

KOLSTER- BRANDES 820

Four-valve superhet covering three wavebands, with keys for six stations and for operation from accumulator and battery. Made by Kolster-Brandes, Ltd., Sidcup, Kent.

Circuit.—It will be noted in the circuit that both aerial and oscillator tuned circuits are drawn in front of V1. The aerial connection includes a series resistor, R1, to reduce the input, and a parallel static discharger, R2.

On short waves the input to V1, the frequency-changer, is by transformer, L1-L2. On M. and L.W. and push-button stations the aerial coupling is by the reactance of C3, which is in the bottom of each grid circuit.

Very similar coils are used in the oscillator section of V1. The tuned coils are in the grid circuit, and the reaction

voltage fed back from the anode is applied across the padder capacity.

Permeability trimmed I.F. transformers link up V2, the I.F. amplifier, and V3, the double-diode triode.

The A.V.C. diode is energised from the anode of V2 via C18. It is connected back to the automatic bias resistors, R13 and R14, for a delay voltage. R12 is the load and R11 is the feed to V2. V1 has an A.V.C. feed resistor direct to the grid in R3.

R8 is the signal diode load, R9 and C17, forming an I.F. filter. L.F. is passed on by C19 to the volume control, V.C., which is also the grid leak of V3. A switched pick-up connection is arranged across the volume control.

The L.F. coupling to V4, the output pentode, is by parallel-feed auto-connected transformer. There are fixed, C21, and variable, C25-T.C., tone controls across V4.

Bias for the set is developed across R13 and R14. H.T. negative is negative with respect to L.T. negative, because of the voltage drop produced by the total anode current passing from the filaments (L.T. negative) to the negative of the H.T. battery. V4 receives full bias and the A.V.C. diode an intermediate value.

The H.T. battery should be a 135v. unit and the accumulator a 2v. cell. The consumption is H.T., 10.6 ma. and L.T., .575 amp.

GANGING

I.F. Circuits.—Tune to top of M.W. and turn volume and tone to maximum. Keep input low to avoid operation of A.V.C.

Inject 464 kc. to V1 signal grid via .1 mfd. and adjust four I.F. trimmers for maximum on an output meter.

M.W. Band.—Inject 600 kc. to aerial and earth via a standard dummy aerial. Tune to 500 m. and adjust core of L13 (M.W. tracker).

Inject 1,400 kc., tune to 214 m. (spot) and adjust T1 and T2.

Repeat both operations until no further improvement results. Rock gang slightly when adjusting L13.

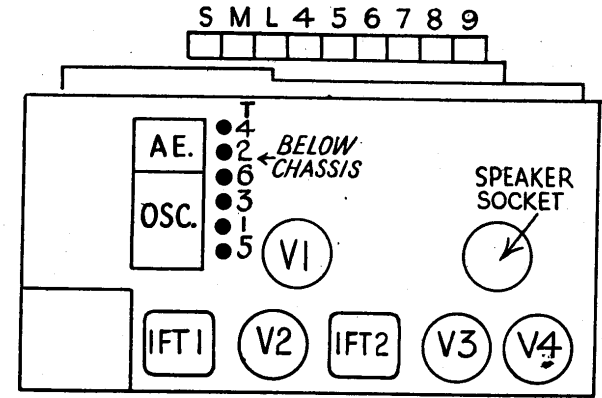
L.W. Band.—Inject 175 kc., tune to 1,714 m. and adjust core of L14 (tracker).

Tune to 350 kc., tune to 857 m. and adjust T3 and T4.

Repeat tracking, rocking gang slightly, and then readjust T3 and T4.

S.W. Band.—Inject 15 mc. via 400-ohm non-inductive resistor, tune to 20 m., and adjust T5 and T6.

Top of chassis layout indicating the positions of the trimmers, which are actually below chassis. P.B. trimmers are accessible from the front and grouped in pairs.



CONDENSERS

C.	Mfds.	C.	Mfds.
1	.002	14	.1
2	.005	15	150 mmfds.
3	.002	16	280 "
4	400 mmfds.	17	50 "
5	.001	18	25 "
6	230 mmfds.	19	.02 "
7	800 "	20	.02 "
8	400 "	21	.001 "
9	.1	22	.1
10	400 mmfds.	23	25
11	150 "	24	2
12	150 "	25	.02
13	.80 "	26	25 mmfds.

RESISTANCES

R.	Ohms.
1	10,000
2	5,000
3	.5 meg.
4	50,000
5	100
6	25,000
7	100,000
8	.5 meg.
9	50,000
10	100,000
11	.5 meg.
12	.5 meg.
13	400
14	150
VC	.5 meg.
TC	50,000

Permeability coils are used for the automatically tuned stations in both aerial and oscillator stages. The receiver is a battery superhet of up-to-date design.

There is no short-wave padding adjustment, but check calibration and compromise with trimming if necessary. Make sure setting of T5 with least capacity is the one adopted.

PUSH KEYS

First make sure the required station is within the wave-range of the selected key:—

Key.	Range (metres).	Osc. coil.	Ae coil.
4	193-286	L5	L15
5	250-363	L6	L16
6	300-416	L7	L17
7	400-552	L8	L18
8	1,100-1,565	L9	L19
9	1,340-2,000	L10	L20

Depress the key selected, inject a signal of the station frequency and set the corresponding pair of coil trimmers for maximum, adjusting the oscillator trimmer first.

See that the set is thoroughly warm before making these adjustments. Final settings can be obtained if required with the set on the aerial with which it will be used.

The coils are behind the key plate and are in pairs corresponding to their keys, the top row being the oscillator coils. The two at the right end, top row, are the L.W. and M.W. trackers.

VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
1	TH2	Anode	129	2
		Screen	62	.6
		Osc. anode	50	.3
2	VP2B	Anode	129	1.5
		Screen	62	.5
3	TDD2A	Anode	45	.7
		Screen	128	.2
4	PM22A	Anode	129	.3
		Screen	129	.3

Bias drop across R14 = 1.75 v.
Bias drop across R13 + R14 = 5.75 v.

WINDINGS

L.	Ohms.	L.	Ohms.
3	2.5	16	1.8
4	37	17	2.1
5	2.5	19	4.3
6	3.6	20	4.3
7	4.8	21	3.7
8	6.5	22	3.7
9	18	23	3.8
10	22	24	2.7
13	5.2	25 (P)	2,500
14	11.5	25 total	5,700
15	1.5	26 (P)	750

