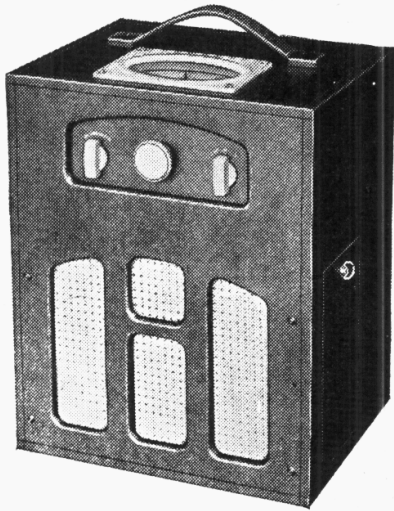


'TRADER' SERVICE SHEET

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HALCYON P39

BATTERY PORTABLE



THE Halcyon P39 is a 4-valve battery operated portable receiver with a self-contained frame aerial. Provision is made for using an external aerial and earth and also for headphones or an extension speaker.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, L2, C18** to pentode valve (**V1, Cossor metallised 210 SPT**) which operates as RF amplifier with gain control by potentiometer **R2** which varies the screen voltage applied, maximum voltage being limited by the inclusion of **R3**. Provision for connection of external aerial via **C1**, and earth, if required.

Tuned-anode coupling by **L4, L5, C21**, between **V1** and detector valve (**V2, Cossor metallised 220 IPT**), an RF

pentode operating on grid leak system with **C6, R6**. Reaction is applied from anode by coil **L3** and controlled by variable condenser **C20**, which is ganged with **R2**. RF filtering in anode circuit by **C9**.

Resistance-capacity coupling by **R8, C10, R9**, via RF filter **R10, C11**, between **V2** and triode AF amplifying valve (**V3, Cossor metallised 210 HL**.) RF filtering in anode circuit by **C12**.

Resistance-capacity coupling by **R11, C13, R13**, via RF filter **R12, C15**, between **V3** and tetrode or pentode output valve (**V4, Cossor 220 OT or 220 HPT**.) Fixed tone correction by **C16** in anode circuit. Provision for connection of high impedance external speaker between anode and HT positive line, while switch **S5** between anode and primary of internal speaker input transformer **T1** permits this speaker to be muted when the external speaker plug is fully inserted.

GB potentials for **V3** and **V4** are obtained automatically from potential divider comprising resistances **R14, R15** in HT negative lead to chassis. Fuse **F1** in negative HT lead affords protection against accidental short-circuit.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 CG resistance	5,000,000
R2	V1 gain control, ganged C20	100,000
R3	V1 SG HT feed	60,000
R4	V1 anode HT feed	10,000
R5	V2 SG HT feed	1,000,000
R6	V2 CG resistance	5,000,000
R7	V2 anode decoupling	100,000
R8	V2 anode load	100,000
R9	V3 CG resistance	500,000
R10	V3 CG RF stopper	100,000
R11	V3 anode load	250,000
R12	V4 CG RF stopper	250,000
R13	V4 CG resistance	500,000
R14	V3, V4 auto GB potential divider resistances	400
R15		150

CONDENSERS		Values (μF)
C1	External aerial coupling	0.00001
C2	V1 CG condenser	0.001
C3	V1 SG RF by-pass	0.1
C4	V1 anode decoupling	0.1
C5	V1 anode LW trimmer	0.00001
C6	V2 CG condenser	0.000025
C7	V2 SG decoupling	0.1
C8	V2 anode decoupling	0.1
C9	V2 anode RF by-pass	0.0002
C10	V2 to V3 AF coupling	0.003
C11	V3 CG RF by-pass	0.0001
C12	V3 anode RF by-pass	0.0001
C13	V3 to V4 AF coupling	0.001
C14*	HT circuit reservoir	2.0
C15	V4 CG RF by-pass	0.0001
C16	Fixed tone corrector	0.003
C17*	Auto GB by-pass	20.0
C18†	Frame aerial circuit tuning	—
C19†	Frame aerial MW trimmer	—
C20†	Reaction control, ganged R2	—
C21†	V1 anode circuit tuning	—
C22†	V1 anode MW trimmer	—

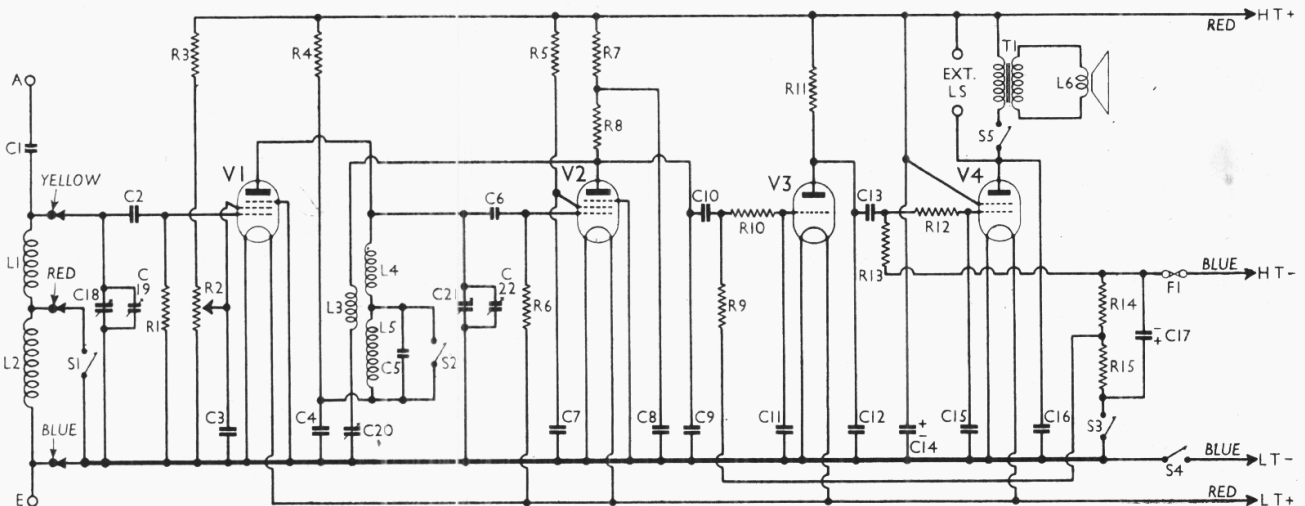
*Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial windings	1.5
L2		8.5
L3	Reaction coil	10.8
L4	V1 anode circuit tuning coils	7.5
L5		28.2
L6	Speaker speech coil	2.0
T1	Speaker input trans. { Pri. Sec.}	575.0 0.2
Sr, S2	Waveband switches	—
S3	HT circuit switch	—
S4	LT circuit switch	—
S5	Internal speaker switch	—
F1	HT circuit fuse	—

DISMANTLING THE SET

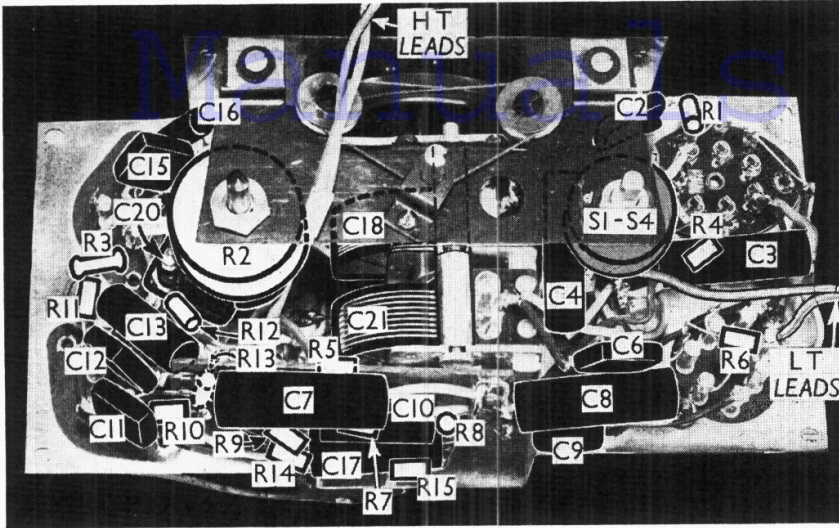
It should be noted that the frame aerial must be removed before the chassis can be withdrawn.

Removing Frame Aerial.—First remove the side panel and the batteries, then unsolder the leads from the chassis to the frame connection panel and remove the



Circuit diagram of the Halcyon P39. R2 and C20 are ganged. S5 is a jack switch.

For more information remember
www.savoy-hill.co.uk



Under-chassis view. C20 is the variable reaction condenser.

extension speaker socket panel (two round head wood screws). Now remove the three wood screws holding the frame to the cabinet, when the frame can be withdrawn.

When replacing, connect the leads as follows, numbering the tags on the terminal panel from bottom to top:—1, blue; 2, yellow; 3, red.

Removing Chassis.—To remove the chassis first remove the frame as described above, then remove the four ornamentally-headed wood screws holding the escutcheon to the top of the cabinet, when the escutcheon and scale covering can be removed. Next unsolder the leads from the speaker, remove the four round-head wood screws (with washers) holding each corner of the chassis to the front of the cabinet and push the battery leads up through the hole in the chassis platform, when the chassis can be withdrawn.

Removing Speaker.—The speaker can be removed from the cabinet without first removing the frame or chassis. First slide out the removable partition on the right of the accumulator compartment and then remove the four ornamentally-headed screws (with nuts and washers) holding the sub-baffle to the front of the cabinet, when the sub-baffle can be withdrawn from the cabinet. The speaker can be removed from the sub-baffle by removing the four screws securing it.

When replacing, see that the shaped side of the sub-baffle is at the top and that the transformer is pointing to the top right-hand corner of the baffle.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 210SPT	92	1.9	47	0.5
V2 220IPT	18	0.5	12	0.1
V3 210HL	42	0.2	—	—
V4 220OT	110	3.6	116	0.8

our receiver when it was operating with an HT battery reading 120 V, on load. The receiver was tuned to the lowest wavelength on the medium band and the combined volume and reaction control was advanced to a point just short of oscilla-

tion but there was no signal input as the frame connections were shorted.

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

GENERAL NOTES

Switches.—S1, S2 are the waveband switches, and S3, S4 the battery circuit switches, ganged in a single unit beneath the control panel and shown in detail in the diagram in col. 3.

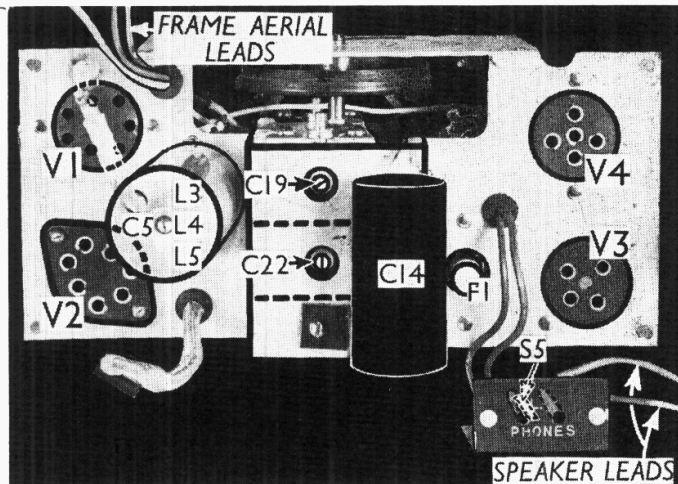
The table below gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and C, closed.

SWITCH	Off	MW	LW
S1	—	C	—
S2	—	C	C
S3	—	C	C
S4	—	C	C

S5 is the internal speaker jack switch associated with one of the external speaker sockets.

Coils.—L1 and L2 are the frame aerial windings on a separate wooden framework inside the cabinet. The connections are brought out to a terminal panel in the framework and the connecting leads to the chassis are colour-coded, the

Plan view of the chassis. S5 is a jack switch incorporated in the left-hand external speaker socket.



colours being given in our circuit diagram.

L3-L5 are in a single screened unit on the chassis deck, this also containing C5.

Components R2, C20.—The gain and reaction controls are combined in a single unit, so arranged that only after the gain has reached its maximum is reaction increased.

Component C1.—The external aerial coupling condenser C1 is mounted in the frame aerial assembly and is thus not shown in our chassis pictures.

External Speaker or Phones.—Two sockets are provided at the back of the set for a high impedance (20,000 Ohm) extension speaker or a pair of phones. When the plug is fully pushed home the internal speaker is cut out by the jack switch S5.

Fuse F1.—This is an Osram MES lamp bulb rated at 3.5 V, 0.15 A, and screws into a holder on the chassis deck.

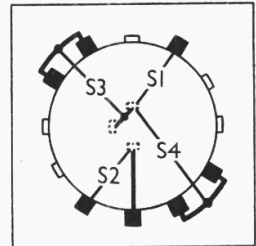
Batteries.—LT, Sterling 5005 2V 20 AH celluloid-cased free-acid cell. HT, Sterling 2005 120 V battery. GB is automatic.

Battery Leads and Voltages.—Blue lead, spade tag, LT negative; red lead, spade tag, LT positive 2 V; blue lead, black plug, HT negative; red lead, black plug, HT positive 120 V.

CIRCUIT ALIGNMENT

The only adjustments provided are for trimming at the bottom of the MW band. These adjustments should be carried out with a non-metallic screwdriver long enough to reach from outside the cabinet

Switch diagram, looking from the knob end of the control spindle.



in order to prevent hand capacity effects.

The batteries should be in position, as their presence affects calibration.

Tune the receiver to a reasonably strong signal at the bottom of the MW band and adjust C19, and then C22, for maximum output. Check that the scale pointer indicates the correct wavelength.