CLIMAX S4 A.C. MAINS SUPER-HETERODYNE

Circuit.—The combined first-detector-oscillator valve, SP4 (plain) (V1), an H.F. pentode, has a band-pass aerial tuner in its grid circuit. Anode-grid reaction is used with the coupling to the oscillator coil in the cathode lead. The valve is followed by a band-pass I.F. transformer (frequency 121 kc).

The intermediate valve MM4V (V2) has the manual volume control in the cathode circuit. This latter also forms part of the second channel suppressor circuit. The coupling to the next valve is by a second band-pass I.F. transformer.

The second detector, 354v (met), works on the power grid principle. The grid leak is taken to cathode, which is raised above chassis potential to allow bias when used for gramophone reproduction. The L.F. coupling is true filter fed auto transformer.

The output Pen.4V (V4), has a tone control in the form of a variable condenser across the grid circuit and also an H.F. stopper, R8, connected directly to the grid. Tone compensation is by the condenser C8 between the anode and earth.

The full-wave rectifier 442BU is followed by the conventional smoothing equipment of speaker field and two electrolytic (wet) condensers.

Quick tests.—Voltages between the following points and chassis :—

Speaker transformer, left-hand tag, 350 v.: speaker transformer, 2nd tag from left (brown and white), 260 v.

Anode of MM4V, 270.

Side terminal of pentode, 275.

VALVE READINGS

VC max.

Valve.	Connection.	Volts.	M.A.
V1 SP4 plain ...	anode ...	270	1.15
	screen ...	110	.5
V2 MM4v. ...	anode ...	270	2.3
	screen ...	110	—
V3 354v ...	anode ...	90	4.2
V4 Pen4v ...	anode ...	260	25
	aux. grid	275	10
		340-0-340	
442BU Rectifier	anodes	A.C.	

Removing the chassis.—Undo octagonal headed bolts from the control knobs. (Hold the knobs firmly while doing this, as the components inside may be strained.)

Remove four holding screws from underneath (two under felt pads).

Release screw holding speaker leads to top of cabinet.

Ease the chassis out.

CONDENSERS

C.	Purpose.	mfd.
1	Band-pass coupling.	—
2	Screens of V1 and V2	.1
3	V1 cathode (osc. circuit) ...	.006
4	V2 cathode	.2
5	V3 grid condenser	.0001
6	V3 anode by-pass	.001
7	LF filter to transformer ...	.1
8	V4 anode, tone correction ...	.006
9	Electrolytic smoothing ...	8 el.
10	Electrolytic smoothing ...	8 el.
11	Suppressor circuit	.006

RESISTANCES

R.	Purpose.	Ohms.
1	Top part of screen ptr. ...	10,000
2	Lower part of screen ptr. ...	7,000
3	Manual volume control ...	8,000
4	Series with osc. tuning condenser.	.95
5	V1 cathode bias...	2,500
6	V3 grid leak	1 meg.
7	V3 cathode bias (on gram.) ...	500
8	H.F. stopper, grid V4	50,000
9	V4 cathode bias...	400
10	L.F. coupling to L.F. transformer.	40,000
	L.S. field	1,500
	P. of output transformer ...	430

RX.—In our model the V.C. is 10,000 ohms with a resistance RX of 15,000 across it.

General notes.—The construction and lay-out of this set are remarkably simple.

Resistances and condensers are supported in the wiring as close to their relative components as possible. Switch contacts are easily cleaned by turning the contact makers to the outside and wiping with a clean duster.

Mains transformer connections :—

Next base plate : two outer terminals to rectifier filaments (yellow); middle terminal to H.T. + (C10) (yellow).

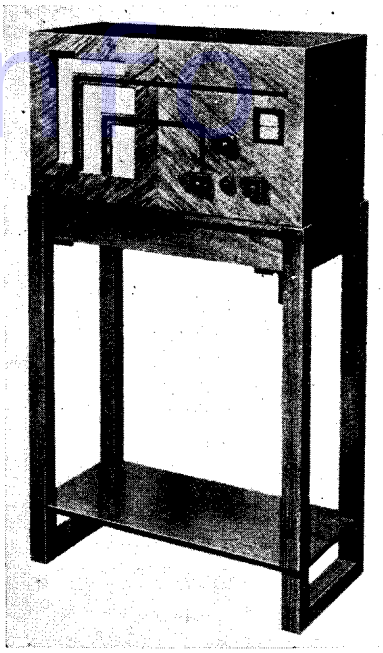
Second row (from front) : (1) black and red, 240 volt tap; (2) brown and green, 230 volt tap; (3) black and yellow, 220 volt tap; (4) blue, 210 volt tap; (5) brown and orange, 200 volt tap; (6) brown and white, mains 0 to switch.

Third row : outers (orange) rectifier anodes, middle C.T. of high voltage A.C. winding and of set heater winding.

Outer row : two heater terminals.

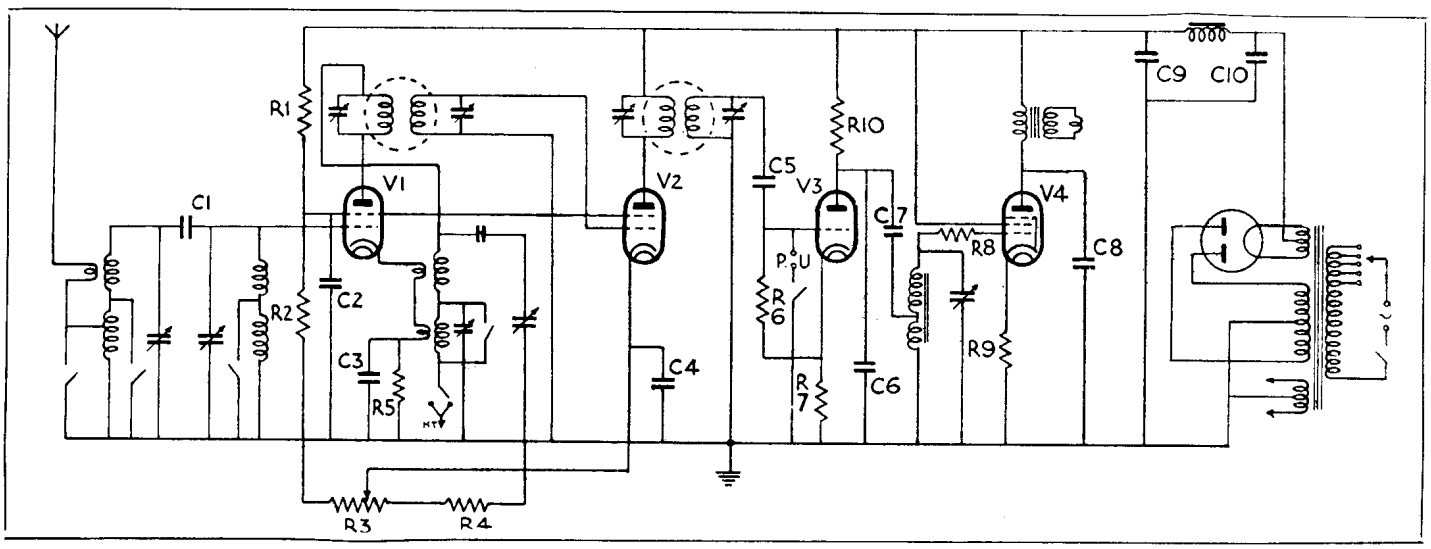
Loudspeaker.—This is the standard Magnavox 144, with 1,500 ohm field. The terminals, looking from back (l. to r.) are :—(1) Blue lead is H.T.+ unsmoothed to L.S. field; (2) brown and white is V4 anode to P. of output transformer; (3) blank; (4) and (5) brown and orange are H.T.+ smoothed from L.S. field and to hum bucking coil.

Replacing the chassis.—Replace chassis in cabinet. Replace four screws underneath, clip speaker cable to top of cabinet and replace knobs.

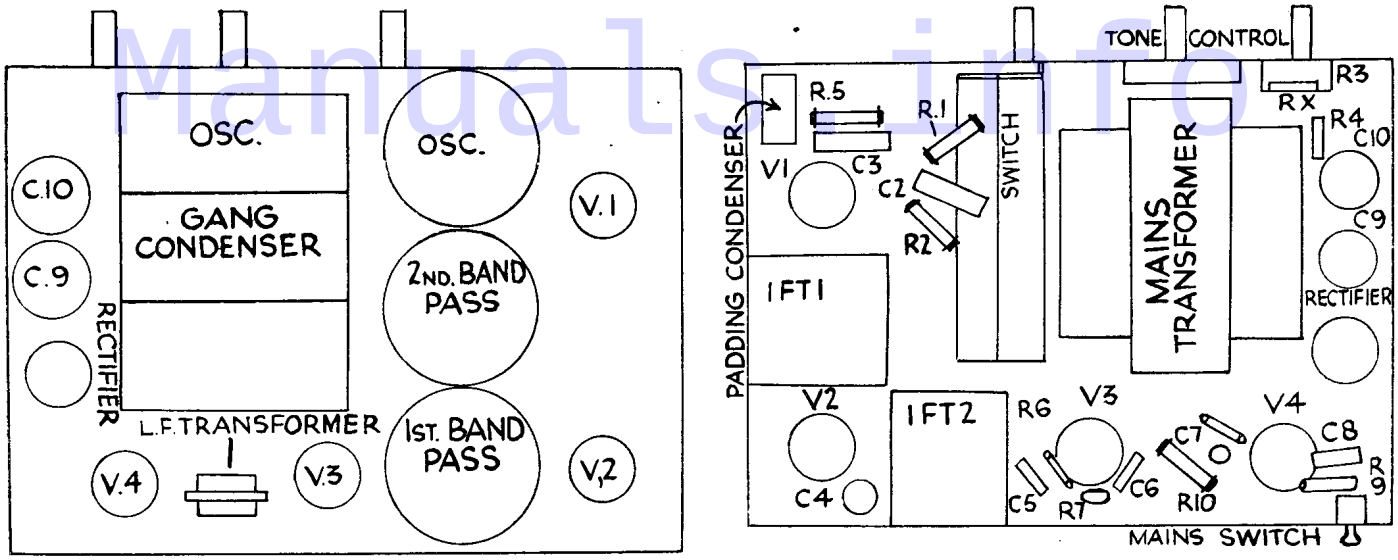


Here the Climax S4 receiver is seen on the pedestal which is obtainable when required. The price of the set is 14 gns. With the pedestal it is 16 gns.

For Chassis Lay-outs of Climax S4 see top of opposite page.

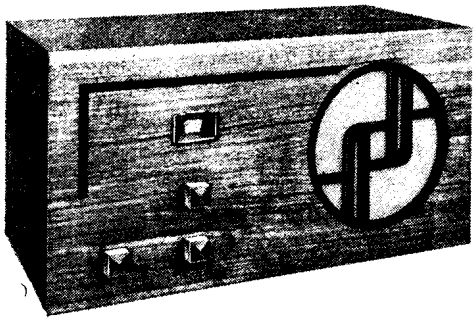


The Climax S.4 is a neat and efficient set using an S.G. valve as first detector-oscillator. The second detector works as a power-grid rectifier and is coupled to the output by an auto transformer. Tone control is by variable condenser across the grid of the pentode.



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.

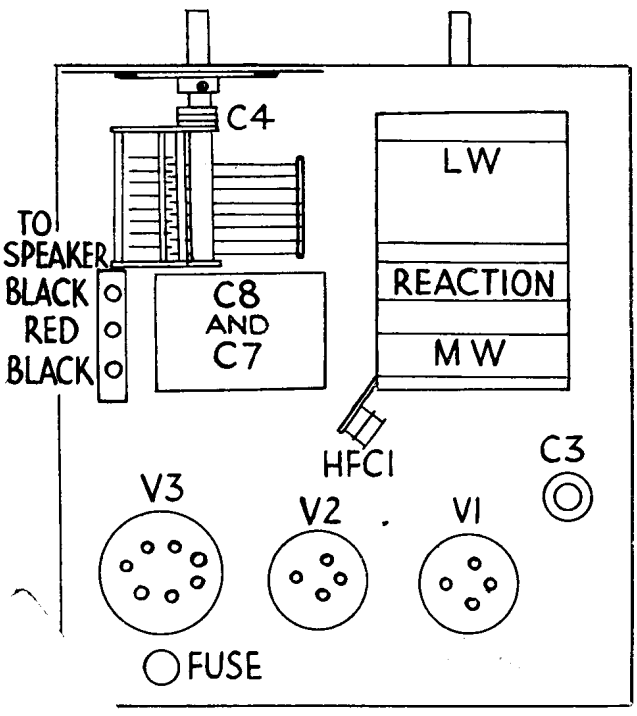
Special Notes.—The aerial circuit is worthy of note. The medium wave winding is in two sections and the long wave winding is connected between them. For use on MW's, the LW winding is short circuited and is not at earth potential.

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.