

BEETHOVEN P202 BABY PORTABLE

Four-valve TRF battery-operated baby portable covering two wavebands, with self-contained frame aerial. Housed in a leatherette case with carrying strap. Provision is made for an external aerial and speaker. Marketed by Beethoven Electric Equipment Ltd., Chase Road, North Acton, London.

INPUT to the grid of V1, an RF pentode, is via a frame aerial with windings L1 (MW) and L2 (LW) forming the grid coils and tuned on both wavelengths by VC1 section of the ganged condenser. Anode and screen of V1 are fed from the high-tension line through R1 and decoupled by C3. The high-tension reservoir condenser is C1.

Output from V1 is coupled to the triode detector valve V2 by tuned anode coils L3 and L4 tuned by VC2 section of the gang. Reaction is obtained from the anode of V2 by means of the reaction coil L5, coupled to L4, and is controlled by the condenser VC3.

To secure smooth reaction, the grid of V2 is returned to the junction of R5 and R6 across the filament. Grid leak detection is employed with C2 and R5, R6 as grid condenser and leak.

The anode circuit of V2 incorporates an RF filter and decoupling circuit with C7 and R4 as filter and R2, C4 decoupling components. A fixed degree of tone correction is provided by C5.

V2 is resistance-capacity coupled by R3, C6 and R8 to V3, a triode operating as an AF amplifier, and

V3 is coupled through a parallel-fed auto-transformer L6, L7, to the grid of the output pentode V4.

Anode of V3 is fed through R9 from the high-tension line with C9 for high note by-pass. C8 is the AF coupling condenser, and R10 is a grid stopper resistance to prevent parasitic oscillation. Bias is obtained by R7 connected between HT and LT negative, and shunted by C11.

Output transformer L8, L9 couples V4 to the permanent-magnet moving-coil loudspeaker, with fixed tone correction effected by C10 across the primary.

An external speaker of high impedance or phones may be connected to the sockets provided, which are located at the side of the cabinet.

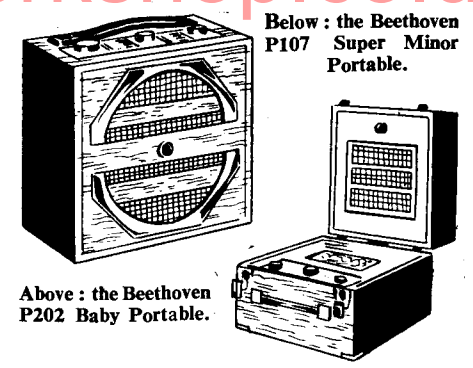
Switching is carried out by a ganged unit, the contacts 2-4 and 7-9 being the waveband switches, and 10-12, 2-2 the battery circuit switches. The pilot lamp, fitted behind a ruby lens on the speaker grill, can be switched off to economise LT current.

Battery power is supplied by a Sterling type 2002, 80 volt HT battery with clip contacts, and an Ever Ready type J155 2 volt jelly acid accumulator. Equivalent batteries are suitable provided they have slip contacts and fit in the cabinet.

GANGING

Take out the two wood screws from the right-hand side of the cabinet that secure the metal nameplate. Two holes will be found whereby access to the two trimmers can be obtained

Connect the leads from a service oscillator to a coupling coil and bring the coil near the receiver. Tune the oscillator to 214m (1,400 kc) and set the receiver scale pointer to 214m.



Above: the Beethoven P202 Baby Portable.

Below: the Beethoven P107 Super Minor Portable.

Adjust the lower trimmer to bring in the signal at maximum volume, then adjust the top trimmer for maximum output.

The reaction condenser (marked volume on the dial) should be adjusted almost to the point of oscillation while the trimmers are being set.

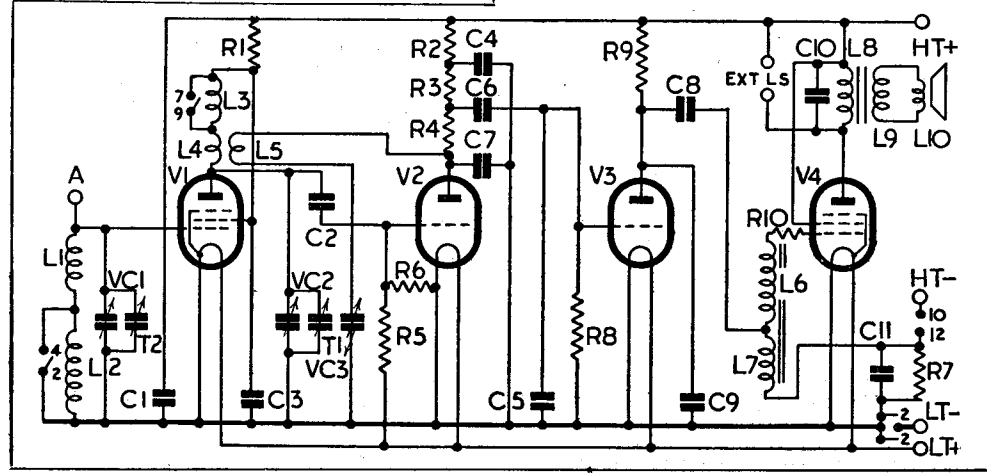
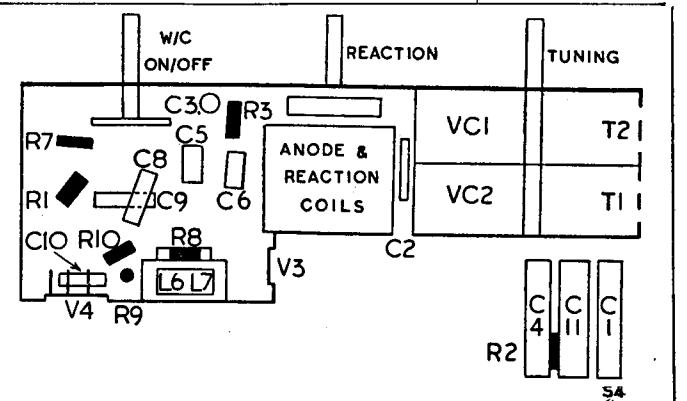
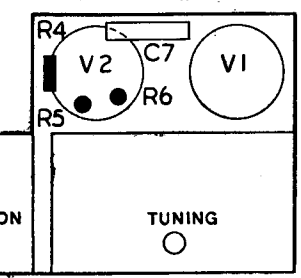
BEETHOVEN P107 SUPER MINOR PORTABLE

Four-valve TRF battery-operated portable covering two wavebands with self-contained frame aerial. Housed in a suitcase type cabinet. Sockets are provided for aerial and earth, and external speaker. Marketed in 1937 by Beethoven Electric Equipment, Ltd., Chase Road, North Acton, London.

THE circuit of the P107 model is so similar to the model P202 reviewed on this page, that a full description of the circuit is not necessary. Where they differ, can easily be detected from the accompanying circuit diagram and component values.

Continued overleaf

The circuit and chassis layouts on this page refer to the popular Beethoven P202.

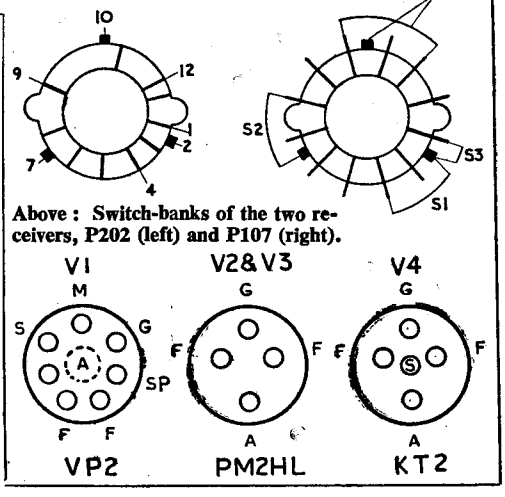


VALVE READINGS

V	Type	Electrode	Volts	Ma
1	Mullard VP2	Anode	65	.8
2	Mullard PM2HL	Screen	70	.4
3	Mullard PM2HL	Anode	44	.5
4	Mullard PM2HL	Anode	55	.6
4	Osram KT2	Anode	75	3.5
		Screen	75	.7

Voltages taken with no signal input, no reaction. MW band minimum capacity. New batteries. Indicating light bulb, Osram MES 3.5v .3A.

RESISTORS		CONDENSERS	
R	Ohms	C	Mfds
1	4,000	1	4.0
2	6,000	2	.00015
3	30,000	3	2.0
4	6,000	4	2.0
5	4 meg	5	.004
6	4 meg	6	.0025
7	300	7	.00005
8	500,000	8	.05
9	20,000	9	.001
10	250,000	10	.004
		11	25.0



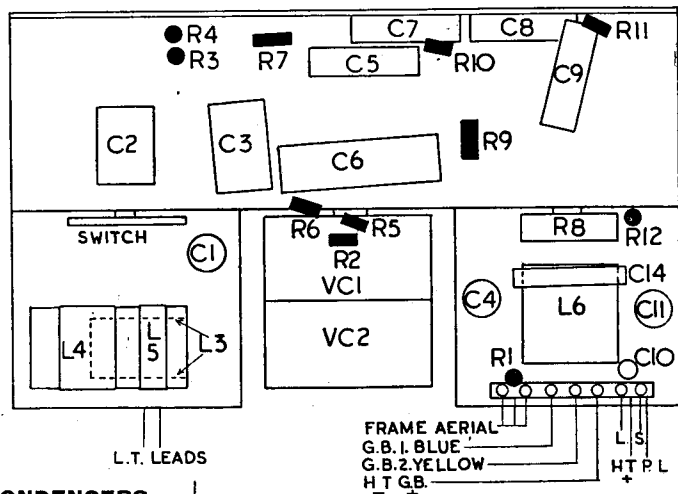
Above: Switch-banks of the two receivers, P202 (left) and P107 (right).

BEETHOVEN P107—Continued

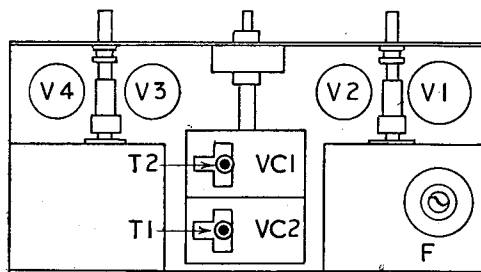
Prominent features are that this model employs a resistance of 65,000 ohms across the frame aerial for damping. The triode detector valve V2 is auto-transformer coupled to the triode AF amplifier V3, which in turn is resistance-capacity coupled to the output pentode V4.

A volume control of 15,000 ohms, ganged to the reaction condenser, is placed across part of the auto-transformer coupling.

Continued on page vi



How components are arranged on the P107 chassis is shown by these two layouts.



RESISTORS

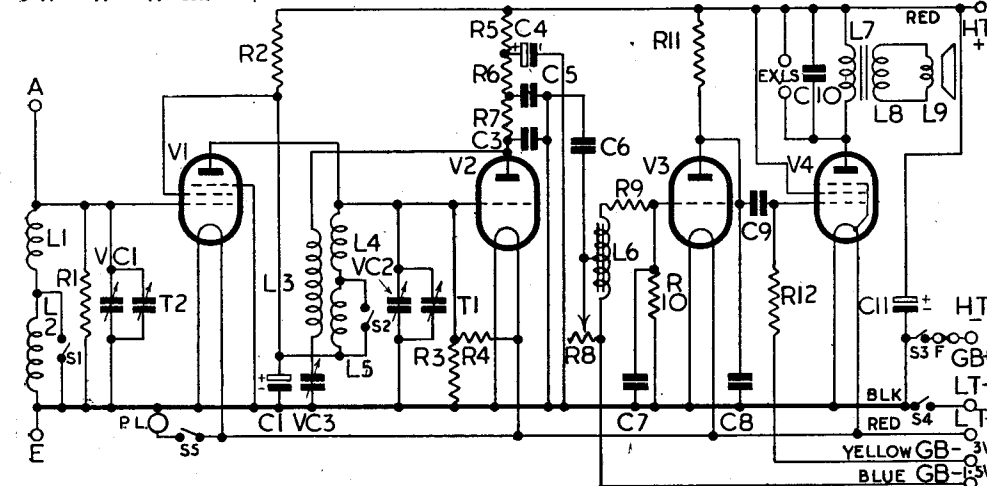
R	Ohms
1	65,000
2	3,000
3	4 meg
4	4 meg
5	12,000
6	40,000
7	3,000
8	15,000
9	250,000
10	250,000
11	30,000
12	100,000

CONDENSERS

C	Mf/ds
1	4.0
20001
30001
4	4.0
50025
62
70003
8005
91
100025
11	4.0

WINDINGS

L	Ohms
1	1.8
2	10.0
3	3.1
4	2.2
5	13.0



The P107 has RC coupling after the transformer-coupled stage instead of before it as in the P202.

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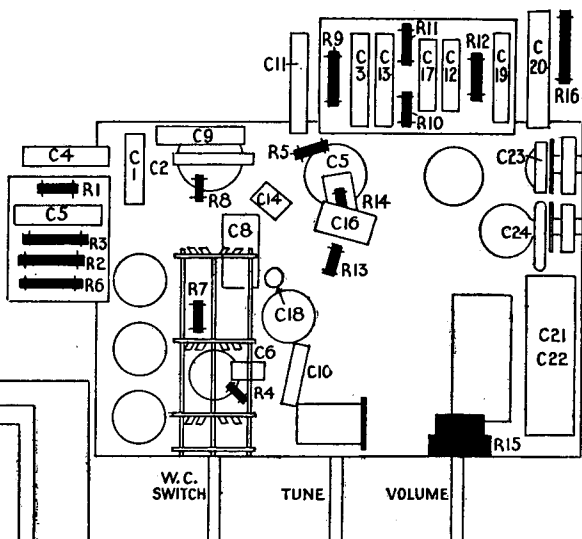
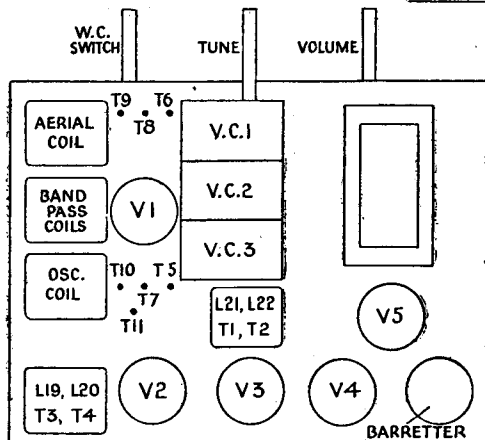
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ALBA 870 AC

Continued

These two drawings identify the components on the 870AC chassis. Below "deck" resistors are drawn in solid black to distinguish them from small condensers. As the top of chassis view (below) indicates, the trimmers are accessible from above.



BEETHOVEN PI07

Continued from page iv

Bias is supplied to V3 and V4 from the GB section of the HT battery, which is a Sterling combined 105 volts HT plus 3 volts GB, type 2001, and the LT accumulator is also a Sterling 2 volt 15AH celluloid cased jelly acid type 5001.

An Osram 1.25 volt 0.2A fuse, similar to a MES lamp, is included in the HT negative to give protection against accidental short circuits.

A combined switch (S5) and lamp holder houses the pilot lamp, which can be switched off to economise LT current by turning the knurled edge of the holder.

Provision is made for an external high-impedance loudspeaker by means of two sockets at the bottom right-hand corner of the speaker panel. An external aerial can be plugged into the red socket, and earth to the black socket on the bottom left-hand corner of the speaker panel.

Some models are not fitted with T2, but if present, this trimmer should also be adjusted.

GANGING

Remove the batteries from the receiver and reconnect outside the cabinet with extension leads. Switch set to MW.

Inject and tune in a 198.5m (1,510kc) signal via A-E sockets, and adjust T1 for maximum output.

VALVE READINGS

V	Type	Electrode	Volts	Ma
1	Mullard VP2	Anode Screen	100 100	1.7 .6
2	Mullard PM2HL	Anode	68	.6
3	Mullard PM2HL	Anode	76	.8
4	Osram KT2	Anode Screen	103 106	5.0 1.1

Volts taken with HT battery reading 110v on load. No signal input.

Volume control at minimum. MW minimum capacity.

HT is derived from the full-wave rectifier V5 with smoothing effected by the field winding L27 and condensers C17 and C18. A mains aerial lead is provided for picking up HF signals from the mains wiring via C19.

GANGING

IF Circuits.—The manufacturers do not recommend adjustment of the IF circuits without the use of an oscillograph. If alignment has to be carried out a signal of 117.5 kc should be injected into the grid circuit of V1 and T1, T2, T3 and T4, adjusted for maximum output.

Band-passing can be effected by slightly staggering the adjustments to the trimmers if peaking results in instability or harsh reproduction.

SW Band.—Switch receiver to SW and tune it to 20 m.

Inject a signal of this wavelength into the aerial and earth sockets and adjust T5 and T6 for maximum output.

MW Band.—Switch receiver to MW and tune it to 200 m. Adjust T7 for maximum output on a signal of this wavelength.

Tune receiver to 500 m, and on a signal of this wavelength adjust T8 and T9 for maximum output.

LW Band.—Switch to LW and tune to 1,600 m. Inject a signal of this wavelength and adjust T10 for maximum output and, while rocking the gang, T11.

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