

INVICTA - 60

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 CCH35	190 62 Oscillator	2.0 2.5	60	1.9
V2 EF39	190	4.0	60	3.0
V3 CBL31	180	37.0	190	3.0
V4 CY31†	—	—	—	—

Cathode to chassis, 210 V, D.C.

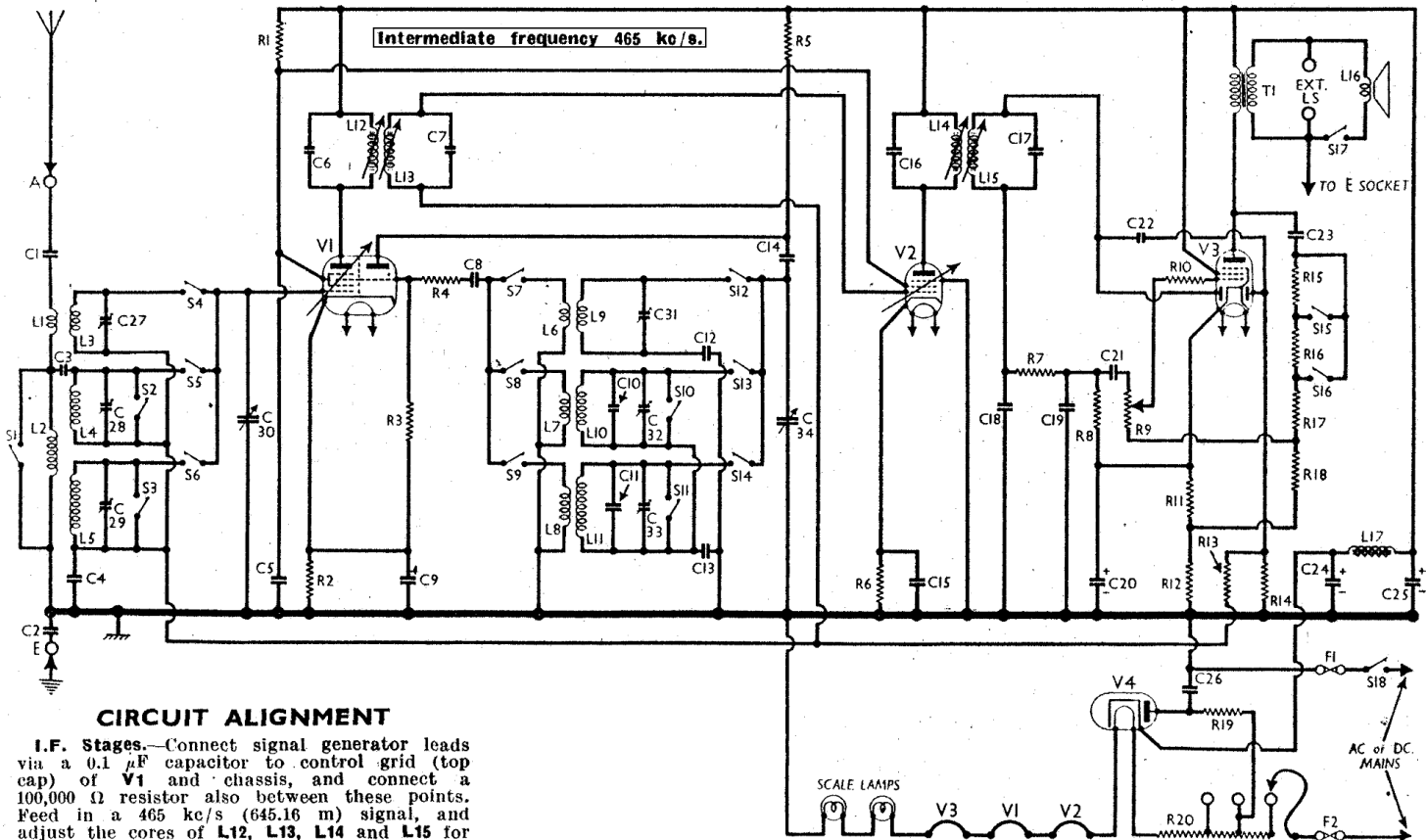
RESISTORS	Values (ohms)
R1 V1, V2 S.G.'s H.T. feed ...	47,000
R2 V1 fixed G.B. resistor ...	150
R3 V1 osc. C.G. resistor ...	47,000
R4 V1 osc. reaction stabilizer ...	47
R5 V1 osc. anode H.T. feed ...	47,000
R6 V2 fixed G.B. resistor ...	220
R7 I.F. stopper ...	47,000
R8 V3 signal diode load ...	470,000
R9 Manual volume control ...	1,000,000
R10 V3 pent. grid stopper ...	100,000
R11 V3 pent. G.B. and A.V.C. {	150
R12 } delay resistors ...	330
R13 A.V.C. line decoupling ...	1,000,000
R14 V3 A.V.C. diode load ...	1,000,000
R15 } Tone control resistors ...	100,000
R16 } ...	47,000
R17 } Feed-back potential divi-	15,000
R18 } der ...	4,700
R19 V4 anode surge limiter ...	100
R20 Heater ballast resistor ...	820*

* Tapped at 620Ω + 100Ω + 100Ω from V4 heater.

CAPACITORS	Values (μF)
C1 Aerial isolator ...	0.0003
C2 Earth isolator ...	0.05
C3 Aerial M.W. "top" coupling ...	0.000006
C4 A.V.C. line decoupling ...	0.1
C5 V1, V2 S.G.'s decoupling ...	0.1
C6 } 1st I.F. transformer tuning	0.00007
C7 } capacitors ...	0.00007
C8 V1 osc. C.G. capacitor ...	0.00015
C9 V1 cathode by-pass ...	0.1
C10 Osc. M.W. fixed trimmer ...	0.000022
C11 Osc. L.W. fixed trimmer ...	0.00034
C12 Osc. circ. S.W. tracker ...	0.005
C13 Osc. M.W. and L.W. tracker ...	0.000657
C14 V1 osc. anode coupling ...	0.00015
C15 V2 cathode by-pass ...	0.1
C16 } 2nd I.F. transformer tuning	0.00014
C17 } capacitors ...	0.00014
C18 I.F. by-pass capacitors ...	0.00015
C19 } ...	0.00015
C20* V3 cathode by-pass ...	25.0
C21 A.F. coupling to V3 pent. ...	0.005
C22 V3 A.V.C. diode coupling ...	0.000022
C23 Neg. feed-back coupling ...	0.01
C24* } H.T. smoothing capacitors {	16.0
C25* } ...	24.0
C26 Mains R.F. by-pass ...	0.1
C27† Aerial circ. S.W. trimmer ...	0.00003
C28† Aerial circ. M.W. trimmer ...	0.00003
C29† Aerial circ. L.W. trimmer ...	0.00003
C30† Aerial circuit tuning ...	\$0.000532
C31† Osc. circ. S.W. trimmer ...	0.00003
C32† Osc. circ. M.W. trimmer ...	0.00003
C33† Osc. circ. L.W. trimmer ...	0.00003
C34† Oscillator circuit tuning ...	\$0.000532

* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, min. to max.

OTHER COMPONENTS	Approx. Values (ohms)
L1 Aerial S.W. coupling coil ...	0.2
L2 Aerial M.W. and L.W. coupling coil ...	65.0
L3 Aerial S.W. tuning coil ...	Very low
L4 Aerial M.W. tuning coil ...	3.7
L5 Aerial L.W. tuning coil ...	12.8
L6 Osc. S.W. reaction coil ...	10.8
L7 Osc. M.W. reaction coil ...	1.2
L8 Osc. L.W. reaction coil ...	1.6
L9 Osc. S.W. tuning coil ...	Very low
L10 Osc. M.W. tuning coil ...	1.7
L11 Osc. L.W. tuning coil ...	2.3
L12 } 1st I.F. trans. { Pri. ...	8.5
L13 } Sec. ...	8.5
L14 } 2nd I.F. trans. { Pri. ...	6.0
L15 } Sec. ...	6.0
L16 Speaker speech coil ...	2.8
L17 H.T. smoothing choke ...	330.0
T1 Output trans. { Pri. ...	250.0
S1-S14 Waveband switches ...	0.4
S15, S16 Tone control switches ...	—
S17 Mains switch, ganged R9 ...	—
F1, F2 Mains fuses—1.0A ...	—



CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator leads via a 0.1 μF capacitor to control grid (top cap) of V1 and chassis, and connect a 100,000 Ω resistor also between these points. Feed in a 465 kc/s (645.16 m) signal, and adjust the cores of L12, L13, L14 and L15 for maximum output. A slotted ebonite rod makes a suitable trimming tool. Remove shunt and capacitor.

R.F. and Oscillator Stages.—Transfer signal generator leads to A and E sockets, via a suitable dummy aerial. The pointer should coincide with the ends of the three scales when the gang is at maximum. It may be adjusted while in the cabinet at the high wavelength end of the scales if the drive drum fixing screw is slackened.

M.W.—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, and adjust C32, then C28, for maximum output. Check calibration at 500 m (600 kc/s).

L.W.—Switch set to L.W., tune to 1,200 m on scale, feed in a 1,200 m (250 kc/s) signal, and adjust C33, then C29, for maximum output. Check calibration at 2,000 m (150 kc/s).

S.W.—Switch set to S.W., tune to 14 m on scale, feed in a 14 m (21.43 Mc/s) signal, and adjust C31, then C27, for maximum output. Check calibration at 50 m (6.0 Mc/s).

Waveband Switch Table

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

