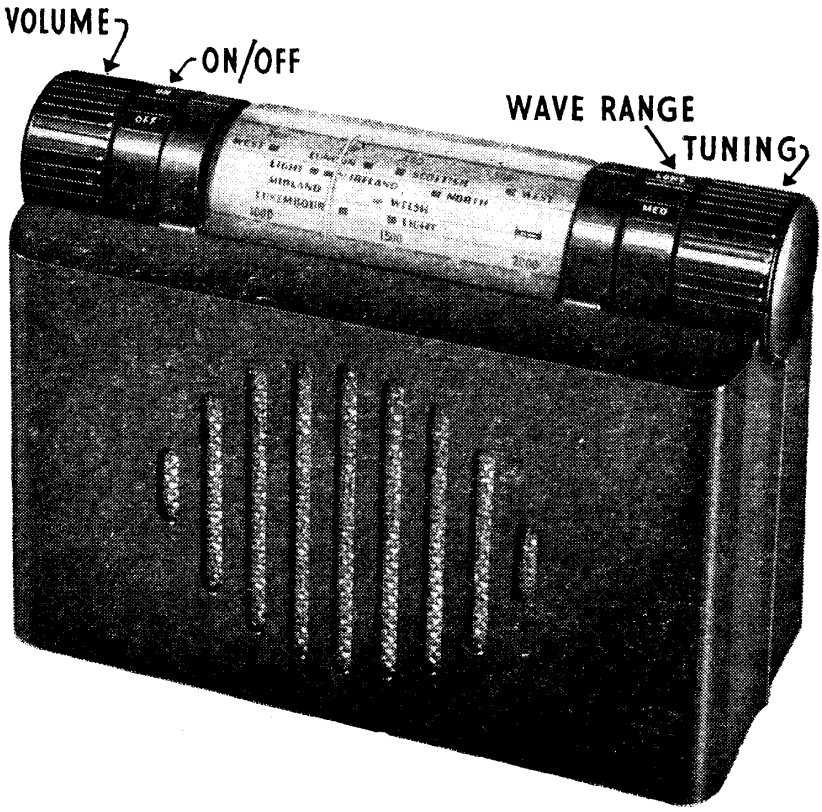
MURPHY RADIO SERVICE INSTRUCTIONS



MAINS SUPPLY:	200 to 250 volts A.C., 50 to 100 cycles
WAVE RANGES:	M. 200 to 545 metres
	L. 1000 to 2000 metres
INTERMEDIATE FREQUENCY:	465 Kc/s
VALVES:	Mazda 10C1, 10F9, 10LD11, 10P13, U404
SPEECH COIL IMPEDANCE:	3 ohms
TOTAL WEIGHT:	8¼ lb.
CABINET DIMENSIONS:	9¼″ wide, 7½″ high, 4½″ deep
CONSUMPTION:	Approximately 25 watts

Issued by

MURPHY RADIO LTD · WELWYN GARDEN CITY
HERTS · ENGLAND **TEL: WELWYN GARDEN 800**

MECHANICAL DETAILS

THE compact layout of the A100 receiver has not been achieved at the expense of accessibility and, provided that the correct procedure is adopted, any component can be removed quite easily.

THE CONTROL KNOBS

The tuning and volume control knobs are secured by grub screws. The wave-range and on/off knobs are a slide fit on the tuning and volume control spindles and can only be removed by dismantling the volume control and the tuning spindle from the receiver chassis. Each of these control knobs has a pin moulded into it and this must be located in a hole at the top of the switch operating lever. The wave-range control knob is held in place by the pulley wheel on the tuning spindle, but the on/off knob is free to slide back when the volume control knob is removed; this knob must therefore be pushed forward and properly located in the switch lever when the volume control knob is refitted.

THE CABINET

The base plate of the cabinet is held by four 2 B.A. screws which screw into insulating pillars. The chassis is removed from the cabinet by removing the tuning and volume control knobs and the base plate and then unscrewing the four pillars with an O.B.A. box spanner. There are four steel washers between the pillars and the chassis and four bakelite washers between the chassis and the cabinet.

The perspex window is held into the cabinet by two speed nuts pressed on to lugs in the top of the cabinet. Great care must be taken in removing these nuts as the lugs on the cabinet can easily be broken. The most satisfactory method is to ease the centres of the speed nuts away from the lugs with a small screwdriver.

There is a metal heat deflector at the output valve end of the cabinet. It will slide out easily when it is pressed in the centre and it must be refitted if a cabinet is replaced.

THE SCALE AND BACK

The scale is held by four screws and can easily be removed when the pointer is at the end of its travel.

The back is held in place by four self-tapping screws, and must be removed to allow access to the valves. In replacing the back, see that it is the right way up and has the painted side outwards. This back must always be replaced so that the chassis, which is connected to the mains, is inaccessible.

THE VALVES

The valves V1, V2, and V3 should be removed by pressing the spigots upwards from under the chassis. The other valves can be removed in the normal manner. The screen round V2 is to screen the valve from the loudspeaker magnet, and its removal may cause loss of gain or instability. There are bakelite washers between the output and rectifier valve holders and chassis to prevent heat transference from the valves to the chassis.

THE LOUDSPEAKER

The loudspeaker is secured by five countersunk self-tapping screws, each screw being housed in a metal clamping piece. At each fixing point a 6 B.A. washer is placed between the loudspeaker and the chassis to avoid the possibility of vibration caused by the loudspeaker frame seating badly on the chassis.

ELECTROLYTIC CAPACITOR, C29/31

This capacitor is secured by a clamp and a 4 B.A. nut and bolt, which also secures one side of the output transformer. The head of the screw may be obscured by the wiring around the output and rectifier valve holders, but it can be reached quite easily if the wires are pushed aside. The nut is made more accessible by moving the capacitor C32 out of its clamp (without unsoldering the leads).

THE OUTPUT TRANSFORMER

To take out the output transformer, remove the loudspeaker and 4 B.A. nut and bolt securing bottom of O.P.T. and C29/31, remove self-tapping screw securing the top of the O.P.T. and one side of the mains transformer bracket to the chassis, also self-tapping screw securing the other side of the mains transformer. The O.P.T. leads may now be unsoldered and the transformer lifted clear of the

chassis. **There is a lead connected to the secondary winding for the purpose of connecting an output meter between this point and chassis, when the receiver is in the cabinet.** This lead must be coiled up and tucked away clear of other components when tests are completed.

THE WAVE-RANGE SWITCH

The wave-range switch is held on two legs pressed out of the chassis end plate. The ends of the legs are splayed to secure the switch wafer and cannot easily be closed again to allow its removal. When replacing the switch, first remove the scale, the loudspeaker, and the cord drive mounting. If this latter item is handled carefully, it can be lowered out of the way without disturbing the cord. The old switch can then be broken away from the legs and the wiring removed. Close up the ends of the legs to allow the new switch to be placed in position, then secure it by building up the ends of the legs with solder.

The switch wiring, starting from the lowest tag on the valve holder side of the chassis, is as follows:

TAG	CIRCUIT REF.	CONNECTIONS
1	6	Chassis and C9 (440 pf)
2	24	C11 (4/44 pf) and C12 (195 pf)
3	8	L2 (M.W. grid) and L4 (L.W. grid)
4	5	L1 (M.W. ae.) and L3 (L.W. ae.)
5	4	L1 (M.W. ae.)
*6	23	C12 (195 pf) and C17 (4/40 pf)
7	22	C9 (440 pf)
8	19	C10 (1000 pf on tag panel)
9	21	L5 (Osc. coupling)

*This tag is used as an anchoring point and has no contact with the switch rotor.

THE ON/OFF SWITCH (S2)

The on/off switch is held by two legs projecting from the chassis end plate. To remove it, unsolder wire from tag 6 on switch to chassis, straighten the ends of the lugs with pliers, unsolder wiring, and remove switch. When the new switch is in position see that it operates satisfactorily, then bend out the ends of the lugs to secure it.

THE I.F. ASSEMBLIES

When replacing a component in an I.F. can, the leads must be unsoldered and the assembly removed from the chassis before it is possible to remove the can by bending back the two tabs underneath.

THE GANG CAPACITOR

To remove the gang capacitor, unsolder the two leads from the capacitor to tag 7 on C6 and tag 23 on tag panel. Remove the three 4 B.A. nuts securing the capacitor to the chassis. Do not lose the washers between the nuts and the chassis. Loosen grub screw holding the drive drum on the capacitor spindle, secure cords around drum with small pieces of adhesive tape, push back the gang, and lift drum clear of capacitor spindle. Tilt the assembly when withdrawing it to clear the stop lugs on the chassis.

When refitting the drum the gang capacitor must be set at maximum capacity (*i.e.* fully in mesh, not fully rotated) with the right-hand pin on the drum in contact with the right-hand stop. The left-hand stop should then operate at minimum capacity.

AERIALS

The third lead in the mains cable is a mains aerial and must not be connected to the earthing circuit of the supply mains.

The mains lead aerial is suitable for use on the local stations, but for more general use the 12 feet length of wire provided with the receiver is recommended. In some circumstances a small outside aerial may be used, but if the signal from a local transmitter is too strong the reception may be marred by tunable whistles. As no provision is made for an aerial filter the remedy, if this occurs, is to reduce the input from the local station by shortening the aerial.

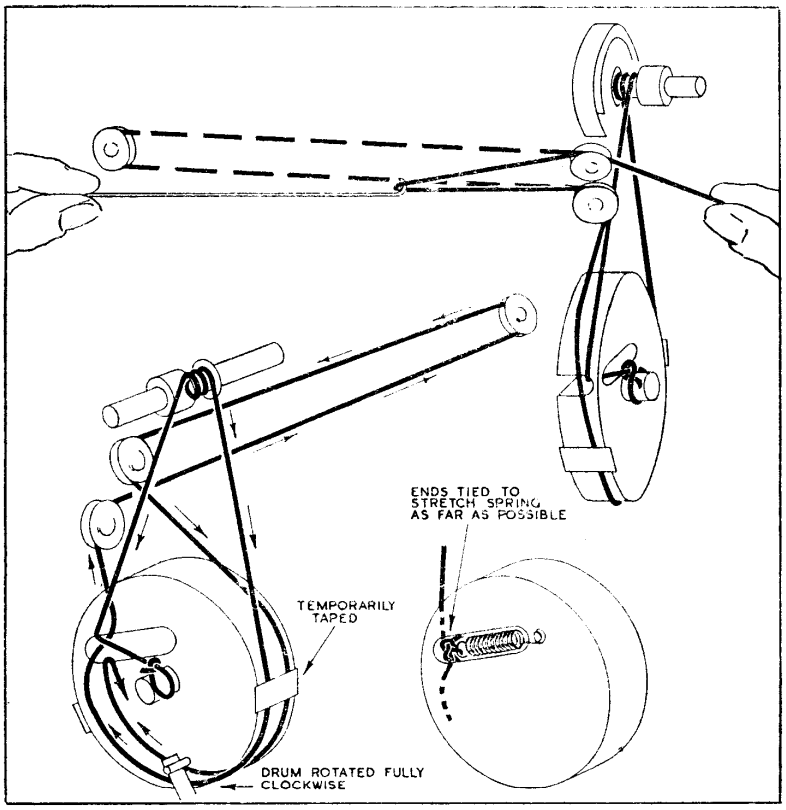
THE CORD DRIVE

The cord drive is most easily fitted when the scale is removed although this is not essential if these instructions are followed. A small tool made of a piece of stout wire in the form of a hook will prove a considerable help and the diagram shows how it is used; also some adhesive tape is necessary in order to prevent the cord from slipping off the drive drum.

Obtain a length of about 4 feet of thin drive cord (thin plaited and waxed Italian hemp cord,

as supplied by Murphy Radio Ltd), and pass one end round the drive spindle three times in an anti-clockwise direction, as shown in the diagram. Then pass the left-hand (outside) end through the slot in the drive drum and anchor it on to the drive drum boss, with the gang capacitor at maximum.

Pass the right-hand (inner) end of the cord in a clockwise direction round the drive drum using two pieces of adhesive tape to hold it in position, as shown in the diagram, and then over the lower pulley. Push the hooked end of a stiff wire behind the left-hand pulley (as seen when facing the speaker) and above and behind the speaker until it is possible to draw the cord through as shown, then pass it round the left-hand pulley. Now pass it round the upper pulley, behind the cords to the driving spindle, and round the drive drum. Remove the adhesive tape and then replace it over the two cords. Then pass this end through the slot with the other end. Another piece of tape should be placed at the slot to hold both ends of the cord. The anchored end can then be removed from the drive drum boss.



Thread one end of the cord through the loop in the spring, and then tie the two ends together as near to the drive drum as possible. The hooked wire or a small screwdriver can now be used to extend the spring and clip it in to the hole in the drive drum.

Remove the pieces of tape and see that the cord is lying evenly round the drive spindle and drive drum. Check the operation of the drive and then set the gang capacitor at minimum, and set the pointer to the calibration marks at the 200 metre (left hand) end of the scale.

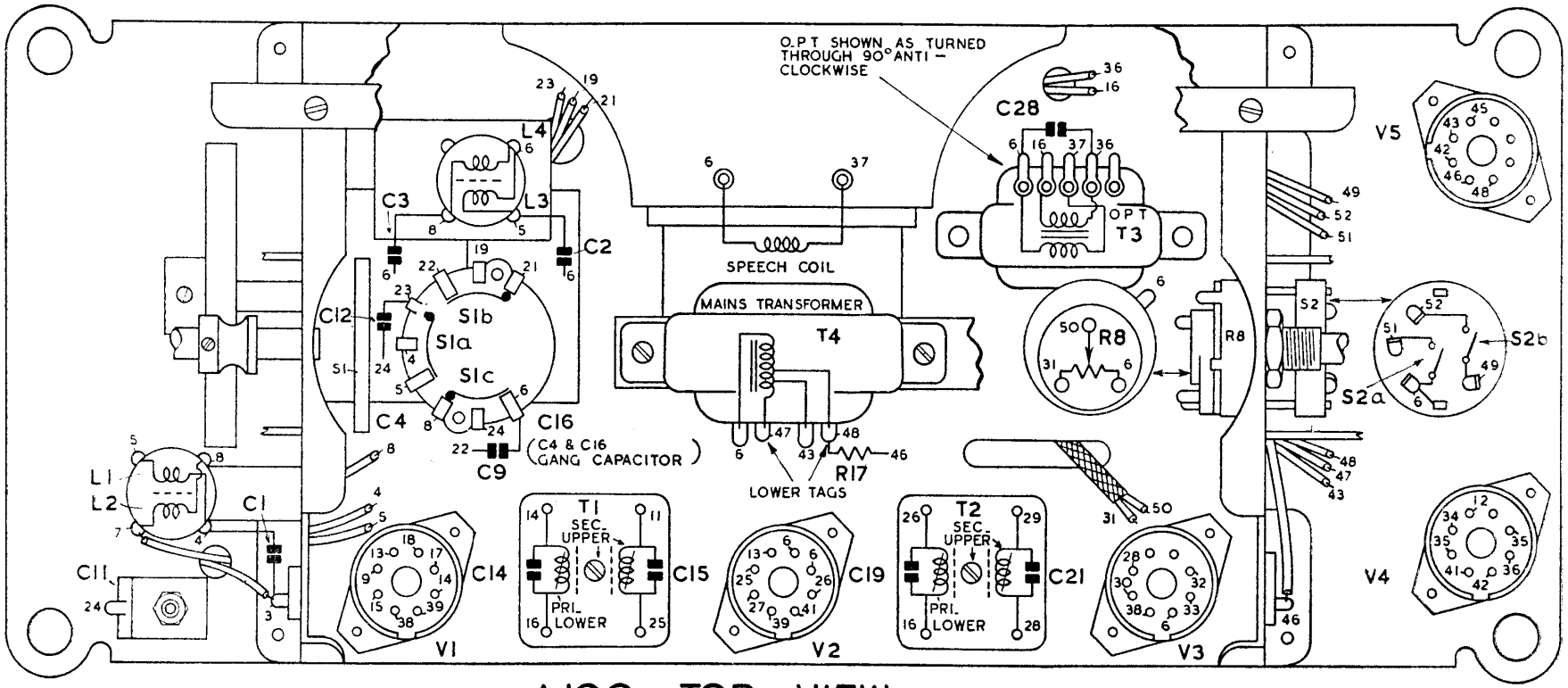
Hook the cord on to the pointer carriage and with a small screwdriver passed under the wires to the mains transformer, push the cord behind the small projection so that the carriage is securely fixed to the cord. Check that the pointer is in alignment with the calibration marks at the other end of the scale, and that it does not touch at any position.

MODIFICATIONS

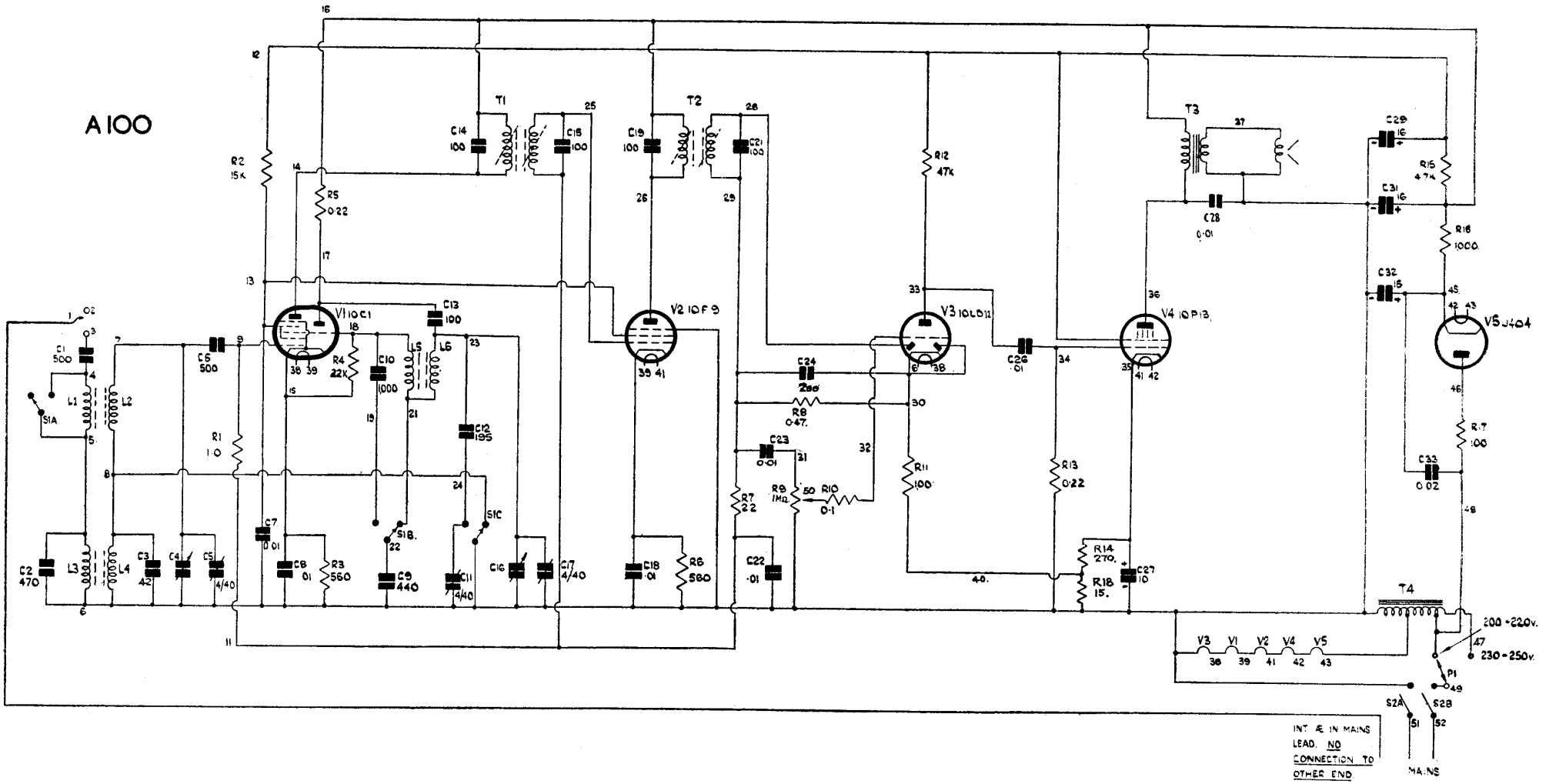
Some receivers may be fitted with components which are slightly different in value to those shown in the circuit diagram, due to the present shortage of supplies.

R5 is now 0·15 MΩ. First receiver modified—Serial No. 200777.

R														17				8							
C		11		1		3 12 4		16 9 14	2	15					19		28 21								
L		1 2						4 3																	
MISC						V1	S1a	S1b S1c	T1				T4 V2			T2		T3	V3				S2a	V5 S2b V4	



A100 TOP VIEW

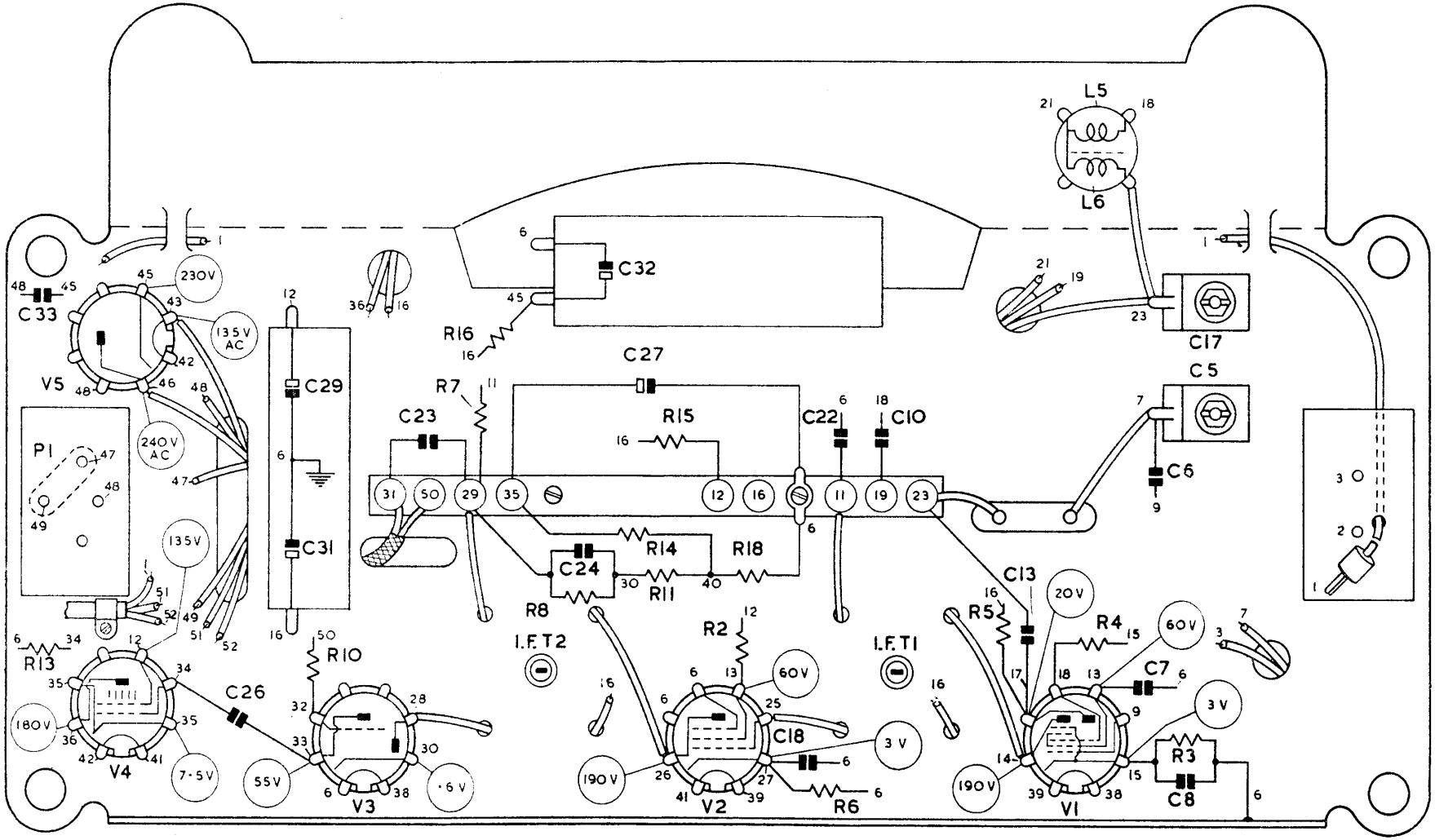


A100 CIRCUIT DIAGRAM

TYPICAL COIL RESISTANCES

Coil	L1	L2	L3	L4	L5	L6	T1 Pri.	T1 Sec.	T2 Pri.	T2 Sec.	T3 Pri.	T3 Sec.	T.4
Ohms	.5	2.5	22	15	2	1.7	18	18	18	18	310	1	140+70+30

R	13				10			7	16	8	14	15 11	18 2		6			5	4		3				
C	33			26	29 31		23			32 24	27			18	22 10			13		7	6 8	17 5			
L																			5 6						
MISC		V5 V4				V3			IF. T2				V2			IF. T1			V1						



AIOO UNDERNEATH VIEW

Voltages on the valveholders are average figures measured between valve electrodes and chassis, using an Avometer type 7, with the receiver switched to M.W. and working on 240 volt A.C. mains, under no signal conditions.

TRIMMING INSTRUCTIONS

All adjustments are made for maximum reading on an output meter connected to the output transformer secondary, with the volume control at maximum, and the service signal generator set to produce the lowest convenient meter reading. Before starting R.F. adjustments see that the pointer is in line with the calibrating marks on the dial when the ganged capacitor is at maximum capacity. The I.F. dust iron cores are rather fragile, and so care must be taken when adjusting them that they are not damaged, and it is recommended that a bakelite or similar tool is used. **Also great care should be taken that the cores are not screwed in too far** as it is possible for them to become disengaged from the thread in the former, in which case it is necessary to remove the opposite core so that the loose core can be restarted in its thread.

CIRCUIT	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 fully	465 Kc/s	Through ·1 mfd. capacitor	V2 Control Grid	550 m	M.W.	2nd I.F. Pri. (under chassis) 2nd I.F. Sec. (top of chassis) DO NOT READJUST
	Unscrew 1st I.F. Pri. and Sec. cores fully	465 Kc/s	Through ·1 mfd. capacitor	V1 Control Grid	550 m	M.W.	1st I.F. Pri. (under chassis) 1st I.F. Sec. (top of chassis) DO NOT READJUST
L.W.	The coils are not adjustable	1300 m	Through .1 mfd. capacitor	V1 Control Grid	1300 m	L.W.	C17 (under chassis)
M.W.	The coils are not adjustable	200 m	Through .1 mfd. capacitor	V1 Control Grid	200 m	M.W.	C11 (top of chassis)
		200 m	100 pf. capacitor	Aerial Socket	200 m	M.W.	C5 (under chassis)

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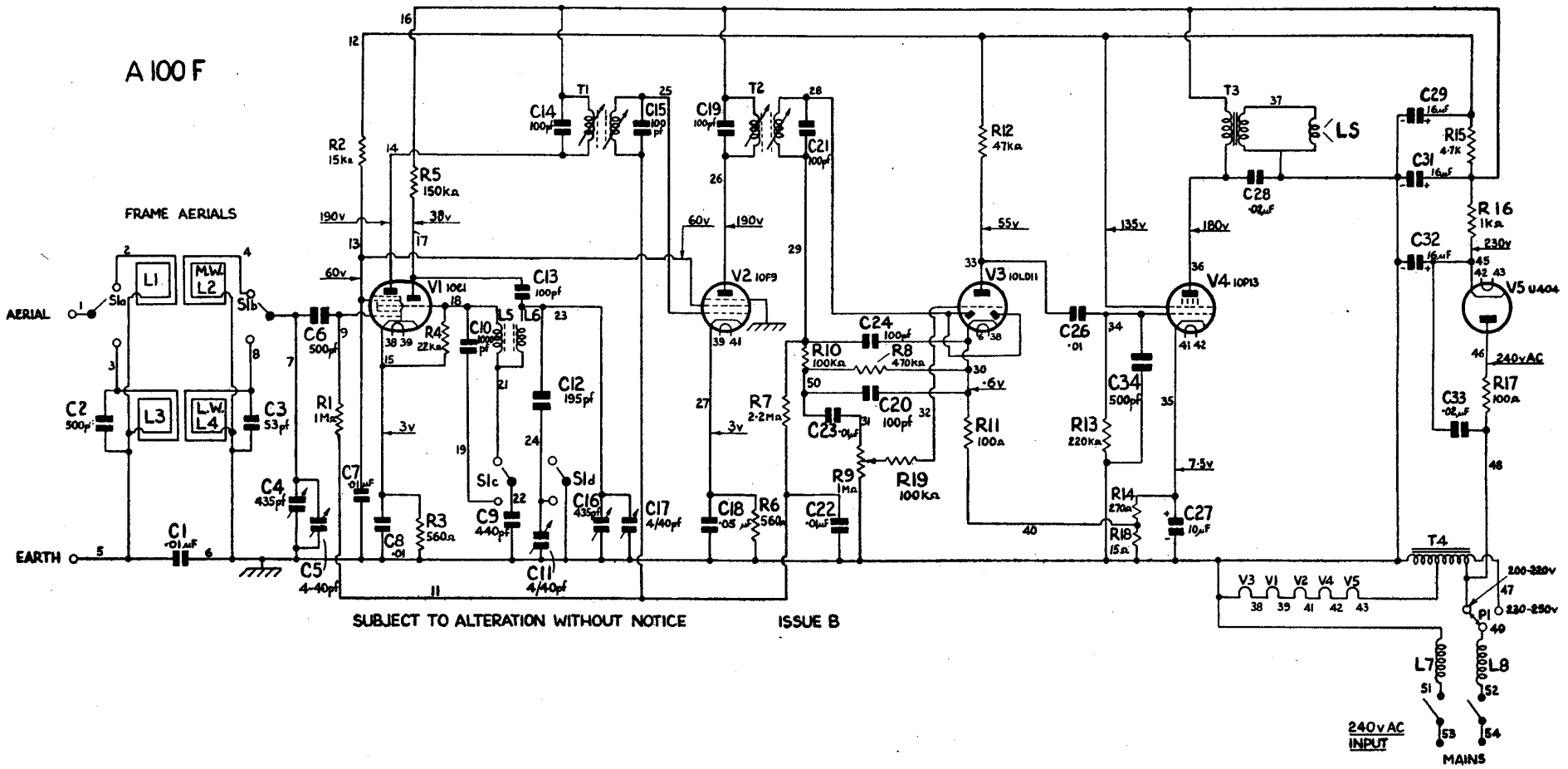
A100F RECEIVER
SUPPLEMENTARY SERVICE INSTRUCTIONS

For use in conjunction with A100 Service Instructions



Approximate resistances of changed and additional coils:

M.W. Frame Aerial, coupling (L1) approx. one ohm, tuned winding (L2) less than one ohm; L.W. Frame Aerial, coupling coil (L3) 35 ohms, tuned winding (L4) 20 ohms; Mains Filter Coils (L7 and L8) 5·7 ohms each.

For layout and further information, see back of sheet.

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A100F RECEIVER

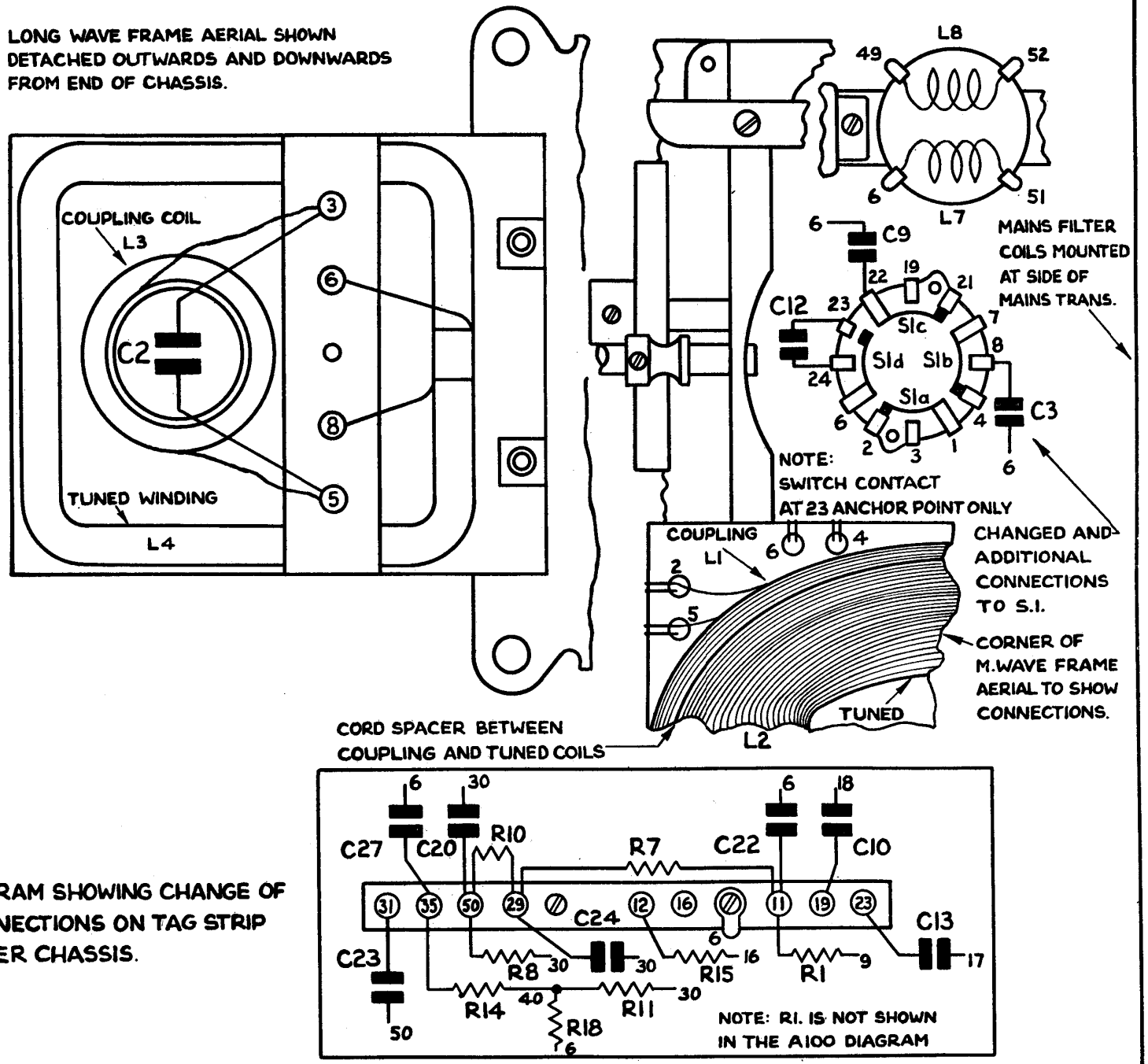

DIAGRAM SHOWING CHANGE OF CONNECTIONS ON TAG STRIP UNDER CHASSIS.

The A100F receiver is a modified version of the A100 and has the following changes:

(*a*) Long and Medium Wave frame aerials.

(*b*) No aerial in mains lead.

(*c*) Provision for an outside Earth.

(*d*) Modified R.F. filter circuit in detector stage.

(e) Mains Filter coils.

Looking from the back of the receiver, the Long Wave frame is mounted at the end of the chassis on the left hand side, and is secured by two small brackets. The frame aerial for Medium Waves, which is flat and has a cord spacer between coupling and tuned windings, is attached to the back panel of the set, with an additional thin cover on the outside.

In order to gain access to the valves, the four self-tapping screws must be removed, enabling the frame to be pulled away from the chassis. If desired, the aerial can be completely removed by unsoldering the four connections at the top left hand corner of the panel. Note that on the top two screws there are two washers separating the back panel and outer cover.