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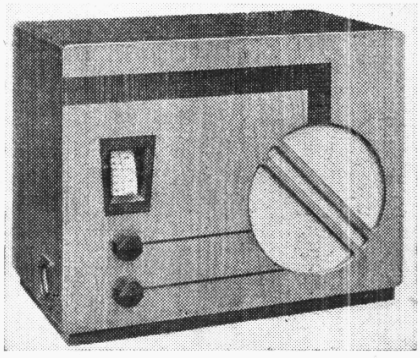
"TRADER" SERVICE SHEET 532

K-B 333A, 333 & 364 (1933 and 1934 MODELS)



The appearance of the KB333 and KB333A receivers.

THE KB333A is a 3-valve 2-band battery receiver. It is fitted with a combined gain and reaction control, and there is provision for connecting a gramophone pick-up and a dipole aerial.

The later KB364 (1934 model) is similar in every respect, except that it is housed in a better cabinet, which has chromium plated fittings.

Two somewhat similar receivers, the KB333 and the 1933 KB364, preceded these sets, and used the same cabinets. Their chassis, however, were in some ways different from the later type, and the differences are described under "1933 Models."

Release dates: KB333 and KB364, 1933; KB333A and KB364, 1934.

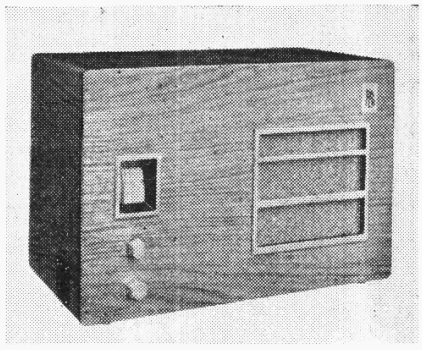
CIRCUIT DESCRIPTION

Aerial input is via coupling coil **L1** to capacity-coupled band-pass filter. Primary coils **L2, L3** are tuned by **C7**; secondaries **L4, L5** by **C9.** Coupling by **C1.** Earth sockets **E** and **C** are connected together unless a K-B Rejectostat aerial is used.

First valve **(V1, Mullard metallised PM12M)** is a variable-mu RF tetrode operating as signal frequency amplifier with gain control by potentiometer **R5,** which varies GB applied.

Tuned-secondary RF transformer coupling by **L6, L9, C11** (MW) and **L7, L10, C11** (LW) between **V1** and second RF tetrode valve **(V2, Osram S23, Micromesh 5B1** or **Cossor 215SG, metallised)** which operates as grid leak detector with **C3** and **R2.** Reaction from anode via coil **L8** is controlled by **C13,** which is ganged with **R5.**

Transformer coupling by **T1** between **V2** and pentode output valve **(V3, Micromesh PenB1, Mazda Pen20, Mullard PM22A, Osram PT2** or **Cossor 220HPT).** Two-position tone control by **C5** and plug and socket device in anode circuit.



The KB364 1933 and 1934 models. The escutcheons and knobs are chromium plated.

COMPONENTS AND VALUES

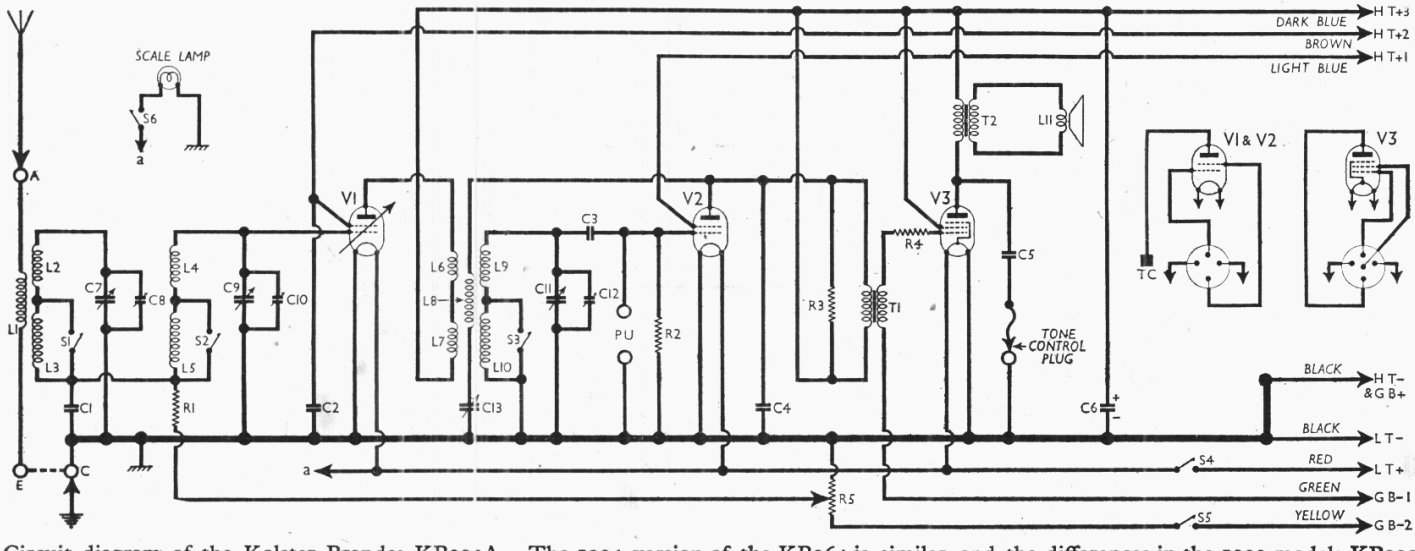
	CONDENSERS	Values (μF)
C1	Band-pass coupling ...	0·02
C2	V1 SG RF by-pass ...	0·1
C3	V2 CG condenser... ...	0·0001
C4	RF by-pass condenser ...	0·0002
C5	Tone control condenser ...	0·005
C6*	HT reservoir condenser ...	2·0
C7†	Band-pass pri. tuning ...	0·0005
C8‡	B-P pri. MW trimmer ...	—
C9†	Band-pass sec. tuning ...	0·0005
C10‡	B-P sec. MW trimmer ...	—
C11†	RF trans. sec. tuning ...	0·0005
C12‡	RF sec. MW trimmer ...	—
C13†	Reaction control	—

* Electrolytic. † Variable. ‡ Pre-set.

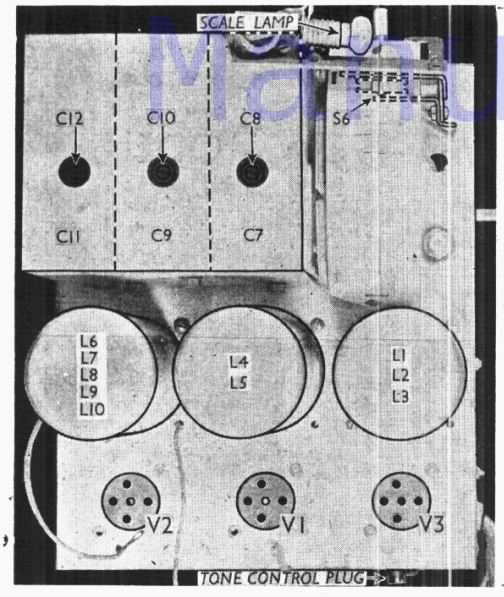
	RESISTANCES	Values (ohms)
R1	V1 CG decoupling ...	500,000
R2	V2 grid leak	500,000
R3	T1 primary shunt ...	100,000
R4	V3 grid stopper	250,000
R5	V1 gain control	10,000

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil ...	22·0
L2	Band-pass primary coils	5·0
L3	Band-pass primary coils	23·0
L4	Band-pass secondary coils	5
L5	Band-pass secondary coils	22·0
L6	RF transformer primary coils	9·5
L7	RF transformer primary coils	8.0
L8	Reaction coupling ...	9·0
L9	RF transformer tuning coils	5·0
L10	RF transformer tuning coils	21·0
L11	Speaker speech coil ...	3·5

Continued overleaf.

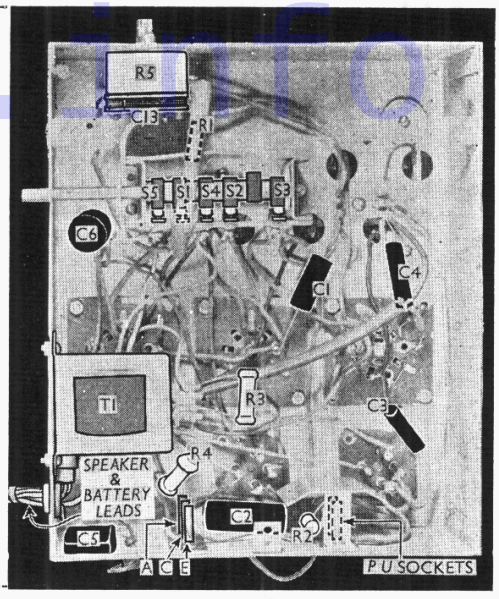


Circuit diagram of the Kolster Brandes KB333A. The 1934 version of the KB364 is similar, and the differences in the 1933 models KB333 and KB364 are described under "1933 Models." The two earth sockets **C** and **E** are strapped together except when a dipole aerial is used.



Left : Plan view of the chassis. All the coils and trimmers are seen here. **S6** is the scale lamp switch, and closes when the tuning knob is pressed.

Right : Under - chassis view. The individual switches are indicated on their unit. **R5, C13** is the combined gain and reaction control. In the 1933 models, most of the components are mounted on a bakelite panel fixed to one of the side members of the chassis.



OTHER COMPONENTS —(*continued*)			Approx. Values (ohms)
T1	Intervalve trans.	Pri. ...	1,400·0
		Sec. ...	6,400·0
T2	Speaker input trans.	Pri. ...	780·0*
		Sec. ...	0·2*
S1-S3	Waveband switches		—
S4	LT circuit switch		—
S5	GB circuit switch		—
S6	Scale lamp switch		—

* Values for Rola speaker ; Goodmans = 900 O and 1·0 O.

VALVE ANALYSIS

Valve voltages and currents given in the table below have been taken from the makers' manual. The measurements were made with a Weston Selective Analyser, and voltages were measured with the negative lead connected to chassis. The volume control was set to a point just short of oscillation, but there was no signal input.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 PM12M	120	0·4	99	0·5
V2 S23	115	2·0	60	0·3
V3 Pen B1	115	3·2	120	0·8

DISMANTLING THE SET

Removing Chassis.—Remove the two control knobs from the front of the cabinet and one from the side (all pull-off);
remove the wooden partition (four wood screws) behind the speaker;
unsolder from the connecting panel on the speaker transformer the two leads connecting it to chassis;
free the battery leads from the cleat holding them to the battery shelf;
remove the three self-tapping screws holding the chassis to the bottom of the cabinet.
When replacing, the speaker leads are connected to the outer tags on the speaker transformer.

Removing Speaker.—Unsolder the two connecting leads and remove the four nuts holding the speaker to the sub-baffle.
When replacing, the transformer should be on the right, and the leads should be connected as indicated previously.

GENERAL NOTES

Switches.—**S1-S3** are the waveband and **S4, S5** the battery switches in a single assembly beneath the chassis. **S1-S3** all close on MW and open on LW, and **S4, S5** close on both bands and open in the "off" position only.

S6 is the scale lamp switch, and closes when the spring loaded tuning control is pushed inwards.

Coils.—All the tuning and reaction coils are in three screened units on the chassis deck.

Scale Lamp.—This is a 2.5 V MES type. It is controlled by **S6,** and since it is only switched on while the tuning control is being pressed, the consumption is not important.

A and E Sockets.—There are three of these, marked **A, C** and **E** reading from top to bottom when the chassis is standing on its base. Unless a Rejectostat aerial is used, **C** and **E** should be connected together and earthed.

Gramophone Pick-up.—Two sockets are provided for this at the rear of the chassis. An external volume control is required for pick-up operation, and the plugs must be withdrawn for radio.

External Speaker.—No provision is made for this, but a high impedance (15,000-20,000 O) type could be connected to the two outer tags on the speaker input transformer **T1.**

Tone Control.—This consists of a 0.005 μF condenser and a plug on a flying lead which can be inserted in a socket connected to chassis. When the plug is inserted, the condenser **C5** shunts **V3** anode circuit for deep tone.

Batteries and Leads.—The HT battery required is 120 V plus 9 V GB, with a common HT negative and GB positive tapping. Any 2 V accumulator that will fit the cabinet can be used. The HT leads are : HT− and GB+, black ; HT+1, light blue (60 V); HT+2, brown (99 V); HT+3, dark blue (120 V); GB−1, green (−3 or −4.5 V); GB−2, yellow (−6 to −9 V).

1933 MODELS

The KB333 and the 1933 model of the KB364 are early editions of the receiver on which this *Service Sheet* was prepared. They employ the same two types of cabinet as the later models. An identical chassis is employed in these two models but this is a little different from the later models 333A and 364.

Originally, **R3** was connected to **V2** anode circuit and, via a 0.01 μF condenser, to chassis, and an HF choke was included between the actual anode pin and the top of **R3.** Also, a 0.02 μF condenser was connected between **L10** and chassis to balance the effect of **C1.** The value of **R3** was then 50,000 O instead of 100,000 O.

CIRCUIT ALIGNMENT

MW.—Switch set to MW, and turn volume control to a point just short of oscillation. Connect signal generator via suitable dummy aerial to **A** and **E** sockets, and screw up **C8, C10** and **C12** fully clockwise; unscrew **C8, C10** one turn.

Feed in a 500 m (600 KC/S) signal, tune it in, and adjust the scale drum so that 500 m mark coincides with pointer. Tune to 200 m on scale, feed in a 200 m (1,500 KC/S) signal, and adjust **C8,** then **C10** and **C12,** for maximum output, reducing generator output as the circuits come into line, and adjusting volume control as necessary to keep receiver just short of oscillation. Repeat 200 m adjustments.

Feed in a 500 m signal again, tune it in, and adjust MW pointer to best compromise between 200 m and 500 m settings.

LW.—Switch set to LW, feed in a 1,714 m (175 KC/S) signal, tune it in, and adjust LW pointer to cover approximately 1,714 m on scale. Check calibration at 1,000 m (300 KC/S), and readjust pointer for best compromise.

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