



Diagram of the S1-S10 switch unit, seen from the rear. Below is the associated switch table.

Switch	M.W.	L.W.	Gram.
S1	C	—	—
S2	C	—	—
S3	—	C	—
S4	—	—	C
S5	—	—	C
S6	C	—	—
S7	—	C	—
S8	C	—	—
S9	—	C	—
S10	—	—	C

OTHER COMPONENTS			Approx. Values (ohms)
L1	Aerial coupling coil		65-0
L2	Aerial M.W. tuning coil		3-7
L3	Aerial L.W. tuning coil		12-8
L4	Osc. M.W. reaction coil		1-2
L5	Osc. L.W. reaction coil		1-6
L6	Osc. M.W. tuning coil		2-0
L7	Osc. L.W. tuning coil		2-5
L8	1st I.F. trans.	Pri.	8-5
L9		Sec.	8-5
L10	2nd I.F. trans.	Pri.	6-0
L11		Sec.	6-0
L12	Speaker speech coil		2-0
L13	Hum neutralising coil		Very low
L14	Speaker field coil		1000-0
T1	Output trans.	Pri.	270-0
		Sec.	0-1
T2	Mains trans.	Pri., total	18-0
		Heater sec.	Very low
		Rect. heat. sec.	Very low
S1-S10	Waveband switches		—
S11	Tone control switches		—
S12			—
S13			—
S14	Mains switch, ganged R9...		—

## INVICTA- 10

**Drive Cord Replacement.**—This requires 50 inches of cord (Cutty Hunk fishing twine will do), which should be fitted as shown in the sketch beneath the circuit diagram overleaf.

### CIRCUIT ALIGNMENT

These operations may be carried out while the chassis is in the cabinet, holes being provided in the bottom to give access to those adjustments which are beneath the chassis.

**I.F. Stages.**—Connect signal generator via a 0.1μF capacitor to control grid (top cap) of V1 and chassis, and connect a 100,000Ω resistor also between these points. Feed in a 465 kc/s (645.16 m) signal, and adjust the cores of L8, L9, L10 and L11 for maximum output. A slotted ebonite rod makes a suitable trimming tool. Remove shunt.

**R.F. and Oscillator Stages.**—Transfer signal generator leads to A and E sockets, and see that the pointer coincides with the ends of the two scales when the gang is at maximum.

**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 C27, then C24, 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 C28, then C25, for maximum output. Check calibration at 2,000 m (150 kc/s).

### VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH35	236	1-0	80	2-7
	84	2-5	—	—
V2 EF39	236	4-0	80	1-1
V3 EB131	225	32-0	236	3-5
V4 AZ31	277†	—	—	—

RESISTORS		Values (ohms)
R1	V1, V2 S.G.'s H.T. feed ...	47,000
R2	V1 fixed G.B. resistor ...	330
R3	V1 osc. C.G. resistor ...	47,000
R4	V1 osc. anode H.T. feed ...	47,000
R5	V2 fixed G.B. resistor ...	220
R6	A.V.C. line decoupling ...	1,000,000
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. diode load ...	1,000,000
R14	Tone control resistors {	100,000
R15		47,000
R16	Feed - back potential	15,000
R17	divider ...	4,700

CAPACITORS		Values (μF)
C1	Aerial "top" coupling ...	0-000006
C2	A.V.C. line decoupling ...	0-1
C3	V1, V2 S.G.'s decoupling	0-1
C4	V1 cathode by-pass ...	0-1
C5	1st I.F. transformer tuning {	0-00007
C6	capacitors ...	0-00007
C7	V1 osc. C.G. capacitor ...	0-00015
C8	Osc. M.W. fixed trimmer	0-000022
C9	Osc. L.W. fixed trimmer...	0-00034
C10	M.W. and L.W. tracker ...	0-000057
C11	V1 osc. anode coupling ...	0-001
C12	V2 cathode by-pass ...	0-1
C13	2nd I.F. transformer {	0-00014
C14	tuning capacitors ...	0-00014
C15	I.F. by-pass capacitors ...	0-00015
C16		0-00015
C17*	V3 cathode by-pass ...	25-0
C18	A.F. coupling to V3 pent.	0-005
C19	V3 A.V.C. diode coupling	0-000022
C20	Neg. feed-back coupling ...	0-01
C21	Mains aerial coupling ...	0-001
C22*	H.T. smoothing capacitors {	8-0
C23*		16-0
C24†	Aerial circ. M.W. trimmer	0-00003
C25†	Aerial circ. L.W. trimmer	0-00003
C26†	Aerial circuit tuning ...	\$0-000532
C27†	Osc. circ. M.W. trimmer...	0-00003
C28†	Osc. circ. L.W. trimmer...	0-00003
C29†	Oscillator circuit tuning...	\$0-000532

\* Elect  
§ "Swi

Intermediate frequency 465 kc/s.

