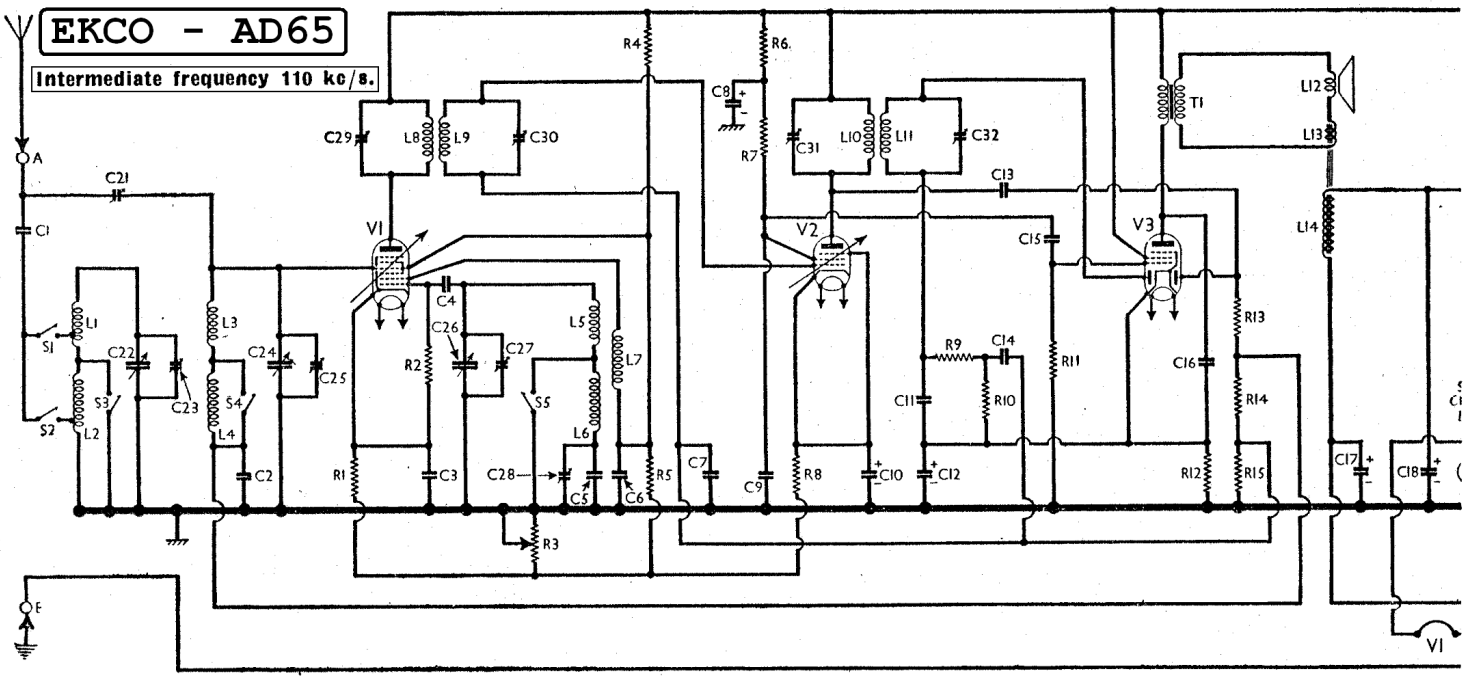
EKCO - AD65

Intermediate frequency 110 kc/s.

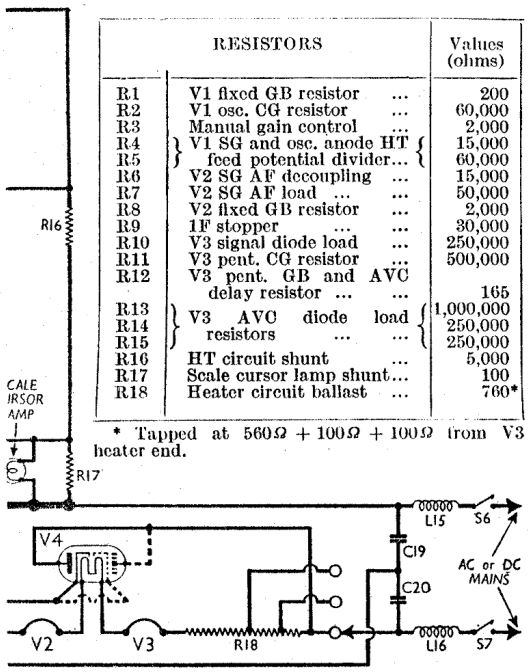


RESISTORS		Values (ohms)
R1	V1 fixed GB resistor ...	200
R2	V1 osc. CG resistor ...	60,000
R3	Manual gain control ...	2,000
R4	V1 SG and osc. anode HT feed potential divider...	15,000
R5		60,000
R6	V2 SG AF decoupling ...	15,000
R7	V2 SG AF load	50,000
R8	V2 fixed GB resistor ...	2,000
R9	IF stopper	30,000
R10	V3 signal diode load ...	250,000
R11	V3 pent. CG resistor ...	500,000
R12	V3 pent. GB and AVC delay resistor	165
R13	V3 AVC diode load resistors	1,000,000
R14		250,000
R15		250,000
R16	HT circuit shunt ...	5,000
R17	Scale cursor lamp shunt...	100
R18	Heater circuit ballast ...	760*

* Tapped at 560Ω + 100Ω + 100Ω from V3 heater end.

CONDENSERS		Values (μF)
C1	Aerial isolator	0·001
C2	V1 hex. CG decoupling	0·1
C3	V1 cathode by-pass ...	0·1
C4	V1 osc. CG condenser ...	0·001
C5	Osc. LW fixed tracker ...	0·0008
C6	V1 HT decoupling ...	0·1
C7	V2 CG RF by-pass ...	0·002
C8*	V2 SG AF decoupling ...	2·0
C9	V2 SG RF by-pass ...	0·0005
C10*	V2 cathode by-pass ...	25·0
C11	IF by-pass	0·0003
C12*	V3 cathode by-pass ...	25·0
C13	Coupling to V3 AVC diode	0·0001
C14	AF coupling to V2 ...	0·005
C15	V2 SG to V3 pentode AF coupling	0·005
C16	Fixed tone corrector ...	0·005
C17*	HT smoothing condensers	8·0
C18*		24·0
C19	Mains RF by-pass condensers	0·1
C20		0·1
C21‡	Image suppressor ...	—
C22†	Band-pass pri. tuning ...	—
C23‡	B-P pri. MW trimmer ...	—
C24†	Band-pass sec. tuning ...	—
C25‡	B-P sec. MW trimmer ...	—
C26†	Oscillator circuit tuning	—
C27‡	Osc. circ. MW trimmer	—
C28‡	Osc. circ. LW tracker ...	—
C29‡	1st IF trans. pri. tuning	—
C30‡	1st IF trans. sec. tuning	—
C31‡	2nd IF trans. pri. tuning	—
C32‡	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.



OTHER COMPONENTS		Approx. Values (ohms)
L1	Band-pass primary coils...	4·0
L2		13·0
L3	Band-pass secondary coils	4·0
L4		13·0
L5	Osc. MW tuning coil ...	5·0
L6	Osc. LW tuning coil ...	10·0
L7	Oscillator reaction coil ...	5·5
L8	1st IF trans. Pri. ...	100·0
L9	1st IF trans. Sec. ...	100·0
L10	2nd IF trans. Pri. ...	100·0
L11	2nd IF trans. Sec. ...	100·0
L12	Speaker speech coil ...	2·0
L13	Hum neutralising coil ...	0·1
L14	Speaker field coil ...	400·0
L15	Mains RF filter chokes ...	3·0
L16		3·0
T1	Speaker input trans. Pri. ...	625·0
	Sec. ...	0·5
S1–S5	Waveband switches ...	—
S6, S7	Mains circuit switches ...	—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC13	200	1·6	90	6·0
	Oscillator			
	90	2·1		
V2 VP1321	200	4·5	145	0·8
V3 Pen DD4020	180	29·0	200	10·0
V4 UR1	245*	—	—	—

* Cathode to chassis, DC.

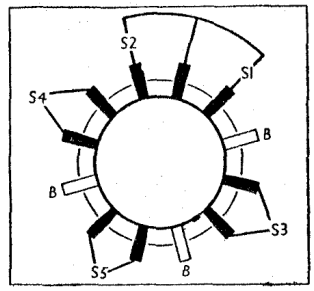
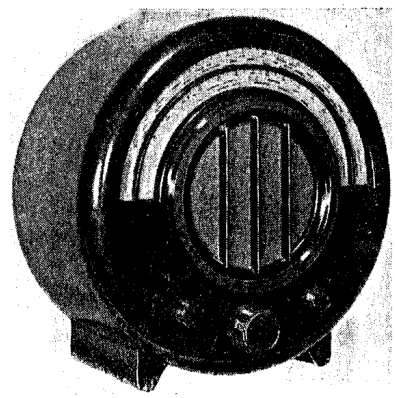


Diagram of the switch unit, as seen from the rear of the underside of the chassis.



The Ekco AD65 in the walnut finish cabinet.

CIRCUIT ALIGNMENT

The makers recommend that the output meter should be connected between **V3** pentode anode and chassis, via a condenser of about 2 μF if one is not already contained in the meter unit. It should be borne in mind that the meter will be live to the mains, although the chassis could be isolated from the mains for the whole of the alignment procedure if it were connected via a double-wound mains transformer where A.C. mains are available.

IF Stages.—Connect signal generator leads to A and E. sockets, switch set to LW, and turn the gang to maximum. If the output is then too weak, transfer lead from socket **A** via a 0.1 μF condenser to **V1** control grip (top cap).

Feed in a 110 kc/s (2,728 m) signal, and adjust **C29, C31, C30,** then **C32,** in that order, for maximum output.

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

MW.—Switch set to MW, tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, and adjust **C27** for maximum output. Tune to 250 m on scale, feed in a 250 m (1,200 kc/s) signal, and adjust **£25** and **C23** for maximum output.

Feed in a 500 m (600 kc/s) signal, and tune it in. If calibration reads high, slacken off **C27** slightly, feed in a 250 m (1,200 kc/s) signal, tune it in, and adjust cursor carrier for correct calibration, re-adjusting **C25** and **C23.** If the calibration at 500 m is low, screw up **C27** slightly, then proceed as before.

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LW.—Switch set to LW, tune to 1,700 m on scale, feed in a 1,700 m (176.3 kc/s) signal, and adjust **C28** for maximum output. Check calibration at 1,200 m (250 kc/s), and if incorrect, re-adjust **C28** to divide the error between the two settings.

Image Suppressor.—This was arranged to operate originally at 479 m, but owing to changed conditions the original adjustment may not now be effective.

If image interference is experienced, therefore, it may be minimised by tuning the receiver to a frequency at which the interference is found, and adjusting **C21** for minimum interference, using the speaker as an indicator.

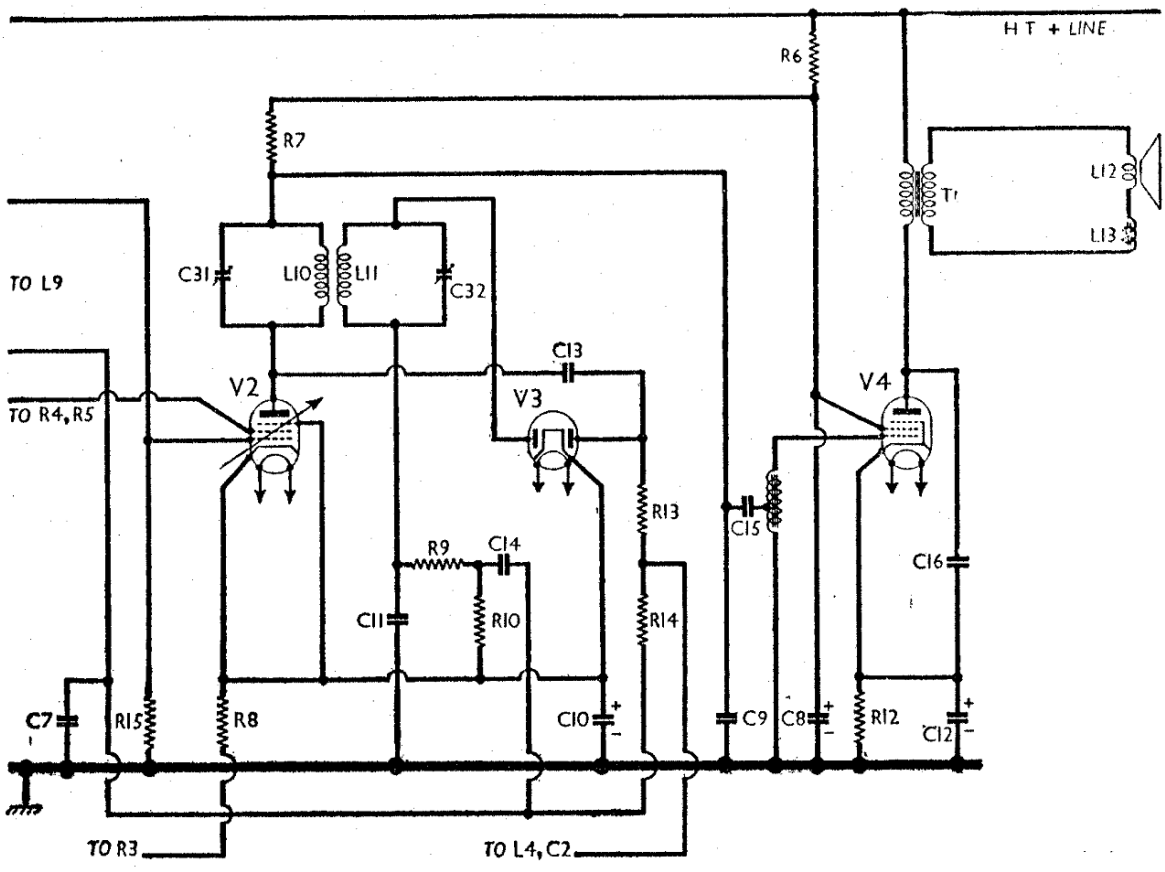
MODIFIED CHASSIS

There are two distinct modified versions of the AD65 chassis. In the first case, some of the original types, otherwise like the sample on which this Service Sheet is based, use a Mullard VP13A valve as **V2**, instead of a Mazda VP1321. This means that the top cap is the control grid connection instead of anode. Fortunately the two valves have different bases, so that confusion between them is unlikely. The top cap lead then comes from the **L8, L9** IF unit, instead of from the **L10, L11** unit.

Still greater changes occur in the second case. **V3** is replaced by two separate Mullard valves : a 2D13 and a Pen26. The affected section of the circuit is re-drawn and shown in the diagram below.

Reflex amplification is retained. **V2** operates as a pentode IF and AF amplifier, **R7** still acting as the AF load, but in the anode instead of the screen circuit. The AF output is passed to **V4** via a parallel-fed auto transformer with **C15.**

The remainder of the circuit behaves very much as in the original model, although several circuit changes will be noticed. **R15,** for instance, is connected at its upper end to the opposite side of **L9,** so that AVC diode current flows through **L9;** and **V2** SG is now connected to **V1** SG. Component values do not alter considerably, except in the case of **R12,** which becomes 450 Ω. **V2** will usually be a VP13A; and **V3** heater comes between those of **V4** and **V5** (the HT rectifier).



Circuit diagram, showing the affected section in the second modified version of the original model. **V2** is a VP13A, and the original **V3** is now split into two separate valves, **V3** and **V4**. A step-up auto-transformer coupling is used between **V2** anode (instead of the screen) and the output valve **V4**. The rectifier thus becomes **V5**.