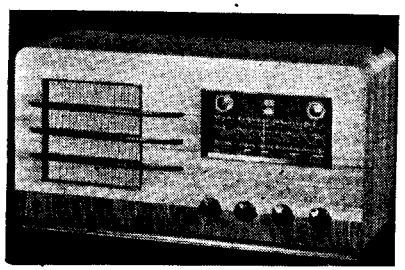
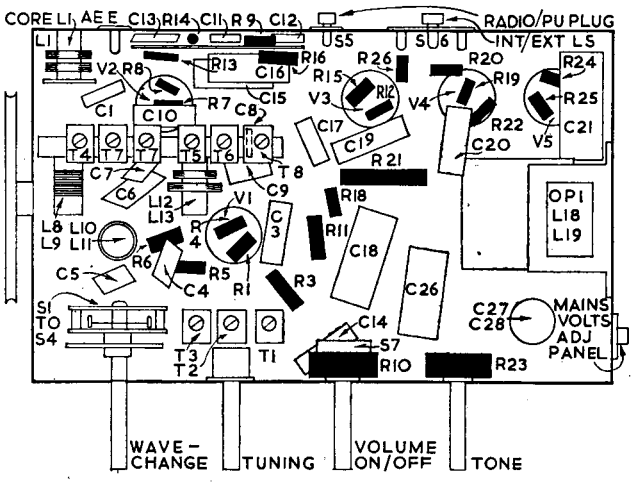
ALLANDER SYMPHONY A410

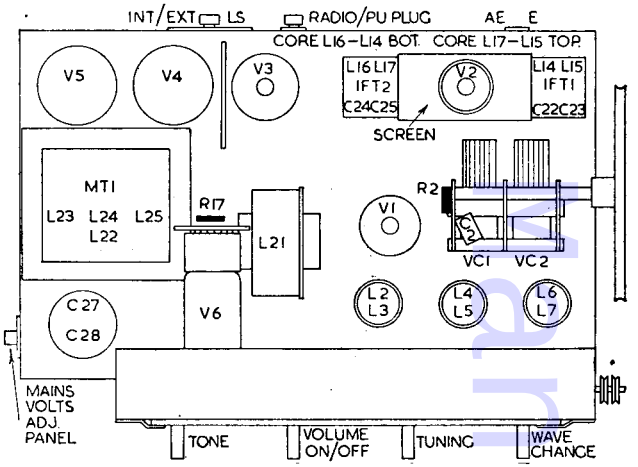


Five-valve, three-waveband superhet for 200-250V. AC 40-60 c/s. Fitted with magic-eye tuning indicator. Sockets provided for aerial, earth, pickup and extension loudspeaker. In walnut veneered cabinet. Manufactured by Allander Industries Ltd., 48, Avenue Street, Bridgetown, Glasgow.



CAPACITORS

C	Capacity	Type
1	100pF	Tubular Ceramic
2	100pF	Mica
3	.05	Tubular 350V
4	100pF	Mica
5	100pF	Mica
6	5,000pF	Silver Mica
7	500pF	Mica
8	100pF	Tubular Ceramic
9	50pF	Silver Mica
10	.05	Tubular 350V
11	100pF	Mica
12	100pF	Mica
13	50pF	Silver Mica
14	.001	Tubular 500V
15	.05	Tublar 350V
16	.05	Tubular 350V
17	100pF	Mica
18	.1	Tubular 350V
19	.05	Tubular 350V
20	.1	Tubular 350V
21	.5	Tubular 350V
22	100pF	Tubular Ceramic
23	100pF	Tubular Ceramic
24	100pF	Tubular Ceramic
25	100pF	Tubular Ceramic
26	4	Electrolytic 350V
27	8	Electrolytic 350V
28	8	Electrolytic 350V

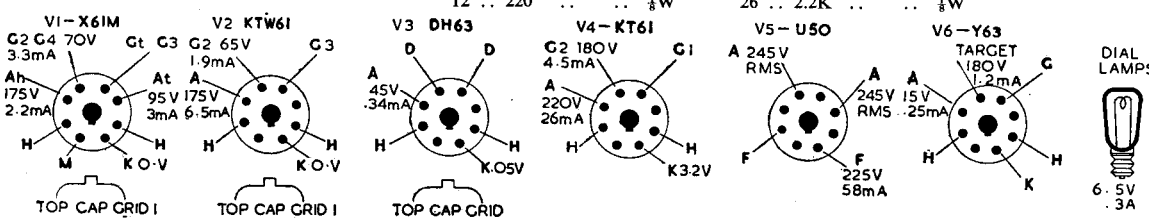


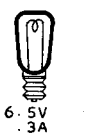
RESISTORS

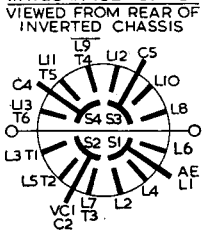
R	Ohms	Watts
1	10K	½W
2	220K	½W
3	10K	½W
4	22K	½W
5	100	½W
6	68K	½W
7	68K	½W
8	220K	½W
9	56K	½W
10	500K Potentiometer fitted with SP ST switch	
11	4.7M	½W
12	220	½W
13	680K	⅓W
14	1.5M	½W
15	220K	½W
16	1.5M	½W
17	680K	⅓W
18	220K	½W
19	680K	½W
20	68K	½W
21	1.5K	1W
22	100	½W
23	50K Potentiometer	
24	220K	½W
25	33	½W
26	2.2K	½W

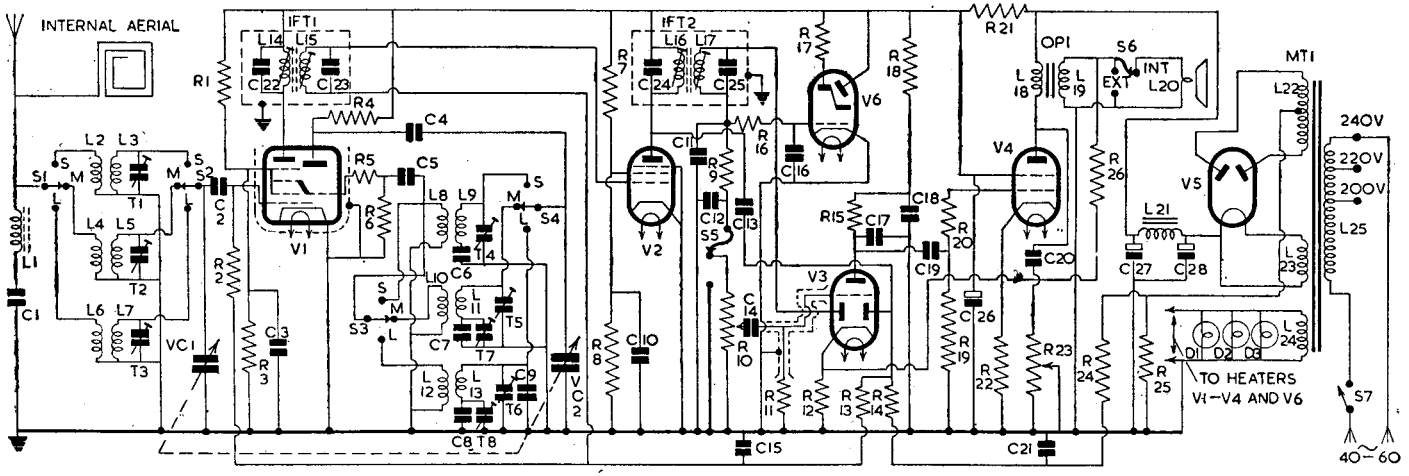
INDUCTORS

L	Ohms	L	Ohms
1	12	14	13
2	.5	15	13
3	Very low	16	13
4	25	17	13
5	5	18	80
6	50	19	.5
7	38	20	2
8	22	21	50
9	Very low	22	360
10	5	23	Very low
11	5	24	Very low
12	7.5	25	46 Total Primary
13	17		









CIRCUIT consists of a triode-hexode frequency changer V1 coupled by a permeability-tuned iron-cored transformer to a variable-mu RF pentode IF amplifier V2. A second permeability-tuned IF transformer couples V2 to the signal rectifier, AVC and audio amplifier valve V3. The triode section of V3 is resistance-capacity coupled to the beam tetrode output valve V4, the output of which is fed to an eight inch PM loudspeaker. The signal rectifier provides the control voltage for the magic-eye tuning indicator V6.

High Tension is provided by a directly-heated full-wave rectifier V5.

Aerial.—A permanently attached aerial consisting of approximately twelve feet of insulated wire, wound in frame form on the inside of cabinet, is fitted to the receiver. A socket is provided for the application of an external aerial, if desired.

The aerial signal is fed to S1 and thence to aerial coupling coils L2 (SW), L4 (MW), L6 (LW). An acceptor IF filter consisting of L1, C1 is connected between aerial input and earth. The grid tuning coils L3 (SW), L5 (MW), L7 (LW) are switched by S2 to the grid tuning capacitor VC1 and through C2 to G1 of triode-hexode frequency changer V1. T1, T2, T3 are grid circuit trimmers. Cathode of V1 is at chassis potential. A small standing bias, together with AVC voltages, is fed to G1 from AVC diode of V3. R2 is for AVC decoupling. Screen (G2, G4) voltage is obtained from potential divider R1, R3, decoupled by C3. L14, C22, which form the primary of IFT1, are in the hexode anode circuit of V1.

Oscillator is connected in a tuned-anode parallel-fed circuit. L9 (SW), L11 (MW), L13 (LW) are the tuning coils switched by S4 to the oscillator tuning capacitor VC2, and coupled by C4 to oscillator anode (At). T4, T5, T6 and C9 are trimming capacitors and C6, C7, T7, C8 and T8 padding capacitors. R4 is oscillator anode load.

ALLANDER A410—*Continued*

L8 (SW), L10 (MW), L12 (LW) are the grid coils switched by S3, through C5 and stopper R5, to oscillator grid (G3, Gt) of V1. R6 is oscillator grid leak and bias for grid is developed automatically on C5.

IF Amplifier operates at 465 kc/s. The secondary of IFT1 (L15, C23), feeds signal to G1 of variable-mu IF amplifier valve V2. AVC and a small standing bias are applied to G1 through L15 decoupled by R13, C15. Cathode and suppressor (G3) are connected to chassis. Screen voltage is obtained from potential divider R7, R8 decoupled by C10. L16, C24, which form the primary of IFT2, are in the anode circuit of V2.

Signal Rectifier.—The secondary of IFT2 (L17, C25), applies signal to one diode of V3. R10, the volume control, is the diode load and R9, C11, C12 form an IF filter circuit. Pickup sockets are fitted across R10 from which the radio input is excluded when using a pickup, by removing plug S5. The fact that this plug must be re-inserted into the appropriate socket for radio ensures removal of the pickup load across R10 when receiving.

Magic-Eye Tuning Indicator operates from the signal rectifier diode. R16 is feed resistor and C16 grid capacitor. Cathode is at chassis potential. Anode voltage is obtained through R17 and target voltage direct from HT line.

Automatic Volume Control.—C13 feeds signal at anode of V2 to second diode of V3. R14 is the load and R13, C15 provide decoupling. Delay voltage for AVC diode is obtained by returning the earthy end of the load R14 to R25 in the negative HT line to chassis. R24, C21 decouple this bias.

Audio Frequency Amplifier.—C14 feeds signal from R10, the volume control, to grid of triode section V3. R11 is grid leak and being a fairly high value (4.7M) negative bias for grid is developed on C14.

R12 in the cathode circuit provides little in the way of cathode bias, but is inserted to introduce the negative feedback voltages from the secondary of the output transformer OP1. R26 is feed resistor for negative feedback. R15 is the anode load and C17 anode RF bypass capacitor. HT supply to anode V3 is decoupled by R18, C18.

Output Stage.—C19 feeds signal at anode V3 to G1 of V4, the beam tetrode output valve. R20 is grid stopper and R19 grid leak.

Cathode bias is provided by R22. Screen voltage is obtained from R21 decoupled by C26. R21 is also used as voltage dropper for HT supply to V1 to V3. L18, the primary of OP1, the output matching transformer, is in the anode circuit. C20, R23 provide a variable top cut tone control. L19, the secondary of OP1, feeds into an internal eight inch PM speaker L20. Sockets are fitted on L19 for connection of any low impedance type extension speaker. The internal speaker may be silenced by removal of link plug S6. Negative feedback voltages from secondary L19 are fed back through R26 to cathode circuit of V3.

High Tension is supplied by a directly-heated full-wave rectifier V5. L22, the HT secondary of the mains input transformer MT1, provides its anode voltages and L23 its heater current. L21, C27, and C28 provide choke-capacity smoothing of the HT supply.

Heaters of V1 to V4 and V6 and the three dial lights obtain their current from L24.

The primary L25 of MT1 is tapped for input 200 to 250V 40-60 c/s. S7, ganged to the volume control spindle, is the on/off switch.

Removal of chassis from cabinet.—Remove control knobs, rear panel and bottom inspection cover. (Panels slide in grooves and are fastened with single screws.) Unscrew the four hexagonal chassis bolts on underside of cabinet. Chassis can now be withdrawn to extent of aerial and loudspeaker leads. Loudspeaker is fitted on a baffle fastened to the front of the cabinet with four wood screws. If these are removed and aerial wire unsoldered from tag on bottom of cabinet, the chassis and loudspeaker can be completely removed for servicing.

Drive Cord Replacement.—One cord is used to the route shown diagrammatically. The usual type of fishing line cord may be used for replacement.

To fit the cord it is necessary to withdraw the chassis and to remove the dial glass (four 5BA nuts). A loop of cord 84 inches long is made and the cord tension spring attached to the knot. The loop is then threaded through the cord hole on the drive drum and one side is taken over the drum round the outer pulley at the R.H. side of the set, once round four inner pulleys of the dial, again round the inner L.H. lower pulley, twice round the two gear drive, round the outer R.H. lower dial pulley, round the inner pulley at the R.H. side of the set, and back on to the lower edge of the drum.

NOTE.—Three versions of the above receiver are manufactured—Model A410A, as described above—Model A410B has a 1.5K resistor instead of smoothing choke L21—Model A410C is fitted with a dynamic speaker, the field coil of which replaces choke L21.

Models A410B and A410C also have a mains input transformer with a higher HT secondary voltage.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune receiver to	Trim in order stated for max. ouput
(1) 465 kc/s to top cap V1 via .01 capacitor		Core of L17, L16, L15, L14
(2) With ganged condenser fully meshed (max. capacity) check that pointer coincides with righthand end of waveband scales. If not, loosen drive wheel on condenser and adjust		
(3) 350 kc/s to AE socket via dummy aerial	857 metres	T6, T3
(4) 160 kc/s as above	1880 metres	T8 and repeat (3) and (4)
(5) 1.5 mc/s as above	200 metres	T5, T2
(6) 600 kc/s as above	500 metres	T7 and repeat (5) and (6)
(7) 15 mc/s as above	20 metres	T4, T1
(8) 465 kc/s as above	300 metres	Core of L1 for minimum output