

"TRADER" SERVICE SHEET
767

MARCONIPHONE 314
AND H.M.V. 167

REVISED ISSUE OF
SERVICE SHEET No. 208

THE Marconiphone 314 is a 3-valve, 2-band T.R.F. receiver for battery operation. It has provision for the connection of a gramophone pick-up and an external speaker. Except for the cabinet, the H.M.V. 167 is similar in every respect.

Release date and original price, both models: 1937; £7 17s. 6d., complete with batteries.

CIRCUIT DESCRIPTION

Aerial input is via the coupling coils **L1** and **L2** to single tuned circuits **L3**, **L4**, **C11**, trimming on the L.W. band being carried out by means of **C10**, which is shunted across **L4**.

The first valve (**V1**, Marconi metallised **S23**) is a tetrode R.F. amplifier with a variable resistor **R2** in its filament circuit which operates as a gain control. This valve is tuned anode coupled by **L5**, **L6**, **C13** to a triode detector valve (**V2**, Marconi metallised **HL2**) operating on the grid leak system with **C4** and **R5**.

Provision is made for the connection of a gramophone pick-up in the C.G. circuit. Reaction is applied from the anode by **L7** and **L8**, and is controlled by the variable capacitor **C14**, parasitic oscillation being prevented by the resistor **R4**. R.F. filtering is provided in the anode circuit by **R6**, **R7**, **C5**, **C6** and **C7**.

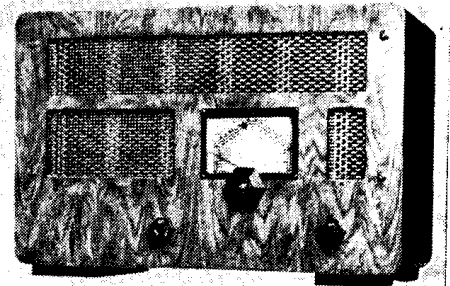
Parallel-fed auto-transformer coupling by **R8**, **C8** and **T1** between **V2** and the pentode output valve (**V3**, Marconi **PT2**). Fixed tone correction in the anode circuit by the capacitor **C9**, and provision for the connection of a low impedance extension speaker across the secondary of the output transformer **T2**.

COMPONENTS AND VALUES

RESISTORS		Values (ohms)
R1	V1 C.G. resistor ...	1,000,000
R2	V1 gain control ...	50
R3	V1 anode decoupling ...	23,000
R4	Reaction circuit stabilizer ...	100
R5	V2 grid leak ...	2,300,000
R6	V2 anode R.F. filter resistor ...	10,000
R7	... tors ...	10,000
R8	V2 anode load ...	50,000

CAPACITORS		Values (μF)
C1	Aerial shunt ...	0.000023
C2	V1 C.G. capacitor ...	0.0005
C3	V1 anode decoupling ...	0.1
C4	V1 to V2 R.F. coupling ...	0.00005
C5	V2 anode R.F. filter ...	0.00023
C6	capacitors ...	0.0005
C7	0.1
C8	V2 to V3 A.F. coupling ...	0.1
C9	Tone corrector ...	0.001
C10†	Aerial L.W. trimmer ...	—
C11†	Aerial tuning capacitor ...	—
C12†	Aerial M.W. trimmer ...	—
C13†	Anode circuit tuning ...	—
C14†	Reaction control ...	0.00065

† Variable. ‡ Pre-set.



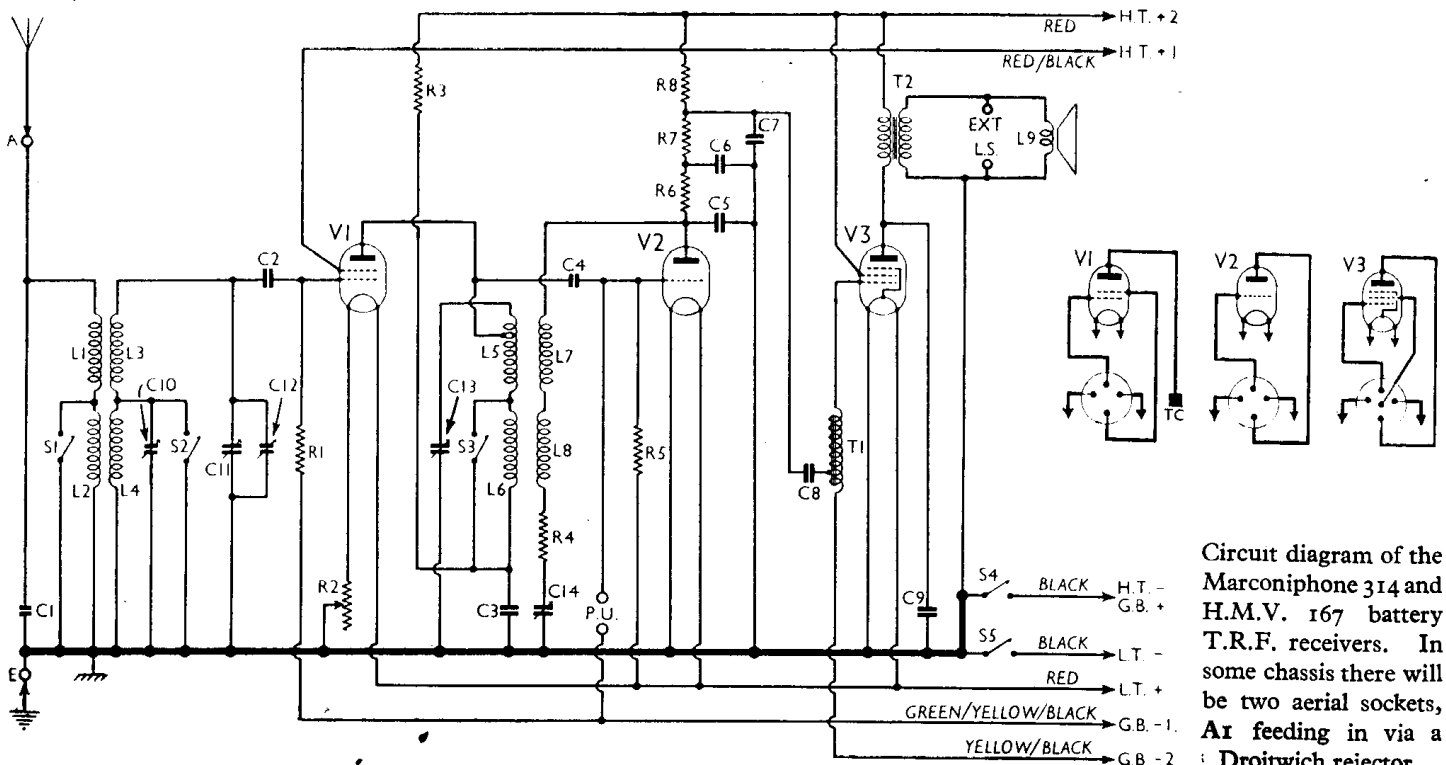
The Marconiphone 314 battery receiver.

OTHER COMPONENTS

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coils ...	20.0
L2		120.0
L3	Aerial tuning coils ...	3.5
L4		18.5
L5	V1 anode tuning coils ...	3.5
L6		15.5
L7	Reaction coils ...	2.0
L8		5.0
L9	Speaker speech coil ...	4.0
T1	Intervalve trans. total ...	3,080.0
T2	Output trans. { Pri. ...	800.0
	{ Sec. ...	0.7
S1-S3	Waveband switches ...	—
S4	H.T. circuit switch ...	—
S5	L.T. circuit switch ...	—

VALVE ANALYSIS

Valve voltages and currents in the table overleaf are those measured in our receiver when it was operating from a new H.T. battery reading 128 V overall, on load. The receiver was tuned to the lowest wavelength on the medium band and the gain control was at maximum.



Circuit diagram of the Marconiphone 314 and H.M.V. 167 battery T.R.F. receivers. In some chassis there will be two aerial sockets, A1 feeding in via a Droitwich rejector.

but the reaction control was at minimum. There was no signal input. Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 823	85	1.1	60	0.4
V2 HL2	55	0.8	—	—
V3 PT2‡	115	4.0	120	0.7

‡ The valve in our receiver was marked with an "X."

DISMANTLING THE SET

Removing Chassis.—Remove gain control knob (concentric screw) and washer from spindle; remove remaining three knobs (recessed grub screws); free the speaker and battery leads from their cleats, and remove the four bolts (with washers and spring washers) holding chassis to bottom of cabinet.

If its rear is now tilted upwards, chassis may now be withdrawn to the extent of the speaker leads; or if these are unsoldered it may be freed entirely.

When replacing, do not omit to replace the small washer on the gain control spindle before replacing the knob.

Removing Speaker.—Remove the four bolts (with washers) holding the speaker to the sub-baffle.

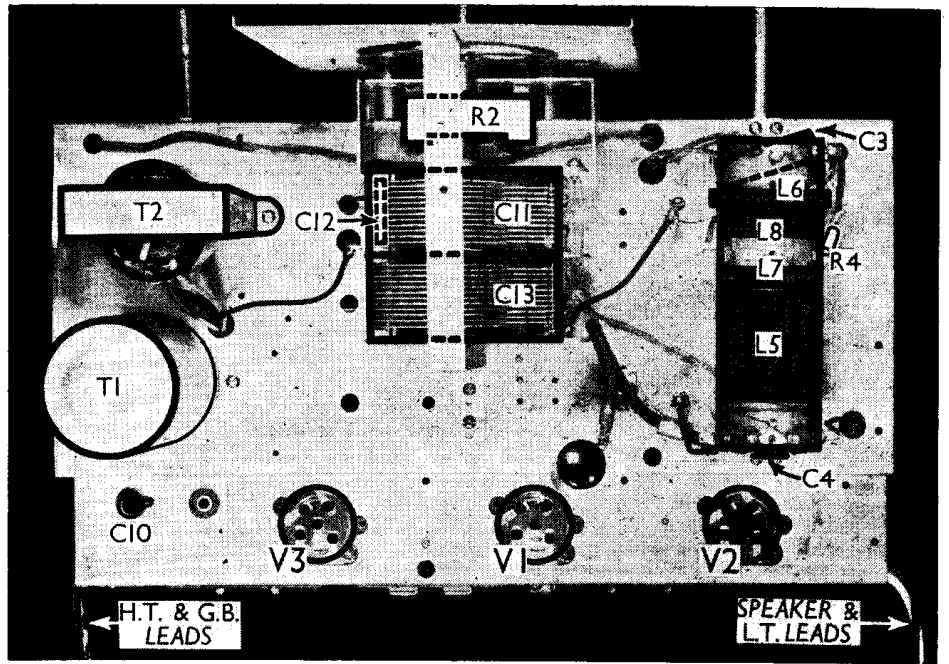
When replacing, the terminal panel should be at the bottom.

GENERAL NOTES

Switches.—S1-S3 are the waveband switches ganged in a single unit with the battery switches, S4, S5, and mounted beneath the chassis. Each switch is formed by two of the leaf-spring contacts, one of these being common to three switches.

In the "Off" position of the control, all the switches are open, and in the M.W. position they are all closed. On L.W., S1, S2 and S3 are open, and S4, S5 closed.

Coils.—L1-L4 and L5-L8 are in two horizontally mounted unscreened units, the former below and the latter above the



Plan view of the chassis. R2 spindle is concentric with that of the gang.

chassis. The large single-layer coils are L3 and L5 respectively.

Resistor R2.—This is a variable resistor connected in the filament circuit of V1 and operating as a gain control. It is mounted beneath the spindle of the gang unit, and its spindle is concentric with the driving spindle of the gang.

External Speaker.—At the back of the chassis there are two terminals, connected across the secondary of the output transformer T2, to which can be attached a low impedance (about 2-4Ω) external speaker.

Batteries.—L.T., Exide 2 V., 45 A.H. glass-cased cell, type DFG. H.T. and G.B., Marconiphone 114 V H.T. plus 6 V G.B., type B498.

Battery Leads and Voltages.—Black lead, spade tag, L.T. negative; Red lead,

spade tag, L.T. positive 2 V; Black lead, yellow plug, H.T. negative and G.B. positive; Red/black lead, yellow plug, H.T. positive 60 V; Red lead, yellow plug, H.T. positive 114 V; Green/yellow/black lead, yellow plug, G.B. negative 1.5 V; yellow/black lead, yellow plug, G.B. negative according to letter marked on V3. If V3 is marked "V," "W" or "X" the voltage should be 4.5 V, while if it is marked "Y" or "Z" the voltage should be 3 V.

Chassis Divergency.—Commencing with serial number J/1 570 a Droitwich rejector is fitted in later chassis, and there are two aerial sockets A1, A2, the original socket becoming A2. The rejector unit is connected between this and the additional socket A1.

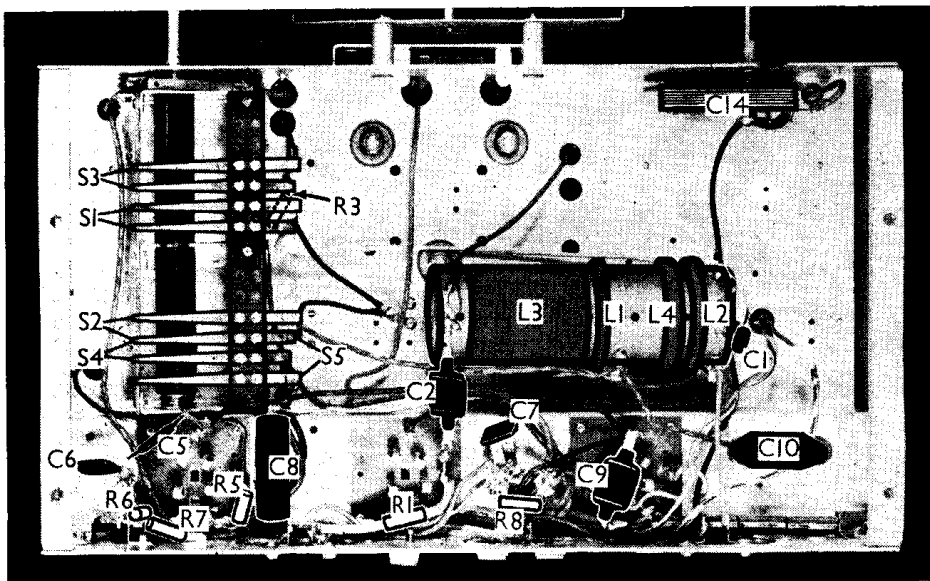
CIRCUIT ALIGNMENT

Connect signal generator leads via a suitable dummy aerial to A and E sockets, turn the gain control to maximum. An 0.3 V A.C. voltmeter may be connected to the external speaker sockets as an output meter.

The scale calibration should be ignored during alignment, the pointer being adjusted afterwards for the best compromise. Remember that a strong signal will overload the receiver, causing a fall in volume, and should not be used for alignment.

M.W.—Switch set to M.W., and adjust the reaction control to a point just short of oscillation. Feed in a 195 m (1,539 kc/s) signal, tune it in, and adjust C12 for maximum output while rocking the gang for optimum results, readjusting the reaction control as required.

L.W.—Switch set to L.W., feed in a 900 m. (333.4 kc/s) signal, tune it in, and adjust C10 for maximum output, again rocking the gang for optimum results and adjusting the reaction control as required to maintain a condition just short of oscillation.



Under-chassis view, in which all the switches are identified.