

'TRADER' SERVICE SHEET
NUMBER **157**

**BURNDEPT 251
AND VIDOR 253**

OF the four-band all-wave type, the Burndept 251 is a 3-valve battery receiver with band-pass tuning, the short-wave ranges being 13.5-48.5 (referred to here as S.W.1) and 48-145 metres (S.W.2). There are two aerial sockets and a variable aerial series condenser is fitted at the rear of the chassis.

An identical chassis is embodied in the Vidor 253 receiver.

CIRCUIT DESCRIPTION

Two alternative aerial input connections **A1** (Day Aerial) and **A2** (Night Aerial) with pre-set series condenser **C10**, via coupling coil **L1** to inductively coupled band-pass filter (M.W. and L.W.). Primary **L2, L3**, tuned by **C12**; secondary **L4, L5**, tuned by **C14**.

First valve (**V1**, Mullard metallised **VP2**) is a variable-mu pentode operating as H.F. amplifier on M.W. and L.W. Gain control by variable potentiometer **R2** which varies G.B. applied.

Tuned-anode coupling by **L11, L12, C18** to triode detector (**V2**, Mazda, metallised **HL2**) which operates on grid leak system with **C4** and **R4**. Reaction is applied from anode by coil **L10** and controlled by variable condenser **C16**. H.F. filtering in anode circuit by choke **L13** and by-pass condenser **C5, C6**.

On short-wave bands, **V1** is not used for amplification but merely as coupling between aerial and the S.W. tuning coils **L6, L7**. Switch **S4** is open while **S3** is closed to connect aerial to **V1** C.G.; **S9** is also open to cut out M.W. and L.W. anode tuning coils and **S8** is closed to connect S.W. coils in detector C.G.

circuit. **C18** tunes **L6** for S.W.1 band (13.5-48.5 m.), and both **L6** and **L7** for S.W.2 band (48-145 m.). Switch **S6** shunts M.W. and L.W. reaction coil **L10** with resistance **R3**, leaving the S.W. coils **L8, L9** in circuit.

Series-fed transformer coupling by **T1** (with secondary loaded by **R7**) between detector and output pentode (**V3**, Mullard **PM22A** or **PM22D**). Tone correction in anode circuit by fixed condenser **C8**. G.B. is obtained automatically from voltage drop along resistance **R8** in common H.T. negative line.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	Gain control fixed min.	500
R2	V1 gain control	15,000
R3	M.W., L.W. reaction coil shunt	200
R4	V2 grid leak	1,000,000
R5	V2 grid leak filament potentiometer.	200
R6	T1 sec. shunt	200
R7	V3 auto. G.B. resistance	150,000
R8	V3 auto. G.B. resistance	200

CONDENSERS		Values (μF)
C1	V1 C.G. decoupling	0.1
C2	S.W.2 trimmer	Very low
C3	V1 anode decoupling	0.25
C4	V2 C.G. condenser	0.0001
C5	V2 anode H.F. by-passes	0.00005
C6	V2 anode H.F. by-passes	0.0002
C7*	H.T. supply reservoir	8.0
C8	Tone corrector	0.005
C9*	V3 G.B. circuit by-pass	50.0
C10†	Aerial series condenser	—
C11‡	Band-pass primary trimmer	0.00003
C12‡	Band-pass primary tuning	—
C13‡	Band-pass primary trimmer	—
C14‡	Band-pass secondary tuning	—
C15‡	Band-pass secondary trimmer	—
C16†	Reaction control	0.0005
C17†	V1 anode circuit trimmer	—
C18†	V1 anode and S.W. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

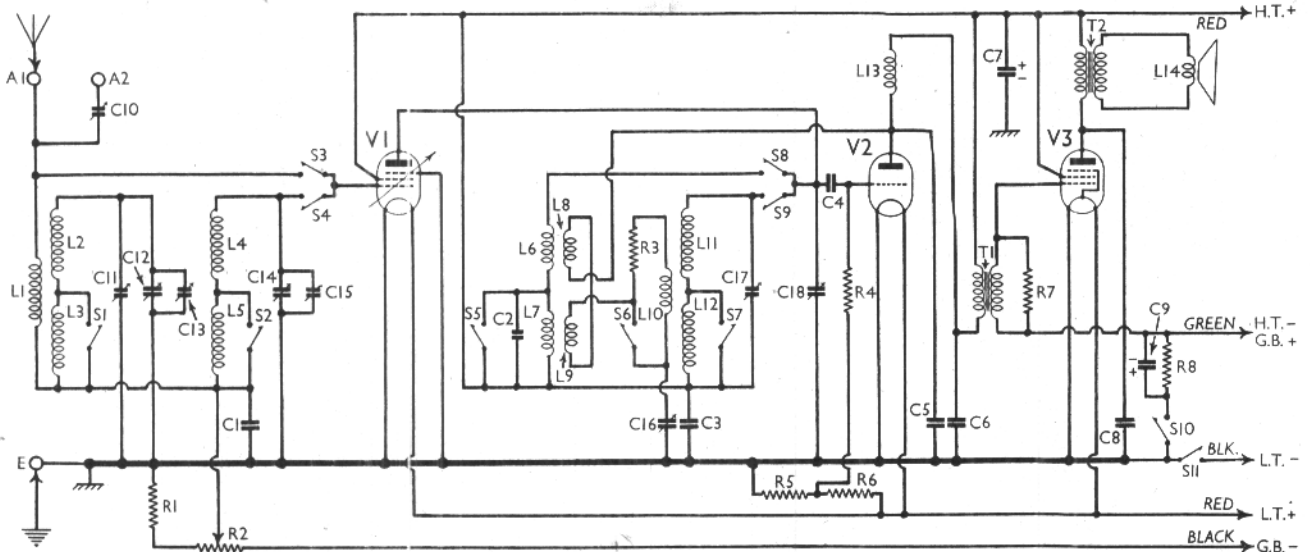
OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil (M.W., L.W.)	1.5
L2	Band-pass primary coils	4.5
L3		9.0
L4		4.5
L5	Band-pass secondary coils	9.0
L6		Very low
L7	S.W.1 and S.W.2 tuning coils	0.4
L8	S.W.1 and S.W.2 reaction coils	0.45
L9		0.8
L10	M.W. and L.W. reaction coil	1.4
L11	V1 anode circuit tuning coils	5.2
L12		9.5
L13	V2 anode H.F. choke	165.0
L14	Speaker speech coil	2.5
T1	Intervalve trans. (Pri. Sec.)	1,300.0
		7,000.0
T2	Speaker input trans. (Pri. Sec.)	850.0
S1-S9	Waveband switches	—
S10	H.T. circuit switch, ganged R2	—
S11	L.T. circuit switch, ganged R2	—

DISMANTLING THE SET

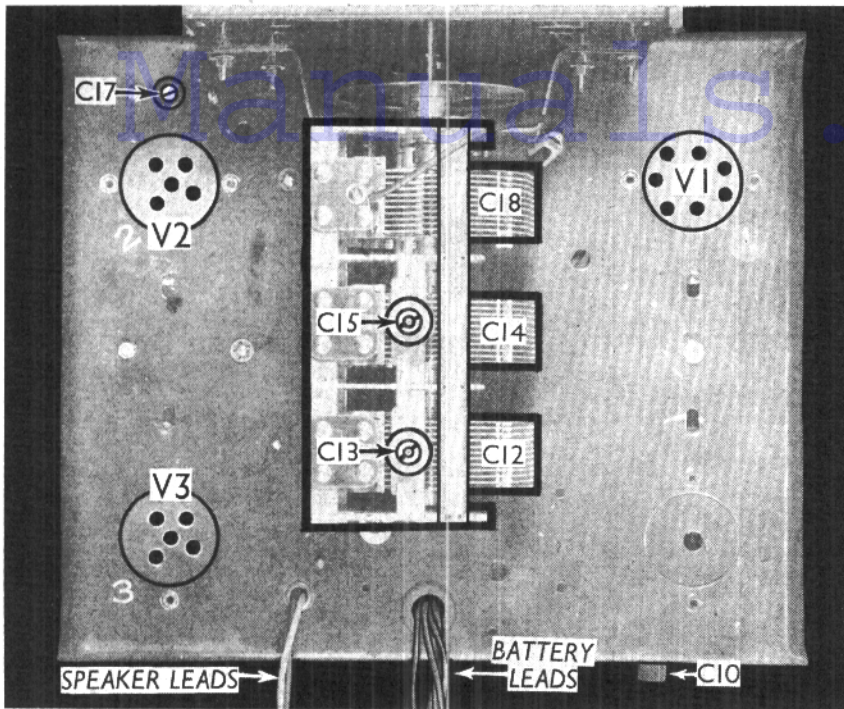
The bottom of the cabinet is detachable (four countersunk-head wood screws) and when removed, gives access to most of the components on the underside of the chassis.

Removing Chassis.—Remove the four control knobs (grub screws), then free the battery leads from the two cleats on the underside of the battery shelf, unsolder the speaker leads and remove the four bolts (with washers) holding the chassis to the bottom of the cabinet. The chassis is now free.

When replacing, note that the knobs for the volume and reaction controls are marked with white dots and as there is no flat on the spindle of the wave-change switch, care must be taken to see that the knob is replaced correctly. The green dot should be uppermost when the receiver is switched to the medium waveband.



On the short-wave bands V1 in the Burndept 251 and Vidor 253 is not used for amplification but acts as a coupling between the aerial and the grid coils of V2. Automatic grid bias is provided for V3.



Plan view of the chassis. Note the position of C17.

Removing Speaker.—To remove the speaker from the cabinet, remove the nuts and lock washers from the four screws with ornamental heads which hold it to the cabinet front. When replacing, see that the transformer is on the left.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new H.T. battery reading 126 V. The volume control was at maximum but the reaction control was at minimum. There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2	110	1.4	110	0.5
V2 HL2	104	1.4	—	—
V3 PM22A	104	5.9	110	0.9

GENERAL NOTES

Switches.—S1-S9 are the waveband switches in a single 4-position rotary unit beneath the chassis. The individual switches are clearly marked in our under-chassis view, and the table below gives their positions for the various control settings, O indicating open, and C closed.

Switch	S.W.1 (Black)	S.W.2 (Blue)	M.W. (Green)	L.W. (Red)
S1	O	O	C	O
S2	O	O	C	O
S3	C	C	O	C
S4	O	O	C	O
S5	C	O	O	O
S6	C	C	O	O
S7	O	O	C	O
S8	C	C	O	O
S9	O	O	C	C

S10 and S11 are Q.M.B. switches controlling the H.T. and L.T. supply circuits, and they are both ganged with the gain control R2.

Coils.—All coils are beneath the chassis in unscreened units, which are indicated in the under-chassis illustration. In the case of the L6-L9 unit, L6 is at the top with L8, which consists of about three turns of wire wound between the turns of the main coil at one end. L7 is

at the bottom of the former with L9 wound over it at the lower end. In the L10-L12 unit, L11 is at the top, L10 in the centre, and L12 at the bottom. L13 is the detector anode H.F. choke mounted underneath the chassis.

Trimming Condensers, C10, C11, C17.—The pre-set aerial series condenser C10 is in circuit when the Night Aerial socket (A2) is in use, and is adjusted by the small knob at the rear of the chassis. C11, a small pre-set trimmer suspended in the under-chassis wiring, is in parallel with the band-pass primary trimmer C13 which is included in the gang condenser assembly. The V1 anode circuit trimmer C17 is adjusted through a hole in the chassis deck, near the V2 valve holder.

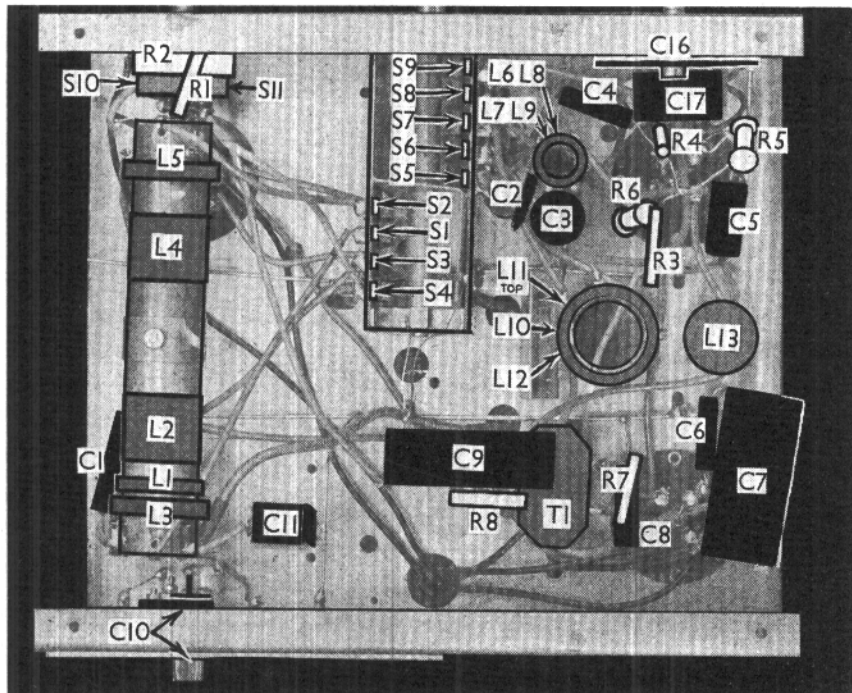
Trimming Condenser C2.—This is a small fixed condenser formed of wiring-up wire.

Electrolytic Condensers.—C7 is an 8μF 150 V working tubular dry type connected across the H.T. supply. C9 is also of the tubular dry type, but has a capacity of 50 μF and is rated to work at 12 V D.C. peak.

External Speaker.—There is no provision for this, but either a high- or a low-impedance type could be connected to the internal speaker input transformer T2.

CIRCUIT ALIGNMENT

The receiver is not fitted with separate trimmers for the various wavebands, and can therefore only be adjusted on one band. It is probably best to choose a wavelength towards the bottom of the M.W. band. Feed in a modulated signal of 250 m. to the A1 and E sockets and rotate gang condenser until the pointer registers exactly the same wavelength. Adjust trimmers C13, C15 and C17 for maximum reading on an output meter.



The various switches are clearly marked in this view of the underside of the chassis.