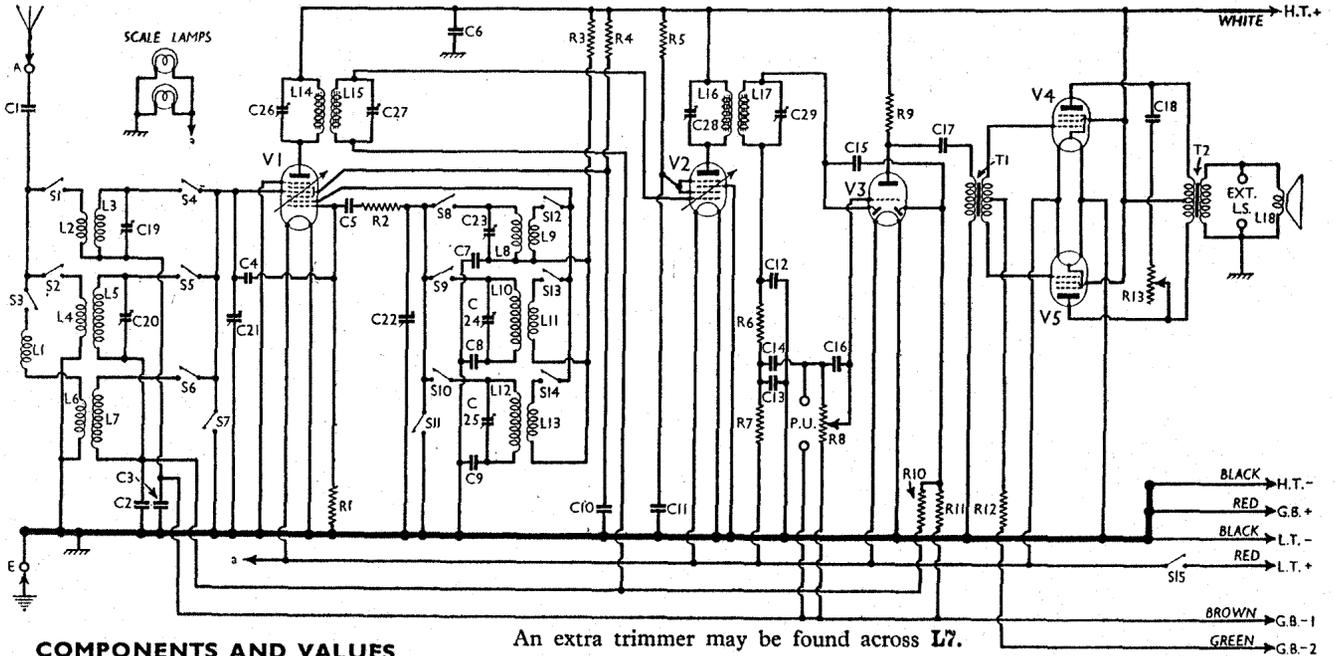


INVICTA - 390



COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Aerial series condenser	0.0003
C2	V1 pentode and V2 C.G. decoupling	0.05
C3	V1 pentode C.G. decoupling (S.W.)	0.1
C4	Small coupling	0.0000018
C5	V1 osc. C.G. condenser	0.00015
C6	H.T. reservoir condenser	1.0
C7	Osc. circuit S.W. fixed tracker	0.005
C8	Osc. circuit M.W. fixed tracker	0.000657
C9	Osc. circuit L.W. fixed tracker	0.00023
C10	V1 S.G. decoupling	0.1
C11	V2 S.G. decoupling	0.1
C12	I.F. filter condensers	0.00015
C13	I.F. filter condensers	0.00015
C14	A.F. coupling to V3 triode	0.01
C15	Coupling to V3 A.V.C. diode	0.00015
C16	Bass compensator	0.0003
C17	A.F. coupling to T1	0.1
C18	Part of tone control filter	0.01
C19	Aerial circuit S.W. trimmer	0.00004
C20	Aerial circuit M.W. trimmer	0.00004
C21	Aerial circuit tuning	0.000553
C22	Osc. circuit tuning	0.000553
C23	Osc. circuit S.W. trimmer	0.00004
C24	Osc. circuit M.W. trimmer	0.00004
C25	Osc. circuit L.W. trimmer	0.00008
C26	1st I.F. trans. pri. tuning	0.00009
C27	1st I.F. trans. sec. tuning	0.00009
C28	2nd I.F. trans. pri. tuning	0.00014
C29	2nd I.F. trans. sec. tuning	0.00014

† Variable. ‡ Pre-set.

An extra trimmer may be found across L7.

VALVE ANALYSIS

Valve voltages and currents given in the table (col. 2) are those measured in our receiver when it was operating with a new 120 V H.T. battery reading 128 V, on load, and the green plug inserted into the 6 V socket of a G.B. battery. The receiver was tuned to the lowest wavelength on the medium band and the volume

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC2A*	128	1.2	70	1.5
V2 VP2B	128	2.0	60	7.0
V3 TDD2A	90	0.6	—	—
V4 PM22A	125	1.2	128	0.2
V5 PM22A	125	1.3	128	0.2

* Oscillator anode (G2) 122 V, 3.4 mA.

control was at maximum, but there was no signal input, the receiver being in the quiescent state.

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

GENERAL NOTES

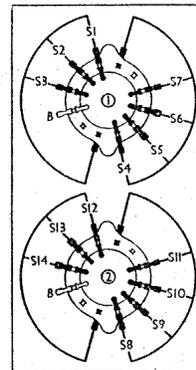
Switches.—S1-S14 are the waveband and radio muting (on gram.) switches, in two ganged rotary units beneath the chassis. These are indicated by numbers in circles and arrows in our under-chassis view, and are shown in detail in separate diagrams on p. IV., where they are seen looking from the rear of the underside of the chassis.

The table below gives the switch positions for the three control settings, starting from fully anti-clockwise. O indicates open, and C, closed.

Switch	S.W.	M.W.	L.W.	Gram.
S1	C	O	O	O
S2	O	C	O	O
S3	O	O	C	O
S4	C	O	O	O
S5	O	C	O	O
S6	O	O	C	O
S7	O	O	O	C
S8	O	O	O	O
S9	O	C	O	O
S10	O	O	C	O
S11	O	O	O	C
S12	C	O	O	O
S13	O	C	O	O
S14	O	O	C	O

L.W.—Switch set to L.W., feed in a 1,200 m. signal, set pointer to 1,200 m. on scale, and adjust C25 for maximum output. If a trimmer is fitted to the L6, L7 unit, adjust this next.

S.W.—Switch set to S.W., feed in a 30 m. signal, set pointer to 30 m. on scale, and adjust C23, then C19, for maximum output. Check on 16.5 m.



Switch diagrams, as seen looking from the rear of the underside of the chassis.

Matching V4 and V5.—The pair of valves supplied are matched. When fitting replacements, rough matching should be carried out. Insert a milliammeter in the negative H.T. lead. Remove all valves, but leave batteries connected. Insert one PM22A in V5 socket, note meter reading and remove valve. Insert another PM22A in same socket and again note reading. Select a pair of valves which give readings with a ratio less than 2 to 1.

S15 is the Q.M.B. L.T. circuit switch, ganged with the volume control R8.

Coils.—The R.F. and oscillator coils are in pairs on six tubular unscreened formers beneath the chassis. Each former (except one in our chassis) carries a trimmer at its end. L1 is on a separate small former. The I.F. transformers L14, L15 and L16, L17 are in two screened units on the chassis deck, with their associated trimmers. Note that the second unit also contains R6, R7, C12 and C13.

Scale Lamps.—These are two Ever Ready M.E.S. types, rated at 2.0 V, 0.1 A.

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator to grid (top cap) of V1 and chassis. Feed in a 465 KC/S signal, and adjust C29, C28, C27, C26, in that order, for maximum output. Re-check.

R.F. and Oscillator Stages.—When gang is at maximum, pointer should be vertical.

M.W.—Connect signal generator to A and E sockets and switch set to M.W. Feed in a 250 m. signal, set pointer to 250 m. on scale, and adjust C24, then C20, for maximum output. Keep input low.

RESISTANCES		Values (ohms)
R1	V1 osc. C.G. resistance	40,000
R2	V1 osc. C.G. stabiliser	50
R3	V1 osc. anode H.T. feed	1,000
R4	V1 S.G. H.T. feed	40,000
R5	V2 S.G. H.T. feed	100,000
R6	I.F. stopper	100,000
R7	V3 signal diode load	500,000
R8	Manual volume control	500,000
R9	V3 triode anode load	40,000
R10	A.V.C. line decoupling	250,000
R11	V3 A.V.C. diode load	1,000,000
R12	V4, V5 C.G. circuit stabiliser	100,000
R13	Variable tone control	50,000

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial circuit choke (L.W.)	60.0
L2	Aerial S.W. coupling coil	0.55
L3	Aerial S.W. tuning coil	Very low
L4	Aerial M.W. coupling coil	75.0
L5	Aerial M.W. tuning coil	1.5
L6	Aerial L.W. coupling coil	1.8
L7	Aerial L.W. tuning coil	12.5
L8	Oscillator S.W. tuning coil	Very low
L9	Oscillator S.W. reaction	0.6
L10	Oscillator M.W. tuning coil	1.4
L11	Oscillator M.W. reaction	17.0
L12	Oscillator L.W. tuning coil	3.9
L13	Oscillator L.W. reaction	33.0
L14	1st I.F. trans. Pri.	6.5
L15	1st I.F. trans. Sec.	6.5
L16	2nd I.F. trans. Pri.	4.15
L17	2nd I.F. trans. Sec.	3.6
L18	Speaker speech coil	2.0
T1	Intervolve trans. Pri.	1,000.0
	Intervolve trans. Sec. total	8,000.0
	Intervolve trans. Sec. total	800.0
T2	Output trans. Sec.	0.1
S1-S14	Waveband and gramophone switches	—
S15	L.T. switch	—