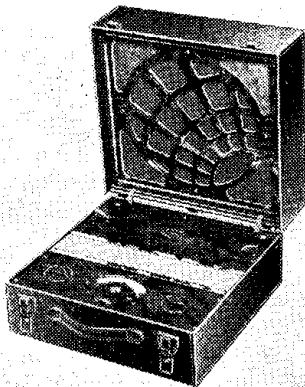


'TRADER' SERVICE SHEET

307

McMICHAEL SMC

SUITCASE PORTABLE RECEIVER



THE 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 divider | 150 |
| R14 | divider | 500† |
| R15 | V1 gain control | 50,000 |

* Centre-tapped. † Tapped at r8o O from chassis.

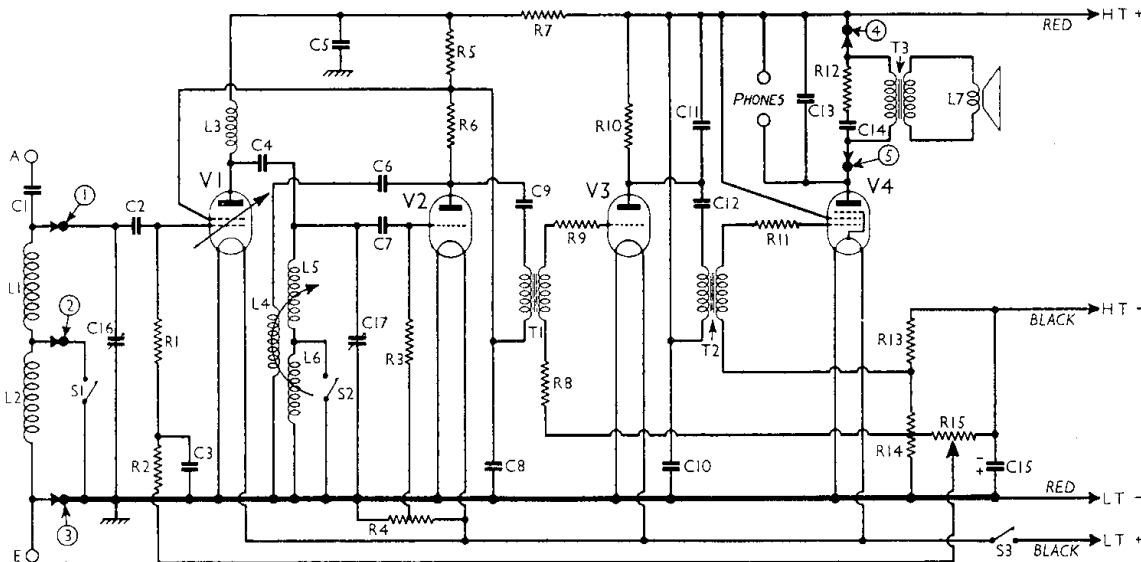
| CONDENSERS | | Values (μF) |
|------------|------------------------------|-------------|
| C1 | Ext. aerial coupling | 0.0003 |
| C2 | V1 CG condenser | 0.001 |
| C3 | V1 CG decoupling | 0.25 |
| C4 | V1 to V2 RF coupling | 0.001 |
| C5 | HT circuit RF by-pass | 1.0 |
| C6 | V2 anode reaction coupling | 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 | | 0.003 |
| C15* | Auto GB by-pass | 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

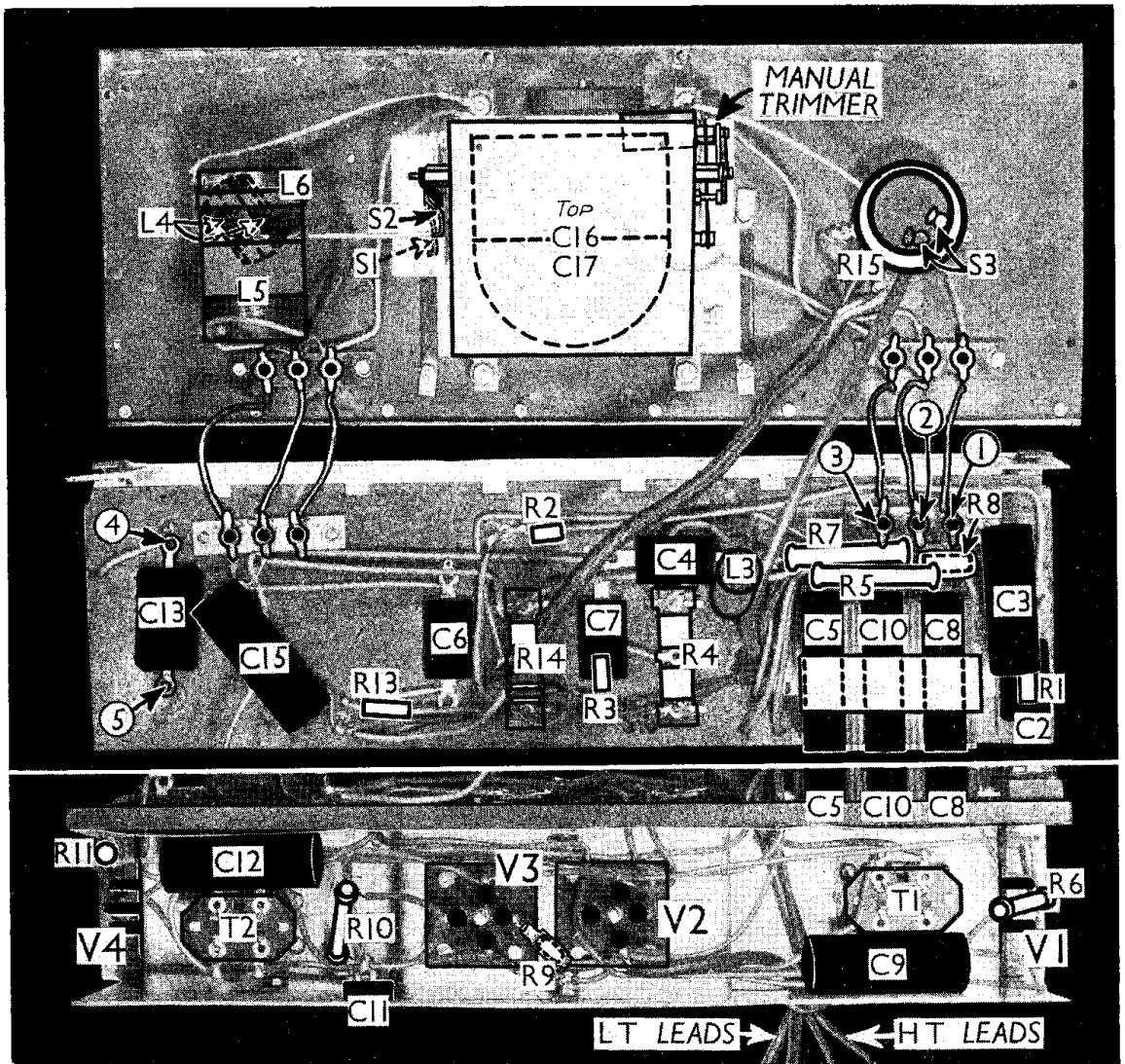
Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the eight nickel-plated wood screws holding the control panel to the wooden framework inside the case and the four countersunk-head wood screws holding the valve compartment.



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 yellow insulating 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 Pen220 | 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.

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