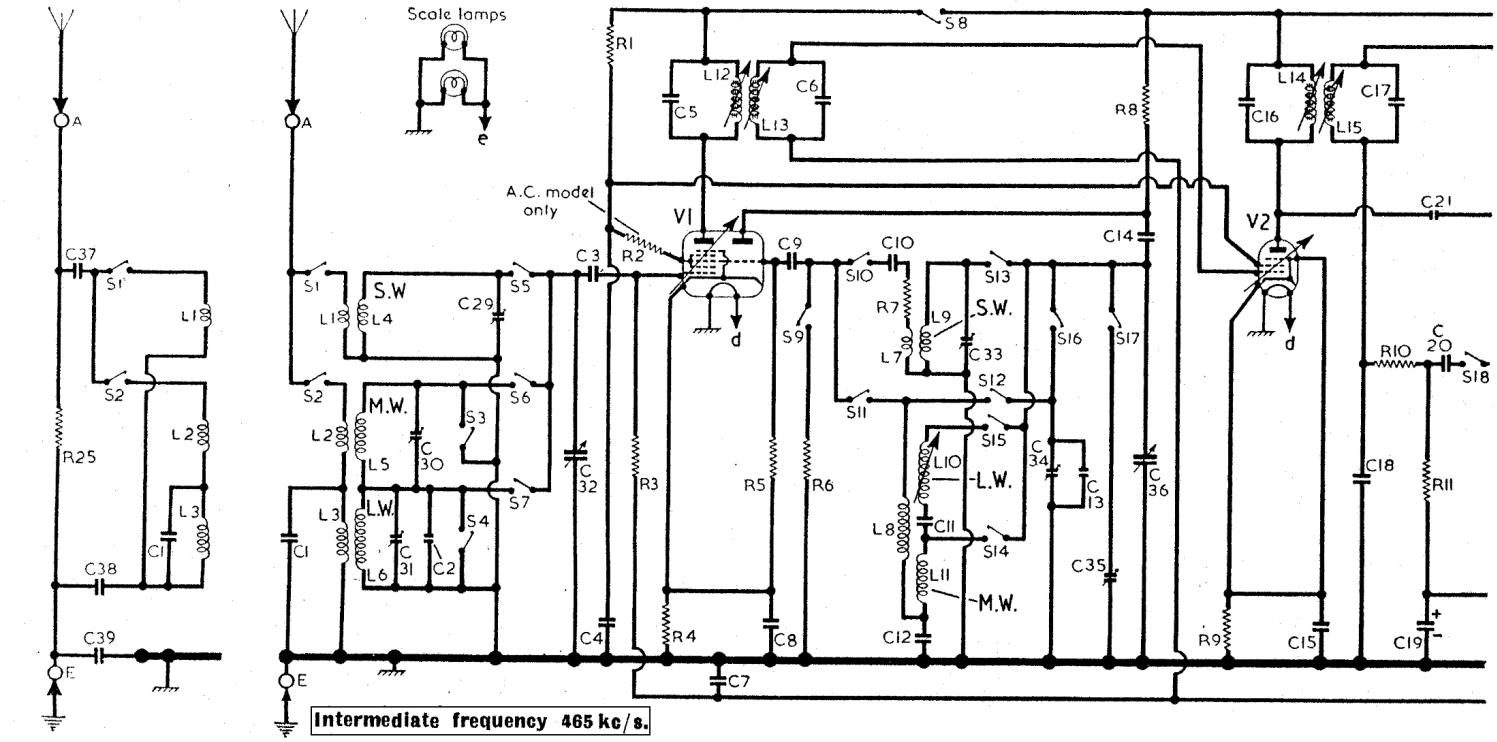
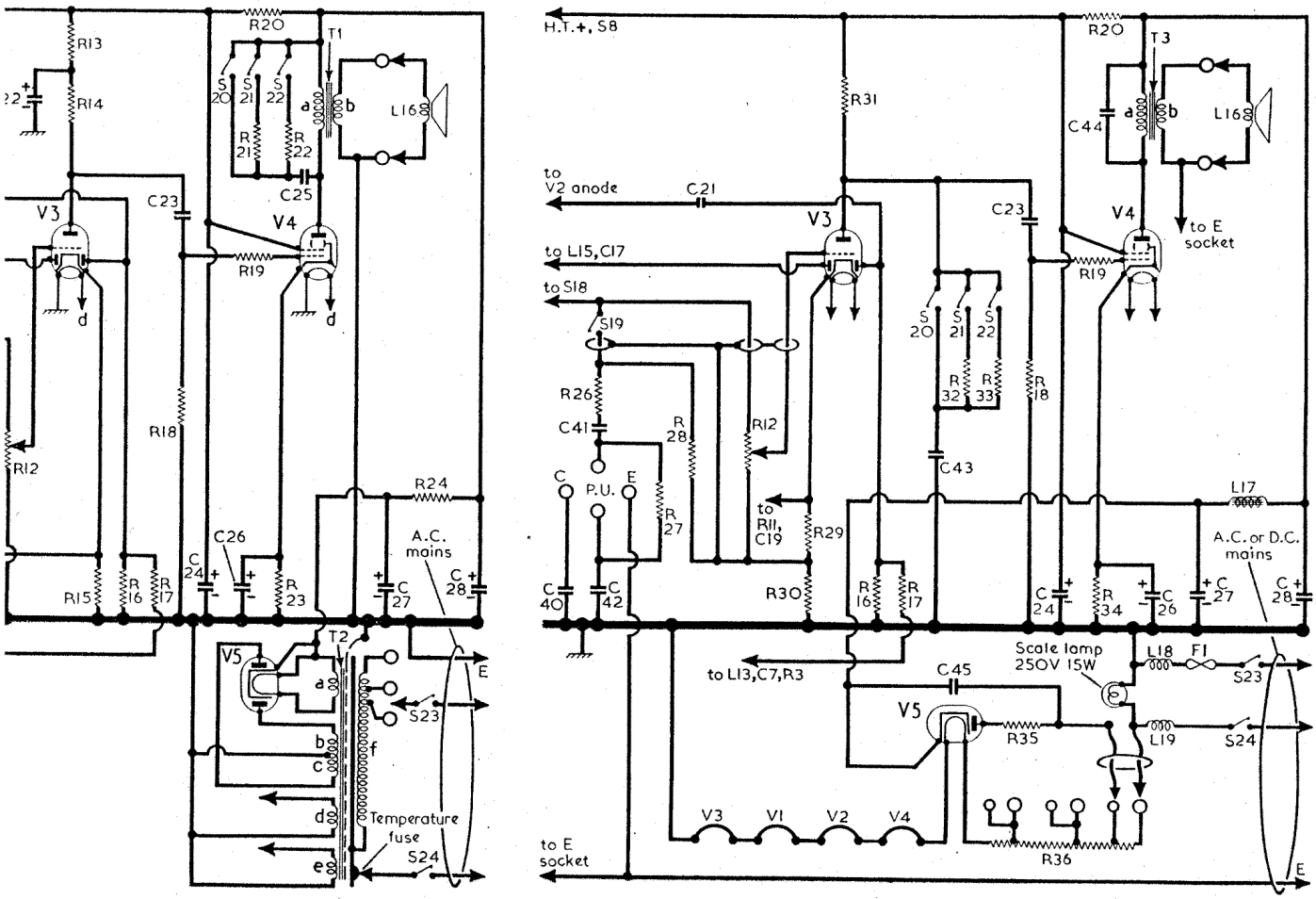
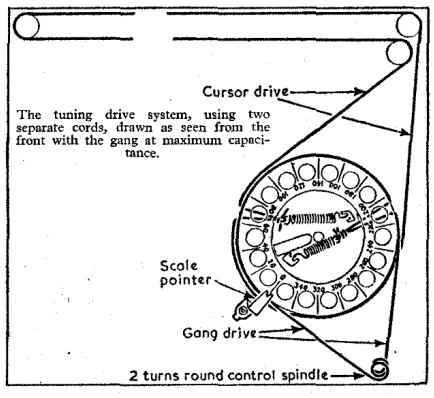
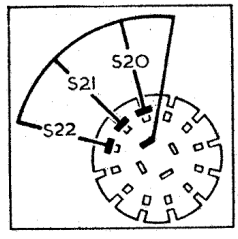




Valves	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 6C9 ...	200	3·7	105	5·7	3·7
	Oscillator				
	80	3·6			
V2 6F16 ...	200	5·6	106	2·0	2·0
V3 6LD20 ...	75	0·75	—	—	2·5
V4 6P25 ...	235	30·0	200	5·5	5·3
V5 UU9 ...	230*	—	—	—	280-0†

* A.C. reading, each anode.
† Cathode current, 57 mA.





Plan view of the chassis (left) of the A.C. model. Above is a detailed diagram of the tone control switch.

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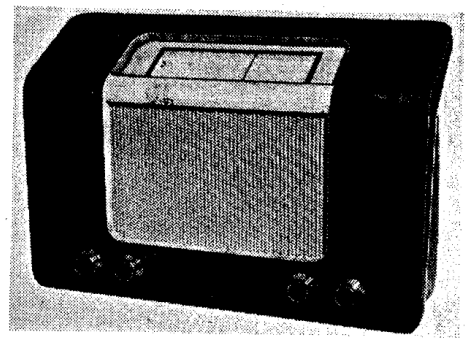
RESISTORS		Values	Locations
R1	S.G. H.T. feed ...	‡12kΩ	F4
R2	V1 S.G. stopper ...	22Ω	F3
R3	V1 C.G.	470kΩ	F3
R4	V1 G.B.	§270Ω	F3
R5	V1 osc. C.G. ...	47kΩ	F3
R6	M.W. osc. shunt ...	3·9kΩ	G3
R7	S.W. osc. stabilizer	82Ω	G3
R8	Osc. anode feed ...	¶33kΩ	F3
R9	V2 G.B.	††270Ω	F4
R10	Signal diode load ...	330kΩ	E3
R11		180kΩ	E3
R12	Volume control ...	1MΩ	E3
R13	H.T. decoupling ...	47kΩ	E3
R14	V3 anode load ...	100kΩ	E4
R15	V3 G.B.	3.3kΩ	E4
R16	A.G.C. diode load ...	1MΩ	E4
R17	A.G.C. decoupling	1MΩ	F3
R18	V4 C.G.	470kΩ	E3
R19	V4 C.G. stopper ...	47kΩ	E3
R20	H.T. smoothing ...	1·8kΩ	F3
R21	Parts tone control	3·9kΩ	D3
R22		22kΩ	D3
R23	V4 G.B.	150Ω	E3
R24	H.T. smoothing ...	*500Ω	F3
R25	Anti-static leak ...	1MΩ	—
R26	P.U. tone correctors	1MΩ	—
R27		6·8MΩ	—
R28		220kΩ	—
R29	V3 G.B.	1·5kΩ	—
R30		1kΩ	—
R31	V3 anode load ...	47kΩ	—
R32	Parts tone control	4·7kΩ	—
R33		33kΩ	—
R34	V4 G.B.	180Ω	—
R35	V5 surge limiter ...	47Ω	—
R36	Heater ballast ...	†1·030Ω	—

* Two 1kΩ resistors in parallel. † Tapped at 700Ω + 200Ω + 80Ω + 50Ω from V5 heater. ‡ 8.2kΩ in U168. § 180Ω in U168. ¶ 22kΩ in U168. †† 330Ω in U168.

CAPACITORS		Values	Locations
*C1	L.W. aerial shunt...	470pF	G3
C2	L.W. aerial trim. ...	27pF	G3
*C3	V1 C.G.	470pF	F3
C4	S.G. decoupling ...	0·05μF	F3
C5	1st I.F. trans. tuning ...	150pF	B2
C6		150pF	B2
C7	A.G.C. decoupling	0·05μF	F4
C8	V1 cath. by-pass ...	0·05μF	F3
C9	V1 osc. C.G. ...	220pF	F3
C10	Oscillator coupling	100pF	G3
C11	Osc. trackers ...	180pF	G3
C12		620pF	F4
C13	L.W. osc. trim. ...	82pF	F4
C14	Osc. anode coup. ...	100pF	F3
C15	V2 cath. by-pass ...	0·05μF	F4
C16	2nd I.F. trans. tuning ...	150pF	B2
C17		150pF	B2
C18	I.F. by-pass ...	220pF	E4
C19*	V3 cath. by-pass	50μF	E4
C20	A.F. coupling ...	0·005μF	E4
C21	A.G.C. coupling ...	33pF	F4
C22*	H.T. decoupling ...	4μF	D3
C23	A.F. coupling ...	0·01μF	E4
C24*	H.T. smoothing ...	16μF	D3
C25	Part tone control ...	0·05μF	D3
C26*	V4 cath. by-pass ...	50μF	E4
C27*	H.T. smoothing ...	16μF	C2
C28*		32μF	C2
C29‡	S.W. aerial trim. ...	35pF	G3
C30‡	M.W. aerial trim....	35pF	G3
C31‡	L.W. aerial trim. ...	35pF	G3
C32†	Aerial tuning ...	546pF	A1
C33‡	S.W. osc. trim. ...	35pF	G4
C34‡	L.W. osc. trim. ...	35pF	F4
C35‡	M.W. osc. trim. ...	35pF	G4
C36†	Oscillator tuning ...	546pF	A1
C37	Aerial and earth isolators ...	470pF	—
C38		0·0018μF	—
C39		0·01μF	—
C40	P.U. isolators ...	0·01μF	—
C41		0·001μF	—
C42		0·005μF	—
C43	Part tone control	0·05μF	—
C44	Tone corrector ...	0·005μF	—
C45	R.F. by-pass ...	0·05μF	—



OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coils	—	A1
L2		1·0	A1
L3		20·0	A1
L4	Aerial tuning coils	—	A1
L5		3·5	A1
L6		21·0	A1
L7	Oscillator reaction coils	—	G3
L8		—	F3
L9	Oscillator tuning coils	—	G3
L10		5·2	F3
L11		2·0	F3
L12	1st I.F. trans. Pri.	6·5	B2
L13	1st I.F. trans. Sec.	6·5	B2
L14	2nd I.F. trans. Pri.	6·5	B2
L15	2nd I.F. trans. Sec.	6·5	B2
L16	Speech coil ...	2·5	—
L17	H.T. smoothing choke	270·0	—
L18	Mains R.F. chokes	7·0	—
L19		7·0	—
T1	O.P. trans. (A168) a	290·0	E3
	O.P. trans. (A168) b	—	
T2	Mains trans. a ...	—	C1
	Mains trans. b ...	183·0	
	Mains trans. c ...	173·0	
	Mains trans. d ...	—	
	Mains trans. e ...	—	
	Mains trans. f, total	42·5	
T3	O.P. trans. (U168) a	300·0	—
	O.P. trans. (U168) b	—	
S1-S19	Waveband switches	—	G3
S20-S22	Tone control switches	—	D3
S23, S24	Mains sw., g'd R12	—	E3
F1	500 mA. fuse ...	—	—

CIRCUIT ALIGNMENT

The chassis should be removed from its cabinet for the following alignment adjustments.

I.F. Stages.—When adjusting the I.F. transformers, a damping unit consisting of a 4.7 kΩ resistor in series with an 0.01 μF capacitor should be connected, via the shortest possible leads, across one winding while the core of the other is adjusted. Turn volume control to maximum and set the tone control to its fully clockwise position. Connect signal generator output, via an 0.1μF capacitor in each lead, to control grid (pin 6) of **V2** and chassis.

Switch set to M.W. and turn gang to maximum capacitance. Feed in a 465 kc/s (645.16 m) signal and adjust the cores of **L15** (location reference B2) and **L14** (E4) for maximum output. Transfer "live" signal generator lead to junction of **C32, C3** and adjust the cores of **L13** (B2) and **L12** (F4) for maximum output. Repeat these adjustments until no further improvement results.

R.F. and Oscillator Stages.—As the tuning scale remains fixed in the cabinet when the chassis is withdrawn, reference is made in the following instructions to the substitute tuning scale embossed on the front of the drive drum. Readings on this scale are taken against the "V" notch in the metal pointer mounted below the drum. Check that with the gang at maximum capacitance, the notch in the metal pointer coincides with "0" on the substitute scale. Transfer signal generator leads via a dummy aerial to **A** and **E** sockets.

L.W.—Switch receiver to L.W., tune to 31 on substitute scale, feed in a 158 kc/s (1,900 m) signal and adjust the core of **L10** (A1) for maximum output. Tune receiver to 167.5 on scale, feed in a 300 kc/s (1,000 m) signal and adjust **C34** (F4) and **C31** (G3) for maximum output. Repeat these adjustments.

M.W.—Switch receiver to M.W., tune to 155 on scale, feed in a 1,364 kc/s (220 m) signal and adjust **C35** (G4) and **C30** (G3) for maximum output. Repeat these adjustments.

S.W.—Switch receiver to S.W., tune to 154.5 on scale, feed in a 15.23 Mc/s (19.7 m) signal and adjust **C33** (G4) and **C29** (G3) for maximum output, rocking the gang while adjusting **C29** for optimum results. Repeat these adjustments.

Aerial Filter.—Where one of these is fitted, connect a voltmeter between the cathode of **V2** and chassis (that is, in parallel with **R9**), 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.

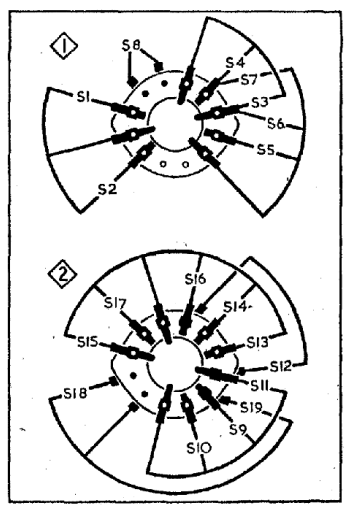
DRIVE CORD REPLACEMENT

There are two drive cords in this receiver: the tuning drive, and the cursor drive. It is unimportant which is fitted first. But the gang drive cord should be the front one in the drum groove. About seven feet of cord is required altogether for both cords, and suitable material (part No. 3962/1) 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 4lb for an hour or so.

The complete system is shown in the accompanying sketch, where it is drawn as seen from the front with the gang at maximum capacitance. The calibration mark 0 (zero) should then register with the V-notch in the fixed pointer bracket at the lower left-hand corner of the drum assembly. Each cord makes just over half of a turn round the drive drum.

Gang Drive.—Take a 24in length of cord, tie one end to the lower tension spring, then follow the course of the lower cord shown in the sketch. Tie off so that the spring is extended to $1\frac{3}{16}$in, $\pm\frac{1}{16}$in, and cut off surplus cord.

Cursor Drive.—Take about 5 feet of cord, tie one end to the upper tension spring, then follow the course of the upper cord in the sketch. Finally, tie off so that the spring is extended $1\frac{5}{16}$in, $\pm\frac{1}{16}$in, and cut off surplus cord.



Switches	S.W.	M.W.	L.W.	Gram
S1	c	—	—	—
S2	—	c	c	—
S3	c	—	—	c
S4	—	c	—	—
S5	c	—	—	—
S6	—	c	—	—
S7	—	—	c	—
S8	c	c	c	—
S9	—	c	—	—
S10	c	—	—	—
S11	—	—	c	—
S12	c	—	—	—
S13	c	—	—	—
S14	—	c	—	—
S15	—	c	c	c
S16	c	—	—	—
S17	—	c	—	—
S18	c	c	c	—
S19	—	—	—	c

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

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