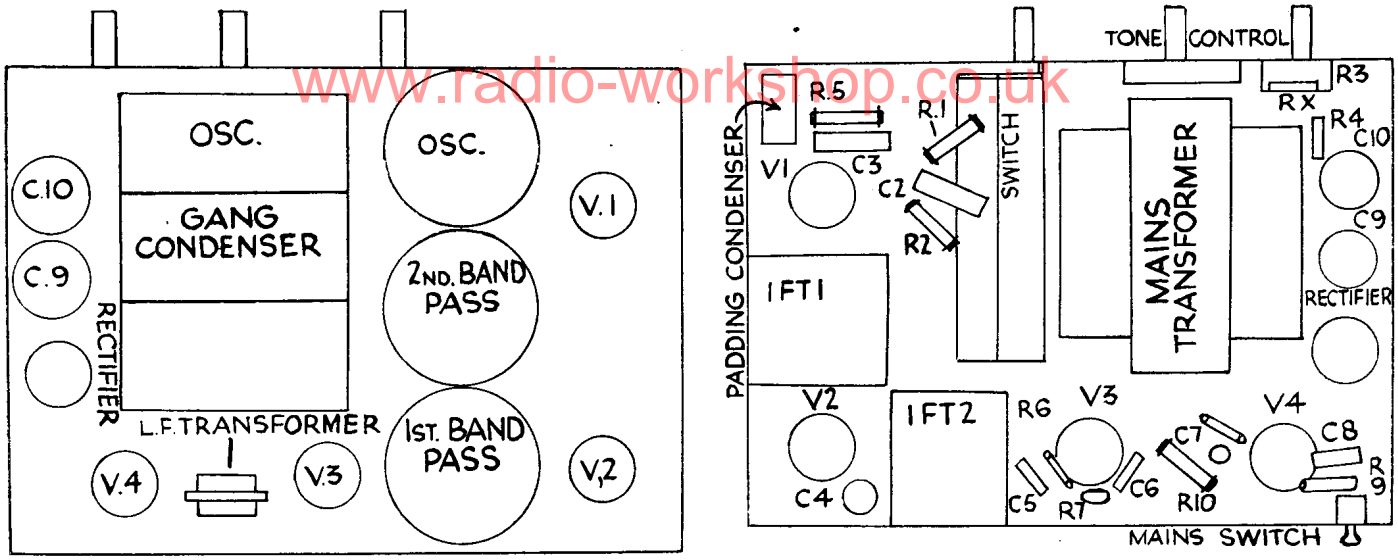
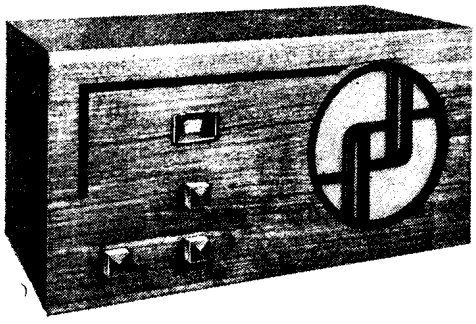



*The appearance of the Climax S4 chassis suggests a straight receiver, as the I.F. transformers are hidden beneath the base plate. This can be appreciated after a glance at these layouts of the top (left) and bottom (right) of the chassis. The resistance RX, shown across the volume control R3, will not be found in all models. (See note given in resistance table.)*

# CLASS B "THREE" BY BURGOYNE



*Detector, driver and Class B valves, are used in the Burgoyne Class B Three.*

**Circuit.**—A leaky grid detector, H.2 (V1), with reaction, has a single aerial tuner in its grid circuit. One fixed aerial series condenser, and a fixed and variable in series, provide the necessary selectivity. The detector is filter fed to the first L.F. transformer and the driver valve.

The driver valve, L.2 (V2), has a .25 megohm resistance connected across the grid circuit (secondary of L.F. transformer) and is followed by a conventional driver transformer.

The output valve, PD220 (V3), is a class B type, operating without external bias. A tone compensating filter, consisting of a condenser and resistance in series is connected between each anode and HT +.

A large permanent magnet speaker is used and the leads to it are taken from plugs.

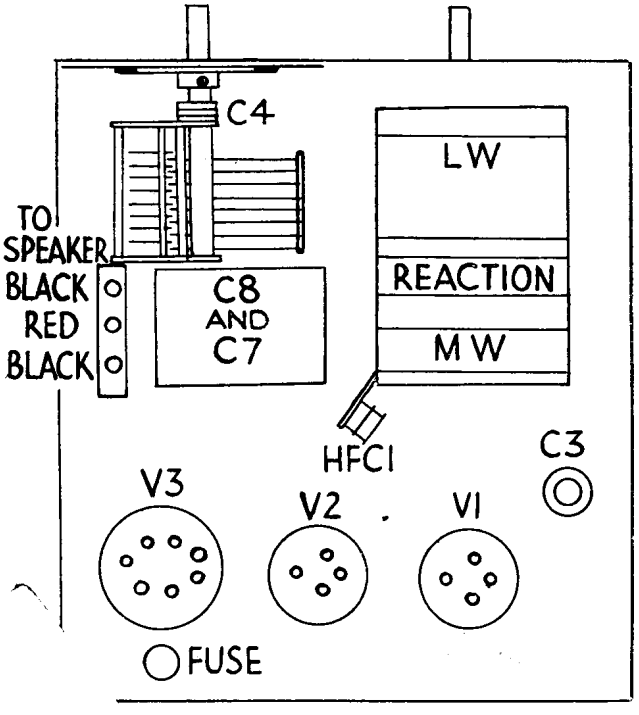
**Special Notes.**—The aerial circuit is worthy of note. The medium wave winding is in two sections and the long wave winding is connected between them. For use on MW's, the LW winding is short circuited and is not at earth potential.

When the switch is open for long waves, the opposing ends of the coil are together and the aerial is taken to the centre tap.

A small H.F. choke mounted on the coil former (HFC1) prevents the local station breaking through on the long waves.

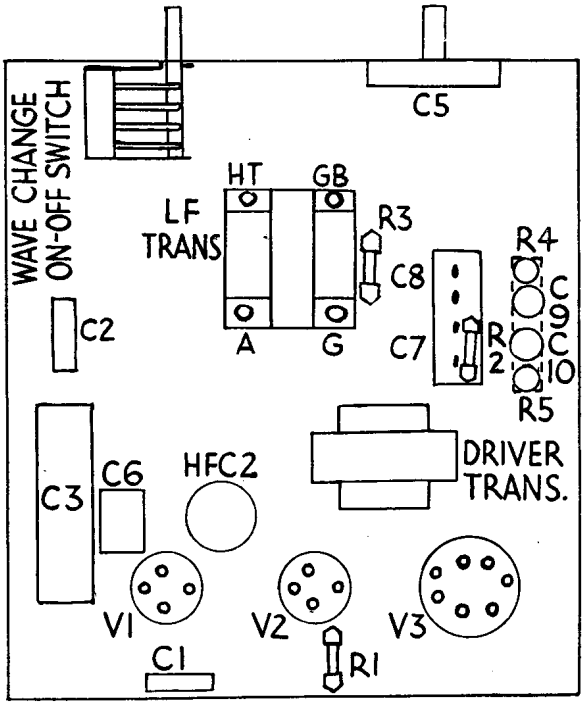
A fuse is inserted in the HT — lead and whenever the set fails to function and the batteries show full voltage the fuse should be tested.

*(Continued on next page.)*




*(Left): The one and only coil in the Burgoyne set is of large size, and is situated on the right-hand side of the chassis when looking from the rear.*

*(Right): The components in the Class B Three are well spaced, and the small ones are suspended in the wiring. All are standard products which are easily replaceable.*



## BURGOYNE CLASS B THREE (Cont.)

**Quick Tests.**—Touch socket labelled "grain" and if a loud whistle is heard the trouble lies in the aerial circuit.

**Removing the Chassis.**—Turn dial to low reading, as there is danger of damaging it when sliding the chassis out. Disconnect batteries. Undo the knobs (grub screw). Un-

(Continued in column 3.)

### VALVE READINGS

With 120v H.T. and GB—1 = 1.5 v, GB—2 = 3v.

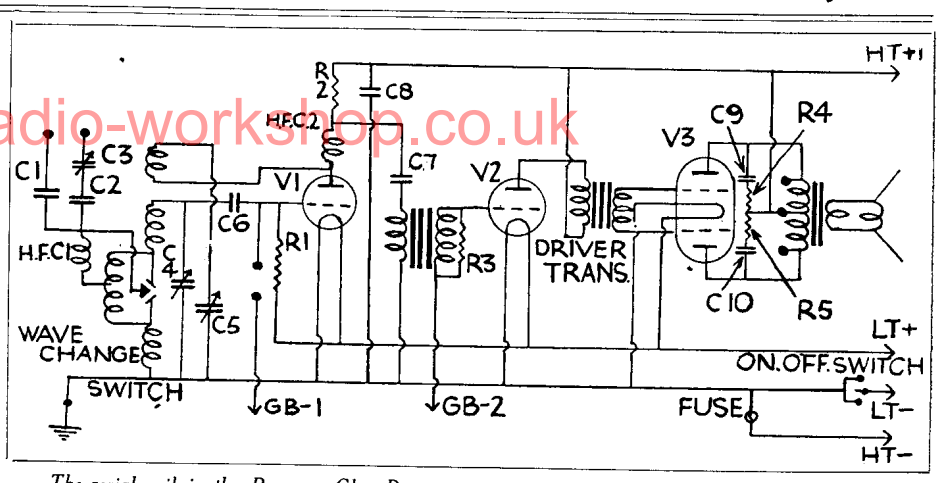
| Valve. | Connection. | Volts. | M.A. |
|---|---|---|---|
| V1 H2 ... | anode | 82 | 1.2 |
| V2 L2 ... | anode | 118 | 2.4 |
| V3 PD 220 ... | anode | 120* | 1 each anode |
| Set current ... | | | 5.6 |

* As the resistance of the primary of the output transformer is only 225 ohms, each section the voltage drop below that of the HT+tapping is negligible.

### CONDENSERS

| C. | Purpose. | Mfd. |
|---|---|---|
| 1 | Series aerial (long aerial) ... | .0005 |
| 2 | Series aerial (medium aerial) ... | .0003 |
| 3 | Semi variable (medium aerial) | .0003max |
| 4 | Tuning condenser ... ... | .0005 |
| 5 | Reaction condenser ... ... | .0005 |
| 6 | V1 grid condenser ... ... | .0003 |
| 7 | Filter feed to L.F. transformer | 1 |
| 8 | Across H.T. battery ... ... | 1 |
| 9 | Tone compensation V3... ... | .01 |
| 10 | Tone compensation V3... ... | .01 |

In our model an additional condenser (not shown in diagrams) was connected between the anode of V1 and earth.




*The aerial coil in the Burgoyne Class B Three has the long wave section interposed between the two sections of the medium wave winding and the aerial lead includes a variable selectivity control.*

### RESISTANCES

| R. | Purpose. | Ohms. |
|---|---|---|
| 1 | V1 grid leak ... ... ... | 2 meg. |
| 2 | Filter coupling to L.F. transformer. | 30,000 |
| 3 | Across L.F. transformer secondary. | 250,000 |
| 4 | V3 tone compensation ... ... | 5,000 |
| 5 | V3 tone compensation ... ... | 5,000 |
| — | L.F. transformer primary ... | 600 |
| — | L.F. transformer secondary ... | 10,500 |
| — | Driver transformer primary ... | 350 |
| — | Driver transformer secondary | 550 each half |
| — | Output transformer primary ... | 225 each half |

(Continued from column 1.)

screw the lock nut on the condenser spindle. Remove speaker plugs from the sockets.

Remove two screws on back plate. (In some cases two additional screws will be found about 2½ inches from the back and at opposite sides of the chassis.)

Slide chassis out.

**General Notes.**—As the L.F. transformer is filter-fed, it is unlikely that the primary will ever be burnt out, and as the output transformer is substantial, this should not give any trouble.

It is immaterial which way round the L.S. plugs are inserted as long as the red one is in the middle socket.

**Replacing the Chassis.**—Slide chassis into position. Insert two screws in back plate. Replace lock nut on condenser spindle and replace the knobs.

# COSSOR'S 635 MAINS SUPERHET

**Circuit.**—The first detector, a variable-mu H.F. pentode MVS/Pen (V1.), is preceded by a band-pass aerial tuner. The seven-pin type valve is used, and the suppressor grid is connected to the oscillator coil. As a separate oscillator valve is used, the primary of the first I.F. transformer is connected straight into the anode circuit.

The oscillator valve, 41MP (V2), is employed in the conventional manner, the oscillator tuning condenser being of the same type as the band-pass. Extra padding condensers are required.

The I.F. valve, MVS/Pen (V3), has the variable resistance (V.C.) in common with the first detector in its cathode circuit. It is coupled to the second detector by the second I.F. band-pass transformer (frequency 134 Kc.).

The second detector, MSG/HA (V4), works as an anode bend S.G. detector, and is resistance coupled to the output valve.

The output valve, MP/Pen (V5), has a variable resistance in series with a fixed condenser (R15, C25) across its grid circuit, acting as a variable tone control. This obviates the necessity for tone compensation in the anode circuit.

Rectification is by full-wave 442 BU, and the L.S. field is used for smoothing in the H.T. + lead with two 8 mfd. electrolytic condensers.

**Special Notes.**—The MVS1 Pen valves have seven-pin bases, the connections to which are, clockwise and looking from underneath:—Heaters, together at one end; cathode; auxiliary grid; metal coating; control grid; suppressor grid. Anode is at top of bulb.

In both V1 and V3 the metal coatings are earthed, and in V3 the suppressor grid is connected to the cathode.

The pick-up jack is connected to the grid of V4 through the secondary of the second I.F. transformer.

An H.F. stopper is included in the second detector anode circuit R13, with C22 and C23 as by-pass condensers.

### VALVE READINGS

V.C. max. and no signal.

| Valve. | Connections. | Volts. | M.A. |
|---|---|---|---|
| V1 MVS/Pen ... | anode ... | 220 | 2 |
| | aux. grid | *85–125 | .5–2 |
| V2 41MP ... | anode ... | *50–90 | 6–10 |
| V3 MVS/Pen ... | anode ... | 220 | 3 |
| | aux. grid | 85–125 | — |
| V4 MSG/HA ... | anode ... | 110 | .1 |
| | screen ... | 50 | — |
| V5 MP/Pen ... | anode ... | 200 | 30 |
| | aux. grid | 200 | 6 |

* The voltages and currents of V1 and V2 vary according to the position of the tuning.

### CONDENSERS

| C. | Purpose. | Mfd. |
|---|---|---|
| 4 | Mains aerial ... ... ... | .0001 |
| 5 | Aerial series condenser ... | .0003 |
| 6 | Aerial coil coupling (inside container). | .000014 |
| 7 | L.W. padding condenser (inside 2nd band-pass). | .000023 |
| 8 | Band-pass coupling ... ... | .1 |
| 9 | V1 cathode ... ... ... | .1 |
| 11 | Padding condenser L.W. on oscillator. | .000675 |
| 12 | Tracking condenser on oscillator | .00145 |
| 13 | Decoupling reaction coil ... | .1 |
| 18 | V3 cathode ... ... ... | .1 |
| 19 | Aux. grids of V1 and V3 ... | .1 |
| 20 | Screen V4 ... ... ... | .1 |
| 21 | V4 cathode, electrolytic (12 volt working). | 50 el. |
| 22 | By-pass anode V4 ... ... | .0002 |
| 23 | By-pass anode V4 ... ... | .0002 |
| 24 | L.F. coupling, V4, V5 ... ... | .01 |
| 25 | Tone control circuit ... ... | .002 |
| 26 | V5 cathode ... ... ... | 50 el. |
| 27 | Smoothing electrolytic ... | 8 el. |
| 28 | Smoothing electrolytic ... | 8 el. |

**Quick Tests.**—Voltages between terminals on L.S. transformer and chassis:—

Inner terminal (R) ... ... 200 volts.
Middle terminal (Y) ... ... 220 volts.
Outer terminal (B) ... ... 350 volts.
Anode V1 and chassis, V.C. max.—220 volts.
Anode V3 and chassis ... ... 220 volts.

**Removing Chassis.**—Remove knobs (grub screw). Remove three screws from underneath cabinet. Lift chassis out.

**General Notes.**—The connections for the leads from the mains transformer are:—

From smallest bobbin (end): Green leads to set filaments; (inner): Yellow leads to rectifier filament.

Middle bobbin: Green leads to rectifier anodes; red leads and black leads to earth.

The switch has wiping contacts, but should

(Continued on next page.)

### RESISTANCES

| R. | Purpose. | Ohms. |
|---|---|---|
| 1 | Volume control ... ... ... | 4,000 var. |
| 2 | Across band pass condenser ... | 2 meg. |
| 3 | Aux. grids ptr. V1 and V3 ... | 20,000 |
| 4 | Osc. valve V2 ... ... ... | 20,000 |
| 5 | Lower part of aux. grid ptr. ... | 25,000 |
| 6 | V1 fixed bias resistor ... ... | 450 |
| 7 | Across padding tracking condensers, C11, C13. | 20,000 |
| 8 | V3 fixed bias resistor ... ... | 350 |
| 9 | Part of bias resistor V4 cathode | 300 |
| 10 | Part of bias resistor V4 cathode (shorted on gram.). | 300 |
| 11 | Top of S.G. ptr, V4 ... ... | 40,000 |
| 12 | Lower part of S.G. ptr. V4 ... | 12,000 |
| 13 | H.F. stopper ... ... ... | 50,000 |
| 14 | L.F. coupling resistance ... | .25 meg. |
| 15 | Tone control, grid V5 ... ... | .25 meg. var. |
| 16 | H.F. stopper, grid V5 ... ... | .1 meg. |
| 17 | Grid leak V5 ... ... ... | .5 meg. |
| 18 | V5 cathode bias... ... ... | 300 |
| — | L.S. field (Y to B) ... ... | 2,000 |
| — | Output transformer primary (Y to R). | 360 |