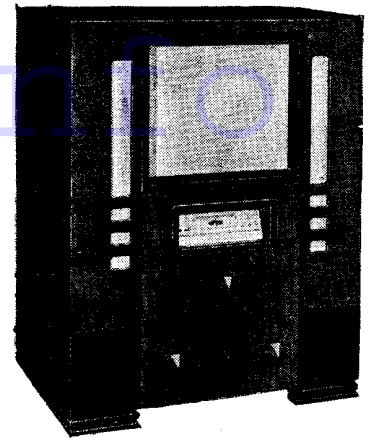


AMPLION "RADIOLUX" A.C. SUPERHETS



The Radiolux is a five-valve A.C. mains superhet marketed by Amplion (1932), Ltd. A neon tuning indicator is among the set's modern features.

Circuit.—An H.F. valve, VP4A met. (V.1) is coupled to the aerial by a tuned secondary transformer. A balancing condenser for aerial trimming is included in the aerial lead. Bias is partly fixed and partly obtained from the A.V.C. line. Visual tuning is provided by a neon indicator in the H.T. lead.

Auto coupling is used to the next valve, an F.C.4 (V.2), combined first detector oscillator. This has the reaction tuning in the grid of the oscillator section. Bias for the oscillator is by cathode resistance, and for the pentode section by cathode resistance and A.V.C.

A "straight" condenser is used for the oscillator, and both padding and tracking condensers are included for the M.W. and L.W. wavebands.

Coupling to the next valve is by band-pass I.F. transformer (frequency 110 k.c.).

The second detector valve, SP4 met. (V.3) is an anode bend detector and the amplified H.F. remaining on the anode is by-passed to a Westector (W.1) to provide A.V.C. for V.1 and V.2. In the anode circuit R.13 forms an H.F. stopper, R.12 is the L.F. coupling resistance, and R.11 the decoupling resistance.

The output pentode, Pen.4VA (V.4), has its grid leak as a volume control potentiometer and is tone compensated by condensers across the primary of the output transformer. A screw switch allows the internal speaker to be disconnected when an external one is in use.

Mains equipment consists of: transformer with H.F. by-pass condenser; full-wave indirectly heated rectifier with the field coil in the positive H.T. lead; two dry electrolytic condensers.

Special Notes.—The pilot lamp 4.5-v. .3-amp type.

To reach the neon tube and the pilot lamps (Continued on opposite page.)

CONDENSERS

C.	Purpose.	Mfd.
1	Var. aerial adjustment	.0005
3	V1 aux. grid by-pass	.1
4	V1 cathode by-pass	.1
5	V1 anode decoupling	.5
8	V3 grid	.00005
9	V2 cathode by-pass	.1
10	V2 osc. grid	.001
11	V2 aux. grid by-pass	.1
12	A.V.C. line by-pass	1
14	V2 osc. anode decoupling	.1
15	V3 grid	.00005
16	H.F. by-pass from A.V.C. line	.001
17	V3 anode decoupling	.5
18	H.F. by-pass to Westector	.0005
19	V3 aux. grid by-pass	1
20	V3 cathode by-pass	25 el. (25 v.)
21	L.F. coupling V3, V4	.1
22	Tone compensating V4	.006
23	V4 cathode by-pass	10 el. (50 v.)
24	H.T. smoothing	8 el.
25	H.T. smoothing	4 el.
26	Fixed part of osc. L.W. track	.0005
27	Mains aerial	.0003
28	Part of V3, H.F. filter	.0003
29	In parallel with C22	.01
30	H.F. by-pass from mains	.006

RESISTANCES

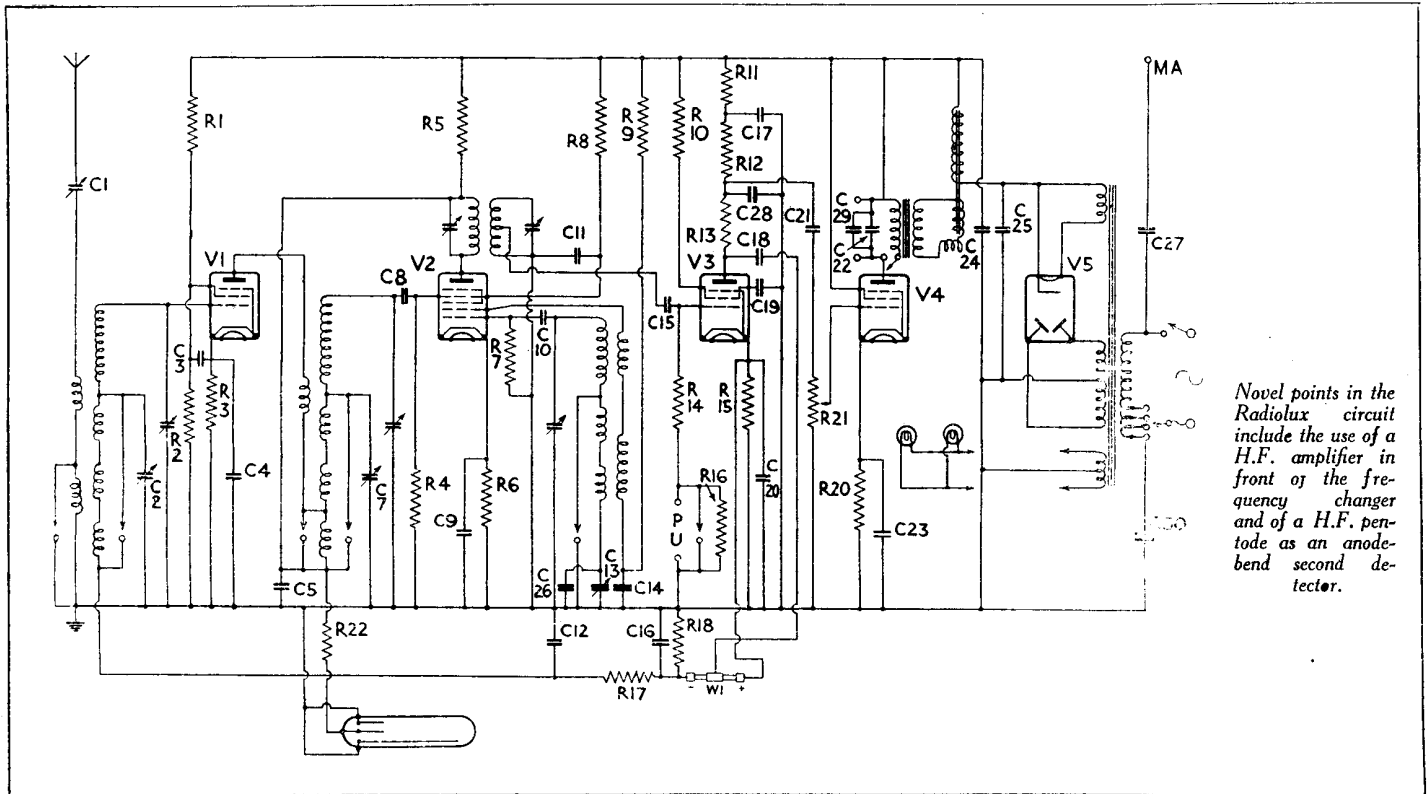
R.	Purpose.	Ohms.
1	Top part of V1 aux. grid ptr.	25,000
2	Lower part of V1 aux. grid ptr.	20,000
3	V1 cathode bias	200
4	V2 grid leak	2 meg.
5	V2 anode decoupling	8,000
6	V2 cathode bias	250
7	V2 osc. grid leak	50,000
8	Voltage dropping to V2 aux. grid.	50,000
9	Decoupling V2 osc. anode	75,000
10	Voltage dropping to V3 aux. grid	1 meg.
11	V3 anode decoupling	50,000
12	V3 anode L.F. coupling	250,000
13	H.F. stopper	50,000
14	V3 grid leak	100,000
15	V3 cathode bias	5,000
16	Across P.U. connections	8,000 or 12,000
17	Decoupling A.V.C. line	250,000
18	A.V.C. rectifier load	100,000
20	V4 cathode bias	500
21	V3 grid leak (var. V.C.)	500,000
22	Voltage dropping to neon anode	8,000-25,000

VALVE READINGS

No Signal

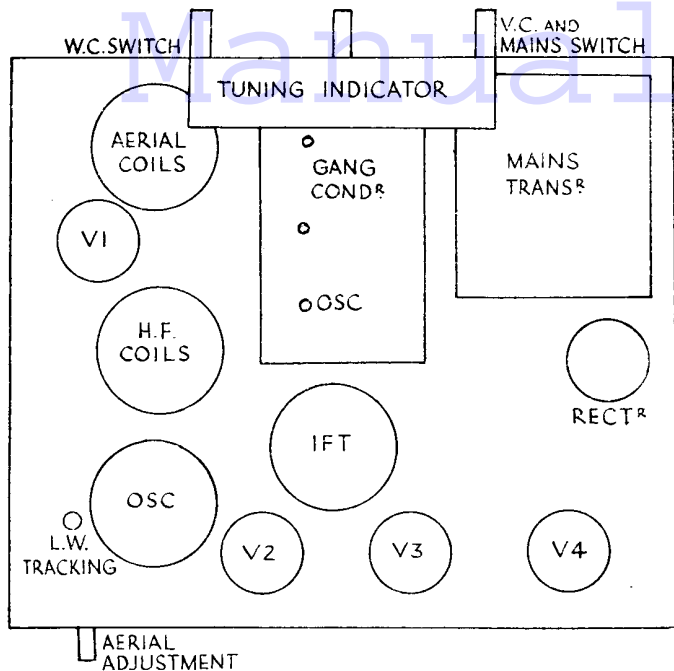
Valve.	Type.	Electrode.	Volts.	M.a.
1	V.P.4 A. met. (7)	anode	175	4.6
		aux. grid	90	
2	F.C.4 met. (7)	anode	172*	3
		aux. grid	80*	
		osc. anode	83*	
3	S.P.4met.(7)	anode	60	.4
		aux. grid	45**	
4	Pen.4VA(7)	anode	225	30
		aux. grid	240	4

* Valve stabilised by anode condenser.
** Entirely misleading voltage readings due to high resistances in circuit. Current reading is correct.



Novel points in the Radiolux circuit include the use of a H.F. amplifier in front of the frequency changer and of a H.F. pentode as an anode-bend second detector.

AMPLION "RADIOLUX" SUPERHET (Continued)



A point to note in connection with the top of the Radiolux is that to reach the pilot lamps and neon tube, two nuts holding the case must be removed.

transformer are not accessible for ordinary ganging.

The drive for the tuning dial is assembled as a complete unit. Should any trouble develop the unit should be removed and returned to the makers for repair.

To remove the dial, undo grub screw and two screws on front of tuning condenser.

The resistance and condenser panel appears more complicated than it really is. To replace a component snip the connecting wires on the other side of the perforated panel and pull the component free.

The A.V.C. components, consisting of the W.1 (or WMX12) Westector, C.12, R.17 and R.18, are mounted on the small assembly next the mains transformer.

Replacing Chassis.—Lay chassis inside cabinet, replace holding screws and knobs.

remove two nuts holding the case to the gang condenser.

Quick Tests.—Between the terminals in the L.S. transformer and chassis (note that as the chassis is coated with an insulating varnish, contact should be made to one of the many tubular rivets) :—

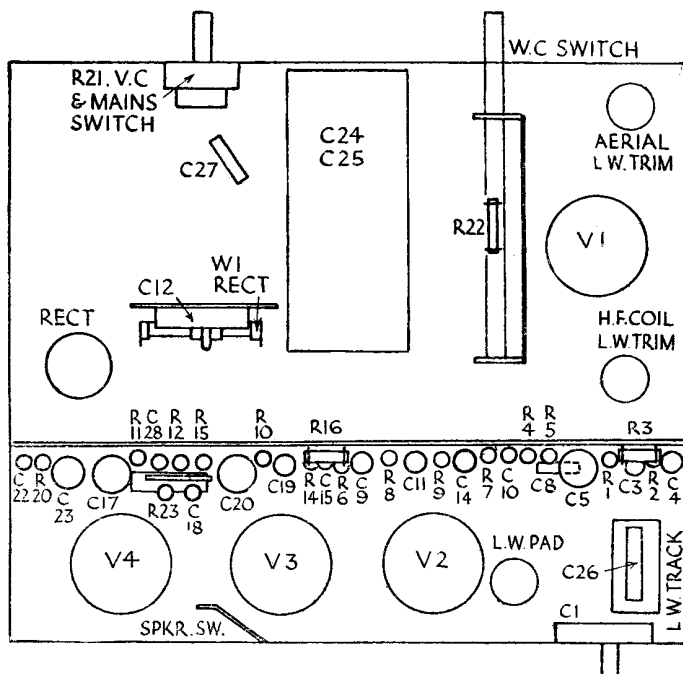
- Top (1) white, H.T. unsmoothed, 360 volts.
- (2) black, V.4 anode, 225 volts.
- (3) blank.
- (4) and (5) red, H.T. smoothed, 240 volts.

1 and 5 are field coil.
2 and 4 are primary of output transformer.

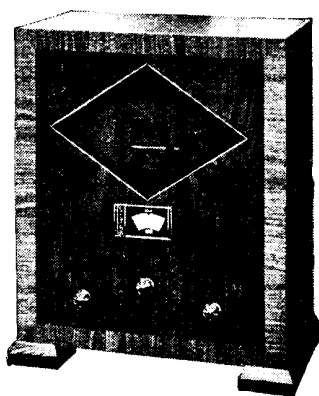
Removing Chassis.—Remove knobs (grub screw) and four holding screws underneath.

General Notes.—The trimmers of the I.F.

A strip of perforated Micalex forms an original condenser and resistance panel underneath the set (right).



BATTERY "TIGER" BY ULTRA



The "Tiger" battery set is a class B five-valve superhet. It is a product of Ultra Electric, Ltd.

Circuit.—The combined first detector oscillator, an S215 (V1), is a screen-grid valve preceded by a band-pass aerial coupling. Oscillation is obtained by coupling coils in the filament leads.

To prevent oscillation in the L.T. wiring a large valve or condenser is connected across the leads.

Coupling to the next valve is by band-pass I.F. transformer (frequency 456 k.c.).

The I.F. valve, S215VM met. (V2) is used with the variable-mu. characteristic to control volume by means of a potentiometer across the G.B. section of the battery, and is followed by a second band-pass I.F. transformer.

The second detector valve H2 met. (V3) operates as a semi power-grid detector. A limited amount of reaction is applied to the second I.F. transformer by means of a fixed condenser in series with a reaction winding. The following coupling is an auto transformer.

The L.F. valve, L2 (V4) is used as a driver for the PD220 Class B output valve (V5) to

which it is coupled in the conventional manner.

Tone compensation for the output valve is by a condenser between the anodes and one between each anode and chassis.

The speaker is a permanent magnet type.

Special Notes.—The H.T. battery is a Grosvenor DBA586, containing H.T. and G.B. tappings. The voltage between H.T.— and the 150 volt socket is actually 135 to 140 volts.

Connections are :—

- H.T.—, Brown, to H.T.—.
- H.T.+1, White, to 70 volts.
- H.T.+2, Yellow, to 150 volts.
- G.B.—1, Green, to —4.5 volts.
- G.B.—2, Blue, to —7.5 volts.

Originally the battery specified was Ediswan 69707. This is now discontinued and the Grosvenor type should be ordered for replacements.

As the battery runs down H.T.+1 should be raised to 80 volts, G.B.—1 reduced to —3 volts, and G.B.—2 to —6 volts.

These sets are fitted with a special aerial contained in a winder at the back of the

(Continued on next page.)

VALVE READINGS

No signal. New H.T. battery.

Valve.	Type.	Electrode.	Volts.	M.A.
1	SG215 (4) ..	anode ..	135	1.4*
		screen ..	66	
2	S215 VM met. (4)	anode ..	135	2.2
		screen ..	66	
3	H2 met. (4)	anode ..	125	1.4
4	L2 (4) ..	anode ..	135	1.5
5	PD220 (7)	eachanode	135	1.3

* Stabilised.