

KOLSTER-BRANDES MODEL 630

CIRCUIT.—The aerial is coupled to the grid of V1, a triode-hexode frequency changer, by a set of tuned band-pass coils on medium and long waves. On short waves a transformer coupled aerial input circuit is brought into operation.

The signal is converted to the I.F. frequency and passes to the first I.F. amplifying stage V2, and H.F. pentode through an I.F. transformer. Thence the signal passes to V3, another H.F. pentode, via an I.F. transformer.

The output of V3 passes through the third I.F. transformer to the demodulator diode of V4, a double diode. The other diode provides A.V.C. in the usual manner.

The output stage of the receiver consists of an output pentode, V5. This has a volume control in the grid circuit and a tone control in the anode circuit.

The mains equipment consists of a mains transformer, with the usual mains voltage tapings, an indirectly-heated full-wave

rectifying valve, the speaker field, which acts as a smoothing choke, and electrolytic smoothing condensers.

Special Notes.—Sockets are provided for a pick-up.

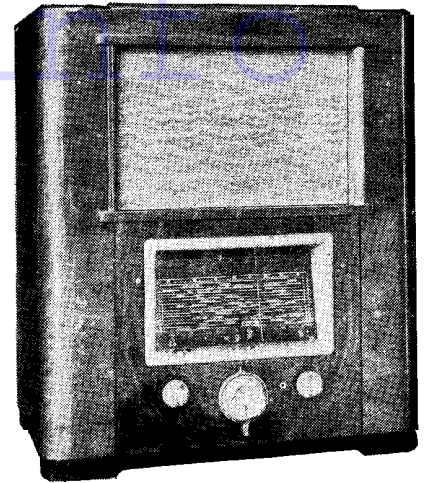
External speaker sockets are provided. A low-resistance permanent-magnet moving-coil model with a speech coil resistance of 2 ohms should be used.

A wander plug enables either one or both speakers to be used at will.

The dial lamp of the receiver is connected across the mains transformer primary and is rated at 230 volts 15 watts

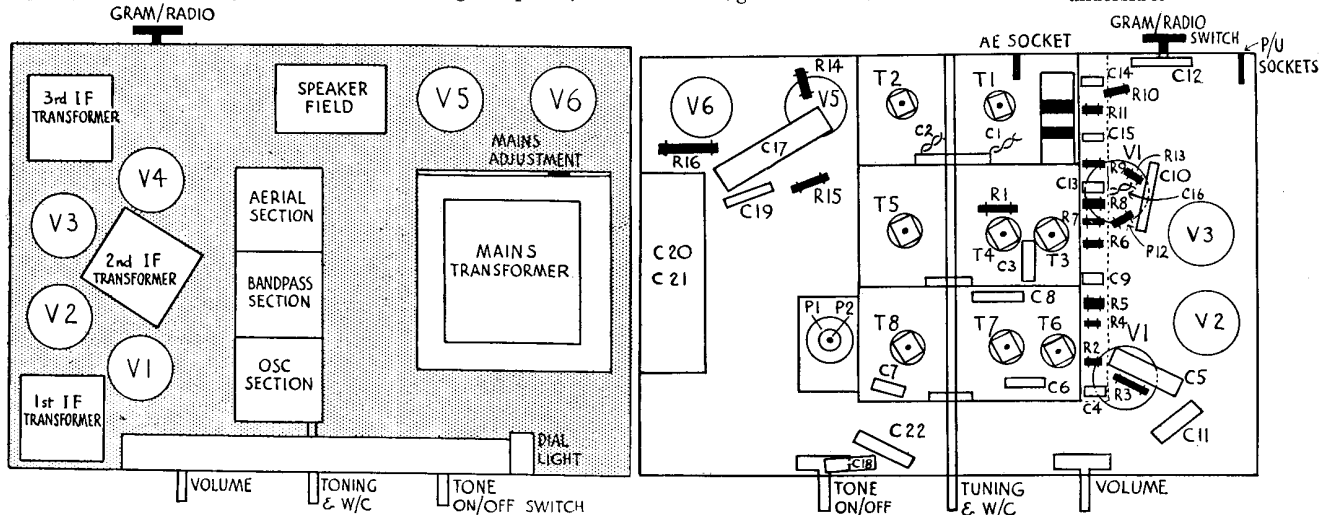
C1, C2 and C16 are each formed by twisting together two pieces of enamelled wire.

A slight variation in the wiring of the pick-up switching may be found. This, however, makes no difference to the function performed. The pick-up is connected through a series condenser which supplies the potential to the grid of V3. On gramophone, the screen voltage is removed.



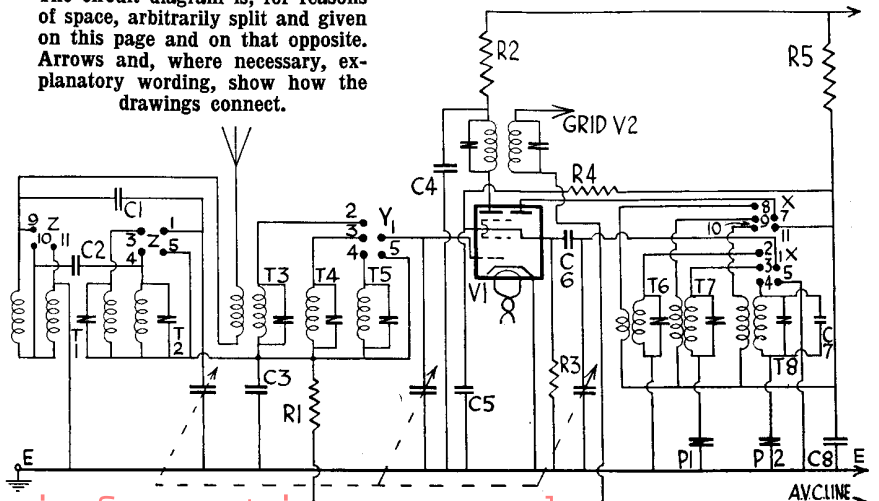
Kolster-Brandes Model 630, an A.C. five-valve superhet with the Alphadex tuning scale, in which stations are listed in alphabetical order.

Below are the chassis layout drawings. On the left is the top view; right is the underside.



CONDENSERS		
C.	Purpose.	Mfds.
1	Medium wave coupling ..	.000018
2	Long wave coupling ..	.000018
3	Band pass coupling (bottom)	.02
4	V1 anode decoupling ..	.1
5	V1 screen decoupling ..	.1
6	Oscillator grid ..	.00005
7	Long wave oscillator fixed trimmer	.00007
8	Oscillator anode decoupling ..	.1
9	V2 anode decoupling ..	.1
10	Pick-up series condenser	.1
11	V2 and V3 screen decoupling (part) ..	.2
12	Coupling for pick-up ..	.1
13	V3 anode decoupling ..	.1
14	L.F. coupling ..	.02
15	H.F. by-pass ..	.0005
16	A.V.C. diode coupling ..	.000015
17	V5 cathode shunt ..	.25
18	Tone control ..	.01
19	Pentode compensator ..	.0005
20	H.T. smoothing ..	.16
21	H.T. smoothing ..	.8
22	Mains filter ..	.01

The circuit diagram is, for reasons of space, arbitrarily split and given on this page and on that opposite. Arrows and, where necessary, explanatory wording, show how the drawings connect.



from V2, thereby automatically rendering the valve inoperative.

R7 was found to be 10,000 ohms in our particular chassis.

The resistance strip in the under-chassis view is drawn in such a manner as to show the various components.

The mains voltage adjustment tappings take the form of a wander plug and three sockets with the various voltages indicated. This is situated on the mains transformer panel on the top of the chassis towards the rear.

Removing Chassis.—This model has a detachable false bottom which can be removed for small replacements.

The back of the cabinet can be removed by sliding up the two fixing clamps. The volume control and the tone control knobs are detached with a gentle pull, as they are spring clipped. The tuning control is grub-screw fixed. The wavechange switch on the same shaft as the tuning control is spring fixed.

Next turn the set on one side and remove the four fixing bolts and washers securing the chassis to the cabinet.

The chassis can then be withdrawn to the extent of the speaker leads. If it is found necessary to completely remove the chassis, either the speaker can be removed with the chassis or else the connections to the loud speaker can be unsoldered.

For the reverse procedure it may be noted that the black lead from the set is connected to the top tag, the next tag is

left blank with regard to the cable, the green lead, the brown lead and the pink lead go to the remaining tags.

Circuit Alignment Notes

I.F. Circuits.—Connect a signal generator between the top grid cap of V1 and chassis via a small fixed condenser in the usual manner. Place an output meter across the primary of the speaker transformer. Tune the oscillator to 464 kc.

Adjust IFT1, IFT2, IFT3 and IFT4 for maximum response, reducing the input from the generator as the circuits come into line to render the A.V.C. inoperative.

Calibration.—Only sufficient input from the oscillator should be fed to give a half-scale reading on the output meter, so as to render the A.V.C. inoperative. Connect the signal generator leads to the aerial and earth sockets of the receiver. Turn the receiver volume control to maximum and the tone control to the "high" position. Leave the output meter connected as before.

Medium Waves.—Switch the set to medium waves and tune in to 214 metres. Inject an oscillator signal of 214 metres (1,400 kc.) and trim T1, T4 and T7 for maximum response.

Tune the set to 500 metres (600 kc.) and inject an oscillator signal of the same wavelength. Adjust the medium wave padding condenser, P1, until the output meter indicates maximum output. P1 is the nut of the double padding condenser.

Long Waves.—Set the wavechange switch to the long-wave position and tune the set to 1,000 metres (300 kc.) and adjust T2, T5 and T8 for maximum.

Set the pointer to 1,714 metres (175 kc.) and inject an oscillator signal of this wavelength.

Adjust P2 for maximum response to the output meter. P2 is the screw of the double padding condenser.

Short Waves.—Switch the set to the short waves. Tune to 20 metres (1,500 kc.) and inject an oscillator signal of this wavelength. Adjust T3 and T6.

Check for calibration at 50 metres (600 kc.).

VALVE READINGS

No signal. Volume maximum. 200 volts A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	Mullard TH4A met. (7).	Anode ..	242	1.3
		Screen ..	78	3.
2	Brimar9D2(7)	Osc. anode ..	120	10.2
		Anode ..	230	4
3	Brimar9D2(7)	Screen ..	70	1.
		Anode ..	230	4
4	Brimar 10D1 (7).	Screen ..	70	1.
		Diode ..	—	—
5	Brimar7D8(7)	Anode ..	240	34
		Screen ..	253	6.
6	BrimarR2(4)	Filament ..	350	—

RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid return	100,000
2	V1 anode decoupling ..	5,000
3	Oscillator grid leak ..	50,000
4	V1 screen decoupling (part) ..	15,000
5	V1 screen and osc. anode decoupling	10,000
6	V2 anode decoupling ..	5,000
7	V1 and V2 screen decoupling pot. (part)	12,000
8	V1 and V2 screen decoupling pot. (part)	20,000
9	V3 anode decoupling ..	5,000
10	Grid stopper	100,000
11	Demodulator diode load ..	500,000
12	A.V.C. decoupling	500,000
13	A.V.C. diode load	500,000
14	Grid stopper	7,000
15	V5 cathode bias	150
16	A.V.C. delay voltage ..	40
VR	Volume control	500,000
TC	Tone control	50,000

K.-B. 630 on Test

MODEL 630.—Standard model for A.C. mains operation, 200-250 volts, 40-60 cycles. Price, 12 gns.

DESCRIPTION.—Three-waveband, five-valve plus rectifier superhet.

FEATURES.—"Alphadex" three-colour, edge-lit, full-vision tuning scale with stations in alphabetical order and wavelengths. Other controls for volume, tone and wave-change. Provision for Rejectostat aerial. Sockets for pick-up and extra speaker.

LOADING.—90 watts.

Sensitivity and Selectivity

SHORT WAVES (16.5-52 metres).—Very good gain and selectivity up to standard. Powerful stations received at second oscillator position. Handling is easy and there is no appreciable drift.

MEDIUM WAVES (195-565 metres).—Average gain and selectivity. Local stations spread on adjacent channels only. Gain well maintained over the entire waveband.

LONG WAVES (970-2,300 metres).—Gain and selectivity up to standard. All main stations easily received and separated; slight interference on Deutschlandsender.

Acoustic Output

Very well balanced output with very little colouration on speech. Generally pleasing reproduction on all types of music.

REPLACEMENT condensers for the K.-B. 630, made by A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18, are as follows: For C's 20 and 21, a single unit, type 2506, price 10s.; for C11, type 3748, price 1s. 8d.; for C17, type 1797, price 1s. 10d.

QUICK TESTS

Quick tests are available on this receiver on the speaker transformer. Volts measured between this and the chassis should be:—
Red lead, 282 volts, smoothed H.T.
Brown lead, 350 volts, unsmoothed H.T.

