EKCO A.C.74 FIVE-VALVE SUPERHET

Circuit.—*The combined oscillator first detector* (*V1*) *SP4* follows a band-pass aerial circuit. Anode, cathode-grid reaction is applied by an H.F. choke, and the band-pass intermediate transformer is on the low H.F. potential side of the choke. The intermediate frequency is 110 kc.

The I.F. valve (V2) is another SP4, and the coupling following it is a second band-pass I.F. transformer.

The second detector is a double diode triode (V3) A.C.HL.DD. Rectification for L.F. amplification takes place at the diode anode fed from the secondary of the second I.F. transformer, and D.C. for the delayed A.V.C. is obtained from the other, which is coupled by a condenser to the primary of the second I.F. transformer. Resistance-capacity coupling is used following the triode section.

The output valve (*V4*) *A.C./Pen.* is compensated by a .0025 condenser connected between the anode and earth.

Full-wave rectification IW3 is used, and the field coil is included in the positive H.T. lead.

The mains transformer has a screened primary.

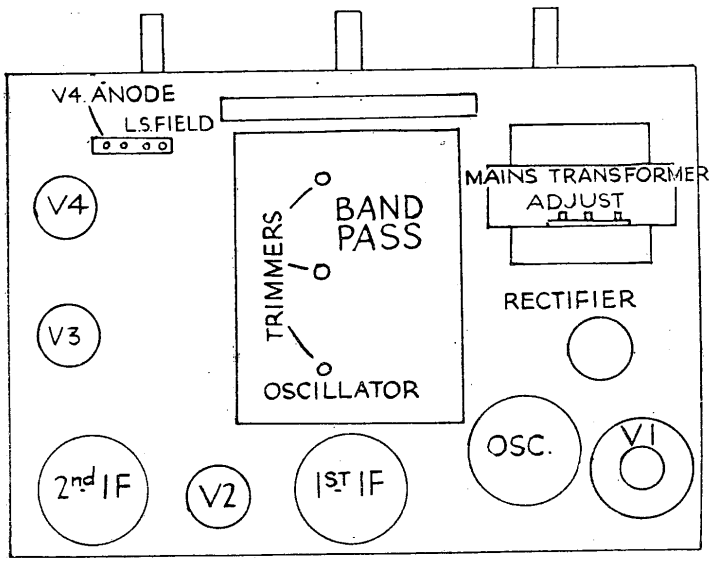
VALVE READINGS

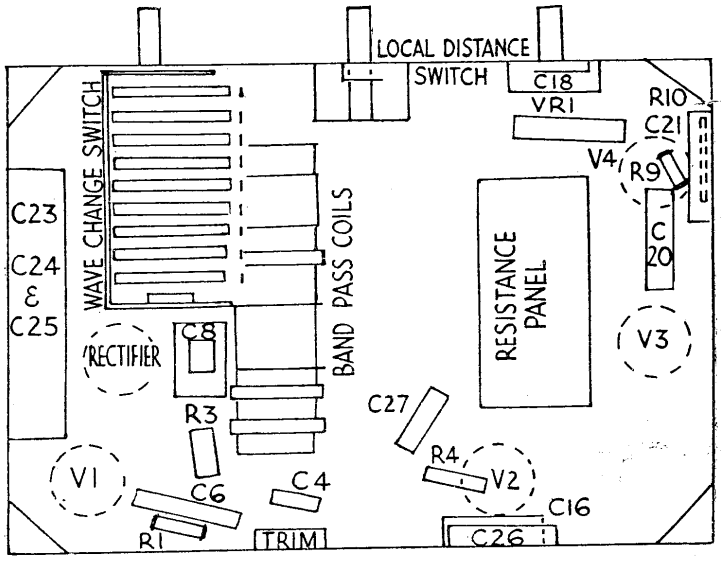
(V.C. max.)

Valve.	Connection.	Volts.	M.A.
V1 SP4 plain ...	anode ...	225	.8
	screen ...	90	—
V2 VP4 met. ...	anode ...	225	2.2
	screen ...	90	—
V3 ACHLDD met.	triode anode	110	1.8
V4 AC/Pen. ...	anode ...	280	30
	aux. grid ...	250	5

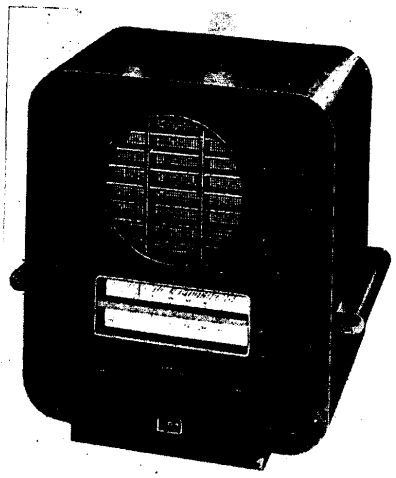
ALTERNATIVE VALVES are :—

V1 ... MS Pen. V3 ... TDD4 or DDT.
V2 ... MVS Pen. V4 ... Pen. LVA.





Component layout diagrams for the Ekco A.C.74 by E.K. Cole, Ltd. A detail drawing for the resistance panel inside the chassis is given on the opposite page.



As we were unable to obtain from the makers of the Ekco 74A.C. the schematic wiring diagram in time for publication, this service review is to that extent incomplete.

(*Continued from page 14.*)

Quick Tests.—Terminals on L.S. transformer :—

Top. 1 and 2 joined	H.T.+ (smoothed)	275v.
3	V4 anode	255v.
4	H.T.+ (unsmoothed)	365v.
Valves. (V1)	SP4 anode,	225v.
(V2)	,, ,,	225v.

Removing Chassis.—Remove knobs, grub screw (two on tuning). Pull out speaker plug and remove four screws at sides of bottom of cabinet (not the buffer supports).

Lift chassis out.

For tests, the speaker leads are sufficiently long to allow the plug to be inserted with the chassis outside the cabinet.

General Notes.—The set functions equally well with the alternative valves. If the condenser drive appears to slip, this is most probably caused by the load thrown on the drive.

(*a*) Apply a little vaseline to the brass rod on which the indicator travels and/or to the pulleys.

(*b*) The drum is set too far back on the condenser spindle. Undo the grub screw and ease it forward a little, taking care that the L.T. terminals and leads are not fouled.

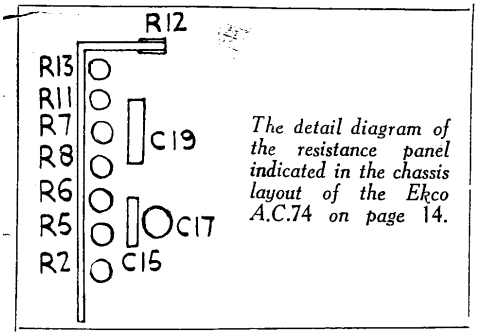
(*c*) If the calibration is wrong through the drum moving on the condenser spindle, tune in a fairly distant station (identified), and, after undoing grub screw, set drive to correct position and tighten grub screw.

Note that the L.T. wires to the pilot lamps pass over the pulleys at the sides. These latter are insulated from the chassis and care should be taken to ensure that they are not short-circuited.

When the A.V.C. system is inoperative, test for short circuit between A.V.C., anode and earth. Diode side of C14 may be making contact with the screen. Try a new double-diode-triode.

Condenser Bank.—The three condensers in the container, Cs 23, 24 and 25, are similar.

Replacing Chassis.—Make sure the drive is correct. Replace chassis in cabinet and replace the four holding screws. Replace knobs and replace speaker plug.



The detail diagram of the resistance panel indicated in the chassis layout of the Ekco A.C.74 on page 14.

CONDENSERS

C.	Purpose.	Mfd.
4	Aerial series condenser	.001
6	Cathode osc. circuit V1 ..	.002
8	Series with anode osc. coil V1	.00055
13	Anode feed condenser to osc. coil V1	.0001
14	Coupling to AVC anode V2 ..	.0001
15	H.F. by-pass	.001
16	Screens V1 and V2	.1
17	L.F. coupling diode to grid V3..	.01
18	Across grid of triode V3 ..	.0005
19	Anode by-pass V3	.002
20	Coupling condenser V3 to V4..	.1
21	Cathode V4	25
22	Compensator anode V4 ..	.0025
23	Smoothing	4
24	Smoothing	4
25	Smoothing	4
26	Cathode V2	.1
27	Across lower half of AVC ptr.	.1

RESISTANCES

R.	Purpose.	Ohms.
1	Bias resistor V1	4,000
2	Bias resistor V2	300
3	Across aerial input (L.D. switch)	20 (wire)
4	Part of AVC ptr.	1 meg.
5	Part of AVC ptr.	.25 meg.
6	Across rectifying diode ...	.25 meg.
7	Anode coupling V3 to V4 ...	80,000
8	Bias resistor triode V3 ...	300
9	Grid leak V4	.25 meg.
10	Bias resistor V4	450 (wire)
11	Part of screen ptr. V1, V2 ...	50,000
12	Voltage dropping to aux. grid V4 and H.F. of set	4,000 (wire)
13	Part of screen ptr. V1, V2 ...	50,000
—	L.S. field	2,000
—	Output transformer primary	750 to 825

Mains Hum and Radio Interference

The subject of hum in loudspeaker output and interference are somewhat closely associated. Interference can be classified under three headings—pure inductive hum, ripples and surges transferred to a set through the mains supply, and radio frequency interference.

Pure inductive hum can originate in a receiver itself and also outside the set. Hum which has its origin in a receiver is due entirely to incorrect design. The most prolific cause is inadequate smoothing, and the cure is just a matter of increasing the smoothing by using more efficient chokes of high inductance and increasing the capacity.

Hum which still persists is then invariably due to induction caused by relatively strong fields adjacent to grid wires, or even interaction amongst the low-frequency components and the mains transformer or smoothing chokes. This is easily detected by moving any components or leads which are suspected of causing trouble, and seeing if this has the effect of increasing or diminishing the hum.

Care must be taken particularly with regard to long leads connected to the input of the amplifying portion, as, for example, the pick-up connection. An earthed screened lead will usually cure the trouble. It sometimes happens on a set with which an external pick-up is used that the mains lead is brought too near to the pick-up or even to the aerial or earth lead of the set. In this manner hum is sometimes introduced, and the remedy, of course, is obvious.

The first rule is always to disconnect the aerial from the receiver, and then the earth, to determine if the interference is being picked up on the radio-frequency side of the set. Interference which comes in strongly with the aerial connected, and is almost absent without the aerial must be eliminated at its source.

These remarks are taken from the large service section of the 1934 "Broadcaster Annual" (post free 2s. 6d. to subscribers of The Broadcaster). They are followed by practical tips on curing man-made static.