

MARCONIPHONE

920

H.M.V. 1354

Four-valve, plus rectifier, super-het for operation on short, medium and long wavebands from 100-130 and 195-255-volt A.C. or D.C. supplies. Marketed by the Gramophone Co., Ltd., and the Marconiphone Co., Ltd., Hayes, Middlesex.

Radio Marketing Service Engineer

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Circuit.—The aerial is connected to V1, the frequency-changer, through transformer coils on each band, there being iron-dust cores to the M. and L.W. units. Both aerial and earth leads contain mains isolating condensers, and there is a static discharger, R16, between the two.

The oscillator section of V1 is tuned grid. There are reaction coils from the anode on S. and M.W., but on L.W. the reaction voltage is applied across C13, the padding condenser, and is thus introduced to the grid circuit.

A special feature is a bi-metal condenser, C28, across the S.W. oscillator circuit. This is associated with R23 in the heater circuit. The object of the arrangement is to maintain frequency stability and accurate tuning by introducing a change of capacity to offset that which occurs as the receiver changes in operating temperature.

Permeability trimmed I.F. transformers link up V2, the I.F. amplifier, and V3, the double-diode triode.

Only one diode is used. VR1, the volume control, is the diode load, R9 and C19 constituting an I.F. filter. The steady "carrier wave" component of the rectified voltage is led off by R8 for A.V.C. purposes.

Pick-up sockets are arranged across the volume control, and blocking condensers, C32 and C33, isolate the connections from the live chassis.

L.F. is applied to V3 grid via C20, and the valve develops its own bias across R10. An anode load of high value passes the signal to V4, the output tetrode via C22.

This circuit contains a novel form of local-distance amplification control.

When the shorting plug is out, R15 forms a potentiometer with R12 and the grid is energised from a point giving a quarter of the voltage. C29 by-passes a proportion of high notes to preserve clarity.

In the output stage a degree of negative feed-back is introduced simply by omitting the decoupling condenser across the bias resistance, R14. Variable tone control is provided across the primary of the output transformer.

The usual A.C./D.C. half-wave rectifier arrangement is employed. The pilot lamp has a parallel surge absorber in R22 and is in series with the valve heaters which are arranged to minimise "noise" transference via heater-cathode capacities. On D.C. the positive main must be

connected to the anode and the valve operates solely as a low resistance.

It must not be forgotten when handling the receiver that on either D.C. or A.C. mains the chassis may be live.

An extension speaker of 5 ohms may be connected across the speech coil tags (yellow and black).

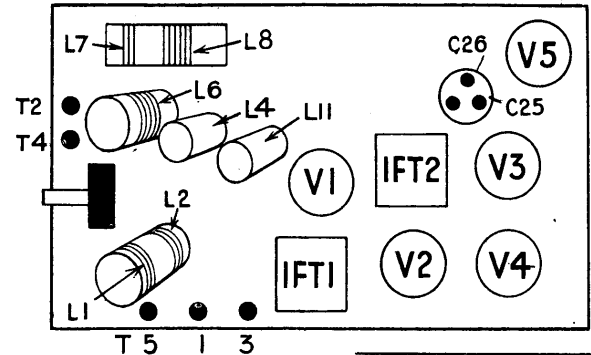
GANGING

I.F. Circuits.—Set plug to "distance," tone and volume fully clockwise, and tune to S.W. maximum. Short R5. Keep input low to prevent operation of the A.V.C.

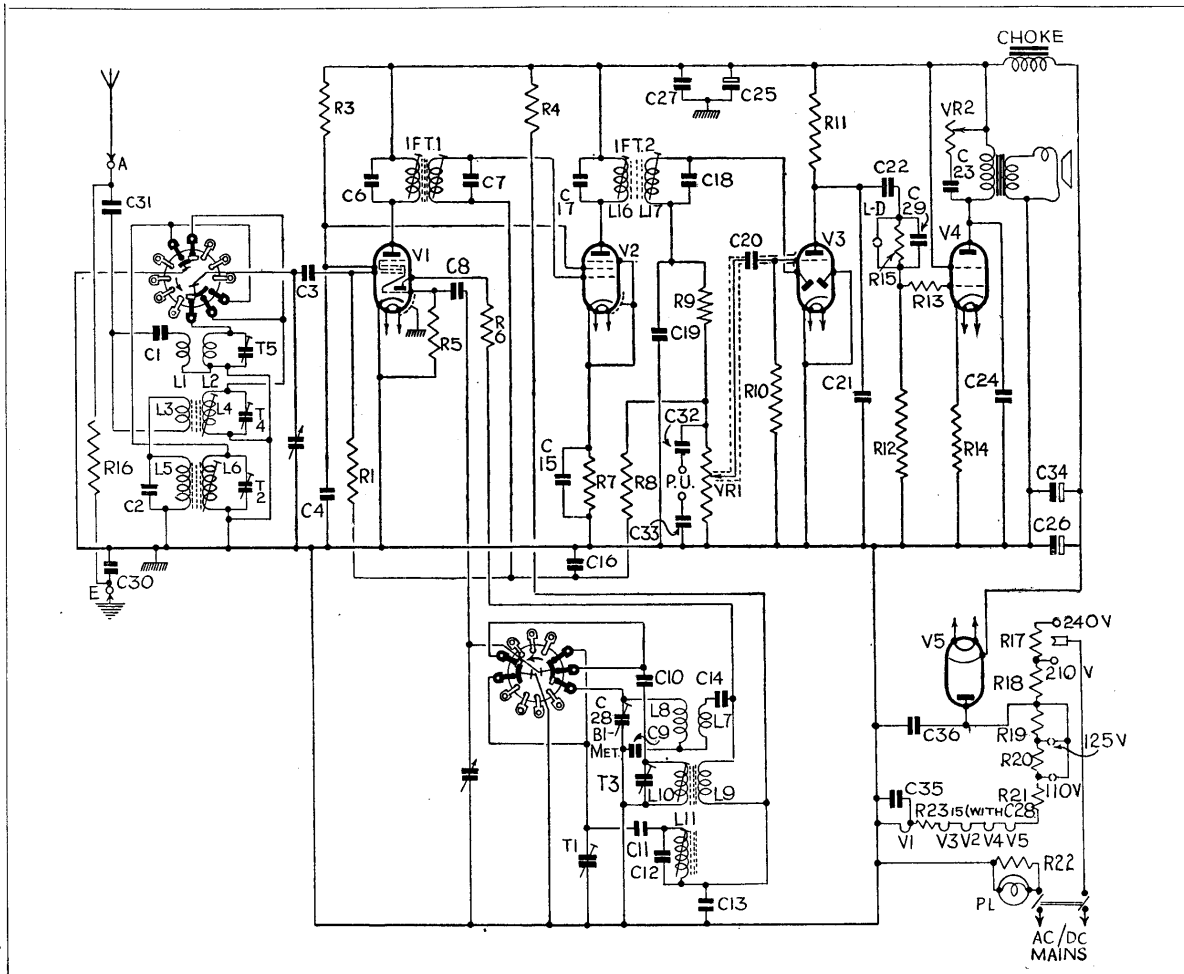
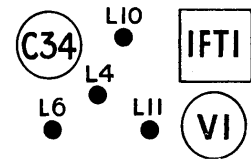
Inject 485 kc. (618.6 m.) to V1 grid via .1 mfd. and adjust four I.F. trimmers for maximum with non-metallic tool.

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Main features of the underside of the chassis showing most of the trimmers. Remaining trimmers are shown in the detail of the top of chassis.



This receiver is an A.C./D.C. model covering short, medium and long bands. The circuit is economical and efficient.



VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
1	X 65	Anode	150	1.6
		Screen	60	2
		Osc. anode	100	4.5
2	KTW61M	Anode	150	4
		Screen	60	2
		Cathode	1.5	6
3	DH63	Anode	50	.4
4	KT32	Anode	137	70
		Screen	150	5
		Cathode	7.5	75
5	U31	Anode	180 A.C.	—
		Cathode	166	91

Pilot lamp 6.2 v., .3 amp.

RESISTANCES

R.	Ohms.	R.	Ohms.
1	.5 meg.	14	100
3	23,000	15	1.5 meg.
4	10,000	16	.1 meg.
5	.1 meg.	17	71
6	100	18	75
7	230	19	167
8	2.3 meg.	20	36
9	50,000	21	95
10	10 meg.	22	23 5 w.
11	.23 meg.	23	15
12	.5 meg.	VR1	1 meg.
13	50,000	VR2	50,000

CONDENSERS

C.	Mfds.	C.	Mfds.
1	100 mmfds.	19	100 mmfds.
2	500 "	20	.0035
3	230 "	21	350 mmfds.
4	.05	22	.005
6	200 mmfds.	23	.15
7	200 "	24	.0023
8	75 "	25	32
9	.005 "	26	16
10	455 mmfds.	27	.05
11	500 "	29	.23
12	50 "	30	.05
13	350 "	31	.001
14	50 "	32	.01
15	.05	33	.05
16	.1	34	16
17	100 mmfds.	36	.05
18	100 "		

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L.W. Band.—With gang at minimum, see that gang registers with 1° mark. Tune to 4°, inject 720 m. (416.7 kc.) to aerial and earth and adjust T1 for maximum.

Tune to 77°, inject 1,900 m. (157.9 kc.) and adjust L11. Tune in 850 m. (352.9 kc.), and adjust T2. Tune in 1,900 m. and adjust L6.

Repeat operations.

M.W. Band.—Tune to 4°, inject 190 m. (1,578.9 kc.) and adjust T3. Tune to 77°, inject 530 m. (566 kc.) and adjust core of L10.

Tune in 210 m. (1,428.6 kc.) and adjust T4. Tune in 530 m. (566 kc.) and adjust core of L4.

Repeat operations.

S.W. Band.—Tune to 86°, inject 50 m. (6 mc.) and adjust loop L8. Tune in and rock gang, injecting 18 m. (16.667 mc.) and adjust T5. Tune in 50 m. (6 mc.) and adjust loop L2.

Repeat operations.

Adjustment of coil loops is done by bending loop across the inside of the coil former up or down, using a strip of insulating material with a nick in it.

WINDINGS

L.	Ohms.	L.	Ohms
16	9	1.7
2	V. low	10	2.5
3	26	11	7.5
4	2.5	12	5
5	70	13	5
6	20	16	6.5
77	17	6.5
8	V. low	Choke	100