BURNDEPT MODEL 245 A.C.-D.C. ALL-WAVE THREE

CIRCUIT.—A three-valve receiver, operating on A.C. or D.C. mains, and covering three wavebands. The input to V1, an H.F. pentode, on short waves is through a small aerial isolating condenser and direct to the grid; on medium and long waves coupling is through a band-pass filter.

From V1 the signals pass through a tuned H.F. transformer to a pentode detector, reaction being employed in the orthodox manner. A small resistance is incorporated on medium and long waves to assist smoothness of control.

Coupling to the output pentode, V3, is through a resistance and capacity stage and to the loudspeaker through a matching transformer. Volume is controlled by varying the bias to V1.

Two choke coils are connected in the mains input leads to damp out any interference which might reach the receiver from that source.

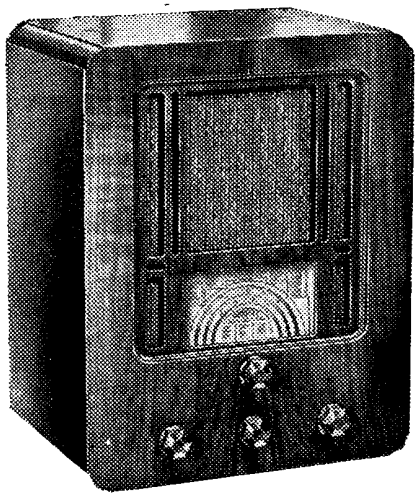
Mains equipment consists of a half-wave rectifier, barretter, electrolytic condensers, and the speaker field.

Special Notes.—The dial lamps are rated at 6.2 volts .3 amps.; the holders are clipped on to the dial assembly and are easily removed. The electrolytic condenser block, consisting of C17 and C18, is mounted on the speaker baffle.

Exposing Chassis.—To get at the underside of the chassis there is no need to take it out of the cabinet; take off the false bottom of the cabinet by removing the four wood screws securing it.

To remove the chassis completely, take off the knobs from the front (grub screws) and undo the four securing bolts from underneath, then unsolder the speaker leads. Reconnection is as follows: Top F, blank; 3, black; 2, green; 1, blue; F, red.

(*Continued on next page.*)



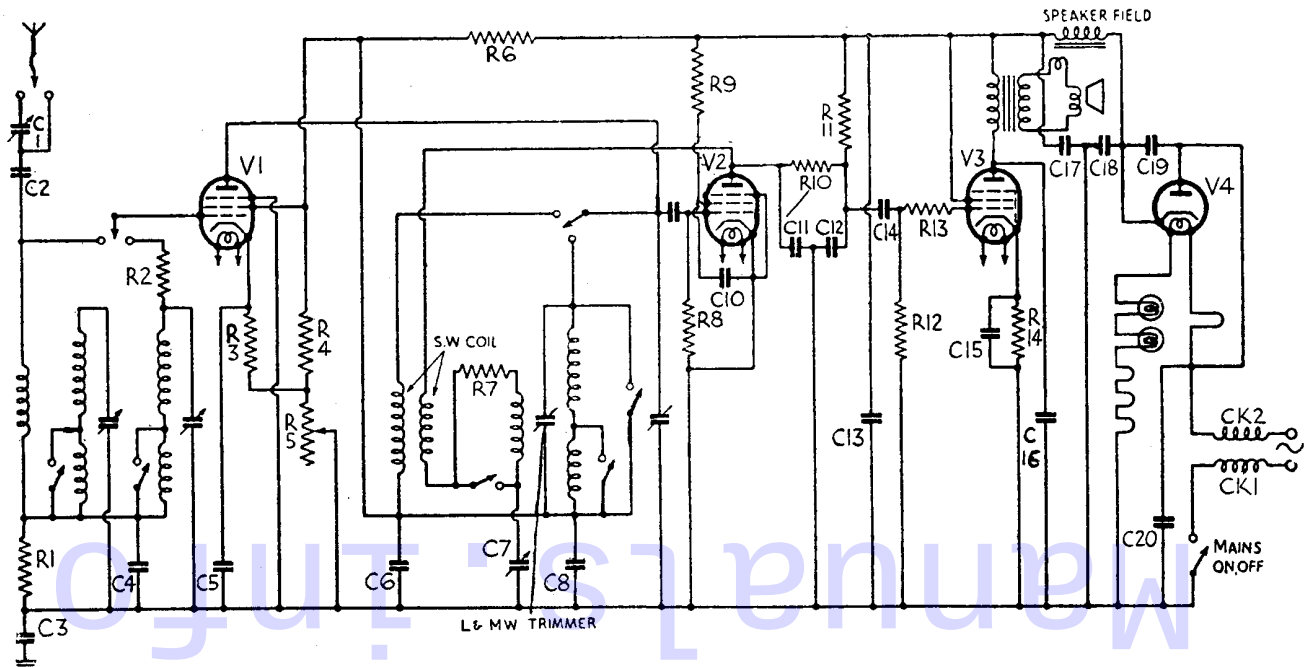
This Burndept receiver, model 245, is a "straight" three-valve receiver covering a short range as well as the medium and long bands. A rectifier and barretter are incorporated to provide for A.C. and D.C. supplies.

CONDENSERS

C.	Purpose.	Mfd.
1	Aerial trimmer	—
2	Aerial isolating	.0005
3	Chassis isolating	.02
4	Band pass coupling	.02
5	V1 cathode bias shunt	.1
6	V1 screen and anode decoupling	.25
7	Reaction	—
8	V1 screen and anode decoupling	8
9	V2 grid	.0001
10	V2 screen decoupling	.1
11	H.F. filter	.0001
12	H.F. filter	.0002
13	H.T. decoupling	.5
14	L.F. coupling	.01
15	V3 cathode bias shunt	25
16	Pentode compensating	.005
17	H.T. smoothing	24
18	H.T. smoothing	16
19	Mains by-pass	.01

RESISTANCES

R.	Purpose.	Ohms.
1	Band pass condenser shunt	1,000
2	V1 series grid	500
3	V1 cathode bias	150
4	V1 screen decoupling potr. (part of)	50,000
5	Volume control	10,000
6	V1 anode and screen decoupling (part of)	5,000
7	Reaction modifier	200
8	V2 grid leak	1 meg.
9	V2 screen decoupling	.75 meg.
10	V2 filter	10,000
11	V2 anode load	.25 meg.
12	V3 grid leak	.25 meg.
13	V3 grid stopper	.1 meg.
14	V3 cathode bias	150



As this circuit shows, the general design of the model 245 is straightforward. On the short waves only the H.F. coupling is tuned, the aerial input being direct to the grid.

BURNDEPT 245 A.C.-D.C. THREE (Continued)

The chassis may then be completely removed, remembering that the speaker field and the electrolytic condensers forming the main part of the smoothing equipment are now disconnected.

ALIGNMENT NOTES

Calibration.—Turn condenser to zero and check that the pointer coincides with the line on the bottom of the scale; if not, adjust by slackening the grub screws on the condenser shaft.

Ganging.—Adjustments are made on medium waves with the reaction control advanced to a position just before oscillation takes place.

Inject a signal of 200 metres from a modulated oscillator to the aerial and earth terminals via a dummy aerial and connect an output meter across the speaker terminals. Adjust T1 for maximum reading on output meter, and, while rocking the tuning condensers slowly, T2 and T3.

QUICK TESTS

Quick tests are available on this receiver on the terminal strip on the back of the speaker. Volts measured between this and the chassis should be:—

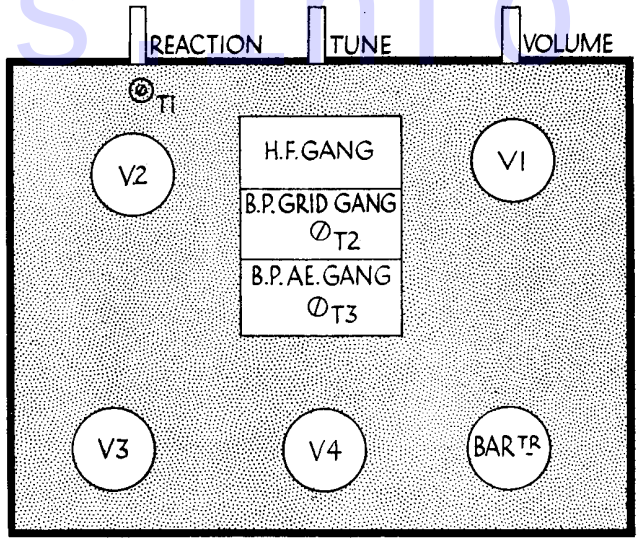
Black lead, 185 smoothed H.T.
Green lead, 0 chassis link.
Blue lead, 122 smoothed H.T.
Red lead, 220, unsmoothed H.T.

VALVE READINGS

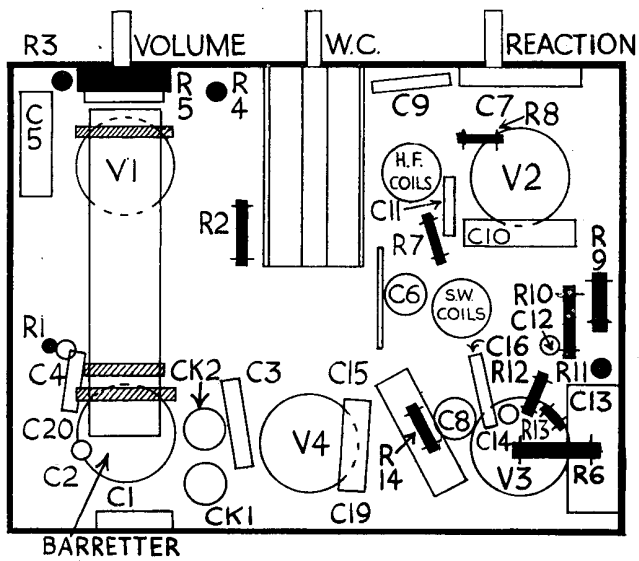
No signal. No reaction. Volume maximum. 200 v. A.C. mains.

V	Type.	Electrode.	Volts.	Ma.
1	Mazda VP1321	anode ...	112	5
	Met. (7)	screen ...	112	1.5
2	Mullard SP13C	anode ...	18	.2
	Met. (7)	screen ...	15	.1
3	Mullard Pen.	anode ...	143	38
	36C. (7)	screen ...	172	8.4
4	Brimar ID5 (5)	cathode...	220	—

The construction of the Burndept 245 receiver is straightforward. There is no mains transformer, and the electrolytic condenser block is mounted near the smoothing choke on the speaker baffle.



Under the chassis most of the small components are suspended in the wiring. It will be seen that all the coils, including the short-wave, are mounted "below-deck."



Shorted I.F. Coil Provides a Puzzle

RECENTLY a fault was proved to be in the H.F. or I.F. section of a set, but did not show up on any of the usual current tests. Voltages, valves, and so on, were all O.K. with each stage passing the prescribed current.

The fault was finally traced to one of the I.F. transformers, where a small piece of very thin wire had shorted one set of trimmer plates. This wire must presumably have been left in the coil during manufacture, and its removal at once brought performance back to normal.

* * *

SOMETIMES when a receiver is being serviced at the customer's house and has failed to show up any fault on the usual tests, it becomes necessary to examine the way in which the receiver has been installed.

In a recent case of poor quality and lack of volume, no cause for these effects could be found through the usual receiver and valve tests.

It was then discovered that the receiver was wired to an extension speaker. This wiring disappeared out of the room through the window and along the wall to an upstairs room. The insulation outside the house was in a very poor state, the wire being of an unsuitable type for outdoor use.

Removal of this extension wire brought the performance up to normal. An obvious fault—but one of those things which have a habit of escaping attention until the analyser and oscillator have failed.

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IN looking for causes of non-oscillation in a superhet it is helpful to bear the following in mind, so that the connections to the oscillator coils can be checked.

The oscillator coil connections can always be regarded as a single winding interrupted at a between-point for the H.T. and cathode connections.

If the two coils are wound side by side the outer ends will go to grid and anode. When they are wound one above the other the connections are easily identified by imagining the coils to be pulled apart into an end-to-end position.

* * *

BLASTING as a receiver is tuned, constant high background level, and varying signals indicates that the A.V.C. side of a receiver is out of action. If replacing the diode or double-diode triode valve does not effect a cure, systematic examination of the A.V.C. components is necessary. In delayed A.V.C. systems using the voltage of the cathode, the voltage may have become excessive, due to a partial fault in a comparatively remote part of the circuit.