



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 rector fixed tuning	0.00035
C3	Aerial MW coupling	0.000023
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 rector 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 rector 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	Intervalve auto-trans., total	3,310.0
T2	Output trans. { Pri... 1,000.0 Sec... 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 KL2	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 ganged 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 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 Receptor.—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.