Radio Manuals Info

MARCONIPHONE TYPE 269 PORTABLE

Circuit.—The H.F. valve, S21 (V1) is preceded by the frame aerial, which is tuned by one of the three ganged condensers and by a trimmer concentric with the main tuning knob. The frame aerial is connected directly to the grid and, as A.V.C. is applied to the valve, the low potential end of the aerial is connected to chassis through a condenser C2, and is decoupled from the A.V.C. system by R2. A tuned-anode coil couples this valve to the next.

The combined first detector oscillator, S21 (V2) operates with reaction in the cathode circuit by means of a coil in series with each filament lead. Coupling to the next valve is by a bandpass I.F. transformer (I.F. frequency 125 kc.).

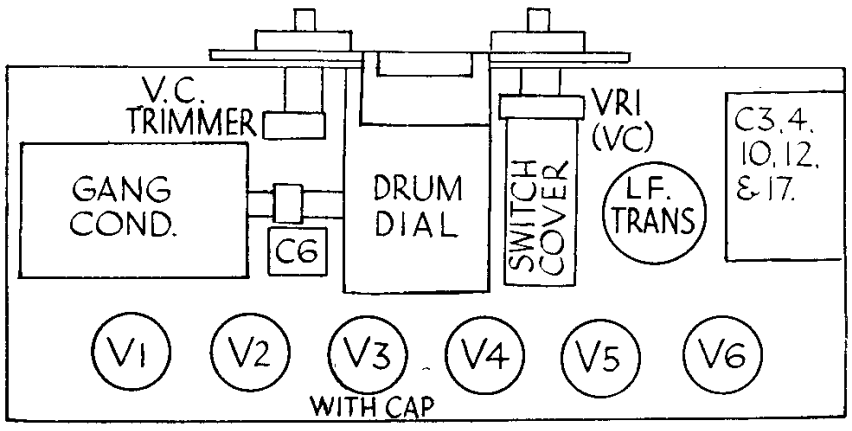
The I.F. valve, VS2 (V3) is a variable-mu type controlled by the A.V.C. It is coupled to the second detector by a similar I.F. bandpass transformer.

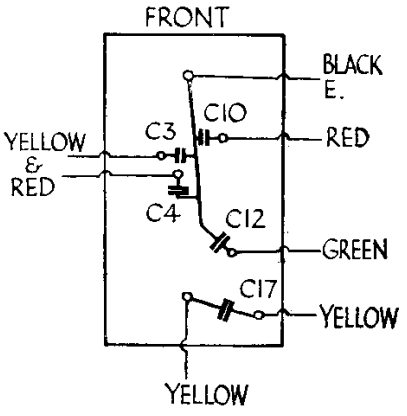
Next is a double metal rectifier, one half of which is fed through a condenser from the primary of the second I.F. transformer, and provides the A.V.C. potential for V1 and V3. The other (rectifier) half is fed from the secondary, and delivers the A.C. output to a quarter megohm potentiometer, which acts as a volume control. The slider is connected to the L.F. coupling condenser.

The L.F. valve, HL2 (met) (V4) has an H.F. stopping resistance in its grid circuit. The H.T. is decoupled by R14 and C10, and it should be noted that the current for V3 also passes through this resistance. Coupling to the output is by parallel-fed push-pull transformer.

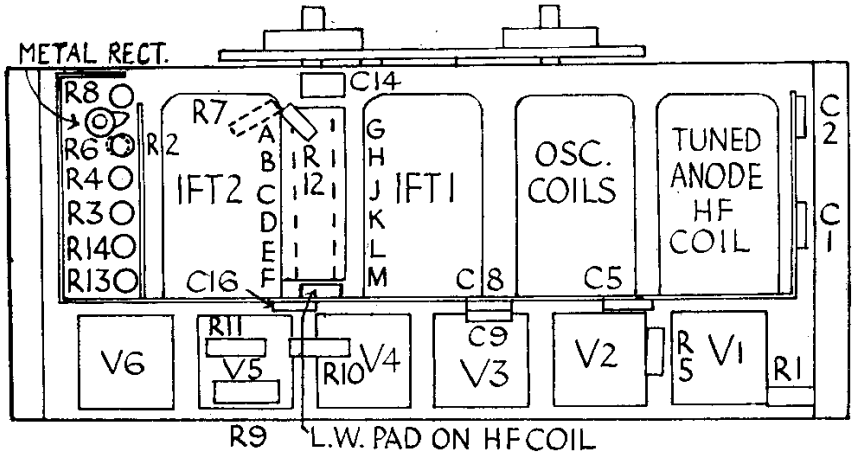
The output stage consists of two PT2's in quiescent push-pull. Balancing is obtained

(*Continued on next page.*)

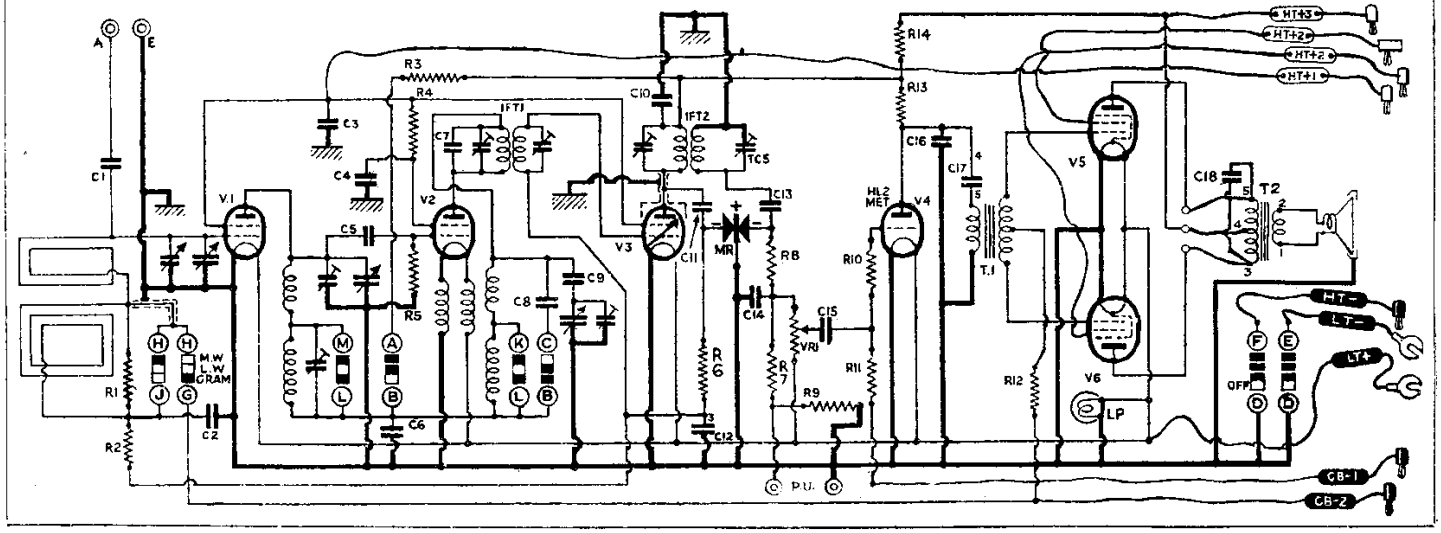




A more accessible valve arrangement could not be found than that in the Marconiphone six-valve battery portable known as the 269. On the right of the layout above is a diagram giving the connections of the condenser block.



On the right the below-deck arrangement of the Marconiphone 269 is shown. Below is the circuit diagram. A feature is the use of two Westectors for second detection and A.V.C.



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MARCONIPHONE 269 PORTABLE (Contd.)

RESISTANCES

R.	Purpose.	Ohms.
1	Across LW frame	15,000
2	Decoupling V1 grid	1 meg.
3	HF decoupling anodes V1 and V2	1,000
4	Decoupling V2 screen	15,000
5	V2 grid leak	1 meg.
6	HF stopper in AVC system ...	.5 meg.
7	Part of load across detector ...	230,000
8	HF stopper	23,000
9	Across P.U.	23,000
10	HF stopper grid V4	100,000
11	V4 grid leak	2.3 meg.
12	Stabiliser in grid return lead to V5, V6	230,000
13	LF coupling V4 to LF transformer	50,000
14	Decoupling anode V4	7,500

CONDENSERS

C.	Purpose.	Mfd.
1	Series aerial condenser	.00005
2	Preventing short circuiting of bias to V1	.01
3	Decoupling screening grids of V1 and V3 from HT	.2
4	Decoupling screening grid of V2	.2
5	V2 grid condenser	.0001
6	Decoupling anode V1 and V2 from HT	.4
8	LW padding on osc.	.00015
9	Tracking cond. on osc. ...	.0017
10	Decoupling anode V3	2
11	IF feed to A.V.C. rectifier ...	.0002
12	Decoupling A.V.C.	.1
13	IF feed to detector	.0002
14	HF by-pass across rectifier ...	.0001
15	LF coupling, rectifier to V4 ...	.01
16	V4 anode by-pass	.002 or .003
17	Filter feed to LF transformer ...	.1
18	Tone correction between V5 and V6 anodes	.001

by providing the aux. grids with separate H.T. leads. The valves are compensated for top note distortion by a condenser across the primary of the output transformer.

A permanent magnet speaker completes the set.

Special Notes.—Owing to the special circuit employed, the matching of the valves is not so important as with other methods, and results can be judged aurally.

Battery voltages are: H.T.+1, 60 volts; 2 × H.T.+2, 155 v. (for PT2 aux. grids); H.T.+3, 175 v. G.B. —1. —1.5 v.; —2, —9 v.

Removing Chassis.—There is no need to remove the knobs. Remove batteries and unscrew four holding screws from underneath the side brackets. Unsolder the leads to the terminal strip next V1, and, after releasing the cleats, lift the chassis out.

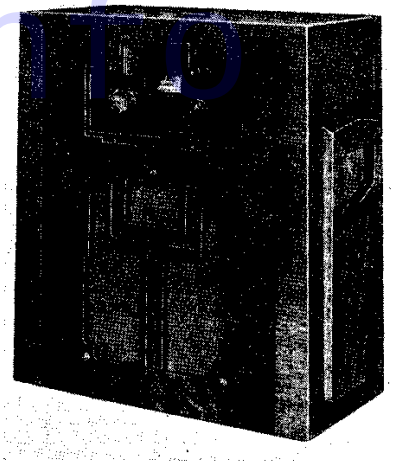
If valve tests indicate that a fault lies in R9, R10, R11, R5, or R1, these may be reached by undoing the four screws holding the sloping screen under the valves.

VALVE READINGS

No signal and new batteries. Set switched to L.W

Valve	Type.	Electrode.	Volts.	M.A.
1	S21 (met)	anode ...	105	.6
		screen ...	60	
2	S21 ...	anode ...	108	1
		screen ...	48	
3	VS2 (met)	anode ...	*140	1
		screen ...	60	
4	HL2 (met)	anode ...	70	.7
5	PT2 ...	anodes ...	170	.6
6		aux. grids...	170	.6

*With screen removed by undoing two nuts.
Set current no signal 12.5 m.a.
Set current moderate 9 m.a.
Leads should be as short as possible as AVC motor boating will occur.



A special form of pentode quiescent push-pull is a feature of the 269 6-valve portable by the Marconiphone Co., Ltd.

General Notes.—To reach the resistance panel at the output end, remove the screen by undoing two screws on the flange at the front and two at the end of the coil support. To reach the terminals of the block condenser also undo the support bracket.

The screws used are all of the self-threading type, and grip the chassis without nuts.

Replacing Chassis.—Lay chassis on the side brackets and press forward while inserting the holding screws. Do not forget the earthing lead under the screw above the accumulator.

Replace the cleats holding the frame aerial leads.

Finding Faults in Mains Apparatus

(*Continued from page* 49.)

to the extra load the valve will burn out much quicker than usual.

When no A.C. readings are obtained between the anodes or between the filament sockets of the rectifying valve holder, the mains transformer should be tested separately for continuity of the windings, and, when a new transformer has been fitted, the H.T.+ to chassis resistance test should be applied before switching on again. Failure to do so may result in a second valve and transformer being ruined.

Broken-down Condensers

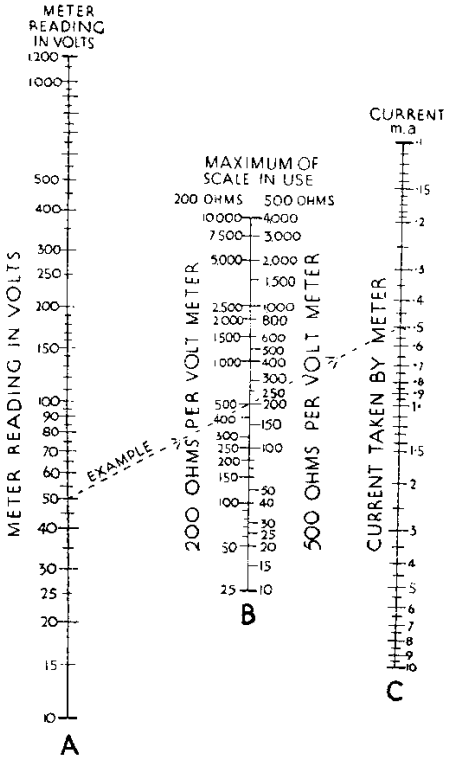
If the H.T.+ circuit (at the valve filament socket) shows a dead short circuit to chassis, the first component to be suspected should be the smoothing condenser on the mains rectifier side of the smoothing choke.

When low readings are obtained, the measured resistance will usually give a clue to the whereabouts of the trouble. For example, a reading of approximately 1,500 ohms (with 1,500 ohm field coil) usually denotes that the smoothing condenser on the set side of the field is short circuited.

When all voltages in "Quick Tests" are low, and there is no reception, the same thing applies. With the set switched off test the H.T.+ to chassis resistance from the rectifying valve socket and compare the reading with the values given for the resistances in the anode circuits (plus the smoothing choke) of the various valves.

METER CURRENT CONSUMPTION ABAC

When measuring voltages, meters themselves draw current from the circuit and this, due to the voltage drop across resistances



and other components, results in a lower voltage than the true one being measured.

To obtain the voltage present under normal conditions, the voltage lost due to the meter's current should be added to the figure obtained. This loss in voltage can be found by multiplying the current the meter consumes by the total resistance through which it passes between the source and the meter.

If the current is measured in milliamps, as it almost certainly will be, the figure obtained as a result of the multiplication must be divided by a 1,000.

The resistance of the circuit can be obtained from the tables given in Service Engineer reviews. The specially drawn Abac given here enables the current taken by both 200 and 500 ohm-per-volt meters to be found at a glance.

A straight-edge is placed linking up the voltage read off and the maximum voltage of the scale in use. In the third column it will indicate the curent the meter passes.

WATCH FOR THESE REVIEWS

In the May issue complete reviews will appear of the following receivers:—

Burgoyne—Portable Five.
Climax—Mains Three.
Cossor—Class B Three.
Ekco—S.H. 25.
Ferranti—Gloria Consolette.
Kolster-Brandes—333 Battery Set.
Varley—Five-valve Superhet.
Zetavox—S.T. Receiver.

Suggestions as to receivers which might be described, and ideas for the improvements of the reviews, are welcome, and should be sent to The Broadcaster and Wireless Retailer, 29, Bedford Street Strand, London, W.C.2. Phone numb Temple Bar 2468.

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HMV 442, 443, 570, 570A

MARCONIPHONE 296, 298, 289, 289A

Four-valve, plus rectifier, two waveband superhet. Models 289, 289A, 570, 570A are auto-radiograms. Suitable for operation from AC mains 200–250v., 50/100 cycles (table models), 50/60 cycles (radiograms). Marketed by the Gramophone and Marconiphone Companies, Hayes, Middlesex.

ALL the models incorporate the same basic chassis with very little modification in the case of the radiograms. The aerial is coupled to a band-pass circuit L2, L6 (MW) and L3, L7 (LW) tuned by VC1 and VC2. Filter coil L1 is brought into the aerial circuit on LW. On MW coupling is via C1 and the image suppression circuit L4, L5, C2 to a tapping on L2.

The heptode frequency changer V1 is fed through C3 blocking condenser with the control grid connected to the AVC line via R1. The oscillator section employs a tuned grid circuit L8 (MW) and L9 (LW). Reaction coils L10, L11 are in the anode circuit which incorporates R6 decoupled by C8. L10 and L11 are switched out of circuit on Gram.

IF signals are coupled by the transformer L12, L13 to the grid of the AVC controlled variable-mu amplifier, V2. The valve has a normal cathode biasing resistance R7 decoupled by C9 with a further variable biasing resistance VR1 which may be adjusted to make the stage less sensitive when local interference is troublesome.

When not required VR1 is shorted out of circuit by S2 which is operated by pushing or pulling the volume control knob.

A second IF transformer, L14, L15, passes on the signal to the signal diode of the double-diode-triode V3. R8, C11, C14 are filtering components, whilst R9 is the load resistance which feeds the volume control VR2; this is connected directly to the grid of the triode portion of V3.

The AVC diode of V3 is fed from a tapping on L14 via C10, the load resistance being R15 and AVC decoupling components R10, C12.

A moving-iron visual tuner is incorporated in the anode supply to both V1 and V2.

V3 is biased for AVC delay by the cathode being returned to chassis through R17 which is in the HT negative line. R12 and C17 are decoupling components.

In the table models the pickup input is introduced into the grid circuit of V3 via a switch, and a limiting resistance R11 is in circuit between the "earthy" pickup socket and chassis. A third socket (S) is provided for earthing any screening round the pickup leads.

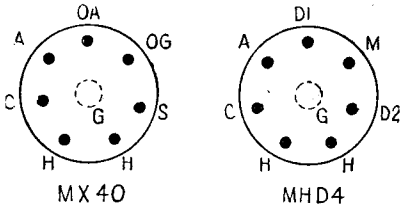
The LF signal from V3 is resistance-capacity coupled by R14, C19 via a whistle rejector L16, C20 to the primary of the intervalve transformer L17, L18 which feeds the grid of the triode output valve V4.

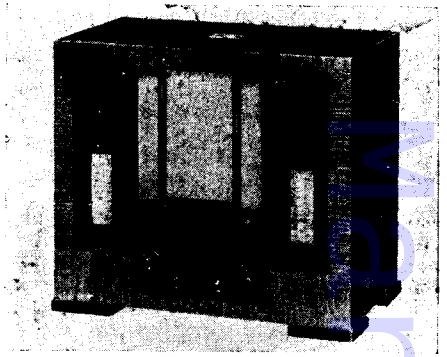
A variable tone control VC4 is connected across the grid circuit, and the grid is biased by being returned to the junction of R17 and loudspeaker field coil L22 in the HT negative line. A humdinger, VR3, is provided across the filament supply to V4.

VALVE READINGS

V	Type	Electrode	Volts	Mas
1 ..	MX40 ..	Anode ..	200 ..	1
		Osc anode ..	90 ..	2
		Screen ..	70 ..	2
2 ..	VMS4B ..	Anode ..	200 ..	3
	(Met) ..	Screen ..	70 ..	.7
3 ..	MHD4 ..	Anode ..	70 ..	1.7
	(Met) ..			
4 ..	PX4 ..	Anode ..	210 ..	43
		Bias across R17	28 ..	—

Pilot lamp, 6v, .3 amp MES. Voltage readings taken with a 2,000 o-p-v meter. Static suppressor knob in and no signal.

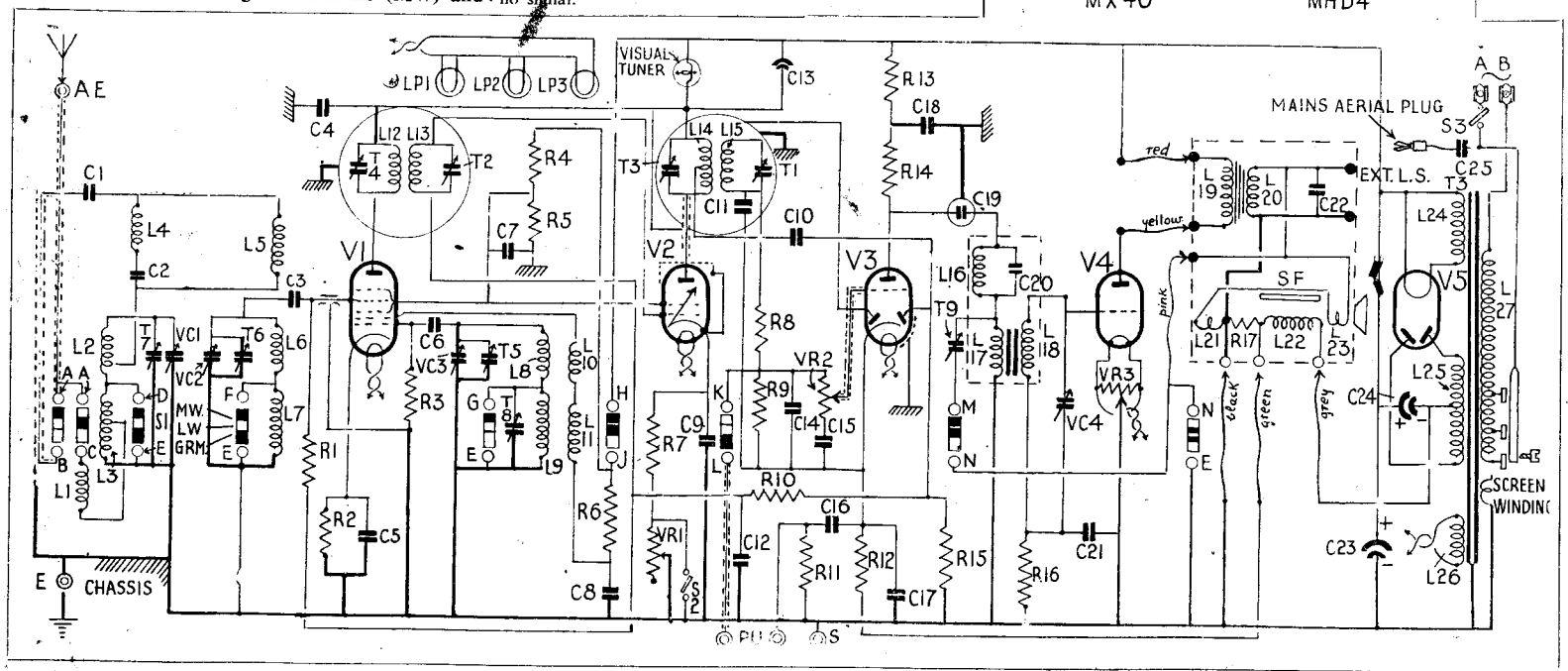




The HMV model 442 version of this chassis has an attractive cabinet.

Output transformer L19, L20 couples V4 to the energised moving-coil speaker in which L21 is the humbucking coil and L23 the speech coil. Extra

Continued overleaf



CONDENSERS

C	Mfds	C	Mfds
1	.0005	14	.0001
2	.002	15	.5
3	.0003	16	1
4	1	17	3
5	.1	18	2
6	.0001	19	.1
7	1	20	.001
8	.1	21	.5
9	.1	22	.7
10	.00005	23	8
11	.0002	24	8
12	.1	25	.0003
13	25		

RESISTANCES

R	Ohms	R	Ohms
1	1 meg.	12 ..	23,000
2	1,000	13 ..	23,000
3	50,000	14 ..	50,000
4	23,000	15 ..	500,000
5	23,000	16 ..	230,000
6	50,000	17 ..	500
7	230	VR1 ..	14,000
8	50,000	VR2 ..	200,000
9	230,000	VR3 ..	48
10	1 meg.	VR4 ..	50,000
11	100,000	(R/Gs only)	

WINDINGS

L	Ohms	L	Ohms
1	72	15	85
2	3.5	16	900
3	13	17	750
4	.3	18	8,000
5	.7	19	150
6	3.5	20	.3
7	13	21	2.5
8	4	22	2,000
9	6	23	8
10	4	24	.1
11	2.5	25	280+270
12	85	26	.1
13	85	27	22+3+3
14	85	P.U. Hum coil	3,500
		P.U. Armature coil ..	3,900
		Visual tuner	3,500

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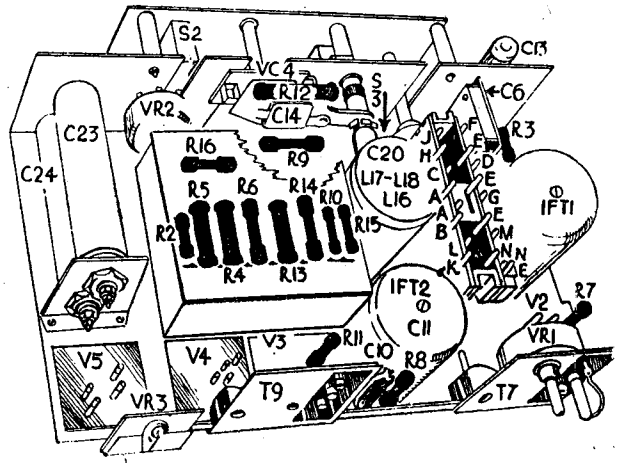
Radio Manuals

HMV 442

MARCONIPHONE 296

Continued

Details of the chassis are given in these diagrams. Trimmers are shown and the switch contacts identified. Resistors are picked out in black to speed location.



loudspeaker sockets are provided for an 8-ohm speaker.

The HT supply circuit comprises the full-wave rectifier V5 with smoothing effected by C23, C24 and field winding L22. A mains aerial is available by a plug and lead which is connected *via* C25 to one side of the mains supply.

Radiogramophone Models

In the radiogram models the output from the pickup is first taken to a scratch filter comprising a resistance of 2,300 ohms, a condenser of .3 mfd and an HF choke having a DC resistance of 114 ohms. These three components are in series across the pickup leads.

The output is then fed direct to the pickup sockets across which is connected a second volume control VR4 effective on Gram only. The slider of this control is taken through switch contacts to the grid of the triode section of V3.

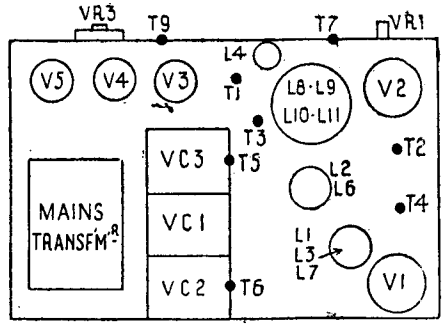
A second group of switch contacts connect the grid of V3 to the slider of VR2, the radio volume control. These latter switch contacts are open on Gram when, of course, the contacts to VR4 are closed.

Colour Code.—In this chassis the following colour code is employed for the identification of wiring: Black, earth; white, cathode; red, HT positive; green, grid; blue, pick-up; brown, heaters; pink, loudspeaker; purple, aerial; orange, mains; yellow, anode; yellow with red traces, screen of screen-grid valve; grey, HT negative; green with black traces, bottom of grid circuit not direct to earth; green with white traces, mid position of tuning coil.

GANGING

IF Circuits.—Connect service oscillator to the grid of V1 and chassis; push in the volume control knob (maximum sensitivity) and adjust T1, T2 for maximum output on a signal of 127 kcs. Tune service oscillator to 123 kcs. and adjust T3, T4 for maximum output.

MW Band.—Unscrew trimmer T7 to minimum capacity and set the moving vanes of the ganged condenser to the position where there is exactly ¼-inch between the edge of the moving vanes and the trimmer side of the frame.



Inject a signal of 200m into the aerial and earth sockets and adjust T5 for maximum output. It is possible to obtain two positions where maximum output is available; adjust to the position nearer minimum capacity of T5.

Inject a 250m signal and rotate ganged condenser until signals are at maximum, and then adjust T6 to further increase output whilst rocking gang.

LW Band.—Switch receiver to LW and inject a signal of 1,000m. Adjust T8 for maximum output whilst rocking gang.

T7 functions as an aerial trimmer, and should be adjusted with the aerial with which the instrument is to be used connected to the aerial socket with a signal coming in of about 210m. Adjust T7 for maximum output on that wavelength, using the visual tuner as a guide.

Static Suppressor.—VR1 will be found at the back of the chassis with a moulded knob to facilitate adjustment. Tune receiver to a point where there is no reception of a station, and turn radio volume control to maximum and pull the volume control knob out.

If there is any background noise, adjust VR1 so that the background noise is reduced to an acceptable level. When maximum sensitivity is required, push in volume control knob.

Unspillable accumulators
Non-inductive tubulars.
Ballast resistors.
E.m.i. type current coils.
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