

# MARCONIPHONE 874

## H.M.V. 1102

Five valve, plus rectifier and tuning indicator, three waveband superhet with 8 station push buttons and automatic frequency correction circuit. For 195-225 volt, 50-100 cycle A.C. supplies. Made by the Marconiphone Co., Ltd. and the Gramophone Co., Ltd., Hayes, Middlesex.

**Circuit.**—Transformer coils, with iron cores on M. and L.W., couple the aerial to V1, the frequency changer. Wavechanging is by buttons and eight further buttons switch trimmer capacities across the M. and L.W. coils for automatic tuning.

In the oscillator section, the push-buttons switch permeability adjustable coils across fixed tuning capacities, C12, C47. I.F. transformers with iron cores and trimmer capacities couple up V2, the I.F. amplifier, and V4, the double-diode-triode.

I.F.T.2 has a third winding which energises V3, a double-diode "discriminator." Voltage changes are produced across R8, R9 and applied to the grid of V4, thereby controlling its current.

The cathode current of V4 passes through an "A.F.C. unit" connected in the oscillator tuned P.B. circuits. The whole circuit is so arranged that if the I.F. signal is off tune due to incorrect push-button adjustments, the cathode current through the A.F.C. unit alters the inductance of the oscillator circuit so as to bring it, and therefore the I.F., into tune.

V4 operates in a perfectly straightforward way and also controls V7, a tuning indicator. Resistance-capacity coupling, including a tone circuit, leads to V5, an output tetrode.

V6 is a full-wave rectifier with a conventional smoothing arrangement.

Wavebands: 13.8-50, 196-580, 726-2,000 metres. Provision for high-resistance pick-up and 5 ohms extension speaker. Pilot lamps, 6.5v. Consumption, 70 watts.

### GANGING

I.F. CIRCUITS.—Press Droitwich button, short C19, inject to V2 grid via .1 mfd. Connect D.C. milliammeter in earth return (yellow) of A.F.C. unit.

1. Screw T14 in. 2. Inject 465 kc., adjust T13 for maximum. 3. Note exact reading of meter. Insert slip of paper between S1 contacts (escutcheon screw switch). 4. Adjust f14 for same meter reading. 5. Remove slip of paper and adjust T13 for maximum on output meter.

6. Repeat operations 3 and 4.  
7. Connect osc. to V1 grid. Remove paper from S1. Adjust T11 and T12 for max. at 465 kc.

CALIBRATION.—See pointer is on L.W. calibration line with gang at maximum.

S.W. BAND.—Inject and tune to 50 m., adjust L10 loop for max. Adjust L2 at 30 m. Repeat operations.

M. & L.W. BANDS.—Tune to 225 m. on dial, inject 1,333.3 kc., adjust T9, T1. Adjust L11 and L4 at 530 m. (566 kc.). Repeat operations.

Set receiver to 850 m., inject 352.9 kc., adjust T10 and T2. Adjust L12 and L8 at 1,900 m. (157.9 kc.). Repeat operations.

Note: After adjustments to L4 or L8, the aerial P.B. trimmers must be readjusted.

### BUTTON ADJUSTMENT

When the escutcheon is removed, S1 automatically shorts the A.F.C. voltage and the P.B. trimmers can be adjusted without regard to the A.F.C. The trimmers are near their respective buttons, and the osc. coils should be adjusted first in each case. The adjustment should be made on the user's mains with the set well warm.

A.F.C. action can be tested by holding S1 open with a slip of paper between contacts. The signal should then be held while the osc. trimmer is given several turns on each side of the true point.

### VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	X65	Anode	260	1.25
		Screen	95	4
		Osc. anode	120	5.5
		Cathode	3.8	10.75
2	KTW63	Anode	265	7
		Screen	95	1.4
		Cathode	2.9	8.4
3	D63	—	—	—
		—	—	—
4	DH63	Anode	133	.8
		Cathode	2	.8
5	KT61	Anode	245	38
		Screen	265	7
		Cathode	4.5	45
6	U50	Anode	360 A.C.	—
		Cathode	360 D.C.	65
7	Y63	Target	265	.1

### RESISTANCES

R	Ohms.	R	Ohms.
1	350	17	1.5 meg.
2	50,000	18	1 meg.
3	23,000	19	.5 meg.
4	23,000	21	400
5	35,000	23	50
7	350	25	1 meg.
8	2.3 meg.	26	2,300
9	2.3 meg.	27	150
10	.1 meg.	28	500
11	.5 meg.	32	23
12	1 meg.	33	1,000
13	2,300	40	10,000
14	50,000	VR1	2 meg.
15	.15 meg.	VR2	2 meg.
16	1.5 meg.		

### WINDINGS

L	Ohms.	L	Ohms.
1	5.5	12	11
2	.1	13, 24, 25	2.3 each
3	.6	14, 15, 16	6.5 each
4	.2	17, 18	10.5 each
5	.18	19	6.5
6	.10	20	6.5
7	.4	21	5
8	9.5	22	10.5
9	.6	23	4
10	.1	Field	1,660
11	4.5		

### CONDENSERS

C	Mfils.	C	Mfils.
1	350 mmfds.	22	.0023
2	.05	23	.5
4	.1	24	.4
5	.4	25	75 mmfds.
6	50 mmfds.	26	50
7	.005	27	.001
8	.005	28	.1
9	550 mmfds.	29	.001
10	230 mmfds.	30	10
11	75 mmfds.	31	.1
12	75 mmfds.	32	.8
13	.1	33	16
15	.05	34	15 mmfds.
16	.1	35	10 mmfds.
17	130 mmfds.	37	.05
18	.0001	38	75 mmfds.
19	150 mmfds.	39	75 mmfds.
20	.001	40	130 mmfds.
21	.0001	41	.0035
		47	75 mmfds.

Distinctive feature of this receiver is an A.F.C. circuit for the correction of errors in tuning due to push-button drift.

