

EVER READY 5038

3-VALVE A.C. SUPERHET

SUITABLE for mains of 200-250 V, 40-100 C/S, the Ever Ready 5038 is a 3-valve (plus rectifier) A.C. 2-band superhet in a horizontal cabinet with the speaker on the left and the chassis on the right. No provision is made for either a gramophone pick-up or an extension speaker.

CIRCUIT DESCRIPTION

Aerial input via coupling coil **L1** to inductively coupled band-pass filter. Primary coils **L2, L3** are tuned by **C18**, secondaries **L4, L5** by **C20**.

First valve (**V1, Ever Ready metallised A80A**) is an octode operating as frequency changer with electron coupling. Oscillator grid coils **L6 (M.W.)** and **L7 (L.W.)** are tuned by **C22**; parallel trimming by **C23 (M.W.)** and **C24 (L.W.)**; series tracking by **C26 (M.W.)** and **C25 (L.W.)**. Reaction by coils **L8 (M.W.)** and **L9 (L.W.)**.

Second valve (**V2, Ever Ready metallised A50P**) is a variable-mu pentode operating as intermediate frequency amplifier with tuned-primary tuned secondary transformer couplings **C27, L10, L11, C28** and **C29, L12, L13, C30**.

section. Fixed tone correction in anode circuit by **C15**.

Second diode of **V3**, fed from **L13** via **C13**, provides D.C. potential which is developed across load resistances **R11, R12**, that across **R12** being fed back through decoupling circuits as G.B. to F.C. and I.F. valves, giving automatic volume control.

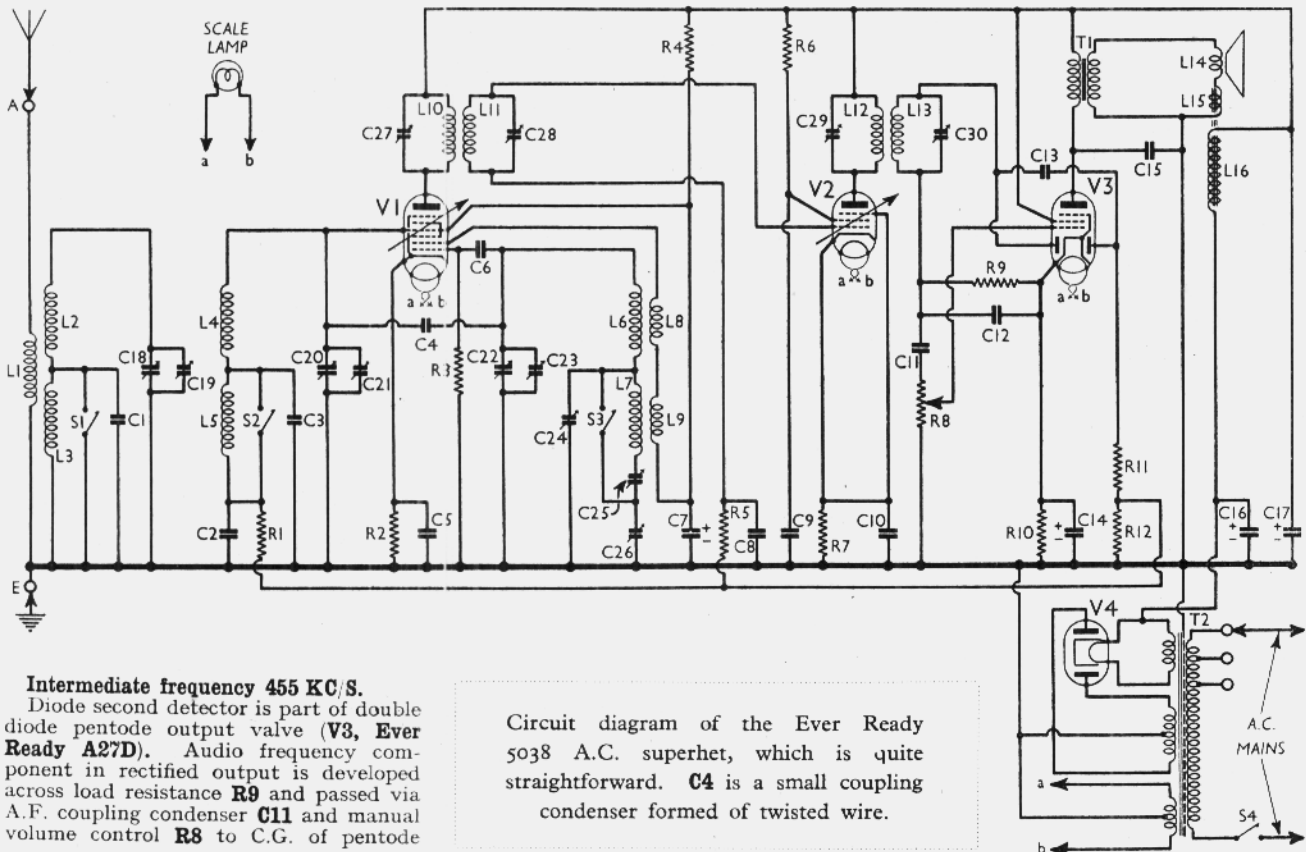
H.T. current is supplied by I.H.C. full-wave rectifying valve (**V4, Ever Ready A11D**). Smoothing by speaker field **L16** and dry electrolytic condensers **C16, C17**.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 pentode C.G. decoupling ..	110,000
R2	V1 fixed G.B. resistance ..	200
R3	V1 osc. C.G. resistance ..	51,000
R4	V1 S.G. and osc. anode H.T. feed ..	25,000
R5	V2 C.G. decoupling ..	510,000
R6	V2 S.G. H.T. feed ..	25,000
R7	V2 fixed G.B. resistance ..	75
R8	Manual volume control ..	500,000
R9	V3 signal diode load ..	510,000
R10	V3 G.B. resistance ..	150
R11	V3 A.V.C. diode load resis-	260,000
R12	tances ..	260,000

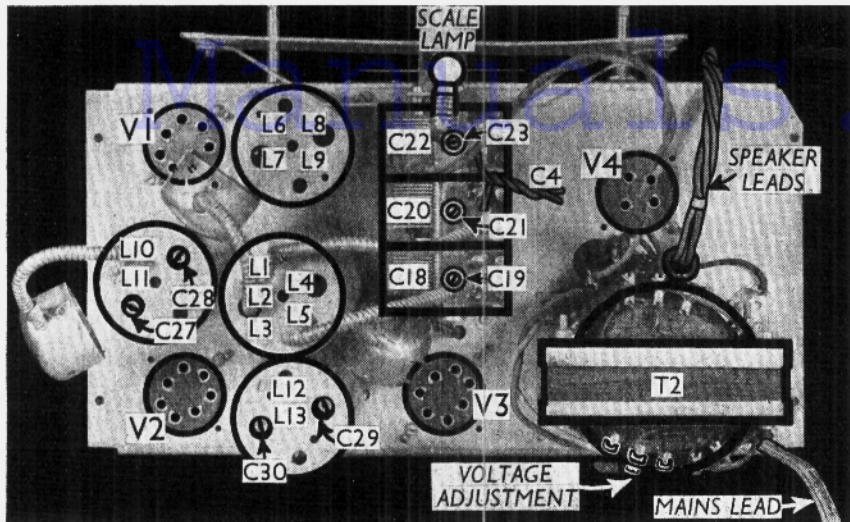
CONDENSERS		Values (μF)
C1	Band-pass pri. L.W. trimmer ..	0.00005
C2	V1 pentode C.G. decoupling ..	0.1
C3	Band-pass sec. L.W. trimmer ..	0.00005
C4	Small coupling ..	Very low
C5	V1 cathode by-pass ..	0.1
C6	V1 osc. C.G. condenser ..	0.0001
C7*	V1 S.G. and osc. anode de-	
	coupling ..	2.0
C8	V2 C.G. decoupling ..	0.1
C9	V2 S.G. decoupling ..	0.1
C10	V2 cathode by-pass ..	0.1
C11	A.F. coupling to V3 pentode ..	0.05
C12	I.F. by-pass ..	0.0002
C13	Coupling to V3 A.V.C. diode ..	0.00001
C14*	V3 cathode by-pass ..	50.0
C15	Fixed tone corrector ..	0.01
C16*	H.T. smoothing ..	8.0
C17*	H.T. smoothing ..	8.0
C18†	Band-pass pri. tuning ..	—
C19†	Band-pass pri. M.W. trimmer ..	—
C20†	Band-pass sec. tuning ..	—
C21†	Band-pass sec. M.W. trimmer ..	—
C22†	Oscillator circuit tuning ..	—
C23†	Osc. circuit M.W. trimmer ..	—
C24†	Osc. circuit L.W. trimmer ..	0.0001
C25†	Osc. circuit L.W. tracker ..	0.0006
C26†	Osc. circuit M.W. tracker ..	0.0004
C27†	1st I.F. trans. pri. tuning ..	—
C28†	1st I.F. trans. sec. tuning ..	—
C29†	2nd I.F. trans. pri. tuning ..	—
C30†	2nd I.F. trans. sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Ever Ready 5038 A.C. superhet, which is quite straightforward. **C4** is a small coupling condenser formed of twisted wire.

Intermediate frequency 455 KC/S.
Diode second detector is part of double diode pentode output valve (**V3, Ever Ready A27D**). Audio frequency component in rectified output is developed across load resistance **R9** and passed via A.F. coupling condenser **C11** and manual volume control **R8** to C.G. of pentode



Plan view of the chassis. Note the construction of C4.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil	12.5
L2	Band-pass primary coils	3.4
L3		14.0
L4	Band-pass secondary coils	2.8
L5		14.0
L6	Oscillator M.W. tuning coil	1.9
L7	Oscillator L.W. tuning coil	5.7
L8	Oscillator reaction coils	3.4
L9		11.0
L10		6.75
L11	1st I.F. trans. { Pri.	6.75
L12	{ Sec.	6.75
L13	2nd I.F. trans. { Pri.	6.75
L14	{ Sec.	6.75
L15	Speaker speech coil	2.2
L16	Hum neutralising coil	0.1
T1	Speaker input { Pri.	1,500.0
	{ Sec.	220.0
	{ Pri., total	0.25
T2	Mains { Heater sec.	16.0
	{ Rect. heat. sec.	0.05
	{ H.T. sec., total	0.1
Sr-S3	Waveband switches	470.0
S4	Mains switch, ganged R8	—

scale of a model 7 Universal Avometer, chassis being negative.

The voltage given for V1 oscillator anode is considerably lower than that of the screen, although it would seem from the circuit diagram that they would be almost identical. This was found to be due to the voltmeter stopping the valve from oscillating. In other receivers the valve may continue oscillating, when the voltage will be 83 V.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 A80A	{ 257 Oscillator	1.6	83	5.2
	{ 57	1.1		
V2 A50P	257	9.4	160	3.4
V3 A27D	250	33.0	257	6.1
V4 A11D	312†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S3 are the waveband switches, ganged in a single unit beneath the chassis. All the switches are closed on the M.W. band and open on the L.W. band.

S4 is the Q.M.B. mains switch, ganged with the volume control R8.

DISMANTLING THE SET

Removing Chassis.—Remove the three control knobs (pull off) and the four wood screws holding the flanges at the sides of the chassis to the wooden supports. The chassis can now be withdrawn.

To free the chassis entirely, unsolder the speaker leads and when replacing, connect them as follows, numbering the tags from left to right:—1, red; 2, blue; 3, brown. The black lead goes to the earthing tag.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, remove the nuts, lock washers and washers from the four bolts holding it to the sub-baffle and when replacing, see that the transformer is at the bottom and do not forget the soldering tag for the earthing lead on the bottom right-hand fixing screw.

VALVE ANALYSIS

Valve voltages and currents given in the table (col. 2) are those measured in our receiver when it was operating on mains of 225 V, using the 216-235 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V

Coils.—These are all contained in four screened units on the chassis deck. The I.F. transformer units also contain their associated trimmers.

Scale Lamp.—This is an Ever Ready M.E.S. type, rated at 5.5 V, 0.3 A.

External Speaker.—No provision is made for this, but a high impedance type could be connected to the two tags on the speaker input transformer T1 which form the connections to the primary.

Condenser C4.—This is a small coupling consisting of two insulated wires attached to the stator terminals of C20 and C22, and twisted together.

Condensers C16, C17.—These are two 8 μF dry electrolytics in a single carton beneath the chassis, having a common negative (black) lead. The red lead to V4 valve-holder is the positive of C16, and the red lead to V3 holder is the positive of C17.

CIRCUIT ALIGNMENT

I.F. Stages.—First short out C22, and connect signal generator to control grid (top cap) of V1 and chassis. Feed in a 455 KC/S signal, and adjust C30, C29, C28 and C27 for maximum output. Re-check, then remove short from C22.

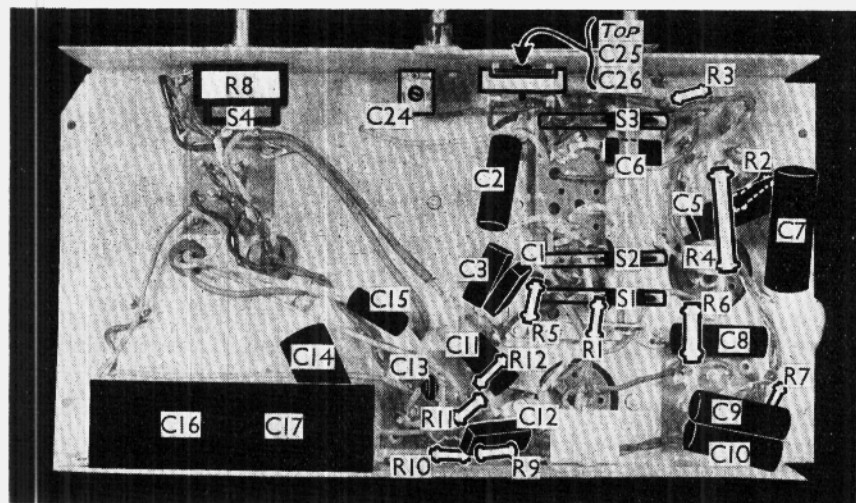
R.F. and Oscillator Stages.—With gang at maximum, pointer should register with the horizontal line at the longer wavelength end of the scale.

Adjust C26 to be approximately two thirds in, and connect signal generator to A and E sockets. Switch set to M.W., feed in a 214 m. (1,400 KC/S) signal, tune to 214 m. on scale, and adjust C23, then C21 and C19, for maximum output.

Feed in a 500 m. (600 KC/S) signal, tune it in, and adjust C26 for maximum output, rocking the gang slightly for optimum results. Continue trimming C23, C21, C19 at 214 m., and tracking C26 at 500 m. until no further improvement in output or calibration can be made.

Switch set to L.W., and set C25 about half in. Tune to 1,200 m. on scale, feed in a 1,200 m. (250 KC/S) signal, and adjust C24 for maximum output.

Feed in a 1,700 m. (176 KC/S) signal, tune it in, and adjust C25 for maximum output, while rocking the gang. Readjust C24 at 1,200 m. and C25 at 1,700 m., until no further improvement results.



Under-chassis view, showing the switches.