

# 289

# BURNDPT 274 AND VIDOR 272

**A** HEXODE R.F. amplifier, a hexode detector and a pentode output valve are employed in the Burndpt 274 battery portable receiver, which is housed in a suitcase type cabinet with apertures for the speaker in both the front and back of the lid. A small switch is provided for switching off the scale lamp.

An identical chassis is used in the Vidor 272 but this *Service Sheet* was prepared on a Burndpt 274.

### CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, L2, C12** to R.F. hexode valve (**V1, Mullard metallised VP2B**) which operates as R.F. amplifier with fixed negative grid potential.

Tuned anode coupling by **L5, L6, C15** between **V1** and R.F. hexode detector valve (**V2, Mullard metallised VP2B**) operating on grid leak system with **C4** and **R2**. Reaction is applied from anode by coils **L3, L4** and controlled by variable condenser **C13**. R.F. filtering in anode circuit by **C6, L7** and **C7**.

Resistance-capacity coupling by **R4, C8** and **R5**, via R.F. stopper **R6**, between **V2** and pentode output valve (**V3 Cossor 220HPT**). Fixed tone correction in anode circuit by condenser **C9**.

H.T. circuit decoupling by dry electrolytic reservoir condenser **C3**.

### COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 C.G. resistance .. ..	500,000
R2	V2 C.G. resistance .. ..	2,000,000
R3	V2 S.G. H.T. feed .. ..	500,000
R4	V2 anode load resistance ..	250,000
R5	V3 C.G. resistance .. ..	500,000
R6	V3 C.G. R.F. stopper .. ..	100,000

CONDENSERS		Values (μF)
C1	V1 C.G. condenser .. ..	0.0001
C2	V1 S.G. decoupling .. ..	0.1
C3*	H.T. reservoir condenser ..	8.0
C4	V2 C.G. condenser .. ..	0.0001
C5	V2 S.G. decoupling .. ..	0.1
C6	V2 anode R.F. by-pass con- sers .. ..	0.0002
C7	.. ..	0.0002
C8	V2 to V3 A.F. coupling ..	0.01
C9	Fixed tone corrector .. ..	0.001
C10‡	Frame aerial L.W. trimmer ..	—
C11‡	Frame aerial M.W. trimmer ..	—
C12‡	Frame aerial tuning .. ..	—
C13†	Reaction control .. ..	0.0005
C14†	V1 anode circuit L.W. trimmer ..	—
C15†	V1 anode circuit tuning .. ..	—
C16‡	V1 anode circuit M.W. trimmer ..	—

\* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings	3.0
L2		17.5
L3	Reaction coils .. ..	5.25
L4		
L5		
L6	V1 anode circuit M.W. tuning coil .. ..	2.25
L7	V1 anode circuit L.W. tuning coil .. ..	19.5
L8	V2 anode R.F. choke .. ..	170.0
T1	Speaker speech coil .. ..	2.5
S1, S2	Speaker input trans. (Pri. Sec.) ..	680.0
S3	Waveband switches .. ..	0.25
S4	L.T. circuit switch .. ..	—
S5	Scale lamp switch .. ..	—

### DISMANTLING THE SET

**Removing Chassis.**—To remove the chassis from the cabinet, remove the batteries, valves and division between the chassis and battery compartment. Now remove the three control knobs (recessed grub screws) and the scale lamp switch knob (unscrew). Remove the two round-head screws holding the front of the control panel to the chassis and remove the panel.

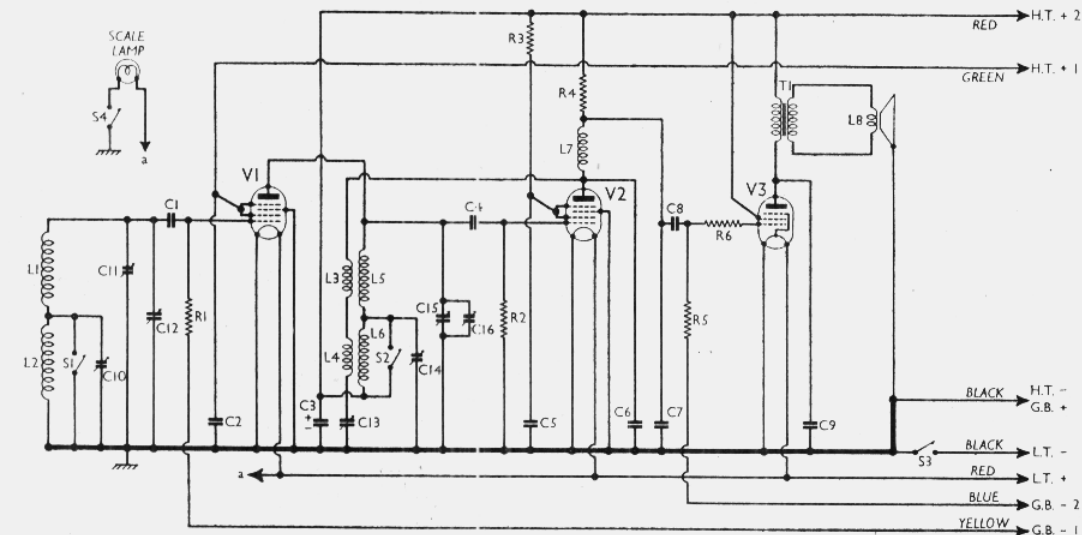
Then remove the countersunk-head screws (with nuts) holding the chassis to the bottom of the cabinet and the two round-head screws (with distance pieces) holding the front of the chassis to the wooden fillets in the cabinet. Remove the cleat holding the frame aerial leads to the side of the cabinet (round-head screw).

The chassis can now be withdrawn to the extent of the speaker and frame aerial leads, which should be sufficient for normal purposes.

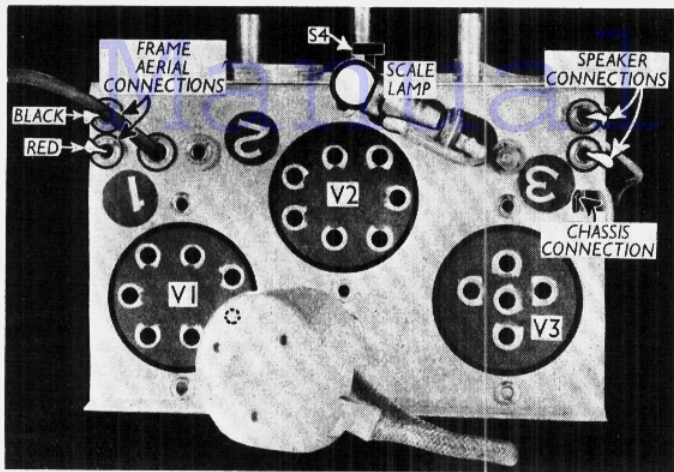
If it is desired to free the chassis entirely, unsolder the speaker and frame aerial leads. *When replacing*, connect the leads as follows, numbering the tags from top to bottom:—Right-hand panel, 1, black frame lead; 2, red. Left hand panel, 1, black speaker lead; 2, red; 3 (chassis), lead in yellow insulating sleeving.

**Removing Frame Aerial.**—To remove the frame aerial from the lid of the cabinet, remove the four countersunk-head wood screws holding it to the lid.

**Removing Speaker.**—To remove the speaker, first remove the frame aerial as described above, then unsolder the speaker leads and remove the nuts and lock washers from the three screws holding the speaker to the lid. *When replacing*, connect the speaker to the outer tags on the trans-



Circuit diagram of the Burndpt 274 and Vidor 272 battery portables. V1 and V2 are both hexodes.



Plan view of the chassis. Note the frame aerial and speaker tags, to which the leads from the aerial and speaker compartment are soldered.

former terminal panel and do not forget to replace the " earthing " lead on the tag on the bottom speaker fixing screw.

**VALVE ANALYSIS**

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with an H.T. battery reading 108 V overall, on load. The receiver was tuned to the lowest wavelength on the medium band and the reaction control was at minimum, but there was no signal input as the frame connections were shorted.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

If, as in our case, V1 should become unstable when its anode current is being measured, it can be stabilised by connecting a non-inductive condenser of about 0.1 μF from that electrode (or grid, top cap) to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2B	105	2.6	67	1.0
V2 VP2B	25	0.3	18	0.1
V3 220HPT	102	4.0	105	0.7

**GENERAL NOTES**

**Switches.**—S1, S2 are the waveband switches, in a simple form of rotary unit beneath the chassis, which also contains S3, the L.T. circuit switch. These switches are indicated in our under-chassis view. On M.W., S1 and S2 are closed, and on L.W. they are open. S3 is closed on M.W. and L.W., and open in the " off " position.

S4 is the scale lamp switch, of the screw type, just below the tuning scale.

**Coils.**—L1 and L2 are the frame aerial windings. The chassis end of L2 is connected to the earthing lead which emerges with the two speaker wires. The junction of L1, L2 (black), and the top of L1 (red) are brought out by a cable, the ends of the leads being connected to the two tags marked " black " and " red " in our plan chassis view.

L3-L6 are in an unscreened unit beneath the chassis, the individual coils being indicated in our under-chassis view.

The choke L7 is also beneath the chassis.

**Scale Lamp.**—This is an M.E.S. type, rated at 2.6 V, 0.3 A. It can be switched on or off by S4.

**Trimmers.**—C10 and C11, the frame aerial trimmers, are inside the frame aerial unit, and are adjusted by screws beneath the name tab on the speaker baffle. The screw to the right (looking at the front of the set) adjusts C11. C14 is mounted on a lug beneath the chassis, while C16 is on the rear section of the gang condenser.

**Batteries.**—L.T., Vidor 2 V 16 AH celluloid cased jelly acid cell. H.T. and G.B., special Vidor 108 V H.T. and G.B. battery, No. 17872. The socket marked blue is the negative end; that marked yellow is 1.5 V positive; that marked black, 3 V positive; that marked green, 72 V positive and that marked red, 108 V positive.

**Battery Leads and Voltages.**—Black lead, black spade tag, L.T. negative;

black lead, red spade tag, L.T. positive 2 V; black lead and plug, H.T. negative and G.B. positive, in black socket; green lead and plug, H.T. positive 1, in green socket; red lead and plug, H.T. positive 2, in red socket; yellow lead and plug, G.B. negative 1, in yellow socket; blue lead and plug, G.B. negative 2, in blue socket.

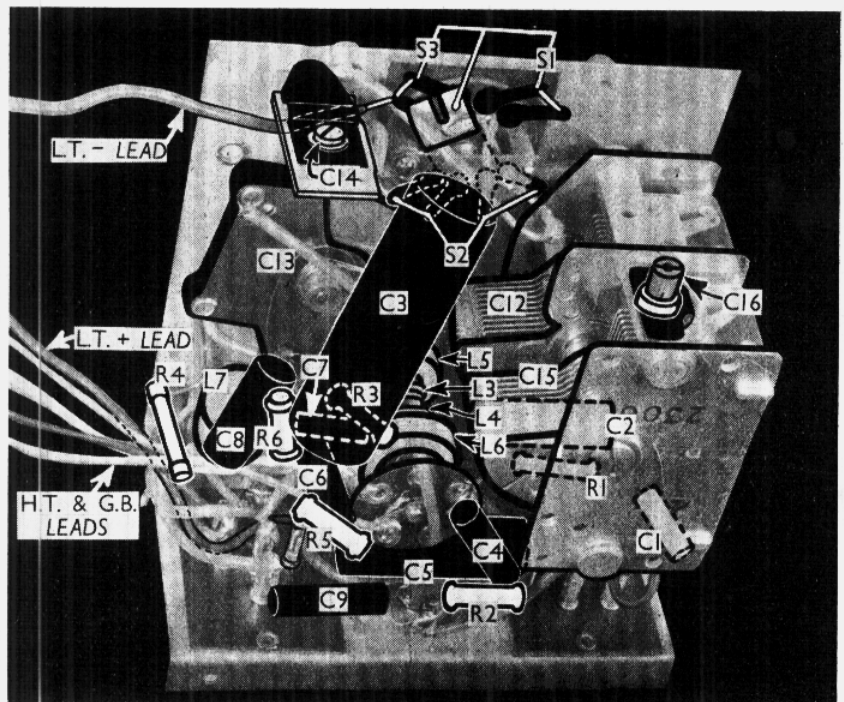
**CIRCUIT ALIGNMENT**

The signal generator must be coupled to the receiver by being connected to the ends of a 60-turn coil, which is stood on edge facing the frame aerial, and some distance from it.

Remove the knobs of the receiver and also the top cover of the chassis. Undo the bolts holding the chassis in the cabinet. Replace the knobs. See that pointer travels to last division on scale (580 m. on M.W.) when gang is fully meshed. If not, adjust it by loosening grub screw holding the drum, and rotating the drum.

Feed a 270 m. (1,100 KC/S) signal into the external coupling coil, switch set to M.W., tune to 270 m. on scale, and adjust reaction until set is just short of oscillation. Now adjust C16 for maximum output, reducing reaction if necessary to keep set stable. C11 (right hand screw under name tag on speaker baffle) should now be adjusted for maximum output, keeping reaction advanced to a point just short of oscillation. Check the calibration at various points on the scale.

Switch set to L.W., feed in a 1,300 m. (230 KC/S) signal, tune to 1,300 m. on scale, and adjust C14, then C10 (left hand screw under name tag on speaker baffle) for maximum output, keeping reaction advanced to a point just short of oscillation. Check calibration at various points on the scale.



View showing the components beneath the chassis. The individual switches are indicated.