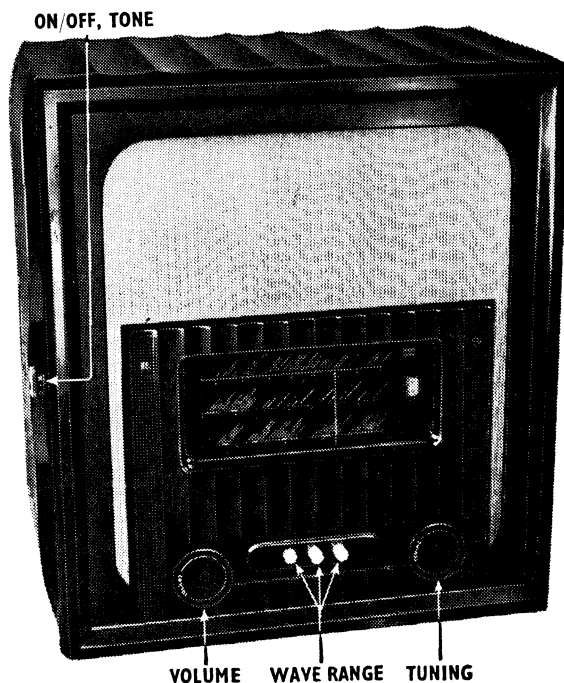


B95 & B97

B95 & B97

MURPHY RADIO SERVICE INSTRUCTIONS



BATTERY SUPPLY:	Accumulator, 2 volt ($3\frac{1}{2}'' \times 5\frac{1}{2}'' \times 7\frac{1}{2}''$ high) H.T. battery, 120 volt ($10'' \times 7\frac{3}{8}'' \times 3''$)
WAVE RANGES:	B95: S1 (14-26 m): S2 (31-85 m): M (190-550 m) B97: S (16.7-50 m): M (190-550 m): L (970-2,000 m)
INTERMEDIATE FREQUENCY:	465 Kc/s.
VALVES:	Mazda TP25, VP23, HL23DD, QP25 (B95), PEN25 (B97)
PILOT LAMP:	3.5 volt, 0.15 amp.
SPEECH COIL IMPEDANCE:	3 ohms.
CABINET DIMENSIONS:	$9\frac{1}{2}'' \times 15\frac{1}{4}'' \times 17''$
CONSUMPTION:	H.T.: 10 MA approx. L.T.: 0.45 amps approx.

Issued by

**MURPHY RADIO LTD • WELWYN GARDEN CITY
HERTS • ENGLAND**

TEL: WELWYN GARDEN 800

AERIAL FILTERS

In receivers operating close to transmitters, an aerial filter, as supplied by Murphy Radio, may be necessary if tuneable whistles occur on stations. The actual area affected is usually within a radius of three to four miles of the transmitter, though it may be modified by such local conditions as the nature of the country, the transmitter aerial power, and the type of receiving aerial in use. The object of the filter is to reduce the interfering signal to the receiver and it may be a single or double unit according to the number of local

stations. It plugs into the sockets on the chassis deck above the aerial socket. The brass link joining the sockets should be cut before fitting the filter.

In order to adjust the filter when fitted, connect an output meter to the Ext. L.S. sockets, and a Service Signal Generator through a "dummy aerial", to the Aerial Socket. Set the Signal Generator carefully to the same frequency as the local transmitter and adjust the coil core for minimum output. If the filter is a double unit the same procedure must be followed for each section.

MECHANICAL DETAILS

DISMANTLING

The moulded escutcheon plate over the tuning scale and controls can be removed by unscrewing the four fixing screws after the tuning and volume control knobs have been removed. This gives access to some of the trimming screws for the R.F. and Osc. circuits. The chassis is secured by four fixing bolts in the base of the cabinet.

Although the leads to the loudspeaker are long enough to allow the chassis to be withdrawn, complete freedom of movement of the chassis can be achieved by unplugging the loudspeaker from the socket on the output transformer and releasing the tone control switch from the slotted bracket in the cabinet by unscrewing the fixing nuts. A temporary mounting for the tone control is provided underneath the chassis.

The chassis is made up of a front panel and a base, which can easily be separated for test purposes by removing the four fixing screws in the front, and removing the few connecting wires.

There is a protective plate over the aerial coils which can be removed by taking out the fixing screws. In replacing the plate see that the spring wire which interlaces the coil adjusting screws is replaced.

In replacing faulty components, the system of numbering employed in the circuit and layout drawings provides an almost complete guide for wiring. In the case of earthing wires, however, it

is important that the correct earthing points should be used.

THE MAIN TUNING DRIVE

The main tuning drive is most easily fitted when the variable capacitor is fully in mesh. The drive drum should then be in the position shown on the top view of the chassis. The procedure for fitting is as follows:

1. Take approximately 30 inches of light gauge drive cord (light gauge plaited and waxed Italian hemp, as supplied by Murphy Radio Ltd).

2. Anchor one end temporarily to the "buffer" bracket beside the ganged capacitor drum.

3. Take the other end round the pulley assembly and tuning drum as indicated in the diagram.

4. Push both ends of the cord through the hole in the drum. (This drive runs in the front groove in the drum).

5. Tie the ends on to the tension spring so that the end of the spring is about half an inch from the inside edge of the drum.

6. Ease the other end of the spring over the fixing lug in the drum with the aid of a small screwdriver.

7. Cut off the surplus cord.

8. Fit the pointer on to the cord and ease it along until it registers with the right-hand ends of the tuning scales.

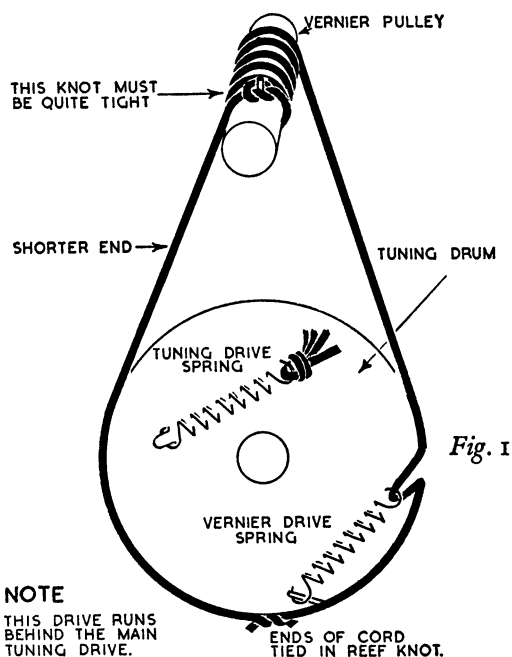
THE VERNIER DRIVE (CHAIN)

Most B95 and B97 receivers are fitted with a chain drive for the vernier scale. The fitting procedure for this is as follows:

1. Fit one end of the chain on to the lug in the side of the tuning drum.
2. Take the chain over the vernier sprocket, round the tuning drum, and through the hole in the side.
3. Attach the tension spring and fit the other end of the spring over the fixing lug on the inside edge of the drum with the aid of a small screw-driver.

THE VERNIER DRIVE (CORD)

Some receivers are fitted with a cord vernier drive and the following instructions will then apply.



The vernier cord drive runs in the second groove in the drum (behind the main tuning drive) and is most easily fitted when the drive is turned fully anti-clockwise (capacitor vanes fully out of mesh). The procedure for fitting a new cord is as follows:

1. Take approximately 30 inches of light drive cord; tie a loose single knot in it about two thirds of the way from the end.
2. Set the tuning drive fully anti-clockwise (variable capacitor fully out of mesh).

3. With the shorter end of cord to the left and the longer end to the right (looking from the front of the chassis) fit the knot over the locating pin in the vernier pulley and pull it tight (so that the cord is attached quite securely to the pin).

4. Pass the left-hand (shorter) end of the cord through the left-hand hole in the front panel, behind the main tuning drive cord and hold it against the tuning drum.

5. Wind the right-hand (longer) end of cord five times round the vernier pulley (clockwise, as viewed from the front with the turns behind the pin and running towards the back of the pulley) through the right-hand hole in the front panel; then tie it to the other end of the cord in a reef knot so that it is held loosely around the drum. This operation is most easily carried out with the chassis front panel turned uppermost.

6. Cut off the surplus cord.

7. Pass the end of the tension spring through the hole in the drum (from the inside). Hook it on to the cord and ease the other end of the spring on to the fixing lug with the aid of a small screw-driver.

NOTES

In some B97 receivers R26 was 220Ω. For economical operation this should be changed to 330Ω.

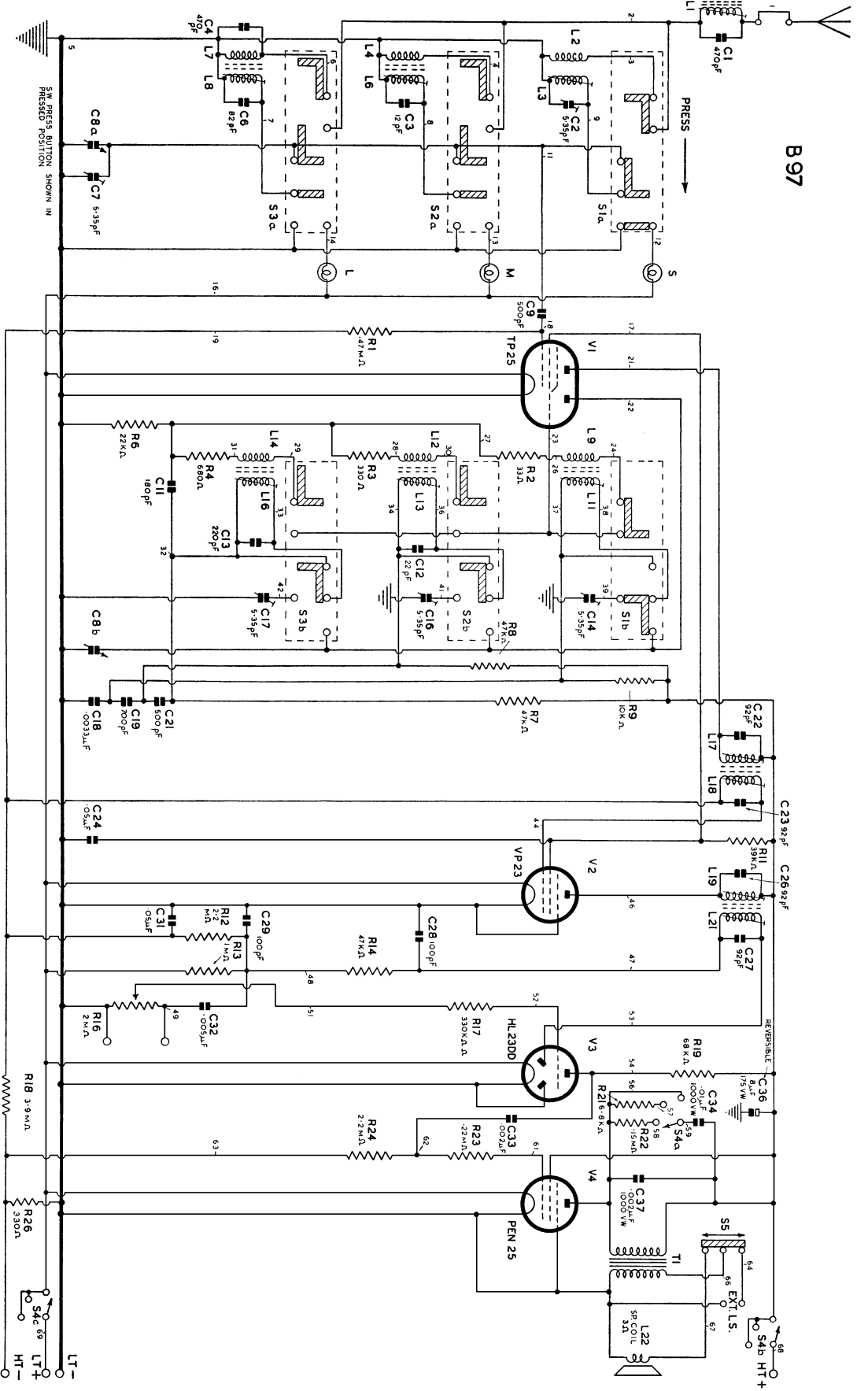
In some receivers C7 is mounted on the ganged capacitor.

Intermittent operation of the B97 oscillator circuit has sometimes been found to originate in an intermittent short between windings on the oscillator coil, and also to the 180 pf. capacitor (C11) becoming "leaky."

B97 OSCILLATOR GRID CURRENT		
S.W.	50 m	·07 M/A
	17 m	·04 „
M.W.	550 m	·08 „
	200 m	·075 „
L.W.	2,000 m	·105 „
	1,000 m	·24 „

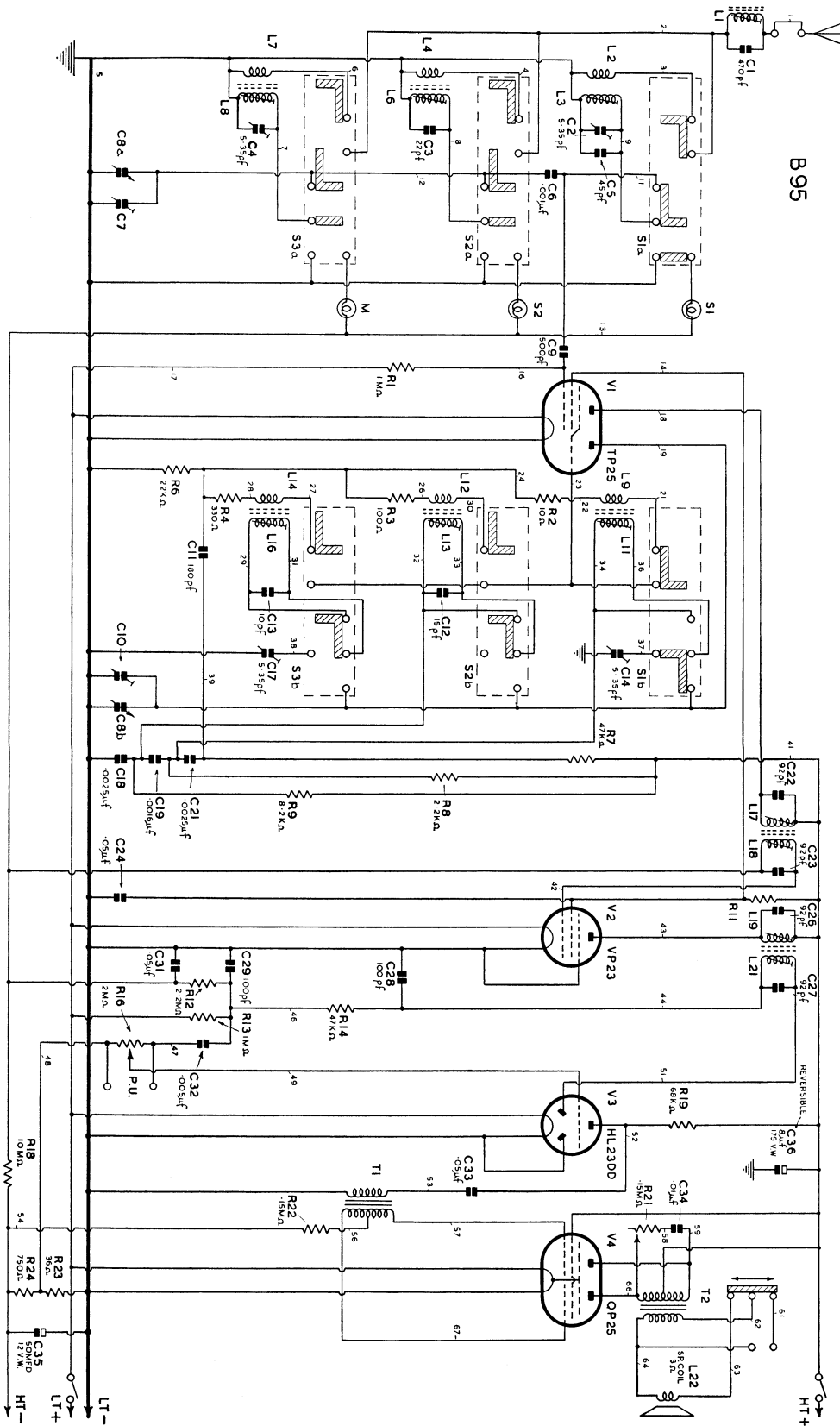
NOTE: Maximum reading at centre of each band. Certain variations may be noted on different receivers.

B97



COIL RESISTANCES

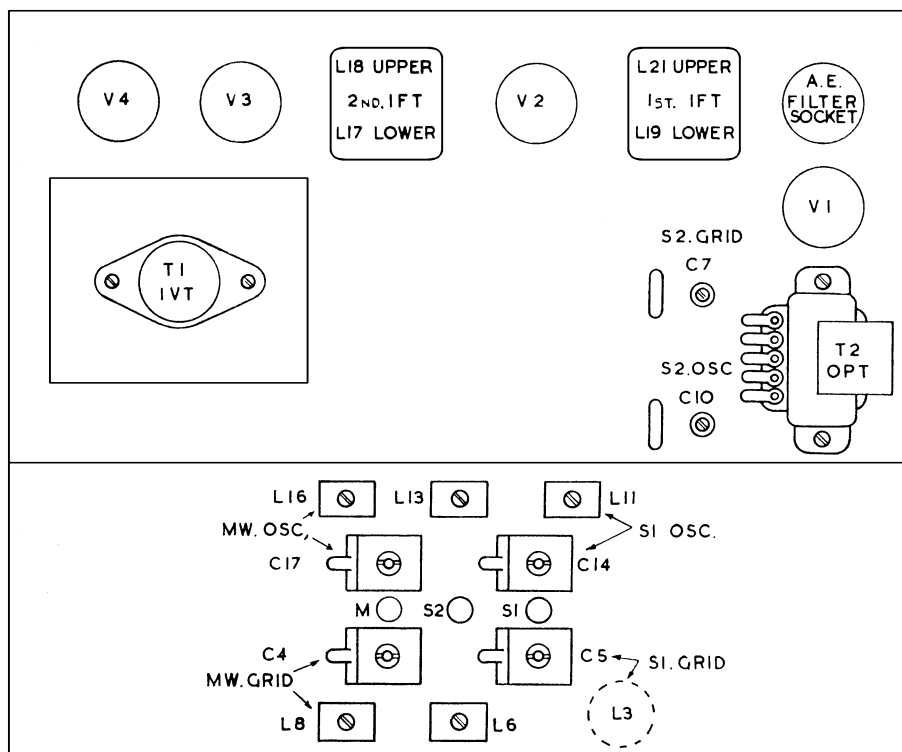
COILS	L1	L2	L3	L4	L6	L7	L8	L9	L11	L12	L13	L14	L16	L17	L18	L19	L21	T1 Prim.	T1 Sec.
OHMS	2.5	—	—	1	2.5	23	37	—	—	—	1	1.5	1.5	6.5	6.5	6.5	6.5	670	—



B95 TRIMMING INSTRUCTIONS

Align I.F. circuits, I.F. rejector and follow general procedure as for B97. Repeat following adjustments until there is no further improvement. The diagram shows the positions of the variable inductances and trimmers.

CIRCUIT	TRIMMING FREQUENCY	DIAL SETTING	ADJUSTMENTS
S2	80 m (3.75 Mc/s) 36 m (8.333 Mc/s)	80 m 36 m	S2 Osc. coil (L13) S2 Grid coil (L6) S2 Osc. trimmer (C10) S2 Grid trimmer (C7) NOTE: C10 and C7 are on gang.
S1	25 m (12 Mc/s) 15 m (20 Mc/s)	25 m 15 m	S1 Osc. coil (L11) S1 Grid coil (L3) (Move adjustable loop in coil with non-metallic object for maximum gain) S1 Osc. trimmer (C14) S1 Grid trimmer (C2)
M.W.	500 m (600 Kc/s) 220 m (1,363 Kc/s)	500 m 220 m	M.W. Osc. coil (L16) M.W. Grid coil (L8) M.W. Osc. trimmer (C17) M.W. Grid trimmer (C4)

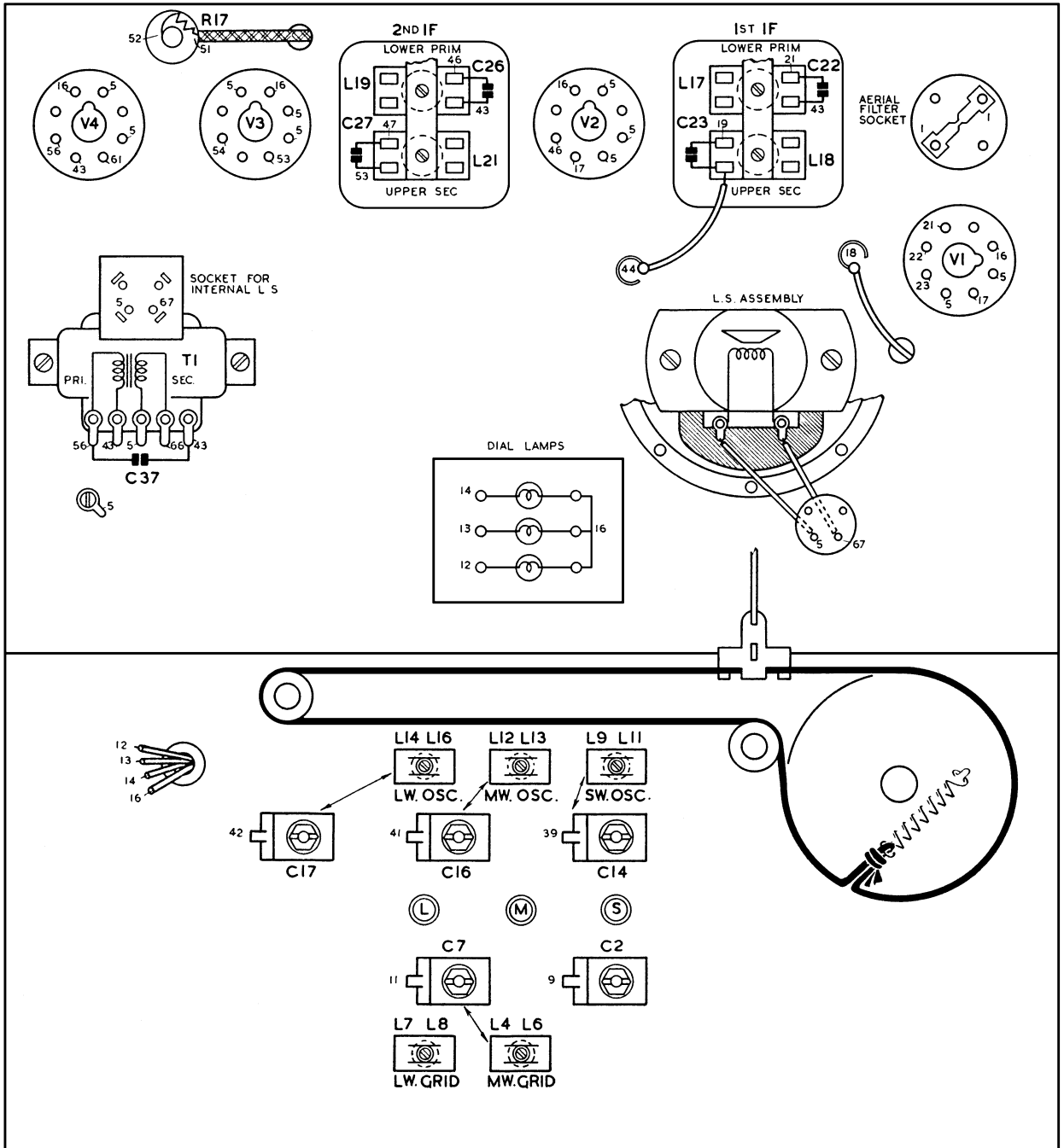


B95 TOP VIEW. SHOWING PRINCIPLE COMPONENT & TRIMMER POSITIONS.

NOTE ABOUT B95 RECEIVER

The B95 chassis is basically similar to the B97 and though a trimming diagram only is given, no difficulty should be experienced in following the circuit arrangements. The mechanical and other details as given for the B97 in most cases also apply to the B95.

R			17															
C		37					27		26			23		22				
L							19 21 14 16 7 8		12 13 4 6			17 18						
MISC	V4		T1	V3						V2								V1



B97 TOP VIEW

B97 TRIMMING INSTRUCTIONS

All adjustments are made for maximum reading on an output meter connected to Ext. L.S. sockets, with V/C at maximum and the Service Signal Generator output adjusted to produce the lowest convenient meter reading. Before starting R.F. adjustments see that the tuning pointer is over the vertical lines at the L.F. ends of the bands when the ganged capacitor is at maximum capacitance.

CIRCUITS	NOTES	SERVICE SIG. GEN. SETTING	SERVICE SIG. GEN. TERMIN'TN	CONNECT SIG. GEN. TO	RECEIVER DIAL SETTING	RECEIVER RANGE	ADJUSTMENTS
I.F.	Unscrew 2nd I.F. Pri. and Sec. cores to fullest extent	465 Kc/s (645 m)	Direct via .1 mfd.	V2 Control Grid	550 m	M.W.	2nd I.F. Pri. (L 19) 2nd I.F. Sec. (L 21) Do not re-adjust
	Unscrew 1st I.F. Pri. and Sec. cores to fullest extent	465 Kc/s (645 m)	Direct via .1 mfd.	V1 Control Grid	550 m	M.W.	1st I.F. Pri. (L 17) 1st I.F. Sec. (L 18) Do not re-adjust
I.F. Rejector	Tune to minimum reading on output meter	465 Kc/s	Dummy Aerial	Aerial Socket	550 m	M.W.	L1 for minimum output
M.W.	Repeat these adjustments until there is no further improvement	600 Kc/s (500 m)	Dummy Aerial	Aerial Socket	500 m	M.W.	M.W. Osc. coil (L 13) M.W. Grid coil (L 6)
	In some receivers C7 is mounted on the ganged capacitor	13.63 Kc/s (220 m)	Dummy Aerial	Aerial Socket	220 m	M.W.	M.W. Osc. trimmer (C 16) M.W. Grid trimmer (C 7)
S.W.	Repeat these adjustments until there is no further improvement	7.14 Mc/s (42 m)	Dummy Aerial	Aerial Socket	42 m	S.W.	S.W. Osc. coil (L 11) S.W. Grid coil (L 3)
	L3 is adjusted by moving the wire loop inside the coil, with a non-metallic object, until maximum gain is obtained	15.25 Mc/s (19.7 m)	Dummy Aerial	Aerial Socket	19.7 m	S.W.	S.W. Osc. trimmer (C 14) S.W. Grid trimmer (C 2)
L.W.	Repeat these adjustments until there is no further improvement	158 Kc/s (1900 m)	Dummy Aerial	Aerial Socket	1900 m	L.W.	L.W. Osc. coil (L 16) L.W. Grid coil (L 8)
		300 Kc/s (1000 m)	Dummy Aerial	Aerial Socket	1000 m	L.W.	L.W. Osc. trimmer (C 17)