

ALBA MODEL 52A.C. MAINS THREE

Circuit.—The H.F. valve, VP4 met (V1), is preceded by a tuned secondary aerial transformer. Volume is controlled by variable resistance common to cathode and auxiliary grid potentiometer. Coupling to the detector valve is by band-pass H.F. transformer.

The detector valve, SP4 met (V2), works as an anode bend detector with a grid condenser and leak. The auxiliary grid is fed from the H.T. through a high value of resistance, R6. The L.F. coupling is by resistance capacity filter, and the anode circuit is decoupled.

The output valve, PM24M or PT41 (V3), is a directly-heated pentode. The grid circuit is stabilised by R10, and the anode circuit is tone compensated by C11. Bias is obtained from a potentiometer formed by R11 and R12 across the L.S. field, which is in the negative H.T. lead.

Mains equipment consists of transformer, full-wave rectifier, IW3, and two electrolytic condensers used with the L.S. field for smoothing.

Special Notes.—The variable-mu H.F. valve must be placed in the V1 position.

The aerial transformer is inside the screen next V1, while the band-pass H.F. transformer is mounted inside the chassis.

Quick Tests.—Between the following terminals on L.S. transformer and chassis (note the polarity), looking from back and counting from right:—

- (1) Red, 114 v. negative H.T.—
- (2) White, 235 v.+, V3 anode.
- (3) Black, 250 v.+, H.T.+ smoothed.
- (4) Blue, zero to chassis.

(1) and (4) are L.S. field terminals. (2) and (3) are primary of output transformer.

Removing Chassis.—Remove knobs (grub screw), four holding bolts underneath.

and lift chassis out. The speaker leads are sufficiently long to allow tests. Stand chassis outside cabinet with mains transformer resting on bottom of cabinet.

General Notes.—Mains transformer connections (see diagram):—

Leads A and H, set filaments.

Leads B and J, rectifier filament.

Tags C and E, rectifier anodes.

Tag D, H.T.—to L.S. field, C13 and R12.

Tag F, to chassis.

Lead G, also to chassis.

Note that the black lead from the 6 mfd. side of the block electrolytic condenser is connected to the thick earth connecting wire, while the black lead from the 4 mfd. side is

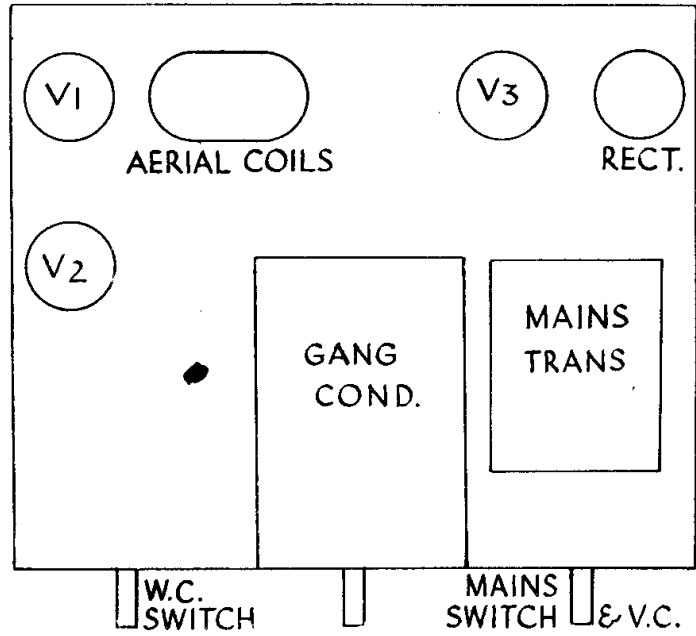
taken to the junction of R12, and the lead from D on the mains transformer.

There is only one common positive lead.

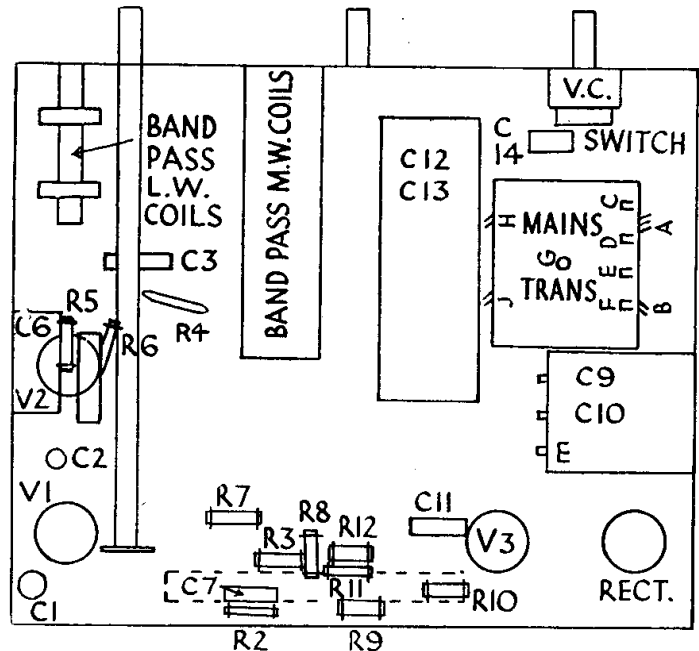
Switch contacts are of the wiping type. Should they require cleaning the blades can be freed by undoing the four holding screws (these are screwed into the support and have no nuts). When cleaning, wipe the contact-makers with a dry duster.

Replacing Chassis.—Lay chassis inside cabinet. Replace the four holding screws, and before tightening them see that the tuning pointer is just clear of the escutcheon.

Replace the knobs. The wave-change and V.C. knobs are marked.



A tuned secondary aerial transformer is situated next to the variable-mu H.F. valve in the Alba 52 A.C. receiver.



The band-pass interval coupling is housed below the chassis, this construction contributing to the clean external appearance.

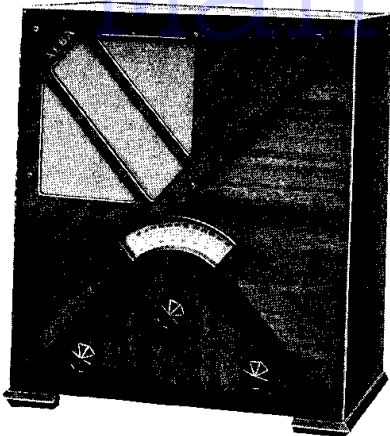
VALVE READINGS				
V.C. max.				
Valve.	Type.	Electrode.	Volts.	M.A.
1	VP4	...	234	2.5
		...	102	
2	SP4	...	94	.2
		...	25	
3	PT41	...	234	31
		...	250	6

* High values of resistances in circuit. Anode current test is the important factor.

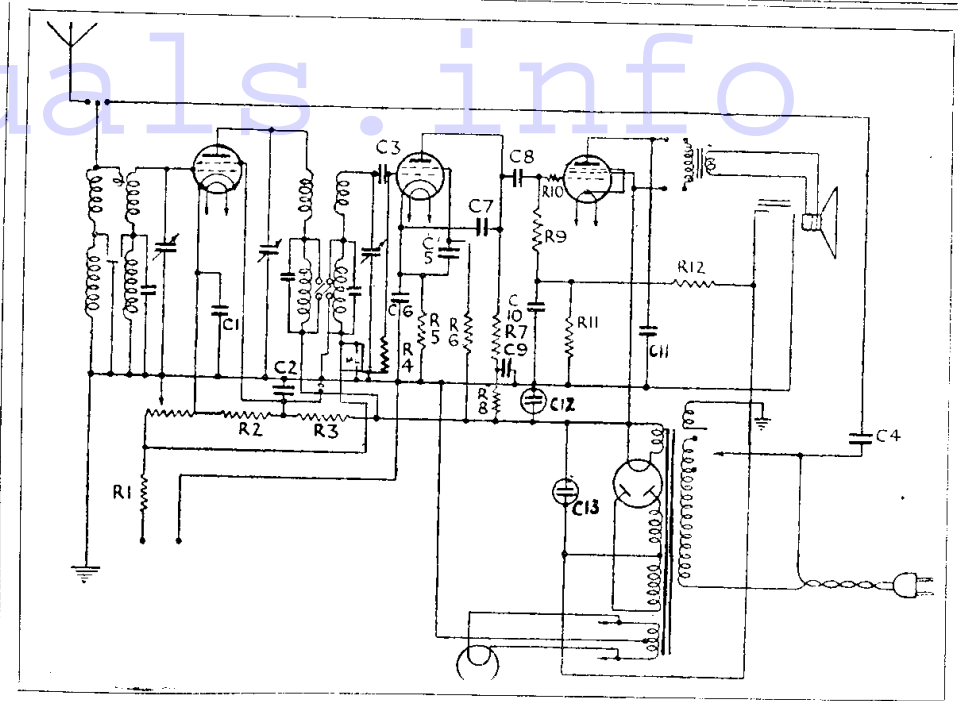
CONDENSERS		
C.	Purpose.	Mfd.
1	V1 cathode	.1
2	V1 screen	.01
3	V2 grid	.0002
4	Mains aerial	.0002
5	V2 aux. grid	.05
6	V2 cathode	.5
7	V2 anode by-pass	.0005
8	L.F. coupling V2, V3	.005
9	V2 anode decoupling	.5
10	V3 grid decoupling	.5
11	V3 anode tone compensating	.01
12	H.T. smoothing	6 el.
13	H.T. smoothing	4 el.

RESISTANCES		
R.	Purpose.	Ohms.
1	Limiting resistance in gram. lead	10,000
2	Part of bias and S.G. ptr.	30,000
3	Part of bias and S.G. ptr.	50,000
4	V2 grid leak	.5 meg.
5	V2 cathode bias	10,000
6	H.T. feed to V2 aux. grid	2 meg.
7	V2 anode L.F. coupling	.25 meg.
8	V2 anode decoupling	50,000
9	V3 grid leak	1 meg.
10	V3 grid stabiliser...	.25 meg.
11	V3 bias ptr.	.3 meg.
12	V3 bias ptr.	2 meg.
	Volume control	11,800
	L.S. field (Magnavox 154)	2,500
	P. of output transformer	475

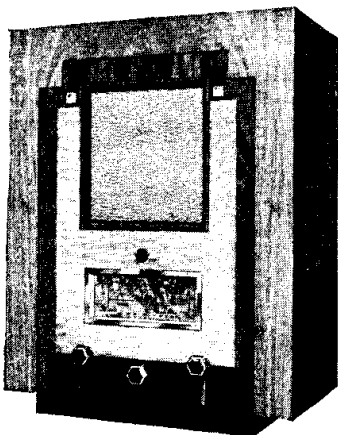
ALBA 52 A.C. MAINS
THREE (Cont.)



The Alba 52 A.C. is a product of A. J. Balcombe, Ltd. On the right is the circuit, which utilises pentodes in H.F., detector and output stages. It is interesting to note that the band-pass tuning circuits are between the H.F. and detector valves.



FERRANTI ARCADIA FOUR-VALVE
MAINS SUPERHET



A "five-point" tuning dial is one of the foremost characteristics of the Arcadia receiver made by Ferranti, Ltd.

R16 in series with a condenser between the anode and chassis gives the control.

The output valve LP4 (V4) is a triode. Bias is obtained from a potentiometer across the L.S. field, which is in the negative H.T. lead. The speaker is the standard Ferranti D4.

Mains equipment consists of transformer, full-wave rectifier, and the L.S. field is used for smoothing in conjunction with two 8 mfd. condensers.

Special Notes.—A switch at the back of the set can disconnect the speech coil of the internal speaker.

The wave-change switch, the tone control and the volume control are provided with indicators. These are controlled by means of cords passing round the respective spindles and working against springs on the pointers. Visual tuning indication consists of a milli-

ampere meter connected in the common anode lead to the first two valves. This usually gives an indication as to whether or not H.F. and detector valves are working correctly.

In some models the A.V.C. tapping for V1 is taken from the same point as for V2.

Quick Tests.—The upper (front) row of terminals on the panel above the mains transformer are the connections to the speaker. From left to right, looking from the rear, the voltages are (note the polarity): (1) Blue, 110 volts negative (H.T.—); (2) Green, 230 volts positive, V4 anode; (3) Red, 240 volts positive H.T. + smoothed; (4) chassis earth.

Removing Chassis.—Pull off the knobs and remove the four holding screws. Pull the "push on" connectors to the L.S. leads

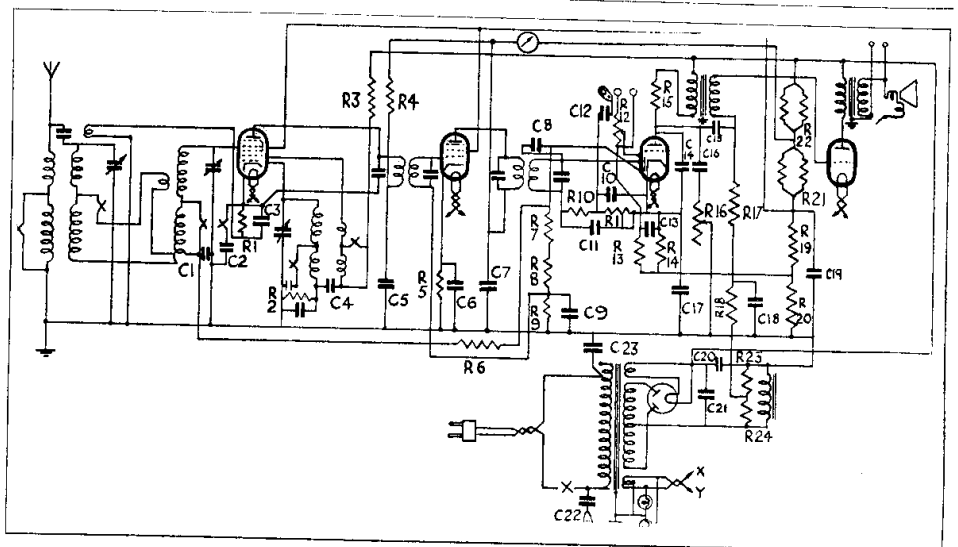
(Continued on next page.)

Circuit.—The first valve VHT4 (V1) is a heptode, and a band-pass aerial circuit precedes it. The conversion is obtained by electronic mixing in the valve, and reaction is applied between the oscillator anode and grid. Coupling to the next valve is by band-pass I.F. transformer (frequency 125 kc.), and bias is obtained partly by cathode resistance, and partly from the A.V.C. line.

The I.F. valve, VPT4 (V2), an H.F. pentode, operates with bias partly fixed and partly controlled from the A.V.C. line.

For the second detector, an H4D double diode is used. One diode anode is used for rectification for L.F. purposes and the other for A.V.C. The load on the former consists of R10 and R11, with C12 as the L.F. coupling and the A.V.C. potentiometer is formed by R7, R8 and R9. Bias for the triode section is obtained by cathode resistance R14 and "delay" from the H.T. potentiometer R19, R20, R21 and R22, from which the various screen potentials are taken.

Coupling to the output valve is by resistance-capacity with tone correcting transformer. The grid leak of the triode section is a variable potentiometer, which forms an L.F. volume control. A variable resistance



The latest types of valves—all Ferranti products—are employed in the Arcadia four-valve A.C. mains superhet.

ALBA 52AC

Three-valve, plus rectifier, two wave-band TRF receiver for operation from AC mains. Sockets are provided for a high impedance pickup. Made by A. J. Balcombe, Ltd., 52, Tabernacle Street, London, EC2.

THE aerial input, either from an external aerial or from the mains wiring via C4, is coupled by L1 (MW) and L2 (LW), aperiodic coupling coils to the tuned grid circuit of V1, a variable-mu HF pentode.

The cathode bias of this valve and, therefore, its sensitivity, are controlled by VR1, the volume control, which also forms part of the screen-grid potential divider network comprising R2, R3. C1 is the cathode decoupler and C2 the screen-grid decoupler of V1.

A bandpass HF transformer transfers the signal from V1 to the HF pentode detector valve V2. L5 and L6 are the tuned

primary coils in the anode circuit of V1, while L7 and L8 are the tuned secondaries across the grid circuit of V2. It will be noted from the circuit diagram that there are small capacities across the LW coils; these are not trimmers.

V2 operates as an anode-bend detector being permanently biased by R5 decoupled by C6, but a grid condenser C3 and leak R4 are provided to prevent the tuning coils shorting the pickup on gram. R1 is a limiter in the pickup input circuit. VR1 is effective on gram as at its maximum resistance position R1 and V2 grid circuit is taken direct to chassis.

The screen of V2 is fed from the HT line via R6 which is decoupled by C5. C7 is the anode HF by-pass condenser.

The LF signal is resistance-capacity coupled from V2 to V3, the pentode output valve. R7, C8 and R9 are the LF coupling components with R8 and C9 anode decouplers for V2. A grid stopper, R10, is in V3 grid circuit which connects via R9 to the junction of R11 and R12. These two resistances form a bias network and are in series with the loudspeaker field winding L12 which acts as a smoothing choke in the HT negative line. R11 is decoupled by C10.

A permanent degree of tone correction

is effected by C11 in the anode circuit of V3 which is coupled to the loudspeaker by the output transformer L9, L10.

The HT supply is obtained from a full-wave rectifier, V4, with smoothing by L12, C12, and C13.

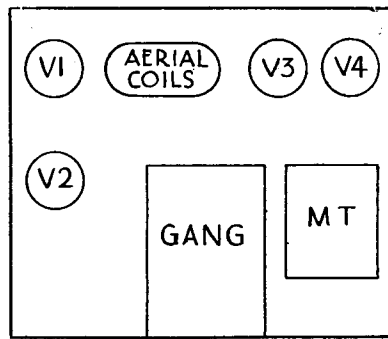
GANGING.—A signal of about 203 m should be used for adjusting the trimmers on the three sections of the ganged tuning condenser. There are no adjustments for the LW band.

CONDENSERS

C	Mfds	C	Mfds
1	.1	8	.005
2	.01	9	.5
3	.0002	10	.5
4	.0002	11	.01
5	.05	12	.6
6	.5	13	.4
7	.0005		

RESISTANCES and WINDINGS

R	Ohms	R	Ohms
1	10,000	10	.25 meg
2	30,000	11	.3 meg
3	50,000	12	.2 meg
4	.5 meg	VR1	11,800
5	10,000	L9	.475
6	2 meg	L10	very low
7	.25 meg	L11	.2
8	50,000	L12	2500
9	1 meg		(Magnavox 154)



W/C SWITCH TUNING MAINS SWITCH & VC.

Top of chassis layout diagram for the Alba 52AC, a simple straight three plus rectifier receiver.

VALVE READINGS

(With volume control at max.)

V	Type	Electrode	Volts	Ma
1	VP4	Anode	234	2.5
		Screen	102	—
2	SP4	Anode*	94	.2
		Screen*	28	—
3	PT41	Anode	234	31
		Screen	250	6
4	IW3	Cathode	250	—

* High values of resistances in circuit. Anode current test is the important factor.

Faulty Coupling Condenser

I ENCOUNTERED the following fault in a HMV 622 set. There was distortion of the LF type on both radio and gram, and the power valve (MKT4) was suspected and replaced. This effected a slight improvement but still there was something lacking.

Examination of anode current of this valve indicated it was too high; the bias voltage was tested and found OK. Next the plate voltage of the previous valve was measured and this was slightly down, but not bad.

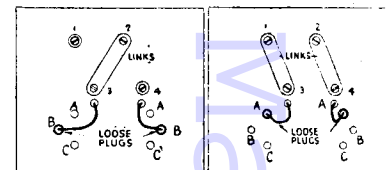
The anode coupling condenser between this valve and the grid of the MKT4 was next tested by unsoldering the grid side and the voltage on this was positive with respect to chassis. This voltage was cancelling to some extent the negative bias applied through the grid leak. Replacement of the coupling condenser effected a cure.

WOULD it be possible for the makers of record players to sound insulate the motor from the motor board as in most cases there is considerable vibration

HMV 551, 551A

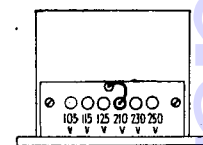
Continued from page iv.

MAINS TRANSFORMER



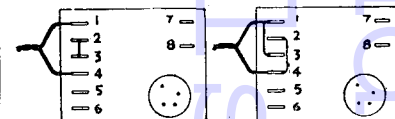
200-260 volts. 100-130 volts.
Adjust links first as above. Loose plugs go in—"A" for 240-260 or 120-130 volts. "B" for 220-239 or 110-119 volts. "C" for 200-219 or 100-109 volts.

MOTOR TRANSFORMER



Insert loose plug in appropriate socket.

FIELD RECTIFIER UNIT



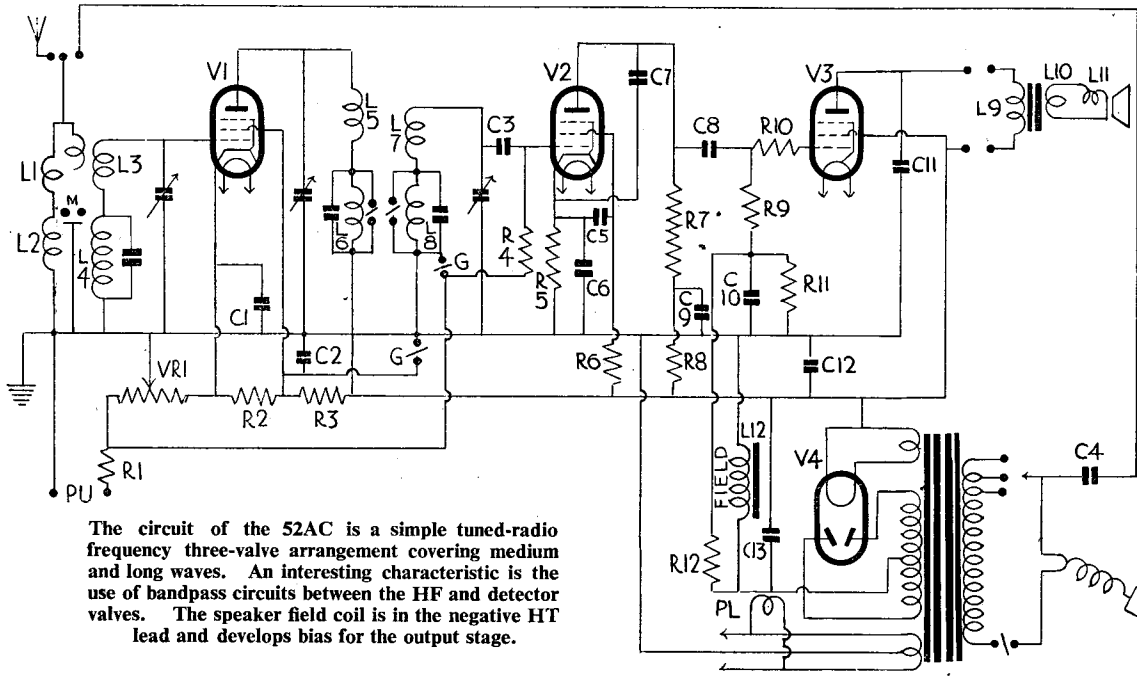
200-260 volts. 100-130 volts.
For over 120 or 240 volts a 200 ohms resistance is fitted in series with the supply lead.

To Switch On: Pull tone arm to right. To switch off motor only, use switch by volume control; this leaves amplifier on for radio.

from this cause alone. The wood acts as a sound board, and the resulting noise is sometimes heard above the speaker, and is most unpleasant. I have often had trouble with customers due to this effect. Felting and rubber washers minimise the trouble but good design would be better.

When testing a record player last week I found that the motor was very erratic, and after some time I found that the mains input to the motor panel from the on-off switch was coming on and off.

Examination of the switch showed a thin layer of carbon deposit around one of the rollers. In this type of toggle switch the roller was easily removed and thorough cleaning of the action remedied the trouble.—D.L.



The circuit of the 52AC is a simple tuned-radio frequency three-valve arrangement covering medium and long waves. An interesting characteristic is the use of bandpass circuits between the HF and detector valves. The speaker field coil is in the negative HT lead and develops bias for the output stage.