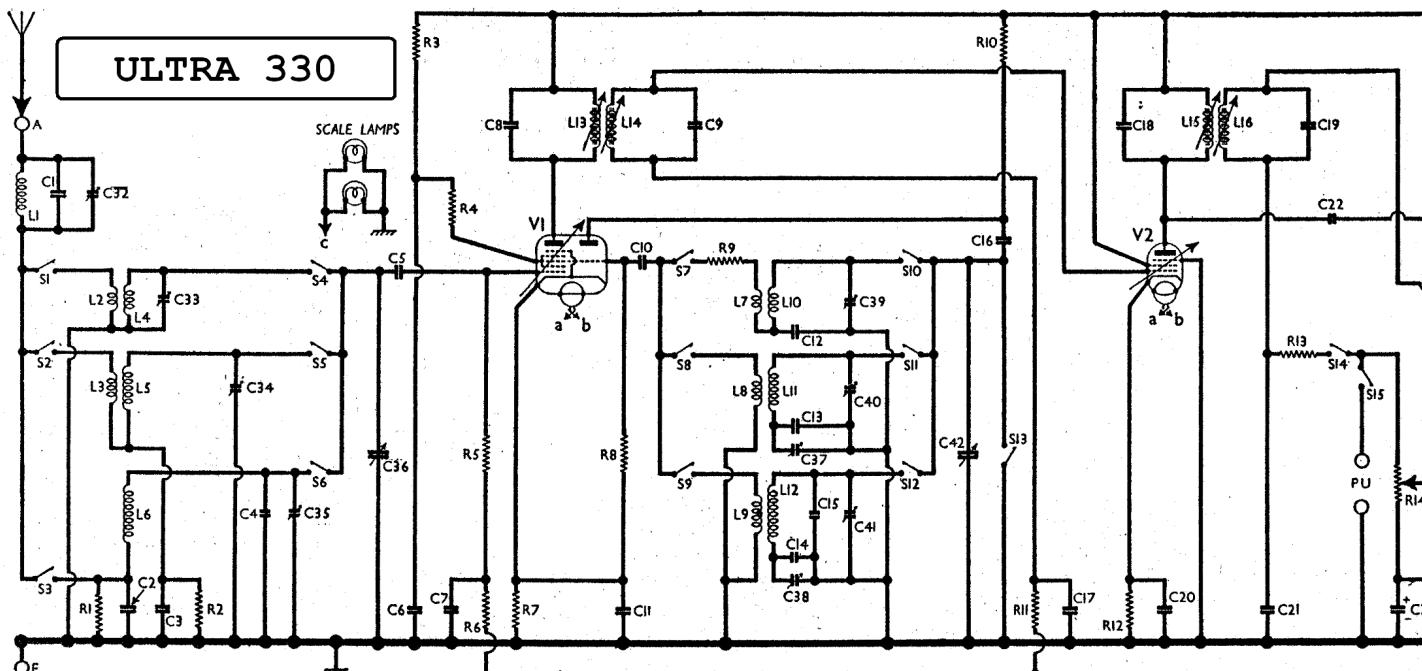


ULTRA 330



CONDENSERS

Values (μF)

C1	IF rejector fixed tuning...	0-002
C2	Aerial LW coupling impedance...	0-002
C3	Aerial MW coupling impedance...	0-004
C4	Aerial LW fixed trimmer	0-00003
C5	V1 heptode CG condenser	0-0001
C6	V1 SG decoupling	0-1
C7	V1 heptode CG decoupling	0-02
C8	1st IF transformer tuning condensers	0-0001
C9	V1 osc. CG condenser	0-0005
C10	V1 cathode by-pass	0-1
C11	Osc. circuit SW tracker	0-004
C12	Osc. circ. MW fixed tracker	0-00033
C13	Osc. circ. LW fixed tracker	0-00008
C14	Osc. circ. LW fixed trimmer	0-00006
C15	V1 osc. anode coupling	0-0001
C16	V2 CG decoupling	0-02
C17	2nd IF transformer tuning condensers	0-0001
C18	V2 cathode by-pass	0-1
C19	IF by-pass	0-0002
C20	Coupling to V3 AVC diode	0-00001
C21	V3 cathode by-pass	50-0
C22	V3 triode CG condenser	0-004
C23	IF by-pass	0-0005
C24	V4 CG condenser	0-02
C25	Part variable tone control	0-02
C26	Fixed tone corrector	0-004
C27	HT smoothing condensers	8-0
C28	Mains RF by-pass	16-0
C29	Aerial IF rejector trimmer	0-004
C30	Aerial circuit SW trimmer	—
C31	Aerial circuit MW trimmer	—
C32	Aerial circuit LW trimmer	—
C33	Aerial circuit tuning	—
C34	Osc. circuit MW tracker	—
C35	Osc. circuit LW tracker	—
C36	Osc. circuit SW trimmer	—
C37	Osc. circuit MW trimmer	—
C38	Osc. circuit LW trimmer	—
C39	Osc. circuit LW tuning	—
C40	Osc. circuit LW tuning	—
C41	Osc. circuit LW tuning	—
C42	Osc. circuit LW tuning	—
C43	Osc. circuit LW tuning	—
C44	Osc. circuit LW tuning	—
C45	Osc. circuit LW tuning	—
C46	Osc. circuit LW tuning	—
C47	Osc. circuit LW tuning	—
C48	Osc. circuit LW tuning	—
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C93	Osc. circuit LW tuning	—
C94	Osc. circuit LW tuning	—
C95	Osc. circuit LW tuning	—
C96	Osc. circuit LW tuning	—
C97	Osc. circuit LW tuning	—
C98	Osc. circuit LW tuning	—
C99	Osc. circuit LW tuning	—
C100	Osc. circuit LW tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES

Values (ohms)

R1	Aerial circuit damping resistances	10,000
R2	V1 SG HT feed	1,000
R3	V1 SG stabiliser	25,000
R4	V1 heptode CG resistance	60
R5	V1 heptode CG decoupling	1,000,000
R6	V1 fixed GB resistance	200
R7	V1 osc. CG resistance	50,000
R8	Osc. circ. SW stabiliser	10
R9	V1 osc. anode HT feed	50,000
R10	V2 CG decoupling	1,000,000
R11	V2 fixed GB resistance	200
R12	IF stopper	100,000
R13	Manual volume control; V3 signal diode load	500,000
R14	V3 triode CG resistance	1,000,000
R15	V3 triode GB; AVC delay	1,500
R16	V3 triode anode load resistances	30,000
R17	V3 AVC diode load resistances	30,000
R18	V4 CG resistance	250,000
R19	V4 grid stopper	750,000
R20	V4 GB resistance	500,000
R21	Variable tone control	1,000
R22	V4 GB resistance	500,000
R23	V4 anode stopper	175
R24	V4 anode stopper	60
R25	V4 anode stopper	60

OTHER COMPONENTS

Approx. Values (ohms)	
3-7	L1 Aerial IF rejector coil
0-2	L2 Aerial SW coupling coil
0-3	L3 Aerial MW coupling coil
3-0	L4 Aerial LW tuning coil
24-0	L5 Aerial LW tuning coil
0-2	L6 Oscillator SW reaction
0-6	L7 Oscillator MW reaction
1-3	L8 Osc. circuit SW tuning
5-7	L9 Osc. circuit MW tuning
14-0	L10 Osc. circuit LW tuning
4-6	L11 1st IF trans. Sec.
4-6	L12 2nd IF trans. Sec.
4-6	L13 1st IF trans. Sec.
4-6	L14 2nd IF trans. Sec.
4-6	L15 Hum neutralising coil
0-1	L16 Speaker field coil
1,000-0	L17 Speaker input (Pri. trans. Sec.)
450-0	L18 Speaker input (Pri. trans. Sec.)
0-6	L19 Speaker input (Pri. trans. Sec.)
39-0	L20 Mains (Heater sec. trans. Sec.)
0-1	L21 Rect. heat. sec. trans. Sec.
0-075	L22 Scale lamp sec. trans. Sec.
490-0	L23 HT sec. total
—	L24 Wavefilter
—	L25 Radio/gram. change switch
—	L26 Mains switch, ganged R14

VALVE ANALYSIS

Valve voltages and currents given in the table overleaf are those measured in our receiver when it was operating on mains of 220 V, using the 220-240 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. If the receiver should become unstable when V2 anode or screen current is being measured it can be stabilised by connecting a condenser of about 0.1 μF between the top cap of the valve and chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH41	242	2-0	82	7-0
V2 VP41	242	3-0	242	3-1
V3 6X4UD	194	2-0	242	8-0
V4 Pent5	222	37-5	—	—
V5 UT6	305†	—	—	—

† Each anode, AC.

CIRCUIT ALIGNMENT

IF Stages.—Switch set to MW and turn the gain and volume control to maximum. Connect signal generator to A and E sockets, feed in a 470 KC/S (638.3 m) signal, and adjust the cores of L13, L14, L15 and L16 for maximum output, reducing the signal input as the circuits come into line.

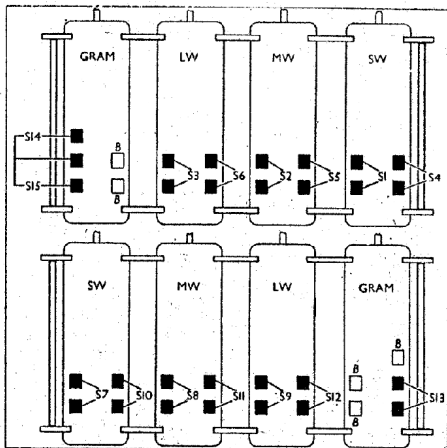
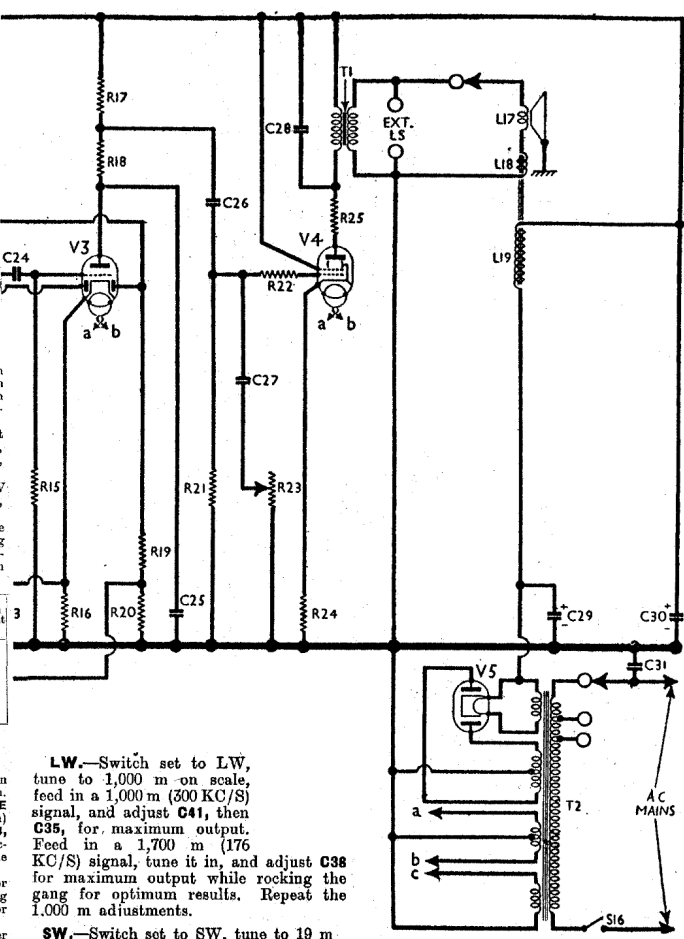
IF Rejector.—With the signal generator leads connected as above, feed in a strong 470 KC/S signal, and adjust C32 for minimum output.

RF and Oscillator Stages.—The pointer should reach a point about an equal distance from each end of the scales at the two extremes of the travel of the gang. If it requires adjustment, it can be slid along the drive cord, which is twisted one turn round the hook behind the pointer carrier. The signal generator leads should be connected via a suitable dummy aerial to the A and E sockets.

MW.—With the set still switched to MW, tune to 200 m on scale, feed in a 200 m (1,500 KC/S) signal, and adjust C40, then C34, for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust C37 for maximum output, while rocking the gang for optimum results. Repeat the 200 m adjustments.

LW.—Switch set to LW, tune to 1,000 m on scale, feed in a 1,000 m (300 KC/S) signal, and adjust C41, then C35, for maximum output. Feed in a 1,700 m (176 KC/S) signal, tune it in, and adjust C38 for maximum output while rocking the gang for optimum results. Repeat the 1,000 m adjustments.

SW.—Switch set to SW, tune to 19 m on scale, feed in a 19 m (15.8 MC/S) signal, and adjust C30, then C33, for maximum output. Check calibration.



Diagrams of the two sides of the press-button switch unit. Above is the underside, as seen in our under-chassis view; below is the upper side.