



Circuit diagram of the Marconiphone 315 battery receiver. L5 and L12 have inductive as well as capacitive trimmers.

COMPONENTS AND VALUES

CONDENSERS	Values (μF)
C1 Aerial isolating condenser	0.0005
C2 Droitwich retractor fixed tuning	0.00035
C3 Aerial MW coupling	0.0000023
C4 Aerial MW fixed trimmer	0.000015
C5 V1 CG condenser	0.0001
C6 V1 CG decoupling	0.1
C7 Part of aerial shunt control	0.1
C8 V1 SG decoupling	0.1
C9* Automatic GB by-pass	25.0
C10 V1 anode decoupling	0.1
C11 MW and LW RF by-pass	0.00023
C12 V2 CG condenser	0.00005
C13 V1 anode RF by-pass condensers	0.0005
C14 V1 anode RF by-pass condensers	0.00005
C15 V1 anode RF by-pass condensers	0.0005
C16 AF coupling to T1	0.1
C17 Fixed tone corrector	0.001
C18* HT circuit reservoir	4.0
C19* Droitwich retractor trimmer	
C20 Aerial circuit SW trimmer	
C21 Aerial circuit MW trimmer	
C22 Aerial circuit LW trimmer	
C23 Aerial circuit tuning	
C24 Reaction control	0.0005
C25 V1 anode MW trimmer	
C26 V1 anode LW trimmer	
C27 V1 anode circuit tuning	

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES	Values (ohms)
R1 V1 CG resistance	2,300,000
R2 V1 CG decoupling	500,000
R3 V1 gain and aerial shunt control	125,000
R4 V1 SG HT feed	50,000
R5 Automatic GB resistance	320
R6 V1 anode HT feed	23,000
R7 V2 CG resistance	2,300,000
R8 V2 anode load	50,000
R9	10,000
R10 RF stopper resistances	10,000

OTHER COMPONENTS	Approx. Values (ohms)
L1 Aerial SW coupling coil	0.2
L2 Aerial MW coupling coil	15.0
L3 Aerial LW coupling coil	125.0
L4 Aerial SW tuning coil	0.1
L5 Aerial MW tuning coil	1.3
L6 Aerial LW tuning coil	12.0
L7 Droitwich retractor coil	7.0
L8 SW reaction coil	0.3
L9 MW reaction coil	1.2
L10 LW reaction coil	4.0
L11 V1 anode SW tuning coil	0.1
L12 V1 anode MW tuning coil, total	1.3
L13 V1 anode LW tuning coil, total	12.0
L14 Speaker speech coil	4.0
T1 Intervale auto-trans., total	3,310.0
T2 Output trans. { Pri. Sec. }	1,000.0 0.6
S1-S19 Waveband switches	—
S20 HT circuit switch	—
S21 SW LT circuit switch	—
S22 MW and LW LT circuit switch	—

MW Inductive Trimming.—This is only necessary if a coil or coils have been replaced. First adjust C25 and C21 as described under "MW" above. Feed in a 530 m (566 KC/S) signal, tune it in, and adjust core of L5, by means of the hexagonal headed screw beneath the chassis, for maximum output. If the calibration is out, adjust L12 core in a similar manner, afterwards re-adjusting L5 core. Repeat the C25 and C21 adjustments.

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 W21	71	2.0	68	0.9
V2 HL2	46	1.0	—	—
V3 KT2	118	3.8	122	0.8

Valve voltages and currents given in the table above are those measured in our receiver when it was operating with a new HT battery reading 125 V, on load. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. There was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

GENERAL NOTES

Switches.—S1-S19 are the waveband switches, and S20-S22 the battery circuit switches, in two gauged rotary units beneath the chassis. The units are indicated in our under-chassis view, and shown in detail in the diagrams on page iv.

The table (page iv) give the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates open, and C closed.

Coils.—L1, L4; L7 and L8, L11 are in three unshielded units beneath the chassis, while L2, L3, L5, L6 and L9, L10, L12, L13 are in two screened units on the chassis deck. The first of the screened units also contains C4, while each contains a pair of trimmers adjustable from the tops of the cans, and a core adjustment (for L5 and L12 respectively) reached from beneath the chassis.

Scale Lamp.—This is an Osram MES type, rated at 2 V, 0.1 A, fitted on a bracket behind the waveband indicating window.

External Speaker.—There is no provision for this, but a low impedance (about 5 Ω) type could be wired across the internal speaker speech coil.

Bearer Tags.—In several places in this chassis, special bearer tags are used. These comprise a metal bracket and a tag, moulded into a small rectangular plate of paxolin, and insulated from each other. The metal bracket is screwed to the chassis, and the tag is used to support components or wiring. The units look like small moulded condensers, and may confuse those who have not encountered them before.

Batteries.—LT, Exide DFG 2 V 45 AH glass cased LT cell; HT, 120 V dry battery, Marconiphone Cat. No. B 408 or B 600.

CIRCUIT ALIGNMENT

The pointer should be positioned so that it stops about $\frac{1}{8}$ in. below the horizontal position at each end of the scale. The reaction control must be kept advanced to a point just short of oscillation, and the volume control must be at maximum. Connect a signal generator to the A and E sockets.

MW.—Switch set to MW, and set gang to minimum. Feed in a 195 m (1,538 KC/S) signal, and adjust C25, then C21, for maximum output. Do not adjust the inductive trimmers unless a coil or coils have been replaced.

LW.—Switch set to LW, tune to 725 m on scale, feed in a 725 m (414 KC/S) signal, and adjust C26, then C22, for maximum output.

SW.—Switch set to SW, tune to 50 m on scale, feed in a 50 m (6 MC/S) signal, and adjust the inductances of L4 and L11, in that order, for maximum output, by moving the loop of wire inside each coil former up or down by means of a strip of insulating material with a nick in it.

Feed in a 16.5 m (18.2 MC/S) signal,

SWITCH TABLE AND DIAGRAMS

Switch	Off	SW	MW	LW
S1	—	C	—	—
S2	—	—	C	—
S3	—	—	C	—
S4	—	—	—	C
S5	—	C	—	—
S6	—	—	C	—
S7	—	—	—	C
S8	C	—	—	—
S9	—	—	C	C
S10	—	C	—	—
S11	C	—	—	—
S12	—	C	—	—
S13	—	—	C	—
S14	—	C	—	—
S15	—	—	C	—
S16	—	—	—	C
S17	—	—	C	—
S18	—	—	—	C
S19	—	C	—	—
S20	—	C	C	C
S21	—	C	—	—
S22	—	—	C	C

tune it in, and adjust C20 for maximum output, while rocking the gang for optimum results. Feed in a 50 m (6 MC/S) signal, tune it in, and readjust loop inside L4 former for maximum output. Repeat the adjustment of C20 at 16.5 m.

After each waveband has been aligned, check that oscillation is obtainable and controllable throughout the band. The pointer should be adjusted to give the best possible compromise on all bands.

Droitwich Retractor.—This must be adjusted on the aerial on which the receiver Droitwich, with reaction control just short of the oscillation point, and adjust C19 for minimum output.