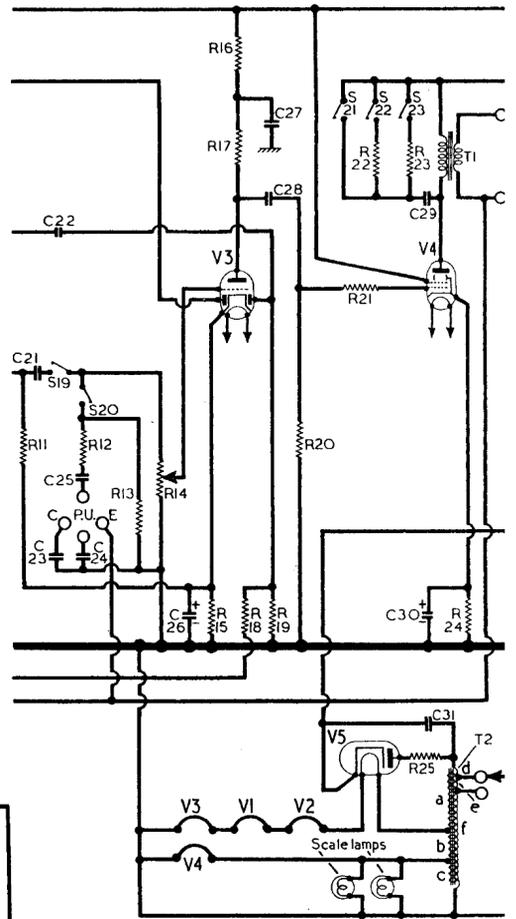
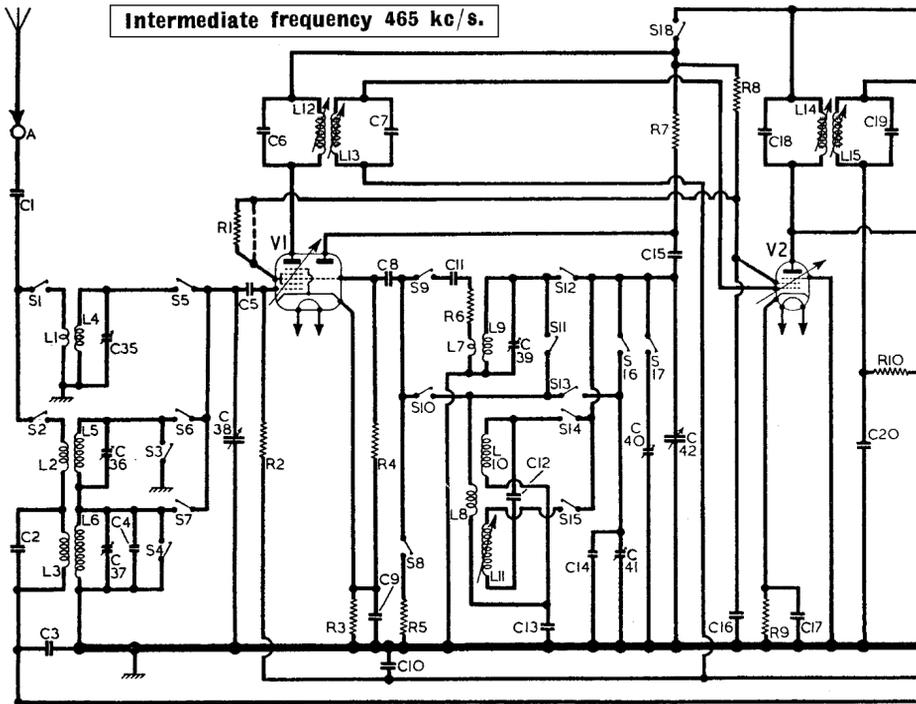
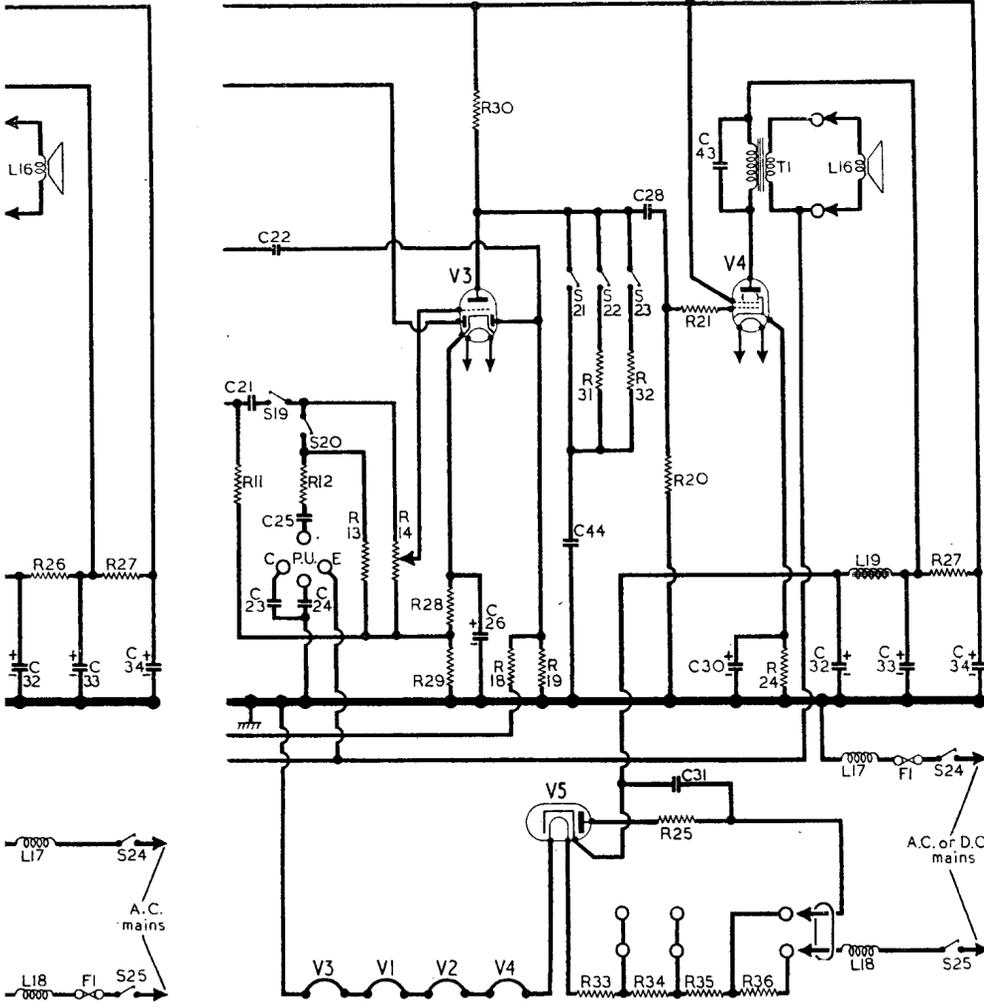


Intermediate frequency 465 kc/s.



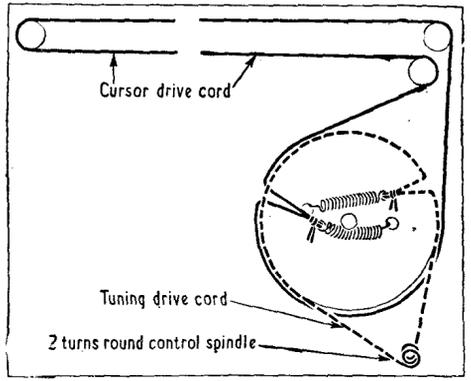
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to  
Cursor guide rail  
& scale lamps



Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 10C1	185	2.6	96	5.8	3.2
	Oscillator	65	3.6	—	—
V2 10F1	185	7.0	96	2.0	2.4
V3 10LD11	82	0.6	—	—	2.4
V4 Pen 45	225	34.0	185	6.0	6.0
V5 U404	240†	—	—	—	270.0

† A.C. reading.



Sketch of the tuning drive system, as seen from the front, with gang at maximum.

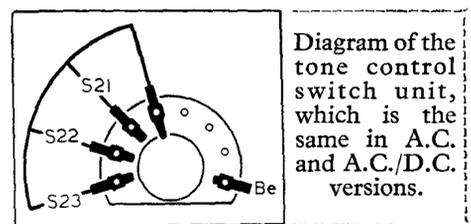


Diagram of the tone control switch unit, which is the same in A.C. and A.C./D.C. versions.

RESISTORS	A.C. MODEL		A.C./D.C. MODEL
	Values	Locations	Values
R1	22Ω	H3	—
R2	470kΩ	H3	470kΩ
R3	270Ω	H3	180Ω
R4	47kΩ	H3	47kΩ
R5	3-9kΩ	J3	3-9kΩ
R6	82Ω	H4	82Ω
R7	33kΩ	H3	22kΩ
R8	12kΩ	G3	8-2kΩ
R9	270Ω	G4	330Ω
R10	330kΩ	G3	330kΩ
R11	180kΩ	G3	180kΩ
R12	1MΩ	B2	1MΩ
R13	220kΩ	B2	220kΩ
R14	1MΩ	F3	1MΩ
R15	3-3kΩ	G4	—
R16	47kΩ	F4	—
R17	100kΩ	F4	—
R18	1MΩ	G3	1MΩ
R19	1MΩ	G4	1MΩ
R20	470kΩ	F3	470kΩ
R21	47kΩ	F3	47kΩ
R22	3-9kΩ	E3	—
R23	22kΩ	E3	—
R24	150Ω	F3	180Ω
R25	47Ω	E4	47Ω
R26	560Ω	G4	—
R27	1-8kΩ	G3	1-8kΩ
R28	—	—	1-5kΩ
R29	—	—	1kΩ
R30	—	—	47kΩ
R31	—	—	4-7kΩ
R32	—	—	33kΩ
R33	—	—	700Ω
R34	—	—	200Ω
R35	—	—	80Ω
R36	—	—	50Ω

### CIRCUIT ALIGNMENT

The receiver may be completely aligned without removing the chassis, provided that a special trimming tool is used to adjust **C35**, **C36** and **C37**. A suitable tool may be made from a length of steel or Tufnol rod by drilling a 6BA clearance hole in one end. If the tool is then placed over the protruding threaded ends of the aerial trimmers they may be adjusted by turning the tool while applying a side-ways pressure on it.

If, however, a major adjustment is required, it will be found simpler to remove the chassis from its baffle so that free access is obtained to these trimmers. A substitute scale is provided on the gang.

**I.F. Stages.**—The I.F. trimming cores are rather fragile and care should be taken when adjusting them. Connect the output of the signal generator, via a 0.1μF capacitor in the "live" lead to control grid (pin 6) of **V2** and chassis. Switch set to M.W., turn gang to maximum and fully unscrew the cores of **L15** (location reference C2) and **L14** (G4). Feed in a 465 kc/s (645.16 m) signal and adjust the cores of **L15**, **L14** for maximum output. Do not re-adjust. Transfer "live" signal generator lead to junction of **C5**, **C38**, fully unscrew the cores of **L13** (B2) and **L12** (H4) and then adjust them, in that order, for maximum output. Do not re-adjust.

**R.F. and Oscillator Stages.**—If the chassis is withdrawn from its baffle, reference must be made to the substitute scale printed on the front of the gang drum, and readings taken on this scale, against the fixed metal cursor, are given in brackets after the tuning scale readings in the following alignment instructions. Check that with the gang at maximum the cursor coincides with the 52 m mark on the S.W. scale or that substitute scale reads 0 degrees.

CAPACITORS	A.C. MODEL		A.C./D.C. MODEL
	Values	Locations	Values
C1	270pF	A1	270pF
C2	470pF	J3	470pF
C3	0-01μF	J3	0-01μF
C4	27pF	J3	27pF
C5	500pF	H3	500pF
C6	150pF	B2	150pF
C7	150pF	B2	150pF
C8	220pF	H3	220pF
C9	0-05μF	H3	0-05μF
C10	0-05μF	H4	0-05μF
C11	100pF	H3	100pF
C12	180pF	H4	180pF
C13	620pF	H4	620pF
C14	87pF	H4	82pF
C15	100pF	H3	100pF
C16	0-05μF	G3	0-05μF
C17	0-05μF	H4	0-05μF
C18	150pF	C2	150pF
C19	150pF	C2	150pF
C20	220pF	G4	220pF
C21	0-005μF	G4	0-005μF
C22	33pF	G4	33pF
C23	0-01μF	A2	0-01μF
C24	0-01μF	A2	0-01μF
C25	0-001μF	B2	0-001μF
C26*	50μF	F4	50μF
C27	0-25μF	F4	—
C28	0-01μF	F4	0-01μF
C29	0-05μF	F3	—
C30*	50μF	F4	50μF
C31	0-05μF	E3	0-05μF
C32*	16μF	D2	16μF
C33*	32μF	A2	32μF
C34*	32μF	A2	16μF
C35†	35pF	J3	35pF
C36†	35pF	J3	35pF
C37†	35pF	J3	35pF
C38†	546pF	A1	546pF
C39†	35pF	J4	35pF
C40†	35pF	H4	35pF
C41†	35pF	H4	35pF
C42†	546pF	A1	546pF
C43	—	—	0-005μF
C44	—	—	0-05μF

\* Electrolytic. † Variable. ‡ Pre-set.

**L.W.**—Switch set to L.W. and transfer signal generator leads, via a dummy aerial, to **A** and **E** sockets. Tune set to 1,000 m (167.5 deg. on substitute scale) and feed in a 1,000 m (300 kc/s) signal. Unscrew **C41** (H4) and **C37** (J3) and then adjust them, in that order, for maximum output. Tune set to 1,900 m (31.0 deg.), feed in a 1,900 m (158 kc/s) signal and adjust the core of **L11** (B1) for maximum output. Repeat these adjustments until no further improvement results.

**M.W.**—Switch set to M.W., tune to 220 m (155 deg.) and feed in a 220 m (1,363 kc/s) signal. Unscrew **C40** (H4) and **C36** (J3), and then adjust them, in that order, for maximum output. Check calibration at 300 m (114.5-116.5 deg.) and 500 m (27-29 deg.).

**S.W.**—Switch set to S.W., tune to 20 m (154.5 deg.) and feed in a 20 m (15 Mc/s) signal. Unscrew **C39** (J4) and **C35** (J3), and then adjust them in that order for maximum output. Rock the gang when adjusting **C35** to obtain optimum results. Check the calibration at 31.25 m (92-95 deg.) and 41.9 m (46.5 deg.) and if the error is large adjust the position of the end turns of **L9** (J3) and **L4** (A1). Repeat these adjustments.

**Aerial Filter.**—Where one of these is fitted, connect a voltmeter between the cathode of **V2** and chassis, switch to the 10 V D.C. range, tune the receiver to the interfering station, and adjust the rejector core for maximum reading on the meter.

OTHER COMPONENTS		Values Approx. (ohms)	Locations	
L1	Aerial coupling coils ...	Very low	A1	
L2		1-0	A1	
L3		20-5	A1	
L4	Aerial tuning coils	Very low	A1	
L5		3-5	A1	
L6		21-0	A1	
L7	Oscillator reaction coils ...	Very low	J3	
L8		Very low	H3	
L9	Oscillator tuning coils ...	Very low	J3	
L10		2-0	H3	
L11	...	5-2	H3	
L12	1st I.F. trans. { Pri. ...	6-0	B2	
L13		Sec. ...	6-0	B2
L14	2nd I.F. trans. { Pri. ...	6-0	C2	
L15		Sec. ...	6-0	C2
L16	Speech coil ...	2-5	—	
L17	Mains filter chokes {	7-5	E3	
L18		...	7-5	E3
L19		...	—	—
T1	H.T. choke (U130)	270-0	—	
	Secondary ...	290-0	G3	
	...	0-5	—	
	...	95-0	—	
	Mains auto-trans. { a ...	75-0	—	
	...	Very low	D1	
	...	10-0	—	
	...	20-0	—	
	...	140-0	—	
F1	Fuse, 500 mA ...	—	D1	
S1-S20	Waveband switches	—	H3	
S21-	...	—	—	
S23	Tone switches ...	—	E3	
S24,	...	—	—	
S25	Mains sw., g'd R14	—	F3	

### DRIVE CORD REPLACEMENT

There are two drive cords in this receiver: the tuning drive, and the cursor drive. It is advisable to fit the cursor drive cord before the tuning drive cord. About six feet of cord is required altogether for both cords, and suitable material (spec. No. 936) can be obtained from the Service Department, Murphy Radio, Ltd., Welwyn Garden City, Herts. Before fitting it should be stretched by suspending a weight of 3 or 4 lb for an hour or so.

The two cords are seen in the sketch below, where the system is drawn as seen from the front with the gang at maximum. The tuning drive cord is drawn in broken line to distinguish it from the other.

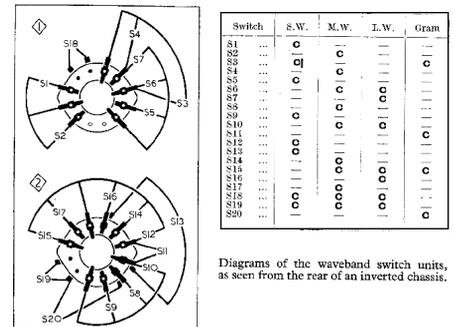
**Cursor Drive.**—Take about four feet of cord and make up a loop which when stretched between two pins stuck in the bench measures 22in. The spring should be tied in the knot, and the cord is then threaded through the appropriate holes in the side of the drum, leaving the spring inside. Then run the cord as shown in our sketch, but the spring should not be hooked up until the tuning drive cord is fitted.

**Tuning Drive.**—Take about two feet of cord and make up a loop which, when stretched between two pins stuck in the bench measures 9in, the spring being tied in the knot. Thread the loop through the appropriate holes in the drum, leaving the spring inside the drum. Remove the retaining spring from the end of the tuning control spindle and withdraw the spindle. Make 2½ turns round a rod or finger as we show round the spindle, and put the control spindle back, passing it through the turns.

The retaining spring should now be replaced, straining it against one side of the spacing collar under the aerial trimmer assembly and the opposite side of the tuning control spindle, and slipping the hooked end of it into a hole near the bottom edge of the chassis member.

Finally, run the cord round the drum as shown, and hook up both tension springs.

Waveband Switch Diagrams



Diagrams of the waveband switch units, as seen from the rear of an inverted chassis.

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