

CAPACITORS		Values	Locations
C1	Part I.F. filter tune	180pF	K6
C2	M.W. coupling ...	470pF	K6
C3	L.W. coupling ...	0.003μF	K6
C4	Aerial L.W. trimmer	25pF	K6
C5	V1 C.G. coupling	470pF	A1
C6	1st I.F. trans.	120pF	B2
C7	former tuning	120pF	B2
C8	V1 cath. by-pass	0.05μF	H5
C9	V1 osc. C.G. coupling	270pF	L6
C10	Osc. S.W. tracker	0.005μF	L6
C11	Osc. M.W. tracker	500pF	L6
C12	Osc. L.W. tracker	120pF	L6
C13	A.G.C. line decoupling	0.05μF	G4
C14	Osc. L.W. trimmer	68pF	L6
C15	Osc. anode coupling	0.01μF	H4
C16	H.T. feed de-coupling	0.05μF	H4
C17	coupling	0.05μF	H4
C18	2nd I.F. trans.	120pF	B1
C19	former tuning	120pF	B1
C20	V2 cath. by-pass	0.05μF	G5
C21	L.F. by-pass ...	100pF	G4
C22*	V3 cath. by-pass ...	50μF	G4
C23	A.F. coupling ...	0.01μF	E3
C24	A.G.C. diode coup.	10pF	G4
C25	Tone corrector ...	0.005μF	F4
C26	Part tone control	27pF	E3
C27*	H.T. smoothing	16μF	F3
C28*	capacitors	24μF	C1
C29*		16μF	C1
C30†	I.F. filter tuning ...	50pF	J4
C31†	Aerial S.W. trim	50pF	J4
C32†	Aerial M.W. trim	50pF	J4
C33†	Image rejector	—	J3
C34†	Aerial L.W. trimmer	50pF	J3
C35†	Aerial tuning	494pF§	A1
C36†	Osc. M.W. tracker	50pF	J4
C37†	Osc. L.W. tracker	50pF	J3
C38†	Osc. S.W. trimmer	40pF	J5
C39†	Osc. M.W. trimmer	50pF	J4
C40†	Osc. L.W. trimmer	50pF	J4
C41†	Oscillator tuning	494pF§	A2

* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, minimum to maximum.
|| Made up of 0.002μF and 0.003μF connected in parallel.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 6C9 ...	{ 220 oscillator 90	{ 3.5 5.0	94	6.4	2.9
V2 6F15 ...	222	6.0	94	1.7	2.3
V3	236	33.0	222	6.2	8.8
V4 45DD ...	270†	—	—	—	296.0

† Each anode, A.C.

RESISTORS		Values	Locations
R1	L.W. coupling ...	12kΩ	K6
R2	V1 S.G. stopper ...	68Ω	H4
R3	V1 hex. C.G. ...	470kΩ	H5
R4	V1 fixed G.B. ...	220Ω	H5
R5	P.U. shunt	100kΩ	L6
R6	Oscillator reaction stabilisers	150Ω	L6
R7		1kΩ	L6
R8		2.7kΩ	L6
R9	V1 osc. C.G. ...	47kΩ	L6
R10	V1 osc. H.T. feed	27kΩ	H4
R11	V1 H.T. feed ...	300Ω	H4
R12	S.G.'s H.T. feed ...	18kΩ	G4
R13	V2 fixed G.B. ...	300Ω	G5
R14	A.G.C. line decoupling	1MΩ	G4
R15	P.U. isolator	47kΩ	G4
R16	Volume control	1MΩ	E3
R17	F-B isolator	100kΩ	E3
R18	Tone control	1MΩ	E4
R19	Grid stopper	47kΩ	C1
R20	V3 G.B. and	180Ω	G4
R21	A.G.C. delay	56Ω	F4
R22	A.G.C. diode load	470kΩ	F4
R23	H.T. smoothing resistors	700Ω	D1
R24		1kΩ	D1
R25		5Ω*	F3

* Made up of two 10Ω resistors in parallel.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	I.F. filter coil ...	8.0	K6
L2	Aerial coupling coils	—	K6
L3		1.8	K6
L4		—	K6
L5	Aerial S.W. tuning	2.4	K6
L6	Aerial M.W. tuning	32.0	K6
L7	Aerial L.W. tuning	—	K6
L8	Oscillator reaction coils	1.0	L6
L9		4.5	L6
L10		—	L6
L11	Osc. S.W. tuning...	3.5	L6
L12	Osc. M.W. tuning...	8.0	L6
L13	Osc. L.W. tuning...	7.5	B2
L14	1st I.F. trans. { Pri.	7.5	B2
L15	Sec.	7.5	B1
L16	2nd I.F. trans. { Pri.	7.5	B1
L17	Sec.	2.6	B1
T1	Speech coil	500.0	H3
T2	Output trans. { Pri.	0.2	—
	Sec.	30.0	—
	Pri., total H.T. sec., total	350.0	D2
	4v. htr. sec.	Very low	—
	5.3 v. htr. sec.	Very low	—
S1-S16	Waveband switches	—	K6
	P.U. jack-switch	—	H5
	Mains sw., g'd R16	—	E3

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W., and turn the gang and volume control to maximum. Connect signal generator via a 0.1 μ F capacitor to the fixed-vane tag of **C35** (A1) and chassis, feed in a 470 kc/s (638.3 m) signal, and adjust **L16**, **L15**, **L14** and **L13** cores (location references B1 and B2) for maximum output, keeping the input signal low enough to avoid A.G.C. action.

I.F. Filter.—Transfer signal generator leads to A and E sockets, via M.W. dummy aerial (0.0002 μ F capacitor). Feed in a strong 470 kc/s signal, and adjust **C30** for minimum output.

R.F. and Oscillator Stages.—With the gang at maximum capacitance, the cursor should cover the short vertical line at the high wavelength end of the scale backing plate, actually on the cursor guide rail.

As the scale panel is mounted in the cabinet and the chassis must be removed for alignment, the scale backing plate carries a number of calibration marks, in the form of dots.

In early chassis (see "Chassis Divergencies"), these marks consisted of six dots numbered 1-6 and three more marked "L," "L" and "H" for the Light Programme on 262 m and 1,500 m and the Home Service on 341 m respectively.

In later models, with the later-type gang, these markings were changed altogether. The calibration points at the ends of the scales were repeated at the same frequencies, but they bore different numbers (4, 7, 1, 6, 9, 3 instead of 1-6) and the station programme positions, which were rendered obsolete by the Copenhagen Plan, were replaced by alignment check points at 30 m (No. 2), 300 m (No. 5) and 1,500 m (No. 8).

In the following instructions, both numbers will be quoted for each frequency where two are involved, the earlier type mark being quoted first. All the adjustments will be found in the tuning assembly, and they are indicated in location references J3, J4 and J5 in our under-chassis view.

M.W.—With the set still switched to M.W., tune to 200 m (mark 1 or 4 on backing plate), feed in a 200 m (1,500 kc/s) signal, and adjust **C39**, then **C32**, for maximum output. Tune to 500 m (mark 4 or 6), feed in a 500 m (600 kc/s) signal, and adjust **C36** for maximum output while rocking the gang for optimum results. In later type receivers, check calibration at 300 m (1,000 kc/s) (Mark 5).

L.W.—Switch set to L.W., tune to 1,000 m (Mark 2 or 7), feed in a 1,000 m (300 kc/s) signal, and adjust **C40**, then **C34**, for maximum output. Tune to 2,000 m (Mark 5 or 9), feed in a 2,000 m (150 kc/s) signal, and adjust **C37** for maximum output while rocking the gang for optimum results. In later type receivers, check calibration at 1,500 m (200 kc/s) (mark 8).

S.W.—Switch set to S.W., and replace dummy aerial with a 400 Ω resistor. Tune to 20 m (mark 3 or 1), feed in a 20 m (15 Mc/s) signal, and adjust **C38**, then **C31**, for maximum output. Tune to 50 m (mark 6 or 3), feed in a 50 m (6 Mc/s) signal, and check calibration. In later type receivers, calibration should also be checked at 30 m (10 Mc/s) (mark 2).

Image Rejector.—When the receiver was designed, the Light Programme on 261 m was liable in areas of high field strength to produce an image on the L.W. band at about 209 kc/s, where it caused a whistle to appear with the L.W. Light Programme. **C33** was then adjusted while a strong 1,149 kc/s (261 m) signal was being fed into the receiver, which was tuned to the image, for minimum output.

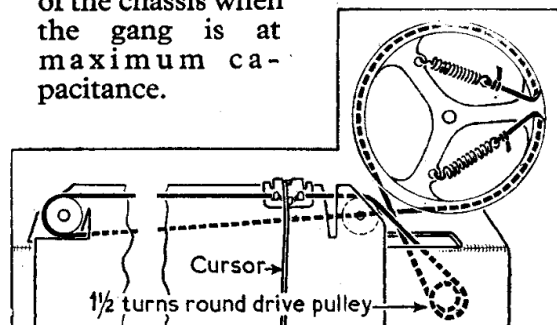
As the Copenhagen has since moved the transmitter to 247 m, the image no longer troubles the L.W. Light Programme, but in some areas it may be troublesome at about 274 kc/s (1,095 m), in which case it would be suppressed by adjusting **C33** while feeding in a strong 1,214 kc/s (247 m) signal and receiving the image on L.W. **C33** should be adjusted for minimum output by sliding the sleeving along the central wire, then sealed with varnish.

DRIVE CORD REPLACEMENT

Four feet of Nylon braided glass yarn is required for a new drive cord, which should be run as shown in the sketch below, where the system is drawn as seen from the front when the gang is at maximum capacitance.

Starting in this position, tie a spring to one end of the cord and hook it on to the lower anchorage. Then run the cord as shown, pulling against the gang stop to hold the cord in position. When tying off, the springs should be extended to about $1\frac{1}{2}$ times their relaxed length. The overall length of our cord, including the knots, was $43\frac{1}{2}$ inches.

Sketch showing the tuning drive system, drawn as seen from the front of the chassis when the gang is at maximum capacitance.



Switch Table and Diagrams

Switch	Gram	S.W.	M.W.	L.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	—
S15	—	—	—	C
S16	C	—	—	—

Diagrams of the two wave band switch units drawn as seen in the directions of the two arrows in our illustrations of the tuning assembly (above) and chassis underside. The associated table is above.

