BURNDEPT ETHODYNE FIVE (Cont.)

Junction of red lead from set to black of speaker field H.T. unsmoothed, 420 v.

Removing Chassis.—Remove the knobs (grub screw), remove four holding screws from underneath and lift the chassis out.

General Notes.—The I.F. trimmers can be reached through the apertures in the tops of the cans and the longwave padding condenser is situated behind the oscillator coil as shown in the diagram.

Mains transformer coding :—

Yellow and black, rectifier heater.

Green and black, set heaters.

Red, rectifier anodes.

The wiring is straightforward, and tracing the circuit offers no difficulties.

The leads underneath the cabinet are those of the speech coil of the high note speaker.

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

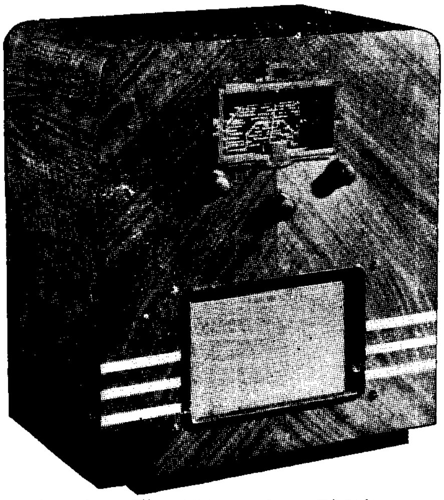
CONDENSERS

C.	Purpose.	Mfd.
1	Decoupling V1 grid	.1
2	V1 cathode by-pass	.1
3	V1 aux. grid by-pass	.1
4	V1 osc. grid	.001
5	Mains aerial	.0001
6	Fixed part of L.W. pad	.0005
7	Decoupling V1 osc. anode	8 el. (150)
8	Decoupling V2 grid	.1
9	Decoupling AVC line	.1
10	Decoupling tuning meter	.1
11	V2 cathode by-pass	.1
12	V2 aux. grid by-pass	.1
13	H.F. by-pass prim. diode	.0001
14	I.F. feed to AVC diode	.0001
15	L.F. coupling condenser	.01
16	V4 cathode by-pass	50 el (12)
17	Tone control circuit	.1
18	Filter feed to extra L.S.	.5
19	H. T. smoothing	6 el. (450)
20	H. T. smoothing	6 el. (450)

RESISTANCES

R.	Purpose.	Ohms.
1	Decoupling V1 grid	100,000
2	V1 cathode bias	250
3	V1 osc. grid leak	50,000
4	V1 osc. anode harmonic suppressor.	250
5	Voltage dropping to V1 aux. grid	30,000
6	Decoupling V2 grid	100,000
7	V2 cathode bias	200
8	Parallel with tuning meter	5,000
9	Decoupling A.V.C. line	250,000
10	Part of V2 aux. grid ptr.	10,000
11	Part of V2 aux grid ptr.	8,000
12	Part of V2 aux. grid ptr. (delay bias).	700
13	Diode load	1 meg.
14	H.F. stopper from diode	100,000
15	Part of A.V.C. diode ptr.	1 meg.
16	Part of A.V.C. diode ptr.	.5 meg.
17	V4 grid stabiliser	.25 meg.
18	V4 cathode bias	150
19	Var. tone control	.25 meg.
	Volume control	.5 meg.
	L.S. field	2,500

EVER READY "5001"



The 5001 battery superhet by Ever Ready Radio, Ltd.

Circuit.—The H.F. valve, PM12M met. (V1), has a single tuned aerial coupling which includes special suppressor and medium-wave interference stopper coils in the filament leads (L1, L2, L3 and L4).

The following coupling is by tuned-anode coil, and bias is partly fixed and partly obtained from the A.V.C. line.

The oscillator first-detector, an FC2 met. (V2), is an octode. Bias for the pentode section is the same as for V1, and coupling to the next valve is by band-pass I.F. transformer (frequency 127 kc.).

The I.F. valve, VP2 met. (V3), has battery bias and is followed by a second band-pass I.F. transformer.

A W6 Westector is used for signal L.F. purposes, and a W2 is employed for A.V.C. The W2 rectifier is biassed from a potentiometer across the G.B. battery. This gives the required delay action.

The W6 is coupled to the driver valve through an H.F. filter to the load resistance volume control, which is parallel fed to the first L.F. transformer.

The driver valve, PM2D1 met. (V4), is coupled by a typical driver transformer to the class B output valve, PM2B (V5). This is operated with bias and is compensated by a resistance and condenser in series between the anodes.

The external speaker is fed from the secondary of the output transformer and a jack plug automatically switches off the internal speaker.

Special Notes. — Battery connections are :—

Yellow lead, 130 v.

Blue lead, 90 v.

Green lead, 69 v.

Brown lead, 4.5 v. (G.B.).

The switch breaks L.T.—, H.T.— and G.B.+ leads.

Removing Chassis.—Pull off the knobs. Remove two screws holding the battery switch at the side, and free the cable from the cleat.

Pull the leads up through the circular hole and remove the three holding screws from underneath the platform. Disconnect the speaker plug and remove the two screws at the ends of the front of the chassis (to reach the left-hand one the valves must be removed and a long screwdriver used).

The chassis can then be removed.

General Notes.—The connections on the semi-circular panel on the driver transformer are (see diagram) : A, centre tap of secondary; B, H.T.+; C, V4 anode; D, V5 grid 1; E, V5 grid 2.

On the first L.F. transformer the one end of the primary is earthed through the soldering tag on the case.

C9, C10, C11, C13 and C19 are of the non-inductive type and are marked with a red spot.

On the suppressor coil former the different sections, counting from the outside, are : (1) and (2), L1; (3), L3 and L4; (4), L2.

The wiring colour code is as follows :—

V1, H.F. valve : Grid circuit, mauve; anode circuit, red flex.

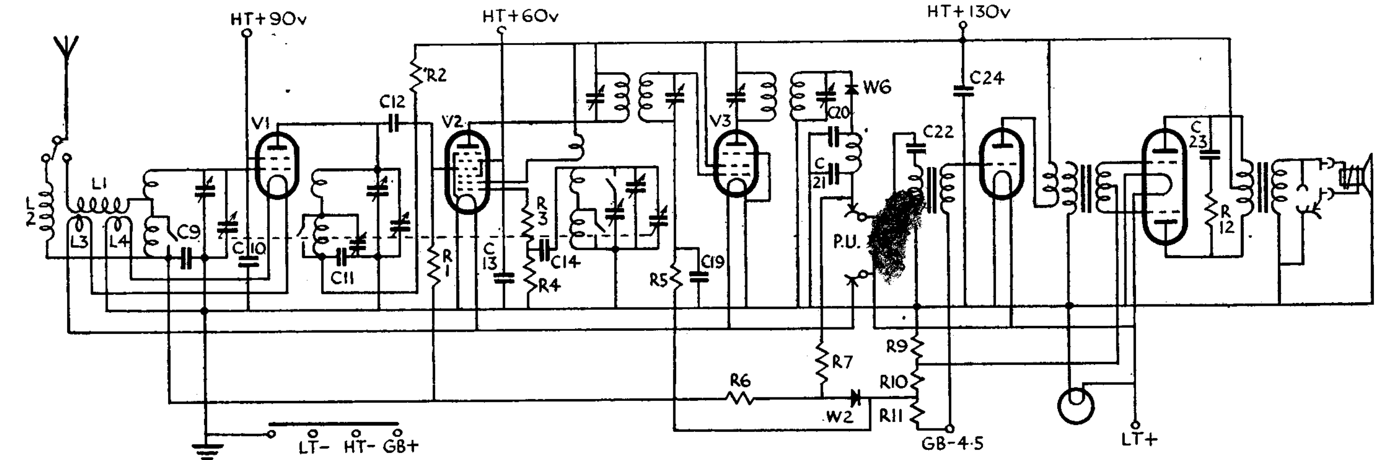
V2, frequency-changer section : Grid circuit, red flex; anode, red. V2, oscillator section : grid, blue; anode, blue with yellow tracer.

V3, I.F. valve : grid, green; anode, screened lead.

V4, driver valve : grid, pink; anode, red.

V5, output valve : grid, brown; anode, brown with yellow tracer.

(*Continued on next page.*)



Five valves and two Westectors are utilised in the Ever Ready circuit. Class B output is used, and one Westector provides A.V.C.

EVER READY "5001" BATTERY SET (Cont.)

Aerial, white; H.T. and screen, red; A.V.C. circuit, black with red tracer.

Replacing Chassis.—It is advisable to place the two front screws in position before sliding the chassis into the cabinet. Screw these home and replace the three holding screws underneath (cheese-headed one in front).

Replace the battery switch, the cable cleat and the knobs.

VALVE READINGS

New battery and no signal.

Valve.	Type.	Electrode.	Volts.	M.A.
1	PM12M met.(4)	anode	128	1
		screen	90	
2	FC2 met. (7)	anode	130	.5
		aux. grid	69	
		osc. anode	130	1.1
3	VP2 met. (7)	anode	130	1.2
		aux. grid	130	
4	PM2D1 met.(4)	anode	128	1.7
5	PM2B (7)	each anode	130	1

CONDENSERS

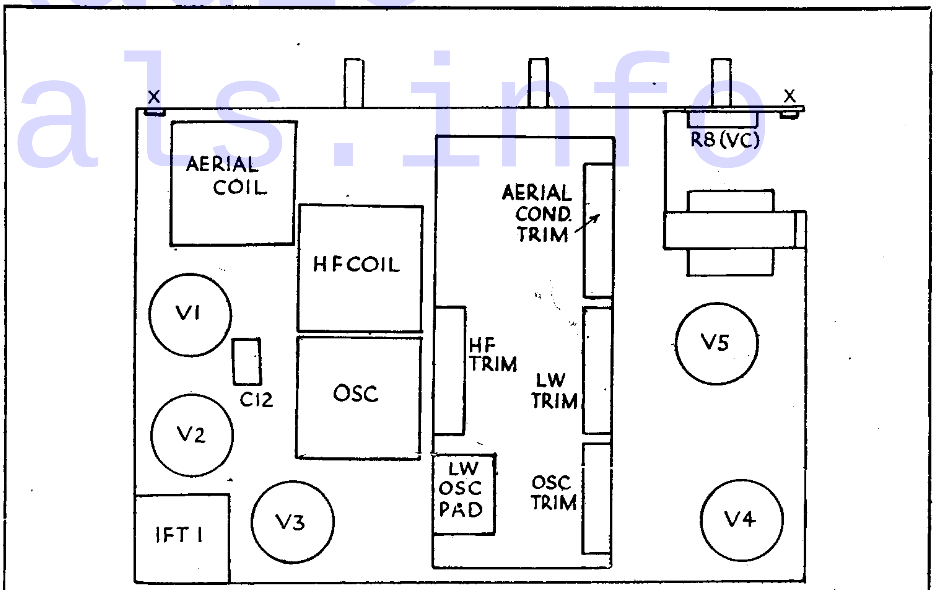
C.	Purpose.	Mfd.
9	Preventing bias short-circuit *	.1
10	V1 screen by-pass *	.1
11	V1 anode decoupling *	.1
12	H.F. coupling V1 to V2	.00002
13	V2 aux. grid by-pass*	.1
14	V2 osc. grid reservoir	.0001
19	Decoupling V3 grid *	.1
20	H.F. by-pass from Westector	.00007
21	H.F. by-pass from Westector	.002
22	L.F. coupling to L.F. transformer	.25
23	Tone compensating circuit V5	.0025
24	Across H.T. battery	8 el (150)

* Non-inductive type.

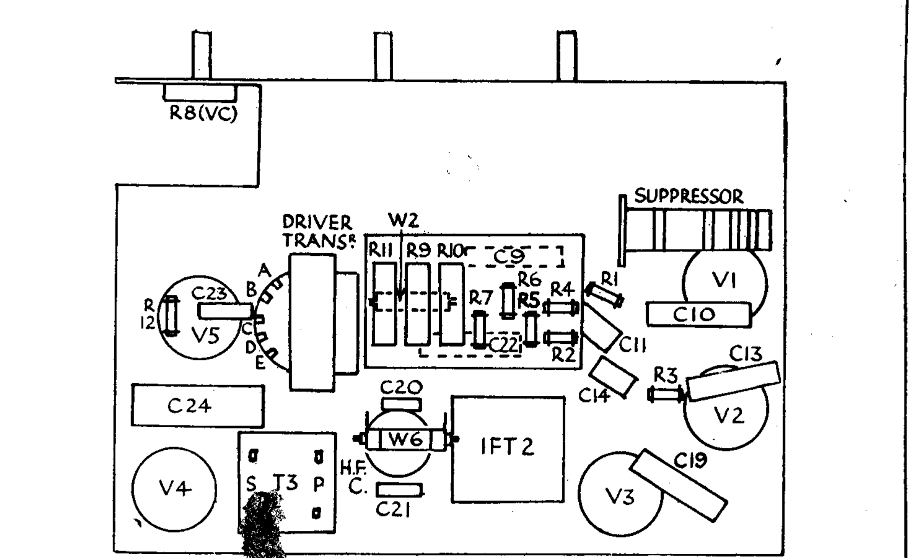
RESISTANCES

R.	Purpose.	Ohms.
1	V2 grid leak	1.1. meg*
2	V1 anode decoupling	2,000*
3	V2 osc. grid harmonic suppressor	3,000*
4	V2 osc. grid leak	100,000*
5	V3 grid decoupling	.25 meg*
6	A.V.C. line decoupling	20,000*
7	A.V.C. diode load	100,000*
8	V.C.	40,000
9	Part of bias ptr.	84
10	Part of bias ptr.	42
11	Part of bias ptr.	280
12	Tone compensating circuit V5 anode.	5,000*

* ½-watt type.



When removing the Ever Ready chassis remember that there are screws at x and x in the front. Both trimming and padding condensers are easily accessible above the gang condenser.



In some models of the Ever Ready 5001 receiver the resistances R9 and R10 may be transposed.

METER READINGS: How Accurate Are They?

(Continued from page 25.)

on the 1 ma. meter on the 500 scale the current flowing through the meter is .2 ma., and this current, flowing through R7 and R8 will cause a voltage drop of 12.

From this it may be deduced that at a reading of 100 volts, with the meter connected across the valve, the following are the static conditions :—

Anode volts, 100; current flowing through the meter, .2 ma.; voltage drop caused by meter, 12 volts; total voltage drop across R7 and R8, 130 volts; total current flowing through R7 and R8, 2.17; current flowing to valve, 1.97 ma. (say 2 ma.); D.C. resistance of the valve at 100 volts, 50,000 ohms.

The conditions obtaining when the meter is removed may be very different and depend on the impedance (A.C. resistance) of the valve.

If, under the above conditions, the impedance is 42,000 ohms—a likely value—the increase in current caused by an increase of anode voltage of 12 would be .35 ma., so that the voltage drop caused by the meter could not have made an alteration in the circuit voltages as great as 12 volts. The lower the impedance of the valve, the nearer the difference is to being cancelled out.

With high-impedance valves such as screen-grids and H.F. pentodes the meter is more likely to cause a considerable change.

Connected between the point H and chassis on the same scale the meter will cause practically the whole of the voltage drop taken by it to be effective, due to the fact that the very high impedance valve does not change its current to any appreciable extent through the lowering of the anode potential by 20 or 30 volts.

Also the voltage recorded by the meter at K will be erroneous. The current taken by the screen of an ordinary S.G. valve is usually less than 1 ma., and as the meter is connected across R3, which forms the lower limb of a potentiometer, the potential at K will vary with the total resistance of the meter. The greater this is in proportion to the value of R3, the smaller will be the error. The error, however, as in the output pentode, will not be reflected in the circuit under test, but will have its effect on the anode current of the valve.

This brief analysis of considerations while taking the orthodox valve readings in a simple three-valve set amply demonstrates the allowances that must be made in determining static conditions inside a receiver.

Every measurement has some effect on every other part of the set, and in many cases the set adjusts itself automatically to the new conditions brought about by connecting the meter into the circuit.

The lower the current taken at the voltages to be measured, the less the need for compensation and the greater the accuracy where no compensating factors are introduced.