

# BEETHOVEN P202 BABY PORTABLE

**CIRCUIT.**—The self-contained frame aerial constitutes the grid coils of V1, a pentode operating as an H.F. amplifier.

V1 is tuned anode coupled to V2, a triode demodulator, and reaction is obtained from the anode of V2 in conjunction with the anode coils of V1, and is controlled by a variable condenser.

An H.F. filter and anode decoupling circuit effectively decouples the anode of V2. It will be noticed that V2 utilises the grid leak method of detection, and a fixed potentiometer across the filament of V2, consisting of R5 and R6, assures smooth control of reaction.

V2 is resistance capacity coupled to V3, a triode operating as an L.F. amplifier, and V3 in turn is parallel fed auto-transformer coupled to the grid of V4, an output pentode.

Across the primary of the output transformer is connected a pentode compensator condenser C11, that affords a fixed modification of the tone. A grid resistance R10 is included to prevent unstable operation.

Grid bias for the output valve is obtained by a resistance between L.T.

negative and H.T. negative, shunted by a large capacity condenser.

Battery power is supplied by a Sterling 80-volt H.T. battery, with clip contacts, type 2,002, and an Ever-Ready 2-volt jelly-acid accumulator, type J155.

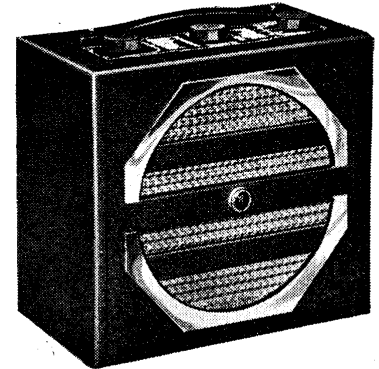
**Chassis Removal.**—Remove the back of the cabinet, all valves and the batteries. Remove the three grub-screw fixed control knobs, the four wood screws securing the wavelength scale and the chassis-securing bolt, which is revealed by removal of the wavelength scale.

Next remove the two chassis-securing wood screws from the inside of the cabinet, together with the nut holding the chassis bracket, and also unsolder the leads to the contact clips for the H.T. battery.

When replacing the battery leads connect the lead with the yellow systoflex to the positive H.T. clip, and the lead with the black systoflex to the H.T. negative clip.

The chassis may then be lowered, and is available for servicing. For more accessible servicing unsolder the red lead to the tag on the left-hand side of the cabinet.

The speaker may be removed by unsoldering the leads to the speaker speech coil and undoing the nuts securing the speaker transformer and the speaker support.



The Beethoven Baby Portable contains a four-valve chassis, a moving-coil speaker and measures only 9 by 8½ by 5 ins. The price is 7 gns.

**Special Notes.**—The indicating light on the front of the cabinet can be replaced by rotating the ruby lens holder as far as it will go to the left, when the glass and holder may be pulled out.

To remove the bulb from the totally enclosed holder hold the milled edge of the lens holder and pull the nut on the reverse end with a pair of pliers. The bulb will then come out.

The bulb is rated at 3.5 volt .3 amp., has an M.E.S. base and is secured in the holder with wax compound to prevent crackles due to the bulb working loose.

The spring clip of the battery should be bent upwards to make firm contact with the clips on the top of the cabinet.

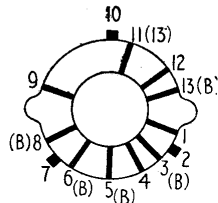
A pair of sockets on the left-hand side of the cabinet permit connections to high-impedance telephones or an extension speaker. A socket on the right-hand side enables an external aerial to be used.

It must be borne in mind that the selectivity of the receiver depends upon the frame aerial, and if an external aerial be used a small fixed condenser should be interposed between aerial and socket.

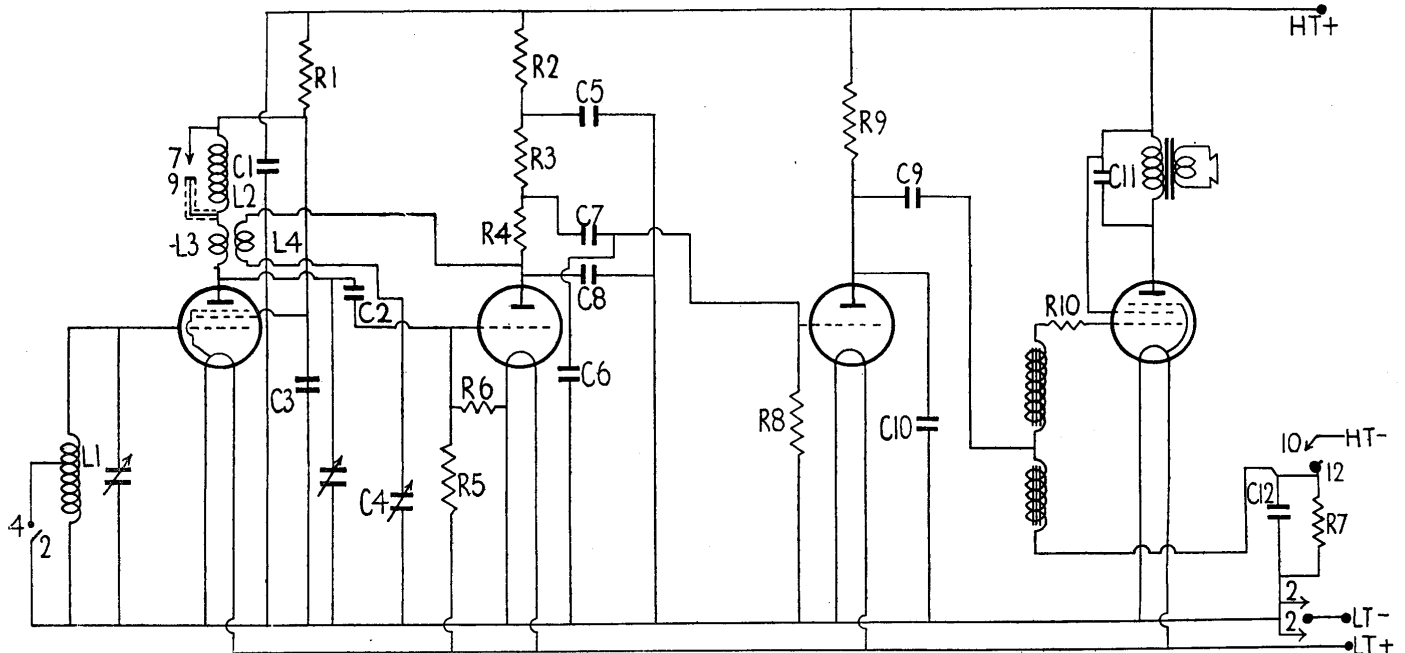
## VALVE READINGS

No signal. No reaction. M.W. band min. cap. New batteries.

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



The switch bank with contacts numbered corresponding to the circuit diagram.



A simple, conventional circuit is employed, the grid coils of the first valve forming the frame aerial. Directional properties of the frame ensure adequate selectivity.

## Circuit Alignment Notes

Take out the two wood screws from the right-hand side of the cabinet that secure the metal name-plate. Two holes will be found in the space revealed, 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 214 metres (1,400 kc.), and set the receiver wavelength pointer to read 214 metres.

Adjust the lower trimmer to bring in

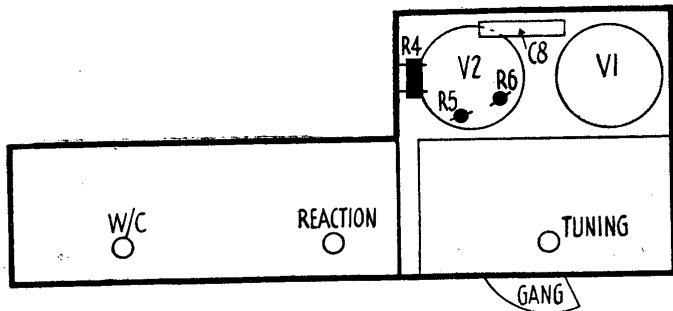
the signal at maximum volume, and then adjust the top trimmer for maximum.

The reaction condenser (marked volume on the dial) should be adjusted almost to the point of oscillation while the trimmers are being set. Move the coupling coil away from the receiver if the volume becomes too great for accurate ganging and leave the reaction control advanced.

### Replacement Condensers

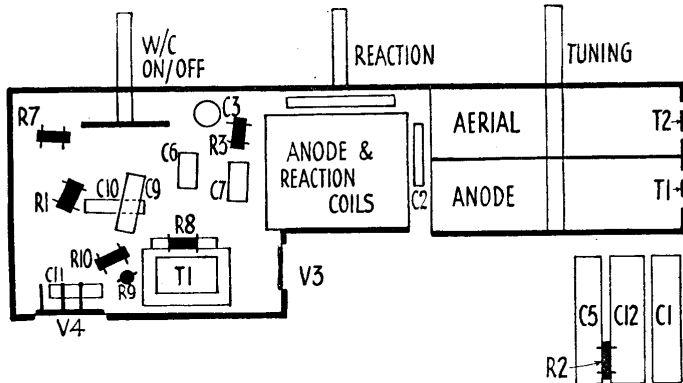
Exact replacement condensers for the P202 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18.

These are: For C1, unit number 2996, price 2s.; for either C3 or C5, unit 3479, 1s. 9d.; for C12, 2918, 1s. 9d.



Left, a diagram giving a top view of the Beethoven P202 chassis. A rather unusual form of construction is necessitated by the compact nature of the set.

Right, a side view of the set which shows the positions of the rest of the components and how the two other valves are arranged.



## Beethoven P202 on Test

**MODEL** Baby P202.—For battery operation, requiring a Sterling 80-volt H.T. battery, type 2002, and an Ever Ready 2-volt jelly-acid accumulator, type J155. Price, 7 gns. complete.

**DESCRIPTION.**—Four-valve, "straight" battery portable covering two wavebands and with self-contained aerial.

**FEATURES.**—Contained in a leatherette case measuring only 9 by 8½ by 5 in. Carrying strap. Rectangular scale calibrated in metres and station names. Controls for combined wave selection and master switch, reaction and tuning. Pilot light on speaker grill can be switched off to economise L.T. current.

**LOADING.**—H.T., 6.5 ma.; L.T., .5 amp. or .8 amp, with dial light.

### Sensitivity and Selectivity

**MEDIUM WAVES** (200-550 metres).—Good gain for valve combination and frame aerial employed. In daylight the main stations are easily received. A very good number is obtainable after dark.

**LONG WAVES** (900-2,000 metres).—Good gain and adequate selectivity. Luxembourg, Radio Paris, Droitwich, and Hilversum are very easily received without any interference. Careful handling of the directional frame and reaction control enables less powerful stations to be obtained.

**GENERAL NOTES.**—The reaction control is very smooth and free from overlap and apart from a little stiffness in the tuning knob, the set handles excellently on both bands.

### Acoustic Output

Clean, crisp tone with sufficient volume for a small room without distortion. Balance is well adjusted and the general reproduction is pleasing.

## RESISTANCES

R.	Purpose.	Ohms.
1	V1 screen and anode decoupling	4,000
2	V2 anode decoupling	6,000
3	V2 anode load	30,000
4	V2 anode H.F. filter	6,000
5	V2 grid pot. (part)	4 meg.
6	V2 grid pot. (part)	4 meg.
7	V4 grid bias resistor	300
8	V3 grid leak	500,000
9	V3 anode load	20,000
10	V4 grid stopper	250,000

## CONDENSERS

C.	Purpose.	Mfds.
1	H.T. reservoir	4
2	V2 grid	.00015
3	V1 screen and anode decoupling	2
5	V2 anode decoupling	2
6	H.F. filter	.004
7	L.F. coupling	.0025
8	H.F. filter	.00005
9	L.F. coupling	.05
10	V3 anode shunt	.001
11	Pentode compensator	.004
12	V4 bias resistor shunt	25