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EKCO SERVICE DATA

MODELS UI99 and UI99/A

MODEL UI99 is a five valve, superheterodyne receiver offering free tuning on the Long and Medium wavebands, with the addition of three switch controlled pre-set positions, tunable to the Medium wave.

The receiver is of the transportable type and contained in a plastic cabinet with a lattice grille. Operation is from either A.C. or D.C. mains supply.

UI99A. This model differs only in the input circuit where conventional aerial coils are used in place of the frame aerials. A and E sockets are provided to permit the connection of an external aerial and earth in areas of low signal strength.

CAUTION. As is customary with AC/DC receivers the chassis connects to one side of the mains supply and care must be taken to ensure that the chassis connects to the 'earthed' side of A.C. supplies. Trimming of the pre-set controls must be carried out only with the special insulated tool provided.

MAINS SUPPLY. 200-250 volts, 110-120 volts D.C. or A.C. 40-100 c.p.s.

For operation on 110-120 volts it may be necessary to fit a pygmy lamp to suit the lower voltage in order to obtain sufficient illumination.

Note: Before connecting the receiver to the mains, ensure that the voltage adjuster is correctly set to suit the mains input. For 200-250 volts operation the insulated lead from the on/off switch should be connected to either the 200-220 volts or 230-250 volts tap according to the mains supply. For 110-120 volts operation the insulated lead from the on/off switch should be connected to the 110/120 volts tap and in addition the insulated link connected to the bottom tag on the resistor should be removed and re-connected to the top tag, shorting out the resistor.

MAINS CONSUMPTION. 210mA at 240 volts A.C. 50 c.p.s.

CONTROLS. Front left VOLUME; right TUNING. Right hand side of cabinet. SELECTOR. Back, insulated screw switch acting as TONE control.

PILOT LAMP. Pygmy type 250 volts, 15 watts (See 'Mains Supply')

VALVES.

V1	UCH42	Frequency Changer
V2	UF41	I.F. Amplifier
V3	UBC41	Det. A.V.C. and A.F. Amplifier
V4	UL41	Output
V5	UY41	H.T. Rectifier

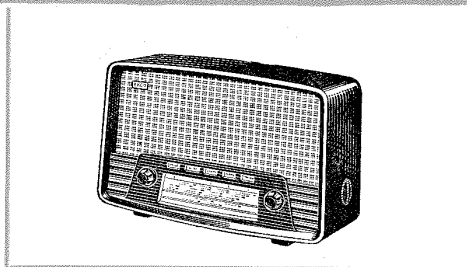
All valves are MULLARD, with B8A type bases.

WAVEBANDS.

M.W.	187—561 metres,	1595—535 Kc/s.
L.W.	1000—2000 metres,	300—150 Kc/s.
Pre-set 1	188—343 metres,	1595—862 Kc/s.
Pre-set 2	245—435 metres,	1225—689 Kc/s.
Pre-set 3	310—550 metres,	967—545 Kc/s.

INTERMEDIATE FREQUENCY. 460 Kc/s.

L. S. IMPEDANCE. 3 ohms at 400 c.p.s.



A 6 inch diameter, permanent magnet speaker is fitted, being selected to suit the acoustics of the cabinet.

EXTENSION SPEAKER. Sockets are provided at the rear of the chassis for the connection of a low impedance extension speaker.

OUTPUT. Approximately 2 watts.

CIRCUIT DETAILS

R. F. Input UI99. Signals picked up by the frame aerials are passed via the selector switch SW3, through a coupling capacitor C7, to the grid of V1. Switch SW4 places a capacitor C6 in shunt with the M.W. frame to detune it whilst on L.W. operation. The main tuning capacitor C1 is connected into circuit via SW1.2, which also selects one of the three aerial trimmers C2, C3 and C4 used for the pre-set positions.

R. F. Input UI99A. Signals from the aerial pass via the coupling capacitor C40 to the common primary of a M.W., L.W., H.F. transformer. Induced voltages in the secondaries are fed via SW3, and a coupling capacitor C7 to the grid of V1, the appropriate secondary coil being selected by the switch SW3. SW1 connects the aerial section of the main tuning capacitor C1 across the selected coil; C2, C3 and C4 are aerial trimmers for the three pre-set positions and are connected into circuit by the switch SW2. SW4 places a capacitor C37 in shunt with the M.W. primary coil, to detune it whilst on L.W. operation. C38 and C39 are safety capacitors to ensure that the chassis is isolated from the aerial and earth connections.

F.C. AND I.F. STAGES. In the oscillator section of V1 are two H.F. transformers, the windings L6, L8, covering the Long and Medium wavebands on manual tuning. The primaries are selected by switch SW8 and SW10, and the secondaries by SW9 which connects the coils via a coupling capacitor C30 to the grid of the triode section of V1. Trimming of the oscillator coils L6, L8 is provided by two capacitors C12 and C36. SW9 also selects one of the three pre-set coils L3, L4 and L5 which are tuned by means of iron dust cores. The fixed capacity for these coils is C8, connected into the circuit by SW5. The switch SW6 is operative only on manual tuning and connects the oscillator section of the main tuning capacitor, C15, across the M.W. and L.W. grid coils. SW7 operates only on the three pre-set positions, and brings into circuit C14 to detune the Long and Medium wave oscillator coils when the receiver is operating on one of these positions.

The oscillator and R.F. signals combine to form an I.F. signal at the

mixer anode (pin 2), this is fed via the 1st I.F. transformer L10, L11 to the grid of V2 for amplification, and subsequently via a further I.F. transformer L12, L13 to one diode of V3 for demodulation.

A.F., A.V.C. and TONE CIRCUITS. The A.F. component appearing across the load resistor R20 is fed via R8 and C22 to the grid of the triode section of V3 for amplification.

Delayed A.V.C. is obtained from the centre tap of R17.18 and fed back as a small bias voltage via R7 and R6 to the grids of V1 and V2. Tone correction is obtained chiefly by the parallel circuit R21 and C32, which can be short circuited if required by switch S11 to cut the top frequencies. C25 and C33 are also tone correction capacitors.

OUTPUT STAGE. The audio signal appearing at the anode of V3 is then fed via a coupling capacitor C23 to the grid of V4 for final amplification. R12 is the grid leak for V4.

Negative feedback is arranged by the addition of a tertiary winding on the output transformer T1, the voltage being fed back via R19, across R11, to the cathode circuit of V3.

POWER SUPPLIES. H.T. is obtained from a half-wave rectifier valve V5, the anode of which is connected to one side of the mains via a surge limiter R16A and dropping resistor R16B/C. The voltage output from the cathode is smoothed by C27. R14, R15 and C26 to supply the main H.T. rail. R14 and R15 are connected in parallel to obtain the required wattage.

The heaters are arranged in series and taken from the 115 volt tap of R16, the return circuit being connected direct to the other side of the mains.

Connected across the mains input is a capacitor C29 and lamp LP. The former filters out any mains-borne interference, whilst the latter provides illumination for the scale and the five small windows above the scale.

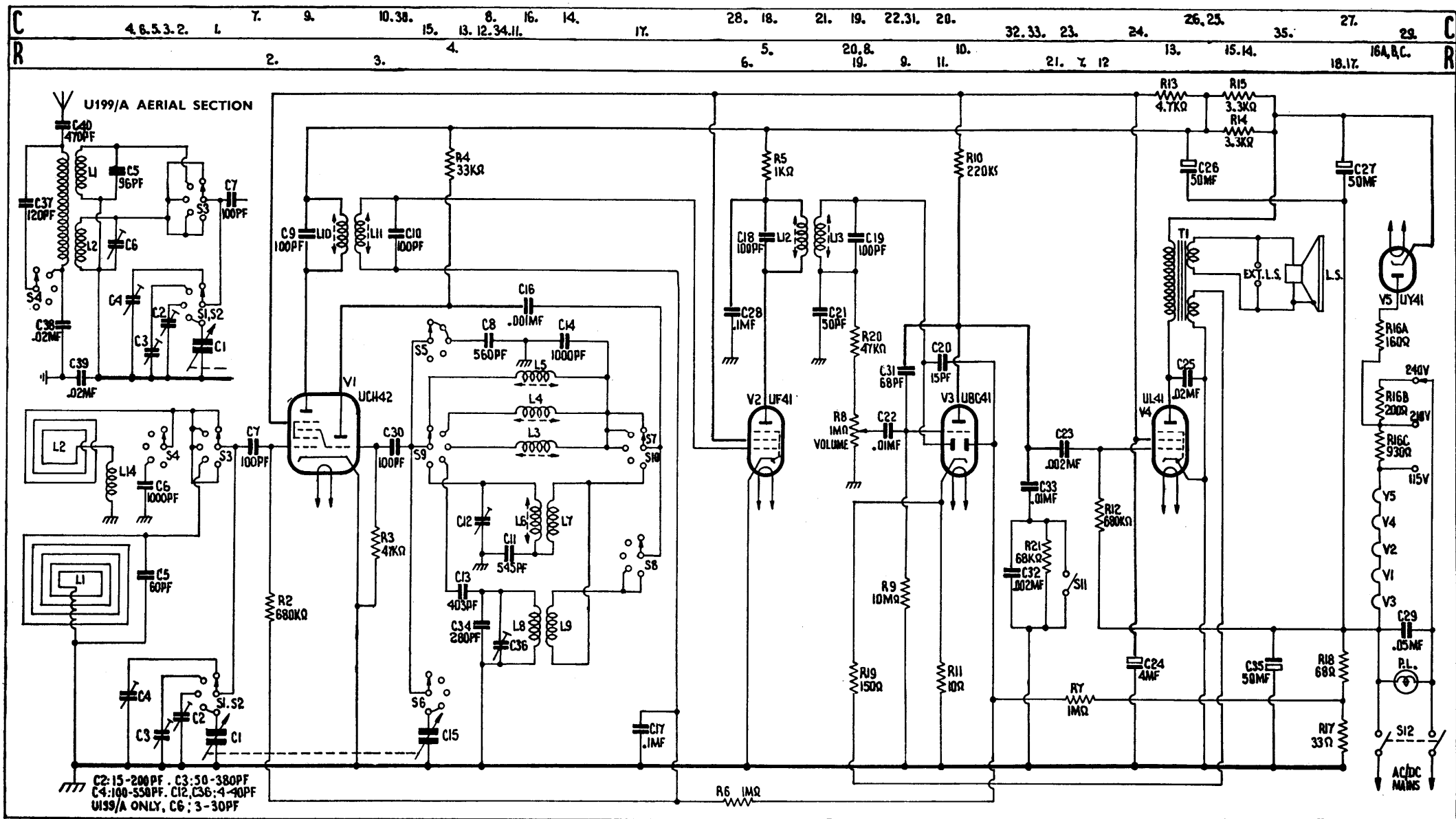
ALIGNMENT PROCEDURE. Set the Volume control fully clockwise. All test signals modulated 30% at 400 c.p.s. Tune for maximum output. Connect output meter to EXT. L.S. sockets.

I.F. ALIGNMENT. Set the tuning control fully clockwise, and selector switch fully anti-clockwise to M.W. Inject 460 kc/s via 0.1 mfd. capacitor to Pin 6 of V1. Shunt as stated with 47K carbon resistor.

Shunt L12 then tune L13. Transfer shunt to L13 then tune L12. Shunt L10 then tune L11. Transfer shunt to L11 then tune L10. Remove shunt.

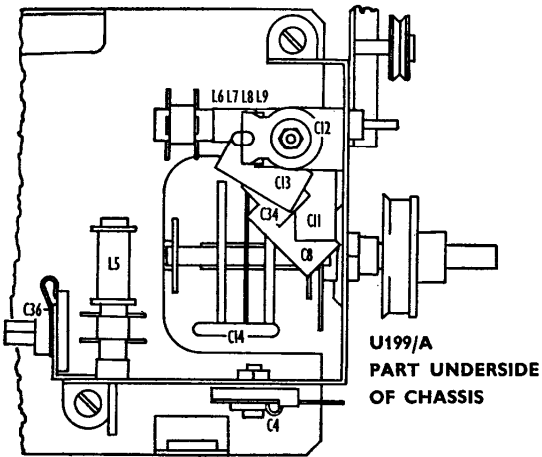
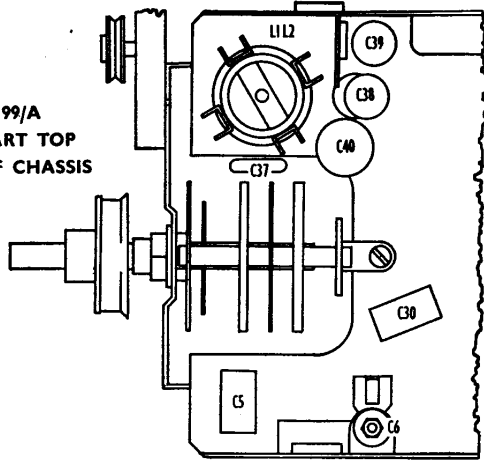
R.F. ALIGNMENT. With the tuning capacitors fully closed, check the pointer against the datum marks at the right hand end of the scale.

R.F. input via a standard search coil. Switch to M.W. (fully anti-clockwise). Tune C12 at 1200 kc/s. and L6 core to 600 kc/s. Repeat until calibration is correct. Switch to L.W. (Next position clockwise). Check calibration at 250, 200 and 150 kc/s. Error should not exceed thickness of pointer. Switch to pre-set 1, 2 or 3 as required (progressively clockwise from L.W.). Inject required station frequency then adjust the appropriate coil core and trimmer, in that order.

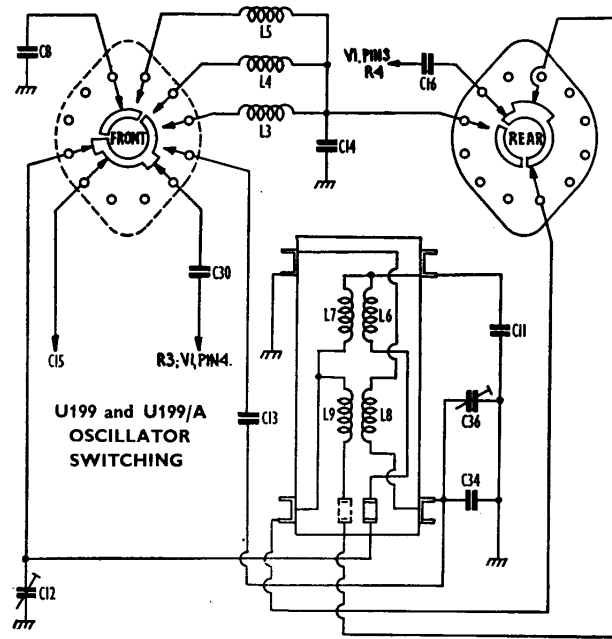
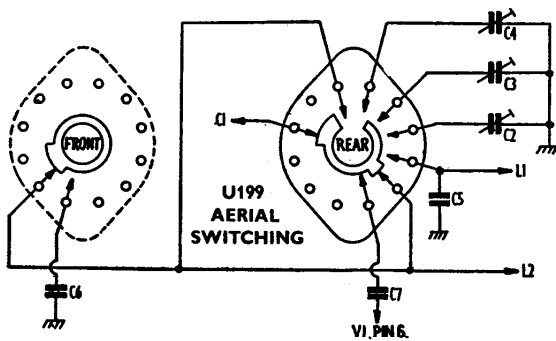


CIRCUIT DIAGRAM

U199/A
PART TOP
OF CHASSIS

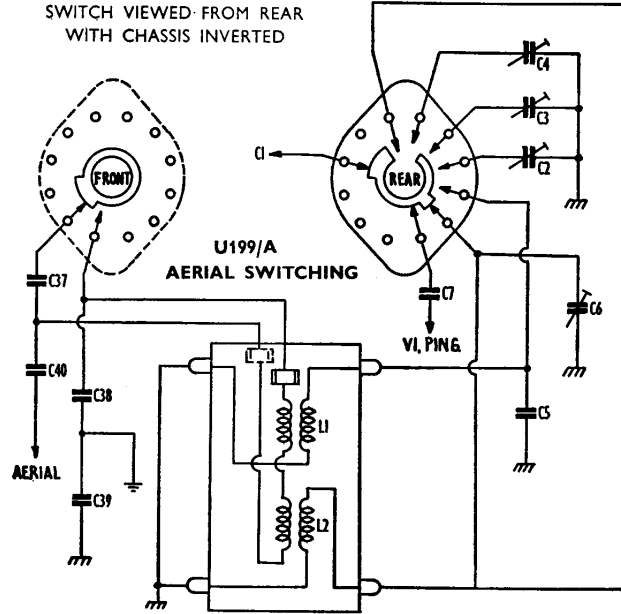


U199/A
PART UNDERSIDE
OF CHASSIS



SWITCH & COIL WIRING

SWITCH VIEWED FROM REAR
WITH CHASSIS INVERTED



CHASSIS REMOVAL. Disconnect the receiver from the mains. Remove the back cover, and pass the lead through the hole provided. Remove the two control knobs on the front, and the selector knob at the side, the grub screw for the latter being accessible from inside the cabinet.

Next remove the two plastic cover plates located underneath the cabinet and held by self tapping screws.

Finally remove the four 2BA bolts thus exposed. The chassis may then be withdrawn to the extent of the speaker leads.

VOLTAGE AND CURRENT DATA

Valve	Anode		Screen		Cathode	
	V	mA	V	mA	V	mA
V1 Mixer	146	2.1	93	3.5	—	7.9
V1 Osc.	62	2.3	—	—	—	—
V2	139	5.6	93	1.8	—	7.4
V3	59	.135	—	—	—	.135
V4	170	30.0	93	4.6	—	34.2
V5	202 A.C.	—	—	—	182	50.0

Heater voltage (total)

112V. A.C.

Heater current

98 mA

Bias voltage (full)

-5.3V

Bias voltage (tap)

-1.7V

All voltages and currents are measured with a 1000 ohm/volt meter, the receiver having no signal input and being tuned to 1 Mc/s. Voltages are measured with respect to the chassis.

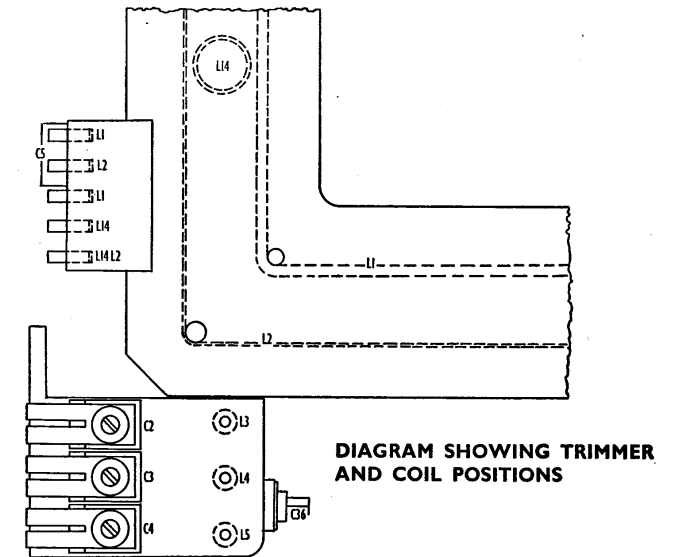
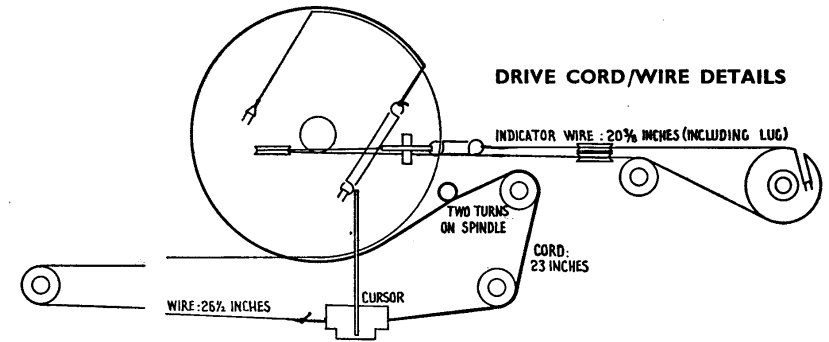
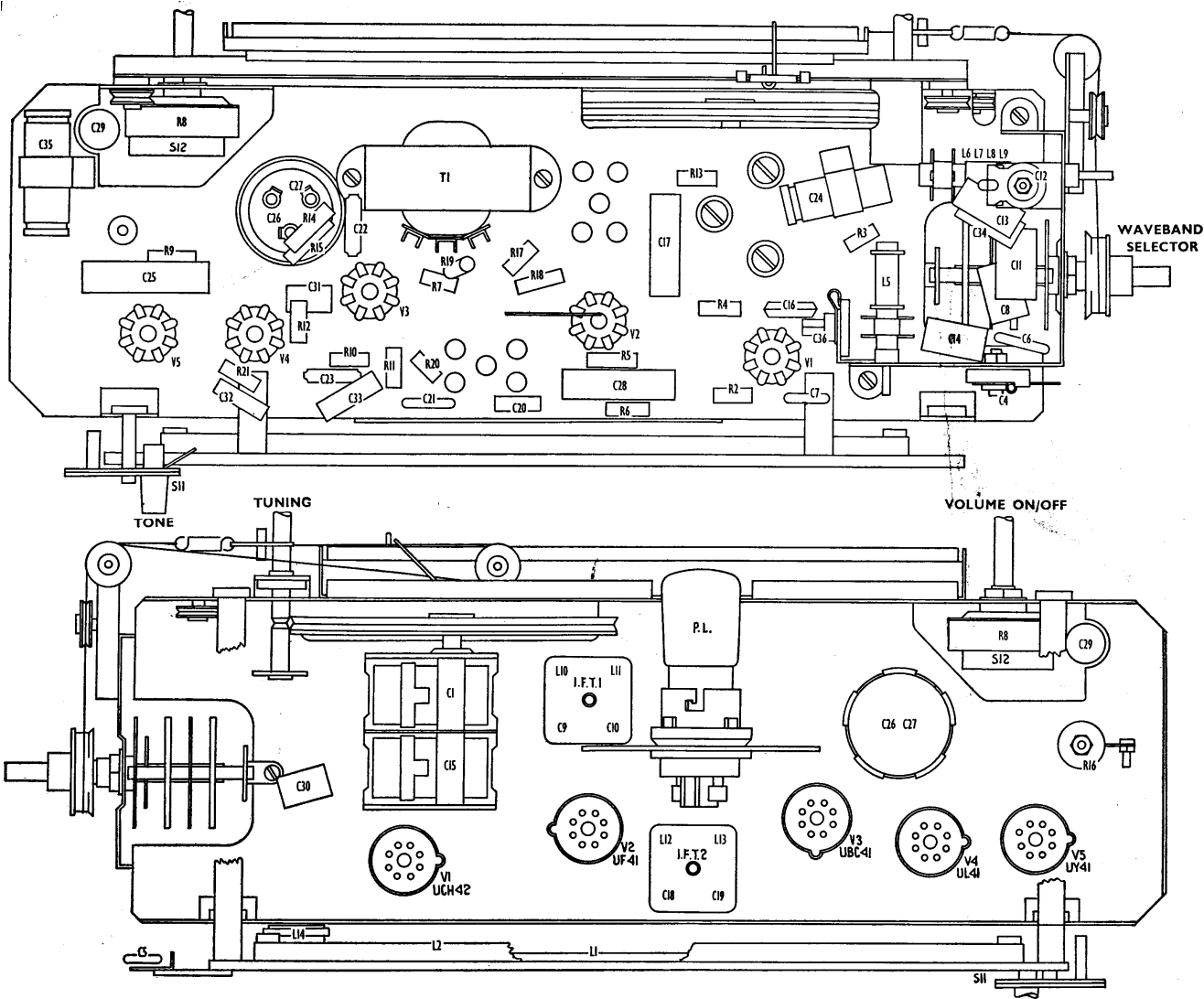
MAINS RESISTOR DATA

Resistance	930	200	160	ohms
Current Rating	100	220	150	mA
Tolerance	±5	±5	±10	%

D.C. RESISTANCE OF WINDINGS

L	Ohms	Part No..
L1	9	DP21751
L2, L14	4	C46624
Com. Pri	49	DP22479
L1	28	
L2	73	DP21865
L3	1.5	
L4	1.5	DP21866
L5	1.5	DP21867
L6	3.5	DP21971
L7	2	

L	Ohms	Part No.
L8	7	DP21971
L9	10	
L10	11.5	SA5062
L11	11.5	
L12	11.5	SA5062
L13	11.5	
T1. Pri.	380	SA5091/1
T1. Sec.	.25	
T1 Tertiary	9	



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