

G.E.C. A.C. MAINS FOUR (Cont.)

terminals on the speaker transformer and chassis :-

- Left (1) Red and white, 330 volts, H.T. unsmoothed.
- (2) Orange, 225 volts, V3 anode.
- (3) and (5) Joined, 0 volts.
- (4) Black, 0 volts.
- (6) and (7) Joined, red, 240 volts, H.T. unsmoothed.

Removing Chassis.—Pull off the knobs, remove four holding screws from underneath the cabinet and free the speaker cable.

General Notes.—The leads to the electrolytic condenser block are :

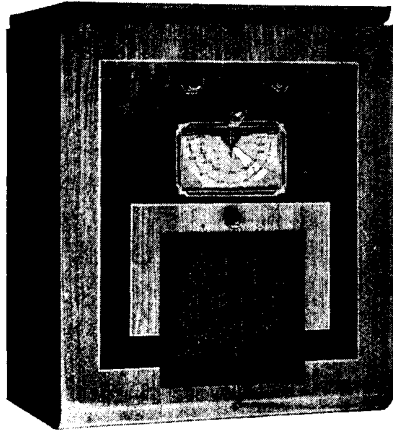
- Yellow, C7; Black, chassis;
 - Red, C15 and C14 (same value).
- The leads from the small condenser block are :-
- C16, orange and orange and white.

| VALVE READINGS | | | | |
|----------------|---------------|--------------|--------|------|
| Valve. | Type. | Electrode. | Volts. | M.A. |
| 1 | VMS4 met. (5) | anode .. | 24 | 6 |
| | | screen .. | 70 | |
| | | aux. grid .. | 120 | |
| 2 | MS4B (5) | anode .. | 120 | 2.7 |
| | | screen .. | 60 | |
| | | aux. grid .. | 225 | |
| 3 | N41 (7) | anode .. | 240 | 38 |
| | | aux. grid .. | 240 | |

- C8, two pink and white. Note that there is no common terminal.
- The leads from the mains transformer are :-
- Two green, rectifier filament.
- Two orange, rectifier anodes, grey C.T.
- Yellow, set heaters.
- Thick yellow, C.T. of heaters (to chassis)
- Black, chassis.
- Mains tappings are :-
- Red, 230-250 volts.
- Green, 210-230 volts.
- White, 190-210 volts.
- Black and red, mains O to switch.

Replacing Chassis.—Lay the chassis inside the cabinet, replace holding screws, clip the speaker cable, and press the knobs on to the spindles.

ALBA SIX-VALVE A.C. SUPERHET



This six-valve A.C. mains superhet receiver, known as model 57, was introduced by A. J. Balcombe, Ltd., for the 1934-5 season.

Circuit.—The frequency-changer valve, FC4 met. (V1), is preceded by a band-pass aerial tuner of which the first coupling is a tuned secondary transformer. Bias is by cathode resistance and A.V.C., and coupling to the next valve is by band-pass I.F. transformer (frequency 117.5 kc.).

The I.F. valve, VP4A met. (V2), is also biased by cathode resistance and A.V.C., and

is followed by a second band-pass I.F. transformer.

The second detector is a simple double diode, 2D4A (V3), the A.V.C. anode being fed from the primary of I.F.T.2. Coupling to the L.F. valve is by resistance capacity filter, of which the grid leak forms the volume control.

Optional sensitivity is provided by a switch, which can change the diode bias to a tapping on the V4 bias potentiometer.

The L.F. valve, VP4A (V4), is resistance capacity coupled to the output valve, a Pen. 4VA (V5). This is tone compensated by a condenser and provided with a control consisting of a condenser and variable series resistance.

The mains equipment is : Transformer, full-wave IW3 indirectly-heated rectifier, and the field coil in the positive H.T. lead with electrolytic condensers.

| VALVE READINGS | | | | |
|----------------|---------------|---------------|--------|------|
| Valve. | Type. | Electrode. | Volts. | M.A. |
| 1 | FC4 met. (7) | anode .. | 236 | 1.5 |
| | | aux. grid .. | 86 | |
| | | osc. anode .. | 82 | |
| 2 | VP4A met. (7) | anode .. | 204 | 1.8 |
| | | aux. grid .. | 86 | |
| | | diode .. | — | |
| 3 | 2D4A | anode .. | 56 | 1.7 |
| | | aux. grid .. | 86 | |
| 4 | VP4A | anode .. | 236 | 33.5 |
| | | aux. grid .. | 86 | |
| | | aux. grid .. | 214 | |

Special Notes.—The pilot lamps are 2.5 v. .3 amp., and are wired in series.

To replace them, turn the dial to about 450 metres. The lamp shield is then above the condenser. Pull the lamp carrier upwards by the projecting flange.

Quick Tests.—Voltages between the terminals on the speaker transformer and chassis :-

Top, (1) and (2).—Joined, H.T. smoothed, 236 v.;

(3).—Junction of C17 and R 18;

(4).—V5 anode, 214 v.;

(5).—H.T. unsmoothed, 356 v.;

Removing Chassis.—Remove the knobs (grub screw) and remove the four holding screws from underneath the cabinet, taking care not to lose the rubber washers within.

General Notes.—The block electrolytic condenser has two red leads, but the case is marked with the corresponding capacities. C19 of 8 mfd. is connected to the second tag from the rear on the inner side of the mains transformer (i.e., the rectifier heater tag).

The connections to the transformer (counting from the rear in each case) are :-

Inner row : (1) and (3) rectifier heaters;

(3) and (5) rectifier anodes;

(4) centre tap

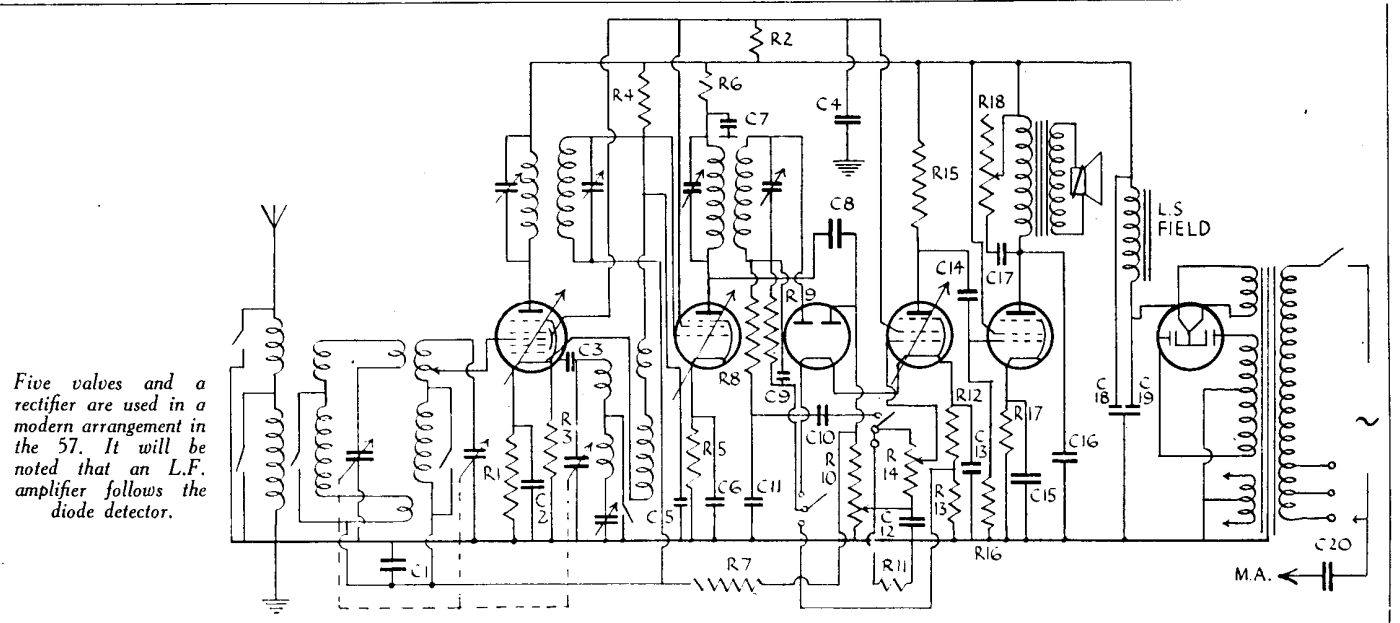
Outer row : (1) Mains Ov.;

(2) Mains, to switch;

(3) and (5) set heaters;

(4) centre tap (to chassis).

(Continued on next page.)



Five valves and a rectifier are used in a modern arrangement in the 57. It will be noted that an L.F. amplifier follows the diode detector.

ALBA A.C. SUPERHET SIX (Cont.)

Replacing Chassis.—Stick or lay the rubber washers over the holes in the bottom of the cabinet.

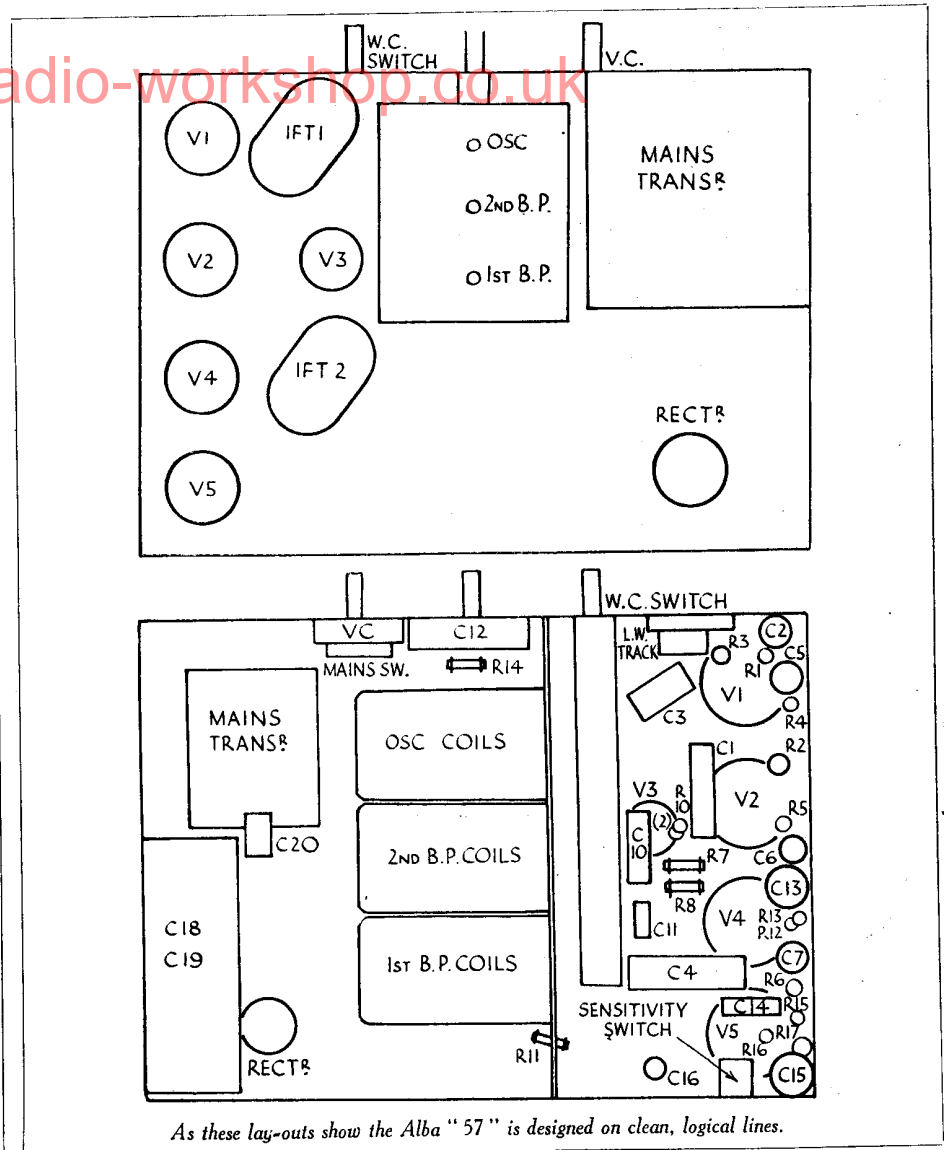
Lay the chassis inside, replace the holding screws and the knobs.

CONDENSERS

| C. | Purpose. | Mfd. |
|----|-------------------------------|-------|
| 1 | Decoupling V1 grid .. | .1 |
| 2 | V1 cathode by-pass .. | .1 |
| 3 | V1 osc. grid. reservoir .. | .0002 |
| 4 | V1 aux. grid by-pass .. | 2 |
| 5 | Decoupling V1 osc. anode .. | .1 |
| 6 | V2 cathode by-pass .. | .1 |
| 7 | Decoupling V2 anode .. | .1 |
| 8 | I.F. feed to A.V.C. diode .. | .0002 |
| 9 | H.F. by-pass .. | .0002 |
| 10 | L.F. coupling V3 to V4 .. | .005 |
| 11 | H.F. by-pass .. | .0006 |
| 12 | Decoupling V4 grid .. | .25 |
| 13 | V4 cathode by-pass .. el. | .25 |
| 14 | I.F. coupling V4 to V5 .. | .005 |
| 15 | V5 cathode by-pass .. el. | .25 |
| 16 | Tone compensating V5 anode .. | .005 |
| 17 | Tone control circuit .. | .02 |
| 18 | H.T. smoothing .. el. | 12 |
| 19 | H.T. smoothing .. el. | 8 |

RESISTANCES

| R. | Purpose. | Ohms. |
|----|---|----------|
| 1 | V1 cathode bias .. | 250 |
| 2 | Voltage dropping to V1 and V2 aux. grids .. | 25,000 |
| 3 | V1 osc. grid leak .. | 50,000 |
| 4 | Decoupling V1 osc. anode .. | 75,000 |
| 5 | V2 cathode bias .. | 400 |
| 6 | Decoupling V2 anode .. | 10,000 |
| 7 | Decoupling A.V.C. line .. | 1 meg. |
| 8 | H.F. stopper .. | 1 meg. |
| 9 | Diode load .. | .5 meg. |
| 10 | A.V.C. diode load .. | .5 meg. |
| 11 | Across P.U. leads .. | 100,000 |
| 12 | V4 bias ptr. .. | 600 |
| 13 | V4 bias ptr. .. | 300 |
| 14 | V4 grid leak, V.C. .. | 5 meg. |
| 15 | V4 anode coupling .. | 100,000 |
| 16 | V5 grid leak .. | .25 meg. |
| 17 | V5 cathode bias .. | 500 |
| 18 | Tone control .. | 50,000 |
| — | L.S. field .. | 2,000 |



As these lay-outs show the Alba "57" is designed on clean, logical lines.

ULTRA MODEL 66 RECEIVER

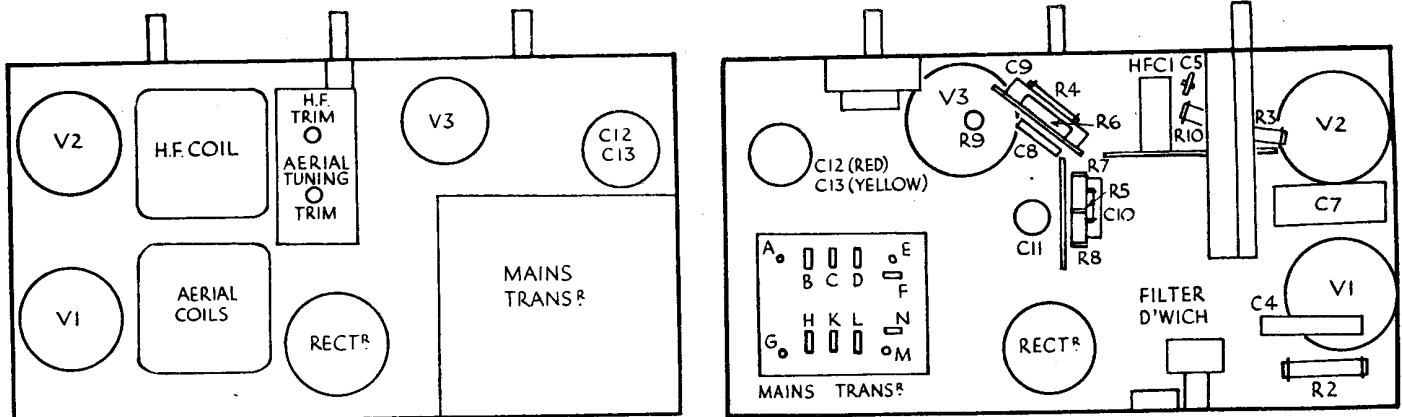
Circuit.—A single H.F. valve, AC/VP1 met. (V1), has a tuned secondary aerial transformer in its grid circuit and is choke filter fed to the grid coil of the next valve. Volume is controlled by variable cathode resistance. The detector valve, AC/S2/Pen met. (V2), is employed as an anode-bend detector, and is coupled to the output valve by a resistance capacity filter.

The last valve, an A.C.2Pen (V3) has both grid and anode stabilizing resistances, and is tone compensated by a condenser across the primary of the output transformer. Mains equipment consists of: transformer, full-wave UU3, indirectly-heated rectifier, and the speaker field in the positive H.T. lead for smoothing with electrolytic condensers. The supply for the pilot lamps is separate

from that of the heaters. The lamps are on clips which slip out and are 4.5v. .3 amp. types connected in parallel.

Special Notes.—The auxiliary grid of V1 has approximately the same H.T. potential as the anode.

The resistance R2 is used to provide a (Continued on opposite page.)



These diagrams show how the parts are arranged on the Ultra chassis. For the mains transformer connections see "General Notes."