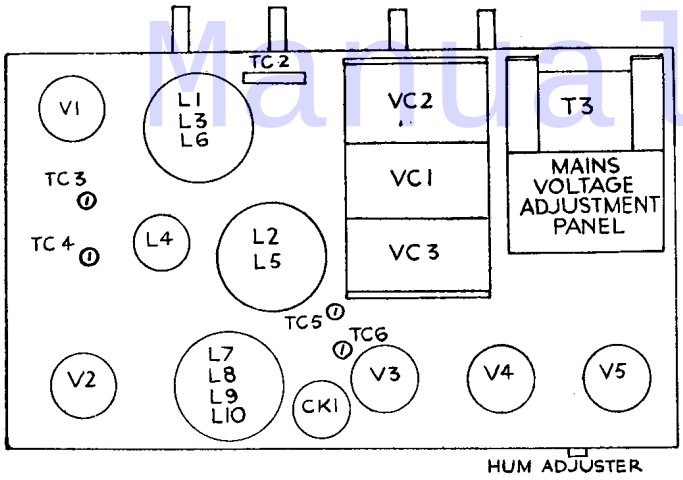
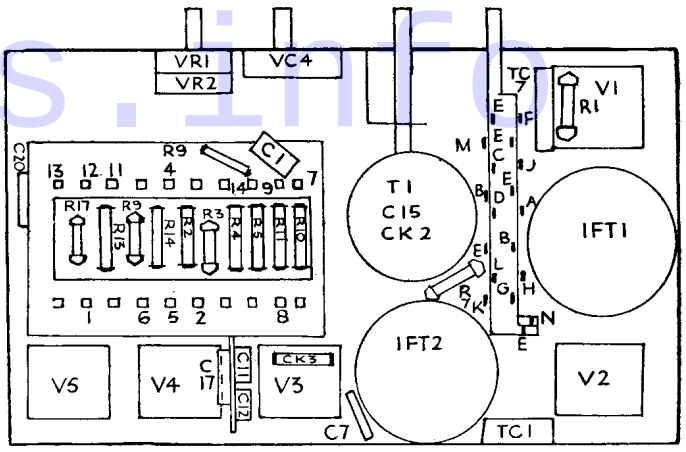




The top (left) and underneath (right) lay-outs of the Marconiphone 272 and 274 chassis. In the third column the connections of the condenser block are shown.

Condenser Block and Resistance Panel.—These are made as one unit, and if any defect develops in the block the unit should be replaced. To replace: Undo the four holding bolts, loosen the small condenser panel at the side and unsolder the leads. If care is taken the condenser block can be replaced without disturbing the leads.

Switch.—If the switch has to be removed:—Remove the four holding screws from above chassis; release the bracket holding the spindle; unsolder the leads to the coded terminals and ease the switch out.

In replacing, use the same special screws and make sure that the shaped cam disc is engaging properly in the mains switch toggle. The forward position is "OFF."

Second Channel Interference.—The only adjustment that should be made on the H.F. side without the aid of special oscillator ganging equipment is that of the "image" suppressors, TC2 and L4.

If a strong second channel is experienced below 350 metres, tune accurately to the image and tune it "out" by means of TC2. If the image is above 350 metres, tune the set to the image and tune it "out" by adjusting the position of L4 on its bracket, which is slotted to allow this.

Replacing Speaker and Chassis.—Replace speaker first, remembering the locking washers. Replace chassis and screw in the four holding bolts in 272 or screws in 274. Reconnect the L.S. leads (and PU plugs and motor leads in 274). Replace knobs in 272, and panel and knobs in 274.

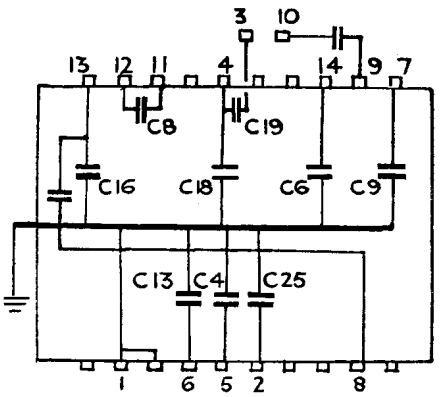


DIAGRAM OF CONDENSER BLOCK

McMICHAEL "LODEX" BATTERY FIVE

Circuit.—*The first H.F. valve, SG215A* (*V1*) is preceded by a single tuned aerial circuit with alternative series aerial condensers. Tuned anode coupling is employed to the *second H.F. valve, SG215A* (*V2*), which is coupled by a special semi-aperiodic choke to the grid of the detector.

The detector H.L.2 (*V3*) is auto-transformer coupled to the next stage. *The driver valve, P220* (*V4*) is followed by a conventional driver transformer, and the *output valve, a PD220* (*V5*) has a condenser connected between the grids by a switch which forms the tone control. As usual a small condenser C17 is connected between one anode and H.T.+.

A permanent-magnet moving-coil speaker has the output transformer mounted on it.

Special Notes.—Some models use two H.T. batteries, and the bias for the valves is obtained by connecting the H.T.− leads to the opposite ends of the bias potentiometers R2 and R11, thus making only one H.T.− at chassis D.C. potential.

In the modified version, utilising a single battery, a G.B. battery is included with the H.T.

Our model had another alteration in having T1 as a direct-coupled transformer. The types are easily recognised. The auto-coupler is in a grey cylindrical container, and the straight transformer is in the usual brown bakelite case.

Operating Voltages.—

Two-battery type: H.T.1, + 120 volts, − 0 v.; H.T.2, + 120 v., − 0 v.; L.T.+; L.T.−.

Single-battery type: H.T.2, 120 volts; H.T.1, 70 v.; G.B.−, − 4½ v.

VALVE READINGS

(With 130v H.T. and V.C. max.)

Valve.	Connection.	Volts.	M.A.
V 1 SG215A ...	anode ...	120	1.1
	screen ...	75	—
V 2 SG215A ...	anode ...	120	1.1
	screen ...	75	—
V 3 HL2 ...	anode ...	100	2.6
V 4 P220 ...	anode ...	120	4.4
V 5 PD220 ...	each anode	125	—

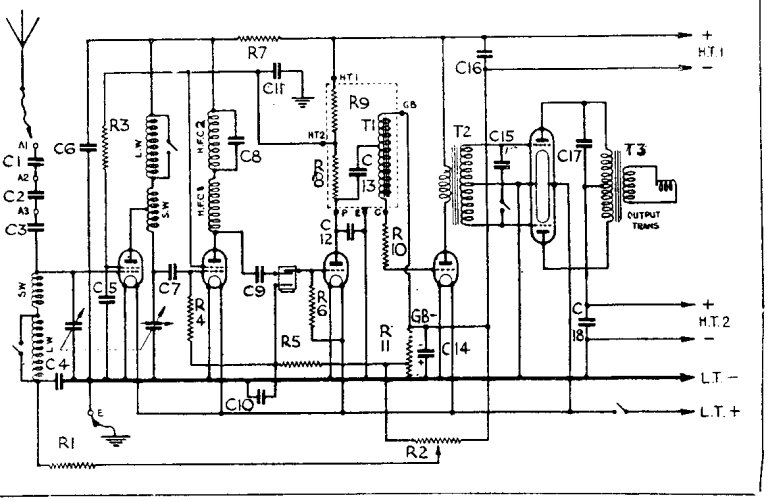
Set current V.C. max. and no signal, 11.5 ma.

Set current V.C. max. and moderate signal, 13 (average).

Note.—The set current cannot be taken in the H.T.− lead, as the resistance of the meter causes the valves to be over-biassed and a very low reading is recorded. Taken in the H.T.+ leads, H.T. +1 was .5 ma., H.T. +2 was 11 ma.

Removing Chassis.—Remove batteries, undo clip alongside speaker holding speaker and L.T. leads together and remove V.C. knob (grub screw) and back plate. Remove

(*Continued in col. 3, page 4.*)



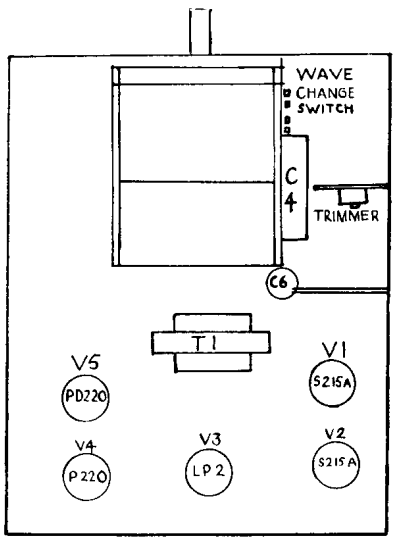
The circuit diagram of the McMichael "Lodex" a five-valve battery receiver. The volume control operates the filament switch in the minimum position.

McMICHAEL LODEX BATTERY FIVE (cont.)

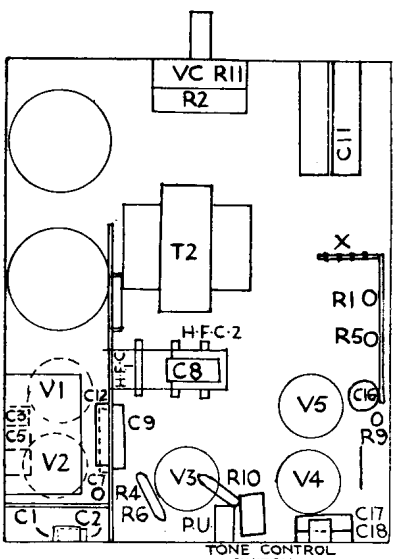
CONDENSERS

C.	Purpose.	Mfd.
1	A 1 aerial series condenser ...	.000005
2	A 2 aerial series condenser ...	.000017
3	A 3 aerial series condenser ...	.000017
4	Bias circuit of V 1	.25
5	Screen of V 1	.1
6	Decoupling anodes V1 and V2 ...	.25
7	Coupling to grid V 2	.0002
8	Tuning semi-aperiodic coupling V 2	.0002
9	Coupling to grid V 3	.0002
10	Decoupling P.U.	1
11	Decoupling screens V 1 and V 2 and anode V 3	1
12	Anode by-pass V 3	.002
13*	Auto-transformer coupling ...	.1
14	Across bias pot	8 Electrolytic
15	Tone control across grids of V 5	.03
16	Across H.T.	1
17	Compensator in one anode of V5	.002
18	Across H.T. (when two batteries are used	1

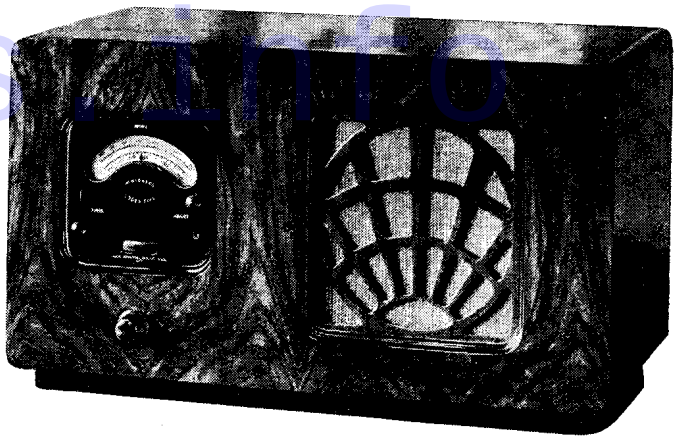
* See note under resistance table.



How the components are placed on the top of the "Lodex" chassis.



The under-chassis arrangement showing the resistances and condensers.



McMichael's Lodex receiver has modern horizontal construction which makes the chassis and speaker easily accessible.

RESISTANCES

R.	Purpose.	Ohms.
1	Decoupling grid V 1 (bias) ...	100,000
2	Volume control pot.	5,000
3	H.F. decoupling S.G. of V 1 ...	500
4	Grid leak V 2	2 meg.
5	Pick-up bias decoupling ...	100,000
6	Grid leak V 3	2 meg.
7	H.F. decoupling anodes V 1 and V 2	500
8*	Coupling to auto transformer T1	30,000
9*	Decoupling anode V 3	20,000
10	H.F. stopper grid V 4	100,000
11	Bias pot.	920+180

* In some chassis straight transformer coupling is used and R 8 is omitted. In such cases R 9 is 10,000 ohms. With auto transformer coupling R 8, R 9, C 13 and T 1 are in one unit.

(*Continued from previous page.*)

four screws from underneath, pull L.T. leads through aperture at back of L.T. compartment and lift chassis out. Chassis can be tested without disconnecting speaker.

General Notes.—The sockets for V1 and V2 are underneath the screening plate. Remove the two bolts holding this to the side of the chassis and ease the plate out.

Replacing Chassis.—In reassembling the chassis remember the earthed lead under one of the bolts on the screening plate.

Before pushing the chassis back into the cabinet, lay the H.T., L.T. and speaker leads over the *top* of the front panel and pull them through afterwards.

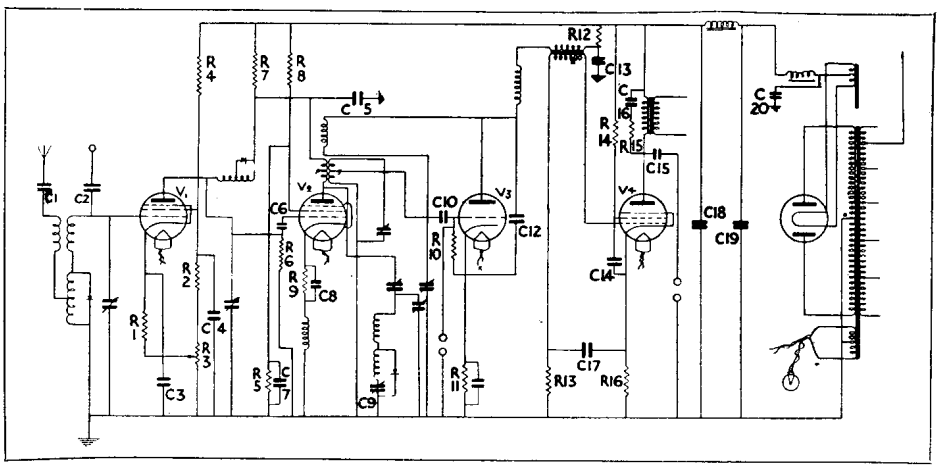
VARLEY A.C. MAINS FOUR-VALVE SUPERHET

Circuit.—*An H.F. valve* (*V1*) *VP4 met.* is preceded by a single tuned aerial circuit. Tuned anode coupling is used to the next valve. *The combined oscillator first detector* (*V2*), *SP4 plain*, is employed with cathode reaction, and is followed by a special *I.F. transformer* (*frequency* 110 kc.) in which reaction is included. There is no intermediate valve.

The *second detector* (*V2*), *354V*, works as a full power grid detector, and is followed by straight transformer coupling to *the output valve* (*V4*) *AC/Pen.*, which is tone compensated. Both the aux. grid and grid are properly decoupled.

Mains equipment consists of the transformer, full-wave rectifier DW3, and both a smoothing choke and the L.S. field are connected in the H.T.+ lead with three 8 mfd. electrolytic condensers.

Special Note.—Owing to the efficiency of the H.F. stage the inclusion of long meter leads in the anode circuit of the H.F. valve may cause instability. Short leads should be used.



There is no intermediate frequency stage in the Varley Superhet Four as the frequency-changer (V2) is followed immediately by the second detector (V3). Another feature to note is that reaction is applied to the I.F. transformer.