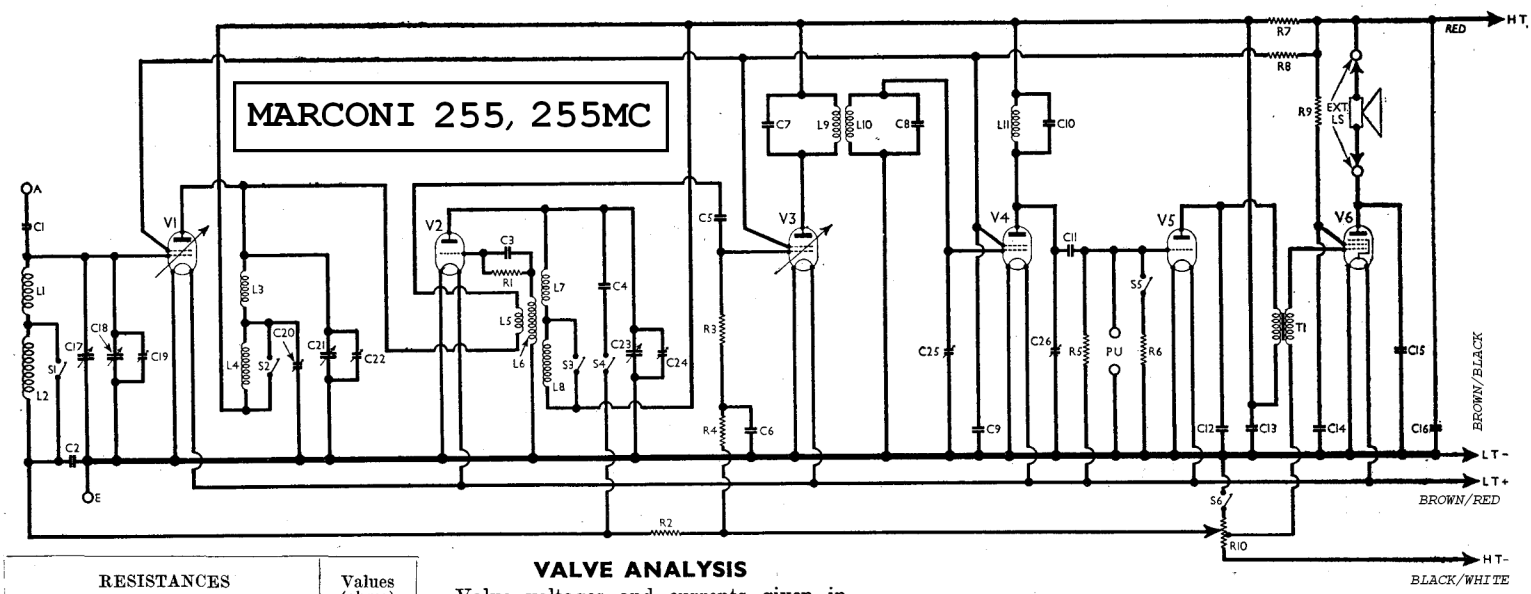

RESISTANCES		Values (ohms)
R1	V2 CG resistance	50,000
R2	V1 CG decoupling ...	1,000,000
R3	V3 CG resistance	1,000,000
R4	V3 CG decoupling ...	1,000,000
R5	V5 CG resistance	1,000,000
R6	Local/distant damping ...	2,000
R7	V1-V5 anode HT feed ...	10,000
R8	V1, V3, V4 SG HT feed ...	20,000
R9	V6 SG HT feed	5,000
R10	Gain control	600*

* Tapped at 250 O from HT negative end.

CONDENSERS		Values (μF)
C1	Aerial series condenser ...	0·00005
C2	V1 CG decoupling ...	0·5
C3	V2 CG condenser... ...	0·0002
C4	Osc. circ. LW trimmer ...	0·0002
C5	V3 CG condenser... ...	0·0001
C6	V3 CG decoupling ...	0·1
C7	IF transformer fixed tuning condensers	0·0005
C8		0·0003
C9	V1, V3, V4 SG's by-pass...	0·1
C10	V4 anode fixed tuning ...	0·0003
C11	V4 to V5 IF coupling ...	0·0001
C12	IF by-pass	0·0005
C13	V1-V5 anodes by-pass ...	0·5
C14	V6 SG by-pass	0·1
C15	Fixed tone corrector ...	0·007*
C16	HT reservoir condenser ...	2·0
C17†	Frame manual trimmer ...	0·0001
C18†	Frame aerial tuning ...	—
C19‡	Frame aerial MW trimmer ...	—
C20‡	V1 anode LW trimmer ...	0·0001
C21†	V1 anode circuit tuning ...	—
C22‡	V1 anode MW trimmer ...	—
C23†	Oscillator circuit tuning...	—
C24‡	Osc. circuit MW trimmer ...	—
C25‡	IF trans. sec. trimmer ...	0·0003
C26‡	V4 anode IF trimmer ...	0·0003

† Variable. ‡ Pre-set. *Made up of 0·002 μF and 0·005 μF condensers connected in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings...	2·0
L2		16·0
L3	V1 anode circuit tuning coils	4·0
L4		13·0
L5	Mixer coupling coil ...	2·5
L6	Oscillator reaction coil	2·4
L7	Osc. circ. MW tuning coil	4·0
L8	Osc. circ. LW tuning coil	6·0
L9	IF trans. Pri. ...	25·0
L10	IF trans. Sec. ...	25·0
L11	V1 anode IF coil ...	25·0
T1	Intervalve trans. ... Pri. ...	500·0
	Intervalve trans. ... Sec. ...	5,000·0
LS	Speaker winding ...	1,900·0
S1-S4	Waveband switches ...	—
S5	Local/distant switch ...	—
S6	HT circuit switch ...	—
S7	LT circuit switch ...	—

VALVE ANALYSIS

Valve voltages and currents given in the table, col. 4, have been taken from the makers' manual. They represent approximately the condition when the HT positive plug is inserted in the 108-volt tapping of a new HT battery of the recommended type, with the volume control at maximum and **S5** at "distant."

Voltages were measured on the 120 V scale of a Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 S21	62	1·2	40	1·0
V2 HL2	62	1·5	—	—
V3 S21	62	0·6	40	0·4
V4 S21	62	1·4	40	1·2
V5 HL2	60	2·3	—	—
V6 PT2	90	3·0	80	—

CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator via a 0.1 μF condenser to control grid of **V3** and chassis, turn gain control to maximum, and switch **S5** to distant. Feed in a 125 KC/S (2,400 m) signal, and adjust **C26** and **C25** for maximum output.

RF and Oscillator Stages.—With the two scale indicators set to the centre of their adjusting slots, the scale overlap at each end of the travel should be about equal. Transfer signal generator leads to **A** and **E** sockets, or couple the output loosely with the frames via a turn of wire round the case.

MW.—Switch set to MW, and turn **C17** to minimum, keeping the gain control at maximum. Tune to 200 m on scale, feed in a 200 m (1,500 KC/S) signal, and adjust **C24,** then **C19** and **C22** for maximum output. Check calibration at various positions on the scale, and see that the range of **C17** is within the required limits, re-adjusting **C19** if necessary. Adjust the MW pointer to the position which offers the best compromise at all positions of the scale.

LW.—Switch set to LW, tune to 1,000 m on scale, feed in a 1,000 m (300 KC/S) signal, and adjust **C20** for maximum output. Check calibration at various points on the scale, and adjust the LW pointer for the best compromise at all parts of the scale.

Finally, adjust **C19** on a broadcast signal, if necessary.

THE principal differences in the MC models, apart from the inclusion of a moving coil speaker, are that all GB potentials are fixed and are not obtained automatically; that gain control is by a screen feed potentiometer; that the intervalve transformer **T1** is parallel-fed; and that the condenser block contains only four condensers.

Less important differences are in the shape of **T1,** the omission of **C19,** the layout beneath the chassis, an additional battery lead and the omission of the local/distant switch.

Our plan view is used in connection with both types, but a separate circuit diagram and under-chassis view are given for the MC models. The valve base diagrams are the same for both types, and are not repeated.

CIRCUIT DESCRIPTION

(MC Model)

Tuned frame aerial input, **L1, L2, C18,** with manual trimmer **C17** for final adjustment, to RF tetrode valve **(V1, Marconi metallised S21)** which operates as signal frequency amplifier with anode circuit tuning by **L3, L4** and **C21.** Provision for connection of external aerial via **C1,** and an earth.

Second valve **(V2, Marconi metallised HL2)** is a triode operating as local oscillator. Anode coils **L7** (MW) plus **L8** (LW) are tuned by **C23.** Parallel trimming by **C24** (MW) and **C4** (LW); tracking by specially shaped vanes of **C23.** Reaction coupling from grid circuit by coil **L6.**

The tuned RF output from **V1** anode circuit is conveyed via mixer coil **L5,** which is inductively coupled to the oscillator circuit and thus picks up the oscillator frequency, via isolating condenser **C6** to control grid circuit of a second RF tetrode valve **(V3, Marconi metallised S21)** which operates as mixer.

Fourth valve **(V4, Marconi metallised S21)** is a third RF tetrode, operating this time as intermediate frequency amplifier. Coupling between **V3** and **V4** is via the transformer **L10, C8,** whose primary and secondary circuits are tuned by condensers **C7** and **C8, C25** respectively to the intermediate frequency. **V4** anode circuit is tuned to the same frequency by **L11, C26.**

Intermediate frequency 125 Kc/s.

Gain control is accomplished by varying the HT voltage applied to the screen grids of **V1, V3** and **V4.** These are all connected to a common junction at the slider of the potentiometer **R3,** which, with **R2,** forms a potential divider across the HT circuit.

IF output from **V4** is passed via **C9** to control grid of a second triode valve **(V5, Marconi metallised HL2)** which operates as second detector on the grid leak system with **C9** and **R7.** IF filtering by **C10** in anode circuit. Provision for connection of gramophone pick-up in control grid circuit.

Parallel-fed transformer coupling by **R8, C11** and **T1,** via grid stopper **R9,** between **V5** and pentode output valve **(V6, Marconi PT2).** Provision for connection of high impedance external speaker by the terminals to which **T1** primary is connected, although a low impedance type could be connected to two of the three terminals of the secondary, according to matching requirements.

VALVE ANALYSIS

(MC Model)

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 S21	76	1·6	40	1·2
V2 HL2	74	1·5	—	—
V3 S21	76	0·8	40	0·2
V4 S21	76	0·7	40	0·9
V5 HL2	25	1·0	—	—
V6 PT2	110	3·5	80	—