

# EKCO AD 36

Three-valve, plus rectifier, two-waveband TRF receiver for operation from AC or DC mains 200/250v, 50/100 cycles. Marketed by E. K. Cole, Ltd., Southend-on-Sea.

**A**ERIAL input is via C1 to a differential variable coupling condenser VC1, which is the volume control, and thence to the tapped tuned grid circuit coils L2, L3 (MW), L4, L5 (LW). On LW a further coil, L1, is in circuit to prevent MW interference.

Aerial tuning is effected by VC2 section of the twin ganged condenser, and signals are passed direct to the grid of the HF pentode V1. This valve is cathode biased by R1 decoupled by C3.

The output from V1 on MW is by means

of the HF choke L11 and coupling condenser C4 to the grid coil L8 tuned by VC3. On LW, L11 is shorted and L10 functions as a coupling coil to L9, the LW grid coil.

Leaky grid rectification is employed, C5 and R2 being the grid condenser and grid leak in the grid circuit of the detector triode V2. Reaction from the anode circuit of this valve is via the variable condenser reaction control VC4 and the windings L6, L7. C6 is the anode to cathode HF by-pass.

Low frequency signals are resistance capacity coupled by R3, C8 and R5 to the grid of the pentode output valve V3. This valve is cathode biased by R6 decoupled by C9.

A permanent degree of tone correction is effected by C10, and the low impedance energised moving coil loudspeaker is coupled by the matching transformer L12, L13 to the output valve. L14 is the hum bucking coil and L15 the speech coil, while the field winding is L16.

The high- and low-tension supply circuits are taken from the mains through HF

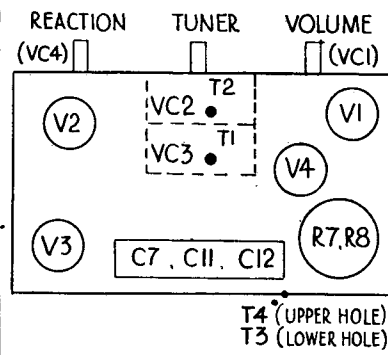
filter chokes L17, L18, with C13 as the HF by-pass condenser.

High tension supply is obtained through the fullwave rectifier V4, which has its anodes strapped so that it functions as a half-wave rectifier, and smoothing is effected by the speaker field L16 and condensers C11, C12.

The heater circuit comprises the normal arrangement of valve heaters in series with the mains voltage dropping resistance R8 with a shunt, R9, across the pilot lamp. A separate winding on the mains voltage dropping resistance assembly is shunted across the HT supply and is shown as R7 in the accompanying circuit diagram.

### VALVE READINGS

V	Type	Electrode	Volts	Ma
1	SP13	Anode	190	6
	Mullard	Screen	190	2.4
2	HL13	Anode	41	2.5
	Mullard			
3	PEN 3520	Anode	166	34.5
	Mazda	Screen	190	8
		Cathode	7	—
4	ID 5	Cathode	222	—
	Brimar			
	Pilot Lamp		6.2v.	.3 amp.



Chassis layout showing position of trimmers. T1 and T2 are accessible through holes in the base of the cabinet.

### GANGING

**MW Band.**—Switch receiver to MW and inject a 250 metre signal into the aerial and earth sockets. Adjust T1 and T2 for maximum output. At the same time the reaction control should be manipulated and the gang rocked to obtain good results under normal conditions.

**LW Band.**—Switch receiver to LW and inject a 1,500 metre signal; adjust T3 for maximum output.

### CONDENSERS

C	Mfds	C	Mfds
1	.001	8	.01
2	.1	9	.25
3	.1	10	.01
4	.00001	11	.24
5	.0001	12	.8
6	.001	13	.1
7	.2		

### RESISTANCES

R	Ohms	R	Ohms
1	300	6	165
2	1 meg.	7	5,000
3	50,000	8	560 + 100 + 100
4	4,000	9	100
5	500,000		

### WINDINGS

L	Ohms	L	Ohms
1A	13	10	2.75
2	.2	11	.36
3	2.5	12	.650
4	2.5	13	.25
5	27.5	14	.1
6	27.5	15	1.5
7	3.75	16	400
8	2.5	17	2.5
9	2.5	18	2.5
	27.5		

Circuit diagram of the three-valve TRF universal receiver employing leaky grid rectification and resistance capacity LF coupling to the pentode output valve.

### AERIAL BALANCING CIRCUIT

This circuit comprises trimmers T4 and backing-off coil L1A, wound the aerial end of the aerial coil former.

To adjust this circuit tune in to a loud signal on MW, and set volume control to minimum position and the reaction control to maximum usable position. Adjust T4 (top aperture at the rear of the chassis) until signal disappears or is reduced to a minimum.

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and adjust T6 and then T3 for maximum output.

Tune receiver to the dot adjacent the 175 kcs calibration mark. Inject a signal of this frequency and adjust T7 (screw) for maximum output.

**SW Band.**—Switch receiver to SW and set pointer to 17 mcs where a dot will be seen. Inject a signal of this frequency into the receiver and adjust T4 for maximum output, employing the minimum capacity setting of T4 as two positions of maximum output will be found. Then adjust T1 for maximum output while rocking gang.

There is no padding trimmer on the SW band.

### Push-Button Alignment

Turn the wavechange switch to the push-button position, i.e., fully counter clockwise, and depress the push-button concerned. Now adjust the oscillator trimmer (screw), immediately behind the button, to give the maximum signal from the desired station.

The correct setting is obtained when the illuminated pattern on the tuning indicator is at its maximum size.

Next adjust the aerial trimmer with the special box spanner to give the maximum signal as indicated by the tuning indicator. It is important to adjust the oscillator trimmer first and to check the setting after any adjustment made to the aerial trimmer.

### Faulty Output Stage

**A**N Ekco set was being tested for weak reception, and although the components, valves and voltages were OK, the output stage seemed faulty.

As a test, the detector was fed into a separate amplifier and this gave full output.

Further tests revealed that the anode current of the output valve was low, and the filament volts were only half the value normally used. The separate filament winding to this valve was found faulty.—F.D.L.

