

'TRADER' SERVICE SHEETS

BURGOYNE 'BATTERY FURY'

3-VALVE RECEIVER

THE Burgoyne Battery Fury receiver employs a straight 3-valve circuit with valves in the usual H.F. (pentode), detector (triode), and output (pentode) sequence. Iron-cored coils are used in the two tuned stages, and a Droitwich rejector is provided for use when necessary. Grid-bias potentials are obtained automatically.

CIRCUIT DESCRIPTION

Two alternative aerial input connections via choke coils **L2** (L.W. only) and **L3** to coupling coils **L4**, **L5**. **A1**, for normal use, has series condenser **C1**, while **A2**, with tuned rejector **L1**, **C10**, is for use when interference from Droitwich is experienced.

Single tuned circuit **L6**, **L7**, **C11** precedes variable-mu pentode H.F. amplifier (**V1**, Tungram metallised **HP211** or Mullard **VP2**). Gain control by variable potentiometer **R2** which varies G.B. applied.

Tuned-secondary transformer coupling by **L8**, **L9**, **L11**, **L12**, **C14** between **V1** and triode detector valve (**V2**, Tungram **LD210** or Mullard **PM1HL**) which operates on grid leak system with **C4** and **R3**. Reaction is applied from anode by coil **L10** and controlled by variable condenser **C13**. Anode H.F. filtering by choke **L13** and by-pass condenser **C5**. Provision for connection of gramophone pick-up in C.G. circuit.

Parallel fed auto-transformer coupling by **R4**, **C6**, **T1** between **V2** and pentode output valve (**V3**, Tungram **PP222** or Mullard **PM22A**). Tone correction by

fixed condenser **C8** in anode circuit.

G.B. potentials for **V1** and **V3** are obtained from drops along resistances **R6**, **R7** in common H.T. negative line.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 C.G. decoupling	500,000
R2	V1 gain control	5,000
R3	V2 grid leak	2,000,000
R4	V2 anode load	30,000
R5	V3 C.G. circuit shunt	250,000
R6	Automatic G.B. resistances	150
R7		400*

* May be 700 O.

CONDENSERS		Values (μF)
C1	Aerial series condenser	0.0002
C2	V1 C.G. decoupling	0.1
C3	H.T. supply by-pass	0.1
C4	V2 C.G. condenser	0.0003
C5	V2 anode H.F. by-pass	0.0002
C6	L.F. coupling to T1	0.1
C7*	V3 G.B. circuit by-pass	20.0
C8	Tone corrector	0.005
C9	V1 G.B. circuit by-pass	0.1
C10†	Droitwich rejector tuning	0.0001
C11†	Aerial circuit tuning	0.0005
C12‡	Aerial circuit trimmer	—

CONDENSERS (Continued)		Values (μF)
C13‡	Reaction control	0.0005
C14†	H.F. transformer tuning	0.0005
C15‡	H.F. transformer trimmer	—

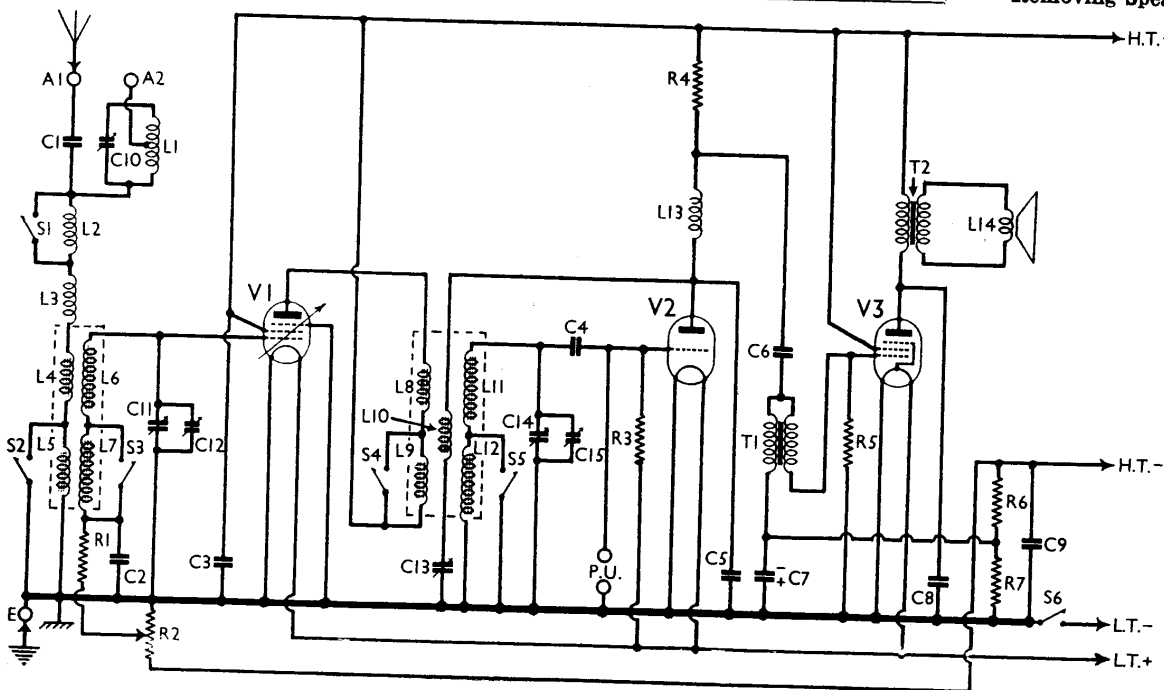
* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Droitwich rejector coil, total	32.0
L2	Aerial choke coil (L.W.)	24.0
L3	Aerial choke coil	8.7
L4	Aerial coupling coils	0.6
L5		4.7
L6	Aerial tuning coils	2.5
L7		10.5
L8	H.F. transformer primary	1.2
L9		4.6
L10	Reaction coil	2.1
L11	H.F. transformer secondary	2.0
L12		10.0
L13	V2 anode H.F. choke	200.0
L14	Speaker speech coil	2.4
T1	Intervalve trans. (Pri.)	1800.0
	(Sec.)	4000.0
T2	Speaker input trans. (Pri.)	700.0
	(Sec.)	0.3
St-S5	Waveband switches	—
S6	L.T. circuit switch	—

DISMANTLING THE SET

Removing Chassis.—Remove the three control knobs from their spindles (recessed grub screws) and the nut which clamps the front of the chassis by means of the switch assembly bush. The chassis is now held in place only by three wood screws in a flange at the rear, and once these have been removed normal repairs can be carried out without unsoldering the speaker leads.

Removing Speaker.—Four bolts hold the



Circuit diagram of the Burgoyne "Battery Fury" 3-valve battery receiver. Note the Droitwich rejector **L1**, **C10**. All the tuning coils are iron-cored. Automatic grid bias is incorporated, thus simplifying the battery connections.

speaker chassis on a sub-baffle, and when the nuts have been removed, the speaker can be taken from the cabinet. When replacing, the input transformer should be at the bottom.

VALVE ANALYSIS

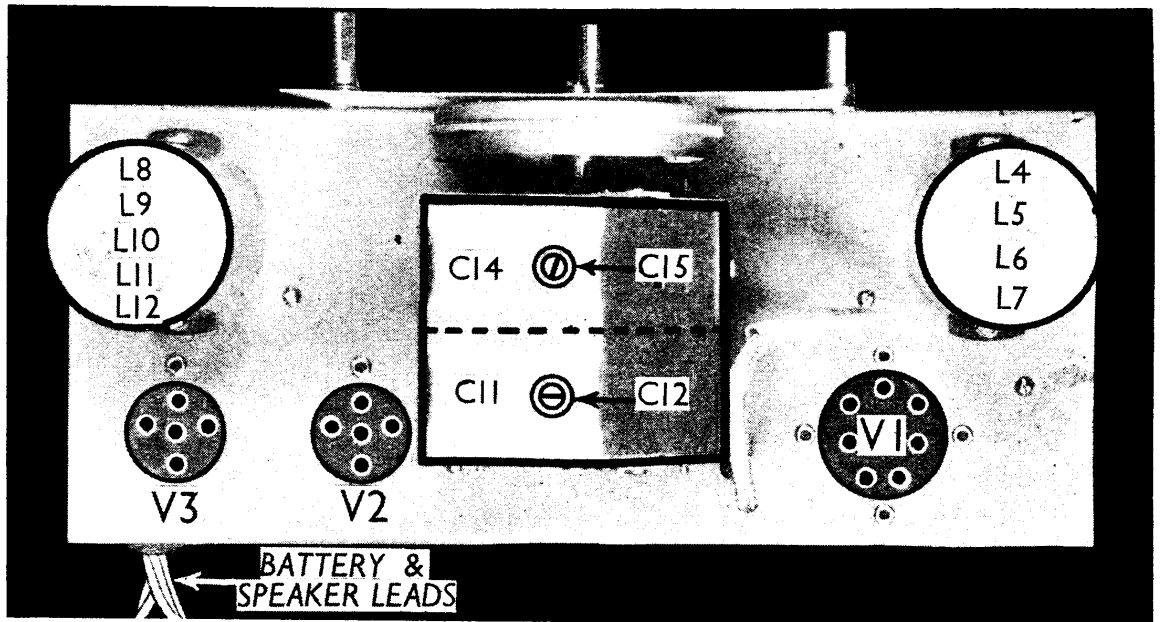
Voltage and current figures listed in the table below were obtained from a representative chassis operating with an H.T. battery reading 120 V. The gain control R2 was at maximum (reaction condenser plates slightly in mesh) and there was no signal input. All voltage readings were taken on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
HP211	112	2.5	115	1.0
LD 210	60	1.0	—	—
PP 222	110	5.8	115	1.2

GENERAL NOTES

Switches.—S1-S5 are the waveband switches, and S6 the L.T. switch. They are all ganged together in a single unit beneath the chassis, and are indicated in our under-chassis view. The table below gives the switch positions for the various control settings.

Switch	Off	M.W.	L.W.
S1	0	C	0
S2	0	C	0
S3	0	C	0
S4	0	C	0
S5	0	C	0
S6	0	C	C



Plan view of the chassis. All the tuning coils are in the two units shown.

Coils.—L1 and L2 are in an unshielded unit beneath the chassis, L2 being nearer to the chassis. L1 in our receiver is centre tapped. L3 is also unshielded and beneath the chassis, as is also choke L13. L4-L7 and L8-L12 are in two shielded units on the chassis deck.

External Speaker.—There is no provision made for this, but a high resistance type could be connected across the primary of T2, that is, across the two tags on the internal speaker panel to which the leads from the chassis are connected.

Batteries.—A 2 V L.T. cell of at least 10 A.H. is recommended, while the H.T. battery should have a voltage of 120 V. Automatic G.B. is fitted.

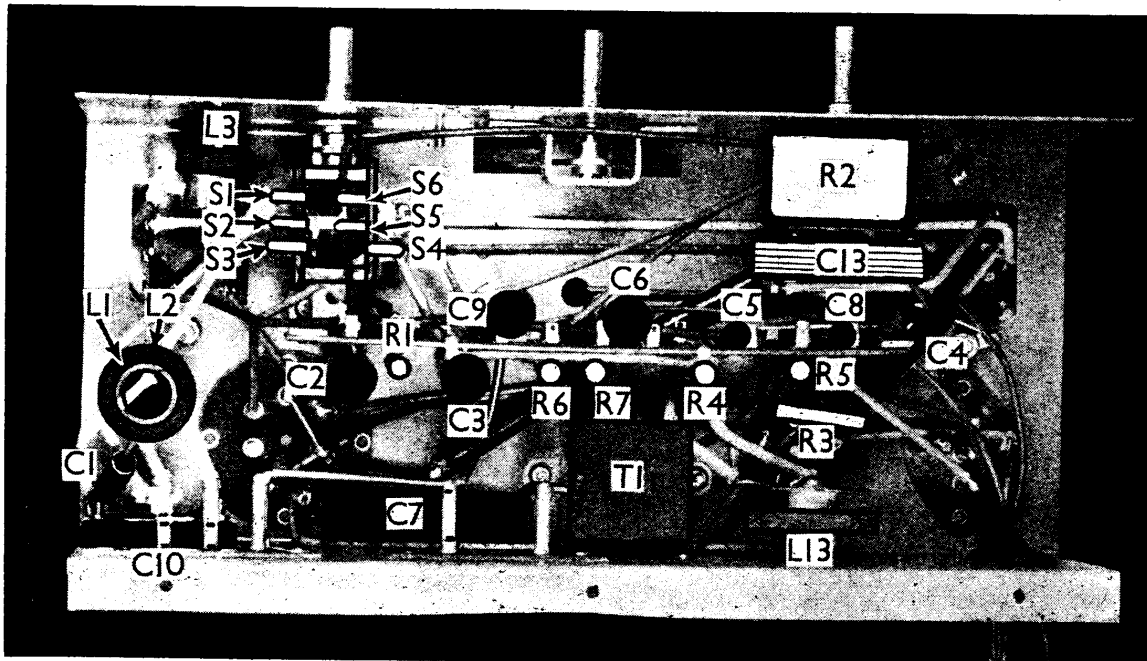
Battery Leads and Voltages.—Black spade tag, L.T. negative; Red spade tag, L.T. positive 2 V; Black plug, H.T. negative; Red plug, H.T. positive 120 V.

Condenser C7.—This is a tubular dry electrolytic (20µF, peak volts 6 V). Note that owing to its position in the G.B. circuit its positive connection goes to chassis, not the negative, as is more usual.

Transformer T1.—I.P. and I.S. on this transformer are joined, and go to one end of C6. O.P. goes to the negative of C7 and R6 and R7. O.S. goes to R5 and the grid of V3.

Condenser C10. The Droitwich rector tuning condenser is adjustable through a hole on the rear of the chassis.

Chassis Divergencies.—C1 may be 0.0001 µF instead of 0.0002 µF. L1 may not be centre-tapped in some chassis, the whole of the coil being in series with the aerial lead to L2. L3 may not occur in early chassis. R7 may be 700 Ω in some chassis, instead of 400 Ω.



Under-chassis view. The switches are clearly marked. R2 and C13 are ganged together. L1 and L2 are on a single former, L1 being uppermost. C10 is adjustable through a hole in the rear of the chassis.