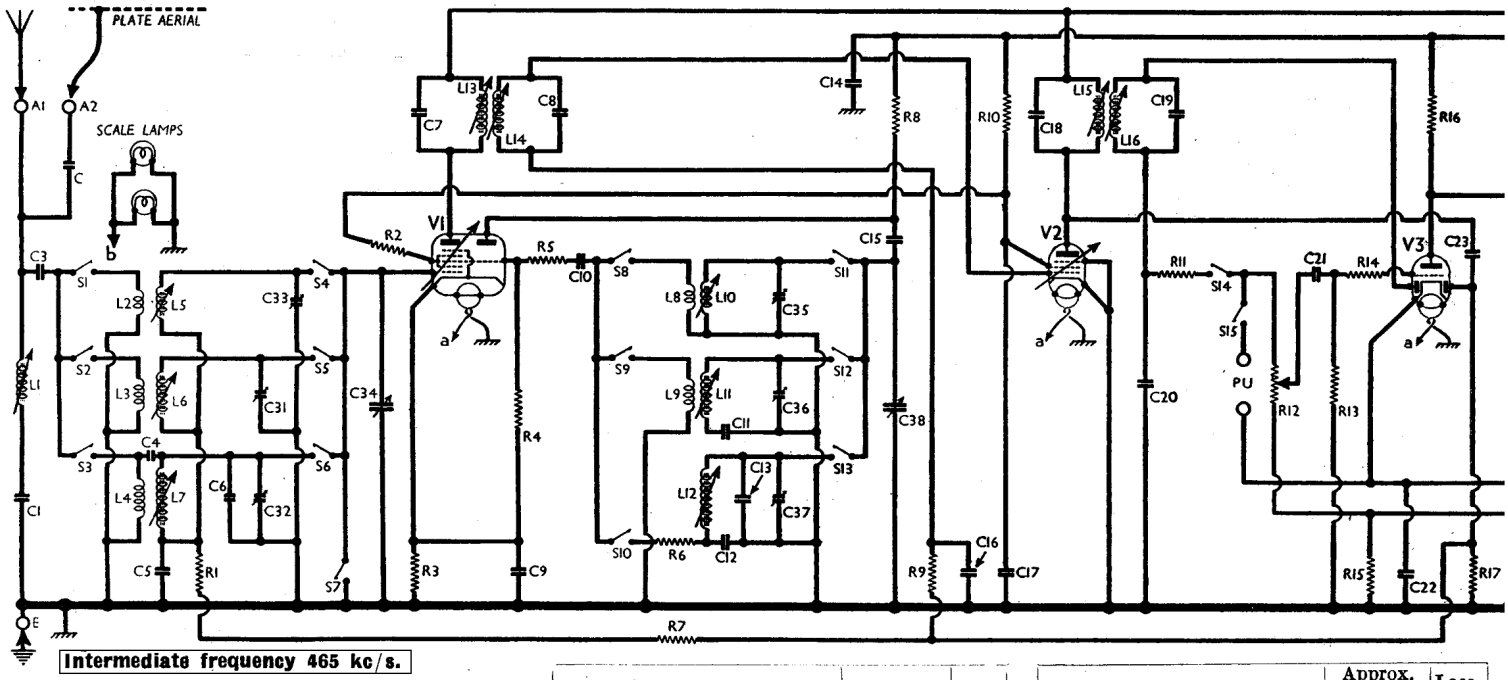
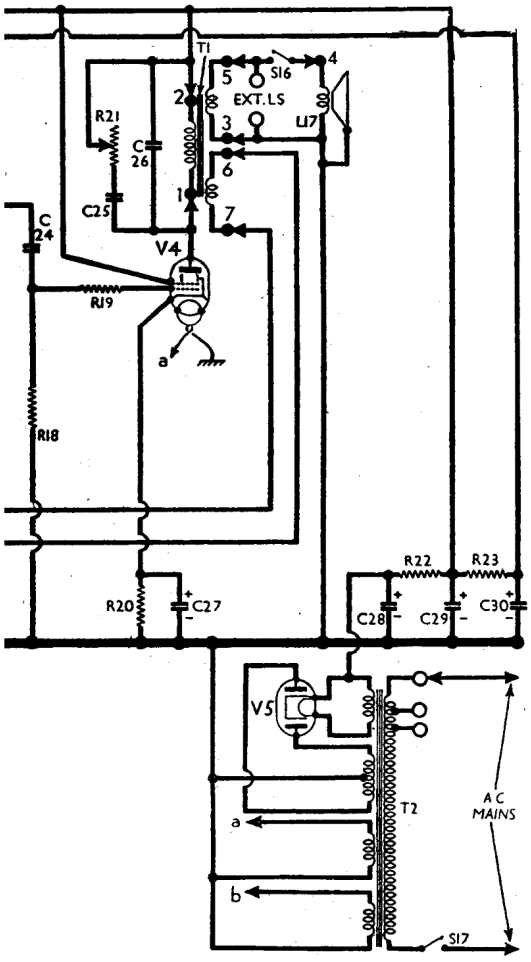


Intermediate frequency 465 kc/s.



Valve	Anode (V)	Anode (mA)	Screen (V)	Screen (mA)	Cath. (V)
V1 TH41	267	2·6	98	6·6	2·7§
	Oscillator 73	3·2			
V2 VP41	267	5·5	98	1·2	—
V3 HL41DD	124	2·0	—	—	2·9§
V4 Pen 45	255	44·0	267	8·0	9·2§
V5 UU6	290†	—	—	—	320

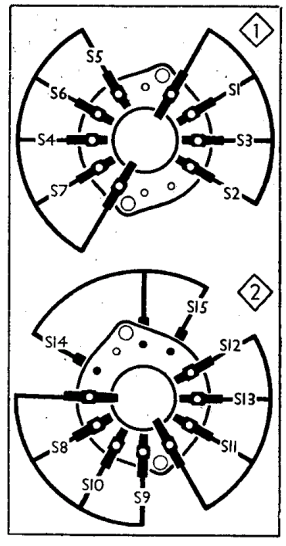
† A.C. § 10V. meter range.

CAPACITORS		Values (μF)	Locations
C1	I.F. filter tune ...	0·00027	K7
C2	Aerial series capacitors ...	0·000022	B3
C3	Aerial series capacitors ...	0·00047	L5
C4	L.W. image rejector	—	L4
C5	Hept. C.G. decoup.	0·05	K5
C6	Aerial L.W. trim ...	0·000047	K4
C7	1st I.F. transformer tuning ...	0·00012	B2
C8	1st I.F. transformer tuning ...	0·00012	B2
C9	V1 cath. by-pass ...	0·05	K7
C10	V1 osc. C.G. ...	0·00018	K6
C11	Osc. M.W. tracker	0·00054	J4
C12	Osc. L.W. tracker...	0·0002	K6
C13	Osc. L.W. trim. ...	0·0001	K4
C14	H.T. R.F. by-pass	0·05	F6
C15	Osc. anode coup....	0·0001	K6
C16	V2 C.G. decoup. ...	0·05	H6
C17	S.G.'s H.T. decoup.	0·05	K7
C18	2nd I.F. transformer tuning ...	0·00012	C2
C19	2nd I.F. transformer tuning ...	0·00012	C2
C20	I.F. by-pass ...	0·0001	G6
C21	A.F. coupling ...	0·001	G6
C22	F.-B. by-pass ...	0·05	G7
C23	A.G.C. coupling ...	0·0001	H7
C24	A.F. coupling ...	0·01	F6
C25	Tone control ...	0·1	F7
C26	Tone corrector ...	0·001	H8
C27*	V4 cath. by-pass ...	50·0	F7
C28*	H.T. smoothing capacitors ...	16·0	G7
C29*	H.T. smoothing capacitors ...	24·0	G7
C30*	H.T. smoothing capacitors ...	16·0	G7
C31‡	Aerial M.W. trim....	0·00007	K4
C32‡	Aerial L.W. trim....	0·00007	K4
C33‡	Aerial S.W. trim....	0·00007	K5
C34†	Aerial tuning ...	0·0005§	A1
C35‡	Osc. S.W. trim. ...	0·00007	K5
C36‡	Osc. M.W. trim. ...	0·00007	K4
C37‡	Osc. L.W. trim. ...	0·00007	K4
C38†	Oscillator tuning ...	0·0005§	B1

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

RESISTORS		Values (ohms)	Locations
R1	Hept. C.G. decoup.	1,000,000	K6
R2	V1 S.G. stabilizer...	68	K6
R3	V1 fixed G.B. ...	220	K7
R4	V1 osc. C.G. ...	47,000	K7
R5	Osc. stabilizing resistors ...	56	K6
R6	Osc. stabilizing resistors ...	12,000	J5
R7	A.G.C. decoup. ...	470,000	H6
R8	Osc. anode load ...	39,000	J6
R9	V2 C.G. decoup. ...	2,200,000	H6
R10	S.G.'s H.T. feed ...	18,000	H6
R11	I.F. stopper ...	100,000	G6
R12	Volume control ...	1,000,000	G9
R13	V3 C.G. resistor ...	2,200,000	G6
R14	V3 C.G. stopper ...	47,000	G6
R15	V3 G.B., A.G.C. delay	1,500	G6
R16	V3 triode load ...	47,000	G6
R17	A.G.C. diode load...	470 000	H6
R18	V4 C.G. resistor ...	470,000	F7
R19	V4 C.G. stopper ...	47,000	F6
R20	V4 G.B. resistor ...	180	F7
R21	Tone control ...	25,000	A1
R22	H.T. smoothing resistors	700	F8
R23	H.T. smoothing resistors	2,200	E8

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	I.F. filter coil ...	5·5	L7
L2	Aerial coupling coils	0·25	L5
L3	Aerial coupling coils	1·0	L6
L4	Aerial coupling coils	6·5	L4
L5	Aerial tuning coils	Very low	L5
L6	Aerial tuning coils	2·0	L6
L7	Aerial tuning coils	11·0	L4
L8	Oscillator reaction coils	6·0	J5
L9	Oscillator reaction coils	0·9	J4
L10	Oscillator tuning coils	Very low	J5
L11	Oscillator tuning coils	2·5	J4
L12	Oscillator tuning coils	6·0	J6
L13	1st I.F. trans. Pri.	8·0	B2
L14	1st I.F. trans. Sec.	8·0	B2
L15	2nd I.F. trans. Pri.	8·0	C2
L16	2nd I.F. trans. Sec.	8·0	C2
L17	Speech coil ...	2·1	B1
T1	Output trans. Pri. 1-2	250·0	H9
T1	Output trans. Sec. 3-5	0·9	H9
T1	Output trans. Sec. 6-7	0·1	H9
T2	Mains trans. Pri., total	28·0	F8
T2	Mains trans. H.T. Sec., total	370·0	F8
T2	Mains trans. Rect. heat sec.	Very low	F8
T2	Mains trans. Heater sec.	Very low	F8
T2	Mains trans. Scale lamp sec.	1·5	F8
S1-S15	W/band and gram. switches ...	—	K5
S16	Int. spkr. switch ...	—	C3
S17	Mains sw., g'd R12	—	G9



Diagrams of the two waveband switch units, which are viewed from opposite directions, as indicated by the arrows in our front view of the chassis.

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Switch	Gram.	M.W.	L.W.	S.W
S1	—	—	—	C
S2	—	C	—	—
S3	—	—	C	—
S4	—	—	—	C
S5	—	C	—	—
S6	—	—	C	—
S7	C	—	—	—
S8	—	—	—	C
S9	—	C	—	—
S10	—	—	C	—
S11	—	—	—	C
S12	—	C	—	—
S13	—	—	C	—
S14	—	C	C	C
S15	C	—	—	—

Chassis Divergencies.—In addition to the omission of **C4** in some models, there are also one or two possible component value variations. **R7** may be 1,000,000 Ω instead of 470,000 Ω, and **C21** may be 0.01 μF. In the latter event, a small "top boost" coupling capacitor will be connected between the top end of the volume control **R12** and its slider. The value will be 0.0001 μF (100 pF).

CIRCUIT ALIGNMENT

These operations must be carried out with the chassis removed from the cabinet, and a dummy scale (calibrated 0-180 deg) is embossed on the rear of the gang drive drum to enable this to be done. Readings on this scale are taken against a metal pointer fixed beneath the tone control **R21** (location reference A1), and with the gang at maximum capacitance the reading should be 180 deg.

I.F. Stages.—Switch set to L.W., tune to 16 deg, connect signal generator, via an 0.05 μF capacitor in the "live" lead to control grid (top cap) of **V1** and the **E** socket, feed in a 465 kc/s (645.16 m) signal, and adjust the cores of **L16, L15, L14, L13** (C2, H7, B2, J7) for maximum output.

R.F. and Oscillator Stages.—Transfer "live" signal generator lead to **A** socket, via a suitable dummy aerial.

I.F. Filter.—With the set still switched to L.W. and tuned to 16 deg, feed in a strong 465 kc/s signal, and adjust the core of **L1** (L7) for minimum output.

R.F. and Oscillator Stages.—Transfer signal generator leads to **A** and **E** sockets via a suitable dummy aerial. With the gang at maximum capacitance, the pointer should indicate 180 deg on the gang drive drum.

M.W.—Switch set to M.W., tune to 8 deg, feed in a 200 m (1,500 kc/s) signal, and adjust **C36** and **C31** (K4) for maximum output. Tune to 150 deg, feed in a 500 m (600 kc/s) signal, and adjust the cores of **L11** (J4) and **L6** (L6) for maximum output. Repeat these operations until no improvement results.

L.W.—Switch set to L.W., tune to 16 deg, feed in a 1,000 m (300 kc/s) signal, and adjust **C37** and **C32** (K4) for maximum output. Tune to 163.5 deg, feed in a 2,000 m (150 kc/s) signal, and adjust the cores of **L12** (J6) and **L7** (L4) for maximum output. Repeat these operations until no improvement results.

If the **L4, L7** assembly has been replaced a new pair of twisted insulated wires 3in long, which constitutes **C4** (L4) should be fitted. This must be adjusted to give optimum L.W. image rejection by feeding in a strong 261 m (1,149 kc/s) signal, tuning it in on L.W., and cutting off short sections of **C4** until minimum output is obtained.

S.W.—Switch set to S.W., tune to 28 deg on scale, feed in a 20 m (15 Mc/s) signal, and adjust **C35** and **C33** (K5) for maximum output. Tune to 127.5 deg, feed in a 40 m (7.5 Mc/s) signal, and adjust the cores of **L10** (J5) and **L5** (L5) for maximum output. Repeat these operations until no improvement results.

Finally, replace the chassis in the cabinet and check that the cursor coincides with the high wavelength ends of the three scales when the gang is at maximum capacitance. It may be adjusted in position by lifting the glass scale from its slot in the top of the cabinet, when the cursor carriage may be slid along the drive cord to correct the error.

DRIVE CORD REPLACEMENT

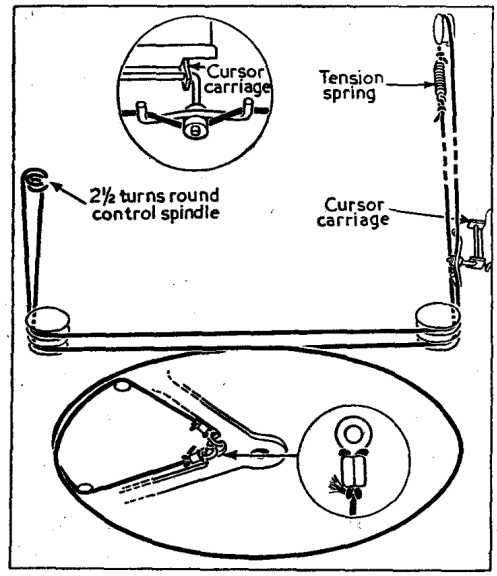
About six feet of nylon braided glass yarn is required for the tuning drive cord, which should be partly made up before being fitted, as the tension spring is inserted at a break in the run of the cord.

The best position for the work is from the drive wheel end, with the chassis on its base and the main chassis section swung right back on its pivots so that the tuning control spindle is vertical, when the drive system assumes the position shown in our sketch below when the gang is at maximum.

Turn the gang to maximum, when the drive wheel calibration mark for 180 deg should be level with the pointer. Fit one end of the cord to one of the end-tags by the method shown inset in our sketch, then tie the tension spring 20½ inches along the cord, measuring from the outer end of the tag. No special tag is provided for this, but a non-slip knot should be used. Cut off the spare cord, and tie one end of it to the other end of the spring.

Anchor the tag to the lower hook on the drive wheel as seen in our sketch, then run the cord as shown, finally tying off to another end-tag like the first, but about half an inch short of the anchor hook so as to extend the tension spring when anchored. The cord-grip below the cursor carriage can then be slipped on to the front cord as shown in the second inset sketch.

The shaded straining bar is not a fixture on the assembly, but, like the cord, it slips into a groove in the little drum-shaped nipple when the cord is strained. When the cord is slackened, it falls off.



Sketch of the drive cord system as seen when viewed over the drive wheel when the chassis is raised on its pivots. The cord grip and end-tag are shown in insets.

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