

ULTRA 25 AND 88

Three-valve, plus rectifier, two-waveband superhets with neon tuning indicator. Provision is made for pick-up on the table and console models, while all models are provided with extra loudspeaker sockets and special switch-plug for muting the internal speaker. Suitable for operation from AC mains, 200-250 volts, 40-100 cycles. (Radiograms, 50-60 cycles.) Made by Ultra Electric, Ltd., Western Avenue, Acton, London, W3.

ALL models employ the same circuit but the RG and ARG models have completely different chassis layout to the table and console models. The table model employs a slightly smaller loudspeaker and a different mains trans-

former to the other three models, details of which are given in the components and valve tables.

The aerial is connected direct to the aperiodic coupling coils, L1 (MW), L2 (LW), of an inductively coupled band-pass filter unit.

The primary coils, L2 (MW) and L4 (LW), are tuned by VC1 section of a triple-gang condenser, and a winding, L5, couples the coils to the grid circuit, L6 (MW), L7 (LW), tuned by VC3 section of the gang. The signal is fed directly to the grid of the frequency changer valve, V1.

The triode section of this valve employs a tuned anode circuit, L8 (MW), L9 (LW), tuned by VC2 section of the gang with cathode coupling coils L10, L11.

R1 is an harmonic suppressor in the oscillator grid circuit, while R3 is the grid leak, HF by-passed by C5.

The screening grid of V1 is fed from the HT line through dropping resistance R2 decoupled by C2. The valve is biased by R7 decoupled by C7.

The IF output from V1 is coupled by an IF transformer L12, L13, to the grid of the HF pentode V2. The anode

circuit of V1 is HF decoupled by the choke L14 and condenser C3.

V2 derives standing bias from the cathode resistance R8 which is decoupled by C8, while the screening grid is fed via the voltage dropping resistance R4, decoupled by C9.

A second IF transformer, L15, L16, transfers the IF signal to the signal diode of V3, the double diode pentode output valve. The load resistance is R11. The signal is HF filtered by L17 and C12.

The LF coupling condenser, C11, hands on the signal to the volume control, R22, from whence it is fed to the grid of the pentode section of V3 through the grid stopper, R21.

The AVC diode of V3 is fed from the anode of V2 via C13, the load resistances being R14 and R16. V1 grid circuit is provided with the full amount of AVC voltage via the decoupled components, R12 and C1, while V2 grid circuit is provided with a lesser voltage via decoupling components R13 and C14.

The pick-up sockets are connected to the primary of a 1-8 ratio input transformer, the secondary of which is con-

nected to the radiogram switch and the tapping on the cathode biasing resistances, R19, R20, of the output valve.

The anode circuit of V3 incorporates an anode stopper resistance, R17, and the primary winding, L20, of the output transformer. A permanent degree of tone correction is effected by C15, C17 and R18, while additional top-note cut may be obtained by switching in C16.

The HT supply is derived from the full-wave rectifier valve, V4, the loudspeaker field coil acting as a choke in the HT positive line. C20 is the reservoir condenser, and C19 the smoothing condenser. The mains input is filtered by C21, C22.

The neon visual tuner is operated by the rise in voltage across the anode resistance, R9 of the V2, consequent upon the increase of bias and drop in anode current when a signal is tuned in and the AVC comes into operation. R14 is the neon exciter limiting resistance, while the feed resistance is R10.

GANGING

IF Circuit.—Adjust short hand of pointer to cover the short line on the immediate left-hand side of the "12 o'clock" position on the tuning scale with the gang condenser at maximum on short waves.

Inject a signal of 456 kc into the control grid of V1, and adjust T1, T2, T3 and T4 in that order for maximum output.

MW Band.—Switch to MW. Inject and tune in a 200 m signal, and adjust T5, T6, T7 in that order for maximum output.

LW Band.—Switch to LW. Inject and tune in a 1,500 m signal, and adjust T8 for maximum output.

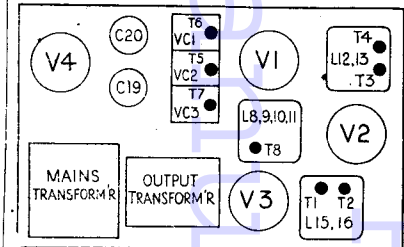
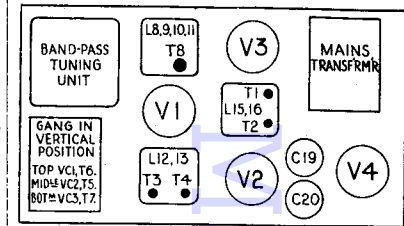
CONDENSERS

C	Mfds	C	Mfds
1	.05	12	.0002
2	.1	13	.0002
3	.1	14	.05
4	.004	15	.001
5	.0002	16	.01
6	.5	17	.01
7	.5	18	.50
8	.1	19	.16
9	.5	20	.8
10*	.002	21	.01
11	.01	22	.01

*.1 mfd in later productions.

RESISTANCES

R	Ohms	R	Ohms
1	1,000	12	1 meg
2	25,000	13	1 meg
3	50,000	14	2 meg
4	30,000	15	250,000
5	4,000	16	750,000
6	80,000	17	60
7	480	18	15,000
8	165	19	138
9	12,000	20	138
10	30,000	21	1,000
11	500,000	22	1 meg



Although they employ the same circuit, the Ultra 25RG and 88ARG radiogram models have different chassis from that used in the model 25 table and console receivers. The top-of-chassis layout for the console and table is illustrated at the top, and below it is the layout for the radiograms versions.

VALVE READINGS

V	Type	Electrode	Table	Volts Others
1	AC/TP Mazda	Anode	274	260
		Osc anode	110	110
		Screen	200	185
2	AC/VP1	Cathode	4.5	4.5
		Anode	165	165
		Screen	195	180
3	AC2/PEN DD	Cathode	1.5	1.5
		Anode	260	245
		Screen	274	260
4	UU3	Cathode	10.4	10.4
		Filament	364	440

Pilot lamps, 4.5 v., .3 amp.

WINDINGS

L	Ohms	L	Ohms
1	1.5	17	110
2	48.5	18	100
3	4.7	19	1,400
4	11.3	20	*400
5	—	—	385
6	4.7	21	*.25
7	11.3	—	.2
8	8.5	22	*1,500
9	4.0	—	3,000
10	—	23	.16
11	1.2	24	.12
12	5.6	25	.3
13	5.6	26	*320+340
14	5.5	—	370+400
15	5.6	27	.31
16	5.6	—	—

* Table models only
Speech coil (plus humbucking coil), 4.0

