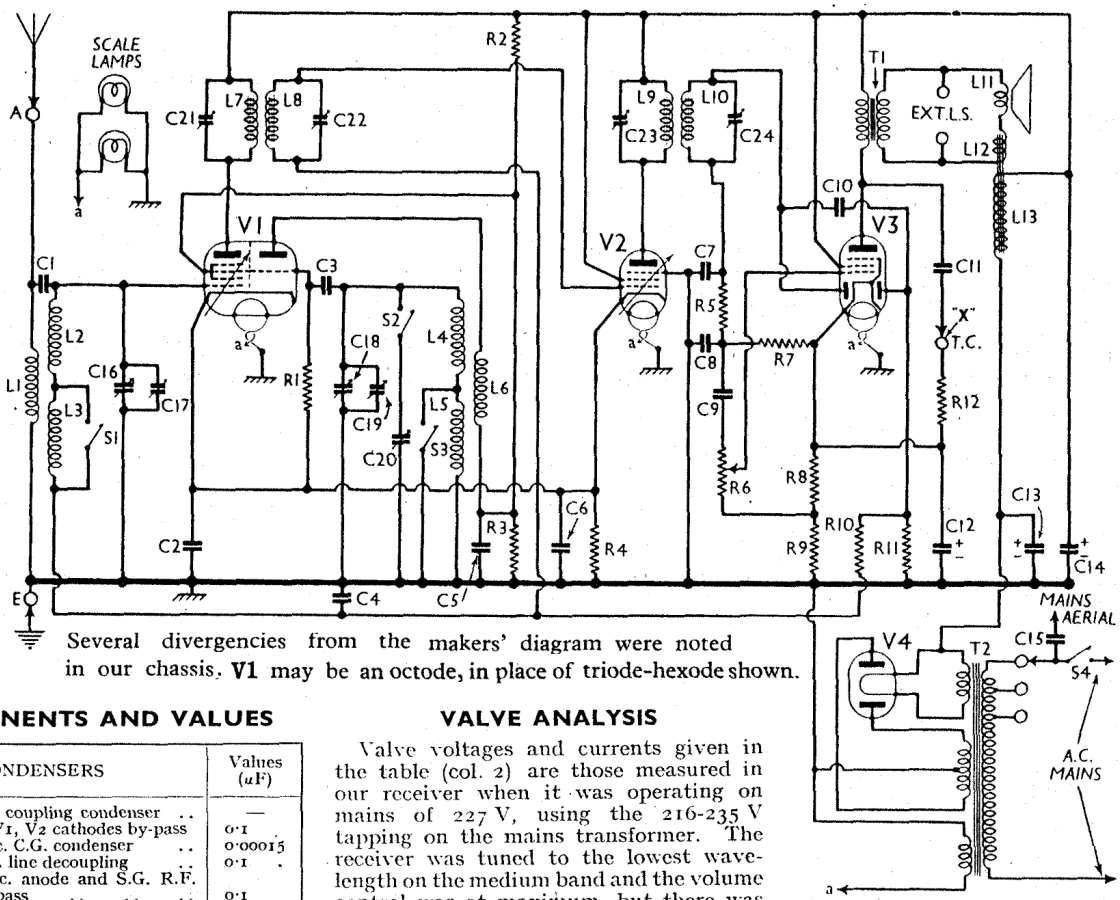
INVICTA - 360



Several divergencies from the makers' diagram were noted in our chassis. **V1** may be an octode, in place of triode-hexode shown.

COMPONENTS AND VALUES

	CONDENSERS	Values (μF)
C1	Aerial coupling condenser ..	—
C2	Part V1, V2 cathodes by-pass	0·1
C3	V1 osc. C.G. condenser ..	0·00015
C4	A.V.C. line decoupling ..	0·1
C5	V1 osc. anode and S.G. R.F. by-pass	0·1
C6	Part V1, V2 cathodes by-pass	0·25
C7	I.F. by-passes ..	0·00015
C8		0·00015
C9	A.F. coupling to V3 pentode..	0·05
C10	Coupling to V3 A.V.C. diode..	0·00015
C11	Part T.C. filter circuit ..	0·01
C12*	V3 cathode by-pass	20·0
C13*	H.T. smoothing ..	8·0
C14*		8·0
C15	Mains aerial coupling	0·001
C16	Aerial circuit tuning	0·00054
C17	Aerial circuit M.W. trimmer	—
C18	Oscillator circuit tuning ..	—
C19	Osc. circuit M.W. trimmer ..	—
C20	Osc. circuit L.W. trimmer ..	0·00023
C21	1st I.F. trans. pri. tuning ..	0·00009
C22	1st I.F. trans. sec. tuning ..	0·00009
C23	2nd I.F. trans. pri. tuning ..	0·00014
C24	2nd I.F. trans. sec. tuning ..	0·00014

* Electrolytic.

	RESISTANCES	Values (ohms)
R1	V1 osc. G.C. resistance ..	40,000
R2	V1 osc. anode and S.G. H.T. feed potentiometer ..	20,000
R3		60,000
R4	V1, V2 fixed G.B. resistance ..	50
R5	I.F. stopper	100,000
R6	Manual volume control ..	500,000
R7	V3 signal diode load	500,000
R8	V3 triode G.B. and A.V.C. delay voltage resistances	150
R9		150
R10	A.V.C. line decoupling ..	1,000,000
R11	V3 A.V.C. diode load ..	1,000,000
R12	Part T.C. filter circuit ..	100

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil	65·0
L2	Aerial M.W. tuning coil ..	2·6
L3	Aerial L.W. tuning coil ..	11·4
L4	Osc. circuit M.W. tuning ..	1·9
L5	Osc. circuit L.W. tuning ..	0·9
L6	Oscillator reaction coil ..	60·0
L7	1st I.F. trans. Pri. ..	6·5
L8	1st I.F. trans. Sec. ..	3·5
L9	2nd I.F. trans. Pri. ..	3·5
L10	2nd I.F. trans. Sec. ..	3·5
L11	Speaker speech coil	1·75
L12	Hum neutralising coil.. ..	0·2
L13	Speaker field coil	3,000·0
T1	Output trans. Pri. ..	320·0
	Output trans. Sec... ..	0·2
T2	Mains trans. Pri., total ..	23·0
	Mains trans. Heater sec. ..	0·1
	Mains trans. Rect. heat. sec.	0·15
	Mains trans. H.T. sec., total	620·0
S1-S3	Waveband switches	—
S4	Mains switch, ganged R6 ..	—

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH4	178	2·1	45	3·8
	Oscillator 45	1·4		
V2 VP4B	178	10·0	178	3·5
V3 Pen4DD	168	26·0	178	4·4
V4 DW4/350	315†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—**S1-S3** are the wavechange switches, ganged together in a unit beneath the chassis. The individual switches are indicated in our under-chassis view.

In the M.W. position **S1** and **S3** are closed, and **S2** open, and in the L.W. position, **S2** is closed and **S1** and **S3** open.

S4 is the Q.M.B. mains switch, ganged with the volume control, **R6**.

Coils.—**L1-L3** and **L4-L6** are in two unscreened units beneath the chassis. The individual coils are indicated in our under-chassis view. The I.F. transformers **L7, L8** and **L9, L10** are in two screened units on the chassis deck, with their associated trimmers. The second unit also contains **R5, R7** and **C7, C8.**

Scale Lamps.—These are two Ever Ready M.E.S. types, rated at 6.2 V, 0.3 A.

External Speaker.—Two sockets are provided at the rear of the chassis for a low impedance (2O) external speaker.

Tone Control.—A plug on a flying lead (marked **X** in our diagram) emerges from the rear of the chassis, and when plugged into the socket marked **TC** connects **C11** to the top end of **R12,** thus introducing high note attenuation. Maximum treble is secured by leaving the plug and flying lead loose.

Mains Aerial.—When this is not in use, the plug should be placed in the socket marked **A2,** which is actually connected to chassis, and is not shown in our circuit diagram.

Chassis Divergencies.—Our chassis differed in a number of points from the makers' diagram supplied, which was evidently an early one.

In the first place, the tone control circuit **C11, R12** and plug **X** was not shown. **C10** was shown connected from A.V.C. diode to anode of **V2,** not to detector diode, and its value was 0.00001 μF, not 0.00015 μF, as in our chassis.

C1, C17 and **C19** were not shown on the makers' diagram. In the makers' diagram, one side of each receiving valve heater was not taken to chassis. **C2** in our chassis was 0.1 μF, not 0.2 μF, while an additional condenser (**C6,** 0.25 μF) was found in parallel with this.

R4 was shown as 100 O, not 50 O as in our chassis, and **R9** was shown as 300 O, not 150 O. The secondary of **T1** was shown with one side connected to chassis, but this was not so in our set. **V1** may be an octode, not a triode-hexode.

V4 Holder.—This is fitted, as usual, on the chassis deck, but in our chassis there is another holder, in parallel with it, on a paxolin strip mounted above **T2.** This is not used in this set, but the sockets form convenient " bearers " for leads from **T2.**

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator between grid (top cap) of **V1** and chassis. Feed in a 465 KC/S signal, and adjust **C24, C23, C22** and **C21** in that order for maximum output.

R.F. and Oscillator Stages.—With gang at maximum, see that scale pointer is horizontal. Switch set to M.W., connect signal generator to **A** and **E** sockets, feed in a 250 m. signal, tune to 250 m. on scale, and adjust **C19,** then **C17,** for maximum output, keeping input low. Switch set to L.W., tune to 1,200 m. on scale, feed in a 1,200 m. signal, and adjust **C20** for maximum output, rocking the gang slightly for optimum results.