PHILCO 267 "STRAIGHT" FOUR

Circuit.—The H.F. valve 77E (V1) follows a tuned secondary aerial transformer and volume is controlled by a potentiometer across the aerial input.

Cathode bias is fixed and coupling to the next valve is by tuned anode coil with reaction.

The detector, a 77E (V2) operates as a power-grid type. Reaction is controlled by a variable resistance in series with a fixed condenser and the reaction winding.

The long wave reaction coil is damped by a resistance R4.

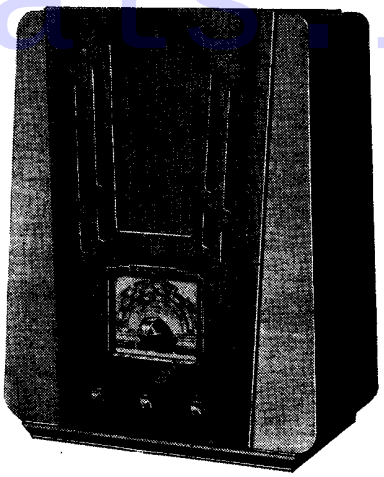
Coupling to the next valve is by resistance capacity filter. The valve, a 42E (V3), is a pentode, tone compensated by a condenser between the anode and cathode. Bias is obtained from a resistance, R10, in the common negative H.T. lead.

Mains equipment consists of: transformer

(Continued on next page.)

CONDENSERS

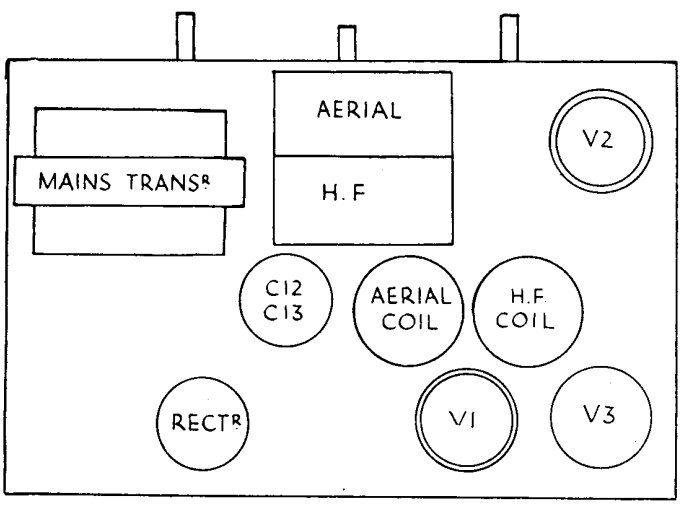
C.	Purpose.	Mfd.
1	V1 cathode by-pass	.05
2	V1 aux. grid by-pass	.09
3	Decoupling V1 anode	.25
4	Series with tuning condenser	.05
5	V2 grid reservoir	.000035
6	V2 aux. grid by-pass	.09
7	V2 anode reaction coupling	.00025
8	H.F. by-pass	.001
9	L.F. coupling V2 to V3	.015
10	Tone compensating V3 anode	.006
11	Decoupling V3 grid	.25
11A	Parallel to C11	—
12	H.T. smoothing	4 el.
13	H.T. smoothing	8 el.
14	H.F. by-pass from mains	.015

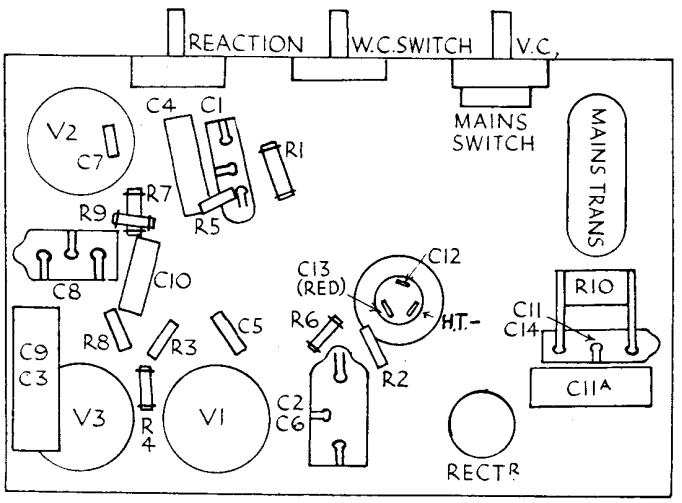


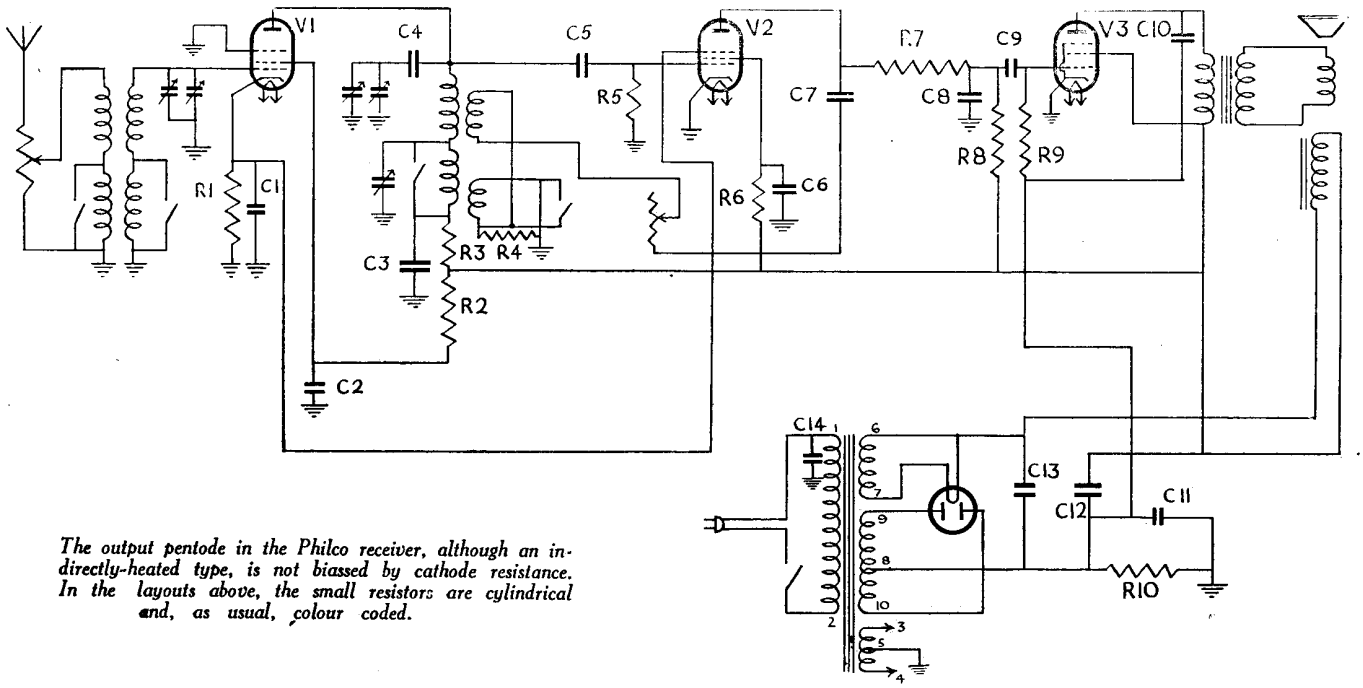
The Philco model 267 "straight" A.C. mains four-valve receiver.

RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias	1,500
2	Voltage dropping to V1 aux. grid	240,000
3	Decoupling to V1 anode	50,000
4	Across L.W. reaction winding	2,500
5	V2 grid leak	2 meg.
6	Voltage dropping to V2 aux.grid	1 meg.
7	H.F. stopper, V2 anode	5,000
8	V2 anode L.F. coupling	240,000
9	V3 grid leak	440,000
10	V3 bias	300
—	Volume control	20,000
—	Reaction control	35,000







The output pentode in the Philco receiver, although an indirectly-heated type, is not biassed by cathode resistance. In the layouts above, the small resistors are cylindrical and, as usual, colour coded.

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 :—

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.

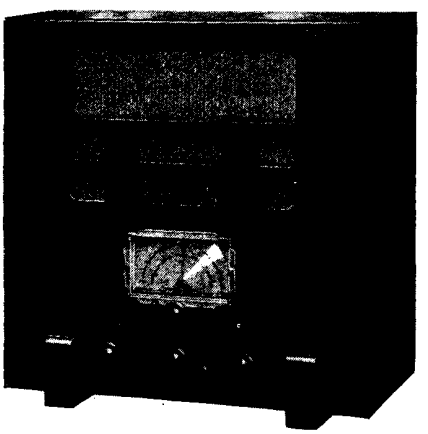
VALVE READINGS

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.

ALBA MODEL 501A.C.



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

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 resistance-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

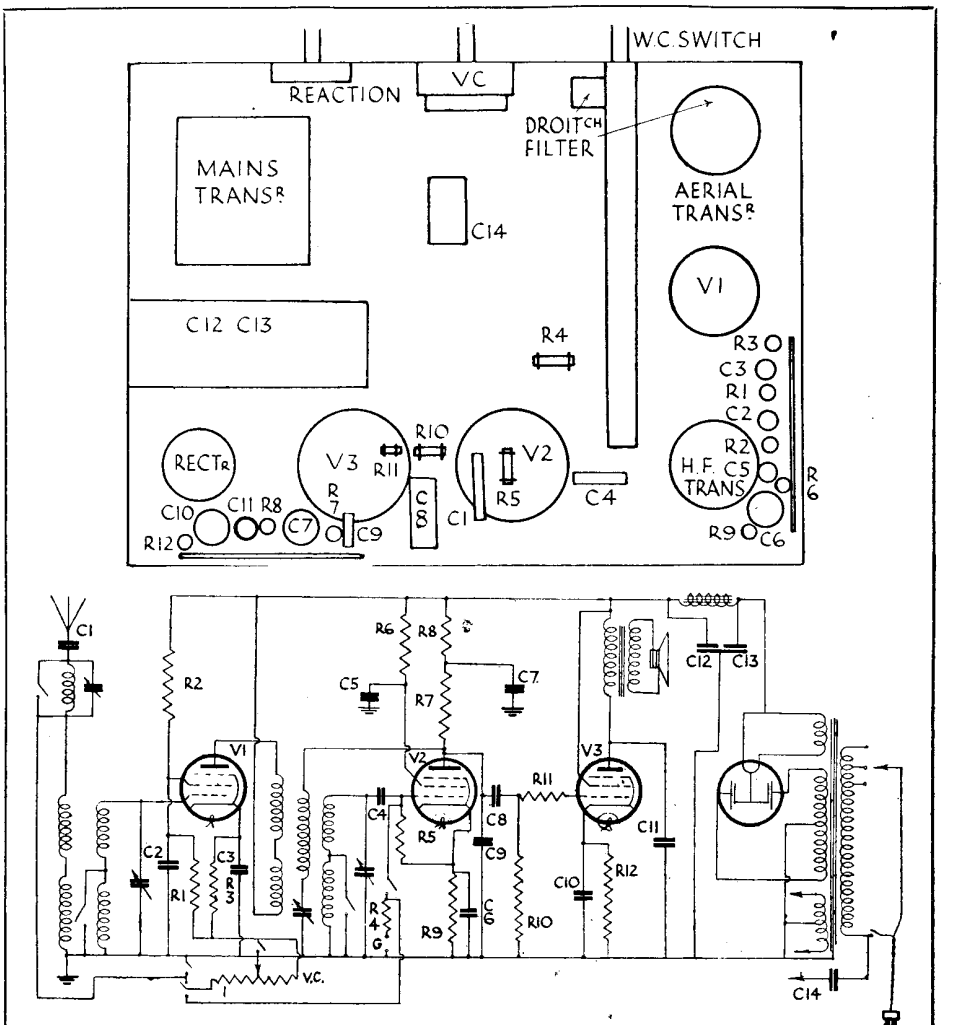
* Very high resistances in circuit cause entirely misleading readings.

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.