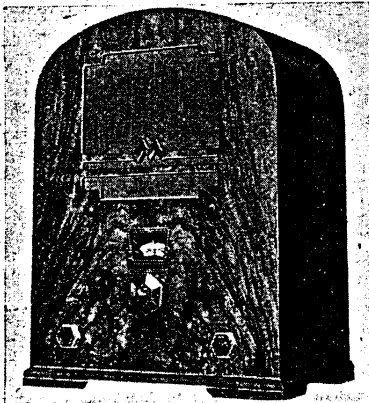


"TRADER" SERVICE SHEET

624

REVISED ISSUE OF SERVICE SHEET No. 20

MARCONIPHONE 284, 284A  
HMV 148 & COLUMBIA 1008



The Marconiphone 284.

THE Marconiphone 284 is a 3-valve, 2-band battery-operated TRF receiver. Gain is controlled by a filament rheostat and a separate reaction control. Provision is made for the connection of a gramophone pick-up and an external speaker.

The Marconiphone 284A, the HMV 148 and the Columbia 1008 employed identical chassis, the differences between all four models being confined to cabinet detail.

Release date and original price, all models: June, 1934; £7 19s. 6d. complete with batteries.

CIRCUIT DESCRIPTION

Aerial input via coupling coil L1 to single tuned circuit L2, L3, C8, which precedes tetrode valve (V1, Marconi metallised S23 or S21) operating as RF amplifier with gain control by filament rheostat R3.

Tuned-secondary RF transformer coupling by L4, L5 and L8, L9, C10 between V1 and triode detector valve (V2, Marconi metallised HL2), which operates on grid leak system with C2, R2. Provision for connection of gramophone pick-up in CG circuit. Reaction is applied from anode via coils L6, L7, and controlled by C11. RF filtering by C3, L10, C4 in anode circuit.

Parallel-fed auto-transformer coupling by R1, C5 and T1, via tone compensating filter C6, L11, between V2 and pentode output valve (V3, Marconi PT2). Fixed tone correction in anode circuit. Provision for connection of high impedance external speaker, also in anode circuit.

COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	V1 CG decoupling	0.1
C2	V2 CG condenser	0.0002
C3	RF by-pass condensers	0.0005
C4		0.001
C5	AF coupling to T1	0.1
C6	Part tone compensator	0.0005
C7	Fixed tone corrector	0.002
C8†	Aerial circuit tuning	—
C9†	Aerial MW trimmer	—
C10†	RF trans. sec. tuning	—
C11†	Reaction control	0.0005

† Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V2 anode HT feed	50,000
R2	V2 grid leak	2,000,000
R3	V1 filament rheostat	50

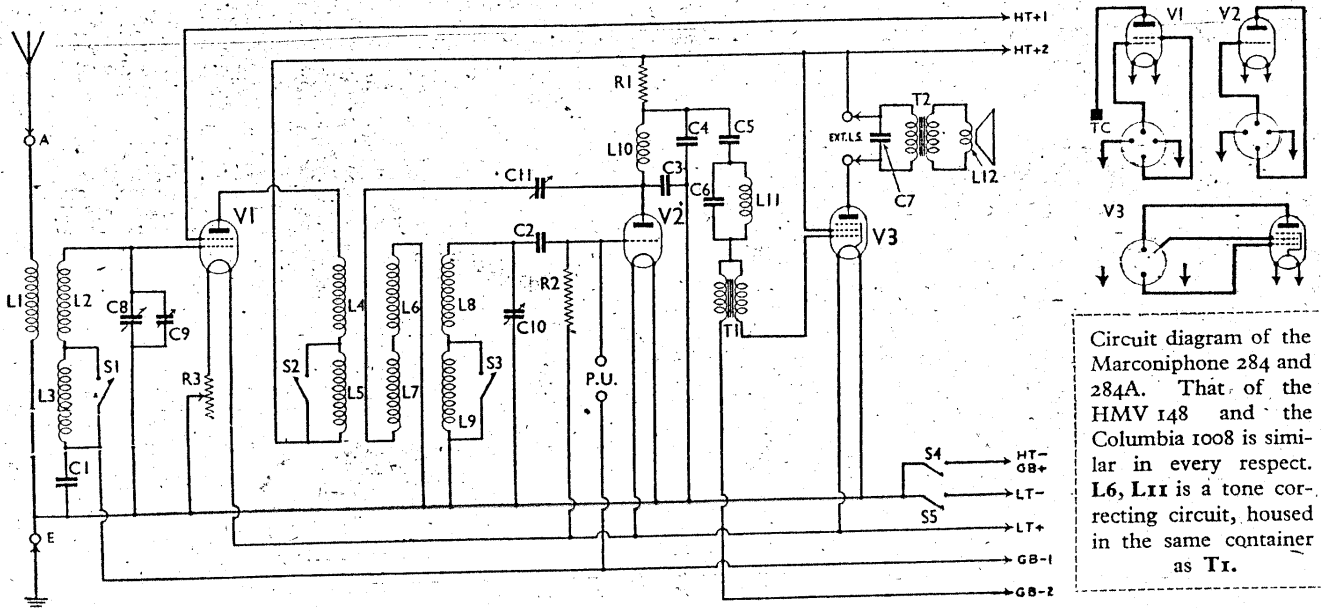
OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil	10.0
L2	Aerial tuning coils	2.5
L3		15.5
L4	RF transformer primary	6.0
L5	coils	9.0
L6	Reaction coils, total	4.0
L7		—
L8	RF transformer secondary	2.5
L9	coils	13.5
L10	RF filter choke	95.0
L11	Tone compensator coil	—
L12	Speaker speech coil	4.0
T1	Intervalve trans.	1,500.0*
T2	Speaker input trans.	4,250.0*
T3	Speaker output trans.	825.0
S1-S3	Waveband switches	—
S4	HT circuit switch	—
S5	LT circuit switch	—

† Inaccessible. \* Including L11.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted by the makers for an average chassis with a new

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 S23*	114	1.5	60	0.75
V2 HL2	50	1.25	—	—
V3 PT2	106	3.75	114	1.25



Circuit diagram of the Marconiphone 284 and 284A. That of the HMV 148 and the Columbia 1008 is similar in every respect. L6, L11 is a tone correcting circuit, housed in the same container as T1.

HT battery, correct HT and GB voltages and with the sensitivity control at maximum.

Voltages were measured on the 1,200 V scale of a meter whose resistance was 200 ohms per volt, the negative lead being connected to chassis. Currents of V1 and V2 were measured with the meter in the low RF potential ends of the circuits.

**DISMANTLING THE SET**

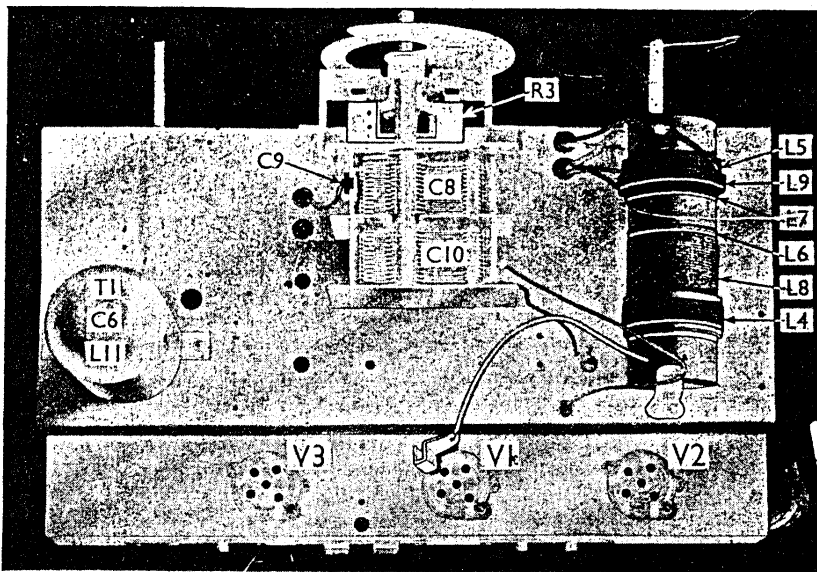
**Removing Chassis.**—Remove the sensitivity control knob (slotted screw), and the three remaining knobs (recessed grub screws); withdraw speaker leads from their terminals on the chassis, and disconnect the earthing lead; free the battery and speaker leads from the cleats holding them to the side and bottom of cabinet; remove the four hexagon screws (with washers) holding chassis to bottom of cabinet. If it is necessary to tilt the cabinet, do not lay it face-downwards, or R3 may be damaged.

**Removing Speaker.**—Disconnect from panel on speaker assembly the leads connecting it to chassis, and remove the three cross-head screws and nuts holding speaker to front of cabinet. When replacing, connect the yellow lead to terminal 3, and the red lead to terminal 5.

**GENERAL NOTES**

**Switches.**—S1-S3 are the waveband switches, and S4, S5 the battery switches, in a barrel operated assembly beneath the chassis. The switches are identified in our under-chassis view. Apart from the connections, the assembly can be freed upon removal of four fixing screws. S1-S3 all close on MW and open on LW.

**Coils.**—These are of the unscreened type. The RF transformer, L4, L5, L8, L9, and the reaction coils, L6, L7, are carried on a former mounted on the chassis deck, while the aerial unit L1, L2,



Plan view of the chassis. R3 is seen in front of the gang assembly. The RF and reaction coils are individually indicated. T1, C6 and C11 are sealed in their container.

L3 is carried underneath. Both are very robustly constructed and should not give any trouble.

**Transformer T1.**—This is of the auto-transformer type designed for parallel feed, and, together with its associated tone correction filter comprising condenser C6 and choke L11, it is sealed within a cylindrical screening box with black wax. Should a fault develop, it will be necessary to replace the complete unit, which is held in place by two screws.

**Resistance R3.**—This is a 50 Ω variable wirewound rheostat operated by the sensitivity control. The element is wound on a flat former carried on brackets just

behind the tuning scale. Replacement is simple.

**Condenser C7.**—As this condenser is connected directly across the primary of the speaker input transformer T2 it is not seen in either chassis view; it will be found inside the cloth bag covering the speaker.

**Pick-up.**—Two sockets are provided at the rear of the chassis for the connection of a gramophone pick-up. The recommended type is a Marconiphone Model 19, with a 5,000 Ω volume control connected in parallel and a 10,000 Ω voltage dropping resistance in series. Since no pick-up switching is provided, the pick-up plugs should be withdrawn when receiving radio.

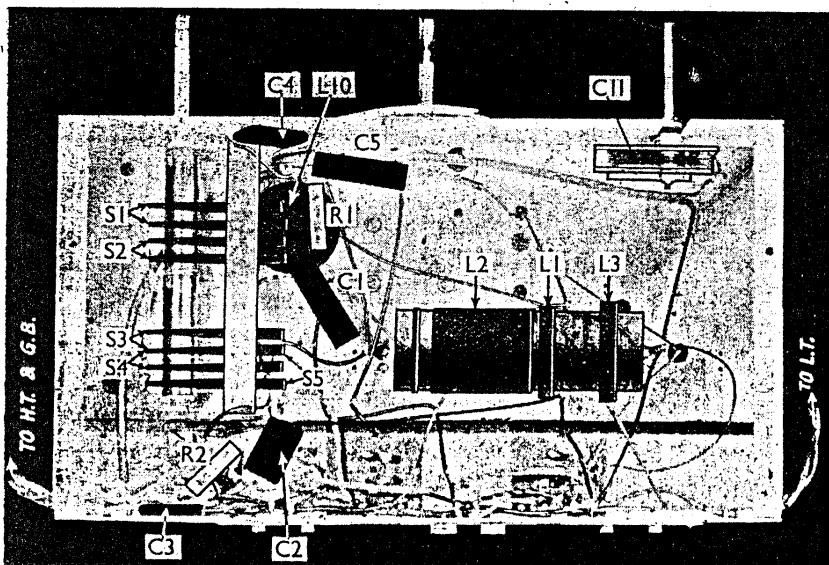
**Extension Speaker.**—This should preferably be of the low-impedance (4-8 Ω) type, and should be connected to terminals 1 and 2 on internal speaker transformer T2. A high-impedance speaker can be connected across terminals 3 and 5, that is, in parallel with the primary of T2.

**Battery Voltages.**—The correct HT and GB battery voltages for the 284 receiver are: HT+2, 114 V; HT+1, 60 V; GB-2, 4.5 V for a PT2 marked V, W or X, and 3.0 V for a Y or Z valve; GB-1, 1.5 V. The total HT consumption is about 8.5 mA.

**CIRCUIT ALIGNMENT**

Connect signal generator, via a suitable dummy aerial, to A and E sockets. Switch set to MW, and turn the sensitivity control to maximum.

Feed in a 220 m (1,362 KC/S) signal, tune it in, and adjust C9 and C11 in turn for maximum output, keeping C11 in such a position that the receiver is just short of oscillation. It is advisable finally to check the setting of C9, readjusting C11 if necessary, on the aerial with which it is to be used; and after final adjustment, C9 should be sealed with wax.



Under-chassis view. The aerial coils are identified, as are also the switches. The HT battery cable emerges on the left, and the LT on the right.