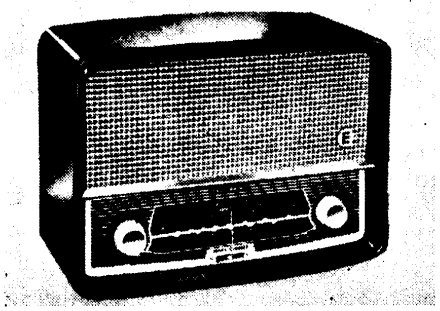
"TRADER" SERVICE SHEET

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.

EMPLOYING 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 6*s* 7*d*. *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.). Reaction 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**.

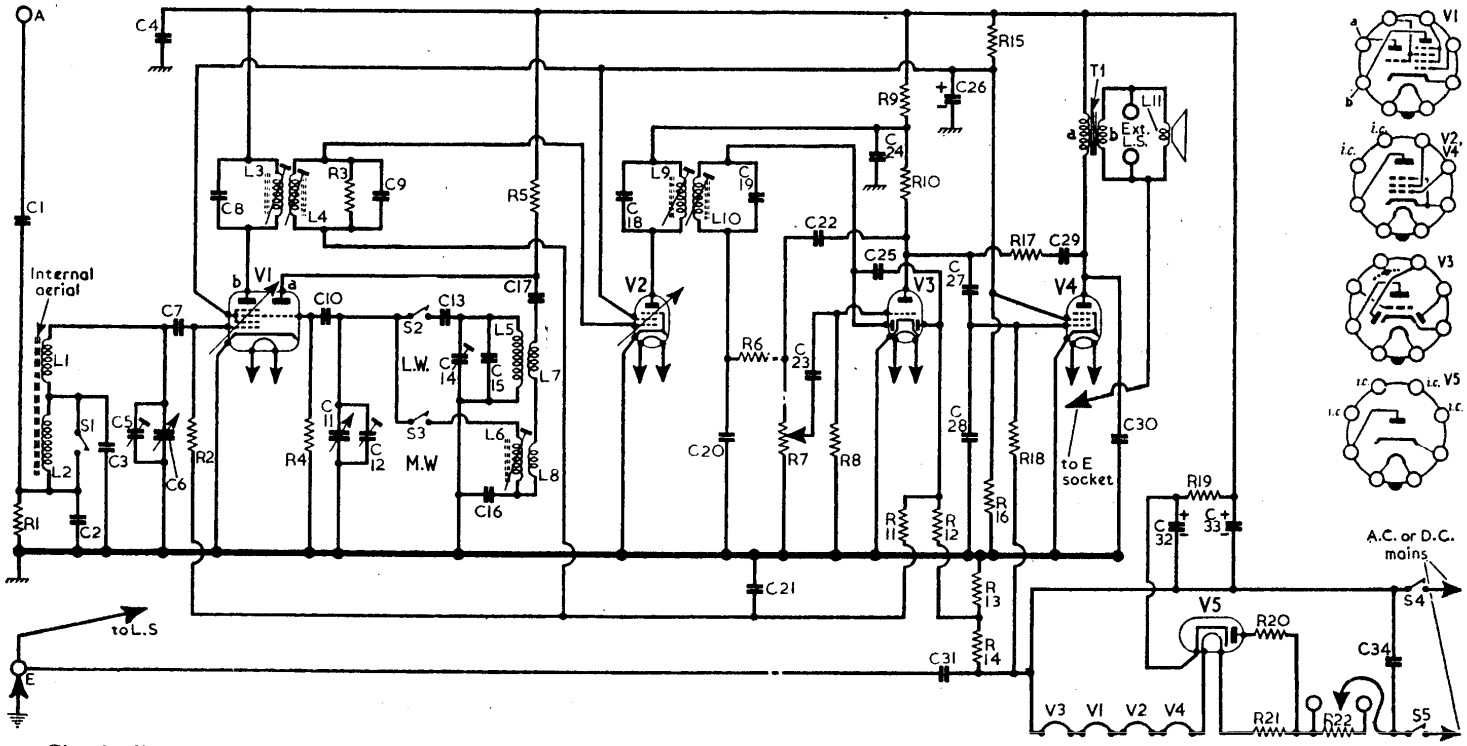
Resistance-capacitance coupling via **R10, C27**,

(*Continued in col.* 1 *overleaf*)

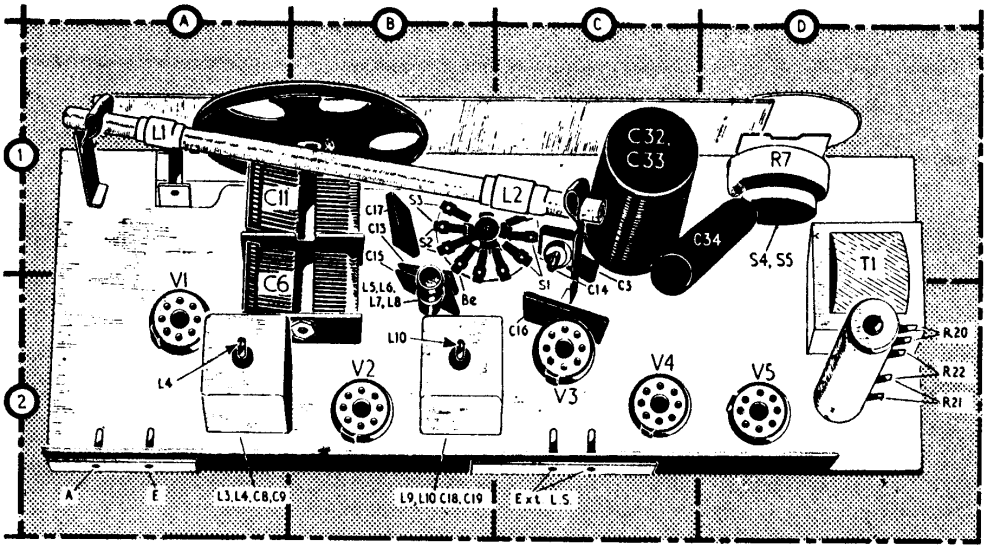
COMPONENT VALUES AND LOCATIONS

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	430·0}	D1
T1 {b	—}	
S1-S3	—	C1
S4, S5	—	D1

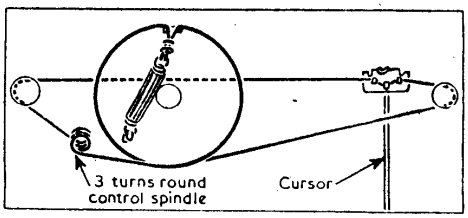
*Approximate D.C. resistance in ohms.



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.



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

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 (Oscillator 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[1]	—	—	—	190[2]

[1] *A.C. reading.*

[2] *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.

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.

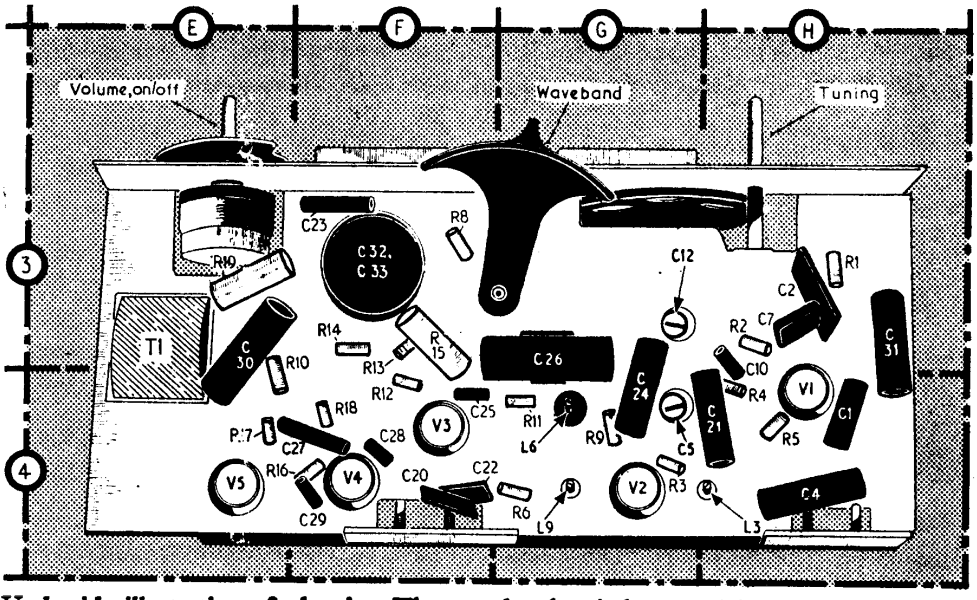
DISMANTLING

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.

Printed in England by Cornwall Press Ltd., Paris Garden, London, S.E.1.