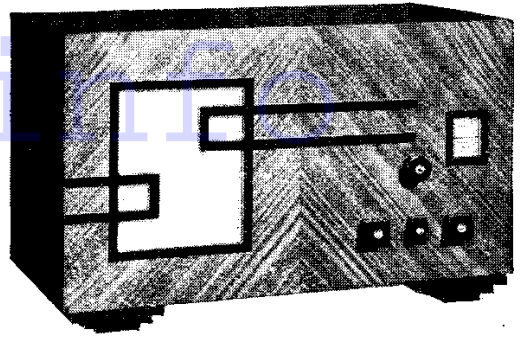


CLIMAX MODEL T.C.111



Climax Radio Electric, Ltd., have listed the popular T.C.111 for two seasons.

Circuit.—An H.F. valve, MM4V (V1), is preceded by band-pass aerial coupling, and its variable- μ characteristic is used for controlling volume.

Coupling to the next valve is by tuned anode, and both the V1 anode and the detector grid leads are taken from the same tapping on the medium wave section. A condenser (C4 is connected to the low H.F. potential end of the coil to decouple the actual H.T. lead and is used without a resistance.

The detector valve, 354V (V2), operates as a power-grid type with a .0001 condenser and .25 megohm grid leak. The grid return is taken to cathode, and a small 50 ohm resistance, R7, is included for bias on gramophone. Reaction is applied to the tuned anode coil, and the L.F. coupling is a parallel-fed transformer.

The output valve, Pen 4V (V3), has a grid stabilising resistance, and is compensated by a .006 mfd. condenser between the anode and chassis.

Mains equipment consists of:—Transformer, full-wave rectifier 442BU, the L.S. field in the positive H.T. lead, and two 8 mfd. electrolytic condensers for smoothing.

Special Notes.—The standard Magnovox 144 speaker, with 2,500 ohm field, is fitted.

In early models volume was controlled by damping the aerial and varying the bias on V1 simultaneously. In later models only the biasing method is used.

Quick Tests.—Voltages between terminal tags on speaker transformer and chassis (looking from back and counting from left).

- (1) H.T. unsmoothed, 360 volts.
- (2) V3 anode, 218 volts.
- (4) and (5) joined, H.T. smoothed 230 volts.

Removing Chassis.—Release speaker (Continued on next page.)

VALVE READINGS

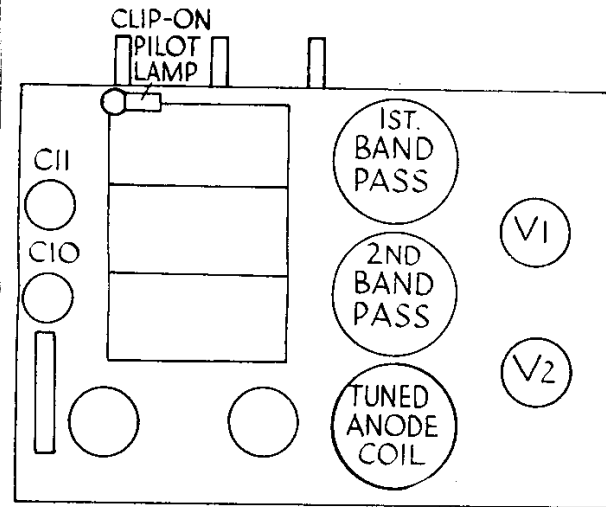
V.	Type	Electrode	Volts	M.A.
1	MM 4V	anode	230	1.8
		screen	85	
2	354V	anode	102	3.4
		anode	218	26
3	Pen. 4V	aux. grid	230	10

CONDENSERS

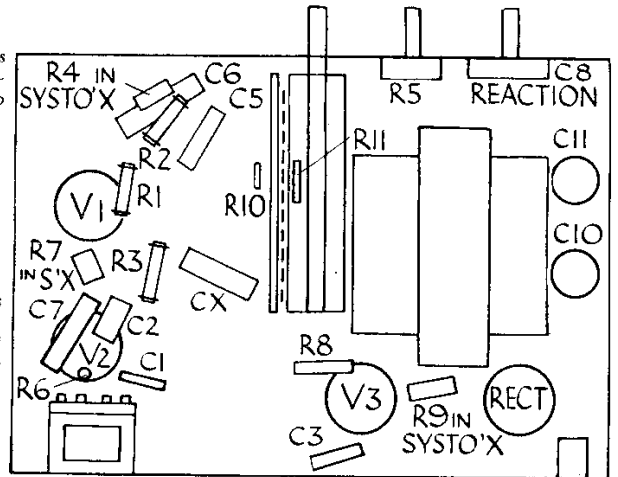
C.	Purpose	Mfd.
1	Coupling V1 to V2	.0001
2	V2 anode by-pass	.0003
3	Pentode compensating V3 anode	.006
4	Decoupling V1 anode lead	.1
5	V1 screen	.1
6	V1 cathode	.1
7	L.F. filter coupling V2, V3	.1
10	HT smoothing	8 (e.l.)
11	HT smoothing	8 (e.l.)

RESISTANCES

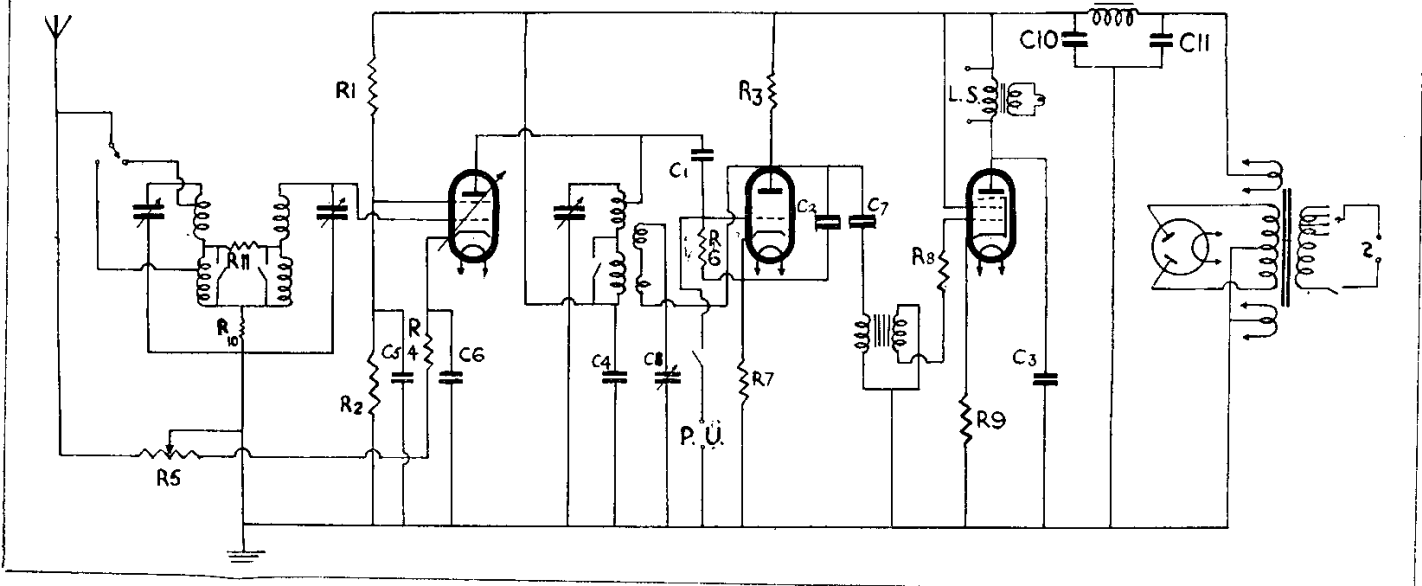
R.	Purpose	Ohms.
1	Top part of V1 screen ptr.	20,000
2	Lower part of V1 screen ptr.	15,000
3	V2 anode coupling	44,000
4	V1 cathode bias	240
5	Volume control ptr.	10,000
6	V2 grid leak	.25
7	V2 cathode bias on "gram"	50
8	V3 grid stabiliser	50,000
9	V3 cathode bias	290
10	Band pass coupling	8
11	Band pass coupling	50,000
	LS field	2,500
	Output transformer—Primary	475
	LF transformer—	
	Primary	400
	Secondary	2,500



On the left, is the layout diagram of the top of the T.C.111 chassis.



On the right is the "below-deck" layout and below is the circuit diagram.



CLIMAX T.C. III MAINS RECEIVER (Cont.)

cable from cleat in top of cabinet. Hold knobs firmly while removing octagonal headed screws, then pull them off.

Remove four screws underneath (two under felt supports) and lifting slightly to right to allow electrolytic condensers to clear, lift chassis out.

To remove speaker (when necessary) undo the four outside wood screws on the baffle.

General Notes.—Switch contacts are of the wiping type. To clean them turn the rotating contacts outwards.

Connections on mains transformer (counting from front in each case):—

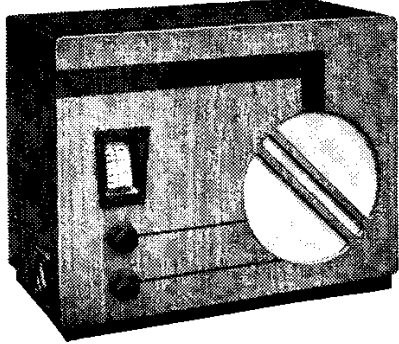
Next base plate (1) and (2) rectifier filaments.

Second row:—(1) 240 volt. mains tapping; (2) 230 volt tap; (3) 220 volt tap; (4) 210 volt tap; (5) 200 volt tap; (6) mains 0 to switch.

Third row: (1) and (3) rectifier anodes; (2) C.T. (H.T. -).

Outer row:—(1) and (2) set filaments. The trimmers are mounted on the sides of the tuning condensers but can be reached by inserting a thin insulated screwdriver beside the electrolytic condensers.

Replacing Chassis.—Lay chassis inside cabinet and insert holding screws. Before tightening them fit the control knobs and make sure that they are not rubbing against the cabinet before tightening the holding screws. Clip the speaker cable as it will foul the condenser rotors.



Notes on the 1933 model of this receiver, the 333, are also given in this review. On the right are the circuit and layouts.

Circuit.—The H.F. valve, VS24 (V1) is preceded by a band pass filter with capacitive coupling. As usual, the aerial coil is suitable for "rejectostatic" reception or with ordinary connections.

Coupling to the next valve is by tuned secondary H.F. transformer. The variable mu characteristic is used for controlling volume by a potentiometer across the G.B. battery.

A screen-grid detector valve, S23 (V2) operates on the leaky grid principle, with low values of condenser and leak. Reaction is applied to the grid coil, and coupling to the output valve is by "straight" transformer.

The output valve, P.T.2 (V3), a pentode, has a stabilising resistance in the grid lead, and optional tone control is provided by a condenser between the anode and chassis. A permanent magnet M.C. speaker is used.

Special Notes.—Differences between the 1933 (333) model and the 1934 model (333A):—

In the 333 the small components were mounted on a panel at the side of the chassis.

An H.F. choke was included in the detector (V2) anode circuit, but is omitted in the 333A.

A resistance of 50,000 ohms was connected in series with a .01 mfd. condenser between the high (A.C.) potential end of the L.F. transformer primary and chassis. In the early models of the 333A the resistance R3 is, instead, connected across the primary terminals of the transformer and is of 100,000 ohms. This improves quality and is recommended for inclusion when servicing 333s.

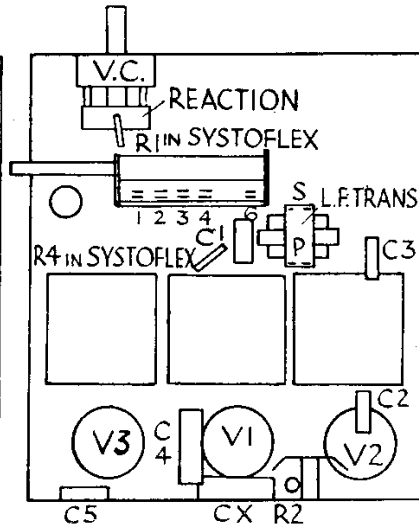
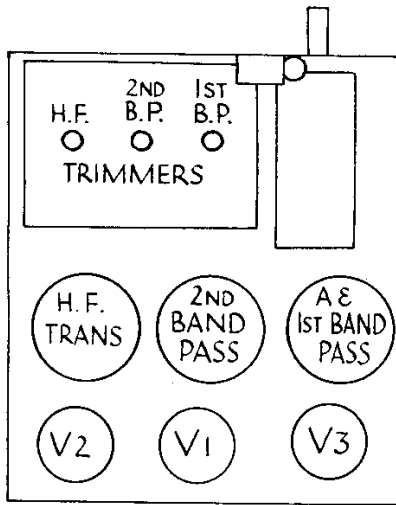
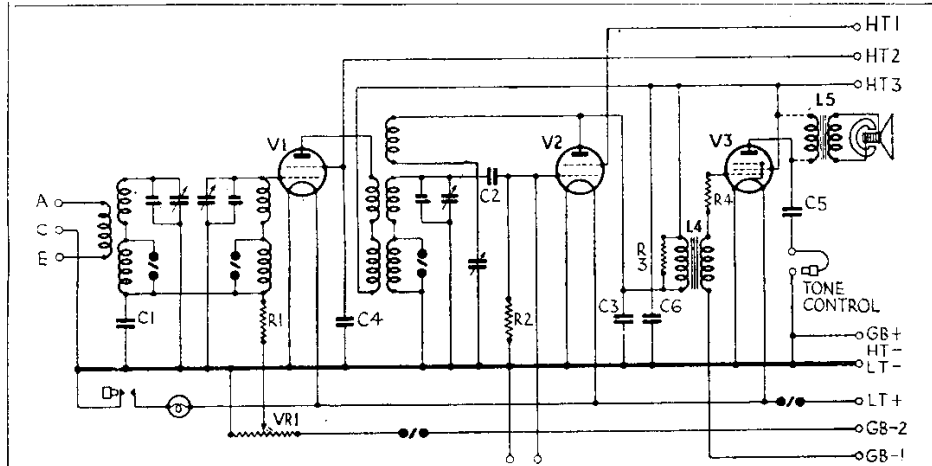
In late models of the 333A this resistance is omitted, but an additional refinement is included. The L.T.+ lead from the switch is connected to the pentode (V3) filament, from which it passes to an extra winding on the L.F. transformer (resistance only .13 ohm) to the L.T.+ sockets of V1 and V2. The flow of current through the winding is in the opposite direction to that of the V2 anode current in the primary and prevents the lowering of the primary inductance.

As H.F. impulses are present in the L.T. leads, a condenser CX of .1 mfd. is connected directly between the L.T.+ of the H.F. valve and negative filament. This prevents H.F. being transferred to the compensating winding.

Removing Chassis.—Remove batteries and valves, undo two bolts holding battery platform, and pull off knobs and switch control (at side).

Remove three screws underneath cabinet.

K.-B. 333A BATTERY SET



Slide battery compartment half out and undo cleat holding cable. Unsolder leads from speaker and lift chassis out.

To remove speaker, when necessary, undo four wood screws holding baffle to front.

General Notes.—Owing to the transformer winding being interposed in the L.T.+ lead to the detector and H.F. valves and the precaution of taking a separate negative lead (Continued in col. 1, page 72.)

VALVE READINGS

Battery connections:—HT— and GB+, black. HT+1 (light blue), 60v.; HT+2 (brown), 72 v.; HT+3 (royal blue), 120 v.; GB—1 (green), —4.5 v.; GB—2 (yellow), in—6 or —9 v.

Valve	Type	V.C. Max	Electrode	Volts.	M.A.
1	VS24	...	anode	120	.4
			screen	99	
2	S 23	...	anode	115	2
			screen	60	
3	PT 2	...	anode	115	3.2
			aux. grid	120	.8

Alternative valves:—
V 1, PM12 M.
V 2, PM 12A, 215SG, 5B1.
V 3, PM 22A, 220 HPT, Pen. 220, Pen. B1.

CONDENSERS

C.	Purpose.	Mfd.
1	Band pass coupling	.02
2	Detector grid	.0001
3	Detector anode by-pass	.0002
4	V1 screen	.1
5	Pentode compensation anode V3	.005
6	Across HT	2 (el.)
CX	By-passing HF from compensating winding	.1

RESISTANCES

R.	Purpose.	Ohms.
1	Across C1 to bias V1	500,000
2	V2 grid leak	500,000
3	Across P of L.F. transformer*	100,000
4	Stabiliser in grid of V3	250,000
VRI	Volume control (across G.B.)	10,000
—	Intervalve transformer:—	
	Primary	1,400
	Secondary	6,400
—	Output transformer:—	
	Primary—Goodman	900
	Rola	780

* See special notes.