

### PHILCO 267 "STRAIGHT" FOUR (Cont.)

with H.F. by-pass condenser, full-wave type 80 rectifier, the speaker field in the positive H.T. lead and electrolytic condensers.

**Special Notes.**—The valves have American bases and connections, counting clockwise and looking underneath, are :—

77E's : Two large pins, heaters; anode; screening grid; screen; cathode. Control grid is at the top.

42E : Two large pins, heaters; anode; aux. grid; control grid; cathode.

Cathode bias is not used on the 42E.

In the rectifier the large pins are the filament and the small ones, the anodes.

**Quick Tests.**—Owing to the fact that the speaker transformer is screened the terminals are not accessible and tests should

be made by comparing the clicks when touching the grids of the valves and by making standard circuit tests.

**Removing Chassis.**—Pull off the knobs and remove three holding screws from underneath.

**General Notes.**—The wiring to the mains transformer is coded as follows :—

VALVE READINGS				
No reaction.				
V.	Type.	Electrode.	Volts.	M.a.
1	77E ..	.. anode ..	135	—
		.. screen* ..	—	—
2	77E ..	.. anode* ..	—	—
		.. screen* ..	—	—
3	42E ..	.. anode ..	250	—
		.. aux. grid ..	260	—

\* Very high resistances in circuit causing entirely misleading readings.

Two blue, rectifier filament.  
Two yellow, rectifier anodes.  
Two black, set heaters.  
Two white, mains and switch.  
Green with yellow tracer, H.T.—  
Black with yellow tracer, centre tap of set heater winding.

As the leads are all coloured the circuit is easily traced.

When ganging this set turn to the low wavelength end of the scale at 1,500 kc., and, with volume control at maximum and no reaction, adjust the trimmers. Increase reaction till almost on the point of oscillation and again adjust the condensers. This should be repeated at the bottom end of the L.W. till the point of utmost sensitivity is obtained.

**Replacing Chassis.**—Lay the chassis inside the cabinet, replace holding screws and knobs.



The Alba 501 three-valve plus rectifier receiver made by A. J. Balcombe, Ltd.

## ALBA MODEL 501 A.C.

**Circuit.**—The H.F. valve, VP4A met. (V1), has a tuned secondary transformer as aerial coupling. The aerial lead includes a special Droitwich filter.

Volume is controlled by a potentiometer which simultaneously increases the bias on the H.F. valve as it damps the aerial. The following coupling is an H.F. transformer with tuned secondary.

The next valve, an SP4 met. (V2), is a leaky grid detector with reaction. A resist-

ance-capacity filter couples it to the output valve (V3), which is a Pen4VB.

This valve has a grid stabilising resistance and is tone compensated by a condenser between the anode and chassis.

Mains equipment consists of : transformer, full-wave IW3 indirectly-heated rectifier, the speaker field, which is in the positive H.T. lead, and two 6-mfd. electrolytic condensers.

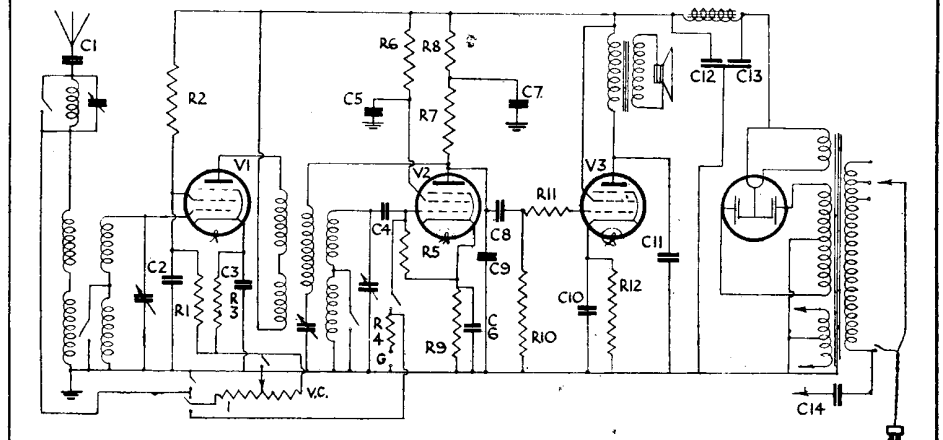
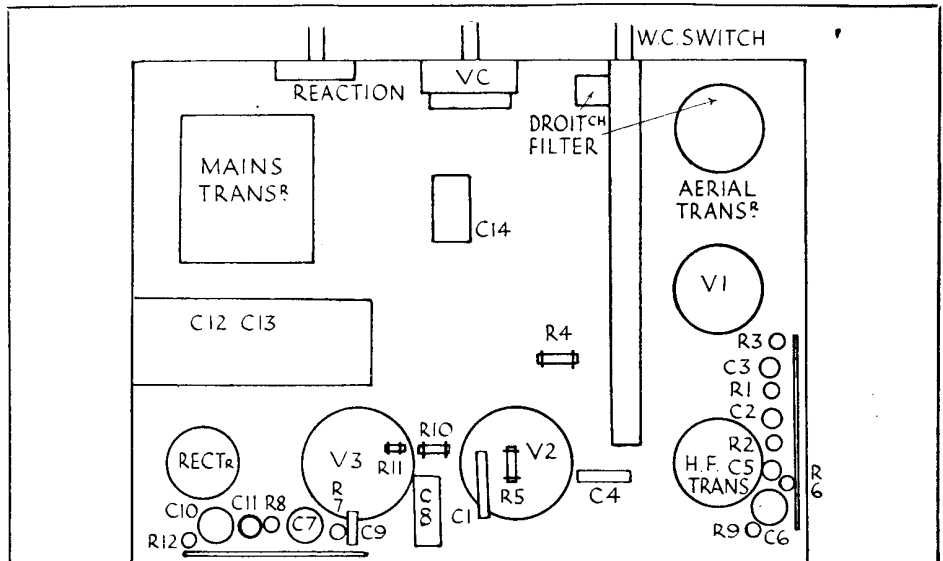
**Special Notes.**—The Droitwich filter is (Continued on next page.)

VALVE READINGS				
No signal. No reaction.				
V.	Type.	Electrode.	Volts.	M.a.
1	VP4 met (7)	.. anode ..	245	4.3
		.. aux. grid ..	120	—
2	SP4 met (7)	.. anode ..	*	.6
		.. aux. grid ..	*	—
3	Pen4VB (7)	.. anode ..	235	29
		.. aux. grid ..	246	3.5

\* Very high resistances in circuit cause entirely misleading readings.

RESISTANCES		
R.	Purpose.	Ohms.
1	Lower part of V1 aux. grid ptr. . . . .	50,000
2	Upper part of V1 aux. grid ptr. . . . .	40,000
3	V1 cathode bias (fixed part) . . . . .	250
4	Across P.U. . . . .	75,000
5	V2 grid leak . . . . .	1 meg.
6	Voltage dropping to V2 aux. grid . . . . .	1 meg.
7	V2 anode coupling . . . . .	.25 meg.
8	V2 anode decoupling . . . . .	50,000*
9	V2 cathode bias . . . . .	1,000
10	V3 grid leak . . . . .	.5 meg.
11	V3 grid stabiliser . . . . .	.1 meg.
12	V3 cathode bias . . . . .	150
—	V.C. . . . .	10,000
—	L.S. field . . . . .	2,000

CONDENSERS		
C.	Purpose.	Mfd.
1	Series aerial . . . . .	.0001
2	V1 aux. grid by-pass . . . . .	.1
3	V1 cathode by-pass . . . . .	.1
4	V2 grid reservoir . . . . .	.0001
5	V2 aux. grid by-pass . . . . .	1
6	V2 cathode by-pass . . . . .	25 el.(25)
7	V2 anode decoupling . . . . .	2 el.(250)
8	L.F. coupling V2 to V3 . . . . .	.005
9	H.F. by-pass from V2 anode . . . . .	.0002
10	V3 cathode by-pass . . . . .	25 el.(25)
11	V3 anode, tone compensating . . . . .	.005
12	H.T. smoothing . . . . .	6 el.(440)
13	H.T. smoothing . . . . .	6 el.(440)
14	Mains aerial . . . . .	.0002



Two condenser-resistance panels simplify the chassis layout of the 501 A.C. receiver. The circuit is itself entirely straightforward.

### ALBA MODEL 501 A.C. RECEIVER (Cont.)

a wavetrapp which is connected into circuit by the switch (white spot uppermost) so that Droitwich will not spread over other stations. The tuning adjustment is made from above through an aperture provided in the chassis. **Quick Tests.**—Between the terminals

and tags on the speaker transformer and chassis:—

- Top (1) 325 volts, H.T. unsmoothed.
  - (2) 235 volts, V3 anode.
  - (3) and (4) 246 volts, H.T. smoothed.
- The speaker field is 2,000 ohms.

**Removing Chassis.**—Remove the knobs (grub screw) and four screws underneath.

**General Notes.**—This is a particularly simple set to service. All components are either colour coded or stamped, and the connections to the mains transformer are labelled.

**Replacing Chassis.**—Lay the chassis inside the cabinet, replace holding screws and knobs.

# MARCONIPHONE JUBILEE CHASSIS

**Circuit.**—The combined oscillator first detector, MX40 plain (V1), is preceded by a band-pass aerial coupling with special I.F. suppressor coils.

Bias is partly controlled by A.V.C. and by cathode resistance. Coupling to the following valve is by band-pass I.F. transformer (frequency 125 kc.).

The I.F. valve, VMS4 met. (V2), is biased in the same way as V1, and is followed by another band-pass I.F. transformer.

The second detector and I.F. valve, MHD4 met. (V3), utilises one diode for L.F. purposes and the other for amplified A.V.C. The L.F. feed to the triode grid is through R11 to VR2 the volume control, to VR4 the

tone control and then through the H.F. stopper R34 to the grid. The cathode resistances are R32 and R24. Coupling to the output valve is by resistance capacity filter.

The output valve, MPT4 (V4), is compensated by a choke and condenser across the primary of the output transformer, and is biased by a potentiometer in the common H.T.—lead.

Mains equipment consists of: transformer, full-wave indirectly heated MUI2 rectifier, with the speaker field in the negative H.T. lead for smoothing.

**Special Notes.**—To reach the pilot lamp undo perforated plate on the bottom of the

cabinet and slacken the holding screw on the lamp bracket.

The noise suppressor circuit is operated by VR1 at the back of the set. By increasing the initial bias on V1 and V2 the virtual delay action of A.V.C. is increased, while the switch (controlled by push-pull action of volume control spindle) is "out" when VR1 is connected into the circuit.

In this position the A.V.C. on V2 changes over to the potential of the signal rectifier.

**Quick Tests.**—Voltages between the following terminals on speaker panel and chassis (they are all labelled):—

Red, 240 volts; yellow, V4 anode, 215 volts.

Voltage between green (+) and grey (-), 115 volts.

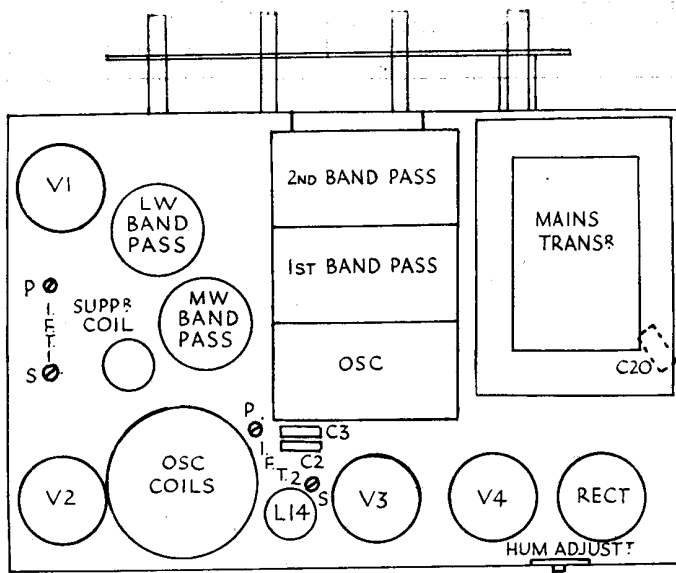
This latter is the voltage drop across the 2,000 ohm speaker field.

**Removing Chassis.**—Remove the knobs. These have self-threading screws, which are loose when knobs are "off."

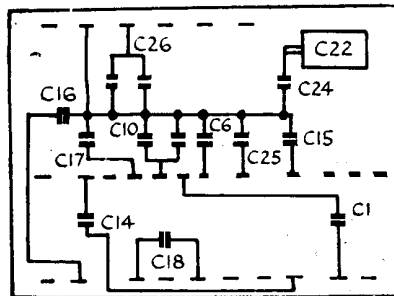
Remove four screws from underneath and free the speaker cable from its spring clips.

**General Notes.**—The resistance panel is

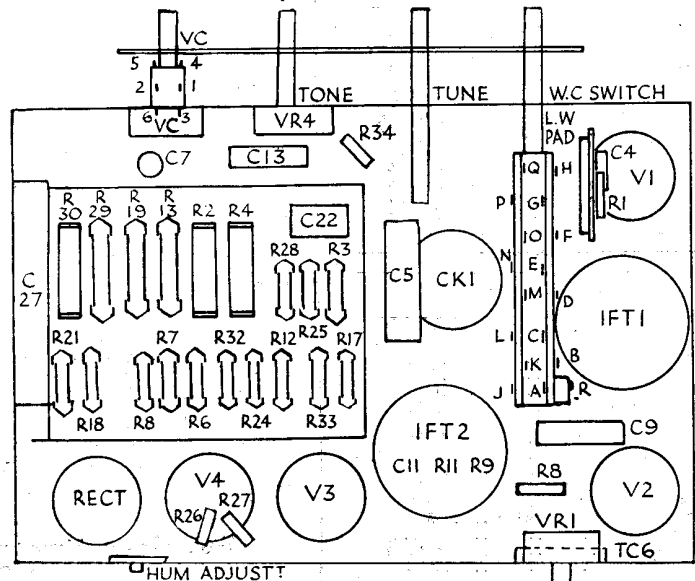
(Continued on opposite page.)



As the above diagram shows, the intermediate-frequency transformer trimmers are accessible from the top of the chassis of the Marconiphone Jubilee models.



Above are the connection details of the condenser block which is actually mounted underneath the resistance panel seen in the under-chassis layout given on the right.



VALVE READINGS				
No signal. "Q" knob out (i.e., silent).				
Valve.	Type.	Electrode.	Volts.	M.A.
1	MX40 plain(7)	anode ..	220	1.4*
		aux. grid.	80	
		osc. anode	120	1.5 to 2
2	VMS4 met.(5)	anode ..	220	8
		screen ..	75	
		anode ..	220	1.5
3	MHD4 met.(7)	anode ..	95	1.5
		aux. grid ..	215	25
4	MPT4 (5)	anode ..	170	4-7

\* 3.3 M.A. with increased sensitivity.