NUMBER 153 **'TRADER' SERVICE SHEETS**

EVER READY 5014

3-VALVE A.C. SUPERHET

AN interesting circuit is used in the Ever Ready 5014 receiver in that although it is a superhet, there is no I.F. amplifier valve. It is a 3-valve (plus rectifier) A.C. type with two alternative aerial sockets and provision for a gramophone pick-up and an extension speaker.

CIRCUIT DESCRIPTION

Two alternative aerial input connections (**A2** with series condenser **C2**) via condenser **C1** and coupling coils **L1** (M.W.) and **L2** (L.W.) to single tuned circuit **L3, L4, C17** preceding octode frequency changer (**V1, Ever Ready metallised A80A**). Oscillator grid coils **L5, L6** are tuned by **C19**; trimming by **C20** (M.W.) and **C21** (L.W.); tracking by shaped plates; anode reaction coil **L7.**

No valve amplification other than that afforded by **V1** is employed in the intermediate frequency stage. A single tuned-primary tuned-secondary transformer **C22, L8, L9, C23** couples the F.C. valve to the triode second detector valve (**V2, Ever Ready A30D**), which operates on the grid leak system with **C7** and **R6.**

Intermediate frequency 465KC/S.

Reaction is applied from **V2** anode to the I.F. transformer by means of coil **L10** and pre-set condenser **C24,** and this, apart from increasing the amplification of the circuit, also provides a simple form of automatic tone control. On strong signals, the reaction applied automatically decreases and the reproduction of high frequencies is improved.

Provision for connection of gramophone pick-up in **V2** C.G. circuit.

D.C. potential developed across detector grid leak **R6** is fed back through decoupling circuit **R5, C3** as G.B. to F.C. valve, giving a simple form of automatic volume control.

I.F. filtering in **V2** anode circuit by **R9, C8** and **C9.**

Resistance-capacity coupling by **R8, C11** and manual volume control **R10** to pentode output valve (**V3, Ever Ready A70C**). Fixed tone correction in anode circuit by **C12**; two-point tone control by additional condenser **C14** and switch **S6** (at rear of chassis).

H.T. current is supplied by I.H.C. full-wave rectifying valve (**V4 Ever Ready A11B**). Smoothing by speaker field coil **L13** and dry electrolytic condensers **C15, C16.**

DISMANTLING THE SET

A detachable bottom is fitted to the cabinet and upon removal (four round-head wood screws) gives access to most of the under-chassis components.

Removing Chassis.—If it should prove necessary to remove the chassis from the cabinet, first remove the three control knobs (pull off) and then the mains lead and back (two screws). Now free the speaker speech coil leads from the cleat on the side of the cabinet, when the chassis can be withdrawn to the extent of the speaker leads, which is enough to allow of normal repairs being carried out.

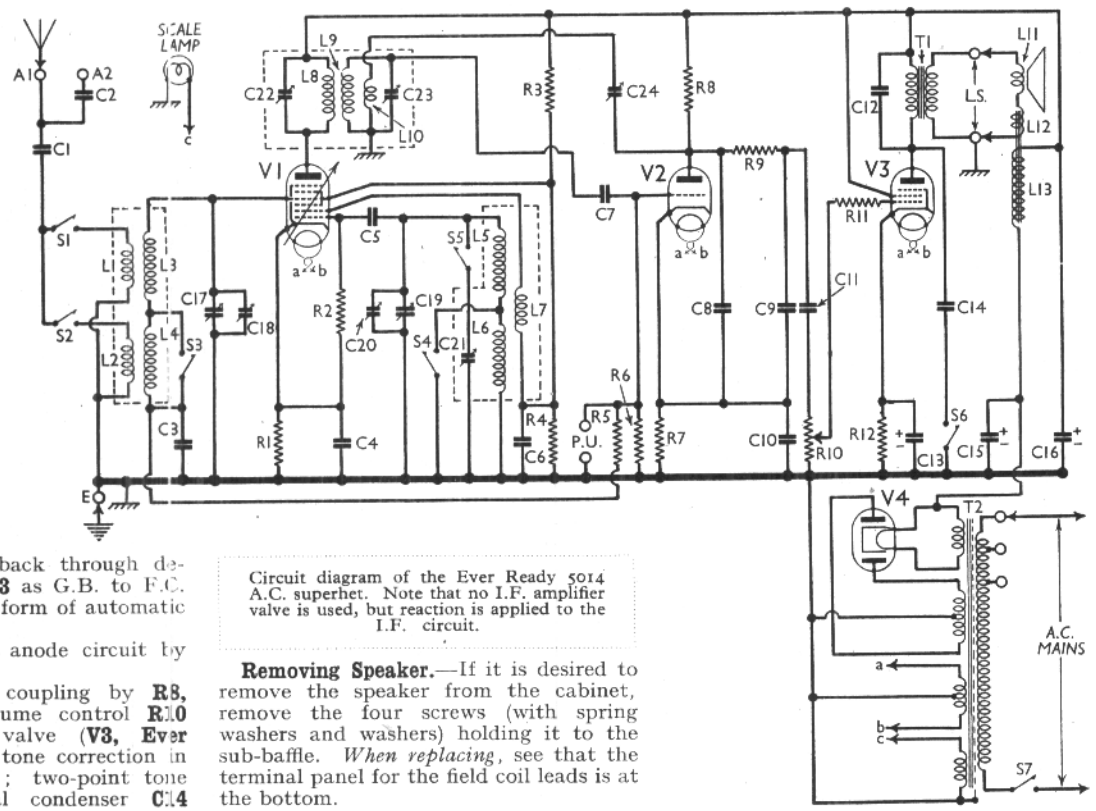
To free the chassis entirely, free the field coil leads from the speaker (screw terminals) and unplug the speech coil leads from the sockets at the rear of the chassis.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 fixed G.B. resistance ..	250
R2	V1 osc. C.G. resistance ..	100,000
R3	V1 S.G.'s and oscillator anode	20,000
R4	H.T. potential divider	40,000
R5	A.V.C. line decoupling ..	2,100,000
R6	V2 grid leak	510,000
R7	V2 G.B. resistance	100
R8	V2 anode load	40,000
R9	I.F. stopper	15,000
R10	Manual volume control ..	250,000
R11	V3 C.G. I.F. stopper	26,000
R12	V3 G.B. resistance	150

	CONDENSERS	Values (μF)
C1	Aerial series condensers	0·002
C2		0·0001
C3	V1 pentode C.G. decoupling ..	0·1
C4	V1 cathode by-pass	0·1
C5	V1 osc. C.G. condenser ..	0·0001
C6	V1 S.G.'s and osc. anode decoupling	0·1
C7	V2 C.G. condenser	0·0001
C8	V2 anode I.F. by-passes	0·001
C9		0·002
C10	V2 cathode by-pass	0·1
C11	V2 to V3 L.F. coupling ..	0·05
C12	Tone corrector	0·0025
C13*	V3 cathode by-pass	50·0
C14	Tone control condenser ..	0·01
C15*	H.T. smoothing ..	8·0
C16*		8·0
C17†	Aerial circuit tuning	—
C18‡	Aerial circuit trimmer ..	—
C19†	Oscillator circuit tuning ..	—
C20‡	Oscillator circuit M.W. trimmer	—
C21‡	Oscillator circuit L.W. trimmer	—
C22‡	I.F. transformer pri. tuning ..	—
C23‡	I.F. transformer sec. tuning ..	—
C24‡	Pre-set reaction condenser ..	—

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Ever Ready 5014 A.C. superhet. Note that no I.F. amplifier valve is used, but reaction is applied to the I.F. circuit.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, remove the four screws (with spring washers and washers) holding it to the sub-baffle. *When replacing*, see that the terminal panel for the field coil leads is at the bottom.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil (M.W.)	1·6
L2	Aerial coupling coil (L.W.)	140·0
L3	Aerial circuit tuning	2·2
L4	Aerial circuit tuning	14·0
L5	Oscillator circuit tuning coils	1·5
L6	Oscillator circuit tuning coils	18·5
L7	Oscillator reaction coil	21·0
L8	I.F. trans. Pri.	7·6
L9	I.F. trans. Sec.	7·6
L10	I.F. reaction coil	1·8
L11	Speaker speech coil	1·6
L12	Hum neutralising coil	0·2
L13	Speaker field coil	3,000·0
T1	Output trans. Pri.	700·0
T1	Output trans. Sec.	0·3
T2	Mains trans. Pri. total	44·0
T2	Mains trans. Heater sec.	0·1
T2	Mains trans. Lamp sec.	0·3
T2	Mains trans. Rec. heat. sec.	0·2
T2	Mains trans. H.T. sec. total	350·0
S1-S5	Waveband switches	—
S6	Tone control switch	—
S7	Mains switch, ganged R10	—

VALVE ANALYSIS

Readings of valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 220 V, with the transformer adjusted to the 216-235 V tapping. The volume control was at maximum and the set was tuned to the lowest wavelength on the medium band, but there was no signal input.

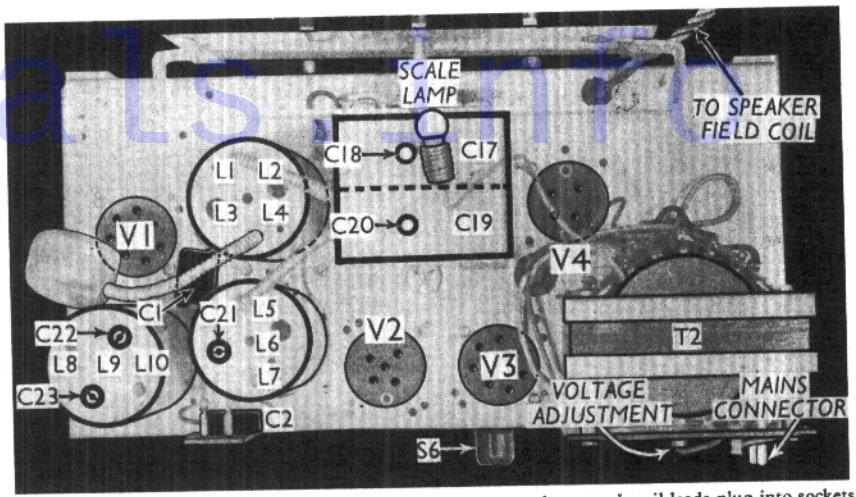
Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 A80A*	260	1·6	90	4·1
V2 A30D	85	4·5	—	—
V3 A70C	230	38·0	260	4·3
V4 A11B	310†	—	—	—

* Oscillator anode (G2) 90 V, 1·6 mA.
† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S5 are the waveband switches, in a single unit beneath the chassis. The table (Col. 2) gives the switch positions for the M.W. and L.W. control settings, O indicating open, and C, closed.



Plan view of the chassis. S6 is the tone control switch. The speaker speech coil leads plug into sockets at the rear of the chassis.

Switch	M.W.	L.W.
S1	C	O
S2	O	C
S3	C	O
S4	C	O
S5	O	C

S6 is the tone control rotary switch at the rear of the chassis. It is closed when the knob is rotated anti-clockwise.

S7 is the Q.M.B. mains switch, ganged with the volume control, **R10.**

Coils.—These are all in three units on the chassis deck. The oscillator unit, **L5-L7,** also contains the oscillator L.W. trimmer **C21,** while the I.F. transformer unit, **L8-L10,** also contains the trimmers **C22, C23.**

Scale Lamp.—This is an Ever Ready M.E.S. frosted type, rated at 3·5 V, 0·3 A.

External Speaker.—A low resistance (1·5 to 2·5 O) external speaker can be used either alone, by plugging into the speaker sockets at the rear of the chassis, or in conjunction with the internal speaker, by plugging into this speaker's socketed plugs.

Condensers C15, C16.—These are two 8 μF dry electrolytics, in a single unit beneath the chassis. They have a common negative (black) lead. The yellow lead is the positive of **C15,** and the red the positive of **C16.**

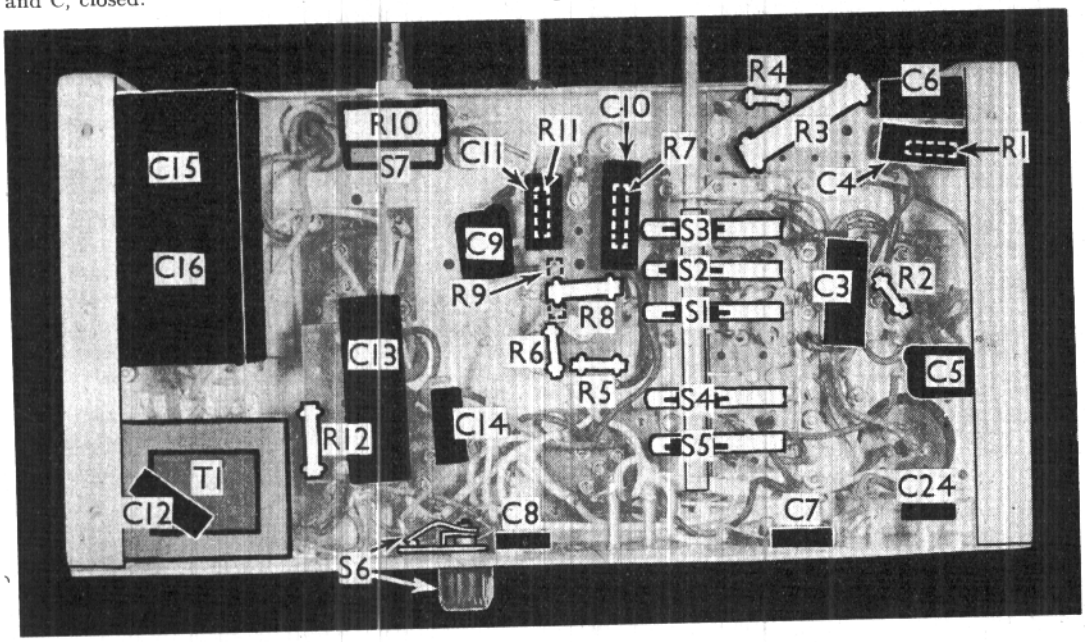
CIRCUIT ALIGNMENT

I.F. Alignment.—Receiver volume control should be at maximum. Inject a 465 KC/S signal between the control grid (top cap) of **V1** (via a 0·002 μF condenser) and chassis, first removing existing connection. Also connect a 0·5 MO resistance between top cap and chassis, and a 0·25 μF condenser between oscillator anode (pin 1) and chassis. Connect an output meter to the set, and adjust **C23,** then **C22,** for maximum.

H.F. and Oscillator Alignment.—Rotate gang condenser until pointer indicates 200 m. on the scale. Apply a 200 m. signal to **A2** terminal and chassis, and switch set to M.W. Adjust **C20** and **C18** for maximum output.

Switch set to L.W., apply a 1,300 m. signal, and tune it in by means of the tuning control. Adjust **C21** for maximum, rocking the gang for optimum results.

The setting of **C24,** the I.F. reaction condenser, does not usually require adjusting. Screwing the condenser up slightly (increasing capacity) will increase the sensitivity of the set to weak signals, but may possibly reduce the output for strong signals. Hence find a compromise between sensitivity and output. If **C24** is altered, the I.F. transformer should be re-aligned.



Under-chassis view. Several of the resistances, shown dotted, are beneath horizontal paxolin component strips.