

'TRADER' SERVICE SHEET

235

G.E.C. SP3

3-VALVE BATTERY RECEIVER

THREE pentodes are used in the G.E.C. SP3 3-valve battery receiver, in which reaction is pre-set and is adjustable by a control at the back of the chassis. The receiver has a combined on-off and wave-change switch with an indicator on the tuning scale showing the position of this switch. There is provision for using an extension speaker.

CIRCUIT DESCRIPTION

Aerial input via volume control potentiometer **R1**, coupling condenser **C1** and coupling coils **L1**, **L2** to single tuned circuits **L3**, **L4**, **C12**, which precede first valve (**V1**, **Osram metallised W21**), an R.F. pentode operating as signal frequency amplifier.

Tuned-secondary R.F. transformer coupling by **L5**, **L6** and **L8**, **L9**, **C15** between **V1** and detector valve (**V2**, **Osram metallised VP21**), an R.F. pentode operating on grid leak system with **C5** and **R4**. Reaction by coil **L7** from anode is controlled by semi-variable condenser **C13**; R.F. filtering by **C7**.

Resistance capacity coupling by **R5**, **C8**, and **R6** via R.F. stopper **R7** between **V2** and pentode output valve (**V3**, **Osram PT2** or **KT2**). Fixed tone correction in anode circuit by **C9**. Provision for connection of low-impedance external speaker across secondary of output transformer **T1**.

G.B. potentials are provided automatically by drop across resistances **R8** and **R9** in H.T. negative line. R.F. filtering in H.T. circuit by **C3**.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	Aerial pot. manual volume control	10,000
R2	V1 C.G. decoupling	99,000
R3	V2 S.G. H.T. feed	440,000
R4	V2 grid leak	4,000,000
R5	V2 anode load	99,000
R6	V3 C.G. resistance	660,000
R7	V3 C.G. stopper	440,000
R8	Automatic G.B. resistances	500
R9		200

CONDENSERS		Values (μF)
C1	Aerial coupling condenser	0.005
C2	V1 C.G. decoupling	0.005
C3	H.T. line R.F. by-pass	0.25
C4	V2 C.G. decoupling	0.005
C5	V2 C.G. condenser	0.00025
C6	V2 S.G. decoupling	0.25
C7	V2 anode R.F. by-pass	0.0002
C8	A.F. coupling to V3	0.02
C9	V3 anode tone corrector	0.002
C10*	Automatic G.B. circuit by-pass	35.0
C11†	Aerial circuit M.W. trimmer	—
C12†	Aerial circuit tuning	—
C13‡	Reaction control	—
C14‡	R.F. transformer sec. M.W. trimmer	—
C15†	R.F. transformer sec. tuning	—

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coils	0.2
L2		3.4
L3		2.2
L4	Aerial circuit tuning coils	19.0
L5		0.5
L6	R.F. transformer primary coils	4.5
L7		0.5
L8	R.F. transformer secondary coils	2.2
L9		17.5
L10	Speaker speech coil	2.25
T1	Output trans.	870.0
S1-S3		Waveband switches (Pri. Sec.)
S4	H.T. circuit switch	—
S5	L.T. circuit switch	—

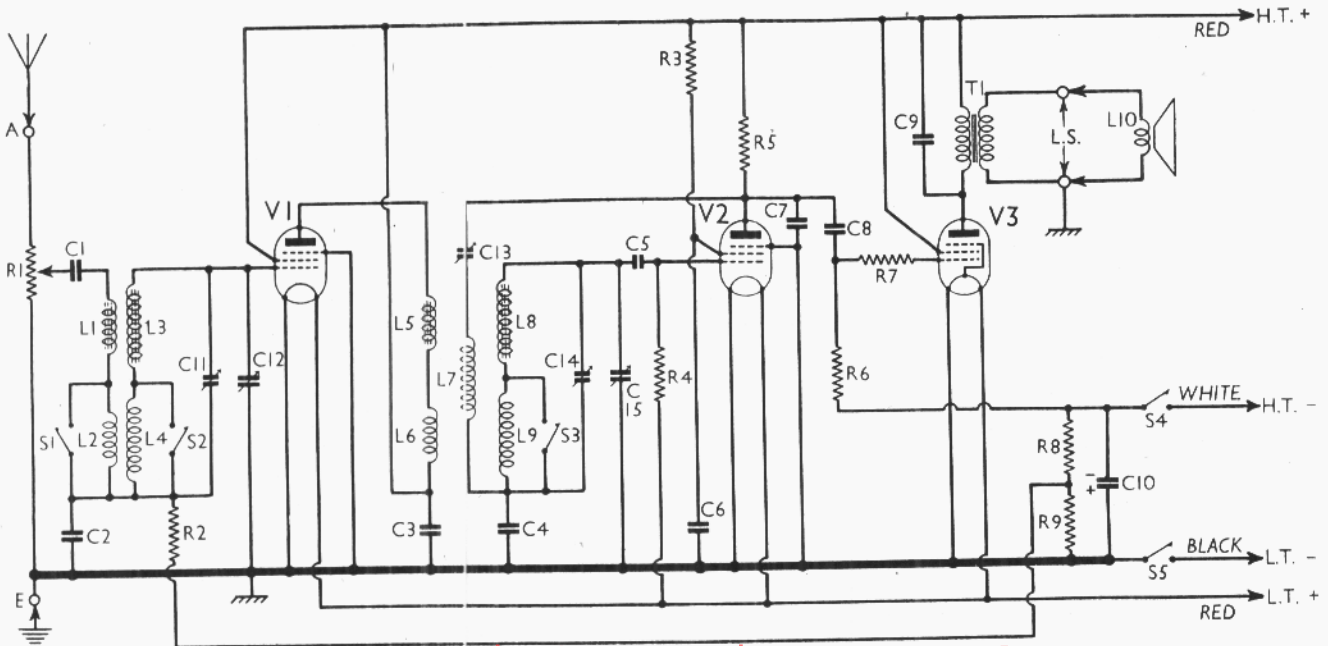
DISMANTLING THE SET

Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the three control knobs (pull off) and the three bolts (with washers) holding the chassis to the bottom of the cabinet. Now free the speaker leads from the two cleats on the side of the cabinet, when the chassis can be withdrawn to the extent of the leads, which is adequate for normal purposes.

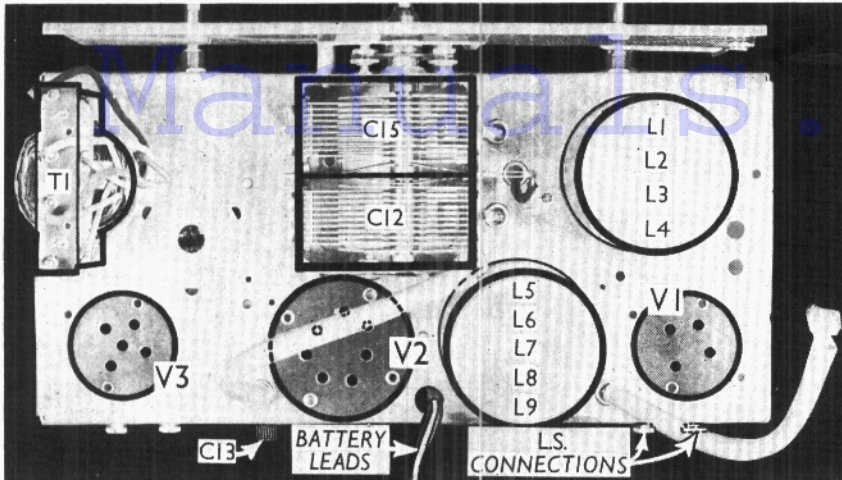
To free the chassis entirely, disconnect the speaker leads from the terminals at the back of the chassis.

Removing Speaker.—To remove the speaker from the cabinet, remove the four cheese-head screws (with washers and spring washers) holding the sub-

* Electrolytic. † Variable. ‡ Pre-set.



For more information of the G.E.C. SP3 3-valve battery receiver. Automatic G.B. is used.



Plan view of the chassis. The knob for adjusting C13 is indicated.

baffle to the front of the cabinet and remove the three counter-sunk head screws (with nuts, spring washers and washers) holding the speaker to the sub-baffle. When replacing, see that the terminal panels are at the bottom.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with a new H.T. 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 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 W21 ..	122	1.8	122	0.6
V2 VP21 ..	38	0.8	20	0.2
V3 PT2 ..	120	3.0	122	0.6

GENERAL NOTES

Switches.—S1-S5 are the waveband and battery circuit switches, in a single rotary unit beneath the chassis, indicated in our under-chassis view, and shown in detail in the diagram on the right, where it is seen looking from the rear of the underside of the chassis.

The table below gives the switch positions for the three control settings, starting from fully anti-clockwise. O indicates open, and C closed.

Switch	Off	M.W.	L.W.
S1	O	C	O
S2	O	C	O
S3	O	C	O
S4	O	C	C
S5	O	C	C

Coils.—L1-L4 and L5-L9 are in two screened units on the chassis deck. The cans are not removable, but the coil units can be removed from the underside of the chassis by undoing the screws which

fix the paxolin strips carrying them to the chassis.

Trimmers C11, C14.—These are beneath the chassis, mounted on the paxolin strips carrying the coil units, and are indicated in our under-chassis view.

Reaction Control.—This is a semi-variable condenser, C13, adjustable by a knob projecting through a hole at the rear of the chassis.

External Speaker.—Two terminals are provided at the rear of the chassis for a low impedance (2-4 O) external speaker.

Batteries.—L.T., 2 V 45 AH accumulator cell, Genelex No. B.C.145. H.T., 120 V dry battery, G.E.C. Black Label, No. B.B.720. Grid bias is automatic.

Battery Leads and Voltages.—Black lead, spade tag, L.T. negative; red lead, spade tag, L.T. positive 2 V; white lead, black plug, H.T. negative; red lead and plug, H.T. positive, +120 V.

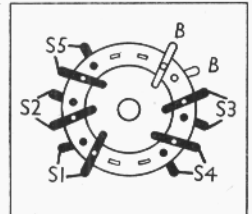
Valve V3.—In early models this is a PT2 output pentode. Later it may be replaced by a KT2 output tetrode.

CIRCUIT ALIGNMENT

Switch set to M.W., tune to 214 m, on scale, and connect signal generator to A and E terminals via a dummy aerial. Feed in a 214 m. (1,400 KC/S) signal, and adjust C11 and C14 for maximum output, keeping input low.

To adjust the pre-set reaction, connect normal aerial and earth to receiver,

The waveband switch unit, looking from the rear of the underside of the chassis.



Under - chassis view. The switch unit is indicated, and shown in detail in Col. 3. C11 and C14 are trimmers, while C13 is the pre-set reaction control.

