

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Optional frame aerial ...	18-0	—
L2	I.F. filter tune ...	15-0	A2
L3	Aerial coupling coils ...	—	A2
L4		18-0	A2
L5		41-0	A2
L6		—	A2
L7	Aerial tuning coils	4-0	A2
L8		28-0	A2
L9	Osc. tuning coils	—	G3
L10		2-7	H4
L11		6-0	H4
L12		—	G3
L13	Osc. reaction coils	1-7	H4
L14		1-0	H4
L15	1st I.F. trans. { Pri. ...	33-0	A2
L16		Sec. ...	A2
L17	2nd I.F. trans. { Pri. ...	15-0	B2
L18		Sec. ...	B2
L19	Smoother choke	350-0	C2
L20	Speech coil ...	3-0	—
T1	Output trans. { Pri. (total) ...	350-0	E4
		Sec. ...	E4
		40-0	—
T2	Mains trans. { Sec. 1-3 ...	0-3	B2
		Sec. 4-5 ...	28-0
		Sec. 5-6 ...	72-0
S1-S13	W/band switches ...	—	H3
S14	Int. spk'r. sw. ...	—	F5
S15	A104 mains sw. g'd R13 ...	—	E3
S16, S17	U109 mains sw's. g'd R13 ...	—	E3

**DISMANTLING THE SET**

**Removing Chassis.**—Pull off the four control knobs (spring fitting); remove the back cover and unplug the frame aerial leads; remove two wood screws holding the chassis fixing bolt covers in place (model U109 only); remove the four chassis fixing bolts (with one convex washer each); remove two wood screws from the scale support brackets. The chassis may now be withdrawn to the extent of the speaker leads, which are of ample length for most purposes. To free the chassis entirely, unsolder the speaker leads from the speech coil tag board. When replacing, the long speaker leads should be coiled round the speaker magnet; an elastic band will hold them in place.

**Removing Speaker.**—Remove four wood screws and lift speaker out. When replacing, the connecting tags should be at the right of the magnet when viewed from the rear.

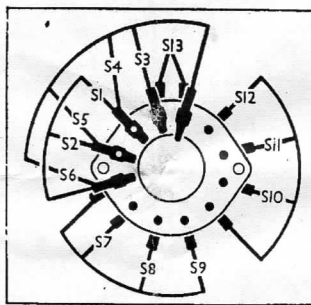


Diagram of the waveband switch unit (above). Below is the associated switch table.

Switch	S.W.	M.W.	L.W.	Gram.
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

**GENERAL NOTES**

**Switches.**—S1-S12 are the waveband switches, and S13 the pick-up switch, ganged in a single 4-position rotary unit beneath the chassis. The unit is indicated in our under-chassis view, and shown in detail in the diagram above, where it is drawn as seen when viewed from the rear of an inverted chassis. The table above gives the switch positions for the four control settings, starting from the fully anti-clockwise position

of the control knob. A dash indicates open, and C, closed.

S14 is a thumb-screw operated speaker muting switch, mounted on the panel carrying the external speaker and pick-up sockets. It opens when the knob is unscrewed.

S15 is the Q.M.B. mains switch in the A.C. receiver, ganged with the manual volume control. In the A.C./D.C. receiver it is replaced by the double-pole switch unit S16, S17.

**Coils.**—L1 is the frame winding, mounted on the back cover of the receiver and terminated by two standard plugs. To bring the frame aerial into use, the plugs are inserted in the A and E sockets.

The oscillator circuit M.W. coils are provided with an adjustable brass core, as indicated in our under-chassis view, a hole being drilled in the rear chassis member to give access to the adjusting head.

**Scale Lamps.**—In the A.C. model, these are two Osram M.E.S. types, with small spherical frosted bulbs, rated at 6.5 V, 0.3 A. In the A.C./D.C. model they are rated at 6.2 V, 0.3 A and have large clear spherical bulbs, and they are shunted by the Brimistor.

**External Speaker.**—Two sockets are provided at the rear of the chassis for the connection of a low impedance (about 3Ω) external speaker. Switch S14, which is associated with these sockets, permits the internal speaker to be muted.

**A.C./D.C. Modifications.**—The standard chassis for the A104/U109 series is so designed that it can easily become either model. The principal differences lie in the mains input circuit, where the mains transformer T2 of the A.C. model is replaced by the ballast resistor R27 of the A.C./D.C. model.

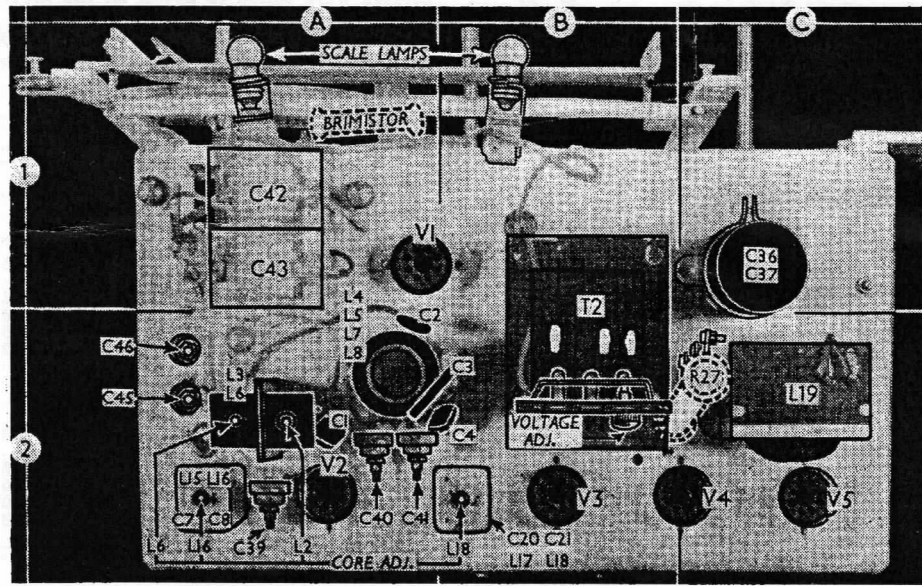
Our circuit diagram is based on the A.C. model, so it is drawn with T2 in circuit. The input circuit for the A.C./D.C. version is inset beneath the main diagram, just to the left of that for the A.C. version. The change-over is simplified by the use of the same range of valves in both versions. These are connected in series in each case, but their sequence is different. Owing to the use of a Brimistor, too, the rating of the scale lamps, which it shunts, is slightly different.

Small differences occur elsewhere, but they are concerned with the isolation of vulnerable points from the mains. C47, C48 are inserted in the aerial and earth leads, and C49, C50 are inserted in the pick-up leads. The speech coil circuit, which goes to chassis in the A.C. model, is returned directly to the E socket.

**CIRCUIT ALIGNMENT**

**I.F. Stages.**—Switch set to M.W. and turn the gang and volume control to maximum. Connect signal generator leads via a 0.1 μF capacitor to control grid (pin 6) of V1 and chassis (via a second 0.1 μF capacitor in the A.C./D.C. version), feed in 460 kc/s (652.1 m) signal, and adjust L18, L17, L16 and L15 (location references B2, G5, A2, H5) in that order for maximum output, reducing the input as the circuits come into line.

Transfer signal generator leads, via a suitable dummy aerial, to A and E



Plan view of the chassis. R27 (shown in broken line) replaces T2 in the A.C./D.C. version.