

NUMBER SEVENTY-SEVEN

'TRADER' SERVICE SHEETS

K-B 430 RECEIVER

3-VALVE (PLUS RECTIFIER) A.C./D.C. MODEL

A THREE-VALVE (plus rectifier) chassis is incorporated in the Kolster-Brandes 430 A.C./D.C. receiver, the receiving circuit consisting of a variable- μ pentode H.F. amplifier, a triode detector and a pentode output valve.

Four tapings are provided on the mains resistance, by means of which the receiver can be adjusted for supplies of 200-270 V.

CIRCUIT DESCRIPTION

Aerial input via coupling coil **L1** to single tuned circuit **L2, L3, C13**, which precedes variable- μ pentode H.F. amplifier (**V1, Brimar 9D2**). Gain control by variable cathode resistance **R4** which varies G.B. applied.

Tuned-secondary transformer coupling by **L4, L5, L7, L8** and **C15** to triode detector (**V2, Mullard metallised HL13C**) operating on grid leak system with **C4** and **R5**. Reaction is applied from anode by coil **L6** and controlled by variable condenser **C17**. H.F. by-passing by **C5**.

Resistance-capacity coupling by **R7, C7** and **R8** to output pentode (**V3, Brimar 7D6**). Fixed tone correction by condenser **C9**.

When the receiver is used with A.C. mains, H.T. current is supplied by a half-wave rectifier (**V4, Brimar 1D5**) which,

with D.C. supplies, behaves as a resistance of low value. Smoothing by speaker field winding **L11** and dry electrolytic condensers **C10, C11**.

Valve-heaters are connected in series together with tapped ballast resistance **R10** across mains supply. Scale lamp derives its current from tapping at one end. Chokes **L12, L13** and condenser **C12** together form filter for suppression of mains-borne interference.

COMPONENTS AND VALUES

Condensers		Values (μ F)
C1	Earth blocking	0.01
C2	V1 cathode by-pass	0.1
C3	V1 S.G. by-pass	0.1
C4	V2 grid condenser	0.0001
C5	V2 anode H.F. by-pass	0.001
C6*	V2 anode decoupling	2.0
C7	L.F. coupling to V3	0.02
C8*	V3 cathode by-pass	25.0
C9	Tone compensator	0.01
C10*	H.T. smoothing	8.0
C11*		8.0
C12	Part of mains filter	0.01
C13†	Aerial circuit tuning	0.0005
C14‡	Aerial circuit trimmer	—
C15†	H.F. transformer tuning	0.0005
C16‡	H.F. transformer trimmer	—
C17†	Reaction control	—

* Electrolytic. † Variable. ‡ Pre-set.

Resistances		Values (ohms)
R1	V1 S.G. H.T. supply potential divider	15,000
R2		15,000
R3	V1 fixed G.B. resistance	300
R4	V1 gain control	10,000
R5	V2 grid leak	2,000,000
R6	V2 anode decoupling	5,000
R7	V2 anode load	25,000
R8	V3 grid resistance	250,000
R9	V3 G.B. resistance	150
R10	Heater circuit ballast, total	880

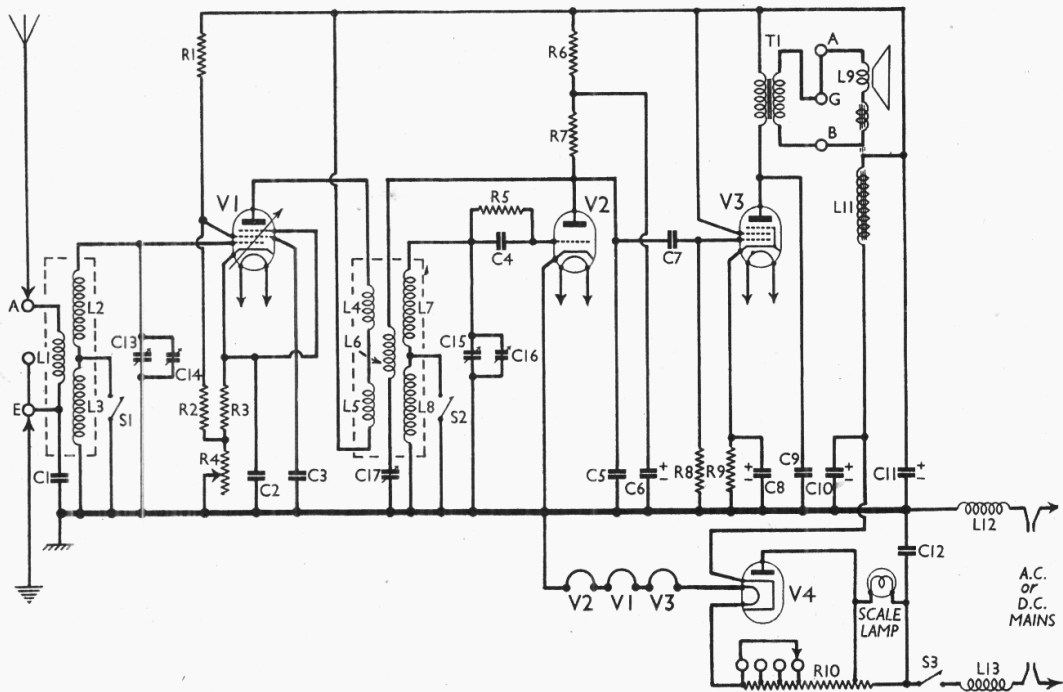
Other Components		Values (ohms)
L1†	Aerial coupling coil	12.0
L2	Aerial tuning coils	5.0
L3		10.0
L4	H.F. transformer primary coils	15.0
L5		4.5
L6	Reaction coil	5.0
L7	H.F. transformer secondary coils	10.0
L8		2.0
L9	Speaker speech coil	0.1
L10	Hum neutralising coil	0.1
L11	Speaker field winding	1,500.0
L12	Mains filter chokes	4.0
L13		3.5
Tr	Speaker input trans.	400.0
Sr, S2	Waveband switches	0.4
S3	Mains switch, ganged R4	—

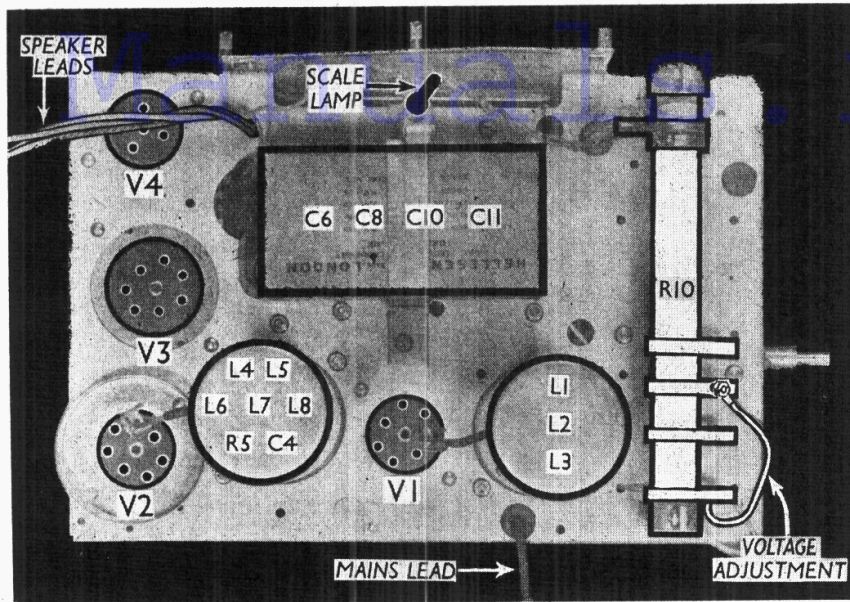
DISMANTLING THE SET

A detachable bottom is fitted to the cabinet, and when removed (two round-head and two countersunk-head screws), gives access to most of the under-chassis components.

Removing Chassis.—If it is necessary to remove the chassis, remove the back and the three control knobs on the front of the cabinet (recessed grub screws).

Circuit diagram of the K-B 430 A.C./D.C. receiver. The mains supply passes to the chokes L12, L13 via special safety devices, which open when the cabinet back is removed. A low resistance external speaker may be connected across G and B on the speaker transformer. A simple switch, replacing the link between A and G, may be added to cut out the internal speaker if required.





Plan view of the chassis. The second coil unit also contains R5 and C4. Note the voltage adjustment by means of tappings on R10.

Remove the two base rails from the cabinet (three countersunk-head wood screws each), exposing the chassis fixing bolts. Remove the four chassis fixing bolts, each with a lock washer and claw washer.

Remove the knob from the wave-change switch (recessed grub screw) and the extension on the switch spindle. Remove the aerial and earth socket panel from the brackets on the side of the cabinet (two round-head screws, nuts and lock washers.)

The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

To remove the chassis entirely, unsolder the speaker leads from the transformer terminal panel. When replacing, connect the leads to the lower tags with the transformer at the top, numbering them from left to right as follows:—1 and 2 joined together, red; 3, blue; 4, red-black.

Removing Speaker.—The speaker is held to the sub-baffle by three bolts and can be removed by taking the nuts and lock washers off them.

VALVE ANALYSIS

Valve voltages and currents given in the table below were measured with the receiver operating on 230 V A.C. mains, using the 225 V tapping on the mains resistance. The gain control was at maximum, reaction was at minimum and there was no signal input. Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 6D2 ..	190	5.3	85	1.4
V2 HL13C ..	85	3.3	—	—
V3 7D6 ..	180	24.0	190	4.4
V4 1D5 ..	265†	—	—	—

† Cathode to chassis.

GENERAL NOTES

Switches.—There are only two wave-band switches, S1 and S2, and these are in a single unit operated by a spindle at the side of the chassis. Both are closed on the M.W. band and open on the L.W. band.

S3 is the Q.M.B. mains switch, ganged with the volume control R4.

Safety Device.—Two metal contacts on the back board of the cabinet enter slots at the back of the chassis, and short two pairs of spring contacts, thus connecting up the mains supply. When

servicing the set, remember that it is necessary to close this safety device, either by detaching the plug from the cabinet back and plugging it into the rear of the chassis, or by utilising a special key available from the manufacturers.

Coils.—The tuning coils, L1-L8, are in two screened units on the chassis deck. The second unit (L4-L8) also contains C4 and R5.

L12, L13, the mains filter chokes, are in a single unit beneath the chassis, at the rear.

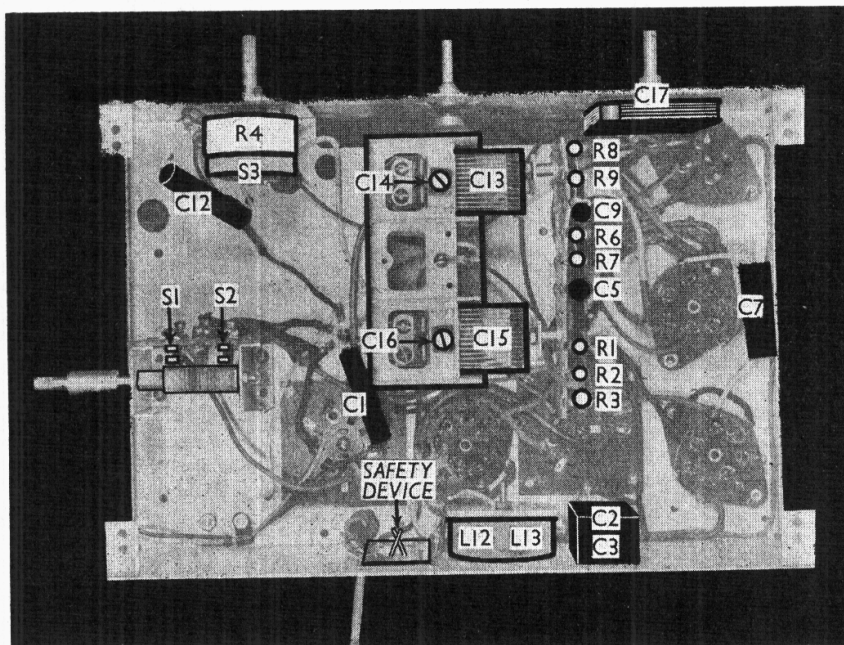
Scale Lamp.—This is an Osram M.E.S. type, rated at 6.2 V, 0.3 A.

Condenser Block.—The dry electrolytic condenser block on the chassis deck contains four condensers, C6, C8, C10 and C11. These have a common negative (black) lead. The coding of the positive leads is: C6, yellow; C8, green; C10, blue; C11, red.

Condensers C2, C3.—These are two 0.1 μF paper condensers in a metal case beneath the chassis. The common tag is marked "C." The tag carrying the brown lead is the other connection of C2, and that carrying the orange lead, the other connection of C3.

A and E Leads to Chassis.—A green and a black rubber-covered lead connect the aerial and earth sockets to the L1, L2, L3 coil unit on the chassis. The green lead is the aerial, and the black the earth connection. The centre socket on the A.E. panel is also connected to the earth socket, and is used when a Rejcostat aerial system is employed.

Condenser C12.—In some chassis, the high potential end of this condenser may go to the junction between the anode of V4 and the scale lamp, instead of to the junction of the scale lamp, the end of R10 and S3 as shown in our circuit diagram.



Under-chassis view. There are only two wave-change switches, S1 and S2. C2 and C3 are two paper condensers in one unit. L12 and L13 are the mains filter chokes.