

KOLSTER-BRANDES LIMITED

FOOTSCRAY

SIDCUP

KENT

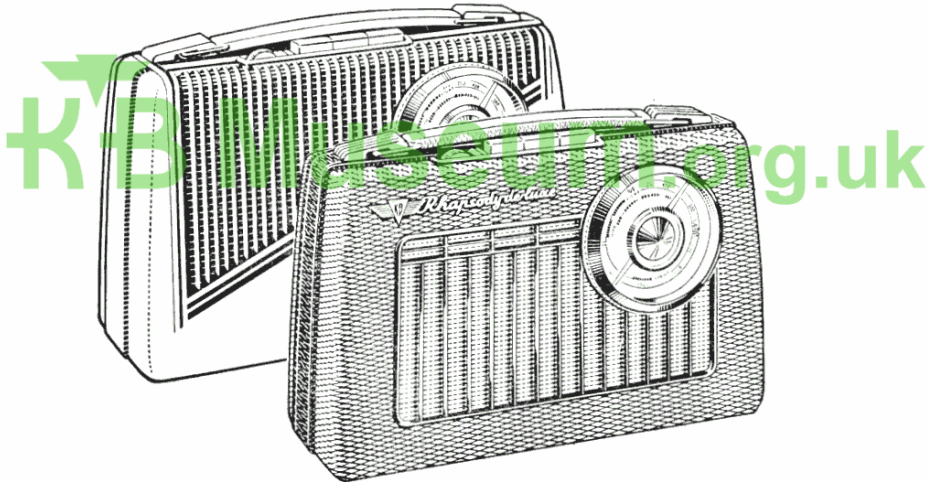
MODEL

PP II & PP 21



ISSUED JULY, 1958

SERVICE DATA



SPECIFICATION

The PP II and PP 21 are four-valve, two waveband, battery operated portable receivers using self contained 90V. and 1.5V. batteries.

VOLTAGE RATING:

Batteries: L.T. 1.5V.
H.1184
AD.35
BB.405
L5040

Type.
Drydex
Ever-Ready
G.E.C.
Vidor

H.T. 90V.
Drymax 526
Batrymax B126
BB.526
L5512

POWER CONSUMPTION: H.T. 10 mA.
L.T. 125 mA.

WAVERANGES:

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

CONTROLS: Press Buttons—LW/On, MW/On, Off.
Volume.
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.

DIMENSIONS: Height 7 inches (17.8 cms.).
Width $9\frac{3}{4}$ inches (24.7 cms.).
Depth $3\frac{1}{2}$ inches (8.9 cms.).

WEIGHT: With batteries, approximately 5 lbs. ($2\frac{1}{4}$ Kilos).

SETTING UP PROCEDURE

1. To open cabinet, depress the two studs one at either end on the top of the cabinet. This will release the catches and allow the back to open on the hinges at the bottom.
2. Remove any packing materials, etc.
3. Make sure all valves are pressed firmly in their sockets.
4. Connect the batteries by means of plugs provided and insert in spaces provided.
 - H.T. at left-hand lower side, viewed from rear of cabinet. (Plug at right-hand side of battery).
 - L.T. at lower right-hand side on white expanded polystyrene support piece. (Plug facing back of cabinet.)

CIRCUIT DESCRIPTION

This is a four-valve superhet receiver, the valves used being 25 mA. filament types.

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

The oscillator circuit is a combination of Hartley and Colpitts design coupling being by C4 (390 pF) (Padder) and a tap on the oscillator coil L5.

On Long waveband C5 (335 pF) is added in parallel with tuned portion of L5, no oscillator adjustment being made after setting up M.W. to correct alignment points.

The DF96 gives I.F. amplification and the secondary of 2nd I.F. transformer feeds the diode of DAF96 as 2nd Detector R5 (1 Megohm) acting as diode load and volume control.

A.G.C. is applied via R4 (1 M Ω) to DF96 and DK96 valves C7 (·04 μ F) being the decoupling component.

The DL96 is used as power output valve, the grid bias for this valve being derived by H.T. current through R12 (560 Ω).

A two pole On-Off switch is actuated by press buttons and has one pole for L.T. -ve and one for H.T. -ve switching.

Battery life should be 50–60 hours using battery types mentioned previously and both batteries should run down approximately together and be replaced at the same time.

REMOVAL OF CHASSIS FROM CABINET

1. Remove tuning knob.
2. Open cabinet and remove batteries.
3. Remove the three fixing screws.
(Viewed from rear.)
 - 1 at top left-hand side.
 - 1 at top right-hand side.
 - 1 at bottom right-hand side.
4. Withdraw chassis by lifting bottom end first and then pulling back to clear press buttons from cabinet slots.

ALIGNMENT INSTRUCTIONS

The following equipment will be required:—

- (a) A.M. signal generator covering the range 140–1600 Kc/s.
- (b) Power output meter or high impedance A.C. voltmeter.

1. The oscillator operates at a higher frequency than the signal on both bands.
2. Set the tuning pointer to the datum mark with gang at maximum capacity.
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. signal, gang condenser fully open, on medium wave.
Cores L4 and L6 screwed out, core L3 normal working position. Adjust cores for maximum gain in the following order:—L7, L6, L3, L4.
6. For R.F. alignment connect the signal generator to a shielded test coil (twelve turns of P.V.C. insulated connecting wire on a 2-inch diameter former) 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.

<i>Operations</i>	<i>Input Frequency</i>	<i>Wave Band</i>	<i>Pointer Position</i>	<i>Adjustments</i>
1.	600 Kc/s.	M.W.	500 M. Mark	Osc. Core L5. Position of M.W. aerial coil on rod.
2.	1400 Kc/s.	M.W.	214 M. Mark	Osc. Trimmer T2. Aerial Trimmer T1.
3.	225 Kc/s.	L.W.	Approx. 1330 metres	Position of L.W. aerial coil on rod.
4.	Repeat 1, 2, and 3 as necessary for optimum alignment.			

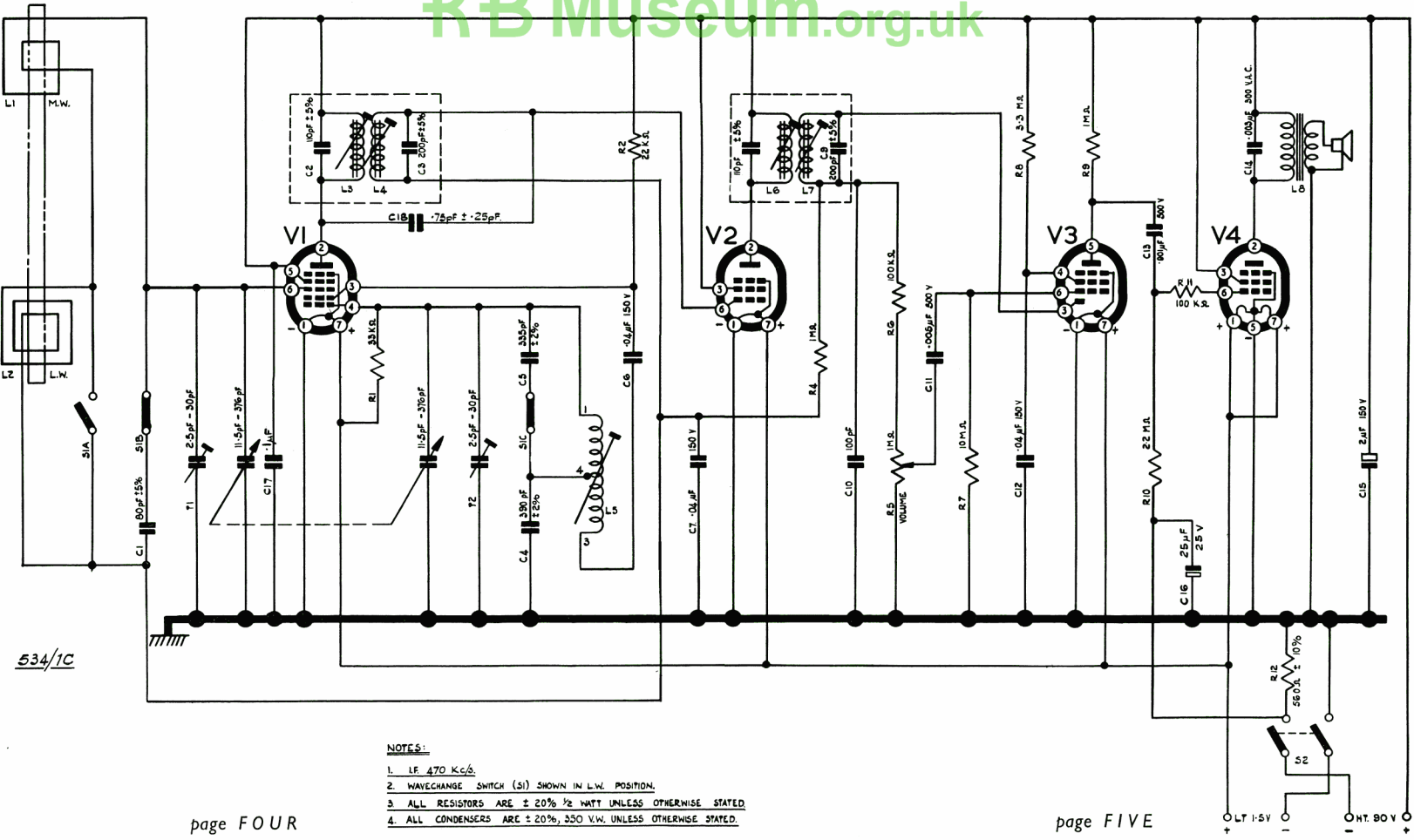
V1
DK96

V2
DF96

V3
DAF96

V4
DL96

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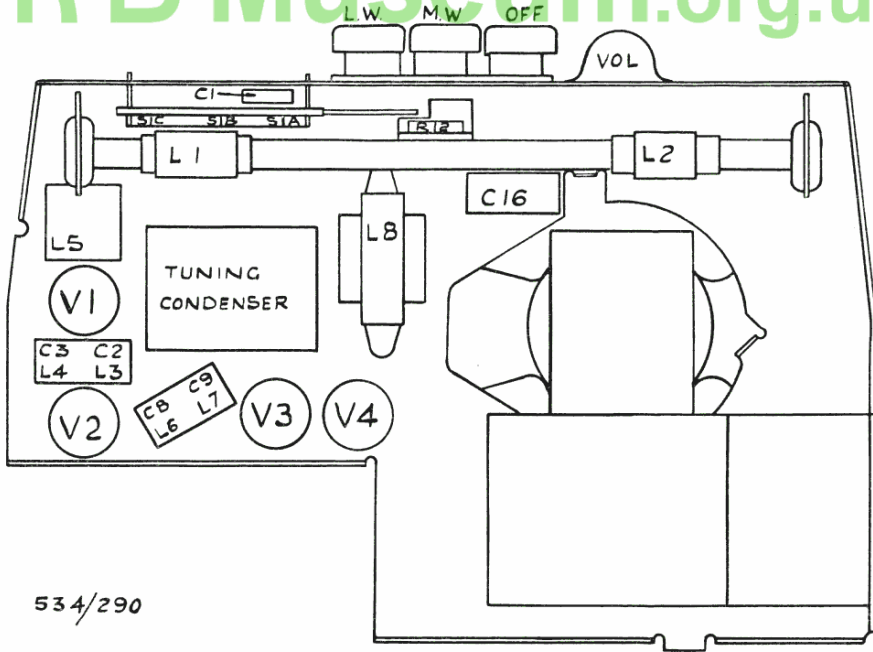
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NOTES:-

1. I.F. 470 Kc/s.
2. WAVECHANGE SWITCH (S1) SHOWN IN L.W. POSITION.
3. ALL RESISTORS ARE ± 20% ½ WATT UNLESS OTHERWISE STATED.
4. ALL CONDENSERS ARE ± 20%, 350 V.W. UNLESS OTHERWISE STATED.

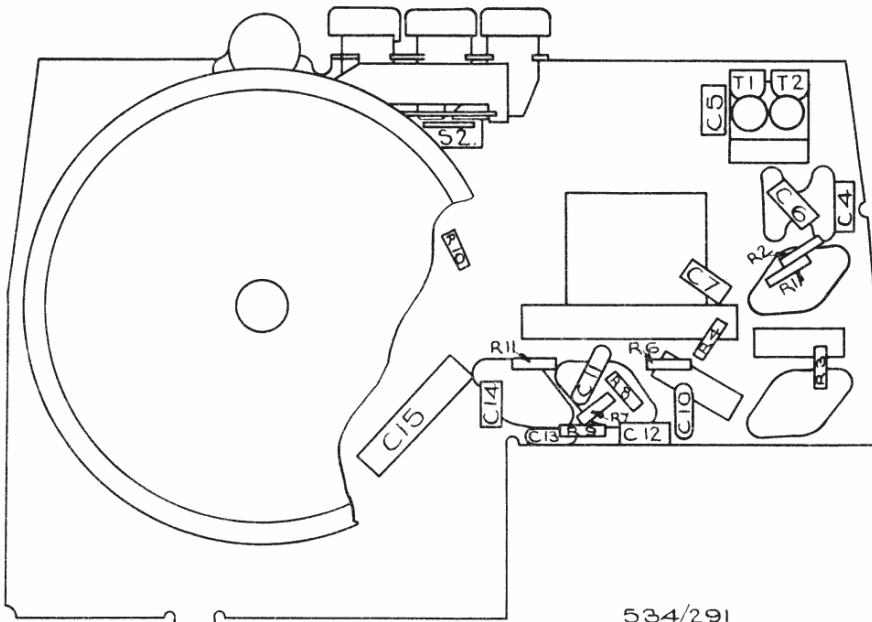
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TOP VIEW OF CHASSIS



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UNDER VIEW OF CHASSIS



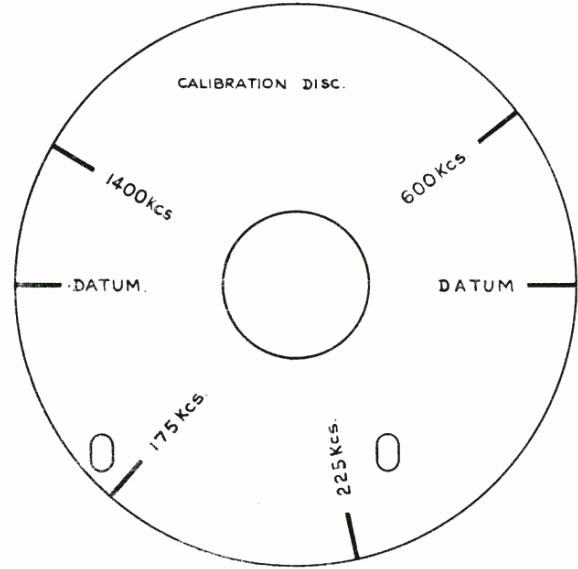
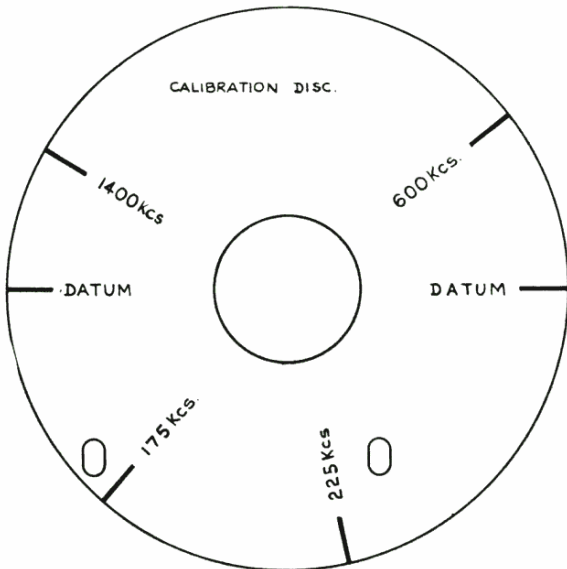
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COIL AND TRANSFORMER DATA

Circuit Ref. No.	Function	Approx. Resistance in ohms.
L1	M.W. AERIAL COIL	1.2
L2	L.W. AERIAL COIL	3.4
L3	1st I.F. PRIMARY	25.5
L4	1st I.F. SECONDARY	4.5
L5	M.W. OSCILLATOR COIL	4.5
L6	OSCILLATOR COUPLING COIL	4.5
L7	L.W. LOADING COIL	3
L8	2nd I.F. PRIMARY	25.5
L9	2nd I.F. SECONDARY	4.5
L10	OUTPUT TRANSFORMER—	
	PRIMARY	600
	SECONDARY	Less than 1

CALIBRATION DISCS





VALVE PIN VOLTAGES MEASURED WITH A VOLTMETER HAVING 20,000 OHMS/VOLT IMPEDANCE

Valve	Circuit Reference	1	2	3	4	5	6	7	8	9
DK96	Frequency Changer ...	E	90	40	SN	90	—	1.5	—	—
DF96	I.F. Amplifier ...	E	90	90	NC	NC	0	1.5	—	—
DAF96	Detector & Audio Amp.	E	NC	SN	25	30	0	1.5	—	—
DL96	Output ...	1.5	85	90	NC	E	0	1.5	—	—
METAL RECTIFIER		A.C. INPUT				D.C. OUTPUT				

E—Denotes Chassis Connection.

NC—Denotes no Connection.

SN—Denotes Slightly Negative

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

Power input batteries H.T. 90V. , L.T. 1.5V.

Total H.T. current 10 mA.

Pointer at 520KC on M.W.

Filament current 125 mA.

Bias resistors (ohms) 560.

Power output 0.1 watts for 10% distortion.

Voltage drop 5.6.

SPARES LIST

PRICES ARE SUBJECT TO ALTERATION WITHOUT NOTICE

Component	Colour Code	Circuit Ref.	Part No.	Price	Component	Colour Code	Circuit Ref.	Part No.	Price
Cabinet Assy. (PP 11)	534/4/B*	55/-	POTENTIOMETERS:—	...	...	...	...
Cabinet Assy. (PP 21)	538/4/A	95/-	Volume Control ...	...	...	457/251/1	6/-
COILS:—					Push Button Unit Assy. ...	...	...	457/123	7/6
Osc. Coil Assy. ...	Brown, Red, Brown	...	505/48/1	3/6	RESISTORS:—	...	...	...	...
I.F. Coil Assy.	480/51	9/-	560Ω ± 10% ½ W. ...	...	R12	R561FEM	1/-
CONDENSER:—					22 KΩ ½ W. ...	...	R2	R223HEM	1/-
.001 μF. 500V.	C13	KC 18	1/3	33 KΩ ½ W. ...	...	R1	R333HEM	1/-
.003 μF. 300V. A.C.	C14	KPM 56	1/3	100 KΩ ½ W. ...	...	R6, 11	R104HEM	1/-
.005 μF. 500V.	C11	KC 108	1/3	1 MΩ ½ W. ...	...	R4, 9	R105HEM	1/-
.04 μF. 150V.	C6, 7, 12	KPM 35	1/3	2.2 MΩ ½ W. ...	...	R10	R225HEM	1/-
Elect. 2 μF. 150V.	C15	KEM 82	2/-	3.3 MΩ ½ W. ...	...	R8	R335HEM	1/-
Elect. 25 μF. 25V.	C16	KEM 103	2/-	10 MΩ ½ W. ...	...	R7	R106HEM	1/-
80 pF. ± 5% 350V.	C1	KST 228	1/3	Rod Aerial Assy. ...	...	...	505/30/1	12/6
100 pF. 350V.	C10	KC 22	1/3	Scale ...	...	...	505/200/1	2/6
335 pF. ± 2% 350V.	C5	KST 247/F	1/3	Speaker Assy. ...	...	...	534/250	30/-
390 pF. ± 2% 350V.	C4	KST 38/F	1/3	Spring Catch Assy. ...	...	...	505/148	1/-
Handle Assy. (PP 21)	480/142/W	6/-	Audio Output Trans. ...	Red, Green	...	457/95/2	9/-
Handle Assy. (PP 11)	480/142/B	6/-					
Gang Condenser	505/210	19/-					
Knob Assy.	505/132	7/-					
Pointer	505/188	1/-					
Battery Lead Assy.	534/145	2/-					
2 Pin Plug	91708/1	1/-					
3 Pin Plug	170/251	1/-					

* When quoting Part No. please state colour.