

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC4	210	2.0	90	4.5
	Oscillator	3.0		
V2 VP4B	210	6.5	210	1.5
V3 TDD4	140	1.5		
V4 ACO42	275	42.0		
V5 1W4/850	350+			350
T.I. TV4	30	0.1		
	Target	very low		
	210			

† Each anode, AC.

RESISTORS

Resistor	Function	Value (ohms)
R1†	V1 CG decoupling	1,250,000
R2	V1 fixed GB resistor	300
R3	1st IF transformer damp-	3,000
R4	ing resistors	6,000
R5	V1 osc. CG resistor	100,000
R6	V1 HT feed resistor	20,000
R7	V2 CG decoupling	1,000,000
R8	V2 fixed GB resistor	300
R9	IF stopper	50,000
R10	V3 signal diode load	250,000
R11	T.I. CG decoupling	500,000
R12	T.I. control potential	1,000,000
R13	divider	250,000
R14*	Manual volume control	500,000
R15	V3 triode CG decoupling	2,000,000
R16	V3 triode anode load	50,000
R17	V3 triode GB and AVC	100,000
R18	delay HT potential divider	1,000
R19		1,000
R20	V3 AVC diode load re-	250,000
R21	sistors	500,000
R22*	Bass compensator	50,000
R23	V4 CG resistor	100,000
R24	V4 heater potentiometer	30
R25	V1-V3 HT feed resistor	4,000
R26		50,000
R27	V4 GB potential divider	100,000
R28	V4 CG decoupling	30,000
R29	T.I. anode HT feed	2,000,000

* Ganged together with S18. † Made up of two resistors in series: 1,000,000 Ω and 250,000 Ω.

CONDENSERS

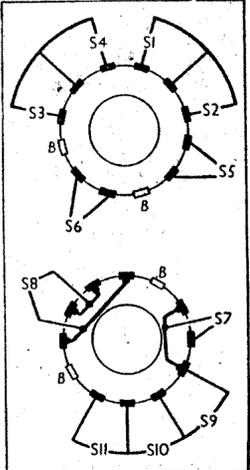
Condenser	Value (μF)
C1	Aerial MW coupling ... 0.0008
C2	V1 CG decoupling ... 0.1
C3	Part 1st IF trans. coupling ... 0.0003
C4	V1 cathode by-pass ... 0.1
C5	V1 osc. CG condenser ... 0.0001
C6	Osc. LW fixed tracker ... 0.0008
C7	V1 HT feed decoupling ... 0.1
C8	V2 CG decoupling ... 0.1
C9	V2 cathode by-pass ... 0.1
C10	IF by-pass condensers ... 0.00012
C11	
C12*	V3 cathode by-pass ... 25.0
C13	V2 CG decoupling ... 0.1
C14	T.I. CG decoupling ... 0.1
C15	HT circuit RF by-pass ... 0.1
C16	Coupling to V3 AVC diode ... 0.000015
C17	AF coupling to V3 triode ... 0.1
C18	V3 triode CG decoupling ... 0.5
C19	AF coupling to T1 ... 0.25
C20	Bass compensator ... 0.2
C21	V4 CG condenser ... 0.25
C22	
C23	Tone control condensers ... 0.05
C24	
C25*	
C26*	HT smoothing condensers ... 4.0
C27*	
C28*	
C29*	V4 CG decoupling ... 4.0
C30†	Image suppressor ...
C31†	Band-pass pri. tuning ...
C32†	B-P pri. MW trimmer ...
C33†	Band-pass sec. tuning ...
C34†	B-P sec. MW trimmer ...
C35†	Oscillator circuit tuning ...
C36†	Osc. circ. MW trimmer ...
C37†	Osc. circ. LW tracker ...
C38†	1st IF trans. pri. tuning ...
C39†	1st IF trans. sec. tuning ...
C40†	2nd IF trans. pri. tuning ...
C41†	2nd IF trans. sec. tuning ...
C42†	9 kc/s rejector tuning ...

OTHER COMPONENTS

Component	Approx. Value (ohms)
L1	Aerial LW coupling coil ... 40.0
L2	Band-pass pri. coils ... 2.5
L3	
L4	
L5	Band-pass sec. coils ... 2.5
L6	
L7	
L8	Osc. MW tuning coil ... 5.0
L9	Osc. LW tuning coil ... 10.0
L10	Oscillator reaction coils ... 5.0
L11	
L12	1st IF trans. { Pri. ... 75.0
L13	{ Sec. ... 75.0
L14	2nd IF trans. { Pri. ... 75.0
L15	{ Sec. ... 75.0
L16	9 kc/s rejector coil ... 3,000.0†
L17	Low-pass filter choke ... 150.0
L18	Speaker speech coil ... 8.0
T1	Hum neutralising coil ... 0.1
T2	Speaker field coil ... 2,000.0
T3	Intervalve trans. total ... 1,600.0
	Output { Pri. ... 300.0
	{ Sec. ... 0.4
	{ Pri. total ... 35.0
	{ V1-V3 heat. sec. ... 0.1
	{ V4 heat. sec. ... 0.1
	{ Rect. heat. sec. ... 0.1
	{ HT sec. total ... 600.0
S1-S6	Waveband switches ...
S7-11	Fidelity control switches ...
S12	Int. speaker switch ...
S13	Mains switch, ganged R14, R22 ...
X, Y, Z	Mute tuning switch ...

† Measured across C41 terminals.

Diagrams of the S1-S6 switch unit (above) viewed in the direction of the arrow in our under-chassis view, and the fidelity switch unit (below) as seen from the rear of the chassis deck.



EKCO - AC97

RADIOGRAM MODIFICATIONS

The differences in the chassis used in the radiogram RG97 and autoradiogram ARG107 as compared with that in the table model are concerned with the method of introducing the pick-up.

The affected part of the circuit is redrawn and shown in the diagram at foot of col. 6, where it will be seen that on gram the pick-up is fed via S14 to the control grid of the tuning indicator. The output of the triode section is then taken from R31 via S16, C17 and R14 to V3 triode.

At the same time, S18 closes and takes the AVC circuit via R37 to R28 (contact Y of the silent tuning switch), biasing the AVC diode and V1, V2 negatively. As S15, S17 also open, radio is effectively muted.

On radio, the circuit reverts almost to the same arrangement as in the table model. The differences are that R29 is split into three elements, R30, R31, R32; R18, R19 are split into three, R34, R35, R36; C14 is now between control grid and cathode of T.I.; and switches S15, S17 (which close on radio) are included in the circuit. The change-over switch is an additional unit, and its control knob is situated on the control panel.

Those components which bear the same numbers as in the AC97 diagram overleaf have the same values. The values of the added resistors are given in the table in col. 6. C42 is 0.5 μ F.

CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator leads to socket E and, via a 0.02 μ F condenser, to the control grid (top cap) of V1, leaving the existing connector in place. Switch fidelity control to its centre position and the volume control to maximum. Feed in a 126.5 kc/s (2,372 m) signal, and adjust C37, C39, then C38, C40, for maximum output. Repeat these adjustments, keeping signal input low.

RF and Oscillator Stages.—Transfer signal generator leads to A and E sockets via a suitable dummy aerial.

MW.—Switch set to MW, tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, fully unscrew C35,

then screw it up slowly until the first peak is reached. Now adjust C35 for maximum output. Feed in a 250 m (1,200 kc/s) signal, tune it in, and adjust C33, then C31, for maximum output.

LW.—Switch set to LW, tune to 1,700m on scale, feed in a 1,700 m (170,6 kc/s) signal, and adjust C36 for maximum output while rocking the gang for optimum results.

Image Suppressor.—As the power and frequency dispositions of transmitters have undergone various changes since the receiver was marketed, the original instructions for image suppression no longer apply.

If image interference is experienced, however, it may be minimised by tuning to the position at which it is found and adjusting C29 for minimum interference, using the speaker as an indicator.

Added Resistors in RG Models

RES.	Values (ohms)	RES.	Values (ohms)
R30	1,000,000	R34	1,000
R31	250,000	R35	400
R32	1,000,000	R36	600
R33	15,000	R37	1,000,000

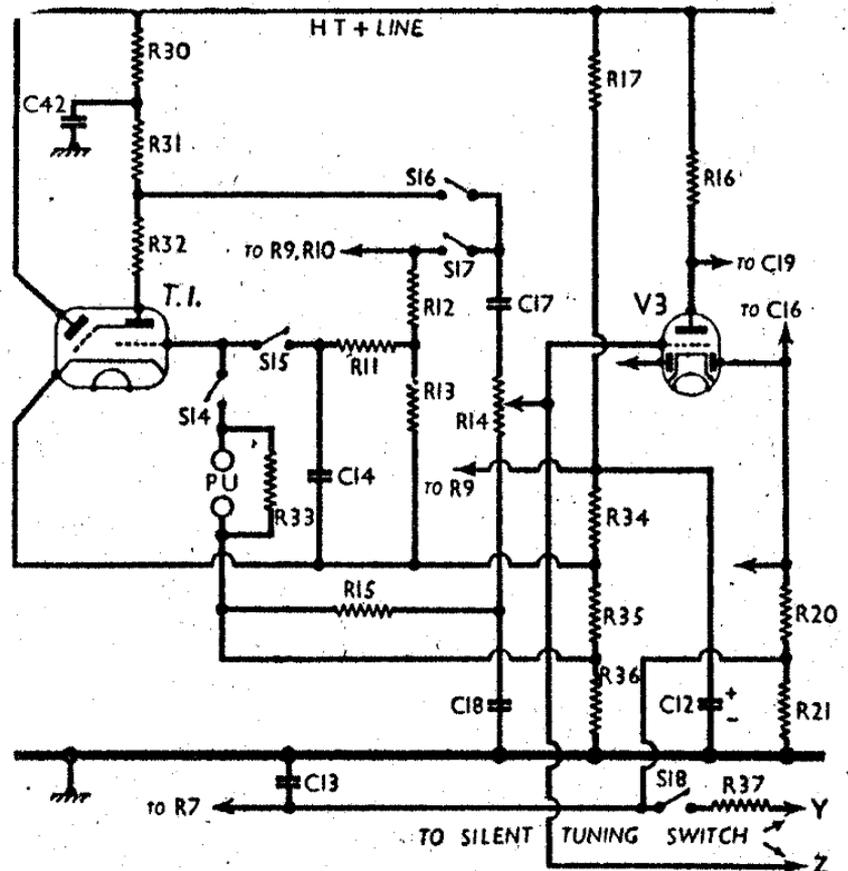


Diagram showing the circuit changes in the radiogram models. The tuning indicator is used as a pick-up amplifier.