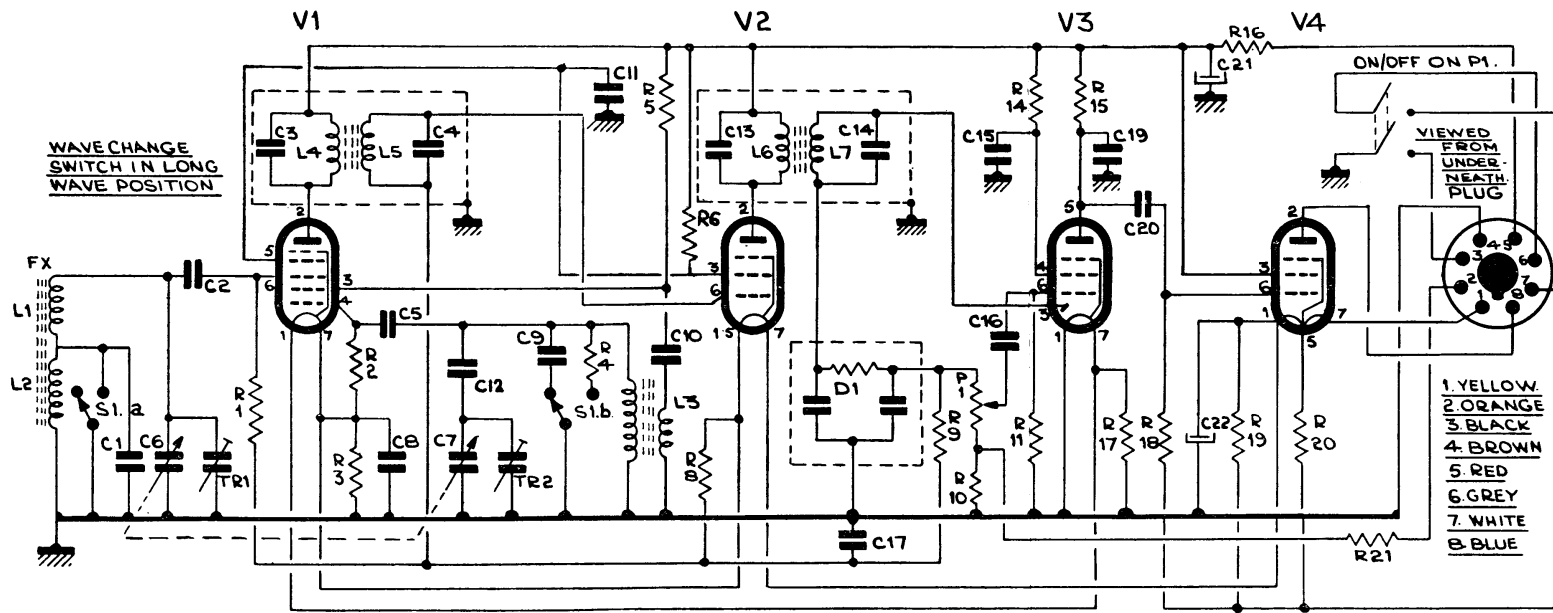
The above table shows typical voltages and current when measured with Mains selector set at 220-230 V. tap and 225 V. supplied to the receiver. M.W. gang closed and no signal pick-up. All voltages and currents $\pm 15\%$. Readings taken with a Model 8 Avometer—FSD 50 Microamps.

D.C. RESISTANCES OF COIL AND TRANSFORMERS

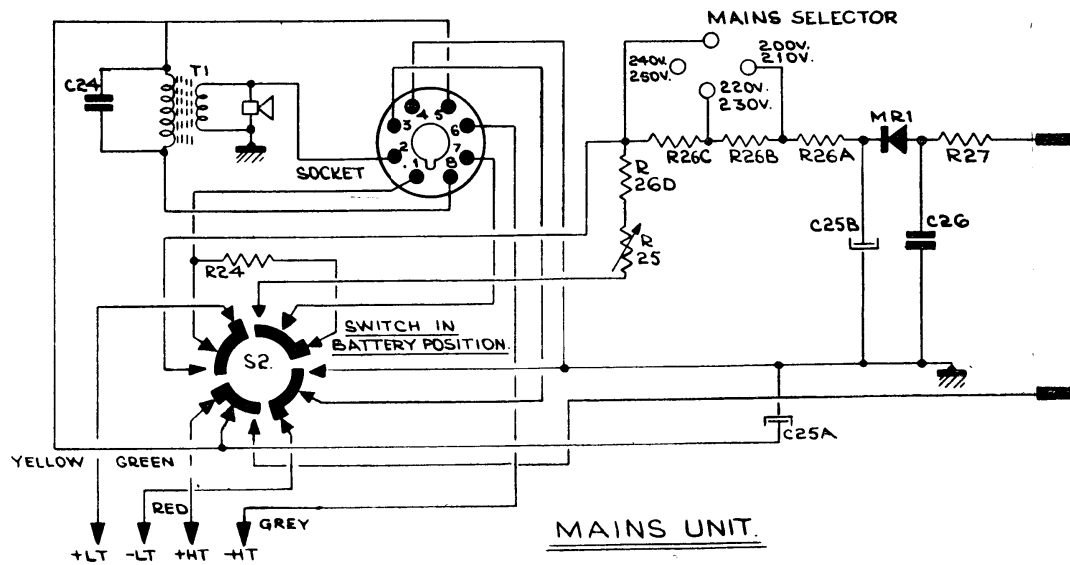
<i>Coils</i>	<i>I.F. Transformers</i>	<i>Output Transformers</i>
L1 ... 1.1 ohms	L4 ... 8.1 ohms	T1 Prim. 450 ohms } $\pm 10\%$ Sec. .26 ohms }
L2 ... 10 ohms	L5 ... 8.1 ohms	
	L6 ... 8.1 ohms	
	L7 ... 8.1 ohms	







PRINTED CIRCUIT PANEL



RESISTORS			
PRINTED CIRCUIT PANEL			
1	1M	ERIE 7AD	20%
2	27K	ERIE 7AD	10%
3	680	ERIE 7AD	10%
4	47K	ERIE 7AD	10%
5	33K	ERIE 7AD	10%
6	33K	ERIE 7AD	10%
7			
8	2.7M	ERIE 7AD	20%
9	4.7M	ERIE 7AD	20%
10	270	ERIE 7AD	10%
11	10M	ERIE 7AD	20%
12			
13			
14	2.7M	ERIE 7AD	20%
15	1M	ERIE 7AD	20%
16	2.2K	ERIE 7AD	10%
17	330	ERIE 7AD	10%
18	2.2M	ERIE 7AD	20%
19	1.8K	ERIE 7AD	10%
20	2.7K	ERIE 7AD	10%
21	2.7K	ERIE 7AD	10%
22	22	ERIE 7AD	10%

RESISTORS			
MAINS UNIT			
23			
24	1.8K	TB	10%
25	1.2K VARIABLE		10%
A26	2800W	MAINS PROPER PRESSURE	5%
B	700W		5%
C	840W		5%
D	2500W		5%
27	450	ERG	5%

COILS			
L1	M.W. AERIAL.		
L2	L.W. AERIAL.		
L3	OSCILLATOR.		
L4	1 ST I.F. TXFR.	WT.	
L5		TYPE	
L6	2 ND I.F. TXFR.	"ST"	
L7			
T1	OUTPUT TXFR.		

CAPACITORS			
PRINTED CIRCUIT PANEL			
1	200pF	SILVER MICA	2%
2	100pF	SILVER MICA	LEMCO 10%
3	100pF	I.F. TXFR.	
4	100pF	COND'R.	
5	100pF	SILVER MICA	LEMCO 10%
6		GANG	PLESSEY
7		CONDENSER	TYPE 'V'
8	.25μF		HUNTS W99 150V
9	365pF	SILVER MICA	LEMCO 2%
10	100pF		LEMCO 10%
11	.1μF		HUNTS A300
12			
13	100pF	I.F. TXFR.	
14	100pF	COND'R.	
15	.01μF		HUNTS W99
16	.003μF		HUNTS W99
17	.01μF		HUNTS W99
18			
19	30pF		LEMCO 20%
20	.003μF		HUNTS W99
21	2μF	ELECT.	PLESSEY CE 215 200V
22	100μF	ELECT.	PLESSEY CE 214 25V

CAPACITORS			
MAINS UNIT			
23			
24	.001μF		HUNTS L83 100V AC
25A	.50+50μF	ELECT	HUNTS JE 268 275V
B			
26	.005μF		T.C.C. TYPE G47 600V AC
27			
28			
29			

VALVES			
V1	DK96.		
V2	DF96.		
V3	DAF96.		
V4	DL96.		

MISCELLANEOUS			
D1	DIODE FILTER 100pF:100K:100μF	ERIE	
P1	500K LOG.	EGEN	
MR1	CONTACT COOLED RECTFR	EGEN	
FX	FERROX ROD FX 1275	MULLARD	
S1 _a	WAVE CHANGE SWITCH		
S2	BATTERY SWITCH		

MPB 405

AMMENDMENTS TO CIRCUIT COMPONENTS

Deleted:

R4 47K

Value changes :

R3 2.2 K

R17 390 ohms.

C1 160 pf

C9 360 pf

Added :

C12 430 pf