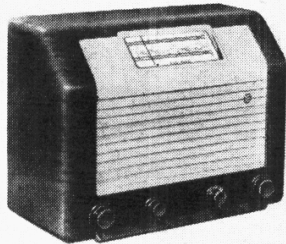


"TRADER" SERVICE SHEET
845

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 EGH35) 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 capacitive 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

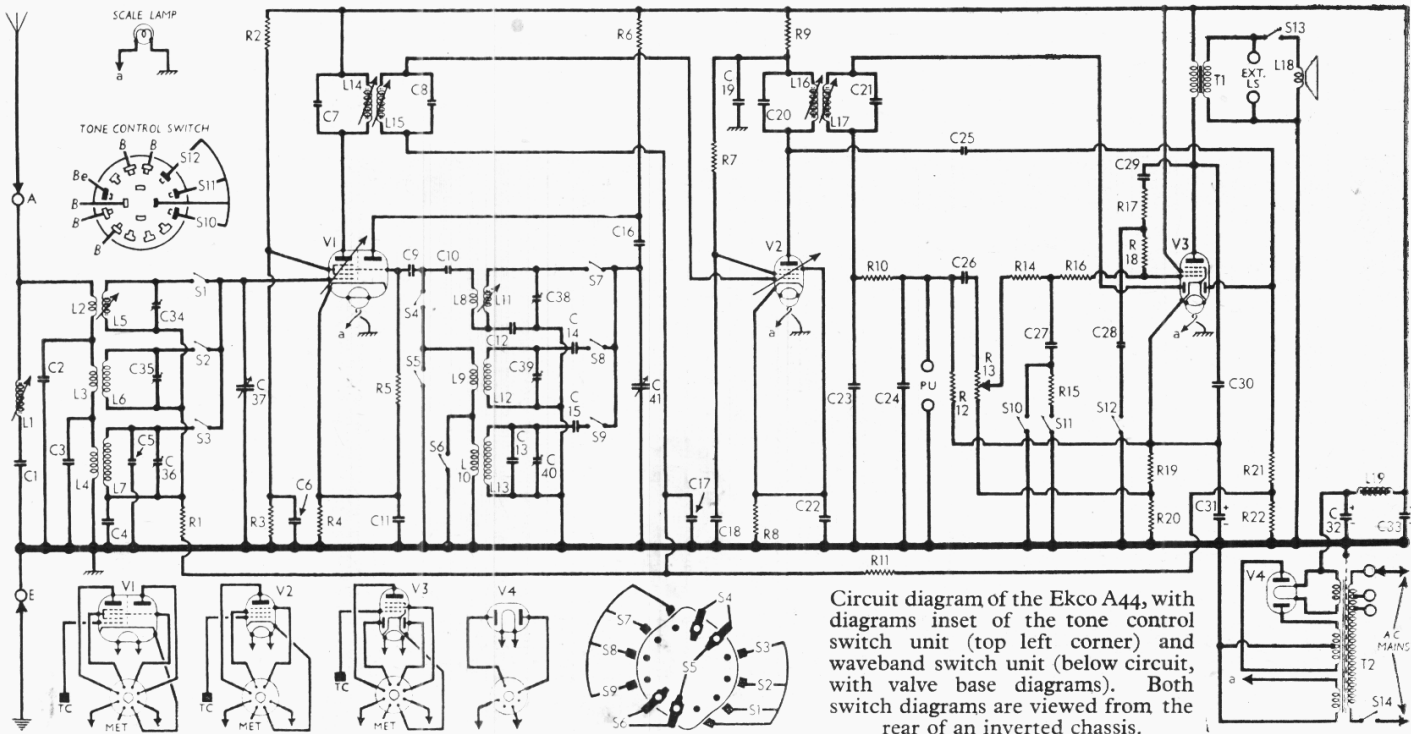
| RESISTORS | | Values (ohms) | Location |
|-----------|-------------------------------------|---------------|----------|
| R1 | V1 hex. C.G. decoup. | 100,000 | J4 |
| R2 | V1 S.G. H.T. potential divider | 33,000 | I5 |
| R3 | V1 fixed G.B. | 33,000 | I5 |
| R4 | V1 fixed G.B. | 220 | J5 |
| R5 | V1 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 | Tone control resistors | 68,000 | G3 |
| R16 | Tone control resistors | 68,000 | F4 |
| R17 | Feed-back resistors | 6,800,000 | F4 |
| R18 | Feed-back resistors | 10,000,000 | F4 |
| R19 | V3 G.B., and A.V.C. delay resistors | 150 | B5 |
| R20 | V3 G.B., and A.V.C. delay resistors | 220 | B5 |
| R21 | A.V.C. diode load resistors | 470,000 | H5 |
| R22 | A.V.C. diode load resistors | 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 | tuning | 0.000068 | A2 |
| C9 | V1 osc. C.G. capacitor | 0.0002 | I5 |
| C10 | tors | 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 | mer tuning | 0.00015 | B2 |
| C22 | V2 cath. by-pass | 0.1 | I6 |
| C23 | I.F. by-passes | 0.0001 | H6 |
| C24 | I.F. by-passes | 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 | Tone control capacitors | 0.0000 | F3 |
| C29 | Tone control capacitors | 0.0025 | F4 |
| C30 | Tone corrector | 0.0025 | G6 |
| C31* | V3 cath. by-pass | 25.0 | B4 |
| C32* | H.T. smoothing capacitor | 8.0 | D1 |
| C33* | acitors | 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 | Aerial coupling coils | 12.0 | A1 |
| L4 | Aerial coupling coils | 36.0 | A1 |

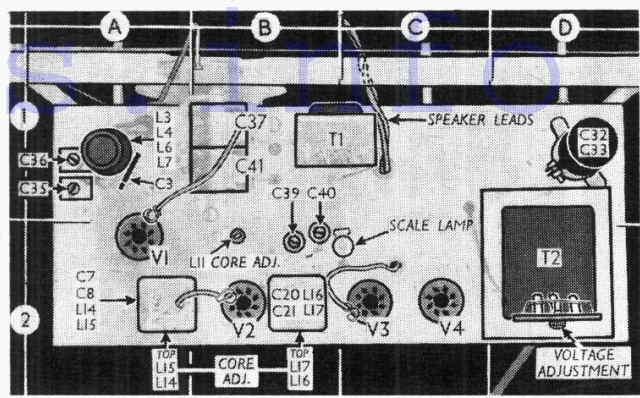
Continued overleaf



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 } ... | 4.0 | A1 |
| L7 } ... | 28.0 | A1 |
| L8 } Osc. reaction coils ... | 0.2 | L5 |
| L9 } ... | 1.0 | H5 |
| L10 } ... | 1.5 | G5 |
| L11 } Osc. tuning coils ... | Very low | L5 |
| L12 } ... | 3.0 | H5 |
| L13 } ... | 5.5 | G5 |
| L14 } 1st I.F. trans. { Pri. ... | 17.0 | A2 |
| L15 } ... { Sec. ... | 17.0 | A2 |
| L16 } 2nd I.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 } Tone control switches ... | — | F3 |
| S12 } ... | — | F3 |
| S13 } Int. speaker switch ... | — | H6 |
| S14 } Mains SW. g'd R13 ... | — | E3 |

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 its maximum. The requisite materials may be obtained from the manufacturers.

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 0.0002 μF 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.

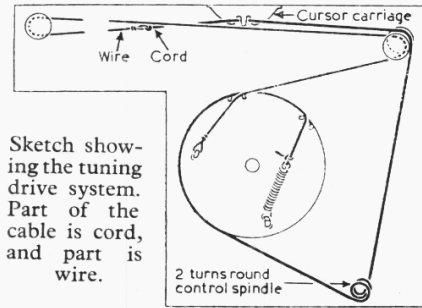
DISMANTLING THE SET

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.

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 | C |
| S5 | C | C | — |
| S6 | C | C | — |
| S7 | — | C | — |
| S8 | — | — | C |



VALVE ANALYSIS

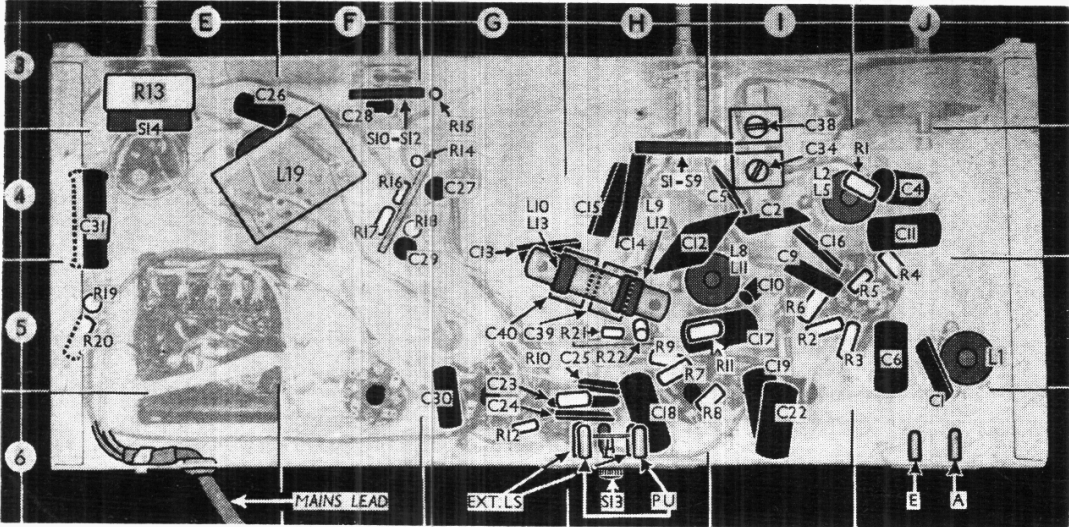
Valve voltages and currents given in the table below are those quoted by the manufacturers. The meter resistance was 1,000 Ω per V.

| 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.

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.



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