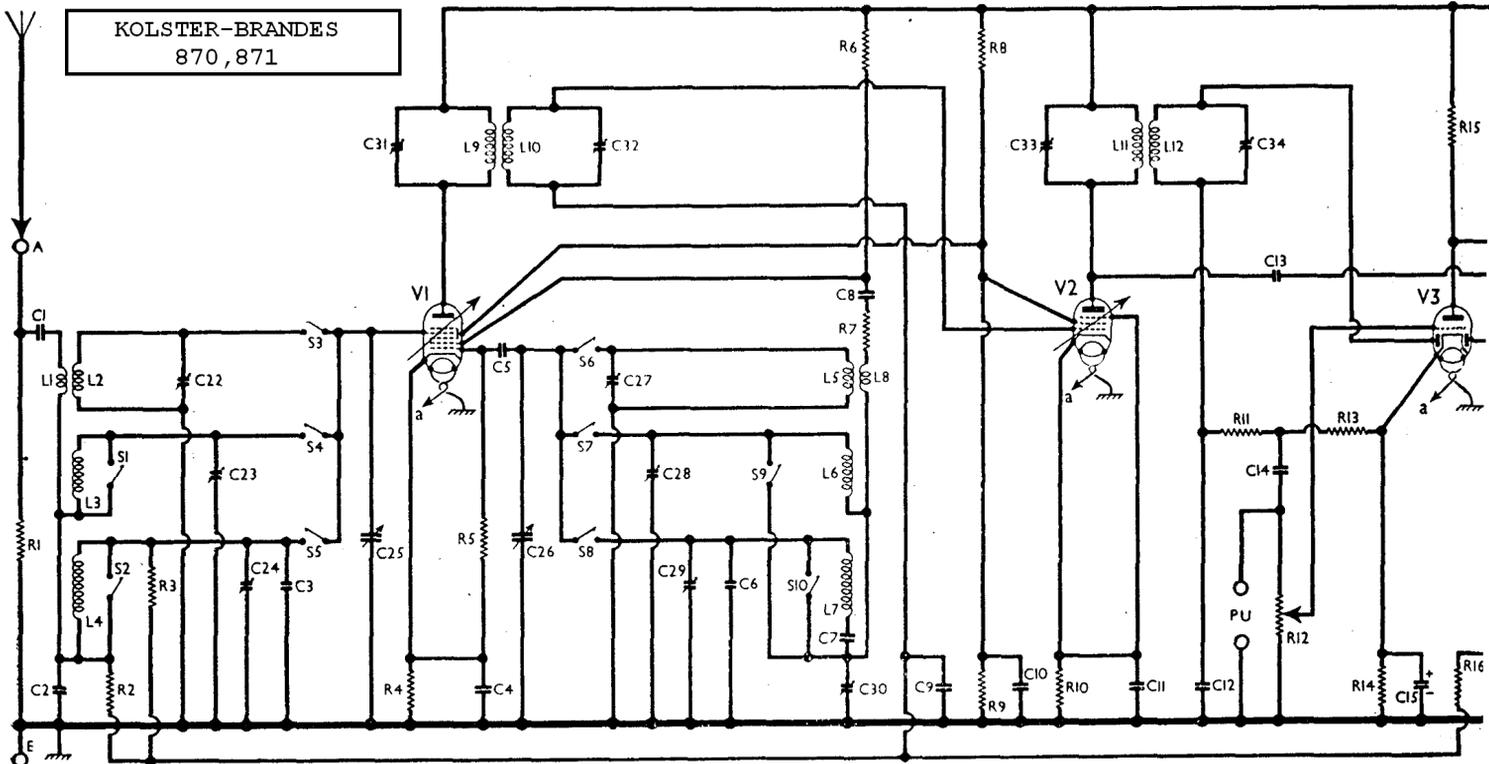


KOLSTER-BRANDES
870, 871



VALVE ANALYSIS

Valve voltages and currents given in the table (col. 5) are those measured in our receiver when it was operating on mains of 230 V, using the 225 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium wave band, and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 15D2	274	4.0	91	3.9
	Oscillator			
	162	4.7		
V2 9D2	274	8.0	91	1.7
V3 11D3	63	0.3		
V4 7D5	253	40.0	274	6.4
V5 R2	202†			

† Each anode, A.C.

CIRCUIT ALIGNMENT

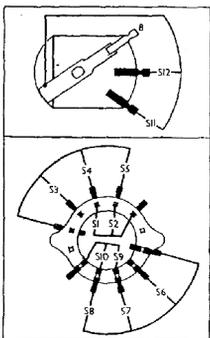
IF Stages.—Short-circuit C26, turn volume control to maximum. Connect signal generator to control grid (top cap) of V1 and chassis. Feed in a 454 KC/S signal, and adjust C31, C32 and C23. C34 is turn for maximum output. Recheck these settings. Remove short-circuit from C26.

RF and Oscillator Stages.—With the gang at maximum, the pointer should cover the lines at the high-wavelength ends of the scales. Connect signal generator, via a suitable dummy aerial, to A and E sockets, and keep volume control at maximum.

MW.—Switch set to MW, tune to 214 m (white mark) on scale, feed in a 214 m (1,400 KC/S) signal, and adjust C28, then C27, for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust C30 for maximum output, while rocking the gang for optimum results. Repeat the 214 m adjustment as a check.

LW.—Switch set to LW, tune to 1,200 m (white mark) on scale, feed in a 1,200 m (250 KC/S) signal, and adjust C27, then C24, for maximum output. There is no variable tracker on this band, but the setting should be checked at 2,000 m (150 KC/S).

SW.—Switch set to SW, tune to 20 m (white mark) on scale, feed in a 20 m (15 MC/S) signal, and adjust C22 for maximum output. Two peaks will be found: use that involving the lesser trimmer capacity (nearer the fully unscrewed position). Now adjust C22 for maximum output, rocking the gang very slightly for optimum results. No tracker is provided on this band.



Diagrams of the two switch units, viewed in the direction of the arrows in the under-chassis view. Above, tone control unit; below, the waveband unit.

Switch Table

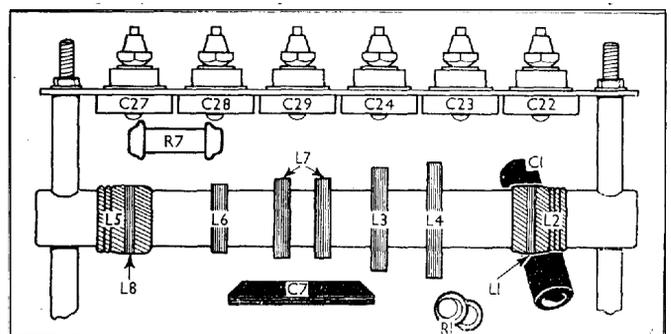
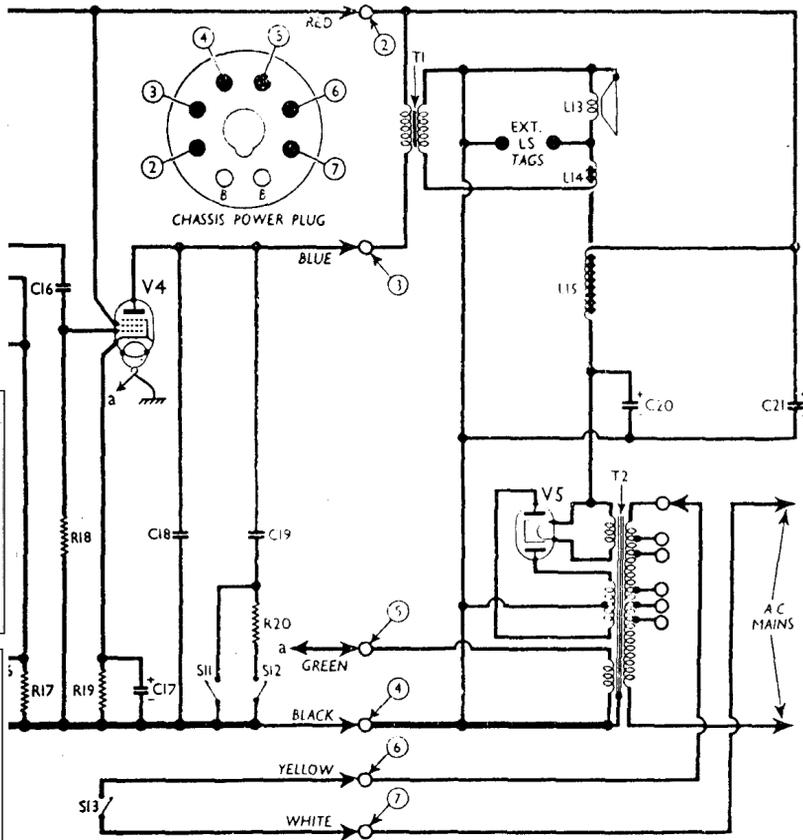
Switch	LW	MW	SW
S1	—	—	○
S2	—	○	○
S3	—	—	○
S4	—	○	○
S5	○	—	○
S6	—	○	○
S7	—	○	○
S8	—	○	○
S9	—	—	○
S10	—	○	○

CONDENSERS	Values (pF)
C1	Aerial coupling potential divider condensers ... 0.0045
C2	Aerial LW fixed trimmer ... 0.0045
C3	V1 anode bypass ... 0.00025
C4	V1 sec. CG condenser ... 0.001
C5	Osc. circ. LW fixed trimmer ... 0.00025
C6	Osc. circ. LW fixed trimmer ... 0.00025
C7	Osc. circuit LW tracker ... 0.00025
C8	V1 sec. anode coupling ... 0.01
C9	V2 CG decoupling ... 0.1
C10	V2 V2 SPS decoupling ... 0.1
C11	V2 anode bypass ... 0.1
C12	IF bypass ... 0.0005
C13	Coupling to V3 AVC triode ... 0.00025
C14	AF coupling to V3 triode ... 0.01
C15	V3 anode bypass ... 250
C16	V3 triode to V4 AF coupling ... 0.02
C17	V4 anode bypass ... 250
C18	Fixed tone control ... 0.005
C19	Part of tone control ... 0.02
C20	Part of tone control ... 0.02
C21	Part of tone control ... 0.02
C22	IF smoothing condensers ... 250
C23	Aerial circuit SW trimmer ... 0.00025
C24	Aerial circuit MW trimmer ... 0.00025
C25	Aerial circuit LW trimmer ... 0.00025
C26	Oscillator circuit tuning ... 0.00025
C27	Osc. circuit SW trimmer ... 0.00025
C28	Osc. circuit LW trimmer ... 0.00025
C29	Osc. circuit MW trimmer ... 0.00025
C30	Osc. circuit SW trimmer ... 0.00025
C31	1st IF trans. sec. tuning ... 0.00022
C32	1st IF trans. sec. tuning ... 0.00022
C33	2nd IF trans. sec. tuning ... 0.00022
C34	2nd IF trans. sec. tuning ... 0.00022

* Electrolytic. † Variable. ‡ Present.

RESISTORS	Values (ohms)
R1	Aerial circuit shunt ... 2,000
R2	V1 pentode CG decoupling ... 500,000
R3	Aerial circuit LW damping ... 500,000
R4	V1 fixed CG resistance ... 300
R5	V1 sec. CG resistance ... 20,000
R6	V1 sec. anode HT feed ... 20,000
R7	Oscillator reaction damping ... 68
R8	V1, V2, V3 SEC'S H.T. potentiometer ... 20,000
R9	1st IF detector ... 20,000
R10	V2 fixed CG resistance ... 200
R11	IF stopper ... 50,000
R12	Manual volume control ... 500,000
R13	V3 signal diode load ... 500,000
R14	V3 signal diode A.V.C. delay ... 5,000
R15	V3 triode anode load ... 500,000
R16	V4 anode decoupling ... 500,000
R17	V3 V3 V3 diode load ... 500,000
R18	V4 CG resistance ... 250,000
R19	V4 CG resistance ... 400
R20	Part of tone control ... 10,000

OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial SW coupling coil ... 0.1
L2	Aerial SW tuning coil ... Very low
L3	Aerial MW tuning coil ... 30.0
L4	Aerial LW tuning coil ... Very low
L5	Osc. circuit SW tuning coil ... 5.0
L6	Osc. circuit LW tuning coil ... 16.0
L7	Oscillator SW reaction coil ... 2.5
L8	1st IF trans. Pri. ... 2.5
L9	1st IF trans. Sec. ... 2.5
L10	2nd IF trans. Pri. ... 2.5
L11	2nd IF trans. Sec. ... 2.5
L12	Speaker speech coil ... 2.5
L13	Hum neutralizing coil ... 0.2
L14	Speaker field coil ... 1,200.0
L15	Speaker field coil ... 430.0
L16	Speaker field coil ... 0.2
T1	1st IF trans. Pri. total ... 29.0
T2	1st IF trans. Sec. total ... 0.1
T3	2nd IF trans. Pri. total ... 209.0
T4	2nd IF trans. Sec. total ... 0.1
S1	Mains switch, ungrounded R12
S2	Mains switch, grounded R12



Coil and trimmer assembly, drawn as seen looking in the direction of the arrow in the plan view.