MARCONIPHONE TYPE 272 AND 274 CHASSIS

Circuit.—The aerial is connected to the band-pass circuits through a volume-control potentiometer (VR2) and a special aerial coil. The combined *detector oscillator MS4B met.* (V1) is used as a grid rectifier with cathode coupling (L7, L8), and is coupled to the *I.F. valve, a VMS4* (V2) by the band-pass I.F. transformer IFT1, frequency 125 kc. The coupling to *the power grid second det., MH4 met.*, V3, is by another band-pass IFT2, and a .00005 mfd. grid condenser (C7). Resistance capacity feed with a special filter transformer couples V3 to the grid of the *output pentode MPT4* (V4).

Full-wave rectification is used, and the tapped speaker field operates as smoothing choke in the negative H.T. lead and supplies the bias for V4. The artificial centre point on the filament winding is through a 50-ohm potentiometer VR4.

Special Notes.—The pick-up is automatically disconnected when switch is on radio. When turned to "gram," the screen of V1 is disconnected to prevent oscillations.

The well-known rising bass characteristic is obtained by feeding L.F. through C10 to the decoupling condenser of V4, grid C17.

Tone control is by a variable condenser VC4 in the grid circuit of the output valve.

Extra speaker must be low impedance, and must have either permanent-magnet or separate energising.

VALVE READINGS

(Set switched to radio VC max.)

Valve.	Connection.	Volts.	M.A.
V1 MS4B ..	anode ..	180	4
	screen ..	70	1
V 2 VMS4 ..	anode ..	190	5.5
	screen ..	70	2.4
V 3 MH4 ..	anode ..	75	2.8
V 4 MPT4 ..	anode ..	220	30
	aux. grid ..	175	6

Removing the Chassis *(272).*—Undo the knobs (grub screw) and take out four bolts from underneath. Slacken the cleats holding speaker cable and aerial and earth leads. Unscrew the aerial bracket and slide the chassis out.

The leads are sufficiently long to allow an examination of the interior, but if any work has to be done the speaker leads should be unscrewed from the speaker transformer.

(274).—The first examination of the components under the base plate can be carried out by removing the side panel as above. If it must be taken out :—

Take out pick-up plugs and disconnect L.S. and gram. motor leads from panel. Remove four screws holding aerial panel. Remove the remaining screws in the control panel. Remove the four holding screws on bearers and lift the chassis out.

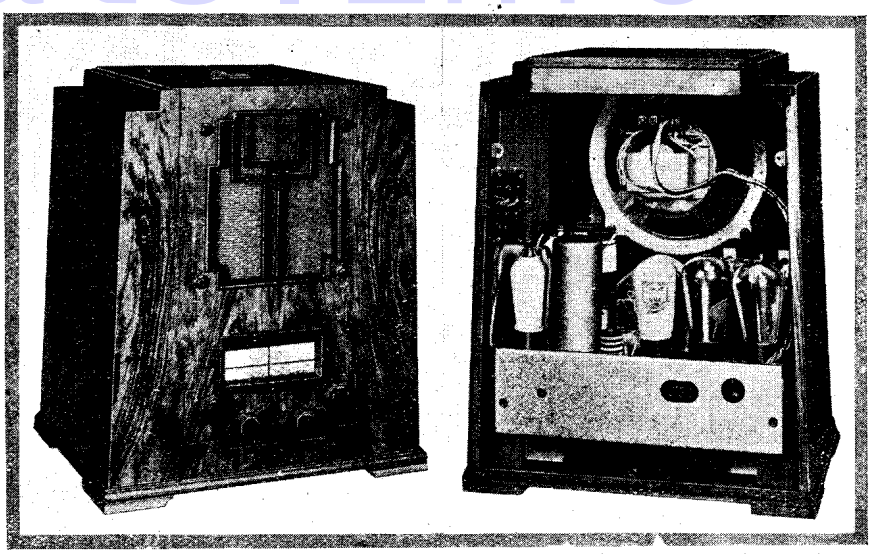
Removing Speaker.—Remove the four nuts from the bolts through the baffle.

Replacing Pilot Lamps *(272).*—Remove metal plate from bottom of cabinet and slacken the screw holding bracket and slide the bracket to one side to allow it to be freed.

(274).—Remove the control knobs and panel and take out the side panel of the cabinet by undoing the two holding screws on the right of the motor-board. Slacken the screw holding the bracket and slide the bracket over the screw head.

Wiring Colour Code.—Black, earth leads; Blue, pick-up; Brown, filaments;

(Continued in column 3.)



The chassis of the Marconiphone 272, which is illustrated above, is also employed in a very slightly modified form in the 274 radiogram.

(Continued from column 1.)

Green, grids; Green and black, bottom of grid circuit if not connected to earth; Green and white, mid. tap on tuning coil; Grey, H.T.−; Orange, mains; Pink, L.S.; Purple, aerial; Red, H.T.+; White, cathodes; Yellow, anodes; Yellow and red, screening-grids.

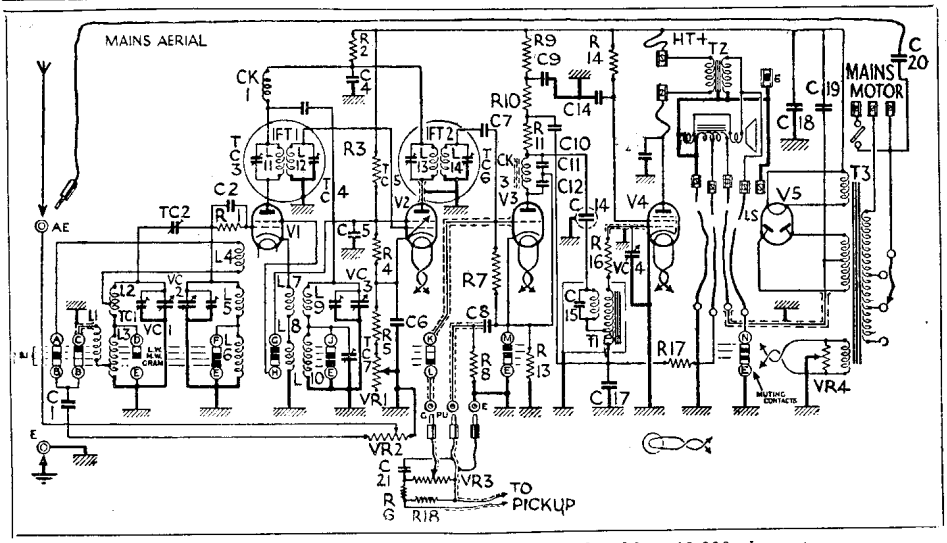
(Continued on next page.)

RESISTANCES

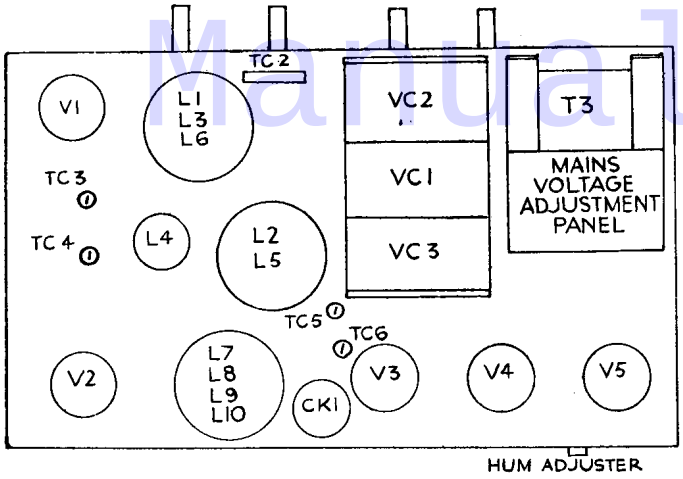
	Purpose.	Ohms.
R 1	Grid leak, V 1	2 meg.
R 2	Anode decoupler, V 1	5,000
R 3	Top of screen pot., V 2 ..	35,000
R 4	Lower part of screen pot., V 2	23,000
R 5	Bias resist pot., V 2	350
R 6	Part of PU pot.	50,000
R 7	Grid leak, V 3	1 meg.
R 8	PU decoupler	1 meg.
R 9	Anode decoupler, V 3	10,000
R 10	Part of special LF bass characteristic circuit	2
R 11	Coupling to filter and auto transformer	23,000
R 13	Bias resistance, V 3	500
R 14	Decoupling aux. grid of V 4 ..	10,000
R 16	Grid lead, V 4	.25 meg.
R 17	Decoupling grid circuit, V 4 ..	.25 meg.
R 18	Across PU leads	5,000
—	Field coil and resistance on chassis end	2,000+ 250
—	Output trans., P	750
—	Output trans., S	2
—	Intervalve trans., S	4,000
	Variable Resistances.	
VR 1	Var. mu. VC on V 2	18,000
VR 2	Aerial input pot.	25,200
VR 3	Gram., VC	25,000
VR 4	Hum adjuster	50

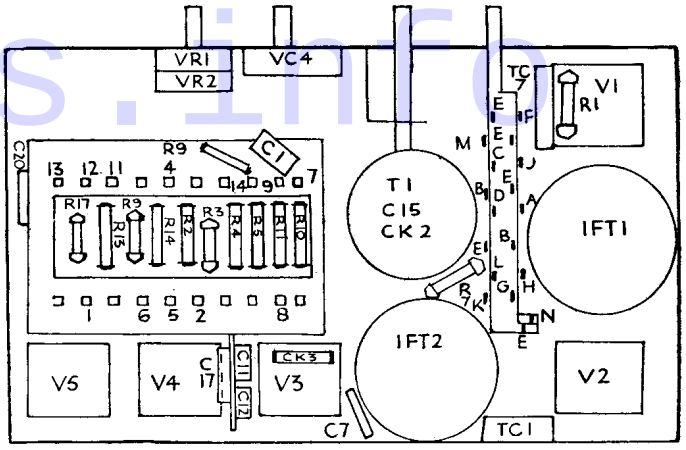
CONDENSERS

	Purpose.	Mfd.
C 1	Part of VC system	.0005
C 2	Grid, V 1	.0005
C 3	Oscillator coupling, V 1 ..	.0001
C 4	Anode decoupler, V 1	1.
C 5	Screen, V 2	1.
C 6	Cathode, V 2	.1
C 7	Grid, V 3	.00005
C 8	Cathode, V 3	1.
C 9	Anode decoupler, V 3	1.
C 10*	Special circuit	2.
C 11	V 3 output filter	.002
C 12	V 3 output filter	.002
C 13	Decoupler AG of V 4	1.
C 14	Filter to LF transformer ..	.1
C 15	Across primary T 1	.0003
C 17	Grid decoupler, V 4	2 mfd.
C 18	Smoothing condenser	2.
C 19	Smoothing condenser	5.
C 20	Mains aerial connector ..	.0003
C 21	Across PU pot.	.003
—	Tone corrector, V 4 anode ..	.002



In some models the detector anode circuit choke CK3 is replaced by a 10,000 ohm resistance. If the motor terminals are lettered A.B.C. the right-hand one goes to the 231–250 volt mains transformer tapping.





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.

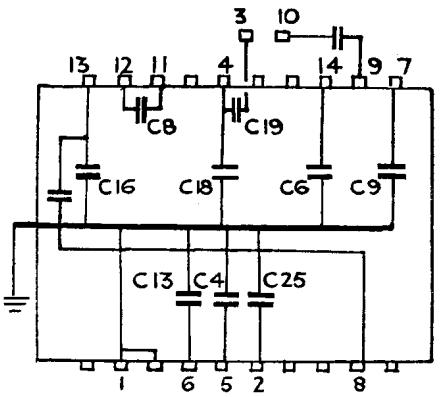


DIAGRAM OF CONDENSER BLOCK

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	—

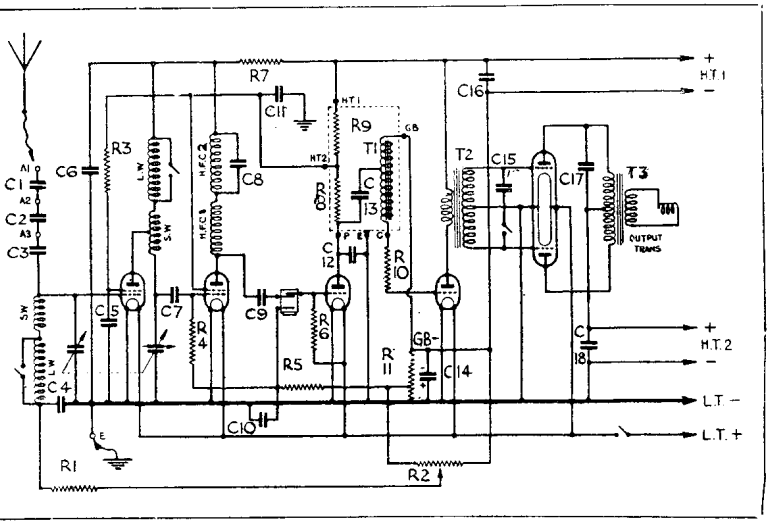
Set current V.C. max. and no signal, 11.5 ma.

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.