BEETHOVEN S.G.4 TRANSPORTABLE

Circuit.—The H.F. valve, PM12M (V1) is preceded by the tuned frame aerial, of which the long-wave section is short-circuited for the medium waves. The anode is coupled to the grid coil of the next valve by H.F. choke and filter condenser (H.F. C1 and C4), and the screening grid derives its potential from the junction of the coupling and decoupling resistances of V2.

The detector valve, PM1HL (V2), operates as a leaky grid detector with reaction. In its anode circuit it has an H.F. choke with bypass condenser (H.F. C2 and C10), and an extra condenser C8 forming a complete filter. The decoupling condenser C7 also acts as the decoupling condenser of V1 screen.

The coupling to the first L.F. transformer is by resistance capacity filter, R3 and C8, and a tone correction circuit, consisting of R5 and a choke, is connected across the primary of the transformer, which is used as a true auto coupler. The volume control consists of a variable resistance also across the primary.

The L.F. valve, PM1HL (V3) has an H.F. stopper R7 in its grid circuit, and the anode is coupled to the second L.F. transformer by another filter R8 and C11.

The output valve, PM22A (V4), is a pentode which is compensated for high note

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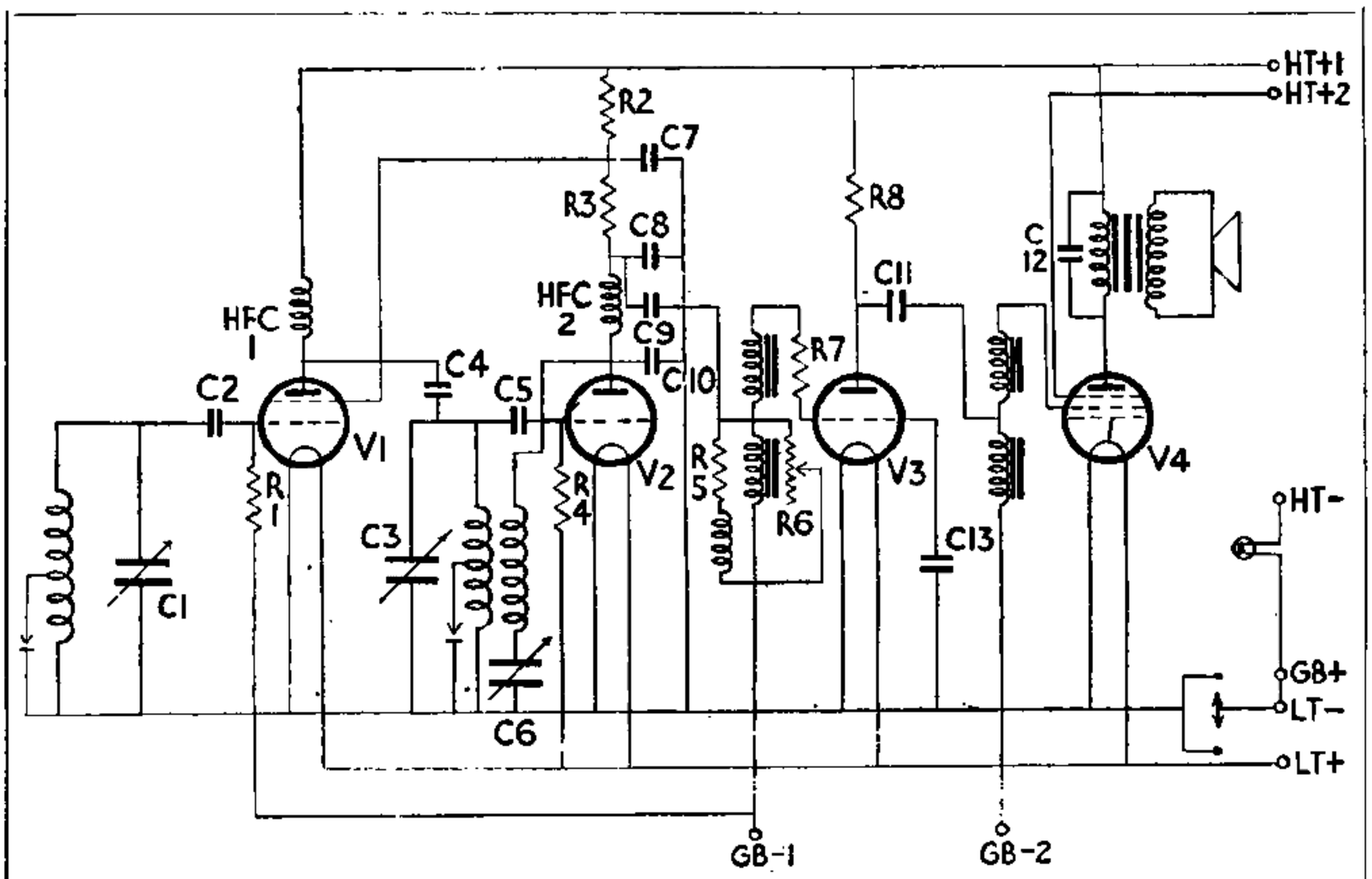
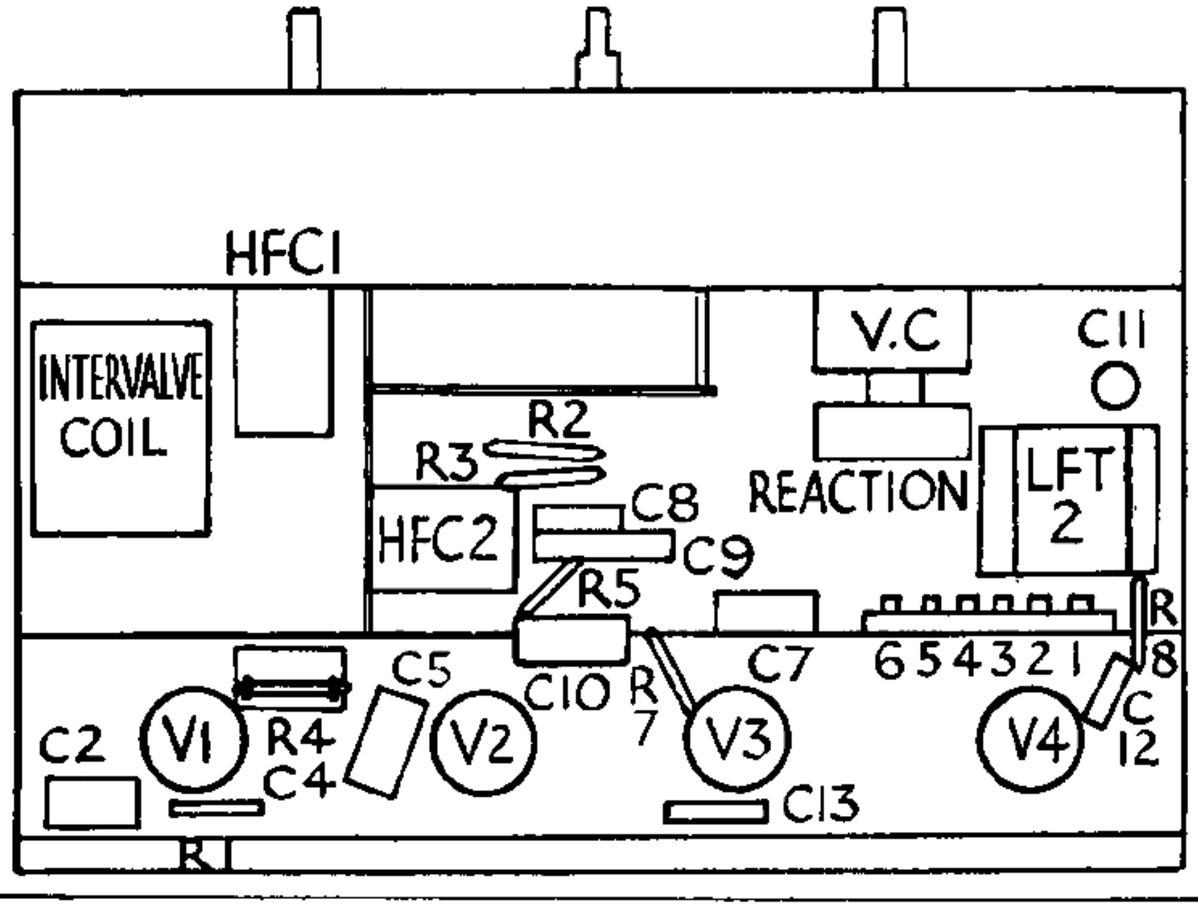


RESISTANCES

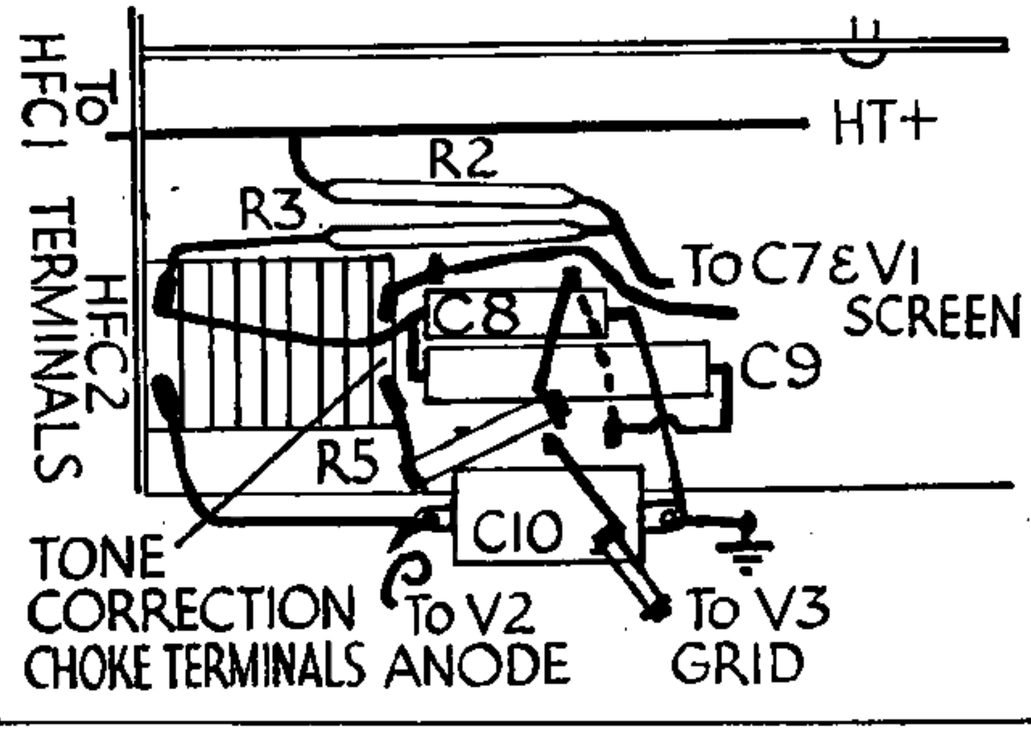
R.	Purpose.	Ohms.
1	V1 grid leak	2 meg.
2	Decoupling anode V2 (S.G.V1)	40,000
3	V2, L.F. coupling resistance ...	40,000
4	V2 grid leak	2 meg.
5	Tone correction circuit	10,000
6	Variable volume control ...	9,000
7	H.F. stopper grid V3	1 meg.
8	V3 L.F. coupling resistance ...	21,000
9	Primary output transformer ...	680
10	Primary L.F.T.2	1,100
11	Secondary L.F.T.2	2,900
12	Primary L.F.T.1	1,050
13	Secondary L.F.T.1	4,000

CONDENSERS

C.	Purpose.	Mfd.
1	Tuning frame aerial	.0007
2	V1 grid	.0009
3	Tuning grid coil of V2	.00055
4	H.F. filter feed to V2 tuned grid	.001
5	V2 grid	.00025
6	Reaction condenser	.00027
7	L.F. decoupling anode V2 (S.G. V1)	.5
8	Part of H.F. filter, anode V2 ...	.0025
9	L.F. filter condenser to L.F.T.1	.1
10	Part of H.F. filter, anode V2 ...	.0001
11	L.F. filter to L.F.T.2	.1
12	Tone compensating anode V4 ...	.0025
13	V3 grid stabiliser	.0001



The circuit (top left) of the Beethoven Transportable consists of H.F. and detector valves followed by a high-gain L.F. section. Note how the V1 screen voltage is obtained. As all components are inside the chassis only one lagout is given (left). Below is a detail diagram of the detector anode circuit.



TRANSPORTABLE BY BEETHOVEN (Cont.)

accentuation by the condenser C12, which is connected between the anode and H.T. +. A permanent magnet M.C. speaker completes the circuit.

Special Notes.—The fuse is in the H.T. — lead.

The volume control operates, also on gramophone as the P.U. leads are connected directly across it.

In our model the grid leak of V1 (R1) was taken direct to L.T. —.

The choke in the tone correction circuit across the primary of L.F.T.1 is actually wound on the same former as H.F.C.2. The connections on this double choke are : two at base, H.F.C.2; two at top, tone correction.

The volume control and reaction condenser are ganged and "staggered" so that the vanes of the reaction condenser do not mesh till the V.C. is at maximum. As the resistance is wire-wound, the junction is easily recognised by those who know the device.

Quick Tests.—These consist of testing voltages on valves.

Removing Chassis. — Remove knobs (grub screws). Take out fillets underneath battery compartment, and remove compartment by unscrewing two countersunk screws from each side.

Pull the leads and wander-plugs through the holes, and remove the two blocks holding the frame aerial.

Remove the four wood screws from the flange at the back of the chassis, and lift out the chassis complete with frame aerial and L.S.

General Notes.—In case any repair has to be performed on the L.F.T.1 section, we give a special diagram of the connections and the relative positions of the components.

The connections on the small panel near V4 are (1) V4 anode, (2) H.T. +, (3) V4 aux. grid, (4) L.F.T.2 (a terminal), GB — 2, (5) GB — 1, (6) H.T. —.

When no reception can be obtained and the voltage on the screen of V1 is abnormally high, the detector valve should be suspected as the drop in voltage to the screen is caused by V2 current through R2.

Replacing Chassis.—Do not forget to replace the cover over the H.F. coil if this has been removed.

Slide chassis carefully into the cabinet, replace blocks holding frame aerial to front of cabinet.

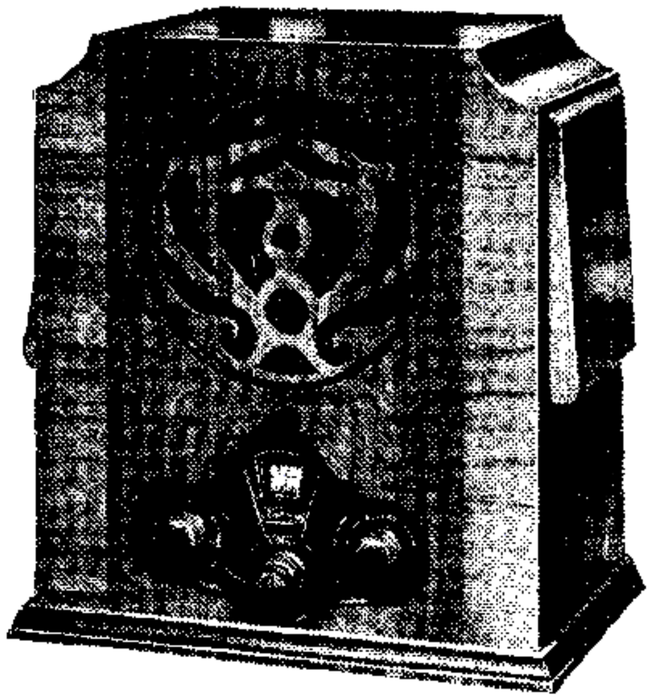
If the battery compartment was difficult to remove through fitting too perfectly, it is advisable to place it in position before replacing the fillets and to take the wander-plugs through the holes before fixing the compartment.

Replace the four screws on the flange at the back of the chassis and replace the knobs.

VALVE READINGS

Battery data: HT + (red, 120 volts; green, 96 volts. GB, white, + ; blue, — 1.5 volts; yellow — 3 volts.

Valve	Type.	Electrode.	Volts.	m.a.
1	PM12M	anode ...	118	1.8
		screen ...	80	—
2	PM1HL...	anode ...	38	.8
3	PM1HL...	anode ...	95	.65
4	PM22A ...	anode ...	118	4.2
		aux. grid ...	95	1.0



The Beethoven S.G.4 Transportable made by Montague Radio Inventions and Development Co., Ltd.