

"TRADER" SERVICE SHEET  
**952**

JOY'S RADIO SERVICE  
CHELTENHAM ROAD  
**EKCO A110**  
"Connoisseur"



**F**OUR pre-set stations and pick-up switching are provided by a rotary control in the Ekco "Connoisseur," continuously variable tuning of the normal kind being omitted. The receiver is a 4-valve (plus rectifier) superhet designed to operate from A.C. mains of 200-250 V 50-100 c/s. The wavelength ranges of the four positions are: L.W., 1,200-1,800 m; M.W.1, 340-550 m; M.W.2, 245-390 m; M.W.3, 194-290 m. Indicator lamps behind named windows show to which position the station selector is set.

Release date and original price: October, 1949, £15 10s 8d. Purchase tax extra.

**CIRCUIT DESCRIPTION**

Pre-set tuned frame aerial input L1, L2, C31 (L.W.), L2, C30 (M.W.1), L2, C29 (M.W.2), L2, C28 (M.W.3) precedes first valve (V1, Mullard ECH42) which operates as frequency changer with internal coupling. Selection is made by switches S4-S7, while S8 closes on gram to mute radio. On M.W. positions, L.W. frame winding L1 is short-circuited by S3.

Provision is made for the connection of an external aerial. L3, C1 is an I.F. filter.

Oscillator circuit consists of the tapped coil L8 which, with capacitor C8, forms a master oscillator circuit between triode anode and control grid of V1. The iron-dust cored pre-set coils L7 (L.W.), L6 (M.W.1), L5 (M.W.2), L4 (M.W.3) are shunted across the tuned section of L8 via switches S9-S12.

Second valve (V2, Mullard EF41) is a vari-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings C3, L9, L10, C4 and C12, L11, L12, C13.

Intermediate frequency 455 kc/s (Southern England) or 460 kc/s (Northern England).

Diode second detector is part of double diode triode valve (V3, Mullard EBC41). Audio frequency component in rectified output is developed across load resistor R10, and passed via C19, manual volume control R11 and grid stopper R12 to grid of triode section, which acts as A.F. amplifier.

Second diode of V3, fed from V2 anode via C18, provides D.C. potential which is tapped off from load resistors R15, R16 and passed back via a decoupling circuit as G.B. to F.C. and I.F. valves, giving automatic gain control.

Resistance-capacitance coupling by R14, C21 and R18 between V3 anode and pentode output valve (V4, Mullard EL41). Variable tone control by C23, R17 in control grid circuit; fixed tone correction by negative feed back circuit C22, R19 between V3 and V4 anodes.

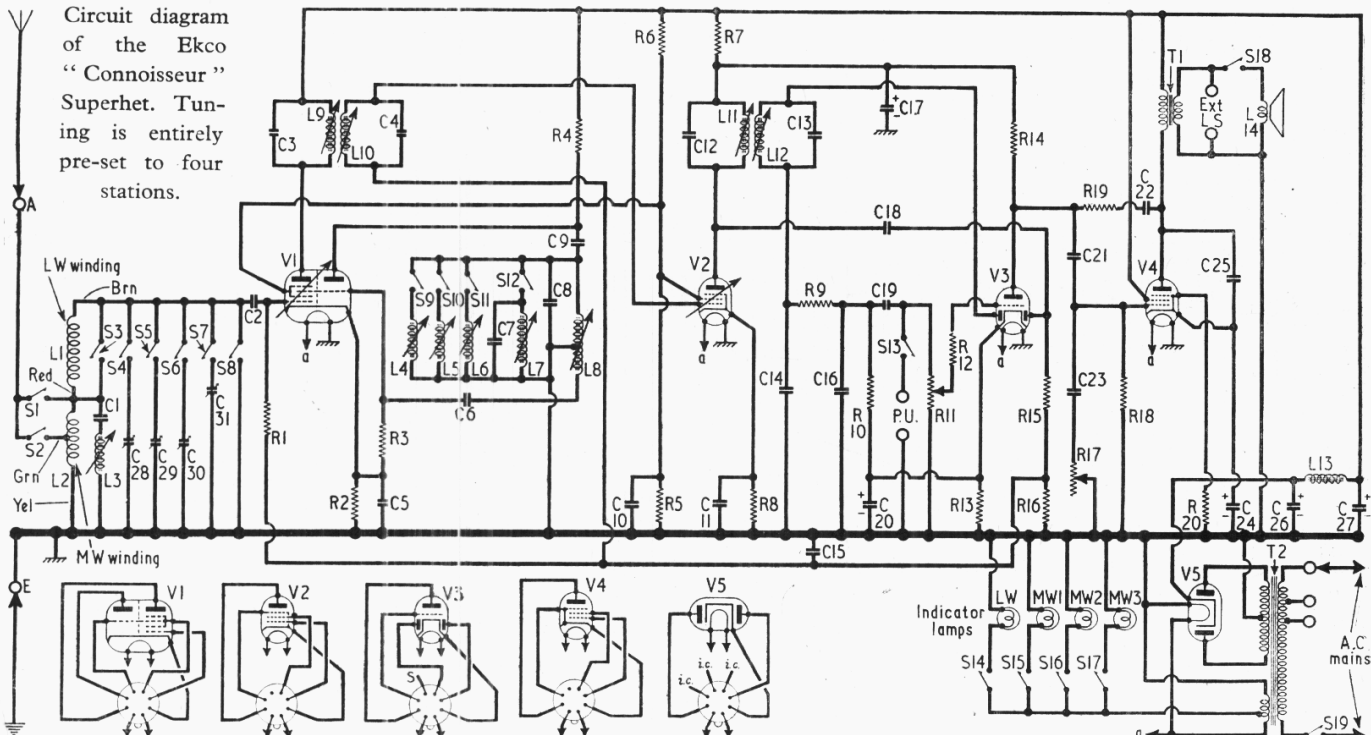
H.T. current is supplied by I.H.C. full-wave rectifying valve (V5, Mullard EZ40), whose heater is fed from the same secondary winding of T2 as the rest of the valves. H.T. smoothing is effected by L13, C26 and C27.

**COMPONENTS AND VALUES**

RESISTORS		Values	Locations
R1	V1 hex. C.G. ...	1MΩ	E3
R2	V1 fixed G.B. ...	330Ω	F3
R3	V1 osc. C.G. ...	47kΩ	E3
R4	Osc. anode load ...	33kΩ	E3
R5	V1, V2 S.G. H.T. feed ...	33kΩ	E3
R6	...	22kΩ	E3
R7	V2, V3 H.T. decoup. ...	3-3kΩ	E4
R8	V2 fixed G.B. ...	330Ω	F4
R9	I.F. stopper ...	100kΩ	E4
R10	Diode load ...	560kΩ	E3
R11	Volume control ...	1MΩ	B1
R12	Grid stopper ...	47kΩ	C3
R13	V3 G.B. ...	4-7kΩ	E3
R14	Triode anode load ...	100kΩ	E4
R15	A.G.C. diode load ...	1MΩ	E4
R16	...	2-2MΩ	E3
R17	Tone control ...	0-5MΩ	B2
R18	V4 C.G. resistor ...	680kΩ	D4
R19	F-B resistor ...	1-8MΩ	C3
R20	V4 G.B. ...	180Ω	D4

CAPACITORS		Values	Locations
C1	I.F. filter tune ...	82pF	F3
C2	V1 hex. C.G. ...	100pF	F3
C3	1st I.F. trans. ...	56pF	A1
C4	tuning ...	56pF	A1
C5	V1 cath. by-pass ...	0-1μF	E3
C6	V1 osc. C.G. ...	200pF	F3
C7	L.W. osc. trim. ...	250pF	A2
C8	M.O. fixed tune ...	270pF	F3
C9	Osc. anode coup. ...	500pF	A2
C10	V1, V2 S.G. decoup. ...	0-1μF	E3
C11	V2 cath. by-pass ...	0-1μF	F4
C12	2nd I.F. trans. ...	100pF	A2
C13	tuning ...	100pF	A2
C14	I.F. by-pass ...	100pF	E4
C15	A.G.C. decoupling ...	0-02μF	E3
C16	I.F. by-pass ...	100pF	E4
C17*	V2, V3 H.T. decoup. ...	4μF	E4
C18	A.G.C. coupling ...	15pF	E4
C19	A.F. coupling ...	0-01μF	E3
C20*	V3 cath. by-pass ...	50μF	E3
C21	A.F. coupling ...	0-01μF	D4
C22	F-B coupling ...	0-001μF	C4
C23	Part tone control ...	0-01μF	D4
C24*	V4 cath. by-pass ...	50μF	D4
C25	Tone corrector ...	0-005μF	D4
C26*	H.T. smoothing ...	32μF	B1
C27*	...	32μF	B1
C28†	Aerial M.W. 3 trim. ...	180pF	A2
C29†	Aerial M.W. 2 trim. ...	350pF	A2
C30†	Aerial M.W. 1 trim. ...	750pF	A2
C31†	Aerial L.W. trim. ...	750pF	A2

\* Electrolytic. † Pre-set.





OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	L.W. frame aerial...	6.5	—
L2	M.W. frame aerial...	0.6	—
L3	I.F. filter coil ...	16.0	F3
L4	Oscillator pre-set tuning coils	3.0	F4
L5		4.0	F4
L6		2.0	A2
L7		3.0	A2
L8	M.O. coil (total) ...	14.5	F3
L9	1st I.F. trans. {	30.0	A2
L10		Sec.	30.0
L11	2nd I.F. trans. {	15.0	A2
L12		Sec.	15.0
L13	Smoothing choke...	320.0	A1
L14	Speech coil ...	2.2	—
T1	Output trans. {	610.0	C4
	Sec.	0.4	—
T2	Mains trans. {	50.0	B1
	Pri. total	—	—
	H.T. sec.	—	—
	total ...	660.0	—
	Heat. sec.	0.4	—
S1-S17	Tuning switches ...	—	A1
S18	Spkr. muting sw....	—	E4
S19	Mains sw. g'd R11	—	B1

**VALVE ANALYSIS**

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from A.C. mains of 230 V, using the 220-230 V tapping on T2. It was switched to M.W.1.

Except for cathode readings, all voltages were measured on the 400 V scale of a model 7 Avometer, chassis being the negative connection.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 ECH42	245	2.5	100	2.8	3.0
	Oscillator				
	120	4.0			
V2 EF41	220	5.4	100	1.6	2.3
V3 EBC41	122	0.5	—	—	1.8
V4 EL41	222	33.0	245	5.1	6.5
V5 EZ40	270†	—	—	—	270.0

† Each anode A.C.

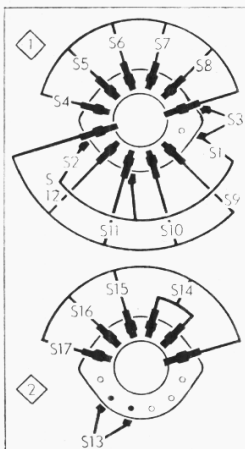
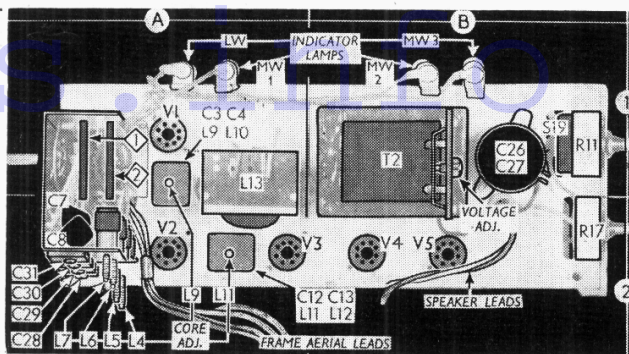
**GENERAL NOTES**

**Switches.**—S1-S13 are the pre-set station and gram selector switches, and S14-S17 the associated indicator lamp switches, ganged in two 5-position rotary units in the tuning assembly at one end of the chassis. These units are indicated in our plan view of the chassis, and shown in detail in the diagrams in col. 2, where they are drawn as seen from the opposite end of the chassis, as indicated by the arrows numbered 1 and 2 in diamonds in our chassis photograph.

The table (col. 2) gives the switch positions for the five control settings, starting from the fully anti-clockwise (gram) position of the control knob. A dash indicates open, and 0, closed.

S18 is the internal speaker muting switch,

Plan view of the chassis. The four pairs of pre-set station adjustments are shown at the rear of the chassis, on the left, where they form a vertical column on the side of the tuning assembly. Diagrams of the waveband switch units appear below in col. 2.



Diagrams of the waveband switch units, as seen when viewed in the direction of the arrows in our plan view above.

with a thumb-screw knob, mounted on the P.U. and Ext. L.S. panel.

S19 is the Q.M.B. mains switch, ganged with the volume control R11.

**Indicator Lamps.**—These are four Osram M.E.S. type lamps, with large clear spherical bulbs, rated at 6.2 V, 0.3 A.

**External Speaker.**—Two sockets (the upper pair) are provided at the rear of the chassis for the connection of a low impedance (about 3 Ω) external speaker.

**DISMANTLING THE SET**

**Removing Chassis.**—Remove the three control knobs (two recessed grub screws each, inside cabinet, accessible from the rear);

remove four 4BA chassis fixing bolts (with one washer each) from the underside of the cabinet, when the chassis, complete with frame aerial, may be withdrawn to the extent of the speaker leads.

To free chassis entirely, unsolder speaker and frame aerial leads.

When replacing, frame aerial leads should be connected as follows, the tags being numbered from top to bottom on the back cover: 1, Yellow; 2, Green; 3, Red; 4, Brown.

**Removing Speaker.**—Slacken the three 4BA nuts and swivel aside the clamps, when the speaker may be lifted out.

Switch	Gram.	L.W.	M.W.1	M.W.2	M.W.3
S1	—	C	—	—	—
S2	—	—	0	—	—
S3	—	—	0	—	—
S4	—	—	—	—	0
S5	—	—	—	—	0
S6	—	—	—	—	0
S7	—	C	—	—	—
S8	—	—	—	—	—
S9	—	—	—	—	0
S10	—	—	—	—	—
S11	—	—	0	—	—
S12	—	—	—	—	—
S13	—	—	—	—	—
S14	—	C	—	—	—
S15	—	—	0	—	—
S16	—	—	—	—	—
S17	—	—	—	—	0

**CIRCUIT ALIGNMENT**

**I.F. Stages.**—Switch pre-set station control to M.W.1 position (second position clockwise from gram), turn the volume control to maximum, and connect signal generator via a 0.1 μF capacitor to control grid (pin 6) of V1 and chassis.

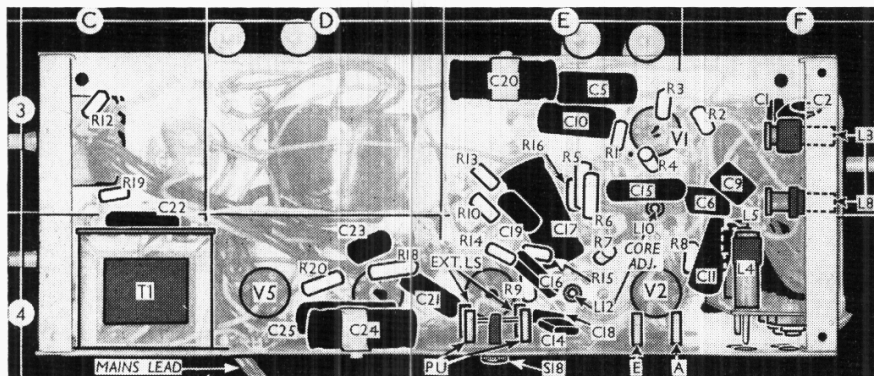
Feed in a 455 kc/s (659.3 m) signal for Southern areas of the country, or a 460 kc/s (652.1 m) signal for Northern areas, and adjust L11 and L12, then L9 and L10 (location reference A2 and E4) for maximum output. The area for which they were originally adjusted is indicated by a large "S" or "N" stamped in indelible ink near the rear edge of the chassis deck.

**I.F. Filter.**—Transfer signal generator leads to A and E sockets, feed in a strong 455 kc/s (or 460 kc/s) signal, and adjust the core of L3 (F3) for maximum output.

**Pre-set Stations.**—All the adjustments are grouped together at the rear of the chassis (location reference A2). They are best adjusted on the transmission of the required station, using the special double-ended trimmer tool supplied with the receiver, and adjusting the oscillator coil first.

Starting from the fully anti-clockwise (gram) position of the control knob, the four successive positions are L.W., M.W.1, M.W.2 and M.W.3. The associated adjustments run from top to bottom in the same order, and their ranges are: L.W., 1,200-1,800 m; M.W.1, 340-550 m; M.W.2, 245-390 m; M.W.3, 194-290 m. After adjustment to a particular station, the appropriate name panel should be inserted in the respective indicator window. The old one can be removed most easily by a prod from the rear.

The master oscillator coil L8 is adjusted on an inductance bridge to 251 μH at works and sealed, and it should not require readjustment. If it has been disturbed, however, it may be reset by feeding in a 135 kc/s signal directly to V1 control grid (pin 6), switching the selector control to gram, and adjusting L8 core for maximum output.



Under-chassis view. The I.F. filter L3 and master oscillator L8 adjustments are indicated.

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