

G.E.C. A.C. MAINS FOUR



The General Electric Co's A.C. Mains Four is a "straight" receiver with a modern circuit which provides a highly efficient performance. A moulded bakelite cabinet, decorated with chromium speaker slats, houses the set.

Circuit.—An H.F. valve, VMS4 met. (V1), has tuned secondary aerial transformer coupling. Volume is controlled by a potentiometer which simultaneously damps the aerial coil and increases the bias on the valve grid.

Coupling to the next valve is by H.F. choke-capacity filter, the choke being tapped for L.W. switching.

The detector valve, MS4B (V2), operates as a power-grid detector with reaction, and is coupled to the output by resistance-capacity filter.

The output valve, N.41 (V3), has a grid stabilising resistance, and is tone-compensated by a condenser between the grid and chassis and between anode and chassis.

Mains equipment consists of: transformer with screened primary, full-wave U12 rectifier, and the speaker field in the positive H.T. lead with two electrolytic condensers for smoothing.

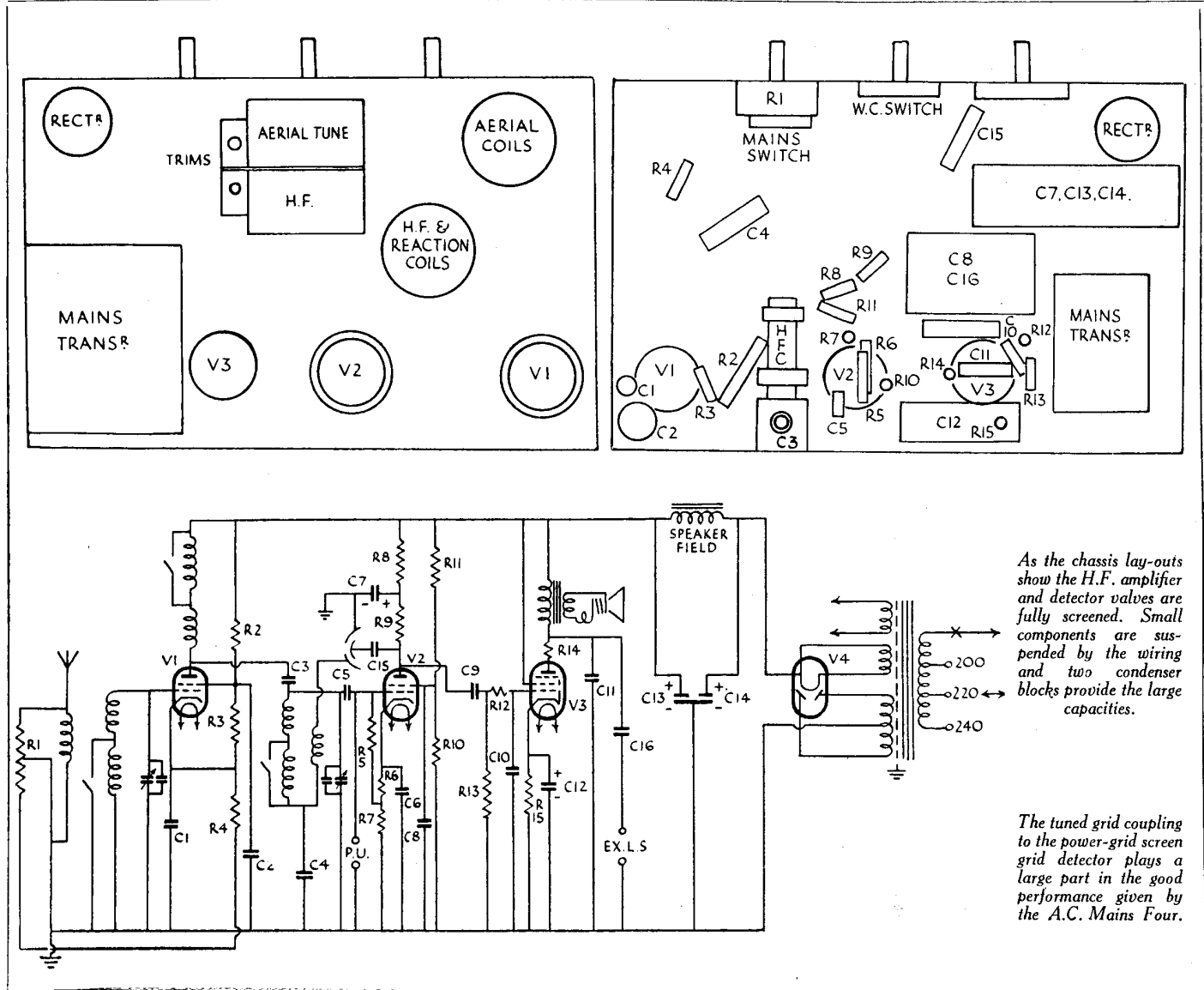
Quick Tests.—Between the top row of
(Continued on opposite page.)

RESISTANCES		
R.	Purpose.	Ohms.
1	Volume control	7,000
2	Upper part of V1 screen ptr.	35,000
3	Lower part of V1 screen ptr.	22,000
4	Part of V1 cathode bias	100
5	V2 grid leak	1 meg.
6	V2 bias resistor on radio	200
7	V2 bias resistor on gram. (series)	200
8	V2 anode decoupling	15,000
9	V2 anode L.F. coupling	30,000
10	Lower part of V2 screen ptr.	30,000
11	Upper part of V2 screen ptr.	70,000
12	V3 grid stabiliser	55,000
13	V3 grid leak	220,000
14	V3 anode stabiliser	100
15	V3 cathode bias	100
—	Field coil	1,400

All are .5 watt, except R2, which is 1 watt.

CONDENSERS		
C.	Purpose.	Mfd.
1	V1 cathode by-pass	.25
2	V1 screen by-pass	.1
3	H.F. feed to V2 grid coil	.000011
4	Earth return of grid coil	.05
5	V2 grid reservoir	.0005
6	V2 cathode by-pass	.5
7	V2 anode decoupling	3*
8	V2 screen by-pass	.5
9	L.F. coupling	.02
10	Tone compensating, V3 grid	.0003
11	Tone compensating, V3 anode	.005
12	V3 cathode by-pass	el. 50 (20v.)
13	H.T. smoothing	el. 7*
14	H.T. smoothing	el. 7*
15	Series with reaction cond.	.005
16	Feed to ex. L.S.	.25

* In electrolytic block.



As the chassis lay-outs show the H.F. amplifier and detector valves are fully screened. Small components are suspended by the wiring and two condenser blocks provide the large capacities.

The tuned grid coupling to the power-grid screen grid detector plays a large part in the good performance given by the A.C. Mains Four.

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, C13 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 ..	225	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.

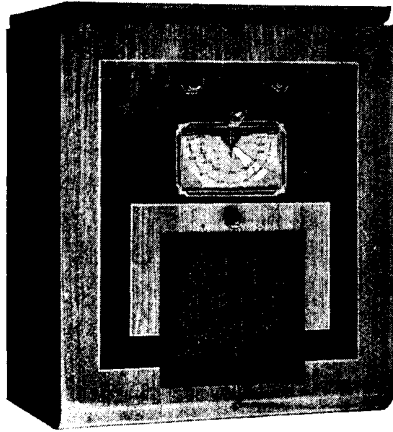
Mains tappings are :-

- 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		4
		osc. anode ..	82		1.25
2	VP4A met. (7)	anode ..	204	1.8	
		aux. grid ..	86		1.7
		diode ..	—		—
3	2D4A	anode ..	56	1.7	
		aux. grid ..	86		.8
4	VP4A	anode ..	236	33.5	
		aux. grid ..	214		3

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

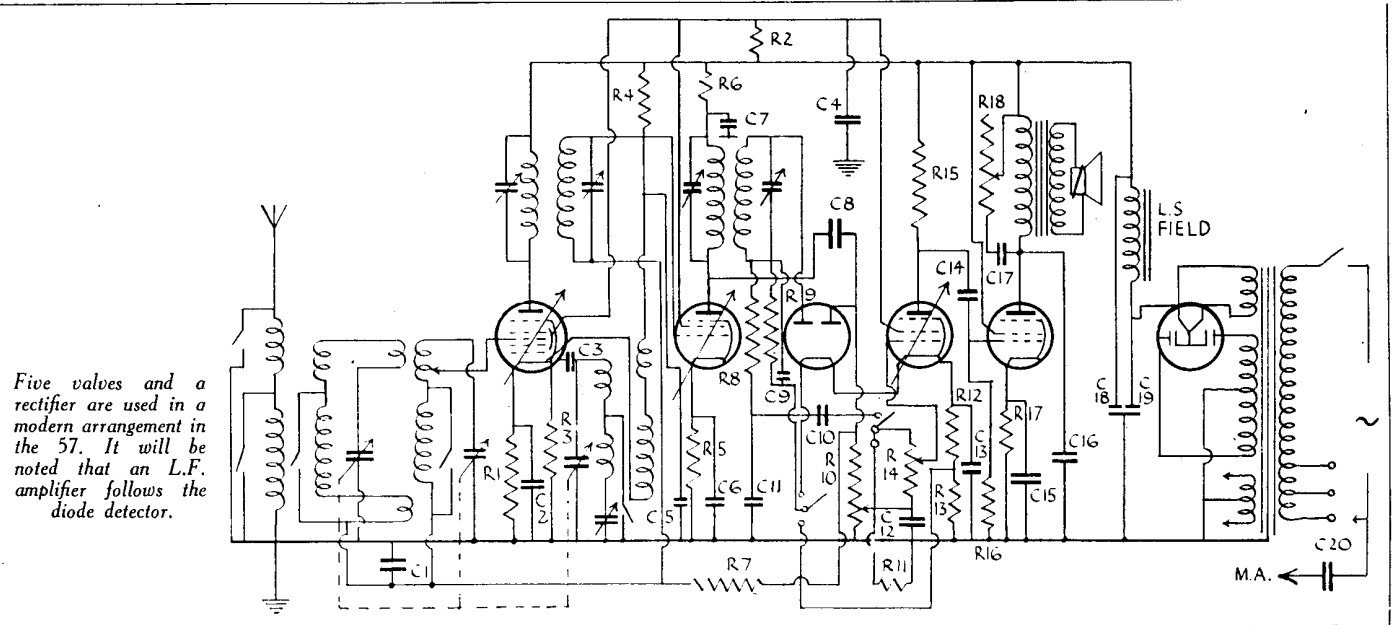
Outer row : (1) Mains Ov.;

(2) Mains, to switch;

(3) and (5) set heaters;

(4) centre tap (to chassis).

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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.