'TRADER' SERVICE SHEET 197

BURNDEPT 270 AND VIDOR 268

A SIMPLE 3-valve battery-operated circuit is employed in the Burndept 270 4-band receiver, the two short-wave ranges being 13·5-48·5 metres (referred to below as S.W.1) and 75-210 metres (S.W.2). Two alternative aerial sockets are fitted, one having a pre-set aerial series condenser.

An identical chassis is incorporated in the Vidor 268 receiver, but this *Service Sheet* was prepared on a Burndept 270.

CIRCUIT DESCRIPTION

Two alternative aerial connections, **A1** direct, and **A2** via pre-set series condenser **C23**, to coupling coils **L1** (S.W.1), **L3** (S.W.2) and **L5** (M.W. and L.W.). On S.W.1 and S.W.2 coupling is to single-tuned circuit **L2, L4, C17.** On M.W. and L.W., coupling is to band pass filter, with primary **L6, L7** tuned by **C12** and secondary **L8, L9** tuned by **C17.** Capacitative coupling by **C1** and **C2.**

First valve (**V1, Mullard metallised VP2**) is a variable-mu pentode R.F. amplifier, with gain control by potentiometer **R2.**

Tuned anode coupling **L11, L13** (S.W.1 and S.W.2) and **L15, L16** (M.W. and L.W.), **C22,** to triode detector (**V2, Mazda metallised HL2**) operating on grid leak system with **C4** and **R4.** The latter is returned to centre-tapped potentiometer **R5, R6** across **V2** filament.

Reaction is applied from anode of **V2** by coils **L10, L12** (S.W.1 and S.W.2) and **L14** with series resistance **R3** (M.W. and L.W.); control is by variable condenser **C18.** R.F. filtering by choke **L17** and condensers **C5, C6.**

Transformer coupling by **T1** between **V2** and pentode output valve (**V3, Mullard PM22D**). Fixed tone correction in anode circuit by condenser **C8.**

Bias for **V3** obtained by drop along resistance **R8** in H.T. negative line. Electrolytic condenser **C7** acts as H.T. reservoir.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	Gain control fixed min. ..	500
R2	V1 gain control	15,000
R3	Series reaction (M.W. and L.W.)	300
R4	V2 C.G. resistance	1,000,000
R5	V2 filament potentiometer	200
R6		200
R7	T1 secondary shunt	150,000
R8	V3 G.B. resistance	150

	CONDENSERS	Values (μF)
C1	Band-pass bottom coupling ..	0·1
C2	Band-pass top coupling (L.W.)	0·000009
C3	V1 S.G. by-pass	0·25
C4	V2 grid condenser	0·0001
C5	V2 anode filter condensers	0·00005
C6		0·0002
C7*	H.T. reservoir	8·0
C8	Fixed tone corrector	0·005
C9*	V3 G.B. by-pass	50·0
C10‡	Aerial circuit trimmer (S.W.2)	0·00003
C11‡	Band-pass pri. trimmer (L.W.	—
C12†	Band-pass pri. tuning (M.W. and L.W.)	—
C13‡	Band-pass pri. trimmer ..	—
C14‡	Band-pass pri. extra trimmer	0·00003
C15‡	Band-pass sec. trimmer (L.W.)	0·00003
C16‡	Band-pass sec. trimmer (M.W. and L.W.)	0·00006
C17†	Band-pass sec. and grid circ. (S.W.1 and S.W.2) tuning ..	—
C18†	Reaction control	0·0005
C19‡	V1 anode circ. trimmer (S.W.2)	0·00003
C20‡	V1 anode circ. trimmer (L.W.)	0·00003
C21‡	V1 anode circ. trimmer (M.W. and L.W.)	0·00006
C22†	V1 anode circuit tuning ..	—
C23‡	Aerial series condenser ..	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil (S.W.1) ..	0·15
L2	Aerial tuning coil (S.W.1) ..	Very low
L3	Aerial coupling coil (S.W.2) ..	0·35
L4	Aerial tuning coil (S.W.2) ..	1·2
L5	Aerial coupling coil (M.W. and L.W.)	3·7
L6	Band-pass pri. coils (M.W. and L.W.)	4·5
L7		19·5
L8	Band-pass sec. coils (M.W. and L.W.)	4·5
L9		19·5
L10	Reaction coil (S.W.1) ..	0·15
L11	V1 anode tuning coil (S.W.1) ..	Very low
L12	Reaction coil (S.W.2)	0·35
L13	V1 anode tuning coil (S.W.2) ..	1·2
L14	Reaction coil (M.W. and L.W.)	2·8
L15	V1 anode tuning coil (M.W.) ..	4·5
L16	V1 anode tuning coil (L.W.) ..	19·5
L17	V2 anode circuit choke ..	170·0
L18	Speaker speech coil	2·5
T1	A.F. coupling trans. Pri. ..	1050·0
	Sec. ..	5750·0
T2	Speaker input trans. Pri. ..	700·0
	Sec. ..	0·3
S1-11	Waveband switches	—
S12	L.T. circuit switch	—
S13	G.B. circuit switch	—
S14	Scale lamps switch	—

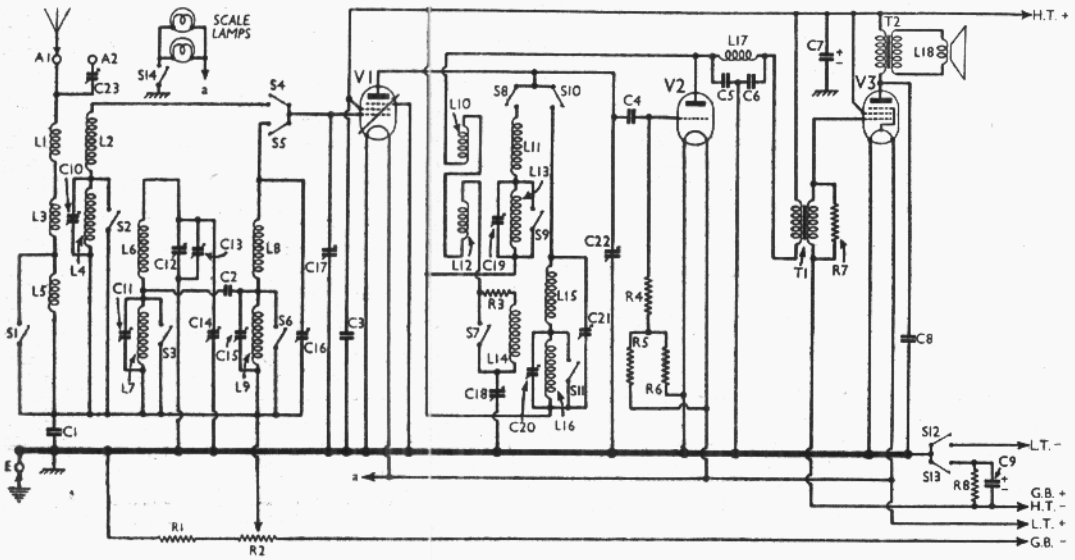
DISMANTLING THE SET

A detachable bottom is fitted to the cabinet and upon removal (four countersunk head wood screws) gives access to most of the under-chassis components.

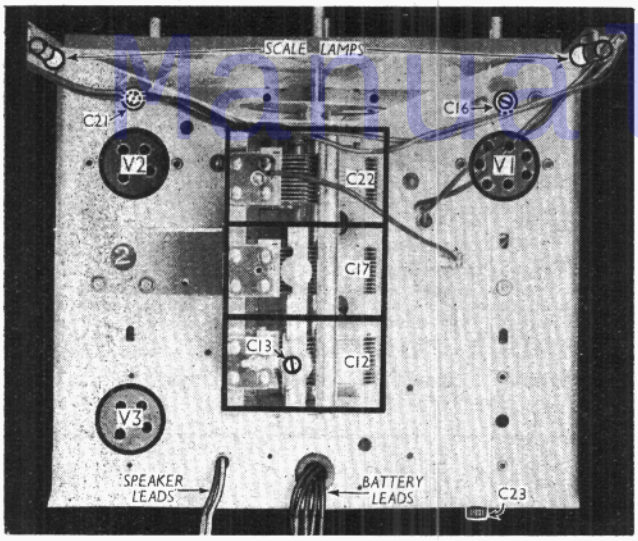
Removing Chassis.—If it is necessary to remove the chassis from the cabinet, first remove the four control knobs (recessed grub screws) and the four bolts (with washers) holding the chassis to the bottom of the cabinet. Now free the battery leads from the two cleats holding them to the battery platform. The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

To free the chassis entirely unsolder the speaker leads.

Removing Speaker.—To remove the speaker from the cabinet remove the nuts and lock-washers from the four bolts holding it to the sub-baffle. *When replacing*, see that the transformer is on the left.



Circuit diagram of the Burndept 270 4-band battery receiver. Band-pass input circuits are used on M.W. and L.W. only.



Plan view of the chassis. Note the trimmers **C16** and **C21**, reached through holes in the chassis deck.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new battery reading 128 V on load. The receiver was tuned to the lowest wavelength on the medium band, and 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, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2 ..	118	1·6	118	0·5
V2 HL2 ..	110	2·9	—	—
V3 PM22D	110	5·5	118	0·9

GENERAL NOTES

Switches.—**S1-S11** are the wavechange switches, in a single unit beneath the chassis, shown in detail in our underchassis view. The table below gives the switch positions for the four control settings. The control knob can be continuously rotated, and there are no markings on the knob, apart from a white dot, so that if the knob is removed, the ranges will have to be identified by the switch positions. S.W.1 is the lowest wavelength range.

Switch	S.W.1	S.W.2	M.W.	L.W.
S1	C	C	O	O
S2	C	O	O	O
S3	O	O	C	O
S4	C	C	O	O
S5	O	O	C	C
S6	O	O	C	O
S7	C	C	O	O
S8	C	C	O	O
S9	C	O	O	O
S10	O	O	C	C
S11	O	O	C	O

S12 and **S13** are the battery circuit switches, ganged with the gain control **R2**. One tag of each is common, and the tag to which the L.T. negative lead is connected is the other connection of **S12**.

S14 is the scale lamp switch, formed by the end of the wave-change switch spindle and a flat leaf contact. It is closed when the switch knob is pushed in.

Coils.—These are all beneath the chassis, on tubular formers, and are unscreened. The positions of **L5-L9** and **L14-L16** are clearly indicated. **L1-L4** and **L10-L13** are on two vertically-mounted formers. **L1** is wound between the turns of **L2**, while **L3** is wound over **L4**. **L10** is between the turns of **L11**, and **L12** is over **L13**.

L17 is an H.F. choke near the **L14-L16** coil unit.

External Speaker.—No provision is made for this, but a high resistance type could be connected across the tags of the primary of **T2**.

Scale Lamps.—These are two M.E.S. types, marked 2·6 V, 0·3 A. They are only switched on when the wave-change knob is pushed in.

Batteries.—L.T., Vidor Triplate 2 V glass cell, 25 AH on slow discharge. H.T. and G.B., Vidor 120V H.T. battery, No. 18580.

Battery Leads and Voltages.—Black spade tag, L.T. negative; red spade tag, L.T. positive 2 V; black plug, G.B. negative 9 V, in negative socket of H.T. battery; green plug, H.T. negative and G.B. positive, in 9 V positive socket of H.T. battery; red plug, H.T. positive, in 120 V positive socket of H.T. battery.

Trimmers.—**C16** and **C21** are adjusted through rubber bushed holes in the chassis deck. The remainder are reached from beneath the chassis, except **C13**, which is on the gang condenser.

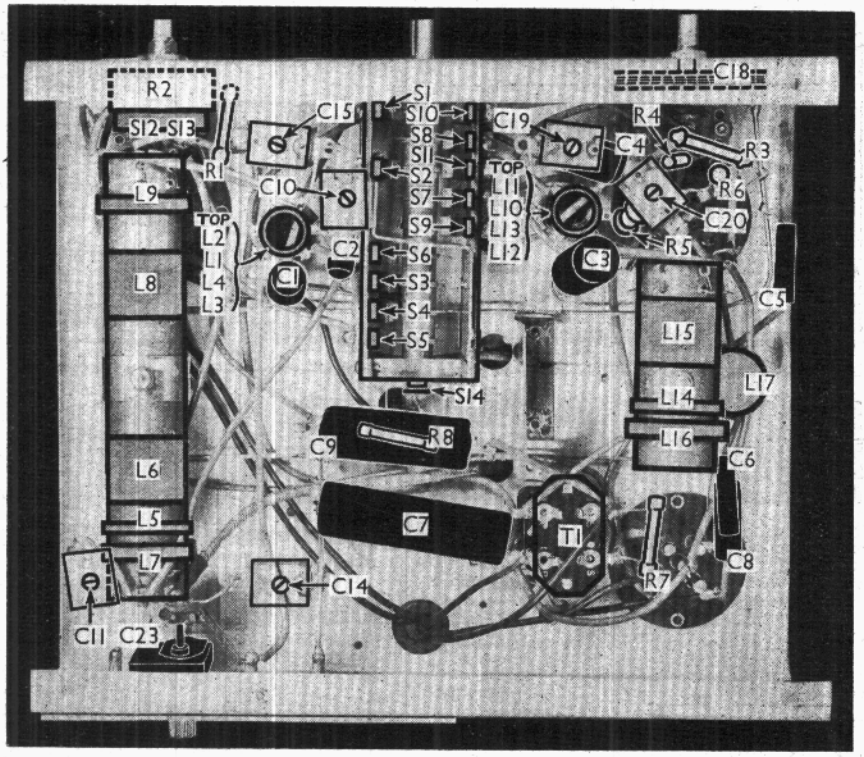
CIRCUIT ALIGNMENT

Inject a 250 m. signal into **A2** and **E** sockets, with **C23** near its maximum. Switch set to M.W., tune to 250 m. on scale, and with gain control at maximum and reaction well advanced, adjust **C21** for maximum output. Then adjust **C16** similarly. **C13** will probably be screwed up fully, but if not, adjust for maximum output. If it is already at maximum, then adjust **C14**. Reaction should be kept advanced to a point just short of oscillation.

Switch set to L.W., feed in a 1,000 m. signal, tune to 1,000 m. on scale, and adjust **C20, C15** and **C11** for maximum output, keeping reaction advanced as before.

Switch set to S.W.2 (range 2), and feed in a 75 m. signal. Tune to 75 m. on scale, and adjust **C19** and **C10** for maximum output, with reaction advanced as before.

The S.W.1 band has no separate trimmers, but slight adjustments may be made by alterations in the leads to the grid and anode of **V1** relative to the rest of the wiring beneath the chassis.



Under chassis view. The individual switches, and the various trimmers are clearly indicated.