

'TRADER' SERVICE SHEET

# 307

# McMICHAEL SMC

## SUITCASE PORTABLE RECEIVER



**T**HE McMichael model SMC Suitcase Portable receiver employs a 4-valve battery-operated chassis having a valve arrangement comprising a tetrode RF amplifier, a triode detector, a triode first AF amplifier and a pentode output valve. The receiver has provision for an external aerial and earth and for headphones.

### CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, L2, C16** to variable-mu tetrode valve (**V1, Mazda SG215**) operating as RF amplifier with gain control by potentiometer **R15**, which varies GB applied. Provision for connection of external aerial, via coupling condenser **C1**, and earth. Manual trimming by "Adjust" lever, which varies position of **C16** stator in relation to rotor.

Choke-capacity fed tuned-grid coupling by **L3, C4, L5, L6** and **C17** between **V1** and triode detector valve (**V2, Osram**

metallised **HL2/K**), which operates on the grid leak system with **C7** and **R3**. GB is obtained from centre-tapped resistance **R4**, connected across filament circuit. Reaction is applied from anode, via condenser **C6**, by coil **L4**, and is controlled by rotating this coil inside **C5, C6** solenoid, thus varying the coupling.

Parallel-fed transformer coupling by **R6, C9** and **T1** between **V2** and third valve (**V3, Osram metallised HL2/K**), a triode operating as AF amplifier. Fixed tone correction by **C11**.

Parallel-fed transformer coupling by **R10, C12** and **T2** between **V3** and pentode output valve (**V4, Mazda Pen220**). Fixed tone correction by **C13, R12, C14** in anode circuit. Provision for connection of headphones across primary of internal speaker input transformer **T3**.

GB potentials for **V3** and **V4**, and potential across **R15**, are obtained automatically from drop across **R13, R14**, which form a potential divider in the HT negative lead to chassis. Decoupling by electrolytic condenser **C15**.

### COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 CG resistance	500,000
R2	V1 CG decoupling	500,000
R3	V2 CG resistance	2,000,000
R4	V2 GB filament pot.	500*
R5	V2 anode HT feed	50,000
R6	V2 anode load	30,000
R7	V1, V2 HT feed	10,000
R8	V3 CG decoupling	500,000
R9	V3 CG RF stopper	500,000
R10	V3 anode load	30,000
R11	V4 CG RF stopper	100,000
R12	Part of fixed tone corrector	5,000
R13	V3, V4 auto GB potential	150
R14	divider	560†
R15	V1 gain control	50,000

\* Centre-tapped. † Tapped at 180 Ω from chassis.

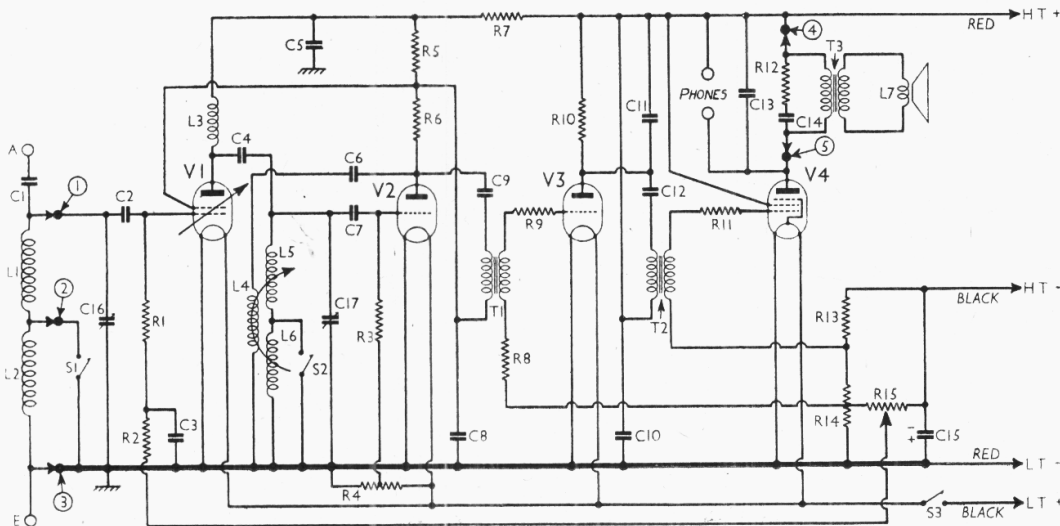
CONDENSERS		Values (μF)
C1	Ext. aerial coupling	0.00003
C2	V1 CG condenser	0.001
C3	V1 CG decoupling	0.25
C4	V1 to V2 RF coupling	0.001
C5	HT circuit RF by-pass	1.0
C6	V2 anode reaction coupling	0.001
C7	V2 CG condenser	0.0002
C8	V1 SG, V2 anode decoupling	1.0
C9	AF coupling to T1	0.5
C10	HT circuit reservoir	1.0
C11	Fixed tone corrector	0.001
C12	AF coupling to T2	0.5
C13	Part of fixed tone corrector	0.005
C14	Auto GB by-pass	0.003
C15*	Frame aerial circuit tuning	25.0
C16†	Frame aerial circuit tuning	—
C17†	V2 grid circuit tuning	—

\* Electrolytic. † Variable.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings	2.25
L2		4.75
L3	V1 anode RF choke	390.0
L4	Reaction coil	0.8
L5	V2 grid circuit tuning coils	2.0
L6		14.0
L7	Speaker speech coil	2.5
T1	V2, V3 coupling	Pri. 900.0 Sec. 1,900.0
T2	V3, V4 coupling	Pri. 900.0 Sec. 1,900.0
T3	Speaker input	Pri. 650.0 Sec. 0.2
S1, S2	Waveband switches	—
S3	LT circuit switch, ganged R15	—

### DISMANTLING THE SET

**Removing Chassis.**—If it is desired to remove the chassis from the cabinet, remove the eight nickel-plated wood screws holding the control panel to the wooden framework inside the case and the four countersunk-head wood screws holding the valve compartment.

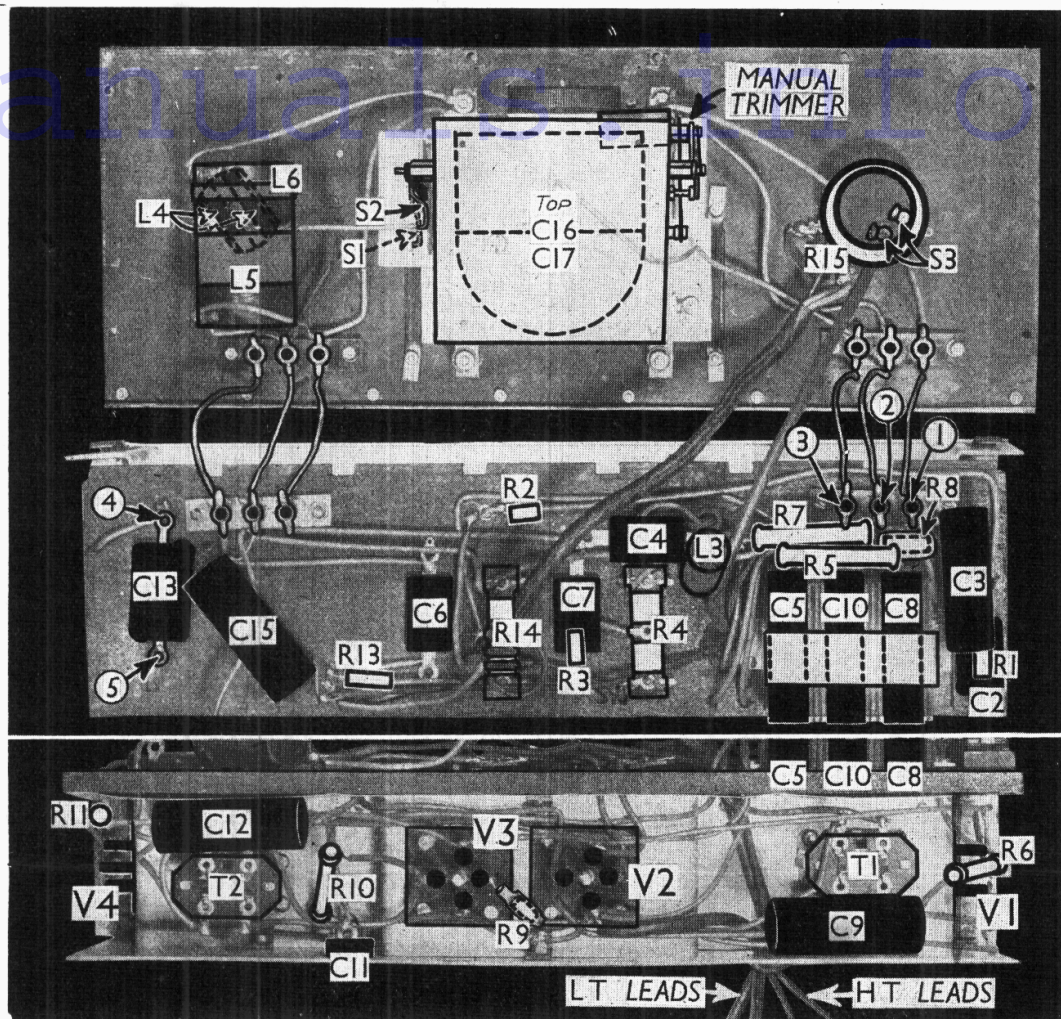


Circuit diagram of the McMichael SMC suitcase portable. The frame aerial and speaker connections are numbered. **L4** is on a rotor inside **L5** and **L6**.



Chassis illustrations. The upper view shows the underside of the control panel. Note the arrangement of the L4-L6 unit, with L4 on a rotor inside the L5, L6 former.

Below this view is an illustration of one side of the main chassis, while at the bottom, separated by a white line, is an underneath view of the main chassis.



Now lift up the control panel and unsolder the earthing lead from the screen, the speaker leads and the leads from the frame aerial. The chassis and control panel can now be withdrawn together.

When replacing, connect the frame aerial leads as follows, numbering the tags on the chassis terminal panel from right to left:—1, red silk-covered lead in sleeving; 2, white silk-covered lead in sleeving; 3, green silk-covered lead in sleeving.

**Removing Speaker and Frame Aerial.**—The speaker and frame aerial may be removed together by removing the six screws (with washers) passing through the sides of the lid of the case.

**VALVE ANALYSIS**

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 SG215	93	1.5	44	0.1
V2 HL2/K	32	0.4	—	—
V3 HL2/K	84	1.1	—	—
V4 Ven220	117	6.3	123	1.3

Valve voltages and currents given in the table above are those measured in our receiver when it was operating with an HT battery reading 126 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, the frame aerial connections being shorted.

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

**GENERAL NOTES**

**Switches.**—S1 and S2 are the waveband switches, fitted on a unit at one side of the gang condenser. A lever projecting through a slot in the control panel forms the common moving contact to the two switches, shorting the fixed contacts and connecting them to chassis in the closed (MW) position. Both switches are open on LW.

S3 is the QMB LT circuit switch, ganged with the gain control R15.

**Coils.**—L1 and L2 are the frame aerial windings, in the lid of the cabinet. Three leads connect them to the chassis, marked 1 to 3 in our circuit diagram and chassis picture. L3 is an RF choke.

L4-L6 are in a unit beneath the control panel, L4 being wound on a rotor, inside the tubular portion of the unit, which is adjustable by the reaction/sensitivity control knob.

**External Phones.**—Two sockets are

provided at the bottom of the speaker grille for a pair of high resistance headphones. The correct polarity should be observed.

**External A and E.**—Two further sockets at the bottom of the speaker grille are for an external aerial and earth. C1 is behind the grille, connected between the A socket and the top of L1.

**Components R12, C14.**—These are also behind the speaker grille, connected in series across the primary of T3.

**Resistances R4, R14.**—These are two tapped wirewound resistors, wound on flat paxolin formers.

**Manual Trimmer.**—This is a lever-operated device (marked "Adjust") which slightly alters the position of the "fixed" vanes of C16 relative to the axis of the gang. It forms the only trimming adjustment in the receiver, and no other alignment is possible.

**Batteries.**—LT, 2 V 20 AH jelly acid celluloid-cased cell, Grosvenor type BK4; HT, 126 V dry battery, Grosvenor type SR 395. GB is automatic.

**Battery Leads and Voltages.**—Black lead, spade tag, LT negative; red lead, spade tag, LT positive 2 V; black lead and plug, HT negative; red lead and plug, HT positive 126 V.