"TRADER" SERVICE SHEET

845

EKCO A44

3-BAND SUPERHET

THREE wavebands are covered in the Ekco A44, the S.W. range being 16-51m. Provision is made for the connection of a gramophone pick-up and an external speaker. Three-position tone control is associated with the negative feedback circuit.

Release date and original price: October, 1947; £17 17s plus purchase tax.

CIRCUIT DESCRIPTION

Aerial input is via coupling coils **L2** (S.W.), **L3** (M.W.) and **L4** (L.W.) to single-tuned circuits **L5, C37** (S.W.), **L6, C37** (M.W.) and **L7, C37** (L.W.). I.F. filtering by **L1, C1** across aerial circuit.

First valve **(V1, Mullard metallized ECH35)** is a triode-hexode operating as frequency changer with internal coupling. Triode oscillator anode coils **L11** (S.W.), **L12** (M.W.) and **L13** (L.W.) are tuned by **C41,** with parallel trimming by **C38** (S.W.), **C39** (M.W.) and **C13, C40** (L.W.) and series tracking by **C12** (S.W.), **C14** (M.W.) and **C15** (L.W.). Inductive reaction coupling to C.G. by coils **L8** (S.W.), **L9** (M.W.) and **L10** (L.W.), with additional capacitative coupling on S.W. due to the common impedance of tracker **C12.**

Second valve **(V2, Mullard metallized EF39)** is a variable-mu R.F. pentode operating as I.F. amplifier with tuned transformer couplings.

Intermediate frequency 460 Kc/s.

Diode second detector is part of double diode pentode output valve **(V3, Mullard metallized EBL31).** Audio frequency component in rectified output is developed across load resistor **R12** and passed via A.F. coupling capacitor **C26,** manual volume control **R13,** and tone control network resistors **R14, R16** to C.G. of pentode section. I.F. filtering in diode anode circuit by **C23, R10, C24.**

Three-position tone control in pentode circuit, via switches **S10-S12, by R14, R15, R16** and **C27, C28** in conjunction with the voltage negative feed-back resistors **R17, R18.**

Second diode of **V3,** fed from **V2** anode via **C25,** provides D.C. potential which is used for A.V.C. purposes. Delay voltage, together with G.B. for pentode section, is obtained from the drop along **R19, R20** in **V3** cathode lead to chassis.

COMPONENTS AND VALUES

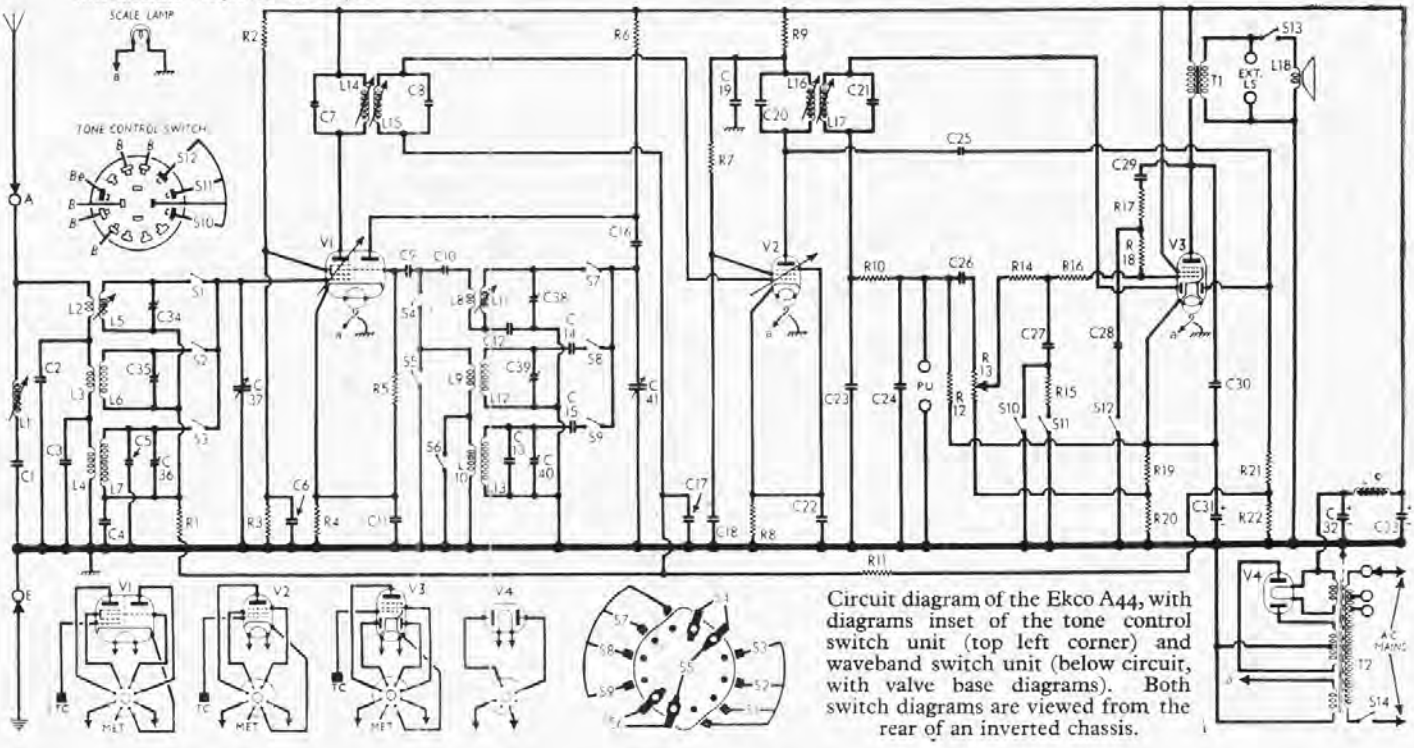
	RESISTORS	Values (ohms)	Location
R1	V1 hex. C.G. decoup.	100,000	J4
R2	V1 S.G. H.T. potential divider	33,000	I5
R3		33,000	I5
R4	V1 fixed G.B.	220	J5
R5	V1 osc. C.G.	47,000	J5
R6	Osc. H.T. feed	33,000	I5
R7	V2 S.G. feed	68,000	H5
R8	V2 fixed G.B.	220	I6
R9	V2 H.T. decoup.	2,200	H5
R10	I.F. stopper	47,000	H6
R11	A.V.C. decoupling	1,000,000	I5
R12	Signal diode load	470,000	G6
R13	Volume control	1,000,000	E3
R14	Tone control resistors	68,000	G4
R15		68,000	G3
R16		68,000	F4
R17	Feed-back resistors	6,800,000	F4
R18		10,000,000	F4
R19	V3 G.B. and A.V.C. delay resistors	150	E5
R20		220	E5
R21	A.V.C. diode load resistors	470,000	H5
R22		1,000,000	H5

	CAPACITORS	Values (μF)	Location
C1	I.F. Filter tuning	0·00015	J5
C2	Aerial M.W. shunt	0·00047	I4
C3	Aerial L.W. shunt	0·00082	A1
C4	V1 hex. C.G. decoup.	0·1	J4
C5	L.W. fixed trim.	0·000082	I4
C6	V1 S.G. decoup.	0·1	J5
C7	1st I.F. transformer tuning	0·000068	A2
C8		0·000068	A2
C9	V1 osc. C.G. capacitors	0·0002	I5
C10		0·00005	I5
C11	V1 cath. by-pass	0·1	J4
C12	S.W. tracker	0·0047	H4
C13	L.W. fixed trim.	0·00022	H4
C14	M.W. tracker	0·00054	H4
C15	L.W. tracker	0·0004	H4
C16	Osc. anode coup.	0·0001	I4
C17	V2 C.G. decoup.	0·1	I5
C18	V2 S.G. decoup.	0·1	H6
C19	V2 H.T. decoup.	0·1	I6
C20	2nd I.F. transformer tuning	0·00015	B2
C21		0·00015	B2
C22	V2 cath. by-pass	0·1	I6
C23	I.F. by-passes	0·0001	H6
C24		0·0001	H6
C25	A.V.C. coupling	0·000015	H5
C26	A.F. coupling	0·01	E3
C27	Tone control capacitors	0·0025	G4
C28		0·0000 1†	F3
C29		0·0025	F4
C30	Tone corrector	0·0025	G6
C31*	V3 cath. by-pass	25,0	E4
C32*	H.T. smoothing capacitors	8·0	D1
C33*		16·0	D1
C34‡	Aerial S.W. trim.	—	I4
C35‡	Aerial M.W. trim.	—	A1
C36†	Aerial L.W. trim.	—	A1
C37†	Aerial tuning	—	B1
C38‡	Osc. S.W. trim.	—	I3
C39‡	Osc. M.W. trim.	—	H5
C40‡	Osc. L.W. trim.	—	H5
C41†	Oscillator tuning	—	B1

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)	Location
L1	I.F. filter coil	53·0	J5
L2	Aerial coupling coils	0·2	J4
L3		12·0	A1
L4		36·0	A1

Continued overleaf



Circuit diagram of the Ekco A44, with diagrams inset of the tone control switch unit (top left corner) and waveband switch unit (below circuit, with valve base diagrams). Both switch diagrams are viewed from the rear of an inverted chassis.

	OTHER COMPONENTS (continued)		Approx. Values (ohms)	Location
L5	Aerial tuning coils		Very low	J4
L6			1·0	A1
L7			28·0	A1
L8			0·2	I5
L9	Osc. reaction coils		1·0	H5
L10			1·5	G5
L11			Very low	I5
L12	Osc. tuning coils		3·0	H5
L13			5·5	G5
L14	1st L.F. trans.	Pri.	17·0	A2
L15		Sec.	17·0	A2
L16	2nd L.F. trans.	Pri.	9·0	B2
L17		Sec.	9·0	B2
L18	Speech coil		2·5	–
L19	H.T. choke		580·0	F4
T1	Output trans.	Pri.	380·0	B1
		Sec.	0·25	B1
T2	Mains trans.	Pri., total	40·0	D2
		Heat sec.	0·2	D2
		Rect. heat sec.	0·1	D2
		H.T. sec. total	580·0	D2
S1-S9	Waveband switches			H4
S10-S12	Tone control switches			F3
S13	Int. speaker switch			H6
S14	Mains SW. g/d R13			E3

GENERAL NOTES

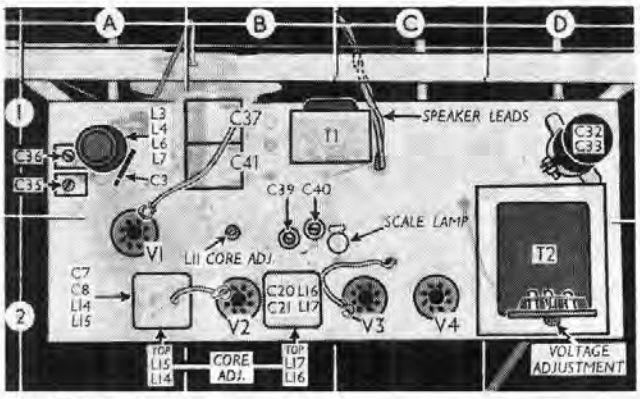
Switches.—**S1-S9** are the waveband switches ganged in a single rotary unit beneath the chassis, as indicated in our under-chassis view. The unit is shown in detail in the diagram inset beneath the circuit diagram overleaf as seen from the rear of an inverted chassis. The table below gives the switch positions for the three control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and **C**, closed.

Switch	S.W.	M.W.	L.W.
S1	C	–	–
S2	–	C	–
S3	–	–	C
S4	–	C	C
S5	C	–	–
S6	–	C	–
S7	C	–	–
S8	–	C	–
S9	–	–	C

S10-S12 are the tone control switches, ganged in a 3-position unit beneath the chassis. In the fully anti-clockwise position of the control, **S10** closes, giving deepest tone; in the next position, **S10** opens and **S11** closes; in the fully-clockwise position, **S11** opens and **S12** closes, modifying the feed-back characteristic. The diagram is inset with the circuit overleaf.

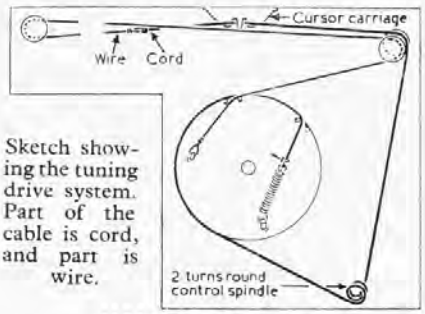
Scale Lamp.—This is an Osram M.E.S. type, rated at 6.5 V, 0.3 A. It has a small clear bulb, and is mounted at the centre of the chassis deck, giving a flood-lit effect to the scale.

Plan view of the chassis. **L5** core adjustment is in square **A1** on the deck, but is covered here by the label "**C3**"



External Speaker.—Two sockets and a switch are provided at the rear of the chassis for the connection of a low impedance (about 3 Ω) external speaker. The switch (**S13**) permits the internal speaker to be muted.

Drive Cord Replacement.—The drive cord consists of 33 ins. of wire and 31 ins. of cord, joined at the point indicated in the sketch below, where the whole system is clearly shown as seen from the front of the set when the gang is at maximum. The requisite materials may be obtained from the manufacturers.



Sketch showing the tuning drive system. Part of the cable is cord, and part is wire.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted by the manufacturers. The meter resistance was 1,000 Ω per V.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH35	263	1·65	80	2·6
	Oscillator			
	127	3·25		
V2 EF39	241	7·6	102	2·25
V3 EBL31	250	36·5	263	4·0
V4 AZ31	287†	–	–	–

†Each anode, A.C.

CIRCUIT ALIGNMENT

These operations should be carried out with the chassis in the cabinet, holes being provided in the bottom to give access to under-chassis adjustments.

I.F. Stages.—Switch set to M.W., turn gang and volume control to maximum, connect signal generator (via an 0.1 μF capacitor) to control grid (top cap) of **V1** and the **E** socket, feed in a 460 Kc/s (652.1 m) signal, and adjust the cores of **L17, L16, L15** and **L14** (location references B2, A2) in that order for maximum output.

I.F. Filter.—Transfer "live" signal generator lead (via an 0.0002μF capacitor) to **A** socket, feed in a 460 Kc/s signal, and adjust the core of **L1** (J5) for minimum output.

R.F. and Oscillator Stages.—With the gang at maximum capacitance the cursor should coincide with the vertical lines at the high wavelength ends of the three scales. It may be adjusted in position by sliding the carriage along the drive cord.

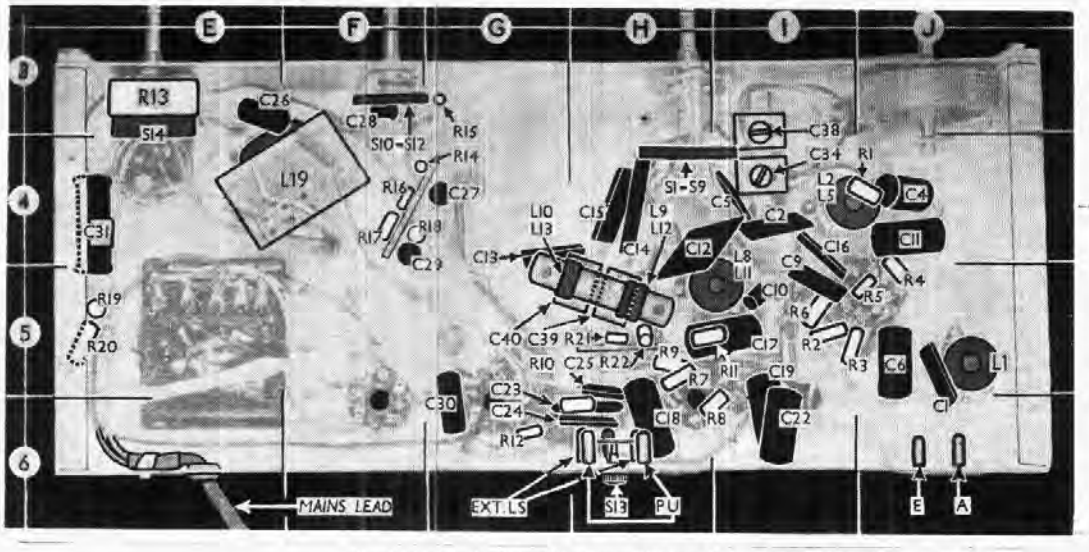
S.W.—Switch set to S.W., tune to 20 m on scale, feed in a 20 m (15 Mc/s) signal, and adjust **C38** (I3) and **C34** (I4) for maximum output. Tune to 50 m on scale, feed in a 50 m (6 Mc/s) signal and adjust the cores of **L11** (B2) and **L5** (A1) for maximum output. Repeat these adjustments.

M.W.—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 Kc/s) signal, and adjust **C39** (B2) for maximum output. Tune to 231 m on scale, feed in a 231 m (1,300 Kc/s) signal, and adjust **C35** (A1) for maximum output.

L.W.—Switch set to L.W., tune to 1,200 m on scale, feed in a 1,200 m (250 Kc/s) signal, and adjust **C40** (B2) and **C36** (A1) for maximum output.

DISMANTLING THE SET

Removing Chassis.—Remove the four control knobs (recessed grub screws) and the light diffusing screen (two spring hooks);
remove the long 4BA cheese head screws (with washers) at either end of the cursor guide rail;
withdraw the four 2BA cheese head screws (with large washers) securing the chassis to the base of the cabinet, and slide out chassis to the extent of the speaker leads.



Under-chassis view. Diagrams of the two switch units **S1-S9** and **S10-S12** are inset with the circuit diagram over leaf.

Printed in England by The Cornwall Press Ltd., Paris Garden, London, S.E.1