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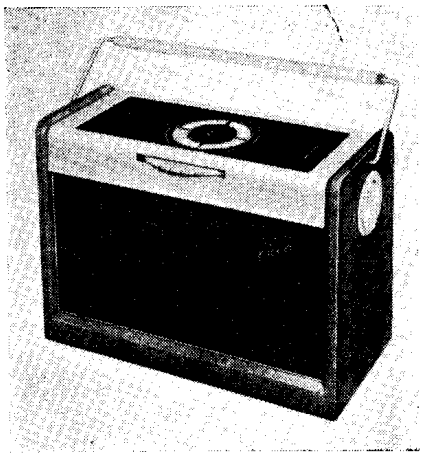
"TRADER" SERVICE SHEET

1307

EKCO BP257

All-dry Battery Portable



EMPLOYING a printed circuit for component and valve connections, together with a ferrite rod internal aerial, the Ekco BP257 is a 4-valve all-dry portable superhet. The waveband ranges are 188-566m and 1,000-2,143m.

Release date and original price: June 1956, £9 1*s* 3*d*. *Purchase tax and batteries extra.*

CIRCUIT DESCRIPTION

Internal ferrite rod aerial coils **L1** (M.W.) and **L1, L2** (L.W.) are tuned by **C3,** and precede heptode valve **V1,** which operates as frequency changer with electron coupling.

Oscillator grid coils **L5** (M.W.) and **L5, L6** (L.W.) are tuned by **C9.** Parallel trimming by **C10** (M.W.) and **C10, C13** (L.W.); series tracking by **C12** (M.W.) and **C12, C14** (L.W.).

Second valve **V2** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C6, L3, L4, C7** and **C17, L9, L10, C18.**

Intermediate frequency 470kc/s

Diode signal detector is part of diode pentode valve **V3.** Audio frequency component in its rectified output is developed across volume control **R8,** which acts as diode load, and is passed via **C22** to **V3** pentode section, which operates as A.F. amplifier.

Resistance-capacitance coupling via **R11, C26, R12** between **V3** and pentode output valve **V4.** Negative feed-back tone correction by **C27** between **V4** and **V3** anode circuits. Grid bias for **V4** is developed across **R13,** which is connected in series with the H.T. negative lead.

GENERAL NOTES

S1, S2 are the waveband switches ganged in a single rotary unit on the chassis (location reference C1). With the control tuned anti-clockwise for M.W. operation, switches **S1** and **S2** close. In the L.W. position both switches open.

Batteries.—Those recommended by the manufacturer are: L.T., Ever Ready AD35, rated at 1.5V; H.T., Ever Ready B126, rated at 90V.

(Continued in column 1 overleaf)

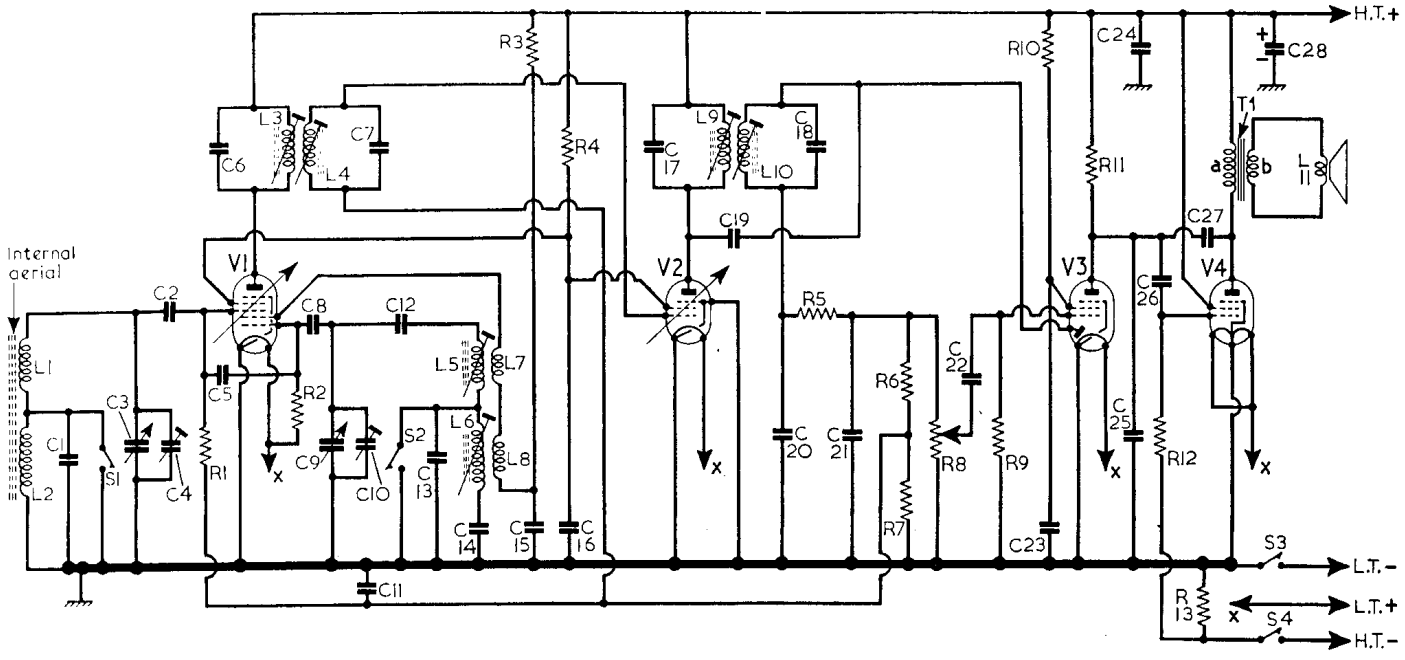
COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	L.W. aerial trim.	50pF	C1
C2	V1 C.G.	100pF	C1
C3	Aerial tuning	—	B1
C4	Aerial trim.	—	B1
C5[1]	Osc. neut.	5pF	C1
C6	1st I.F.T. tuning	56pF	C1
C7	1st I.F.T. tuning	56pF	C1
C8	V1 osc. C.G.	50pF	C1
C9	Osc. tuning	—	B1
C10	Osc. trim.	—	B1
C11	A.G.C. decoupling	0·01μF	B1
C12	M.W. osc. tracker	600pF	C1
C13	L.W. osc. trim.	100pF	B1
C14	L.W. osc. tracker	350pF	C1
C15	Osc. anode decoup.	0·01μF	C1
C16	V1, V2 S.G. decoup.	0·01μF	B1
C17	1st I.F.T. tuning	56pF	A1
C18	1st I.F.T. tuning	56pF	A1
C19[2]	Top coupling	6pF	A1
C20	I.F. by-passes	100pF	A1
C21	I.F. by-passes	100pF	A1
C22	A.F. coupling	0·001μF	B1
C23	V3 S.G. decoup.	0·01μF	A1
C24	H.T. decoupling	1μF	B1
C25[1]	I.F. filter	100pF	A1
C26	A.F. coupling	0·001μF	A1
C27[3]	Neg. feed-back	10pF	A1
C28	Battery by-pass	8μF	A1

[1]*May be omitted.* [2]*May be 8pF.* [3]*May be 20pF.*

	RESISTORS	Values	Locations
R1	V1 C.G.	1MΩ	C1
R2	V1 osc. C.G.	100kΩ	C1
R3	Osc. anode feed	18kΩ	C1
R4	V1, V2 S.G. feed	27kΩ	B1
R5	I.F. stopper	47kΩ	A1
R6	A.G.C. potential divider	3·3MΩ	B1
R7	A.G.C. potential divider	1MΩ	C1
R8	Volume control	500kΩ	A1
R9	V3 C.G.	10MΩ	B1
R10	V3 S.G. feed	3·3MΩ	B1
R11	V3 anode load	1MΩ	B1
R12	V4 C.G.	1MΩ	A1
R13	V4 G.B.	680Ω	A1

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	Internal aerial coils	1·5	C1
L2	Internal aerial coils	8·5	A1
L3	1st I.F.T. Pri.	33·0	C1
L4	1st I.F.T. Sec.	35·0	C1
L5	Osc. tuning coils	5·5	C1
L6	Osc. tuning coils	7·1	C1
L7	Osc. reaction coils	2·5 (total)	C1
L8	Osc. reaction coils		C1
L9	2nd I.F.T. Pri.	33·0	A1
L10	2nd I.F.T. Sec.	35·0	A1
L11	Speech coil	2·5	—
T1	O.P. trans. a	720·0	A1
T1	O.P. trans. b	0·29	A1



Circuit diagram of the Ekco BP257. **C19** functions as an I.F. top coupling capacitor. **C27** is a negative feed-back capacitor.

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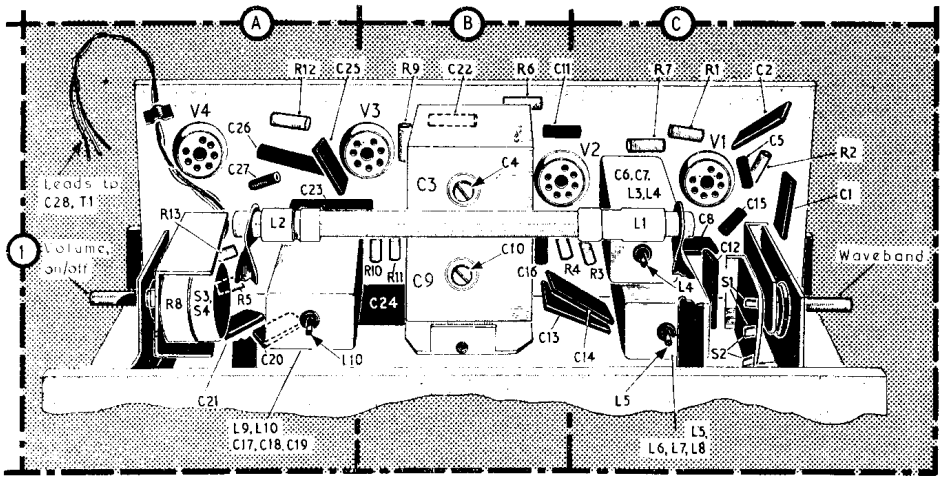
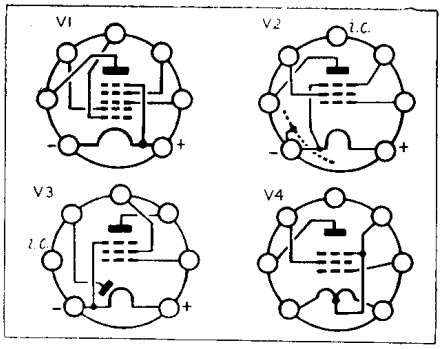




Above: Diagram of the valve base connections. *Left:* Rear view of chassis. Ferrite rod aerial is mounted in the carrying case.

General Notes—Continued.

Circuit Plate.—To avoid damaging the printed circuit when replacing components, use a soldering iron having a small bit and rated at not more than 60W.

The leads of the replacement components should be cut to the correct length, tinned and pushed through the holes in the circuit plate while melting the solder on the printed circuit side of the plate.

Chassis Divergencies.—In earlier receivers **C5** and **C25** are omitted. **R4** is 10kΩ and also feeds **V1** oscillator anode circuit, **R3, C15** being omitted. **C19** is 8pF. **C27** is 10pF. **R13** is shunted with an 8μF electrolytic (positive to chassis).

CIRCUIT ALIGNMENT

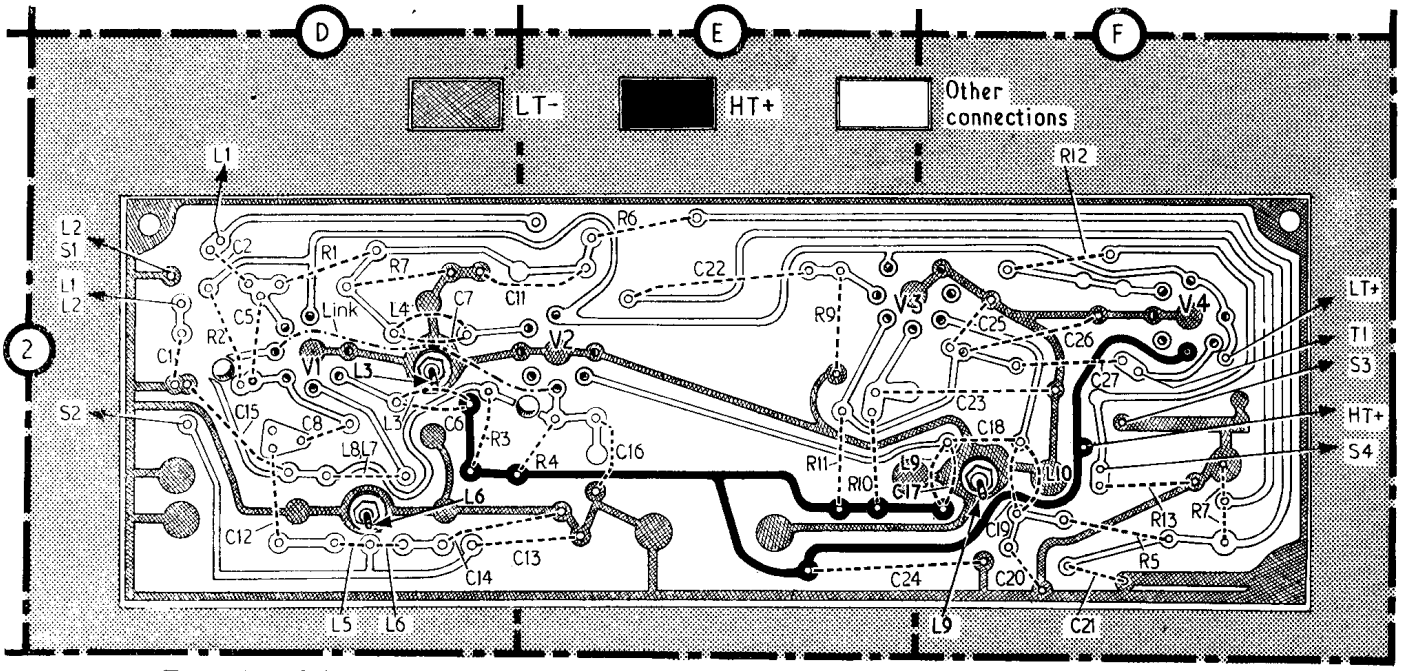
1.—Switch receiver to M.W. and connect output of signal generator, via an 0.1μF capacitor in the live lead, to control grid (pin 6) of **V2** and chassis.
2.—Feed in a 470kc/s signal and adjust the cores of **L9** (F2) and **L10** (A1) for maximum output.
3.—Transfer signal generator "live" lead to control grid (pin 6) of **V1**.
4.—Feeding in a 470kc/s signal, adjust the cores of **L3** (D2) and **L4** (C1) for maximum output.
5.—Repeat steps 1-4.
6.—Check that with gang at maximum capacitance, the cursor coincides with the datum line between the M.W. and L.W. tuning scales.
7.—With signal generator output connected to **V1** control grid, tune receiver to 566m, feed in a 530kc/s signal and adjust the core of **L5** (C1) for maximum.
8.—Tune receiver to 187.5m, feed in a 1,600kc/s signal and adjust **C10** (B1) for maximum output.
9.—Switch receiver to L.W., tune to 1,429m, feed in a 210kc/s signal and adjust the core of **L6** (D2) for maximum.
10.—Switch receiver to M.W., loosely couple output of signal generator to receiver by laying the generator output leads near the ferrite rod aerial.
11.—Tune receiver to 428.7m, feed in a 700kc/s signal and adjust the inductance of **L1** for maximum output by sliding the coil along its ferrite rod.
12.—Tune receiver to 214.3m, feed in a 1,400kc/s signal and adjust **C4** (B1) for maximum output.
13.—Switch receiver to L.W. and tune it to 1,429m. Feed in a 210kc/s signal and adjust the inductance of **L2** (A1) for maximum output by sliding the coil along its ferrite rod.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturer's information. They were measured with a Model 7 Avometer, chassis being the negative connection in every case. The total L.T. consumption was 125mA, and the total H.T. consumption was 9mA. The voltage measured across **R13** was 5.8V, positive to chassis.

Valve	Anode		Screen	
	V	mA	V	mA
V1 DK96 ..	84·5	0·35	50·0	0·8
	Oscillator			
	35·0	1·8		
V2 DF96 ..	84·5	1·5	50·0	0·35
V3 DAF96 ..	*	0·055	*	0·014
V4 DL96 ..	81·5	4·0	84·5	0·69

* No reading quoted.



Front view of chassis as seen with receiver resting on tuning scale. Shading identifies circuit element.

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

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