

MARCONIPHONE

262, 272, 274, 286, 288

HMV

440, 438/439, 512, 540, 542

Four-valve, plus rectifier, two waveband superhets for 200-250 v, 50-100 cycle AC supplies except radiogram and autoradiogram models which are for 50-60 cycles. Table models 262, 272, 440, 438-439, have PU sockets. 439 is similar to 438 but incorporates mains clock in speaker fret. Models 274, 286, 512, and 540 are radiograms, and 288 and 542 autoradiograms. All models provide for low-impedance extension speakers.

Marketed in 1933-5 by the Gramophone Co., Ltd., and the Marconiphone Co., Ltd., Hayes, Middlesex.

Circuit.—On both wavebands the aerial input is taken to earth through VR2 which is ganged to VR1 and forms the volume control. The required signal potential is coupled via C1 to L4 and L2 on MW, L4 and T9 being an image suppressor arrangement. On LW, the input is via L1 to L3, L1 preventing MW breakthrough.

The secondaries of the bandpass coils, L5 and L6, are coupled to the grid condenser C2 and leak R1 of V1, the detector oscillator—a screen-grid valve. Cathode coupling is effected via L7, L8 and the oscillator coils L9, L10, which are fed from the anode circuit, via the choke L23 and C3.

V1 is coupled to V2 the IF amplifier by IFT1, comprising L11, L12. V2 is a variable-mu valve and its sensitivity is controlled by the VR1 section of the

volume control. R5 provides standing bias at minimum resistance position of VR1.

R2 decoupled by C4 is the voltage dropper for V1 and V2 anodes while the screens are fed from the potential divider network R3 R4 decoupled by C5. V2 is coupled to the triode second detector V3 by the second IFT comprising L13 L14. V3 operates as a power grid detector with C7 and R7 as the grid condenser and leak.

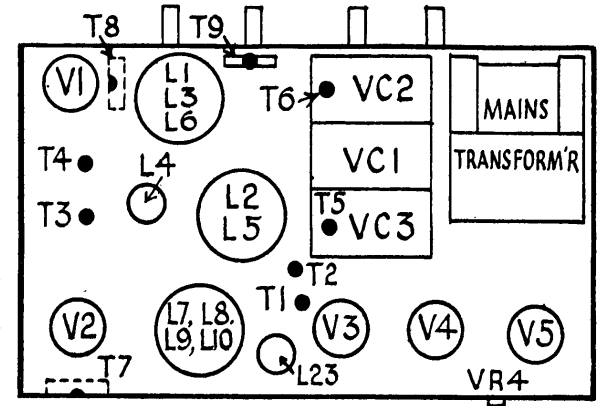
On gram the PU is connected across the grid-cathode circuit and switch contacts bring into action R13 for biasing V3 as an LF amplifier. R8 and C8 also become effective for decoupling the pick-up circuit. Also on gram the aerial input is disconnected from the aerial coils and the screen feed to V1 is broken thus preventing radio breakthrough.

R9 and C9 are the anode decoupling components for V3. R10 and C10, which it should be noted is connected to the grid circuit of V4, give a rising bass characteristic to the LF coupling which

is effected by R11 and C14 to the auto-transformer L17. HF, and a certain amount of high note filtering is effected by L15, C11 and C12. In some models L15 is replaced by a 10,000 ohm resistance.

The LF coupling unit containing L17 also incorporates a high note rejector L16, C15 in series with L17. The grid of V4 is fed from the unit via a grid stopper, R15, and is decoupled by C16 and R16. Bias is obtained by connecting the grid circuit to a tapping on the speaker field, L20, which is in the HT negative line.

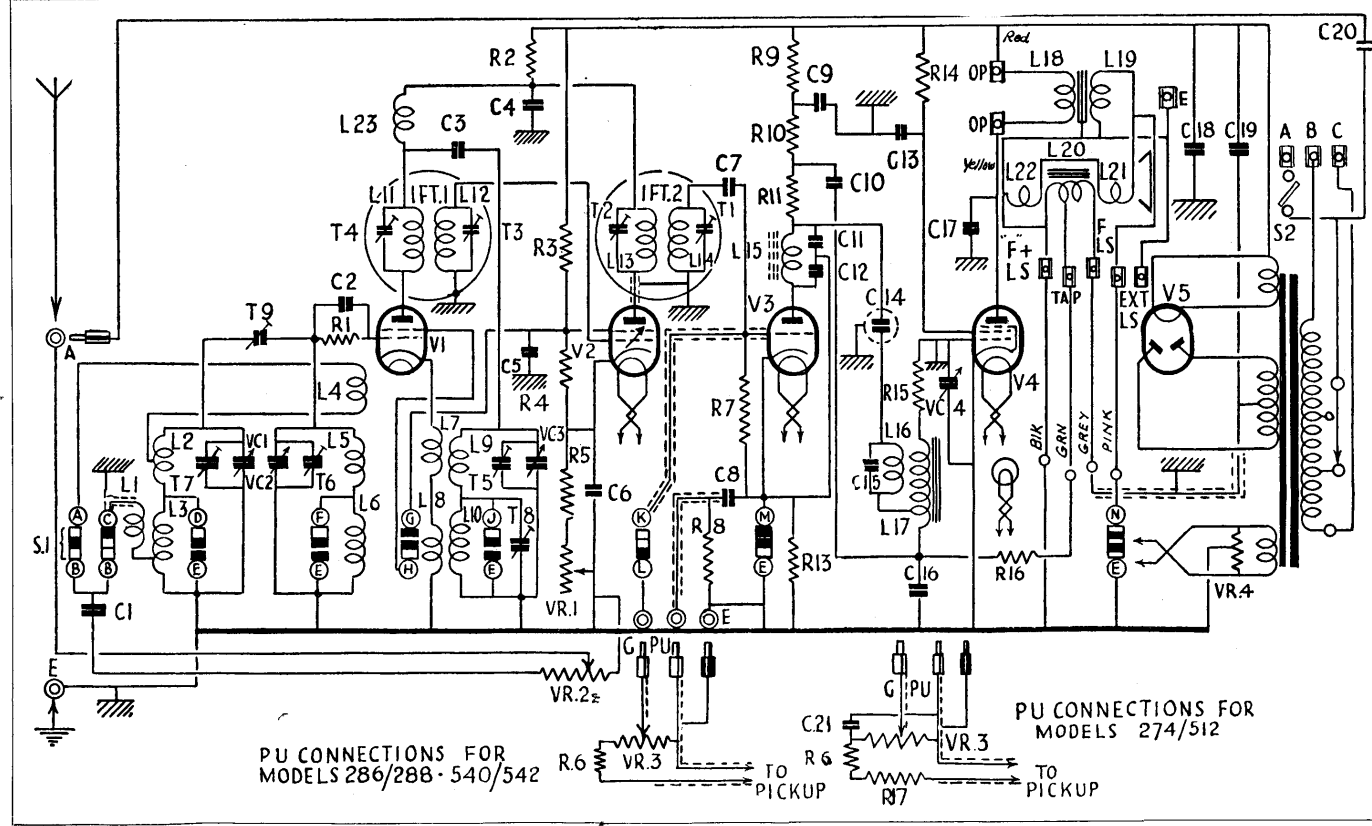
Variable tone control is effected by VC4 and a permanent degree of tone



controlled by the pentode output valve is provided by C17.

The output from V4 is coupled to the low impedance speaker by the transformer comprising L18, L19. The speech coil L21 has a hum-bucking coil L22 in series with it and extra loudspeaker terminals are provided for a speaker of about 11 ohms AC impedance. The speech coil is shorted out by muting

Continued on opposite page



R3, originally 35,000 ohms, may be increased to 50,000 if instability around 1,500 m is experienced. On the chassis (diagram above) T8 will be found below; T7 the aerial trimmer is in parallel with VC1.

WINDINGS

L	Ohms
1	72
2	3.5
3	13
4	.1
5	3.5
6	13
7	.25
8	.5
9	5
10	5
11	100
12	100
13	100
14	100
15	240
16	1
17	4,000
18	750
19	2
20	2,250
21	(tapped at 250)
22	9

VALVE READINGS

Set switched to radio, volume control at max.

V	Type	Electrode	Volts	Ma
1	MS4B	Anode	180	4
		Screen	70	1
2	VMS4	Anode	190	5.5
		Screen	70	2.4
3	MH4	Anode	75	2.8
4	MPT4	Anode	220	30
		Screen	175	6
		Grid	-9	—

Pilot lamp, 6.2v, .3 amp, MES.

RESISTANCES

R	Ohms	R	Ohms
1	2 meg.	12	10,000
2	5,000		when fitted in place of L15
3	50,000	13	500
4	23,000	14	10,000
5	350	15	.25 meg.
6*	2,000 or 50,000	16	.25 meg.
7	1 meg.	17	5,000
8	.1	VR1	18,000
9	10,000	VR2	25,200
10	10,000	VR3*	1,500 or 25,000
11	23,000	VR4	50

* Models 274/512

CONDENSERS

C	Mfds	C	Mfds
1	.0005	11	.002
2	.00005	12	.002
3	.0001	13	.1
4	1	14	.1
5	1	15	.0003
6	.1	16	.2
7	.00005	17	.002
8	1	18	.2
9	1	19	.5
10	2	20	.0003
21	9	21	.003

PU CONNECTIONS FOR MODELS 286/288 - 540/542

PU CONNECTIONS FOR MODELS 274/512

MARCONIPHONE

278, 280, 262 DC,
286 DC

HMV

404, 505, 440 DC,
540 DC

These models are the DC versions of the receivers reviewed on the opposite page. They are suitable for 200-250 DC supplies and make provision for both a pickup and a low-impedance extension speaker. Marketed in 1933-4 by the Gramophone Co., Ltd., and the Marconiphone Co., Ltd., Hayes, Middlesex.

Circuit.—The following are the variations from the AC models:—
Extra aerial condenser C1.
Isolating condensers C8 and C9 for the pick-up circuit. In some models a condenser is used to isolate the screen-

ing of the pick-up leads from the cathode circuit of V3. Where fitted this condenser is C12.

The LF coupling unit employs a similar high-note rejector circuit comprising L16 and C13, but the transformer has separate windings L17 and L18, instead of the auto-transformer arrangement used in the AC models.

Permanent tone correction for the output valve is effected by R16 and C20 in series.

The extra loudspeaker terminals are those numbered 1 and 2, and the extra loudspeaker should have an impedance of about 11 ohms (9 ohms DC).

The HT supply circuit follows usual DC practice. The mains input is filtered by HF chokes L24 and L25 and condensers C26 and C27. Smoothing for the HT feed is effected by an LF choke, L22, in the table models with an additional choke and condenser, L26, and C28 in the radiograms.

The heaters of the valves are connected in series across the mains with the necessary voltage dropping resistances in the positive supply lead.

An interesting feature of the models 404, 505, 278, and 280 is the provision of

a conversion plug and socket which breaks the HT positive feed line. By withdrawing the conversion plug from its socket and inserting a similar plug fitted to a metal rectifier and condenser the model can be converted for use from AC mains. The motor in the radiograms is of the universal type and, therefore, runs satisfactorily from AC or DC without adjustment.

GANGING

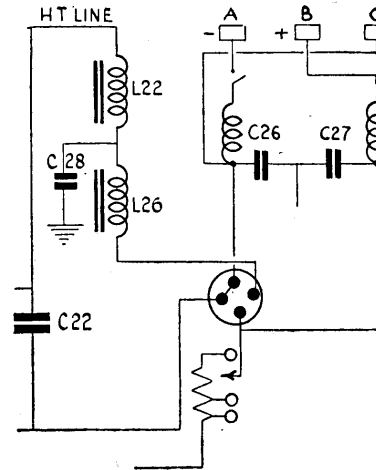
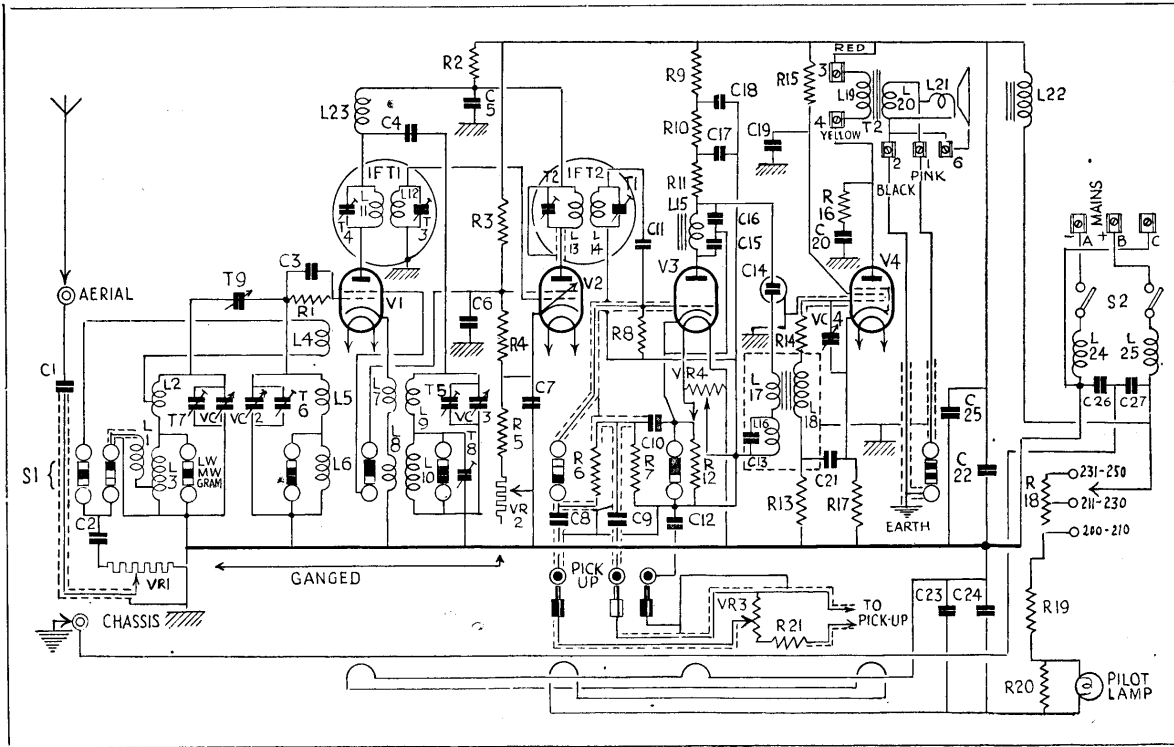
The ganging instructions given in the review of the AC models apply also to the DC instruments. The trimmers are positioned as shown in the chassis layout diagram covering the AC models.

VALVE READINGS

Measured on 235v. mains. Volume control at minimum on radio.

V	Type	Electrode	Volts	Ma
1	DSB	Anode	140	1
		Screen	60	.25
2	VDS	Anode	140	.4
		Screen	50	.75
3	DH	Cathode	2.5	—
4	DPT	Anode	60	2.5
		Anode	160	2.4
		Screen	127	.4
		Cathode	6	—

Pilot lamps, 6v. .3 amp. M.E.S.



Models 505 and 280 RGs incorporate a plug and socket for conversion to AC by means of a metal rectifier unit. Models 404 and 278 have two PLs and no L26, C28.

RESISTANCES

R	Ohms	R	Ohms
1	2 meg.	14	230,000
2	5,000	15	10,000
3	35,000	16	10,000
4	20,000	17	230
5	350	18	80+80
6	10,000	19	500
7	100,000	20	100
8	230,000	21	2,000
9	10,000	VR1	25,200
10	10,000	VR2	18,000
11	23,000	VR3	1,500
12	500	VR4	3,000
13	230,000		

CONDENSERS

C	Mfd's	C	Mfd's
1	.001	15	.002
2	.0005	16	.002
3	.00005	17	2
4	.0001	18	1
5	1	19	1
6	1	20	.004
7	.1	21	2
8	.5	22	3
9	.5	23	2
10	1	24	2
11	.00005	25	2
12*	.01	26	.005
13	.0003	27	.005
14	.1	28	2

* Omitted in some models.

WINDINGS

L	Ohms	L	Ohms
1	72	14	100
2	3.5	15	240
3	13	16	1,000
4	.1	17	400
5	3.5	18	2,350
6	13	19	750
7	.25	20	2
8	.5	21	9
9	5	22	(Table) 1,200
10	5		(RGs) 230
11	100	23	100
12	100	24	2.5
13	100	25	2.5
		26	(RGs) 230

MARCONI and HMV AC MODELS

Continued from page v

contacts when the wavechange switch is operated.

HT is provided by a normal arrangement of full-wave rectifier, V5, smoothing condensers C18, C19 and speaker field. The heater supply to the receiving valves is earthed via VR4.

A condenser, C20, connected to the mains input provides a mains aerial device.

GANGING

IF Circuits.—Short V1 cathode to chassis. Inject 125kc signal into grid circuit of V1 and adjust T1, T2, T3, T4 for maximum reading on output meter.

If quality is more important than selectivity, T4 and T2 may be adjusted to 128kc and then T3 to 123kc and T1 to 125.5kc.

MW Band.—Remove short across V1 cathode coils. Connect service oscillator to aerial and earth sockets employing dummy aerial. Unscrew T9 several turns.

Inject and tune to 210m signal. Screw T6 up and adjust T5 for maximum output and then T7.

Unscrew T6 until maximum output is obtained.

LW Band.—Inject and tune to 1,000 metre signal.

Adjust T8 for maximum output.

Image Suppression Circuits.—Tune in powerful 250m signal at its image point (315m). Adjust T9 for minimum output. Tune in powerful 350m signal at its image point (496m) and adjust bracket holding L4 to position giving minimum output.

Check over adjustments as they are interdependent.

In later models the image suppressor is an assembly of two bobbin-wound coils and a fixed condenser on a bracket. The position of the whole assembly may be varied to give minimum output from the "image" signal.

Hum in Pye Portable

A PYE mains portable was tested for a complaint of hum and noise. The hum was found to be due to mains modulation of the HF end of the set and was cured by putting a .1 mfd condenser across the mains input.

The other fault was more or less intermittent in that it took a long time to occur, and when the wave-change switch was operated it sometimes stopped the fault. Testing the valves by gently tapping each in turn, it was found that the ECH3 valve was faulty, apparently having a bad electrode.