NUMBER SIXTY - SEVEN **'TRADER' SERVICE SHEETS**

VIDOR CN232

3-VALVE BATTERY 'ALL-WAVE' SET

IN the Vidor model CN232 battery-operated "all-wave" receiver, a range of 17-52 metres is covered, in addition to the usual M.W. and L.W. ranges. On the last two ranges the circuit consists of a variable-mu pentode H.F. amplifier, a triode detector and a pentode output valve, but on the S.W. range the H.F. stage is not used for amplification.

CIRCUIT DESCRIPTION

Two alternative aerial connections, **A2**, via pre-set series condenser **C9**, and **A1**, to fixed series condenser **C1** and coupling coil **L1**. Series resistance **R1** is in circuit only on short wave band. Single tuned input circuit **L2, L3, C10** precedes variable-mu pentode H.F. amplifier (**V1 Mullard metallised VP2**). Gain control by variable potentiometer **R4** which varies G.B. applied.

Tuned anode coupling by **L7, L8, C13** to triode detector (**V2, Marconi metallised HL2**) which operates on grid leak system with **C4, R6**. Grid leak is returned to centre-tap on filament potentiometer **R7, R8**. Reaction is applied from detector anode to tuning coils by coil **L6** and controlled by variable condenser **C12**.

On the short wave band **V1** is not used for amplification but merely as coupling between aerial and the S.W. tuning coil **L4**. Switch **S3** is open while **S2** is closed to connect aerial to control grid of **V1**. Switch **S7** is also open to cut out M.W. and L.W. tuning coils, while **S6** is closed to connect the S.W. coil in the detector grid circuit. **S5** shunts M.W. and L.W. reaction coil with resistance **R5**, leaving the S.W. coil **L5** in circuit. **S9** is closed to short-circuit **L7** and **L8**.

H.F. filtering in detector anode circuit by choke **L9** and condensers **C5, C6**.

Transformer coupling by **T1** to pentode output valve (**V3, Mullard PM22A** or **Marconi PT2**). Tone compensation in anode circuit by fixed condenser **C8**.

DISMANTLING THE SET

A detachable bottom is fitted to the cabinet and enables most repairs to be carried out without removing the chassis. The bottom is held by four countersunk wood screws.

Removing Chassis.—If it is necessary to remove the chassis, remove the four control knobs (recessed grub screws) and the detachable bottom, unsoldering the earthing lead from the screening plate on the bottom. Remove the three insulated cleats holding the speaker and battery leads to the battery platform (roundhead woodscrews and washers for each), and the four bolts (with washers) holding the chassis to the cabinet. It is now possible to withdraw the chassis to the extent of the speaker leads, which is sufficient for normal needs. If it is desired entirely to free the chassis, unsolder the leads to the speaker.

If the chassis should be removed from the cabinet, take care that the earthing lead for the screening plate does not cause a short circuit during tests. To prevent any possibility of trouble, it may be covered with insulating tape. *When replacing* chassis, do not forget to reconnect earthing lead.

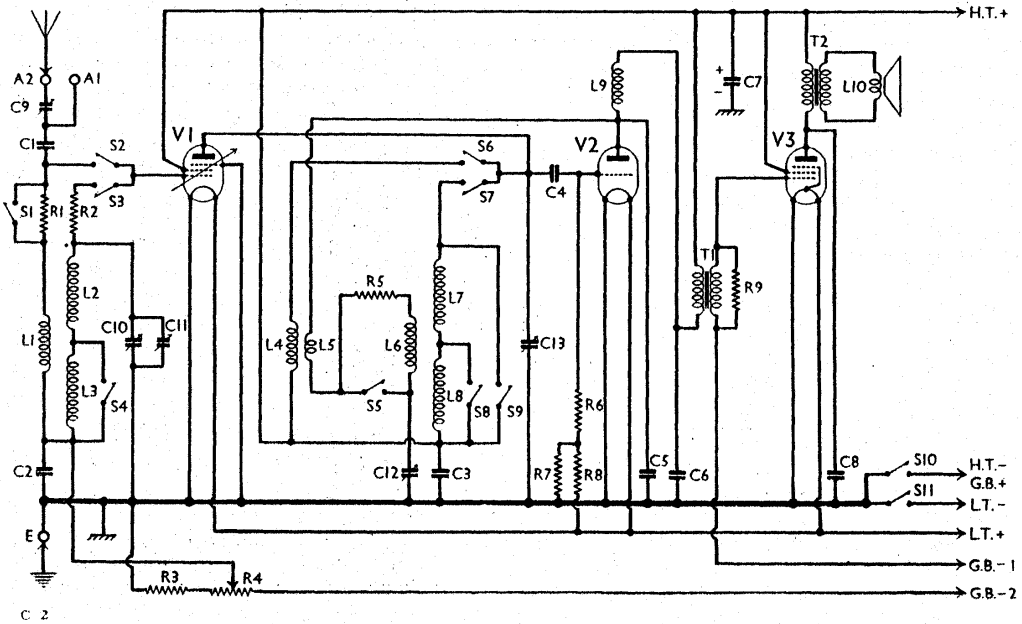
Removing Speaker.—Four bolts with ornamental heads hold the speaker to the sub-baffle and by removing the nuts and lock-washers from them, the speaker can be withdrawn, if necessary. *When replacing*, see that the transformer is on the left.

COMPONENTS AND VALUES

	Resistances	Values (ohms)
R1	Aerial series resistance (S.W.)	15,000
R2	V1 grid series resistance ..	500
R3	V1 fixed G.B. resistance ..	500
R4	V1 gain control	15,000
R5	M.W. and L.W. reaction stabiliser	200
R6	V2 grid leak	1,000,000
R7	Filament potentiometer (V2)	200
R8		200
R9	Intervalve trans. sec. shunt ..	250,000

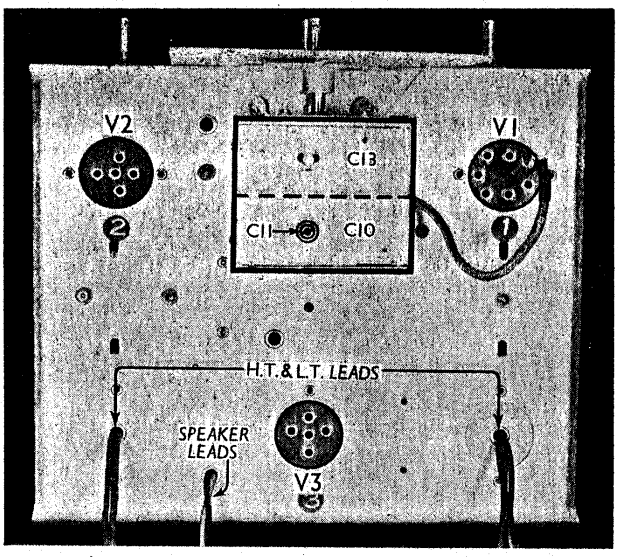
	Condensers	Values (μF)
C1	Fixed aerial series condenser..	0·0005
C2	V1 cont. grid decoupling ..	0·1
C3	V1 anode decoupling	0·1
C4	V2 grid condenser	0·0001
C5	V2 anode H.F. by-passes	0·0001
C6		0·0002
C7*	H.T. reservoir	8·0
C8	Tone compensator	0·005
C9‡	Pre-set aerial condenser ..	—
C10	Aerial circuit tuning	—
C11‡	Aerial circuit trimmer ..	—
C12	Reaction condenser	0·0005
C13	V1 anode circuit tuning ..	—

* Electrolytic. ‡ Pre-set.



C 2

Circuit diagram of the Vidor CN232 3-valve battery receiver. L4 and L5 are the S.W. coils. V1 is merely used for coupling purposes on the S.W. band. The GB—1 lead is fitted with a yellow plug (—4.5 V), while GB—2 has a green plug (—9 V).



Plan view of the chassis. Only the aerial section of the ganged tuning condenser (C10) is provided with a trimmer, C11.

	Other Components	Values (ohms)
L1	Aerial coupling coil	1·2
L2, L3	Aerial tuning coils	4·2, 8·5
L4	Short wave tuning coil	0·05
L5	Short wave reaction coil	0·25
L6	M.W. and L.W. reaction coil	1·2
L7, L8	V1 anode tuning coils	4·2, 8·5
L9	V2 anode H.F. choke	165·0
L10	Speaker speech coil	2·4
T1	Intervalve trans Pri. / Sec.	125·0 / 700·0
T2	Speaker input trans. Pri. / Sec.	700·0 / 0·5
S1-S9	Waveband switches	—
S10	H.T. and G.B. switch (ganged R4)	—
S11	L.T. switch (ganged R4)	—

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

Coils.—These are in three unscreened units beneath the chassis. Two of them carry the M.W. and L.W. coils, while the third is for the S.W. windings. The individual coils are indicated in the under-chassis view. This also shows the H.F. choke **L9.**

Batteries and Voltages.—The L.T. accumulator is an Exide type D.F.L. The H.T. and G.B. battery is a Vidor heavy duty combined 120 V + 9 V type. The H.T. and G.B. connections are: Black plug, negative; Red plug, 120 V+; Yellow plug, −4½ V; Green plug, −9V.

Chassis Divergencies.—In early models **S9** was omitted, as were also **R2** and **R5.** The output valve may be a Mullard PM22A or a Marconi PT2.

External Speaker.—No provision is made for an external speaker, but one could be connected across the internal speaker transformer primary, by soldering leads to the tags on the transformer in parallel with those from the chassis.

VALVE ANALYSIS

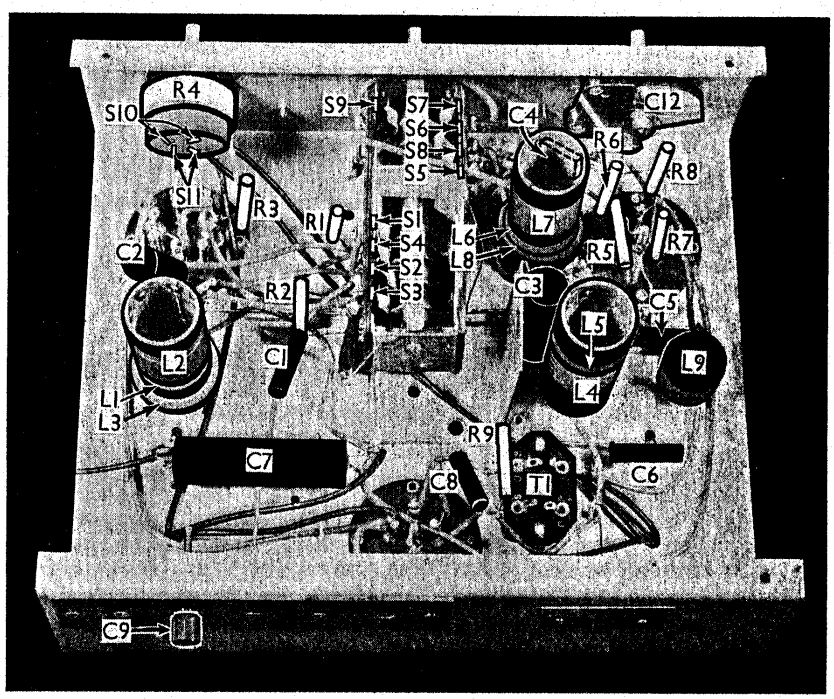
Readings of valve voltages and currents printed in the table below were measured with new batteries, no signal input, the volume control at maximum, and the reaction condenser at minimum. Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 VP2	115	1·2	115	0·4
V2 HL2	110	3·6	—	—
V3 PM22A	112	3·4	115	0·85

GENERAL NOTES

Switches.—The wavechange switches, **S1-S9,** are ganged together in a single unit, seen in the under-chassis view, where the individual switches are indicated. The table in column two gives the various switch positions for the different settings of the control, O indicating open, and C closed.

S10 and **S11** are respectively the combined H.T. and G.B., and the L.T. switches, in the form of a 2-pole Q.M.B. unit, ganged with the volume control **R4.**



Under-chassis view. All the coils and switches are clearly indicated. C4 is behind the L6, L7, L8 coil former. C12 is the reaction condenser. The adjusting knob of the pre-set aerial condenser C9 is shown at the rear of the chassis.