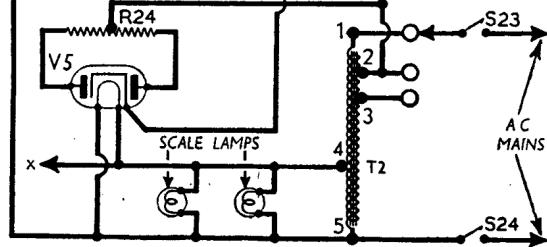


OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coils	0-1	H3
L2		137-0	J3
L3		0-1	H3
L4	Aerial tuning coils	2-6	J3
L5		26-0	J3
L6	Oscillator coupling coils	0-4	H5
L7		2-0	J5
L8	Oscillator tuning coils	0-1	H5
L9		2-6	J5
L10	Pre-set 3 coil	6-8	J5
L11		2-0	A2
L12	Pre-set 2 coil	2-5	A2
L13		5-0	A2
L14	1st I.F. transformer	10-0	B2
L15		4-4	B2
L16	2nd I.F. transformer	7-0	C2
L17		4-4	C2
L18	Speech coil	4-0	C2
L19		4-0	C2
T1	Output trans.	500-0	B1
T2		1-2	D4
T3	Mains Auto-transformer	2-3	D4
T4		3-4	D4
S1-S22	W/and switches	4-5	H4
S23		—	H4
S24	Mains switches, g'd	—	E3
S25		—	E3



Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 X147	215	1-7	94	2-0	1-5
V2 W147	107	3-8	—	—	—
V3 DH147	215	3-9	94	1-24	1-6
V4 N147	50	0-76	—	—	—
V5 U147	222	25-0	215	2-7	4-2
	230†	—	—	—	250-0

† A.C. reading.

CAPACITORS

		Values (μF)	Locations
C1	External aerial series	0-001	J5
C2	Earth isolator	0-01	J5
C3	"Top" coupling	0-000005	H4
C4	Aerial L.W. trim	0-00003	J3
C5	V1, hexode C.G.	0-0001	A1
C6	A.G.C. decoupling	0-05	F4
C7	V1 S.G. decoupling	0-05	H5
C8	1st I.F. transformer tuning	0-0001	B2
C9	V1 cath. by-pass	0-00018	B2
C10	V1 osc. C.G.	0-02	H5
C11	V1 osc. L.W. tracker	0-0001	H5
C12	Osc. L.W. tracker	0-00027	A2
C13	Osc. L.W. fixed trim.	0-0001	G3
C14	H.T. R.F. by-pass	0-05	F4
C15	Pre-set tune II	0-00035	J4
C16	Osc. anode coupling	0-0001	H5
C17	Osc. M.W. tracker	0-00059	J4
C18	V2 cath. by-pass	0-05	G5
C19	2nd I.F. transformer tuning	0-0001	C2
C20	I.F. by-pass	0-00018	C2
C21	I.F. by-pass	0-0001	E5
C22	P.U. D.C. isolating capacitors	0-01	F5
C23	H.T. smoothing capacitors	0-05	G5
C24*	H.T. smoothing	16-0	G4
C25	F.B. decoupling	0-05	F3
C26	A.F. coupling	0-01	E4
C27	F.B. capacitor	0-05	E4
C28	A.F. coupling	0-02	E5
C29	F.B. tone control	0-0005	E3
C30	Tone corrector	0-005	E4
C31*	H.T. smoothing capacitors	16-0	G4
C32*	H.T. smoothing capacitors	32-0 §	F4
C33	Mains R.F. by-pass	0-01	E5
C34†	Aerial S.W. trim.	—	A1
C35†	Aerial M.W. trim.	—	A1
C36†	Aerial L.W. trim.	—	A1
C37†	Pre-set 3 trim.	—	A2
C38†	Pre-set 2 trim.	—	A2
C39†	Pre-set 1 trim.	—	A2
C40†	Aerial tuning	—	A1
C41†	Osc. S.W. trim.	—	G4
C42†	Osc. M.W. trim.	—	B1
C43†	Osc. L.W. trim.	—	B1
C44†	Oscillator tuning	—	A1

* Electrolytic. † Variable ‡ Pre-set. § two 16μF in parallel.

RESISTORS		Values (ohms)	Locations
R1	Aerial shunt	1,000,000	J5
R2	V1 hex C.G.	680,000	B1
R3	V1, V2, S.G. H.T.	22,000	G5
R4	V1 pot. divider	47,000	H5
R5	V1 fixed G.B.	220	H5
R6	V1 osc. C.G.	33,000	H5
R7	Osc. damping	39,000	J4
R8	Osc. anode load	22,000	H5
R9	V2 fixed G.B.	330	G5
R10	A.G.C. decoupling	2,200,000	F4
R11	Signal diode load	470,000	E5
R12	I.F. stopper	100,000	F4
R13	V1 volume control	2,000,000	E3
R14	F.B. resistor	4,700	E3
R15	V3 C.G. resistor	22,000,000	E5
R16	Triode load	220,000	F5
R17	F.B. resistor	2,200	E4
R18	V4 C.G. stopper	47,000	E4
R19	Tone control	500,000	F3
R20	H.T. smoothing	1,000	G4
R21	V4 G.B.	150	B4
R22	Speaker shunt	33	B1
R23	H.T. smoothing	330	F5
R24	V5 surge limiter	*240	D5

* Centre tapped.

Switch Table and Diagrams

Switch	S.W.	M.W.	L.W.	3	2	1
S1	C	—	—	—	—	—
S2	C	—	—	—	—	—
S3	—	C	—	C	C	—
S4	—	C	—	—	—	C
S5	—	—	C	C	—	C
S6	—	—	—	—	C	—
S7	—	—	—	—	C	—
S8	—	—	—	—	C	C
S9	C	C	C	—	C	C
S10	C	—	—	—	C	C
S11	C	—	—	—	C	C
S12	C	C	—	C	C	C
S13	C	—	—	—	—	C
S14	—	C	—	—	—	—
S15	—	—	C	—	—	—
S16	—	—	—	C	—	—
S17	—	—	—	—	C	—
S18	—	—	—	—	C	C
S19	C	C	C	C	C	C
S20	—	—	—	—	—	—
S21	C	—	—	—	—	—
S22	—	C	C	—	—	—

CIRCUIT ALIGNMENT

These operations may be carried out with the chassis in the cabinet if the bottom cover is removed to give access to the trimmers. It may, however, be found more convenient to remove the chassis from its cabinet where a complete re-alignment is necessary. For this purpose an alignment scale is printed on the outer face of the cursor drive drum. It is calibrated in frequency, and readings are taken against a wire pointer as shown in our plan view of the chassis.

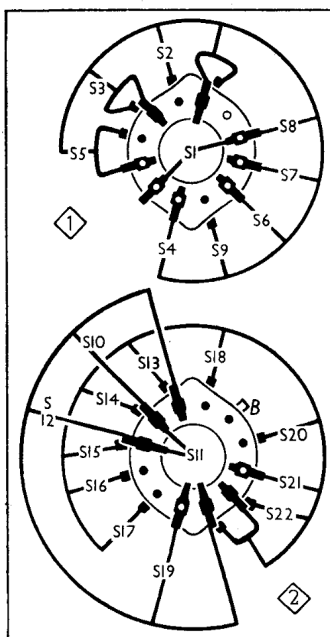
I.F. Stages.—Switch set to M.W., turn volume control and gang to maximum, connect signal generator (via a $0.01\mu\text{F}$ capacitor in the "live" lead) to control grid (top cap) of **V2** and the **E** socket. Feed in a 465 kc/s (645.16 m) signal, and adjust the cores of **L17** (location reference C2) and **L16** (C2) for maximum output. Transfer "live" signal generator lead to control grid (top cap) of **V1**, feed in a 465 kc/s signal, and adjust the cores of **L15** (B2) and **L14** (B2) for maximum output.

R.F. and Oscillator Stages.—Transfer "live" signal generator lead to **A** socket via a suitable dummy aerial. The alignment pointer should coincide with the black line on the drum (opposite to the one with waveband markings) at maximum capacitance of the gang. The pointer may be adjusted in position by slackening its retaining nut on the end of the gang, while the drum may be adjusted upon slackening its two boss screws. At maximum capacitance of the gang, the cursor should coincide with the high wavelength ends of the tuning scales with the receiver in its cabinet. The cursor may be adjusted by sliding the carriage along the drive cord.

S.W.—Switch set to S.W., and unscrew **C41** (G4) to its minimum capacitance. Tune to 18 Mc/s on scale, feed in an 18 Mc/s (16.7 m) signal and adjust **C41**, then **C34** (H3) for maximum output.

M.W.—Switch set to M.W., tune to 230 m on scale, feed in a 230 m (1,300 kc/s) signal and adjust **C42** (G4), then **C35** (J3) for maximum output.

L.W.—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal and adjust **C43** (G4), then **C36** (J3) for maximum output.



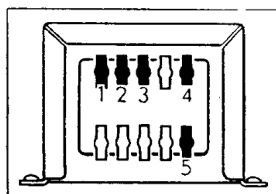
Diagrams of the waveband switch units (above) drawn as seen from the rear of an inverted chassis. In several cases front and back tags are strapped together. On the left is the associated table.

Pre-set Stations

Position 1.—This will normally be set to receive the B.B.C. L.W. station on 1,500 m. Feed in a 1,500 m (200 kc/s) signal and adjust (with the special trimming tool provided) **L13** (A2) and **C39** (A2) for maximum output. This pre-set position has a waveband range of 1,250-2,000 m.

Position 2.—The range of this channel is 330-560 m. Using the trimming tool provided, adjust **L12** (A.2) and **C38** (A2) for maximum output while receiving the desired transmission.

Position 3.—The range of this channel is 200-342 m. Using the trimming tool provided, adjust **L11** (A2) and **C37** (A2) for maximum output while receiving the desired transmission.



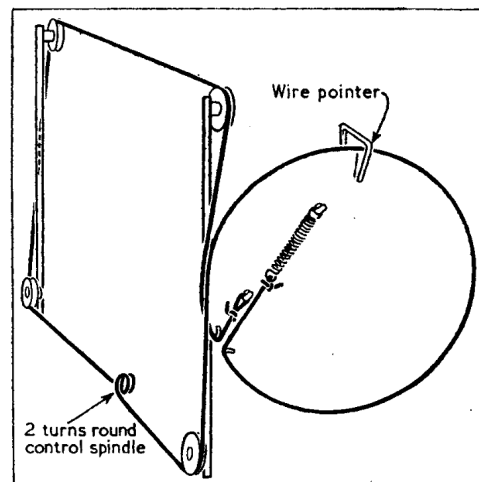
This sketch identifies the five connections to the mains transformer, numbered in the circuit diagram.

DRIVE CORD REPLACEMENT

About six feet of fine quality plaited flax twine is required for the tuning drive cord. The course it follows is shown clearly in the sketch below, where the drive system is drawn as seen when the chassis is viewed from the front right-hand corner, taking a three-quarter view of the end of the chassis which carries the drive drum, with the gang at minimum.

First check that the wire pointer coincides with the vertical calibration line on the drum when the gang is at maximum. Then tie a loop in one end of the cord, making a non-slip knot, pass the end of the cord through the hole in the drum groove, slip the loop over the nearer anchor, and turn the gang to minimum capacitance. Run the cord upwards over the upper pulley near the drum, then follow the sketch, pulling the gang against its stop at minimum to prevent the cord from slipping off its pulleys.

Make two complete turns in an anti-clockwise direction round the control spindle, and finally tie off to the tension spring so that the spring opens out to about twice its relaxed length when hooked onto its anchor.



Three-quarter end-view sketch of the drive cord system as seen from the drum end of the chassis.

MARCONIPHONE T21A