

# K.B. 710 BATTERY THREE

**CIRCUIT.**—The aerial input to the grid of V1, an H.F. pentode operating as an amplifier, is via an aerial transformer coupling on the short-wave band. On the medium and long waves the aerial input is via a set of band-pass coils. A series aerial resistance R1 can be brought into circuit if desired by connecting the aerial to the additional aerial socket.

The volume control varies the grid bias applied to the grid of V1, thereby decreasing the sensitivity. The bias potentiometer network is switched out of circuit when the set is inoperative to avoid a constant drain on the bias battery.

V1 is tuned anode coupled to V2, a triode operating as the demodulator stage on the grid-leak principle. Reaction is obtained in the usual manner by means of reaction windings controlled by a variable condenser.

V2 is resistance-capacity, auto-transformer coupled to V3, the pentode output valve. A pentode compensator condenser C6 between the anode and cathode effects

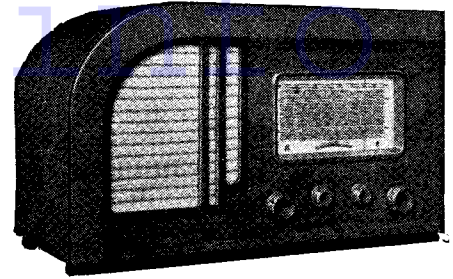
a fixed modification of the tone. A large capacity condenser C7 acts as an H.T. reservoir or decoupler, and a fuse connected in the H.T. negative lead protects the receiver from accidental shorts.

The set requires a 2-volt accumulator and a combined 120-volt H.T. battery and 9-volt grid bias battery.

**Chassis Removal.**—The cabinet has a false bottom secured by two wood screws. Removal of these enables the underside of the chassis to be inspected and small replacements effected.

To remove the chassis, take off the back and withdraw all batteries and also the H.T. battery stand. This is secured by four small nails. Next remove the wood screen (secured by three nuts) from the speaker and unsolder the red and blue leads from the two lower tags on the speaker transformer, the black lead from the speaker frame, the green aerial wire from the aerial socket and the black earth wire from the earth socket.

Remove the four chassis-securing bolts from the base, the four grub-screw fixed



The model 710 by Kolster-Brandes, Ltd., is a straight three-valve battery model covering three wavebands and selling at £7 12s. 6d. without batteries.

control knobs, and the two wood screws from the top of the wavelength dial (inside the cabinet). The chassis may then be completely withdrawn from the cabinet.

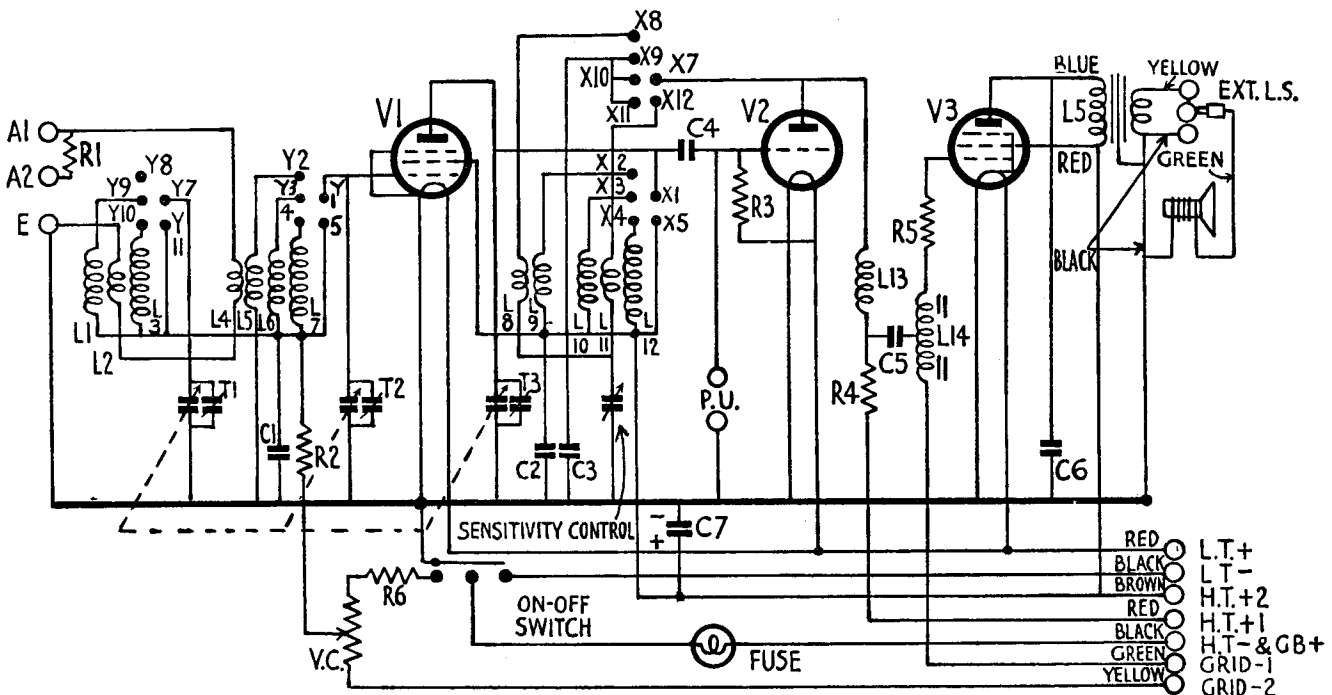
**Special Notes.**—There are two aerial sockets at the rear of the cabinet, A2 being for use when receiving local stations.

A pair of sockets on the chassis deck near V2 enable a pick-up to be connected. When the set is viewed from the rear the right-hand socket is the "earthy" one. A

CONDENSERS		
C.	Purpose.	Mfds.
1	Bottom band-pass coupling ..	.02
2	V1 anode M.W. and L.W. by-pass ..	.1
3	V1 anode S.W. by-pass ..	.0005
4	V1 grid coupling ..	.0001
5	L.F. coupling ..	.02
6	Pentode compensator ..	.003
	H.T. reservoir ..	2

RESISTANCES		
R.	Purpose.	Ohms.
1	Series aerial ..	100,000
2	V1 grid resistance ..	250,000
3	V2 grid leak ..	2 meg.
4	V2 anode load ..	25,000
5	V3 grid stopper ..	500,000
6	V1 bias pot. (part) ..	1,000
V.C.	V.C. and V1 bias pot. (part) ..	10,000

VALVE READINGS				
No signal. Volume maximum. M.W. min. cap. New batteries. No reaction.				
V.	Type.	Electrode.	Volts.	Ma.
1	All Mullard. VP2 (7)	Anode ..	125	1.6
		Screen ..	125	.5
2	PM2HL (4)	Anode ..	46	1
3	PM22A (5)	Anode ..	117	6.2
		Screen ..	125	1.3



A conventional band-pass three circuit is found in the KB.710. Tuned anode coupling is used between the pentode H.F. amplifier and triode detector with switched reaction coils. The volume control regulates the bias to the variable-mu V1.

For more information remember

www.savoy-hill.co.uk

separate volume control is necessary, as the internal volume control only operates on radio.

Sockets are provided to operate a 2- to 5-ohm impedance permanent-magnet type extension speaker. If the wander plug adjoining the extension L.S. sockets is removed the internal speaker will be rendered inoperative.

A 2.5-volt fuse bulb is mounted in a screw-in holder insulated from the chassis

### WINDINGS (D.C. Resistances)

Winding.	Ohms.	Range.	Where measured
L1	.. 4	M.W.	Aerial gang and C1.
L2	.. 23	L.W.	Between L4—L2 and chassis.
L3	.. 11	L.W.	Aerial gang and C1.
L4	.. Below .1	S.W.	Across tags.
L5	.. Below .1	S.W.	Band-pass gang and chassis.
L6	.. 3.2	M.W.	Band-pass gang and C1.
L7	.. 1.4	L.W.	Band-pass gang and C1.
L8	.. .25	S.W.	Anode V2 and reaction condenser.
L9	.. Below .1	S.W.	Top anode V1 and C2.
L10	.. 3	M.W.	Top anode V1 and C2.
L11	.. 3.2	L.W.	Anode V2 and reaction condenser.
L12	.. 11.2	L.W.	Top anode V1 and C2.
L13	.. 260	—	Tag and X7.
L14	.. 6,000	—	R5 and G.B.—1 lead.
L15	.. 820	—	Blue and red leads speaker transformer.

by a rubber grommet and located on the chassis deck near V3.

A refinement is included in the shape of a wood screen on the speaker frame, whereby the speaker is protected from acid splashing and, to a certain extent, fumes from the accumulator.

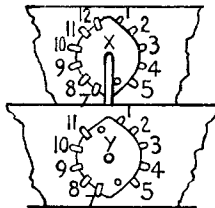
The H.T. +1 red lead should be connected to a voltage between 72 and 90, H.T. +2 (brown) to the 120-volt socket, Grid -1 (green) to 4.5-volt negative, and Grid -2 (yellow) to 9-volt negative.

R1 is soldered between the two aerial sockets under the H.T. battery stand.

### Circuit Alignment Notes

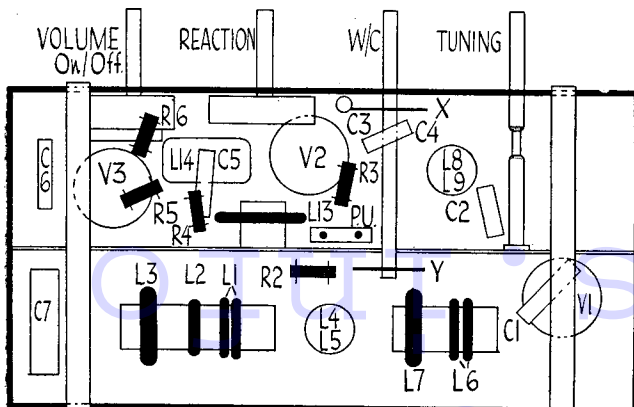
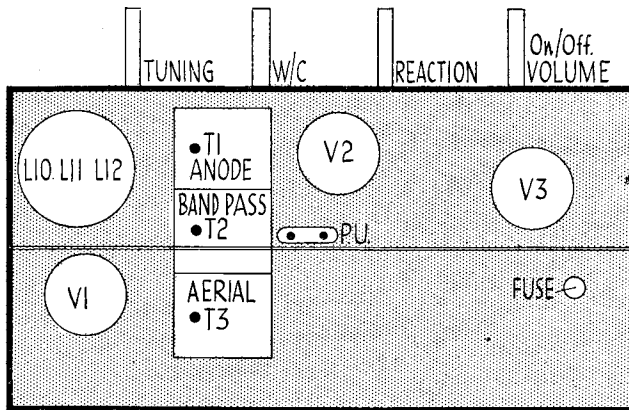
The pointer should coincide with the right hand vertical line on the wavelength scale when the gang condenser is at maximum capacity.

Connect an output meter across the primary of the speaker transformer and turn volume control to maximum. Connect a service oscillator to the aerial and earth sockets via a dummy aerial, only feeding sufficient input to obtain reliable peaks in



The switch banks of the 710 as seen looking towards the front of the chassis. They are lettered and numbered to correspond with the circuit diagram.

Right, the diagram identifying the parts on the top of the chassis. In "Service Engineer" reviews top "deck" diagrams are tinted so they are distinguishable at a glance from underneath layouts.



Left, the diagram giving the positions of all components underneath the 710 chassis. Most of the parts are small and suspended in the wiring.

## K.B. 710 on Test

**MODEL KB.710.**—Standard model for battery operation, requiring an Exide type OCG3C, a Fuller MSGH or Oldham OL3G 2-volt accumulator, and a combined 120-volt H.T. and 9-volt grid-bias battery. This may be a Drydex H1070, Ever-Ready Portable 33, G.E.C. Blue Label BB.338, Siemens Full O' Power 1193, or Fuller S851 Price £7 17s. 6d. without batteries.

**DESCRIPTION.**—Three-valve, three-band "straight" table model, with band-pass H.F. stage.

**FEATURES.**— Full-vision scale traversed by vertical pointer. Separate scales calibrated in metres and station names, with reference colours for wavebands. Controls for combined volume and master switch, reaction, wave-selection and tuning. Wave selection switch operates indicator on wavelength scale. Speaker at side of chassis. Sockets for pick-up and low-impedance extension L.S. Control of internal speaker. Fuse in H.T. negative lead.

**LOADING.**—H.T., 10 ma.; L.T., .44 amp.

### Sensitivity and Selectivity

**SHORT WAVES (18-52 metres).**—Satisfactory performance for a straight receiver with well-aligned circuits. Handling is easy and reaction free from overlap.

**MEDIUM WAVES (195-570 metres).**—Very good sensitivity and adequate selectivity. Careful handling of volume and reaction enables a large number of stations to be easily received without undue spread of the local transmissions.

**LONG WAVES (730-2,000 metres).**—Similar performance to medium band, with very small interference on Deutschlandsender with careful handling. Other main stations very well received.

### Acoustic Output

Ample volume for an ordinary room without overloading, and with a well-balanced tone. Top notes are not unduly corrected and general balance on speech and music is good, with very little colouration. Low-note radiation is particularly well maintained for a small battery receiver.

the output meter and reducing the input as the circuits come into line.

For optimum results the reaction control should be advanced until the receiver is nearly but not quite oscillating. At no time should the receiver oscillate.

Tune the receiver to 214 metres—this is marked with a black dot on the wavelength—and inject a signal of 214 metres (1,400 kcs.). Adjust T1, T2 and T3 in that order for maximum response. When adjusted in the above manner the calibration and sensitivity should be correct for all wavebands.

A replacement condenser for C7 is available from A. H. Hunt, Ltd., Garratt Lane, London, S.W.18. List No. 3479, it sells at 1s. 9d.