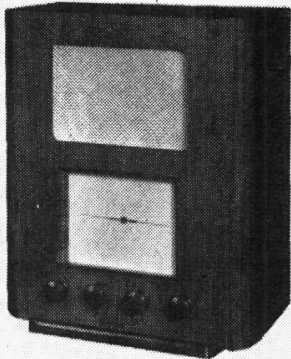


EVER READY 5117

3-BAND AC SUPERHET



The Ever Ready 5117 3-band AC superhet.

A SHORT-WAVE range of 16-52 m is covered by the Ever Ready 5117 4-valve (plus rectifier) AC 3-band superhet. The receiver has a triode-hexode frequency changer, a variable-mu pentode IF amplifier, a double-diode triode and a pentode output valve, and is suitable for operation on mains of 200-250 V, 40-100 C/S. Provision is made for using both a gramophone pick-up and an extension speaker.

Release date: August, 1938.

CIRCUIT DESCRIPTION

Two alternative aerial input sockets **A1** and **A2**. Input from **A1** on MW and LW is via coupling coil **L1** to inductively coupled band-pass filter. Primary coils

L2, L3 are tuned by **C27**; secondaries **L5, L6** by **C31**. On SW, input from **A1** is via coupling condenser **C1** to single tuned circuit **L4, C31**. Input from **A2** introduces potential divider **R1, R2** for the reception of local transmissions.

First valve (**V1, Ever Ready metallised A36C**) is a triode hexode operating as frequency changer with internal coupling. Triode oscillator grid coils **L7 (SW), L8 (MW) and L9 (LW)** are tuned by **C32**; parallel trimming by **C33 (SW), C34 (MW) and C35 (LW)**; series tracking by **C8, C36 (MW) and C37 (LW)**. Reaction by coils **L10 (SW), L11 (MW) and L12 (LW)**.

Second valve (**V2, Ever Ready metallised A50P**) is a variable-mu RF pentode operating as intermediate frequency amplifier with tuned-primary tuned-secondary transformer couplings **C38, L13, L14, C39** and **C40, L15, L16, C41**.

Intermediate frequency 452 KC/S.

Diode second detector is part of double diode triode valve (**V3, Ever Ready metallised A23A**). Audio frequency component in rectified output is developed across load resistances **R15, R16**, that at their junction being tapped off and passed via IF stopper **R17**, AF coupling condenser **C14** and manual volume control **R19** to CG of triode section, which operates as AF amplifier. IF filtering by **C13** and **C15**. Variable tone control by **C16, R18** across **R19**. Provision for connection of gramophone pick-up, also across **R19**.

Second diode of **V3**, fed from **L16** via

C18, provides DC potential which is developed across load resistance **R23** and fed back through decoupling circuits as GB to FC and IF valves, giving automatic volume control. Delay voltage is obtained from drop along **R20** in cathode lead to chassis.

Resistance-capacity coupling by **R22, C21, R25**, via grid stopper **R27**, between **V3** triode and pentode output valve (**V4, Ever Ready A70D**). Negative feedback by resistance **R26** between **V4** and **V3** triode anodes. Provision for connection of high impedance external speaker across primary of internal speaker input transformer **T1**.

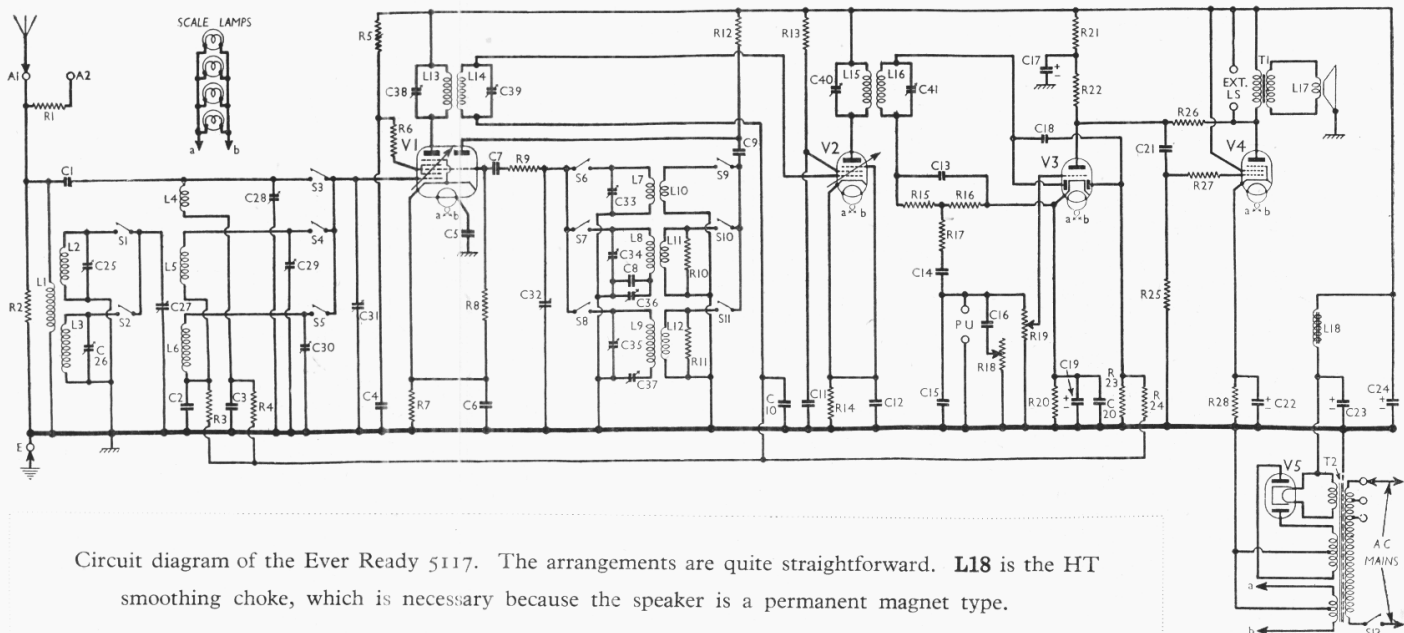
HT current is supplied by IHC full-wave rectifying valve (**V5, Ever Ready A11D**). Smoothing by iron-cored choke **L18** and dry electrolytic condensers **C23, C24**.

DISMANTLING THE SET

The chassis and speaker can be withdrawn from the cabinet as a complete assembly.

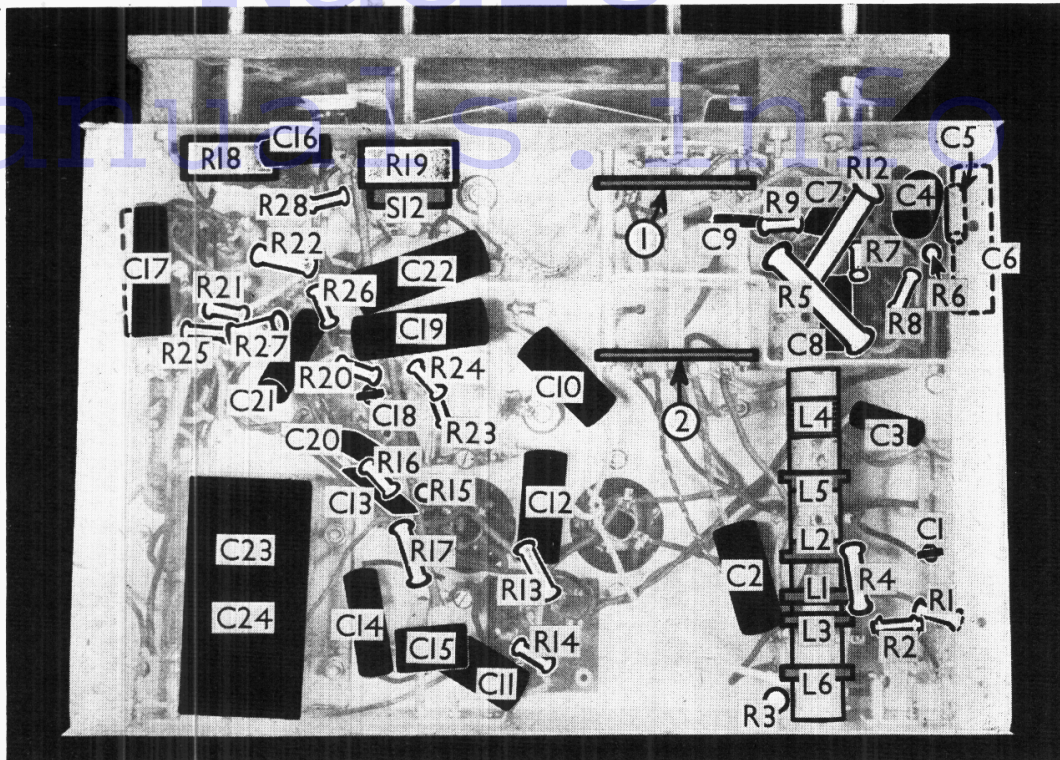
Removing Assembly.—To do this remove the four control knobs (pull off) and the four bolts (with washers) holding the chassis to the bottom of the cabinet. Now free the two straps holding the sub-baffle to the front of the cabinet (four round-head wood screws), when the assembly can be withdrawn.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, the assembly must first be withdrawn as described above, and the red and yellow



Circuit diagram of the Ever Ready 5117. The arrangements are quite straightforward. **L18** is the HT smoothing choke, which is necessary because the speaker is a permanent magnet type.

Under-chassis view. Diagrams of the two switch units are overleaf. Note the unscreened L1-L6 coil unit. The trimmers, which are adjusted through holes in the chassis deck, are not shown here, but are indicated in the plan chassis view overleaf.



leads to the speaker unsoldered from underneath the chassis. Then remove the nuts and washers from the four screws holding the speaker to the sub-baffle.

When replacing, see that the transformer is on the right, do not forget to replace the earthing lead on the bottom right-hand screw, and connect the red lead to the screen socket (pin 3) on V4 valve-holder and the yellow lead to the anode (pin 7) socket.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	Aerial input potential divider resistances	110,000
R2		11,000
R3		110,000
R4	V1 hexode SW CG decoupling	110,000
R5	V1 SG HT feed resistance	20,000
R6	V1 SG RF stopper	75
R7	V1 fixed GB resistance	150
R8	V1 osc. CG resistance	51,000
R9	Oscillator circuit damping	200
R10	Oscillator MW reaction damping	1,100
R11	Oscillator LW reaction damping	2,100
R12	V1 osc. anode HT feed	20,000
R13	V2 SG HT feed	25,000
R14	V2 fixed GB resistance	250
R15	V3 signal diode load resistances	510,000
R16		260,000
R17	IF stopper	110,000
R18	Variable tone control	2,000,000
R19	Manual volume control	500,000
R20	V3 triode GB; AVC delay	1,000
R21	V3 triode anode decoupling	11,000
R22	V3 triode anode load	40,000
R23	V3 AVC diode load	1,100,000
R24	AVC line decoupling	260,000
R25	V4 CG resistance	510,000
R26	Negative feed-back coupling	250,000
R27	V4 grid stopper	110,000
R28	V4 GB resistance	150

CONDENSERS		Values (μF)
C1	Aerial SW coupling	0.00001
C2	V1 hexode CG MW and LW decoupling	0.1
C3	Aerial circuit SW tracker	0.01
C4	V1 SG decoupling	0.1
C5	V1 heater RF by-pass	0.005
C6	V1 cathode by-pass	0.1
C7	V1 osc. CG condenser	0.0001
C8	Osc. circuit MW fixed tracker	0.0005
C9	V1 osc. anode coupling	0.0003
C10	V2 CG decoupling	0.1
C11	V2 SG decoupling	0.1
C12	V2 cathode by-pass	0.1
C13	IF by-pass	0.0001
C14	AF coupling to V3 triode	0.05
C15	IF by-pass	0.0001
C16	Part of variable tone control	0.002
C17*	V3 triode anode decoupling	—
C18	Coupling to V3 AVC diode	0.00001
C19*	V3 cathode AF by-pass	50.0
C20	V3 cathode RF by-pass	0.0005
C21	V3 triode to V4 AF coupling	0.05
C22*	V4 cathode by-pass	50.0
C23*	HT smoothing	8.0
C24*		16.0
C25‡	Band-pass pri. MW trimmer	0.00004
C26‡	Band-pass pri. LW trimmer	0.00009
C27†	Band-pass pri. tuning	—
C28‡	Aerial circuit SW trimmer	0.00004
C29‡	Band-pass sec. MW trimmer	0.00004
C30‡	Band-pass sec. LW trimmer	0.00009
C31†	SW aerial and band-pass secondary tuning	—
C32‡	Oscillator circuit tuning	—
C33‡	Osc. circuit SW trimmer	0.00002
C34‡	Osc. circuit MW trimmer	0.0001
C35‡	Osc. circuit LW trimmer	0.0001
C36‡	Osc. circuit MW tracker	0.00025
C37†	Osc. circuit LW tracker	0.00025
C38†	1st IF trans. pri. tuning	0.0003
C39†	1st IF trans. sec. tuning	0.0003
C40†	2nd IF trans. pri. tuning	0.0003
C41†	2nd IF trans. sec. tuning	0.0003

* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial MW and LW coupling	11.0
L2	Band-pass primary coils	2.5
L3		11.0
L4		Aerial SW tuning coil
L5	Band-pass secondary coils	2.5
L6		11.0
L7		Osc. circuit SW tuning coil
L8	Osc. circuit MW tuning coil	1.8
L9	Osc. circuit LW tuning coil	5.0
L10	Oscillator SW reaction	0.3
L11	Oscillator MW reaction	6.25
L12	Oscillator LW reaction	8.3
L13	1st IF trans.	Pri. 6.5
L14		Sec. 6.5
L15	2nd IF trans.	Pri. 6.5
L16		Sec. 6.5
L17	Speaker speech coil	2.5
L18	HT smoothing choke	230.0
T1	Speaker input trans	Pri. 650.0 Sec. 0.4
T2	Mains trans.	Pri., total 19.0
		Heater sec. 0.05
		Rect. heat. sec. 0.1
S1-11	Waveband switches	—
		HT sec., total 240.0
S12	Mains switch, ganged R19	—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 A36C	268	2.8	108	7.0
	105	7.8		
V2 A50P	268	8.7	176	3.0
V3 A23A	106	3.2	—	—
V4 A70D	242	36.0	268	5.4
V5 A11D	252†	—	—	—

† Each anode, AC.

Valve voltages and currents given in the table above are those measured in

our receiver when it was operating on mains of 231V, 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.

GENERAL NOTES

Switches.—S1-S11 are the waveband switches, in two rotary units beneath the chassis. These are indicated in our under-chassis view, and shown in detail in the diagrams in column 3, where they are drawn as seen looking from the rear of the underside of the chassis.

The table (col. 2) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates *open*, and **C**, *closed*.

S12 is the QMB mains switch, ganged with the volume control potentiometer **R19**.

Coils.—L1-L6 are in a tubular unscreened unit beneath the chassis. L7-L12, and the IF transformers L13, L14 and L15, L16 are in three screened units on the chassis deck, with their associated trimmers. Note that the L7-L12 unit also contains the reaction damping resistances **R10**, **R11**.

The smoothing choke **L18** is mounted on the baffle to the right of the speaker and the input transformer **T1**.

External Speaker.—Two sockets are

TABLE AND DIAGRAMS OF THE SWITCH UNITS

Switch	SW	MW	LW
S1	—	C	—
S2	—	—	C
S3	C	—	—
S4	—	C	—
S5	—	—	C
S6	C	—	—
S7	—	C	—
S8	—	—	C
S9	C	—	—
S10	—	—	C
S11	—	C	—

provided at the rear of the chassis for a high impedance (10,000 O) external speaker.

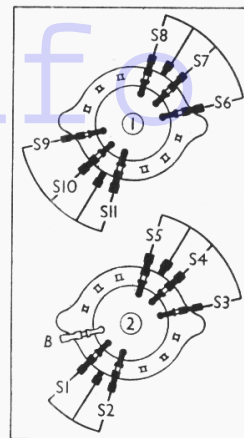
Pre-Set Condensers.—Of the pre-set condensers, eight are reached through holes in the chassis deck, while six are at the tops of the three coil units mounted on the chassis deck.

Condensers C23, C24.—These are two dry electrolytics (350 V working) in a single carton beneath the chassis, having a common negative (black) lead. The yellow lead is the positive of **C23** (8 μ F) and the red the positive of **C24** (16 μ F).

Scale Lamps.—These are four Ever Ready MES types, and are rated at 5.5 V, 0.3 A.

Pillar Bearers.—At several points beneath the chassis ebonite pillars are provided, with screws and soldering tags at their tops, to act as bearers.

Diagrams of the two switch units, as seen from the rear of the underside of the chassis.



CIRCUIT ALIGNMENT

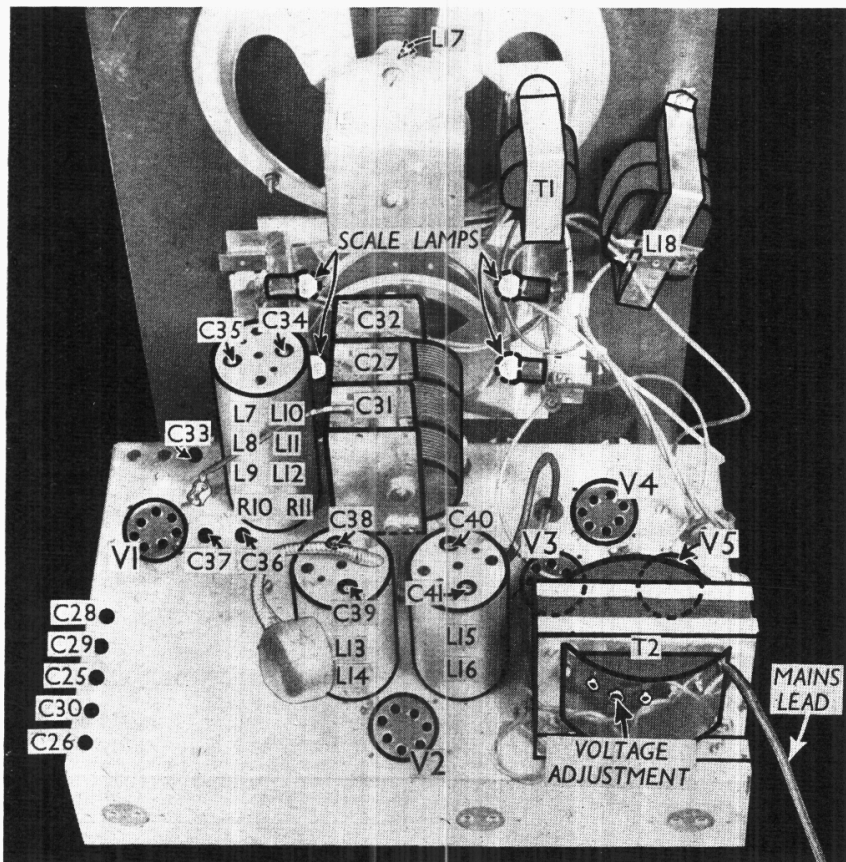
IF Stages.—Switch set to MW, and short circuit **C32**. Connect signal generator to control grid (top cap) of **V1**, via a 0.1 μ F condenser, and chassis. Feed in a 452 KC/S signal, and adjust **C41**, **C40**, **C39** and **C38**, in that order, for maximum output. Re-check these settings, then remove the short circuit from **C32**.

RF and Oscillator Stages.—With gang at maximum, pointer should register with the horizontal line across the centre of the scale. Connect signal generator to **A1** and **E** sockets.

LW.—Switch set to LW, and adjust tracker **C37** to be at approximately three-quarters of its full capacity. Tune to 1,200 m on scale, feed in a 1,200 m (250 KC/S) signal, and adjust **C35**, then **C30** and **C26**, for maximum output. Tune to 1,700 m on scale, feed in a 1,700 m (176.5 KC/S) signal, and adjust **C37** for maximum output. Now repeat the 1,200 m adjustments, and return to 1,700 m. See that the pointer is at the 1,700 m mark when receiving the 1,700 m signal. If not, make a slight re-adjustment to **C37**.

MW.—Switch set to MW, and adjust tracker **C36** to be at approximately three-quarters of its full capacity. Tune to 214 m mark on scale, and feed in a 214 m (1,400 KC/S) signal, and adjust **C34**, then **C29** and **C25**, for maximum output. Tune to 500 m on scale, feed in a 500 m (600 KC/S) signal, and adjust **C36** for maximum output. Now repeat the 214 m adjustments, and return to 500 m. See that the pointer is at the 500 m mark when receiving the 500 m signal. If not, make a slight re-adjustment to **C36**.

SW.—Switch set to SW, and screw up **C33** fully. Tune to 15 MC/S on scale, and feed in a 15 MC/S (20 m) signal. Now unscrew **C33** slowly, and adjust accurately for maximum output on the first peak reached from the fully screwed up position. Next adjust **C28** for maximum output. Feed in a 7.5 MC/S (40 m) signal, and tune it in. Adjust the end turn of **L4** (nearest the end of the coil former beneath the chassis) for maximum output, while rocking the gang for optimum results. Repeat the 15 MC/S adjustments.



View of top deck of chassis and back of speaker baffle. All the trimmer adjustments are clearly indicated.