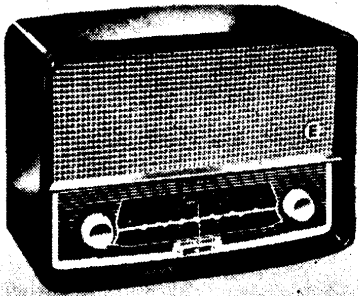


# "TRADER" SERVICE SHEET

## 1309

# EKCO U245

2-band Transportable for A.C. or D.C. Operation



Appearance of the Ekco U245. In later models a carrying handle is fitted to the top.

**E**MPLYING a ferrite rod internal aerial, the Ekco U245 is a 4-valve (plus rectifier) 2-band table receiver designed to operate from A.C. or D.C. mains of 200-250V, 25-100c/s in the case of A.C. The wavebands covered are 192-566m and 983-2,112m. The mains consumption is 40 watts.

Release date and original price: May 1955, £11 6s 7d. Purchase tax extra.

### CIRCUIT DESCRIPTION

Internal ferrite rod aerial coils L1 (M.W.), L2 (L.W.) are tuned by C6. Provision is made for the connection of an external aerial which is coupled via the common impedance of R1, C2 to the aerial tuning circuit.

First valve V1 is a triode hexode valve operating as frequency changer with internal coupling. Oscillator grid coils L5 (L.W.) and L6 (M.W.) are tuned by C11. Parallel trimming by C12 (M.W.) and C12, C14, C15 (L.W.); series tracking by C16 (M.W.) and C13 (L.W.). Re-

action coupling from oscillator anode via C17 and L7 (L.W.), L8 (M.W.). Additional coupling on M.W. via the common impedance of tracker C16.

Second valve V2 is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings C8, L3, L4, C9 and C18, L9, L10, C19.

Intermediate frequency 470kc/s.

Diode signal detector is formed by one diode section of double diode triode valve V3. A.F. component in its rectified output is developed

across volume control R7 and is passed via C23 to V3 triode section, which operates as A.F. amplifier. I.F. filtering by C20, R6 and the capacitance of the leads to chassis.

I.F. signal is also fed via C25 to second diode of V3, and the resulting rectified output, developed across R12, is fed back as bias to V1 and V2 giving automatic gain control. Operation of the A.G.C. diode is delayed by tapping off a negative bias voltage from the junction of R13, R14 and applying it to the diode via R12.

Resistance-capacitance coupling via R10, C27, (Continued in col. 1 overleaf)

### COMPONENT VALUES AND LOCATIONS

Capacitors			
C1	0.01μF	H4	
C2	2,600pF	H3	
C3	47pF	C1	
C4	0.1μF	H4	
C5	—	G4	
C6	—	B2	
C7	300pF	F3	
C8	100pF	A2	
C9	100pF	A2	
C10	100pF	H3	
C11	—	B1	
C12	—	G3	
C13	345pF	B1	
C14	40pF	C2	
C15	200pF	B1	
C16	421pF	C2	
C17	0.001μF	B1	
C18	100pF	B2	
C19	100pF	B2	
C20	50pF	F4	
C21	0.1μF	H4	
C22	50pF	F4	
C23	0.01μF	F3	
C24	0.1μF	G3	
C25	15pF	F4	

C26	2μF	G3	
C27	0.002μF	F4	
C28	0.002μF	F4	
C29	0.002μF	F4	
C30	0.02μF	E4	
C31	0.05μF	H3	
C32	50μF	C1	
C33	50μF	C1	
C34	0.05μF	D1	

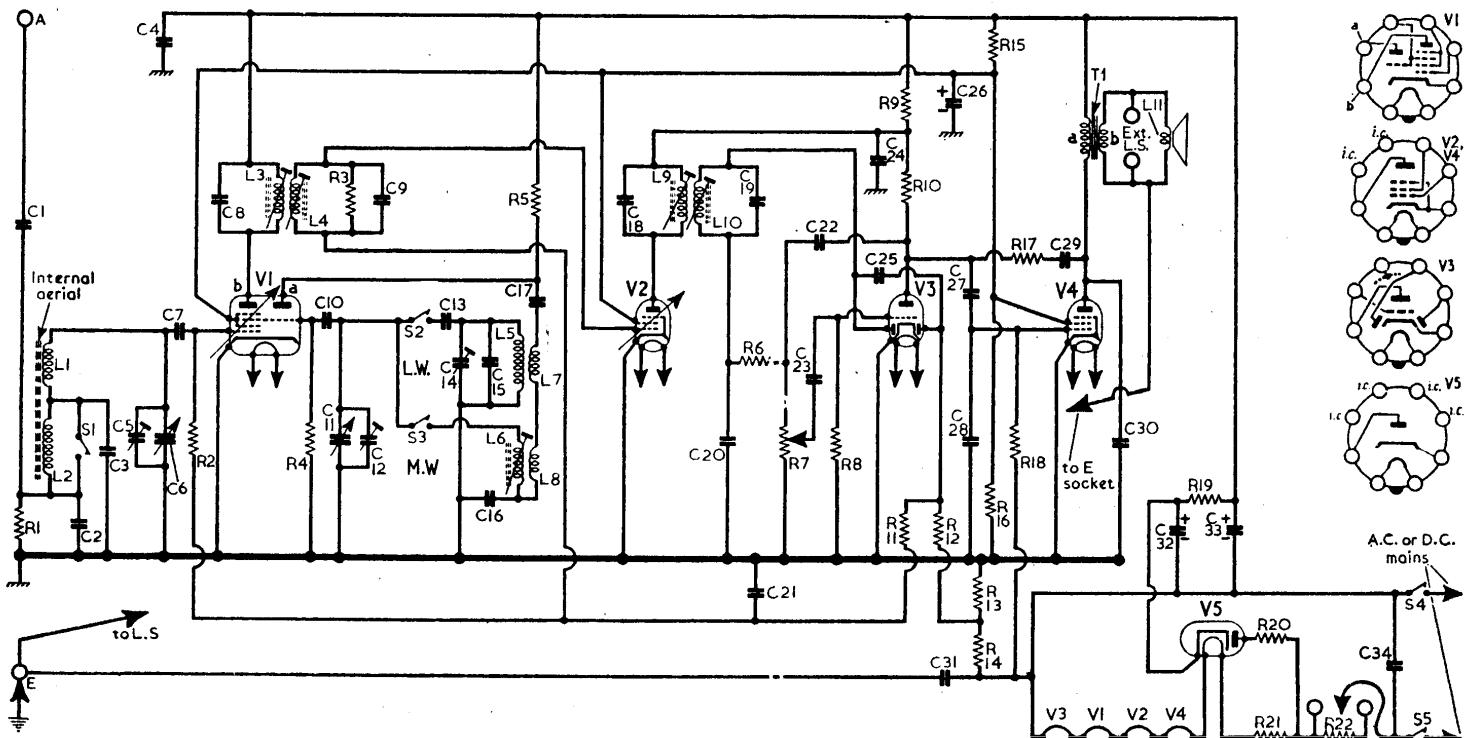
Resistors			
R1	22kΩ	H3	
R2	470kΩ	H3	
R3	680kΩ	G4	
R4	47kΩ	H4	
R5	47kΩ	H4	
R6	47kΩ	G4	
R7	500kΩ	D1	
R8	10MΩ	F3	
R9	1kΩ	G4	
R10	220kΩ	E3	
R11	1MΩ	G4	
R12	1MΩ	F4	
R13	39Ω	F3	
R14	47Ω	F3	
R15	10kΩ	F3	

R16	33kΩ	F4	
R17	1MΩ	E4	
R18	1MΩ	F4	
R19	470Ω	E3	
R20	160Ω	D2	
R21	930Ω	D2	
R22	200Ω	D2	

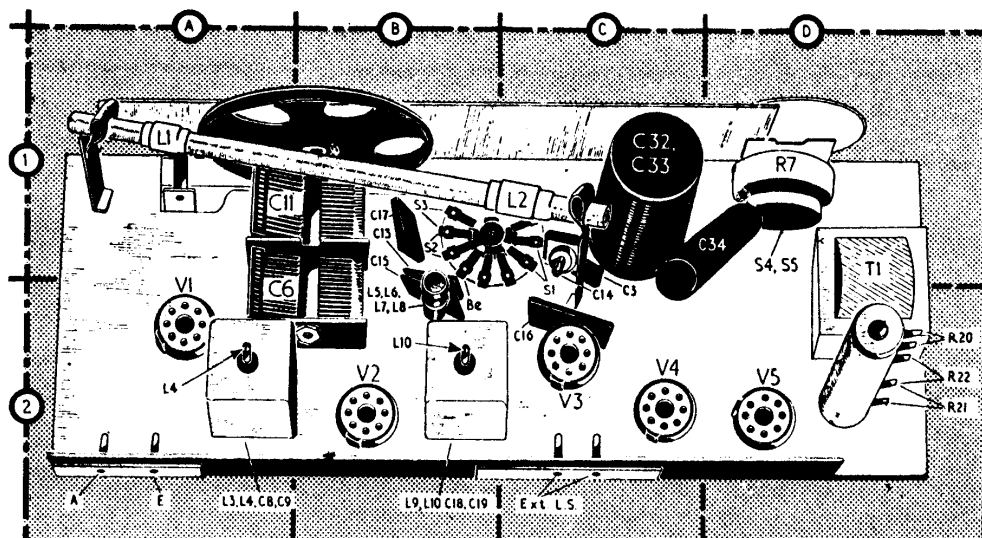
Coils*			
L1	1.4	A1	
L2	3.5	C1	
L3	11.5	A2	
L4	11.5	A2	
L5	6.3	B2	
L6	3.4	B2	
L7	3.2	B2	
L8	1.5	B2	
L9	11.5	B2	
L10	11.5	B2	
L11	2.5	—	

Other Components*			
T1	{ a 430-01 b — }	D1	
S1-S3	—	C1	
S4, S5	—	D1	

\*Approximate D.C. resistance in ohms.



Circuit diagram of the Ekco U245. A.G.C. delay bias and grid bias for V4 is developed across R13 and R14. Valve base connections, as seen from the underside of the chassis, are inset on the right of the main part of the diagram.



Plan illustration of chassis. In some models C5 is mounted on the ferrite rod aerial bracket in location reference A1.

#### Circuit Description—Continued

R18 between V3 and pentode output valve V4. Tone correction by C28, C30. Negative feedback tone correction by C22, R17, C29.

H.T. current is supplied by I.H.C. half-wave rectifying valve V5. H.T. smoothing by electrolytic capacitors C32, C33 and resistor R19. Voltage developed across R13, R14 in the H.T. negative circuit is fed as grid bias to V4. That developed across R13 provides fixed minimum grid bias for V1 and V2.

#### VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturer's information. They were measured with the receiver operating from 240V A.C. mains with the voltage adjustment set to the appropriate tapping.

The receiver was tuned to 300m, but there was no signal input.

Voltages were measured on a 20,000 ohms-per-volt meter, chassis being the negative connection in every case. Voltage measured across R13 was 1.7V, and across R13, R14 it was 3.8V, chassis being the positive connection in each case. Total mains consumption was 40 watts.

Valve	Anode		Screen		Cath. (V)
	V	mA	V	mA	
V1 UCH42	170 55	1.7 2.3	72	2.9	—
V2 UF41	165	3.8	72	1.1	—
V3 UBC41	78	0.4	—	—	—
V4 UL41	157	27.0	72	3.7	—
V5 UY41	205 <sup>1</sup>	—	—	—	190 <sup>2</sup>

<sup>1</sup>A.C. reading.

<sup>2</sup>Cathode current 45mA.

#### CIRCUIT ALIGNMENT

1.—Remove chassis from cabinet, switch it to M.W. and turn gang to maximum. Connect output of signal generator, via an 0.1μF capacitor in the live lead, between chassis and control grid (pin 6) of V1. Connect output meter across speaker tags.

2.—Feed in a 470kc/s signal and adjust the cores of L10 (location reference B2), L9 (G4), L4 (A2) and L3 (H4) for maximum output.

3.—Transfer signal generator leads to A and E sockets. Remove tuning scale from cabinet (four hexagonal-head bolts), and place it in position over the control spindles.

4.—Check that with gang at maximum capacitance the cursor coincides with the vertical datum mark which cuts the centre line at the high wavelength end of the tuning scales.

5.—Tune receiver to 250m, feed in a 1,200kc/s signal and adjust C12 (G3) for maximum output.

6.—Tune receiver to 225m, feed in a 1,333kc/s signal and adjust C5 (G4) for maximum output.

7.—Tune receiver to 500m, feed in a 600kc/s signal and adjust the core of L6 (G4) for maximum output. At the same frequency, adjust the inductance of L1 (A1) for maximum output by sliding the coil along its ferrite rod.

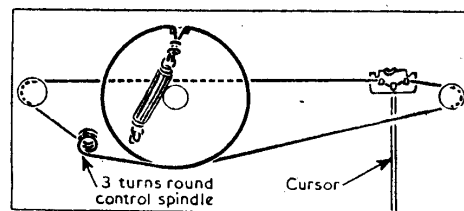
8.—Check calibration at 250m and 500m and, if necessary, repeat the adjustments in steps 5, 6 and 7.

9.—Switch receiver to L.W., tune it to 1,600m, feed in a 187.5kc/s signal and adjust C14 (C1) for maximum output. At the same frequency, adjust the inductance of L2 (C1) for maximum output by sliding the coil along its ferrite rod.

10.—Switch receiver to M.W. and check calibration at 500m, readjusting ferrite rod coil L1 if necessary.

#### GENERAL NOTES

Switches.—S1-S3 are the waveband switches ganged in a single rotary unit on the chassis deck. The switch connections are identified in the plan illustration of the chassis (location reference B1). S1, S3 close for M.W. operation. S2 closes for L.W. operation.



Sketch of the tuning drive system as seen from the rear of upright chassis.

**Drive Cord Replacement.**—About 38in of flax fishing line, plaited and waxed, is required for a new drive cord. Before fitting a new cord it should be stretched for about 24 hours to prevent the drive from becoming slack after a short period of use.

The cord should then be tied to the drive spring and, with the gang turned to minimum capacitance, it is passed out through the hole in the top of the drive drum and is then run on as indicated in the sketch of the tuning drive system above.

C5.—In some models trimmer C5 is mounted on the ferrite rod bracket near L1.

**Voltage Adjustment.**—The voltage adjustment consists of a flying lead which can be secured by means of a nut to one of two terminals on the ballast resistor R21, R22 (location reference D2). The lower terminal (junction of R21, R22) is for 200-220V mains operation, and the upper terminal (free end of R22) is for 230-250V mains operation.

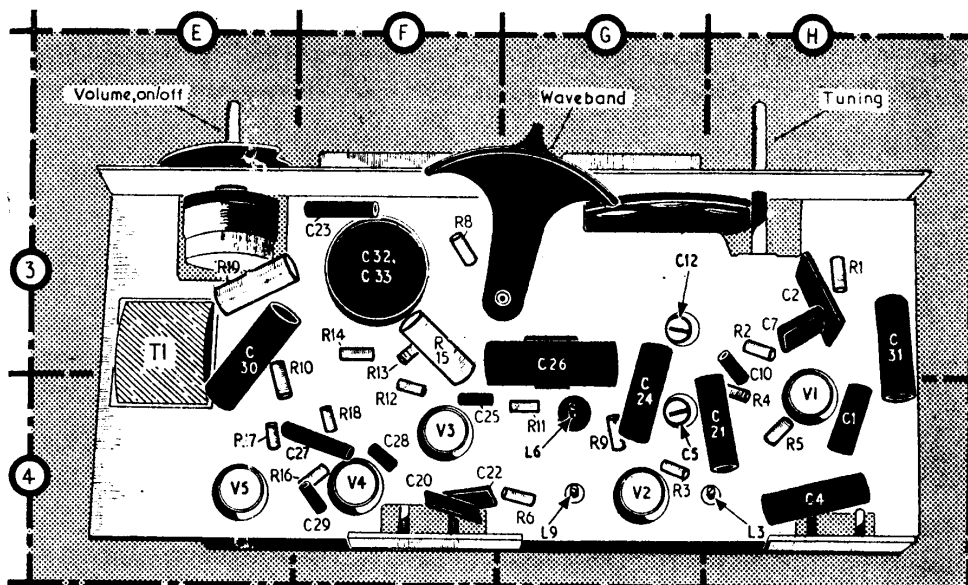
**Replacing C32, C33.**—H.T. smoothing capacitors C32, C33 are contained in a single tubular unit whose metal can is not isolated from the common negative connection of the capacitors. As the negative connection of the capacitors is returned to the H.T. negative circuit and not to chassis, a thin sheet of insulation is wrapped round the can to insulate it from the mounting lugs on the chassis.

When replacing the capacitor unit with a similar type, care should be taken to replace the insulating sheet round the new unit. If, however, the replacement unit has an isolated can, the insulation can be dispensed with.

#### DISMANTLING

**Removing Chassis.**—Remove two control knobs from front of receiver (secured by grub screws). Remove back cover (held by five wood screws). Remove two plinths from base of cabinet (each held by two self-tapping screws) exposing chassis bolts.

Remove four 4BA chassis bolts and withdraw chassis to extent of speaker leads which can then be disconnected from the speaker speech coil tags.



Underside illustration of chassis. The waveband switch control in location reference G3 is shown in the L.W. position.