NUMBER 104 **'TRADER' SERVICE SHEETS**

# Burgoyne 'Hollywood AC3'

## 3-VALVE A.C. RECEIVER

SUITABLE for A.C. mains of 200-250 V, 25-100 c.p.s., the Burgoyne "Hollywood AC3" receiver is fitted with a 3-valve (plus rectifier) chassis using a variable-mu pentode H.F. amplifier, a triode detector and a pentode output valve. Provision is made for a gramophone pick-up, for which there is a third position on the wave-change switch, and a Droitwich rejector can be brought into circuit by means of a second aerial socket.

### CIRCUIT DESCRIPTION

Two alternative aerial input connections via fixed series condenser **C1** and choke coil **L2** on L.W. to coupling coils **L3, L4. A2,** for normal use, is direct, while **A1** includes rejector circuit **L1, C13,** and is used when interference from Droitwich is experienced.

Single tuned circuit **L5, L6, C14** precedes variable-mu pentode H.F. amplifier (**V1, Tungsram metallised HP4115** or **Mullard VP4B**). Gain control by variable cathode resistance **R4** which varies G.B. applied.

Tuned-secondary transformer coupling by **L7, L8, L10, L11** and **C17** to triode detector (**V2, Tungsram metallised HL4** or **Mullard 904V**) which operates on grid leak system with **C5** and **R5.** Reaction is applied from anode by coil **L9** and controlled by variable condenser **C16.** Anode H.F. filtering by choke **L12** and by-pass condenser **C7.** Provision for connection of gramophone pick-up in grid circuit by switch **S6,** when G.B. is obtained from cathode resistance **R6.**

Resistance-capacity coupling by **R7, C8** and **R9** to pentode output valve (**V3, Tungsram APP4C** or **Mullard Pen4VB**). Tone correction in anode circuit by fixed condenser **C10.**

H.T. current is supplied by I.H.C. full-wave rectifying valve (**V4, Tungsram APV4** or **APV4200** or **Mullard IW3**). Smoothing by speaker field coil **L15** and dry electrolytic condensers **C11, C12.**

### DISMANTLING THE SET

**Removing Chassis.**—If it is necessary to remove the chassis from the cabinet, remove the back (two knurled screws), the three control knobs and the bush from the wave-change switch. Now remove the knurled securing nut from the mains switch on the side of the cabinet and push the switch through into the inside of the cabinet. Remove the two cleats on the side of the cabinet for the speaker leads (one round-head wood screw for each) and remove the three round-head wood screws from the flange at the back of the chassis, which can now be withdrawn to the extent of the speaker leads. This is sufficient to allow of normal repairs being carried out.

If the chassis is connected to the mains, take care that the switch does not short to the chassis.

*When replacing,* fix the wave-change switch knob so that the white dot is on the left when the receiver is switched to the medium wave band.

To free the chassis entirely, unsolder the leads on the speaker terminal panel. *When replacing,* connect as follow, numbering the tags from bottom to top :— 1, yellow ; 2 and 4 joined together, red ; 3, grey. The black lead goes to the frame of the speaker.

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

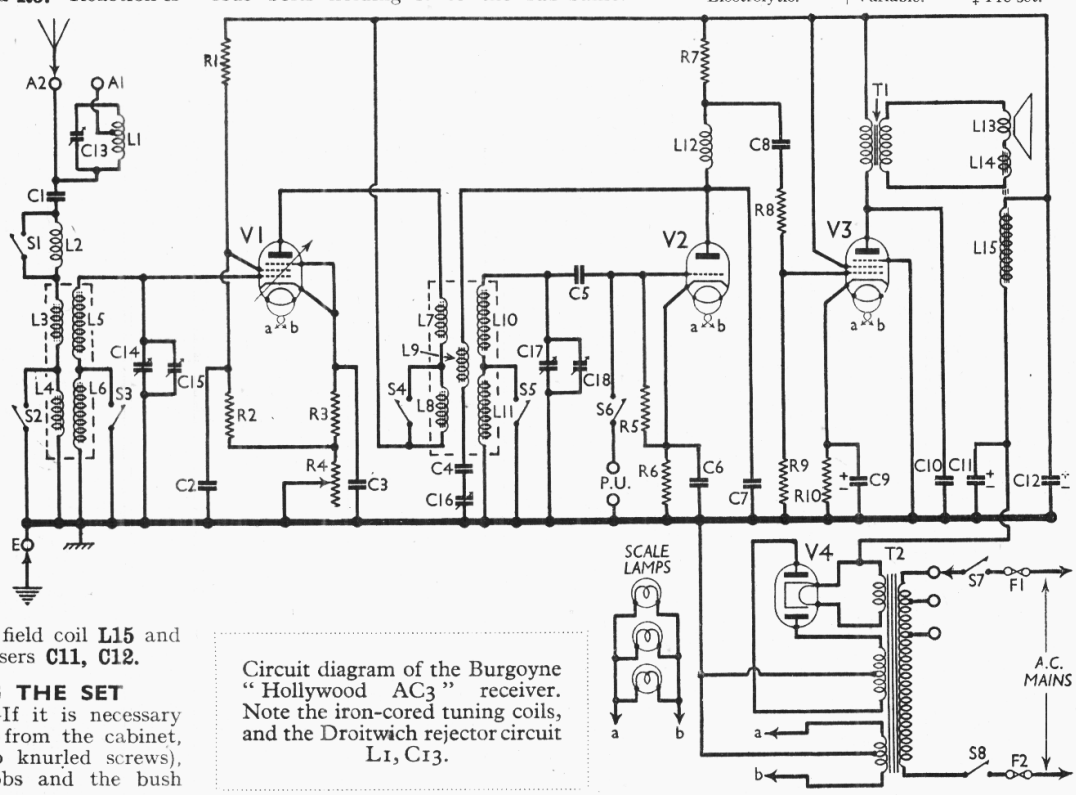
### COMPONENTS AND VALUES

| | Resistances | Values (ohms) |
|---|---|---|
| R1 } R2 } | V1 S.G. potential divider | 50,000* 40,000 |
| R3 | V1 fixed G.B. resistance | 200 |
| R4 | V1 gain control | 5,000 |
| R5 | V2 grid leak | 1,000,000 |
| R6 | V2 G.B. resistance (gram.) | 1,000 |
| R7 | V2 anode load | 50,000 |
| R8 | V2 C.G. H.F. stopper | 50,000 |
| R9 | V3 C.G. resistance | 250,000 |
| R10 | V3 G.B. resistance | 150 |

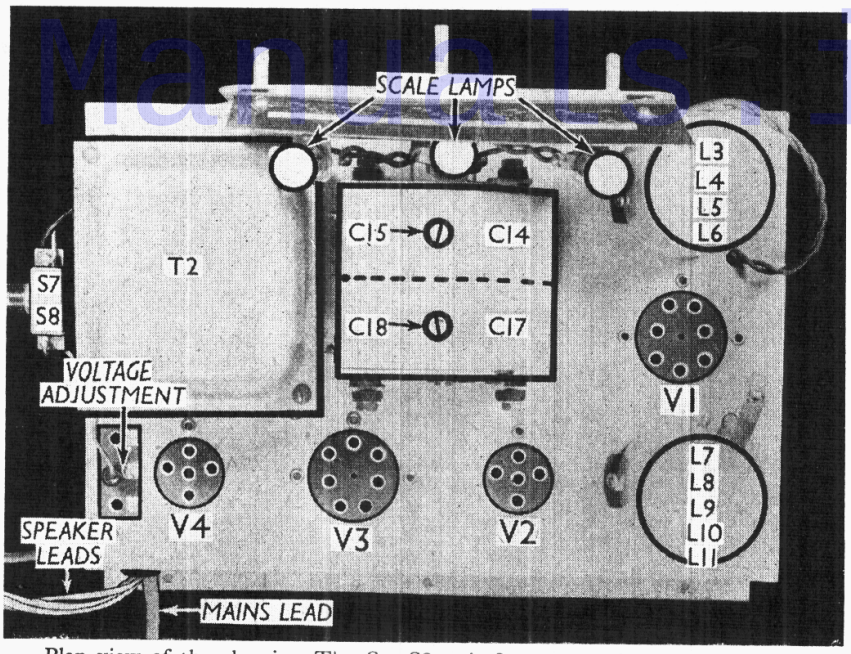
*10,000 Ω with VP4B.

| | Condensers | Values (μF) |
|---|---|---|
| C1 | Aerial series condenser | 0·0001 |
| C2 | V1 S.G. by-pass | 0·1 |
| C3 | V1 cathode by-pass | 0·1 |
| C4 | Reaction series condenser | 0·0005 |
| C5 | V2 grid condenser | 0·0001 |
| C6 | V2 cathode by-pass | 0·1 |
| C7 | V2 anode H.F. by-pass | 0·0005 |
| C8 | L.F. coupling V2 to V3 | 0·1 |
| C9* | V3 cathode by-pass | 25·0 |
| C10 | Tone corrector | 0·01 |
| C11* C12* | H.T. smoothing | 8·0 12·0 |
| C13‡ | Droitwich rejector tuning | 0·0002 |
| C14† | Aerial circuit tuning | 0·0005 |
| C15‡ | Aerial circuit trimmer | — |
| C16† | Reaction control | 0·0005 |
| C17† | H.F. transformer tuning | 0·0005 |
| C18‡ | H.F. transformer trimmer | — |

* Electrolytic. † Variable. ‡ Pre-set.




Circuit diagram of the Burgoyne "Hollywood AC3" receiver. Note the iron-cored tuning coils, and the Droitwich rejector circuit L1, C13.




Plan view of the chassis. The S7, S8 unit fits on the side of the cabinet.

| | Other Components | | Approx. Values (ohms) |
|---|---|---|---|
| L1 | Droitwich rejector coil | .. .. | 31·0 |
| L2 | Aerial choke coil | .. .. | 21·0 |
| L3 | Aerial coupling coils | .. | 0·6 |
| L4 | | | 4·6 |
| L5 | Aerial tuning coils | .. | 2·2 |
| L6 | | | 10·5 |
| L7 | H.F. transformer primary | | 1·2 |
| L8 | | | 4·8 |
| L9 | Reaction coil | .. .. .. | 2·2 |
| L10 | H.F. transformer secondary | | 2·2 |
| L11 | | | 10·5 |
| L12 | V2 anode H.F. choke | .. .. | 280·0 |
| L13 | Speaker speech coil | .. .. | 1·6 |
| L14 | Hum neutralising coil | .. .. | 0·1 |
| L15 | Speaker field coil | .. .. | 2,000·0 |
| T1 | Speaker input trans. | Pri. .. | 770·0 |
| | | Sec. .. | 0·25 |
| T2 | Mains trans. | Pri. total .. | 27·5 |
| | | Heater sec. .. | 0·05 |
| | | Rect. heat. sec. | 0·1 |
| | | H.T. sec. total | 640·0 |
| S1-S5 | Waveband switches | .. .. | — |
| S6 | Gram. pick-up switch | .. | — |
| S7, S8 | Mains switches | .. .. | — |
| F1,F2 | Mains circuit fuses | .. .. | — |

## VALVE ANALYSIS

Voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 225 V, using the 220-230 V tapping on the mains transformer. The volume control was turned so that the whole of the resistance was out of circuit, but the vanes of the reaction condenser were not fully in mesh, that is, the spindle was turned through an angle of about 90 degrees. There was no signal input.

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 HP4115 | 270 | 5·0 | 92 | 1·7 |
| V2 HL4 | 77 | 4·0 | — | — |
| V3 APP4C | 240 | 41·0 | 272 | 5·1 |
| V4 APV4 | 345† | — | — | — |

† Each anode, A.C.

## GENERAL NOTES

**Switches.** — **S1 - S5,** the waveband switches, and **S6,** the pick-up switch, are all ganged together in a single unit, seen in the under-chassis view. The table below gives the switch positions for the various control knob settings, O indicating open, and C, closed.

| Switch | M.W. | L.W. | Gram. |
|---|---|---|---|
| S1 | C | O | O |
| S2 | C | O | O |
| S3 | C | O | O |
| S4 | C | O | C |
| S5 | C | O | C |
| S6 | O | O | C |

**S7** and **S8** are the two Q.M.B. mains switches, in a single unit, mounted at the side of the cabinet.

**Coils.**—**L1, L2** and **L12** are multi-layer coils mounted beneath the chassis. **L3-L6** and **L7-L11** are in two screened units on the chassis deck.

**Scale Lamps.**—There are three of these, connected in parallel. They are all of the M.E.S. type, and are marked "6 V." 6.3 V, 0.3 A types would be suitable.

**External Speaker.**—There is no provision on the chassis for this, but a high resistance type could be connected across the primary of **T1**.

**Condensers C9, C11, C12.**—These are three dry electrolytic types in a single unit beneath the chassis, having a common negative (black) lead. The positive of **C9** (25 $\mu$F) is the green lead, that of **C11** (8 $\mu$F) the yellow lead, and that of **C12** (12 $\mu$F) the red lead.

**Condenser C16, Resistance R4.**—The reaction condenser and gain control are ganged together.

**L1, C13.**—These form the Droitwich rejector. **L1** may not be centre-tapped in some chassis.

**Resistance R10.**—This may be 140 O.

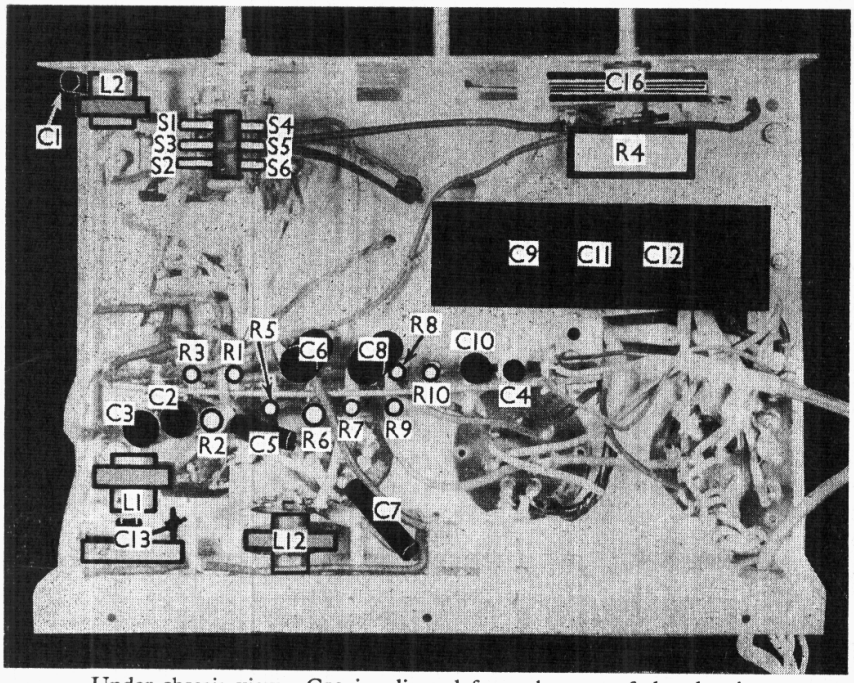
**Resistance R1.**—This is 50,000 O in our chassis, which employs Tungsram valves. Where Mullard valves are used, **R1** becomes 10,000 O.

**Valve V1.**—If a Mullard VP4B is used, the top cap connection is the control grid, and not the anode as in the Tungsram HP4115. Hence the two valves are not interchangeable unless the wiring is suitably modified.

**Valve V3.**—Note that the Mullard Pen4VB has its suppressor grid connected internally, and not to Pin 1 as in the Tungsram APP4C.

**Condenser C2.**—This may be returned to cathode of **V1**, instead of to chassis.

**Fuses F1, F2.**—These are two 2 A glass tubular types, fitted in the special mains plug.




Under-chassis view. C13 is adjusted from the rear of the chassis.