

# EKCO AC86

Four-valve, plus separate diode demodulator and rectifier, two-waveband superhet with provision for high-resistance pickup and low-resistance extra loudspeaker. For operation from 200-250v AC mains. Marketed by E. K. Cole, Ltd., Service Dept., Ekco Works, Southend-on-Sea.

THE aerial input is fed via C1 to a tapping on the MW primary coil L1 of an inductively coupled band-pass filter unit. L4 is the secondary winding, and the filter unit is tuned by VC1 and VC2 sections of the ganged condenser.

On LW the aerial input is fed via C1 and L3 to a tapping on the LW primary coil L2. L3 is an HF choke to prevent medium wave break-through on LW. L5 is the LW secondary coil.

Second-channel interference is eliminated by the

trimmer T10 connected between the aerial and grid circuit of the frequency changer V1. This valve is cathode biased by R2 decoupled by C3, but the grid circuit is connected to the junction of R8, R9.

The oscillator section of V1 employs a tuned grid circuit in which L6 (MW) and L7 (LW) are tuned by VC3 section of the ganged condenser. R1 and C7 are the grid leak and condenser. The oscillator anode coils L8 (MW) and L9 (LW) are fed from the high-tension line via R3, which also drops the volts to the screening grid of V1. C5 is the decoupling condenser for this feed.

The intermediate-frequency signal from V1 is

### VALVE READINGS

V	Type	Electrode	Volts	Mas
1	FC4 (met Mullard)	Anode	250	3.4
		Osc Anode	125	2.8
		Cathode	*44-60	—
2	AC/VP1 (Met Mazda)	Anode	250	7.1
		Screen	250	.9
		Cathode	*42-60	—
3	2D4A (Met Mullard)	Metallising and Cathode	*42-60	—
		Anode	150	2.5
4	354V(Met Mullard)	Cathode	2.5	—
		Anode	225	28
5	AC/PEN (Mazda)	Screen	250	5.4
		Cathode	16	—
		Anodes	350 (AC)	—

\* Depending on adjustment of VR1.

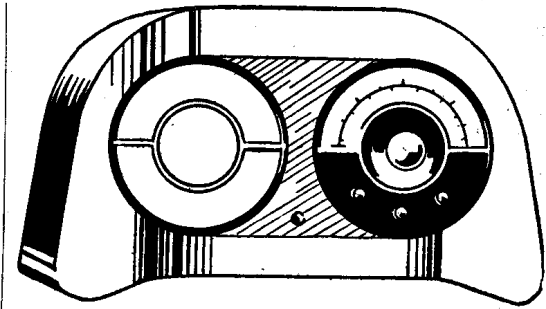
transferred by L10 and L11 to the grid of the IF amplifying valve V2, and the grid circuit is connected to the automatic volume control line.

Permanent bias is obtained from the cathode resistances R8 and R9, while further bias may be applied by adjusting the noise suppression control VR1. By increasing the amount of this resistance in circuit the V1 and V2 stages may be desensitized so as to suppress noisy background and allow reception of only those signals which are of worthwhile strength to be reproduced. V1 grid receives negative bias from the junction of R8, R9 depending upon the resistance of VR1.

A second IF transformer L12, L13, L14 is connected in the anode circuit of V2. L13 feeds the signal diode of V3 double diode valve, the signal being filtered by R10 and C10 with R5 the load resistance. This is returned to R2 for delay volts.

The third winding, L14, on the IF transformer feeds the AVC diode of V3. R6, C8 are filter components, and R7 the load resistance which completes the circuit to the cathode of V3 via R8.

From R5 the LF signal is fed via C12 to the volume control VR2, which has C14 in series with it for maintaining the bass output at low volume. It should be appreciated that because of this arrangement a small volume of sound will still be heard on loud signals when the volume control is at minimum.



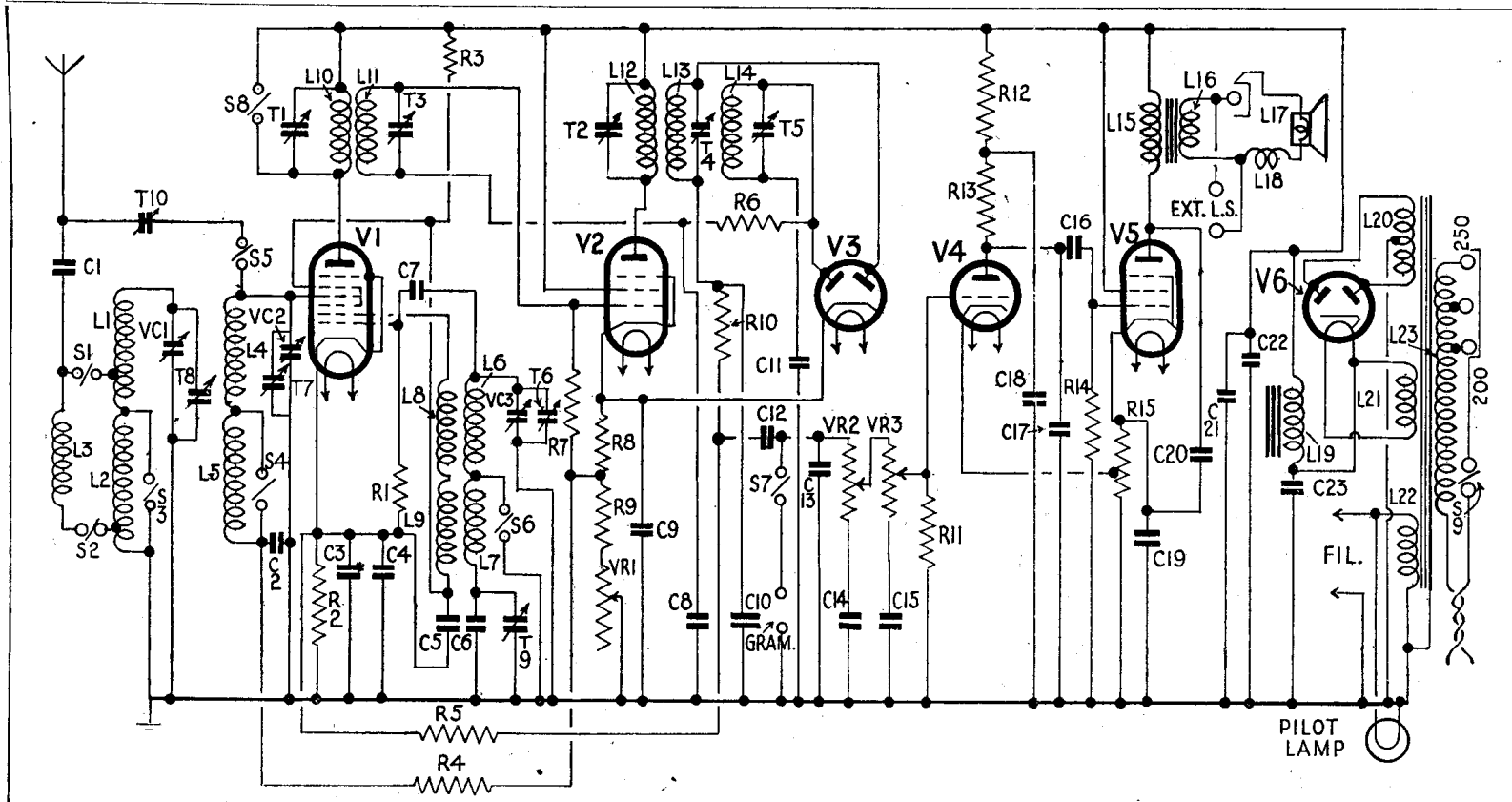
Housed in this distinctive moulded cabinet, the AC86 is a five-valve, plus rectifier, two-waveband AC superhet.

Sockets for a high-resistance pickup are provided across VR2.

A tone control circuit, VR3, C15, is interposed between the volume control and the grid of the LF amplifier triode V4. R11 is the grid leak, and cathode bias is derived from a tapping on V5's cathode resistance R15.

The LF signal is tone corrected by C17 and resistance capacity coupled by R13, C16 and R14 to the

Continued overleaf



### CONDENSERS

C	Mfds	C	Mfds
1	.0008	13	.0003
2	.1	14	.25
3	10	15	.0005
4	.1	16	.01
5	.1	17	.001
6	.0007	18	.2
7	.001	19	.25
8	.01	20	.0025
9	.1	21	.1
10	.0002	22	.8
11	.01	23	.8
12	.01		

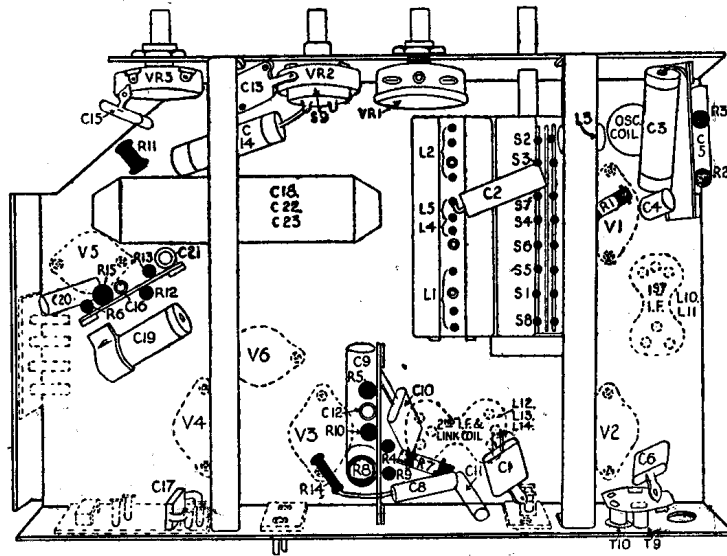
### RESISTANCES

R	Ohms	R	Ohms
1	50,000	10	100,000
2	6,000	11	1 meg
3	15,000	12	9,000
4	500,000	13	25,000
5	100,000	14	250,000
6	250,000	15	400
7	250,000	VR1	10,000
8	300	VR2	250,000
9	5,000	VR3	500,000

### WINDINGS

L	Ohms	L	Ohms
1	3	13	77
2	30	14	150
3	50	15	800
4	3	16	low
5	30	17	2.5
6	5	18	2.5
7	10	19	2,150
8	5	20	600 (total)
9	5	21	Very low
10	77	22	Very low
11	77	23	36 (total)
12	77		

How components are situated under the AC86 chassis. Resistors are easy to pick out as they are shown in solid black, while condensers are in outline. To the right, below, is the diagram identifying components on top of the chassis.



grid of V5, the output pentode. C20 is the pentode tone correcting condenser, and the output transformer L15, L16 couples V5 to the low impedance energised loudspeaker in which L17 and L18 are the speech and hum-bucking coils respectively.

Sockets for a low-impedance extra speaker are connected across L16 with a screw-switch for silencing the internal speaker when desired.

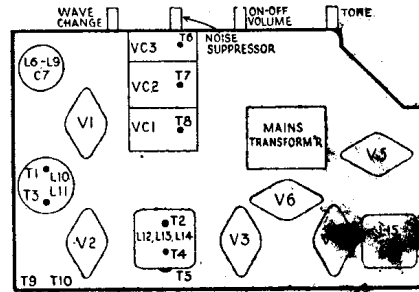
The HT circuit is quite standard, and employs a full-wave rectifier V6 with smoothing effected by the loudspeaker field winding L19 and condensers C22 and C23.

**GANGING**

**IF Circuits.—(First Method.)** Switch receiver to LW and adjust gang to nearly maximum capacity. Inject a 130 kc signal into the A and E sockets, or if the signal is not strong enough, between the grid of V1 and chassis.

Connect an output meter to the external loudspeaker sockets and adjust T1, T2, T3, T4 in that order for maximum output, keeping the input signal as low as possible. Next adjust T5 for minimum output.

**(Second Method.)** Remove chassis from cabinet and adjust receiver controls as before. Disconnect R8 and insert a 0-10 milliammeter between R8 and cathode of V2. Turn VR1 to minimum (anti-clockwise).



Inject a 130 kc signal as above and adjust T1 T2, T3, T4 and T5 for minimum reading on the meter.

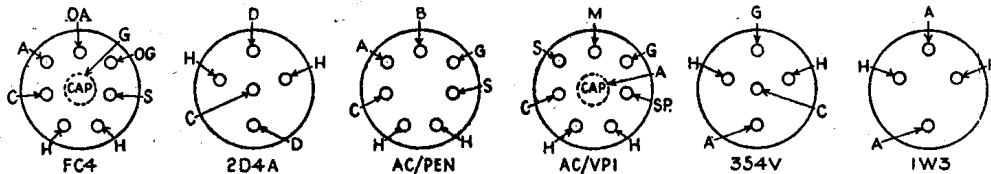
**MW Band.—**Switch receiver to MW and adjust gang to the 200-metre mark on the dial. Inject a 200m signal into the A and E sockets and adjust T6 for maximum output.

Adjust gang to 250m mark on dial and inject a 250m signal. Adjust T7 and T8 for maximum output.

**LW Band.—**Switch to LW and inject a 1600 metre signal. Check calibration at this wavelength, and if out to any extent adjust T9 for maximum output while rocking gang.

**Image Rejection.—**The image rejection trimmer T10 is, of course, only in circuit on MW.

Tune in the undesired second channel waistle and adjust T10 until the whistle is minimised



Valve connections as seen from below the base, or the underside of the valveholders. Abbreviations are evident except, perhaps, for B, which stands for blank.

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BARKER.—88, etc., etc. (Core size, 1 1/2-in. x 1 1/2-in.)  
COLUMBIA.—335, etc., etc. (Core size, 1-in. x 1 1/2-in.)  
COSSOR.—348, 484, and many others. (Core size, 1 1/2-in. x 1 1/2-in.)

DECCA.—All Types, 4 volt, 6.3 volt and 13 volt. (Core size, 1-in. x 1 1/2-in.)  
DEFIANT.—MSH950, 956. (2-in. x 1 1/2-in.) 878. (1 1/2-in. x 1 1/2-in.)

EKCO.—RG489, AC74, AC85, AW108, ARG107, etc. (Core size, 1-in. x 1 1/2-in.)

EVER-READY, LISSEN, PYE. Practically all types. (Core size, 1 1/2-in. x 1 1/2-in.)

FERRANTI, Lancastria, Parva, etc. (Core size 1 1/2-in. x 1 1/2-in.)  
FERGUSON.—101A, 104A, 378, 503. (Core size, 1 1/2-in. x 1 1/2-in.)

G.E.C.—Practically all 4-v. types. (Core size, 1-in. x 1 1/2-in.)  
G.E.C.—Practically all 6-v. types. (Core size, 1 1/2-in. x 1 1/2-in.)

G.E.C.—Practically all 13-v. types. (Core size, 1-in. x 1 1/2-in.)

H.M.V.—440, 490, 494, 495, 499, 501, 512, 542, 580, 651, 905, 1103, 1200, 1300, etc.

MARCONI.—262, 272, 274, 286, 288, 538, 878, 883, etc., etc. 4-volt (Core size, 1 1/2-in. x 1 1/2-in.); 6-volt (Core size, 1 1/2-in. x 1 1/2-in.)

MURPHY.—A3, A4, A24, A26, A28, A30, A34, A36, A38, A40, A46, etc., etc. (Core sizes, 1 1/2-in. x 1 1/2-in., and 1 1/2-in. x 1 1/2-in.)

PHILCO.—444, 537, 581, etc., etc. (Core size, 1 1/2-in. x 1 1/2-in.)

PORTADYNE.—A30, A39, etc., etc. (Core size, 1-in. x 1 1/2-in.)

REGENTONE.—AC56, etc., etc.  
ROBERTS.—M5A, etc., etc. (Core size, 1-in. x 1 1/2-in.)  
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