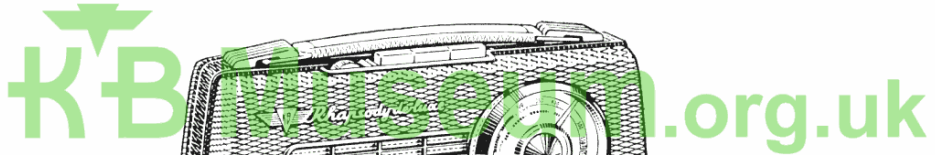


SERVICE DATA



This receiver is a de luxe version of the MPI51/2. It is contained in a rexine-covered wooden cabinet with modified gold decor, etc.

SPECIFICATION

The PP 251 is a four valve and metal rectifier two waveband portable receiver, for operation on self contained batteries or mains (A.C. or D.C.).

VOLTAGE RATING

Mains: 200-250 volts A.C. or D.C.		
Batteries: L.T. 7.5 volts.	Make.	H.T. 90 volts.
H.1187	Drydex	Drymax 526
AD.38	Ever-Ready	B126
BB.408	G.E.C.	BB.526
L.5048	Vidor	L.5512

POWER CONSUMPTION. 10 watts.

WAVERANGES.

Long Waveband	150-300 Kc/s. (2000-1000 metres).
Medium Waveband	500-1610 Kc/s. (600-186 metres).

CONTROLS. Press Buttons—L.W./On, M.W./On, Off.
 Volume Control.
 Tuning.

VALVE COMPLEMENT:

TYPE	FUNCTION
Brimar DK96	Frequency Changer.
Brimar DF96	I.F. Amplifier.
Brimar DAF96	2nd Detector, 1st Audio Amplifier.
Brimar DL96	Audio Output.
Metal Rectifier—Westinghouse 18RA 1-1-16-1, or Siemens E250 C50.	

DIMENSIONS. Height 7 inches.
 Width 9 $\frac{3}{4}$ inches.
 Depth 3 $\frac{1}{2}$ inches.

The receiver contains a ferrite rod aerial unit which operates on both Long and Medium wavebands.

The mains cord is connected to the receiver by means of a special plug, which, when inserted in the slot provided in the rear of the cabinet, connects the mains and actuates a change-over switch thereby disconnecting the internal batteries.

This plug can only be fully inserted one way and should not be forced in the wrong way round.

The cabinet must not be opened until this plug has been withdrawn and the mains disconnected.

Withdrawal of the plug changes over from mains to battery operation.

When batteries are permanently removed from the cabinet the H.T. 3 pin plug on the battery lead should be inserted in the panel provided. The L.T. battery plug is permanently fixed to chassis so that no problem arises when L.T. battery is removed.

SETTING UP PROCEDURE

1. To open cabinet, depress the two metal studs at either end on the top. This will release the catches and allow the back to open on the hinge at the bottom.
2. Remove any packing materials, etc.
3. Make sure that all valves are pressed firmly in their sockets.
4. Set mains voltage plug to the appropriate position, i.e., for input voltages 200–210 volts set to 205V position; for voltages 220–230 volts set to 225V position; and for 230–250 volts set to 245V position.
5. Connect batteries.

CIRCUIT DESCRIPTION

This is a 4+1 superhet receiver the valves used being battery 25 mA. filament types. Due to the low filament current it is essential to check that this is nominal when valves are replaced—see special note on filament current adjustment.

A ferrite aerial assembly is used for Long and Medium wavebands. No aerial or earth terminals being provided due to high Q coils and 8-in. rod used in this design.

The oscillator circuit is a combination of Hartley and Colpitts, coupling being by C9 (390 pF. padder) and L6 on oscillator coil. L7 is the L.W. oscillator loading coil which is short circuited on M.W.

The I.F. transformers are both of the same type and the 2nd transformer has a 1 M Ω . load used as volume control. A.G.C. is applied to DF96 and DK96 valves via R9 and R1.

Audio negative feedback is applied from secondary of the output transformer via 0.1 μ F. and 1800 ohms in series fed into a 470 ohm resistor in the bottom of the volume control. This gives effective bass compensation as volume control is retarded.

Resistors R4, R8, R14 and R17 are close tolerance values as they maintain the cathode current of each valve within the prescribed ratings. These resistors are in general necessary with series operation of battery valves.

The Brimistor R18 (CZ10) across the filament circuit is a protective element should any valve become open circuit filament.

On mains H.T. and L.T. are supplied by a single metal rectifier. Resistors R20, R21, R22, R23 and R25 are all incorporated as one unit (mains dropper) and voltage selection is carried out by short circuiting R21 or R21 and R22 on the D.C. side of the rectifier. These voltage positions apply to A.C. or D.C. mains inputs. R25 has been adjusted to a critical value to make this possible.

A two pole on-off switch is actuated by press buttons and has one pole for mains and one for battery switching.

R24 is the variable pre-set filament current adjustment control. Being prior to H.T. line voltage take off point this latter is also stabilised as between receivers when filament is set correctly.

The resistor R19 (1.2K Ω) is included to drop H.T. volts to maximum permissible with valves connected in existing series chain arrangement.

The H.T. current on battery operation does not as on MP 151/1 pass through the L.T. battery and hence the useful life of this is considerably prolonged.

REMOVAL OF CHASSIS FROM CABINET

1. Remove tuning knob and mains cord plug.
2. Open cabinet and remove batteries.
3. Remove the three fixing screws.
4. Release the lid stay.
5. Withdraw chassis by lifting bottom end first and then pulling back to clear press buttons from cabinet slots.

FILAMENT CURRENT

In order to obtain satisfactory operation under all mains voltage conditions it is essential to adjust the filament current to a measured value of 24mA. with nominal mains input.

To check this the following equipment will be required:—

1. A suitable voltmeter to determine mains supply voltage and means to adjust this to nominal.
2. D.C. milliammeter to read 24 mA.

ADJUSTMENT

1. Set voltage selection plug to the appropriate mains voltage and adjust supply to nominal, i.e., the voltage as marked on the top.
2. Unsolder the lead from the On/Off switch (S2) to Pin 7 on V4 (DK96).
3. Connect milliammeter in place of this lead.
4. Adjust the pre-set control R24 until the filament current is 24 mA.
5. Remove milliammeter and resolder lead to switch.

ALIGNMENT INSTRUCTIONS

The following equipment will be required:—

1. A.M. signal generator covering the range 140 to 1600 Kc/s.
2. Power output meter or high impedance A.C. voltmeter.
3. Calibration Disc (see page 7).

ALIGNMENT

1. The oscillator operates at a higher frequency than the signal input on both bands.
2. Set the tuning pointer to the datum mark with gang at maximum capacity. Pointer slot upwards.
3. Keep the input signal as low as possible, reducing it progressively as the sensitivity increases with alignment.
4. Measurements to be made with the R.F. signal modulated 30% at 400 c/s.
5. I.F. alignment should be carried out as follows:—
 Connect signal generator via 0.1 μ F. capacitor to the mixer signal grid (V1 DK96 pin 6).
 Feed in 470 Kc/s. signal, gang condenser fully open, on medium wave.
 Cores L4 and L8 screwed out, core L3 normal working position.
 Adjust cores for maximum gain in the following order: L9, L8, L3, L4, re-adjust L8 for maximum.
6. For R.F. alignment connect the signal generator to a shielded test coil* situated axially in relation to the aerial coils on the ferrite rod. This is necessary as no aerial or earth terminals are provided.
7. R.F. alignment should be carried out in the order shown below, operations should be repeated as necessary until scale accuracy with maximum sensitivity is attained.

Operation.	Input Frequency.	Waveband.	Pointer Position.	Adjustments.
1.	600 Kc/s.	M.W.	500 M. mark.	Osc. Core L5.
2.	1400 Kc/s.	M.W.	214 M. mark.	Osc. Trimmer T2. Aerial Trimmer T1.
3.	225 Kc/s.	L.W.	1330 Metres. Approx.	Osc. Core L7 whilst rocking gang for optimum.
	V1 DK 96		V2 DF 96	V3 DAF 96 V4 DL 96

* Twelve turns of P.V.C. insulated connecting wire on a 2-inch diameter former.

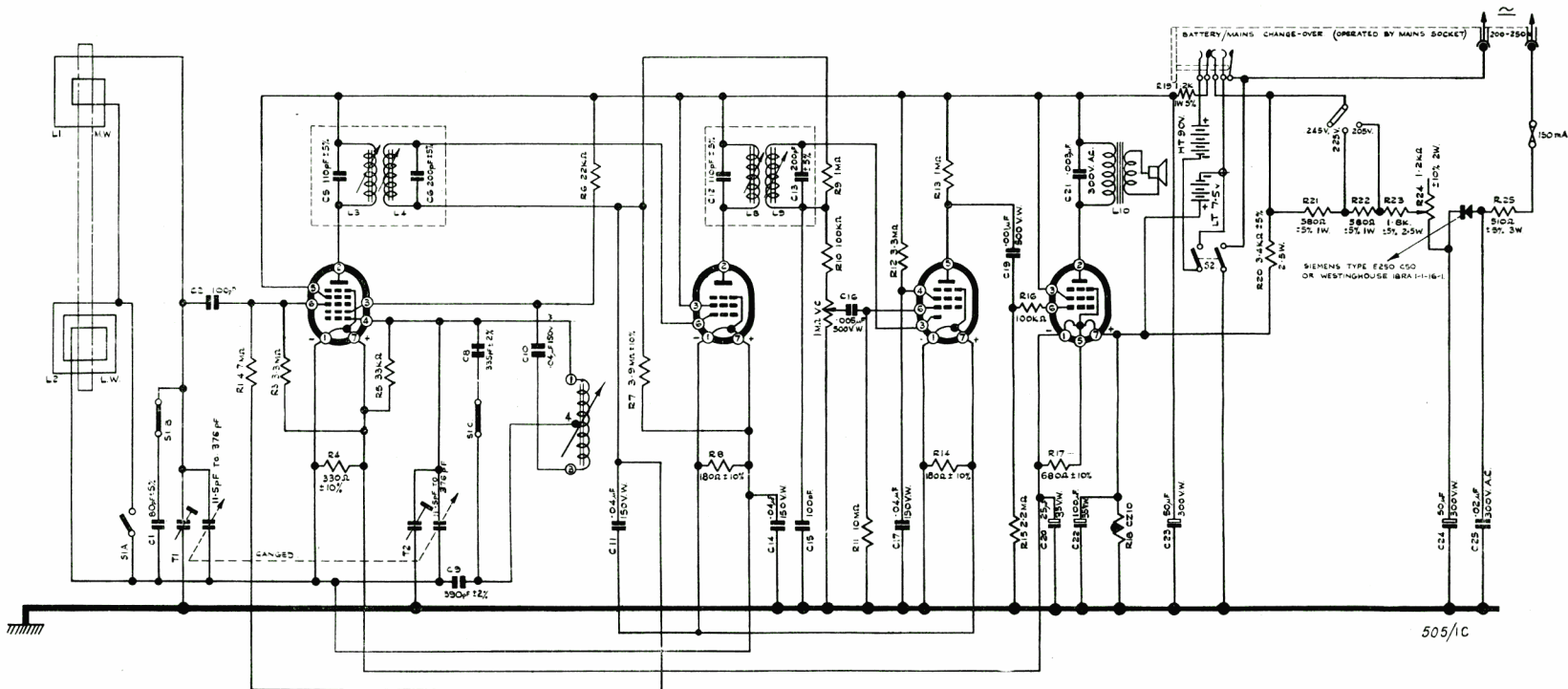
V1
DK 96

V2
DF 96

V3
DAF 96

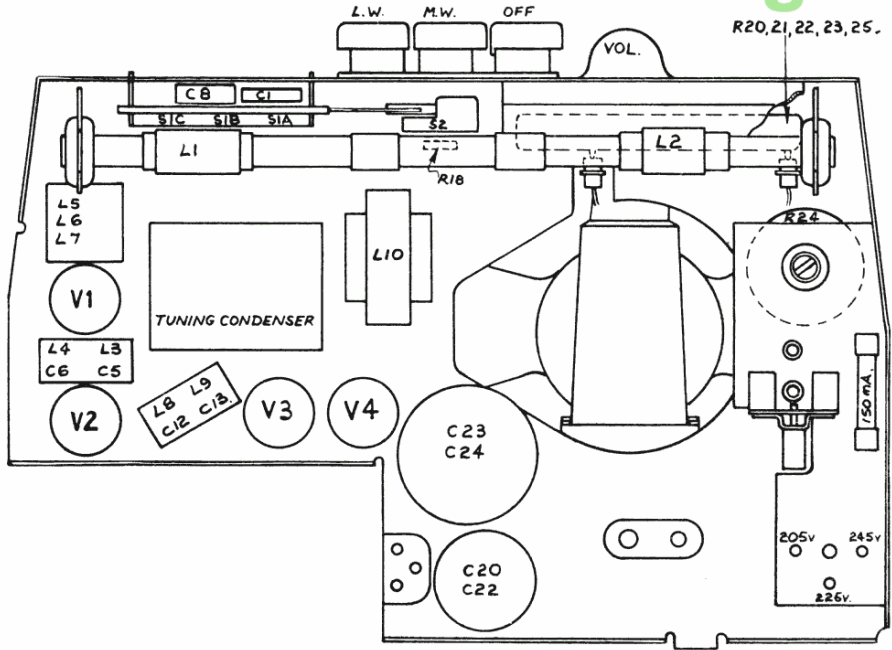
V4
DL 96

page FOUR

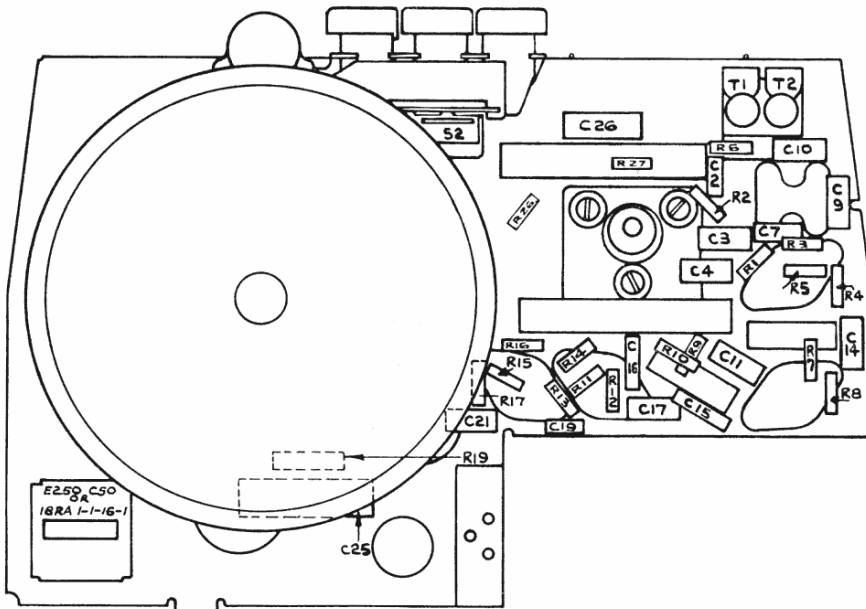


505/1c

- NOTES:-
1. T.F. 470 Kc/s
 2. WAVECHANGE SWITCH (S1) SHOWN IN L.W POSITION
 3. ALL RESISTORS ARE ± 20% 1/2W UNLESS OTHERWISE STATED
 4. ALL CONDENSERS ARE 120% 350VW UNLESS OTHERWISE STATED



UNDER VIEW OF CHASSIS



VOLTAGE CHART

VALVE PIN VOLTAGES MEASURED WITH A VOLTMETER HAVING 1,000 OHMS/VOLT IMPEDANCE

Valve	Circuit Reference	1	2	3	4	5	6	7	8	9
DK96	Frequency Changer ...	*	80	34	0.3	41	0	*	—	—
DF96	I.F. Amplifier ...	*	80	80	—	—	0	*	—	—
DAF 96	Detector & Audio Amp.	E	—	SN	5	8	0	*	—	—
DL 96	Output ...	*	77	80	—	5	0	*	—	—
METAL RECTIFIER		A.C. INPUT 218V.				D.C. OUTPUT 214V.				

E—Denotes Chassis Connection.

SN—Denotes Slightly Negative

All measurements taken with controls set for minimum gain and no applied signal

Power input 245V. into 245V. tap.

Mains input current 47 mA.

Pointer at Datum on M.W.

Total H.T. current 10 mA.

Smoothing Electrolytics C24 50 mF, C23 50 mF.

Filament current 24 mA. Series Filament Chain.

D.C. voltage 214, 80.

Power supply range 200–250V. A.C. or D.C.

Hum voltage 2.8, 0.02.

Power consumption 10 watts.

Smoothing resistors (ohms) R23, 24 1800+600. R21, 22 580+580. R19 1200.

Voltage drop 78, 43, 12.

SPARES LIST

PRICES ARE SUBJECT TO ALTERATION WITHOUT NOTICE

IMPORTANT NOTE: It is essential to quote Receiver Serial Number when ordering

Component	Colour Code	Circuit Ref.	Part No.	Price	Component	Colour Code	Circuit Ref.	Part No.	Price
Cabinet Assy.	538/4	95/-	POTENTIOMETER:—	...	...	...	...
COILS:—	Volume Control ...	...	...	457/251/1	5/6
I.F. Coil Assy.	480/51	10/-	Push Button Unit Assy. ...	...	...	457/123	5/6
Osc. Coil Assy. ...	Brown, Brown, Violet	...	505/48	6/-	Mains Panel Assy. ...	...	...	505/137	2/3
M.W. Aerial Coil Assy.	505/32	1/-	RESISTORS:—	...	...	...	...
L.W. Aerial Coil Assy.	505/33	1/-	120Ω ± 10% ½ W. ...	...	R8, 14	R121 FEM	1/-
CONDENSERS:—	330Ω ½ W. ...	...	R4	R331 HEM	1/-
50 pF. 350V.	C7	KST 36	1/-	390Ω ± 10% ½ W. ...	...	R17	R391 FEM	1/-
60 pF. ± 2% 350V.	C1	KST 60/C	1/-	22 KΩ ½ W. ...	...	R6	R223 HEM	1/-
100 pF. ± 10% 350V.	C2	KST 1/F	1/-	33 KΩ ½ W. ...	...	R5	R333 HEM	1/-
100 pF. 350V.	C15, 18	KC22	1/-	47 KΩ ½ W. ...	...	R2	R473 HEM	1/-
270 pF. ± 2% 350V.	C8	KST 180/F	1/-	100 KΩ ½ W. ...	...	R10, 16	R104 HEM	1/-
390 pF. ± 2% 350V.	C9	KST 38/F	1/-	1.2 KΩ ± 5% ½ W. ...	...	R19	R122 EF	1/-
.001 μF. 500V.	C19	KC 18	1/-	1 MΩ ½ W. ...	...	R9, 13	R105 HEM	1/-
.003 μF. 300V. A.C.	C21	KPM 56	1/-	2.2 MΩ ½ W. ...	...	R15	R225 HEM	1/-
.005 μF. 500V.	C16	KC 108	1/-	3.3 MΩ ½ W. ...	...	R3, 12	R335 HEM	1/-
.02 μF. 300V. A.C.	C25	KT 22/T	1/-	3.9 MΩ ± 10% ½ W. ...	...	R7	R395 FEM	1/-
.04 μF. 150V.	C3, 4, 10, 11, 14, 17	KPM 35	1/-	4.7 MΩ ½ W. ...	...	R1	R475 HEM	1/-
100 ± 25 μF. Elec. 35V.	C20, 22	KEM 108	3/-	10 MΩ ½ W. ...	...	R11	R106 HEM	1/-
50 ± 50 μF. Elec. 300V.	C23, 24	KEM 107	6/3	Brimistor CZ10 ...	...	R18	457/267	1/6
Gang Condenser	480/210	15/-	Rod Aerial Assy. ...	...	...	505/30	8/-
Fuse 150 mA.	89511/5	6d.	Rectifier ...	...	...	457/326	8/6
Knob Assy.	505/132	7/-	Shorting Link ...	...	...	150/206	6d.
Mains Plug & Lead Assy.	505/131/C*	5/-	Scale ...	...	...	505/200	3/6
Plug 2-Pin	170/252	6d.	Speaker Assy. ...	...	...	505/250	28/3
Handle Assembly	480/142/W	...	TRANSFORMER:—	...	...	...	...
					Output Transformer ...	Red	...	457/95/2	7/6