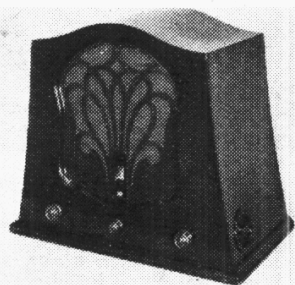


"TRADER" SERVICE SHEET

563

MARCONIPHONE 42

and HMV 501 Table Radiogram



The Marconiphone 42 receiver.

THE Marconiphone 42 is a 3-valve (plus rectifier) 2-band AC TRF receiver, designed to operate from mains of 95-260 V, 50-60 C/S. Twelve arrangements of two plugs in seven sockets enable any voltage within this range to be accommodated, and the settings are given in a table in "General Notes" overleaf.

The HMV 501 table radiogram employs an identical chassis, but the cabinet is different, and the controls are brought out to different positions. Otherwise, except for the addition of a pick-up and motor, this *Service Sheet*, which was prepared from a Marconiphone 42 receiver, is applicable to the HMV 501 in every respect.

Release date, both models: 1931.

CIRCUIT DESCRIPTION

Aerial input via variable series condenser **C18** to capacity coupled band-pass filter. Primary coils **L1**, **L2** are tuned by **C19**; secondaries **L3**, **L4** by **C21**. Coupling by **C1**.

First valve (**V1**, Marconi MS4B) is a tetrode operating as RF amplifier with gain control by variable resistance **R3**, which varies SG voltage.

Choke-capacity RF coupling by **L5**, **C4** to second valve (**V2**, Marconi metallised MH4), which operates as grid leak detector with **R5**, **C7**. Control grid circuit is tuned by **L8** (MW), plus **L9** (LW), and **C5**, **C23**. Reaction is applied from anode via coils **L6**, **L7**, and is controlled by **V1** gain control **R3**, so that reaction circuit is progressively damped as **V1** SG voltage is lowered, and *vice versa*. RF filtering by **C11**, **L10**, **C12** in anode circuit. Provision for connection of gramophone pick-up in control grid circuit via **L9**, **L8**, **R5**, and a special volume control **R7**, which is ganged with **R3**, is fitted. When the switch control is turned to the gram position, **S4** and **S5** open, applying necessary GB to **V2**, and over-biasing **V1** to mute radio.

Parallel-fed transformer coupling by **R10**, **C10** and **T1** between **V2** and pentode output valve (**V3**, Marconi MPT4). Provision for connection of low impedance external speaker across secondary of output transformer **T2**. Switch **S6**, also connected across **T2** secondary, closes between all settings of the switch control,

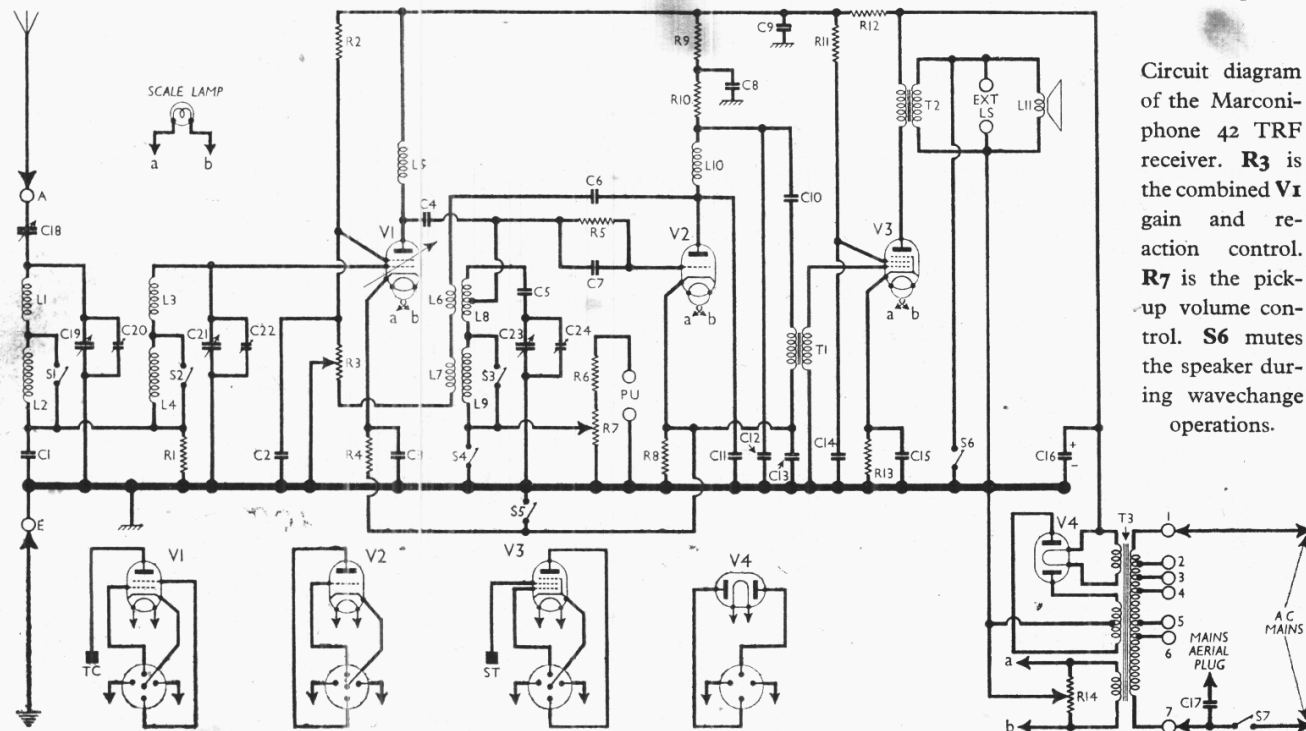
muting the receiver during the process of switching from one position to another.

HT current is supplied by full-wave rectifying valve (**V4**, Marconi U10). Smoothing by electrolytic condenser **C16**, resistance **R12** and condenser **C9**. Provision by plug and socket device for mains aerial connection via **C17**. Potentiometer **R14** permits hum in heater circuit to be balanced out.

COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Band-pass coupling ...	0-01
C2	V1 SG decoupling ...	0-1
C3	V1 cathode by-pass ...	0-1
C4	V1 to V2 RF coupling ...	0-0005
C5	RF tuning series condenser ...	0-01
C6	Reaction coupling condenser ...	0-0002
C7	V2 CG condenser ...	0-0003
C8	V2 anode decoupling ...	1-0
C9	HT smoothing condenser ...	8-0§
C10	AF coupling to T1 ...	0-5
C11	RF by-pass condensers ...	0-0003
C12	RF by-pass condensers ...	0-001
C13	V2 cathode by-pass ...	1-0
C14	V3 SG decoupling ...	1-0
C15	V3 cathode by-pass ...	1-0
C16*	HT smoothing condenser ...	8-0
C17	Mains aerial coupling ...	0-0001
C18†	Aerial series condenser ...	—
C19†	Band-pass pri. tuning ...	—
C20†	B-P pri. MW trimmer ...	—
C21†	Band-pass sec. tuning ...	—
C22†	B-P sec. MW trimmer ...	—
C23†	RF circuit tuning ...	—
C24†	RF circ. MW trimmer ...	—

* Electrolytic. † Variable. ‡ Pre-set. § Made up of two 4μF condensers in parallel.



Circuit diagram of the Marconiphone 42 TRF receiver. **R3** is the combined **V1** gain and reaction control. **R7** is the pick-up volume control. **S6** mutes the speaker during wavechange operations.

RESISTANCES		Values (ohms)
R1	V1 CG decoupling	2,000
R2	V1 SG HT feed	100,000
R3	Radio volume control	50,000
R4	V1 GB resistance	600
R5	V2 grid leak	1,000,000
R6	PU series resistance	25,000
R7	Gram volume control	25,000
R8	V2 gram GB resistance	1,000
R9	V2 anode decoupling	10,000
R10	V2 anode load	50,000*
R11	V3 SG HT feed	10,000
R12	HT smoothing resistance	2,000
R13	V3 GB resistance	280
R14	Heater circuit pot	25

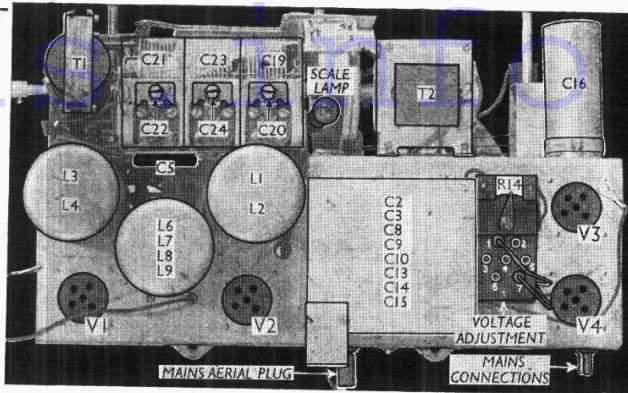
* Made up of two 100,000 Ω in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Band-pass primary coils	4.5
L2		21.5
L3		4.5
L4		22.5
L5	V1 anode RF choke	85.0
L6	Reaction coils	15.0
L7		15.0
L8	RF MW tuning coil	4.5
L9	RF LW tuning coil	22.5
L10	RF filter choke	85.0
L11	Speaker speech coil	8.5
T1	Intervalve trans. { Pri. ... 1,000.0 Sec. ... 10,000.0	
T2	Output trans. { Pri. ... 1,000.0 Sec. ... 0.5	
T3	Mains trans. { Pri., total ... 57.0 Heater sec. ... 0.25 Rect. heat. sec. ... 0.25 HT sec., total ... 1,250.0	
S1-S3	Waveband-switches	—
S4, S5	Radio/gram change switches	—
S6	Wavechange muting	—
S7	Mains switch	—

DISMANTLING THE SET

Removing Chassis.—Remove the three knobs (recessed grub screws in our sample, but may be pull-off) from the front of the cabinet, and the volume control knob from the side; remove the volume control escutcheon (three instrument-head wood screws) from the side of the cabinet; unsolder from the tags on the pink sockets at rear of chassis the two leads from the speaker; remove from beneath the cabinet the two front chassis fixing bolts (with lock-washers and large metal washers), and the two rear ones (with similar washers beneath the cabinet and nuts and flat-sided washers inside the cabinet).
When replacing, fit the volume control escutcheon with its name panel uppermost.
Removing Speaker.—Unsolder the connecting

Plan view of the chassis. The mains voltage adjustment sockets are numbered here, while the tags of the condenser block are identified in the under-chassis view below.



leads as already described, and remove the four fixing nuts (with metal washers).
When replacing, the connecting leads should emerge from the bottom.

VALVE ANALYSIS

Valve voltages and currents in the table below are those given in the makers' manual. They were measured with the volume control advanced, but not far enough to permit oscillation, and V2 anode current was measured while receiving a signal. Voltages were measured on the 1,200 V scale of an Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 MS4B	150	1.2	40	0.5
V2 MH4	70	2.0*	—	—
V3 MPT4	280	25.0	150	3.5
V4 U10	—	16.0†	—	—

* With signal tuned in. † Each anode, DC. Cathode to chassis: 300 V, DC.

GENERAL NOTES

Switches.—S1-S3 are the waveband switches, S4, S5 the radio/gram change-over switches, and S6 the wavechange muting switch, in a single rotary unit beneath the chassis. The switch tags are individually indicated in our under-chassis view. S1-S3 are all closed on MW, and open on LW. S4, S5 are both closed on MW and LW and open on gram. S6 is open on all settings of the control, but it closes during the process of changing from one setting to another.
Scale Lamp.—This has an MES base. A suitable replacement could be one rated at 6.2 V, 0.3 A. The size of the bulb is unimportant.
Gramophone Pick-up.—Two sockets (coded blue) are provided at the rear of the chassis for a pick-up. An internal volume control R7 is provided, and the leads may be left per-

manently connected. R7 is ganged with the radio volume control R3.

External Speaker.—Two further sockets (coded pink) are provided for connection of a low impedance (6-12 Ω) external speaker.

Condenser Block.—Condensers C2, C3, C8, C9, C10, C13, C14 and C15 are contained in a single unit mounted on the chassis deck. The connecting leads are all brought out to two rows of tags on a paxolin panel, which is fitted to the underside of the unit and appears beneath the chassis deck. The tags are numbered from 1 to 13, and a fourteenth tag, marked E, forms the common connection to all the condensers mentioned except C10. Tag E is connected to chassis. The connecting panel is shown in our under-chassis view, where the tag numbers and the condensers associated with them are indicated.

Tags 3, 13 and 12 were externally unconnected in our chassis, although they were connected internally to condensers. The makers state that this may be so, and that they might be used as replacements should others in the block break down. One condenser is connected between tags 12 and 13, and is isolated from the rest of the assembly; the other is between tags 3 and E. Both are rated at 0.1 μ F.

Volume Control.—This is a dual unit comprising R3 and R7, which are ganged. R3 operates only on radio, and R7 operates only on gram.

Resistances R4, R8, R13.—These are the GB resistances for V1, V2 and V3. They are wired on a single former, and their six ends are brought out to tags at one end of the unit. The tags are identified in our under-chassis view, where the unit is indicated.

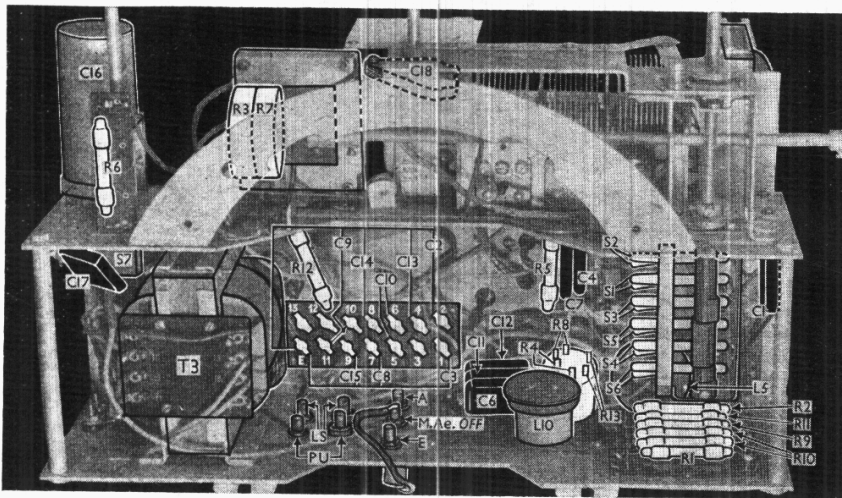
Mains Voltage Adjustment.—Tappings from the mains transformer T3 primary are brought out to seven sockets on a panel on the chassis deck near V4 holder. The sockets are numbered from one to seven, and the appropriate numbers are indicated in our circuit diagram and plan view illustration. Two plugs, which are connected via S7 directly to the mains connection pins, are inserted in two of the sockets according to the mains voltage. The table below gives the plug positions for the twelve settings.

Mains Voltage	Tappings Used	Mains Voltage	Tappings Used
95-102	4 and 5	146-155	1 and 5
103-110	4 and 6	156-164	1 and 6
111-118	3 and 5	190-205	4 and 7
119-127	3 and 6	206-222	3 and 7
128-136	2 and 5	223-240	2 and 7
137-145	2 and 6	241-260	1 and 7

CIRCUIT ALIGNMENT

The MW and LW letterings at the ends of the scales should be visible in the scale aperture at equal distances from top and bottom of the aperture respectively at the two extremes of travel. The drum can be adjusted if its two fixing screws are slackened.

Connect signal generator via a suitable dummy aerial to A and E sockets, turn C18 to maximum, volume control to minimum, and gang to minimum. Feed in a 200 m (1,500 KC/S) signal, advance volume control to a point short of oscillation, and adjust C20, C22 and C24 for maximum output, slacking off volume control if oscillation occurs. Check calibration at several settings of the scale, and adjust MW pointer for best compromise over the scale. Check calibration on LW, resetting the volume control at each point, and adjust LW pointer.



Under-chassis view. The switch and condenser block connections are indicated.