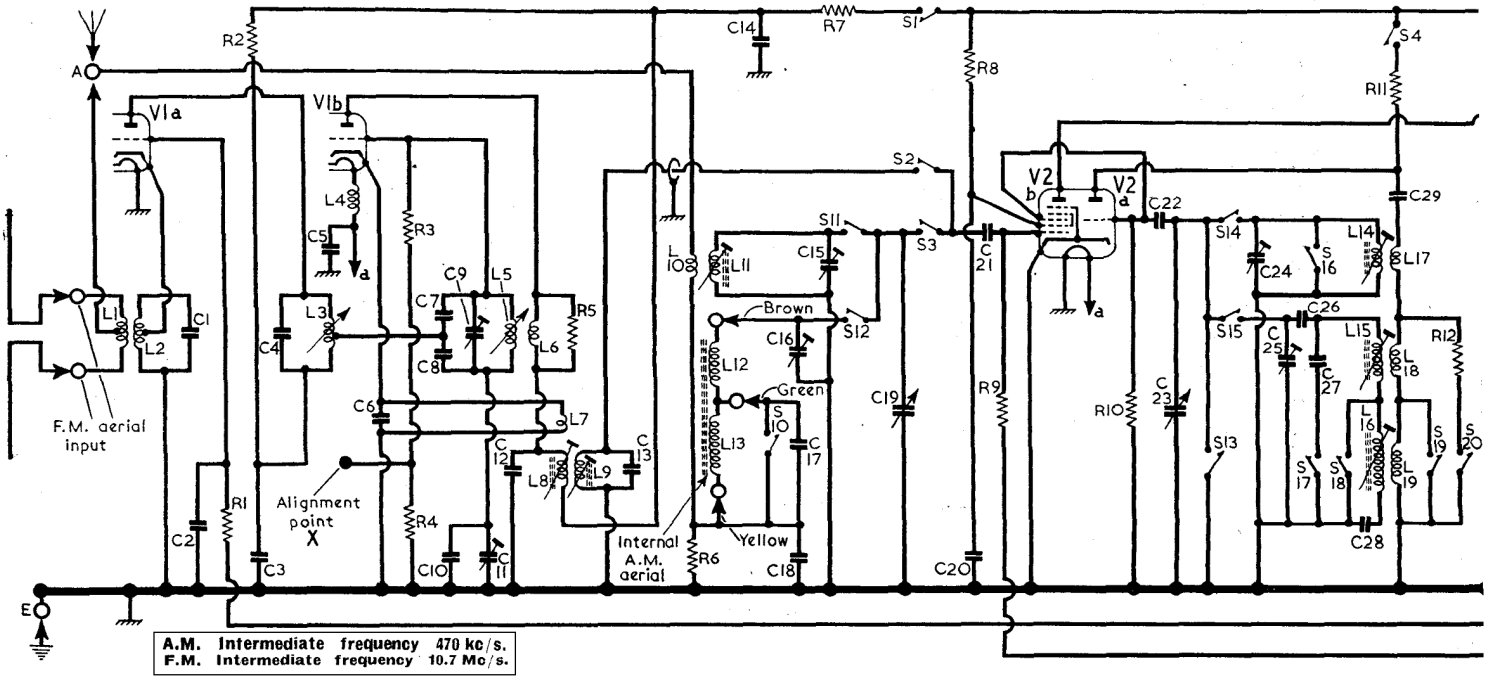

A.M. Intermediate frequency 470 kc/s.
F.M. Intermediate frequency 10.7 Mc/s.

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Switch Table

Switch	F.M.	S.W.	M.W.	L.W.
S10 ...	—	—	C	—
S11 ...	—	C	—	—
S12 ...	—	—	C	C
S13 ...	C	—	—	—
S14 ...	—	C	—	—
S15 ...	—	—	C	C
S16 ...	—	—	C	C
S17 ...	—	—	—	C
S18 ...	—	—	C	—
S19 ...	—	—	C	—
S20 ...	—	C	—	—

Valve		Anode V	Screen V	Cath. V
V1	6AQ8 a	95‡	—	—
	6AQ8 b	90‡	—	—
V2	6AJ8 a	83	—	—
	6AJ8 b	225	60	—
V3	6BY7	215	75	0·4
V4	6AK8 a-c	—	—	—
	6AK8 d	55	—	—
V5	6BQ5	260	227	7·0
V6	6V4	250*	—	270·0†

* A.C. reading, each anode. † Cathode current 60 mA (A.M.), 66 mA (F.M.). ‡ Receiver switched to F.M.

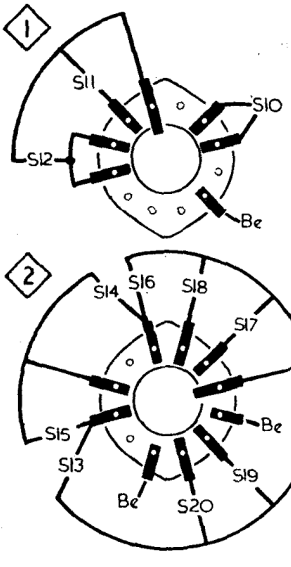
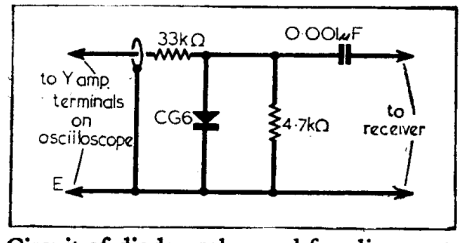


Diagram of the A.M. waveband switch units as seen from the rear of an inverted chassis.



Circuit of diode probe used for alignment. The input to it from the receiver is on the right, and the rectified output to the oscilloscope is on the left.

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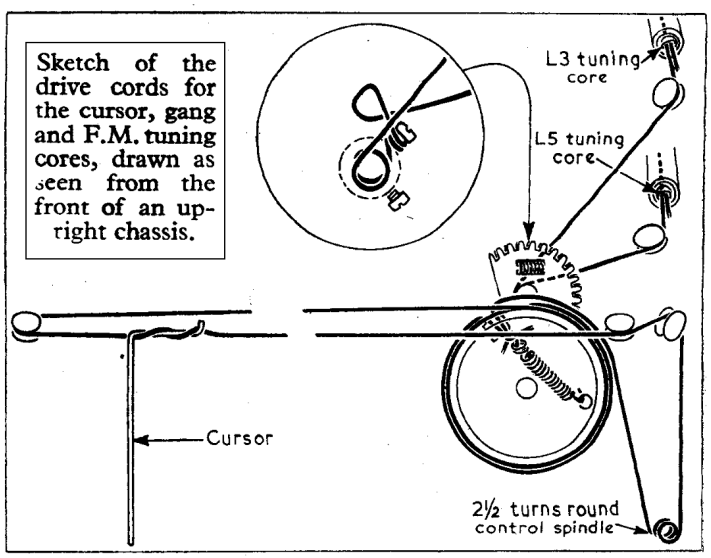
RESISTORS		Values	Locations
R1	V1a C.G.	470kΩ	H5
R2	V1a H.T. feed ...	2·2kΩ	H5
R3	V1b C.G.	47kΩ	H5
R4		10kΩ	H5
R5	F.M. osc. shunt ...	560Ω	H5
R6	A.M. aerial shunt...	1kΩ	G3
R7	H.T. feed ...	15kΩ	G4
R8	V2b S.G. feed ...	39kΩ	G4
R9	V2b C.G.	470kΩ	G4
R10	V2a osc. C.G. ...	47kΩ	F4
R11	V2a H.T. feed ...	39kΩ	G4
R12	A.M. osc. stabilizer	100Ω	G4
R13	V2b anode feed ...	2·2kΩ	F4
R14	A.M. I.F.T. shunt	470kΩ	F4
R15	F.M. Limiting ...	220kΩ	F3
R16		220kΩ	F4
R17	V3 S.G. feed ...	68kΩ	F4
R18	V3 G.B.	33Ω	F4
R19	V3 anode feed ...	2·2kΩ	F3
R20	A.M. I.F. stopper...	47kΩ	F4
R21	A.G.C. decoupling	2·2MΩ	F4
R22	Parts de-emphasis	56kΩ	F4
R23		56kΩ	E3
R24	F.M. Balancing ...	560kΩ	E4
R25	D.C. load	27kΩ	E4
R26	Volume control ...	500kΩ	D3
R27	V4d C.G.	6·8MΩ	E4
R28	V4d anode load ...	680kΩ	E4
R29	Tone control ...	500kΩ	D3
R30	V5 C.G.	470kΩ	E4
R31	V5 C.G. stopper ...	47kΩ	E4
R32	H.T. smoothing ...	2kΩ	F3
R33	V5 G.B.	180Ω	E4

CAPACITORS		Values	Locations
C1	F.M. aerial tuning	24pF	H5
C2	V1a C.G.	0·003μF	H5
C3	V1a H.T. decoup.	0·003μF	A2
C4	F.M. R.F. tune ...	4pF	H5
C5	R.F. by-pass ...	0·001μF	H5
C6	V1b cath. by-pass	82pF	H5
C7	F.M. osc. trimmers	22pF	H5
C8		22pF	H5
C9		8pF	H5
C10	F.M. osc. neut. ...	4pF	H5
C11		9pF	H5
C12	1st F.M. I.F.T.	33pF	H5
C13	tuning	22pF	H5
C14	H.T. decoupling ...	0·001μF	H5
C15	S.W. aerial trim.	—	G3
C16	M.W. aerial trim....	—	G3
C17	L.W. aerial trim. ...	47pF	G3
C18	A.M. aerial coupling	0·005μF	G3
C19	A.M. aerial tuning	—	A1
C20	V2b S.G. decoup....	0·003μF	G4
C21	V2b C.G.	0·001μF	G4
C22	V2a C.G.	47pF	G3
C23	A.M. osc. tuning...	—	A2
C24	S.W. osc. trim. ...	—	G3
C25	M.W. osc. trim. ...	—	G3
C26	M.W. osc. tracker	440pF	G4
C27	L.W. osc. trim. ...	100pF	G3
C28	L.W. osc. tracker...	492pF	G3
C29	V2a anode coup. ...	100pF	G4
C30	V2b H.T. decoup.	0·003μF	F4
C31	2nd F.M. I.F.T.	22pF	A2
C32	tuning	22pF	A2
C33	1st A.M. I.F.T.	150pF	A2
C34	tuning	220pF	A2
C35		500pF	A2
C36	A.G.C. decoupling	0·1μF	F4
C37	V3 S.G. decoup. ...	0·003μF	F4
C38	R.F. by-pass ...	0·01μF	F4
C39	V3 H.T. decoup. ...	0·003μF	F4
C40	3rd F.M. I.F.T.	8·2pF	B2
C41	tuning	51pF	B2
C42	2nd A.M. I.F.T.	150pF	B2
C43	tuning	150pF	B2
C44	A.M. I.F. by-pass...	100pF	F3
C45	F.M. A.F. load ...	180pF	E4
C46	F.M. Limiting ...	5μF	E4
C47	Part de-emphasis	0·002μF	E4
C48	A.F. coupling ...	0·01μF	D3
C49	Part tone control...	9·01μF	D3

(*Continued next col.*)

CAPACITORS (*Continued*)			
C50	A.F. coupling ...	0·01μF	E4
C51	H.T. smoothing ...	32μF	A1
C52	Tone corrector ...	0·001μF	E4
C53	V5 cath. by-pass ...	25μF	E4
C54	H.T. smoothing ...	32μF	A1

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	F.M. aerial coup. coils ...	—	H5
L2		—	H5
L3	F.M. R.F. coil ...	—	H5
L4	R.F. choke	—	H5
L5	F.M. osc. coils ...	—	H5
L6		—	H5
L7	F.M. reaction coil...	—	H5
L8	1st F.M. I.F.T. Pri.	1·0	H5
L9	Sec.	1·0	H5
L10	S.W. aerial coils ...	1·0	G3
L11		—	G3
L12	M.W. and L.W. int. aerial coils ...	0·5	—
L13		8·0	—
L14	A.M. osc. tun. coils	—	G4
L15		2·5	G4
L16		6·0	G4
L17	A.M. osc. reaction coils	0·5	G4
L18		2·5	G4
L19		4·0	G4
L20	2nd F.M. I.F.T. Pri.	1·0	A2
L21	Sec.	1·0	A2
L22	1st A.M. I.F.T. Pri.	10·5	A2
L23	Sec.	10·5	A2
L24	3rd F.M. I.F.T. Pri.	1·0	B2
L25	Sec.	0·5	B2
L26	Tert.	—	B2
L27	2nd A.M. I.F.T. Pri.	10·0	B2
L28	Sec.	10·0	B2
L29	Speech coil ...	2·5	—
T1	O.P. trans. a ...	13·0	
	b ...	300·0	B2
	c ...	0·5	
T2	Mains trans. a ...	—	
	b ...	200·0	C2
	c ...	200·0	
	d, total	38·0	
S1-S9	A.M./F.M. switches	—	F4
S10-S20	Waveband switches	—	G3



Sketch of the drive cords for the cursor, gang and F.M. tuning cores, drawn as seen from the front of an upright chassis.

CIRCUIT ALIGNMENT

Equipment Required.—A wobbulated F.M. signal generator (Cossor model 1324) with an output impedance of 70-80Ω; a diode probe, if not provided with generator, comprising a crystal diode **(B.T.-H CG6)**, two resistors (4.7kΩ and 33kΩ), and an 0.001μF capacitor, connected as shown at the foot of this column; an oscilloscope; an accurately calibrated spot-frequency signal generator; an output meter.

F.M. I.F. Stages.—Connect oscilloscope leads, via diode probe, to **V3** anode (pin 7) and chassis. Set oscilloscope gain to maximum. Connect output of **F.M.** signal generator between alignment point X (location reference **A2**) and chassis. Switch receiver to F.M. and make the following adjustments:

1.—Feed in a 10.7 Mc/s signal, deviated by ±300 kc/s, and adjust the cores of **L8** (H5), **L9** (H5), **L20** (F4) and **L21** (A2) until a response similar to curve 1 in the set of oscilloscope traces (column 6) is obtained on the oscilloscope. If difficulty is experienced in obtaining the correct response shape, the alignment of **L20, L21** should be checked as described in operation 2 below.

2.—Transfer "live" F.M. generator lead to control grid (pin 2) of **V2b.** Feeding in a 10.7 Mc/s signal, deviated by ±300 kc/s, adjust the cores of **L20** (F4) and **L21** (A2) until a response curve similar to curve 2 is obtained on the oscilloscope. Re-connect the "live" generator lead to alignment point X and adjust the cores of **L8, L9** as described in operation 1.

3.—Disconnect diode probe, and connect oscilloscope leads across the outer tags of the volume control **R26.** With signal genrator connected to alignment point X, adjust the cores of **L24** (F4) and **L25** (B2) until a response similar to curve 3 is obtained on the oscilloscope. The peaks of this response curve should be accurately balanced about the centre frequency. Slight re-adjustment of **L25** may be necessary to obtain optimum balance and linearity.

A.M. I.F. Stages.—Connect output of spot-frequency signal generator to control grid (pin 2) of **V2b** and chassis. Connect output meter to **Ext. L.S. sockets.** Switch receiver to M.W. and turn gang to its mid-position. Make the following adjustments:

4.—Feed in a 470 kc/s signal and adjust the cores of **L28** (B2), **L27** (F4), **L23** (A2) and **L22** (F4) for maximum output. Repeat these adjustments until no further improvement results.

F.M. R.F. and Oscillator Stages.—Check that with the gang at minimum capacitance, the cursor coincides with the "Max" mark at the high wavelength ends of the tuning scales, and the outer edges of the cores of **L3** and **L5** coincide with the slots cut in the ends of their respective formers. The positions of the cores may be adjusted by means of screws which pivot the drive cord pulleys. These are indicated in A1. Connect output of F.M. signal generator to F.M. aerial sockets and switch the receiver to F.M. With the oscilloscope still connected directly across the volume control, make following adjustments

5.—Tune receiver to 90 Mc/s. Feed in a 90 Mc/s signal, deviated by ±100 kc/s and adjust **C9** (H5) until a response similar to curve 4 is obtained on the oscilloscope.

6.—Feeding in a 90 Mc/s signal deviated by ±100 kc/s, adjust the core of **L3** (core adjustment in A1) for maximum amplitude response similar to curve **4.**

A.M. R.F. and Oscillator Stages.—Connect spot-frequency signal generator to A.M. **A** and **E** sockets via an all-wave dummy aerial. With the sound output meter connected across the **Ext.** L.S. sockets, make the following adjustments:

7.—Switch receiver to S.W., and tune to 18 Mc/s. Adjust **C24** (G3) and **C15** (G3) for maximum output. **C24** should be adjusted to the lower capacitance peak. Tune receiver to 6 Mc/s, feed in a 6 Mc/s signal and adjust the cores of **L14** (G4) and **L11** (G3) for maximum output. When adjusting **L14** choose the second peak obtained on screwing the core in from its fully-out position. Repeat these adjustments until no further improvement results.

8.—Switch receiver to M.W. and tune to "M" on the tuning scale at 193m. Feed in a 193m (1,554 kc/s) signal and adjust **C25** (G3) and **C16** (G3) for maximum output. **C25** should be adjusted to the lesser capacitance peak. Tune receiver to "M" on the tuning scale at 522m. Feed in a 522m (575 kc/s) signal and adjust the core of **L15** (G4) for maximum output. Adjust the inductance of **L12** for maximum output by sliding the coil along the ferrite rod. Repeat these adjustments until no further improvement results.

9.—Switch receiver to L.W. and tune to "L" on the tuning scale at 1,875m. Feed in a 1,875m (160 kc/s) signal and adjust the core of **L16** (G4) for maximum output. Adjust the inductance of **L13** for maximum output by sliding the coil along the ferrite rod.