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# EKCO SERVICE DATA

## MODEL A244

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**MODEL A244** is a 5 valve superheterodyne receiver, for free tuning on the Long and Medium wavebands, with which is incorporated a self starting electric clock that provides automatic switching and alarm facilities.

Features include an appliance socket controlled by the automatic switching, and a built-in ferrite rod aerial for operation on both wavebands.

Sockets are provided, for the connection of an external aerial and earth for use in areas of low signal strength, and for a low impedance extension loud-speaker.

The radio chassis and clock assembly, housed in a plastics cabinet, operate from A.C. mains only.

**MAINS SUPPLY :** 200-250 Volts, 50 c/s. A.C.

**MAINS CONSUMPTION :** 147 mA at 240 Volts, 50 c/s.

**APPLIANCE SOCKET :** The maximum loading of this socket must not exceed 1250 watts. The correct sequence of connections for the plug is shown as an inset on the circuit diagram, the plug being viewed from the rear when mated to the socket.

### CONTROLS :

**Radio :** Left VOLUME, Centre WAVEBAND SELECTOR, Right TUNING.

**Clock :** Left SLEEP, Centre MASTER, Right ALARM and at the rear HANDS position control.

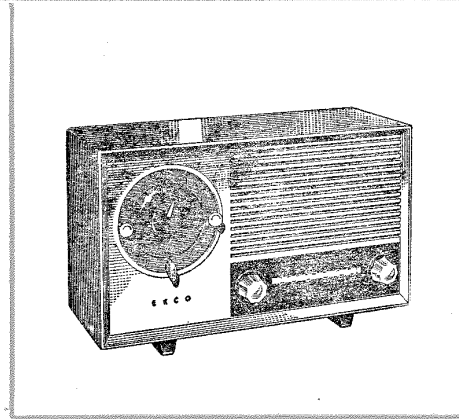
### VALVES :

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

All valves are MULLARD and use B8A type bases.

**INDICATOR LAMP :** 10 Volts, 200 mA. M.E.S.

**WAVEBAND COVERAGE :** M.W. 190-550 metres. L.W. 1100-1900 metres.



**INTERMEDIATE FREQUENCY :** 470 Kc/s.

**LOUD-SPEAKER :** 3 ohms at 400 c/s. A moving coil P.M. elliptical type is fitted into the receiver, and sockets are provided for an external speaker of the same impedance.

**OUTPUT :** Approx. 2 watts.

**CLOCK AND ALARM FACILITIES :** These are of the 12 hour type. Operation is from A.C. mains only.

### CIRCUIT DETAILS

**FREQUENCY CHANGER AND I.F. STAGES :** Protective capacitors C1 and C3 are inserted in both aerial and earth circuits, whilst R2 forms a static leak for use with an external aerial.

Only one of the aerial coils L1.L2 is in circuit for each band, depending upon the position of the switch S1 which shorts out the coil not in use. The selected coil is shunted by a trimmer C5 and the aerial section C6 of the tuning capacitors.

Signals from the input circuit are fed via C7 and an I.F. rejector network L3.C8 to the control grid of the frequency changer valve V1.

An H.F. transformer L6.L7 is used in the oscillator section of V1, being shunted by the trimmer C13 and tuning capacitor C14. On M.W. the switch S2 open circuits the parallel tuning capacitor C15.

The I.F. output signal at V1 anode is fed via the 1st I.F. transformer L4.L5, to the grid of a pentode valve V2 for amplification, and subsequently to one diode of V3 for demodulation.

### DEMODULATOR, A.F., OUTPUT AND AVC STAGES :

The demodulated A.F. component appearing across R9.R20 is fed via R8 and C22 to the grid of the triode section of V3 for amplification.

The D.C. component from the diode load circuit is fed via R10 to the remaining diode of V3, the delayed output from which is fed back to the grid circuits of V1 and V2, providing A.V.C.

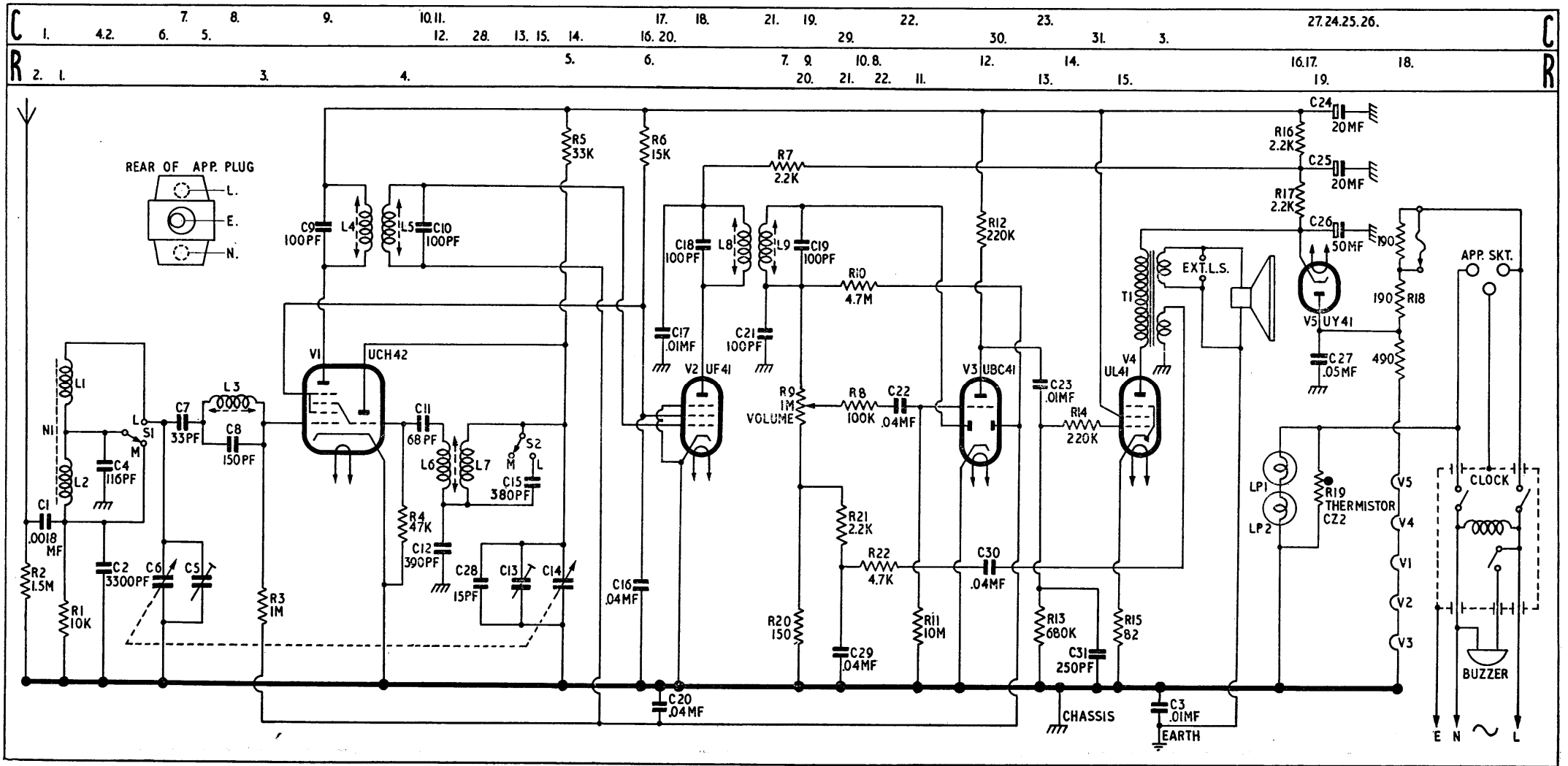
The audio signal is then passed from V3 anode via C23 and R14 to the grid of V4 for final amplification. The output transformer T1 has two secondaries, one which feeds the loudspeaker, the other, a tertiary winding, providing negative feedback via C30, R22 and the V/Control circuit to the grid of V3.

**POWER SUPPLY :** H.T. is derived from the mains via a half wave rectifier valve V5. The valve heaters are in series with a ballast resistor R18, across the mains input. A thermistor R19 is shunted across the two indicator lamps to maintain the heater circuit in the event of a lamp failure.

The clock unit is connected directly across the input supply.

**CLOCK FUNCTION :** As soon as the receiver is connected to the supply the clock will start, the position of the hands being adjustable by the 'HANDS' knob at the rear.

The centre control is the 'MASTER' switch and in its middle position the receiver is 'Off.' When this control is turned clockwise to 'Manual' the receiver is switched 'On,' and when turned to the anti-clockwise position 'Alarm,' the radio will be switched on at the time indicated on the centre scale. When the radio has been switched on automatically it will stay on indefinitely until the centre control is switched to 'Off.'



CIRCUIT DIAGRAM

The left hand control marked 'SLEEP' can be rotated in a clockwise direction so that the pointer indicates any one of the graduations 0-60. This operation will automatically switch the receiver on providing the 'MASTER' control is set at either 'Alarm' or 'Off.' The receiver will stay switched on until the number of minutes shown on the 'SLEEP' indicator scale elapses. The receiver will then be switched off automatically.

An 'ALARM' buzzer is incorporated in the clock and operates at approx. 8 minutes later than the radio alarm switch. The buzzer will operate if the 'ALARM' control is left in the out position and is silenced by pushing the control in. The position of the 'MASTER' control does not affect the buzzer operation.

**CLOCK UNIT SERVICE FACILITIES:** Full directions are given in the A222 Service Manual, to which reference should be made.

### ALIGNMENT

**I.F. ALIGNMENT:** Switch to M.W. and tune to 550 metres. Connect an output meter, or a low range AC voltmeter, across the secondary of the output transformer. Set the Volume Control to maximum output. Inject a modulated 470 Kc/s signal via an 0.1 mfd. capacitor to pin 6 of V1 and adjust the four I.F. cores in the following order for maximum output. IFT2 upper and lower then the IFT1 upper and lower. Inject the 470 Kc/s into the aerial socket and adjust L3 core for minimum output.

**POINTER SETTING:** With the tuning capacitors fully meshed, the pointer should coincide with the datum marks at the right hand end of the scale. If in error, slide the pointer carriage along the cord until correct. **Note.** Some tuning capacitors may 'overswing' the maximum capacity point slightly, and this should be checked to ensure that pointer setting at datum does coincide with maximum capacity.

**R.F. ALIGNMENT:** Input, modulated 30% at 400 c/s, to A and E sockets via standard dummy aerial.

Switch to M.W. Tune to and inject 600 Kc/s then adjust L7 core, and the position of L1 on the ferrite rod for maximum output.

Tune to and inject 1400 Kc/s then adjust C13 and C5 for maximum output. Repeat as necessary.

Switch to L.W. With 210 Kc/s input check calibration at this point, then adjust the position of L2 on the ferrite rod for maximum output.

**CHASSIS REMOVAL:** Disconnect the receiver from the mains supply. Remove the appliance plug and the six screws holding the back cover, then pull the 'HANDS' setting knob, which comes away with the back cover and extension spindle.

Next remove the four chassis retaining screws on the base of the cabinet.

Finally withdraw chassis sufficient to release the screw through the metal clamp holding the mains lead in position. The chassis can then be withdrawn to the extent of the loud-speaker and mains leads.

**Note.**—To remove the clock unit, release the chassis as above and unsolder the mains leads from the two insulated terminal pins adjacent to the ballast resistor R18.

Remove the plastic back cover from the clock and finally remove the four nuts holding the clock assembly to the cabinet.

When the clock has been removed the mains cable should be disconnected from the clock.

### VOLTAGE AND CURRENT DATA:

VALVE	ANODE		SCREEN		CATHODE		GRID
	V	mA	V	mA	V	mA	V
UCH42 ...	87	1.1	47	1.9	0	4.4	1.25
UF41 ...	106	2.9	47	0.9	0	3.8	1.25
UBC41 ...	54	0.15	—	—	0	0.15	1.3
UL41 ...	131	34	87	5.4	3.4	39.4	0
UY41 ...	167 A.C.	—	—	—	141	48.5	—

Other voltages and current figures:—

Consumption (Receiver) ...	147 mA
Triode Anode current of UCH42 ...	1.4 mA
H.T. voltage at C26 ...	141 V
H.T. voltage at C25 ...	113 V
H.T. voltage at C24 ...	87 V

**Conditions.**—The receiver should be in a quiescent condition and tuned to the L.F. end of the Medium waveband. D.C. voltages should be measured with a 20,000 ohms/volt meter and A.C. voltages on a 1000 ohms/volt meter. The grid voltages should be taken on a D.C. valve voltmeter. Input 240 Volts, 50 c/s. All voltages are relative to chassis.

### D.C. RESISTANCE OF WINDINGS:

WINDING	OHMS	PART NO.
L1	1.1	DP23080
L2	3.2	DP23079
L3	8.5	DP23078
L4	11.5	DP20952
L5	11.5	
L6	1.2	DP23072

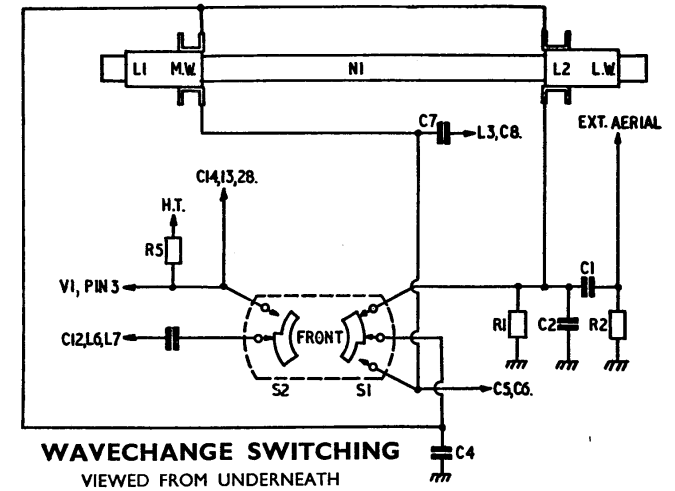
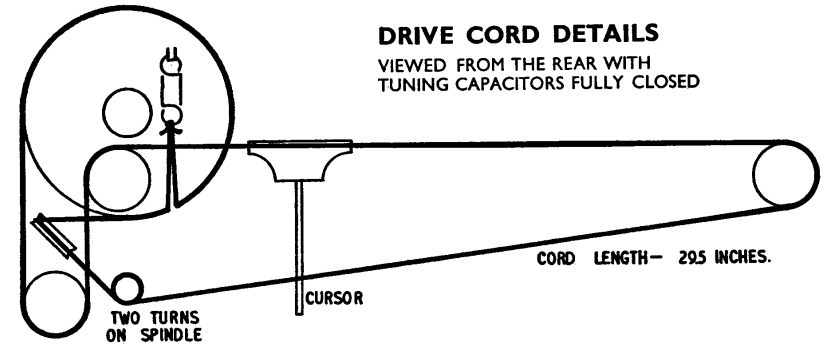
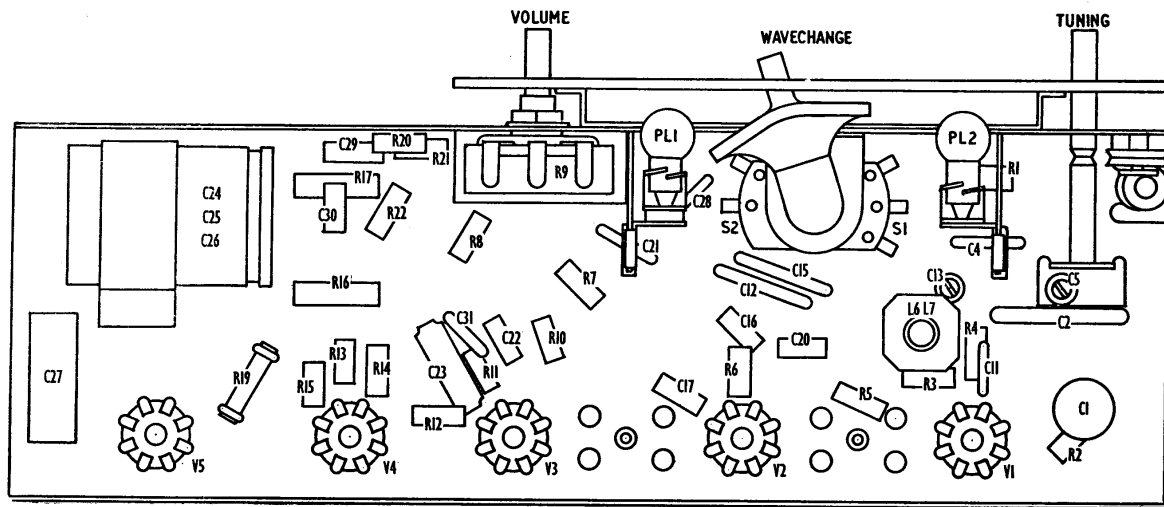
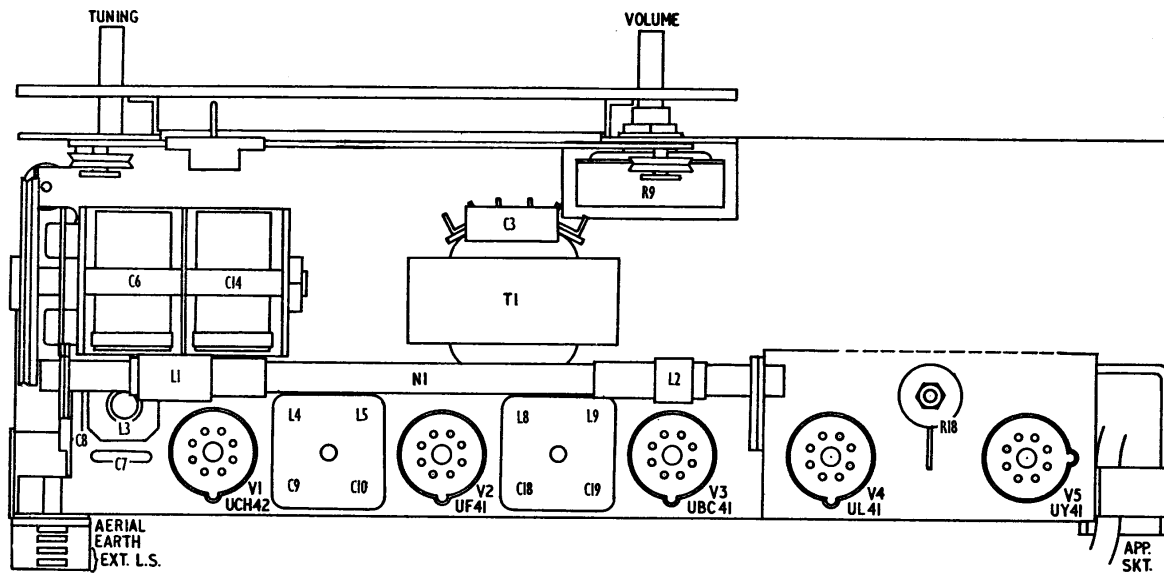
WINDING	OHMS	PART NO.
L7	2.5	DP23072
L8	11.5	SA5062
L9	11.5	
TI Pri.	250	SA5386
Sec.	0.3	
Tertiary	31	

### VALVE BASE DATA:

VALVE	1	2	3	4	5	6	7	8	BASE
UCH42 ...	H	A	OA	OG	G2	G1	K	H	B8A
UF41 ...	H	A	K.G3	—	G2	G1	K.G3	H	B8A
UBC41 ...	H	A	G1	I.S.	D	D	K	H	B8A
UL41 ...	H	A	—	—	G2	G1	K.G3	H	B8A
UY41 ...	H	A	—	—	—	—	K	H	B8A

### SERVICE NOTES

**MAINS LEAD:** When replacing a mains cable always ensure that it is of the three cored type and that the earth lead (green) is efficiently connected to the clock frame and to the centre pin of the appliance socket. This arrangement ensures that, in the event of a fault occurring, the possibility of shock to the user is eliminated.



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