

MARCONIPHONE 314
3-VALVE BATTERY RECEIVER

EMPLOYING a tetrode R.F. amplifier, the Marconiphone 314 is a 3-valve battery operated receiver with provision for connecting both an extension speaker and a gramophone pick-up.

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 823) is a tetrode R.F. amplifier with a variable resistance (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 and reaction is applied from the anode by L7 and L8, and is controlled by the variable condenser C14, parasitic oscillations being prevented by the resistance R4. R.F. filtering is provided in the anode circuit by R6, R7, C5, C6 and C7.

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

DISMANTLING THE SET

Removing Chassis.—To remove the chassis from the cabinet, remove the knob from the gain control (screw down the centre) and the washer from the spindle. Now remove the other three knobs (recessed grub screws), free the speaker and battery leads from the two cleats holding them, and remove the four bolts (with washers and spring washers) holding the chassis to the bottom of the cabinet.

By tilting the back upwards the chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes. When replacing, do not forget to place the small washer on the spindle of the gain control before fixing the knob.

To free the chassis entirely, unsolder the speaker leads.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, remove the four bolts (with washers) holding it to the sub-baffle and when replacing, see that the terminal panel is at the bottom.

COMPONENTS AND VALUES

Table with 2 columns: RESISTANCES and Values (ohms). Lists components R1 through R8 and their corresponding values.

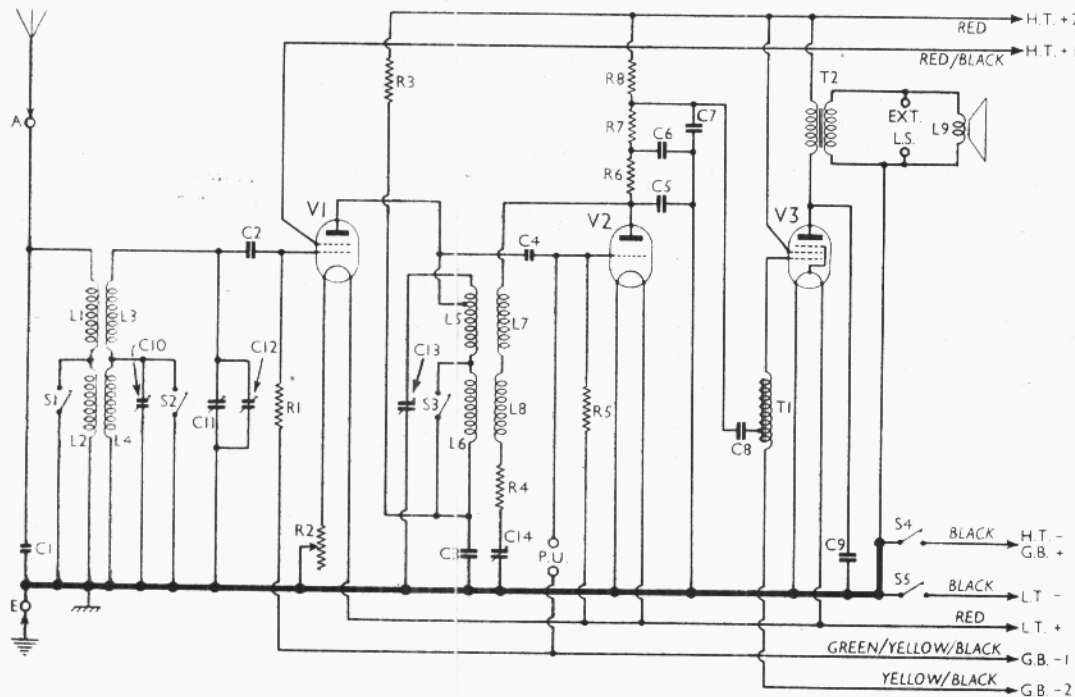
Table with 2 columns: CONDENSERS and Values (µF). Lists components C1 through C14 and their corresponding values.

† Variable. ‡ Pre-set.

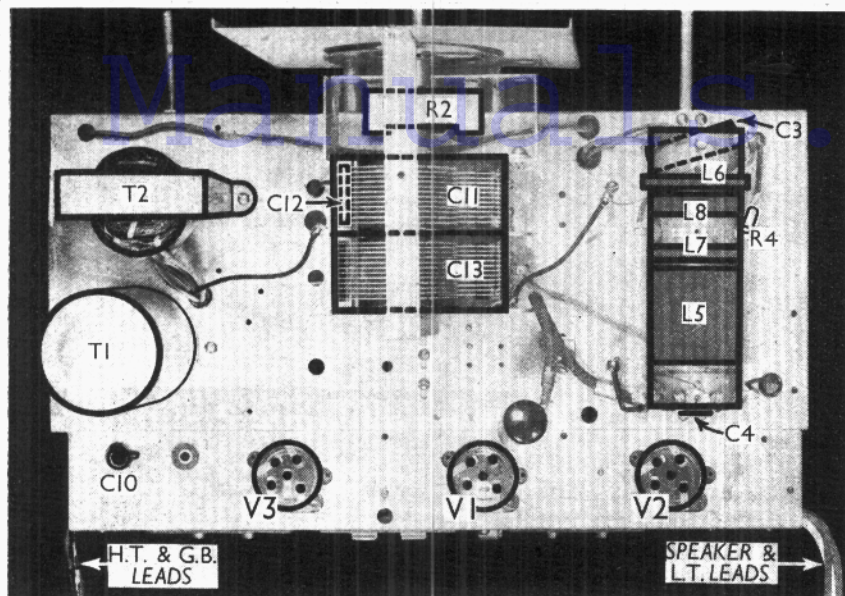
Table with 2 columns: OTHER COMPONENTS and Approx. Values (ohms). Lists components L1 through S5 and their approximate values.

VALVE ANALYSIS

Valve voltages and currents given in the table (p. vii) are those measured in



Circuit diagram of the Marconiphone 314 3-valve battery receiver. Note the R.F. filter system in the anode circuit of V2.



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 3V.

CIRCUIT ALIGNMENT

If a signal generator is available connect it to the **A** and **E** sockets and connect an aerial and earth to the respective sockets. Switch the set to the M.W. band, turn the gain control to maximum and adjust the reaction control to a point just short of oscillation. Set the signal generator to 195 m., tune the receiver to the signal and, while rocking the gang, adjust **C12** for maximum output as shown on an output meter, or an 0-3 V A.C. voltmeter connected across the **Ext. L.S.** terminals.

Now set the generator to 900 m., switch the receiver to L.W., adjust reaction as before, and adjust **C10** for maximum output, while rocking the gang.

The scale calibration should be ignored during alignment, the pointer being adjusted afterwards for the best compromise.

If no signal generator is available, the receiver can be aligned on broadcast signals, preferably during daylight, and the output judged aurally. Tune in a weak station which does not fade, at approximately 210 m., and adjust **C12** for maximum output, with the gain control at maximum and reaction at a point just short of oscillation.

Next tune the receiver to a weak station on approximately 1,000 m., adjust the reaction control to a point just short of oscillation and adjust **C10** for maximum output.

A strong signal will overload the receiver and cause a fall in volume and should not be used for alignment.

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, 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 a negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 S23	85	1.1	60	0.4
V2 HL2	55	0.8	—	—
V3 PT2†	1.5	4.0	120	0.7

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

control. It is mounted beneath the spindle of the gang condenser 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 40) external speaker.

Batteries.—L.T., Exide 2 V, 45 AH 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 2V; Black lead, yellow plug, H.T. negative and G.B. positive; Red/black lead, yellow plug,

GENERAL NOTES

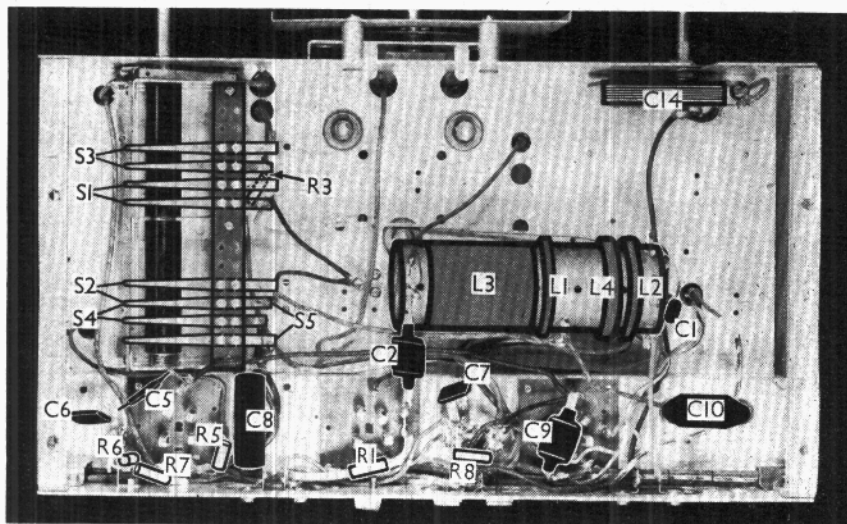
Switches.—**S1-S3** are the waveband switches ganged in a single unit with the battery switches, **S4, S5**, and mounted beneath the chassis. Each switch is formed by two of the leaf-spring contacts, one of these being common to three switches.

The table below gives the switch positions for the various control settings, turning clockwise from the "off" position, O indicating open and C closed.

Switch	Off	L.W.	M.W.
S1	O	O	C
S2	O	O	C
S3	O	O	C
S4	O	C	C
S5	O	C	C

Coils.—**L1-L4** and **L5-L8** are in two horizontally-mounted unscreened units, the former below and the latter above the chassis. The large single-layer coils **L3** and **L5** respectively.

Resistance R2.—This is a variable resistance connected in the filament circuit of **V1** and operating as a gain



Under-chassis view. All the switches are clearly marked.