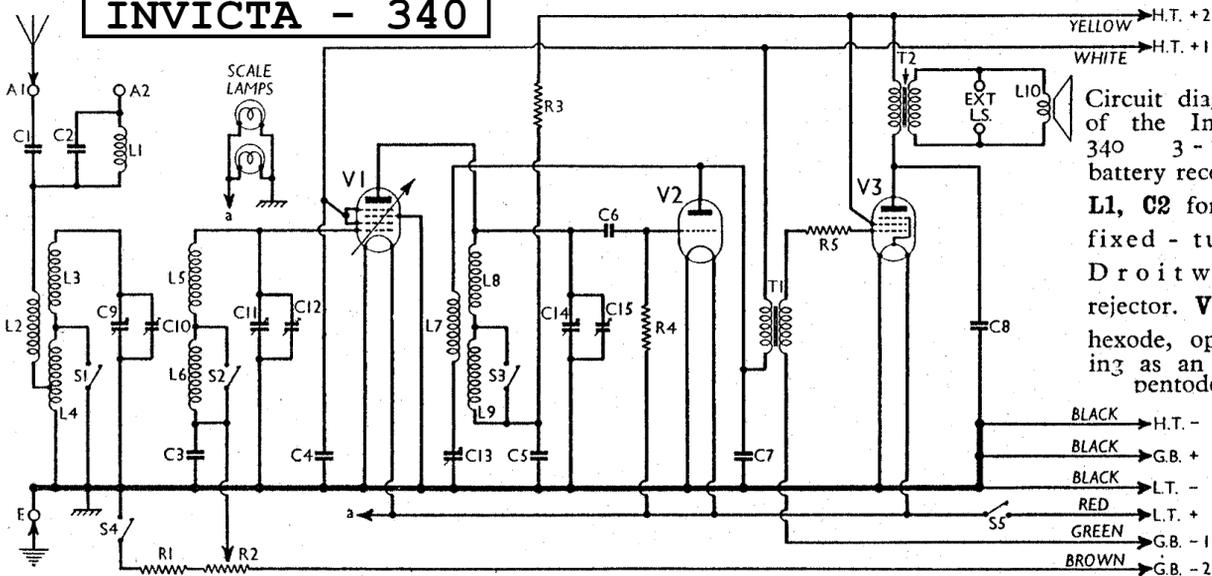


# INVICTA - 340



Circuit diagram of the Invicta 340 3-valve battery receiver. L1, C2 form a fixed-tuned Droitwich rejector. V1 is a hexode, operating as an R.F. pentode.

## COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 G.B. minimum limiting resistance	3,000
R2	V1 gain control	50,000
R3	V1 anode H.T. feed	3,000
R4	V2 grid leak	2,000,000
R5	V3 C.G. R.F. stopper	250,000

CONDENSERS		Values (μF)
C1	Aerial series condenser	0.00015
C2	Droitwich rejector tuning	0.00015
C3	V1 C.G. decoupling	0.1
C4	V1 S.G. decoupling	0.1
C5	V1 anode decoupling	0.1
C6	V2 C.G. condenser	0.00007
C7	V2 anode R.F. filter	0.0002
C8	V3 anode tone corrector	0.005
C9†	Band-pass primary tuning	0.000493
C10†	Band-pass pri. M.W. trimmer	—
C11†	Band-pass secondary tuning	0.000493
C12†	Band-pass sec. M.W. trimmer	—
C13†	Reaction control	0.0005
C14†	Anode circuit tuning	0.000493
C15†	Anode circuit M.W. trimmer	—

† Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Droitwich rejector coil	19.0
L2	Aerial coupling coil	8.75
L3	Band-pass primary coils	2.6
L4		10.6
L5	Band-pass secondary coils	2.6
L6		10.6
L7	Reaction coil	2.1
L8	Anode circuit tuning coils	2.4
L9		10.6
L10	Speaker speech coil	2.1
T1	Intervalve trans. { Pri. . . . . 1100.0	2500.0
	{ Sec. . . . .	
T2	Output trans. { Pri. . . . . 550.0	0.1
	{ Sec. . . . .	
S1-S3	Waveband switches	—
S4	G.B. circuit switch	—
S5	L.T. circuit switch	—

## VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on a new 120 V H.T. battery reading 125 V, on load. The H.T.+1 lead was plugged into the 60 V socket on the battery and the G.B.—1 lead was plugged into the 6 V socket of the grid bias battery.

The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. There was no signal input.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2B	110	3.7	63	1.5
V2 PM2HL	60	0.5	—	—
V3 PM22A	122	1.8	125	0.3

## GENERAL NOTES

**Switches.**—S1-S3 are the wavechange switches, and S4 and S5 the G.B. and L.T. circuit switches respectively, ganged in a single unit beneath the chassis, and indicated in our under-chassis view.

The table (p. III) gives the switch positions, starting from the M.W. setting, and proceeding clockwise. A dash indicates open, and C closed.

Switch	M.W.	L.W.	Off
S1	C	—	C
S2	C	—	C
S3	C	—	C
S4	C	C	—
S5	C	C	—

**Coils.**—L1 is beneath the chassis on a tubular former mounted at the rear close to the aerial-earth panel. L7-L9 are wound on another tubular former beneath the chassis, and their order from top to bottom is indicated in our under-chassis view.

L2, L3, L5 and L4, L6 are on two un-screened tubular formers on the chassis deck. The positions of these coils are indicated in our plan chassis view.

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

**External Speaker.**—Two sockets are provided at the rear of the chassis for a low resistance (about 2 Ω) external speaker.

**Bearer Panel.**—A small paxolin panel bolted to the underside of the chassis deck carries four tags, three of which are used merely as bearers, while the fourth is blank.

**Chassis Divergencies.**—The bottom of L2 goes to a tapping on L4, and not to chassis as in the makers' diagram. R1 is not shown in the makers' diagram, but appears in their list of components. C7 was 0.0002 μF in our chassis, but may be 0.0003 μF.

**Batteries.**—L.T., 2 V 30 or 40 AH accumulator cell. H.T., 120 V or 150 V standard or power type battery. G.B., 6 V grid bias battery.

**Battery Leads and Voltages.**—Black lead, spade tag, L.T. negative; red lead, spade tag, L.T. positive 2 V; black lead and plug, H.T. negative; white lead and plug, H.T. positive 1, +60 V; yellow lead and plug, H.T. positive 2, +120 V or +150 V; green lead and plug, grid bias negative 1, -4.5 V or -6 V (120 V H.T.), -6 V or -7.5 V (150 V H.T.); brown lead and plug, grid bias negative 2, -9 V. (If local station cannot be reduced sufficiently in volume, use -10.5 V or -12 V for G.B.—2.)

## CIRCUIT ALIGNMENT

With the gang at maximum the scale pointer should be horizontal.

Connect signal generator to A1 and E sockets, feed in a 250 m. signal, switch set to M.W. and tune to 250 m. on scale. With reaction control at minimum, adjust C10 and C12 for maximum output.

Reduce the output from the signal generator and increase reaction until the set is just below the oscillation point. Adjust C15 for maximum output. If the receiver breaks into oscillation, reduce reaction slightly.

Check alignment at 550 m. and on the L.W. band.