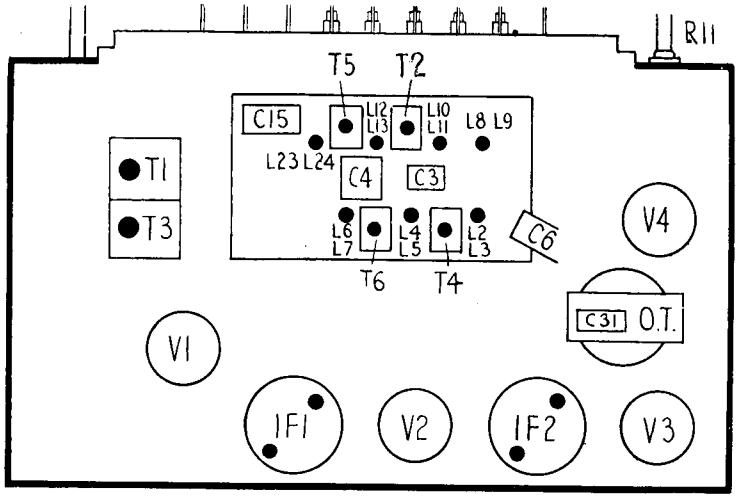
EKCO PB507 PB508

Four-valve battery-operated superhet with three wavebands and pre-set push-button tuning. PB507 has a moulded cabinet, and PB508 a wood cabinet. Made by E. K. Cole, Ltd., Green Park Hotel, Aston Clinton, Bucks.



The top "deck" layout diagram of the Ekco PB507, 508 chassis. The inset portion shows how the trimmers are located on the coil assembly which is actually on the underside of the chassis.

Circuit.—The aerial is connected either direct or through C1 to three primary windings. Across these are C2 and L1 in series, forming an I.F. filter. Each aerial input transformer is iron cored, the windings being: S.W., L2, L3; M.W., L4, L5; L.W., L6, L7. L4 is shunted by C3, L6 by C4, and L7 by C5.

Push-button switches select the waveband and connect three pre-sets across L5 or two across L7. A.V.C. is applied to the bottom end of the primaries via R8, decoupled by C6.

V1 is the frequency-changer. The screen, in common with that of V2, is fed via R5, R6, R13, and is decoupled by C18.

An iron-core I.F. transformer connects the anode to main H.T. C7 and C8 are in series across the primary, L19; C9 tunes L20, the secondary.

The oscillator section is tuned grid, the coupled windings being L8–9, L10–11, L12–13. L12 has a fixed shunt C14, and the padders, all fixed, are C11, C12, C13. On P.B. a master oscillator circuit is switched in. L23 is the anode coupling coil, and L24, tuned by C15, is shunted by one of L14–18.

The oscillator grid condenser is C10, and the leak R2. R3 is a stabiliser between R2 and the grid. C16 is the oscillator anode feed condenser, R1 being the anode load. The H.T. for the oscillator, V2, and V3 anodes is taken from R13, in the main H.T. line, decoupled by C26, an electrolytic, and C25 in shunt.

V2, the I.F. amplifier, is A.V.C. controlled via R4, decoupled by C17. The I.F. windings are L21, 22 tuned by C19, 20.

V3 is the double-diode-triode. The A.V.C. diode, fed via C21 from V2 anode, develops D.C. across R7, which is connected between R14, 15 in the negative H.T. line for delay bias. The same point is connected to the volume control, R11, and the P.U. sockets, thereby biasing the triode section.

The demodulated signal is developed across R10, filtered by R9, C22, C23, and passed to the volume control through C24.

Amplified L.F. is developed by R12, the anode load, and passed through C27 to the primary of the push-pull intervalve transformer. C28 is an H.F. shunt.

The centre-tap of the transformer secondary is returned through R16 to H.T.—, which is negative with respect to chassis and V4 filament. The two outers feed the two sections of the Q.P.P. output valve, V4.

The push-pull output transformer is shunted by a variable tone control, C30, R17. The anodes are linked by C31 and earthed through C32, C33.

Batteries.—H.T., 135 volts; L.T., 2 volts. Consumption: H.T., 10 ma., quiescent; L.T., .7 amp.

Wavebands.—19–50.5, 190–565, 1,000–2,000 m.

CIRCUIT DIAGRAM

WE are not permitted by E. K. Cole, Ltd., to publish the circuit diagram of this receiver. Accordingly the circuit description given is very complete, describing the function of practically every component.

GANGING

I.F. Circuits.—Tune to max. M.W. Inject 477 kc., or if the set has a red serial number, 465 kc. Adjust all four I.F. cores with non-metallic instrument.

I.F. Filter.—Inject I.F. signal to aerial and adjust L1 for minimum.

Calibration.—See that pointer registers with line terminating 560 m. end of M.W. scale with gang at max. Adjust by drive wheel (grub screws).

Tune to 20 m., inject 15 mc. and adjust T1 (trimmer on osc. gang section). To check that trimmer is on right peak, check that image is received twice the I.F. below—i.e., 21.4 m.

Tune to 200 m., inject 1,500 kc., and adjust T2, M.W. osc. trimmer. Tune to 500 m., inject 600 kc. and adjust L10, L11 for correct calibration. Repeat T2 and L10, L11 adjustments.

Tune to 250 m., inject 1,200 kc., and adjust T3, aerial gang trimmer.

Return to 20 m., and adjust T4, S.W. aerial trimmer.

Tune to 1,300 m., inject 230.8 kc., and adjust T5 for calibration and T6 for output. Tune to 1,700 m., inject 176 kc. and adjust L12, L13 for calibration. Repeat L.W. adjustments.

PUSH-BUTTONS

Take tool from back cover and unscrew button panel. Fully unscrew lower key of button to be reset. Do not force.

Press button and turn lower key clockwise for number of turns indicated in the Guide for that station and button. Increase volume control.

Turn upper key for maximum. Do not fully unscrew. Alternately adjust upper and lower keys and compare results with those obtained manually.

Do not touch master oscillator coils, L23, L24.

VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
1	TH2	Anode	126	.29
		Screen	33	.58
		Osc. anode	55	1.52
2	VP2B	Anode	100	.57
		Screen	33	.21
3	TDD2A	Anode	70	.61
4	QP22B	Anodes	123	2.71
		Screen	126	.86

RESISTANCES

R	Ohms.	R	Ohms.
1	30,000	10	680,000
2	100,000	11	850,000
3	39	12	47,000
4	1 meg.	13	6,800
5	82,000	14	75
6	1,000	15	820
7	680,000	16	100,000
8	1 meg.	17	60,000
9	56,000		

CONDENSERS

C	Mfds.	C	Mfds.
1	.0003	18	.1
2	40 mmfds.	19	140 mmfds.
3	.0003	20	140 mmfds.
4	.00085	21	15 CX.
5	80 mmfds.	22	140 mmfds.
6	.1	23	.0001
7	.1	24	.01
8	140 mmfds.	25	.1
9	140 mmfds.	26	4
10	50 mmfds.	27	.1
11	3,750 mmfds.	28	.0003
12	590 mmfds.	29	50
13	305 mmfds.	30	.02
14	230 mmfds.	31	.003
15	266 mmfds.	32	.003
16	.0004	33	.003
17	.04		

WINDINGS

L	Ohms.	L	Ohms.
1	15	12	3
2, 3	below 1	13	1
4	10	14	2
5	2	15	3.5
6	34	16	4.5
7	22	17	5.5
8, 9	1	18	6.5
10	3.5	19–23	5
11	1	24	9

Back E.M.F. in Choke Reduced H.T.

A MARCONIPHONE model 223 A.C./D.C. set was being tested for loss of H.T. rectified voltage which was 60 volts instead of 200 volts. The A.C. voltage on the rectifier was 200 and correct.

In course of testing, a resistance was substituted for the smoothing choke to check if the choke had too high a resistance. This caused the D.C. voltage to rise to its correct value. The resistance was 475 ohms, and the choke also gave this reading. When reconnected in circuit, however, the low voltage was again present.

Further testing showed that the 12 mfd. condenser next to the rectifier was O.C.

Due to the rectified current having insufficient smoothing a back E.M.F. was being set up in the choke. This E.M.F. opposed the main E.M.F., causing the voltage reduction observed. Replacement of the condenser removed the "ripple," and, with only the D.C. current passing through the choke, the voltage rose to its correct value.

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A PHILIPS 638A was being tested for the cause of a bad hum at the mains frequency. All the condensers were found to be O.K. Shorting out the grid input to the different valves proved that the hum was entering at the SP4 valve.

Examination of the lead to the valve cap showed that the usual screening in the lead was missing, and as this is near the mains transformer, hum was being induced.

Binding some wire around the sleeving of the lead and earthing the end of the wire to chassis cured the trouble.

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A PHILCO U427 when connected to the mains would straight away blow the set mains fuses. Testing the set showed an O.C. in the resistance feeding the speaker field.

The voltage in other parts of the set was rising to much higher values than correct, and in consequence causing higher currents to flow, thus blowing the fuses. A new resistance cured the set.—F. DAY-LEWIS, Dublin.

Ganging Instructions

ROUTINE ganging procedure is omitted from most set reviews in SERVICE ENGINEER. When in doubt, newcomers should refer to the article on set alignment in the September issue.