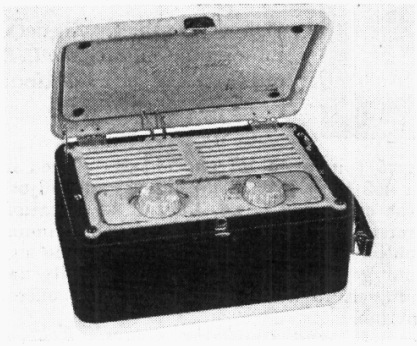
"TRADER" SERVICE SHEET

891

CHAMPIONETTE

Personal Receiver



HOUSED in a casket-shaped metal and plastic case, the Championette is a 4-valve "Personal" receiver covering the medium waveband only and using button-based miniature valves.

As is common with these receivers, the battery switch is operated by opening and closing the lid.

Release date and original price: October 1948; £10 10s including batteries, plus purchase tax.

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1, C16** precedes a heptode valve **(V1, Brimar 1R5)** operating as frequency changer with electron coupling.

Oscillator grid coil **L2** is tuned by **C17,** with parallel trimming by **C18** and series tracking by **C4.** Reaction coupling from anode by coil **L3.**

Second valve **(V2, Brimar 1T4)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-transformer couplings **C1, L4, L5, C2** and **C7, L6, L7, C8** in which the tuning capacitors are fixed and alignment adjustments are effected by varying the positions of the iron-dust cores.

Intermediate frequency 465 kc/s.

Diode second detector is part of single diode pentode valve **(V3, Brimar 1S5).** Audio frequency component in rectified output is developed across the manual volume control **R4,** which is also the diode load resistor, and passed via A.F. coupling capacitor **C10** and C.G. resistor **R5** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C9** in diode circuit.

The D.C. potential developed across **R4** is tapped off and fed back, through a decoupling circuit **R3, C5** as G.B. to I.F. valve, giving automatic gain control.

Resistance-capacitance coupling by **R7, C12, R8** between **V3** pentode anode and pentode output valve **(V4, Brimar 3S4),** the two filament sections of which are wired in parallel.

G.B. potential for **V4** is obtained from the drop across **R9** in the H.T. negative lead to chassis, this resistor being unbypassed to introduce negative feed-back in the output stage and improve the quality of reproduction. An electrolytic capacitor **C14** decouples the H.T. circuit.

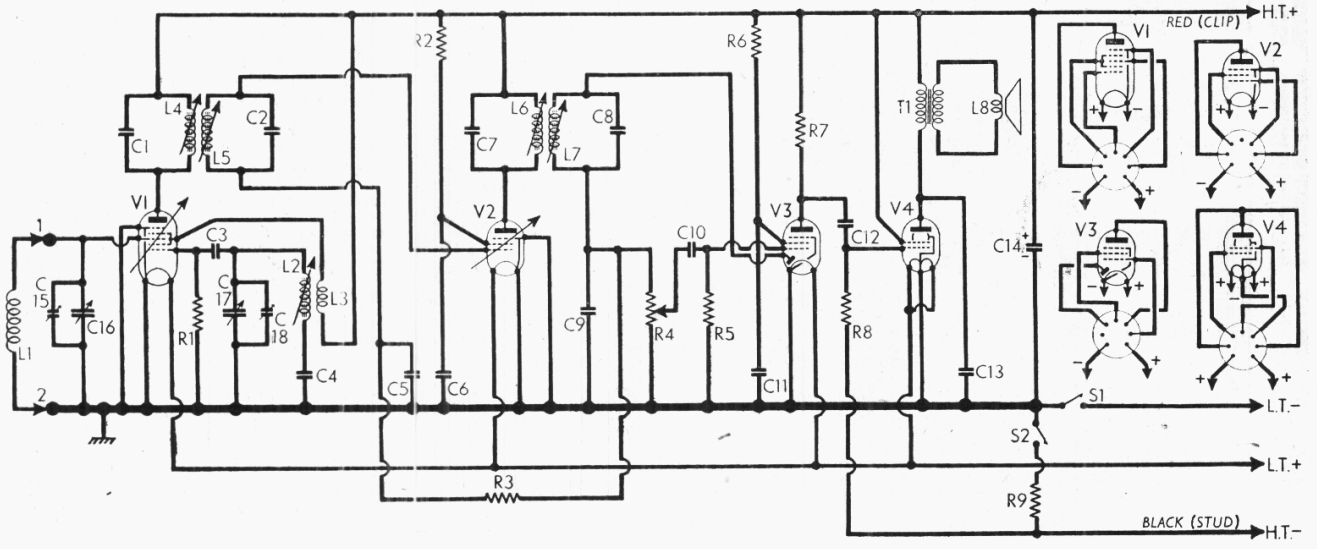
COMPONENTS AND VALUES

	CAPACITORS	Values (μF)	Locations
C1	1st I.F. trans-former tuning ...	0·0001	A1
C2		0·0001	A1
C3	V1 osc. C.G. ...	0·0001	E4
C4	Oscillator tracker	0·0006	D3
C5	A.G.C. decoupling	0·1	E3
C6	V2 S.G. decoup. ...	0·1	D3
C7	2nd I.F. trans-former tuning ...	0·0001	B1
C8		0·0001	B1
C9	I.F. by-pass ...	0·0001	D3
C10	A.F. coupling ...	0·005	C3
C11	V3 S.G. decoupling	0·002	C3
C12	A.F. coupling ...	0·005	E4
C13	Tone corrector ...	0·002	A2
C14*	H.T. reservoir ...	3·0	A2
C15‡	Aerial trimmer ...	—	E4
C16†	Aerial tuning ...	0·00037	F4
C17†	Oscillator tuning...	0·00037	F3
C18‡	Oscillator trimmer	—	E3

* Electrolytic. † Variable. ‡ Pre-set.

	RESISTORS	Values (ohms)	Locations
R1	V1 osc. C.G. ...	100,000	E4
R2	V2 S.G. feed ...	4,700	D3
R3	A.G.C. decoupling ...	3,300,000	D3
R4	Volume control ...	1,000,000	D3
R5	V3 pent. C.G. ...	10,000,000	C3
R6	V3 S.G. feed ...	4,700,000	C3
R7	V3 pent. load ...	1,000,000	C3
R8	V4 C.G. resistor ...	3,300,000	F3
R9	V4 G.B. resistor ...	820	F4

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	Frame aerial ...	1·3	—
L2	Osc. tuning coil ...	0·6	E3
L3	Osc. react. coil ...	0·1	E3
L4	1st I.F. trans. Pri.	12·0	A1
L5	1st I.F. trans. Sec.	12·0	A1
L6	2nd I.F. trans. Pri.	12·0	B1
L7	2nd I.F. trans. Sec.	12·0	B1
L8	Speech coil ...	8·6	A1
T1	Output trans. Pri.	700·0	A2
	Output trans. Sec.	1·4	A2
S1	L.T. circ. switch...	—	F4
S2	H.T. circ. switch...	—	F4



Circuit diagram of the Champion "Championette" personal receiver. Switches **S1, S2** close automatically when the lid is raised.

DISMANTLING THE SET

Before commencing this operation a note should be made of the position of the dot on the tuning control knob, with respect to the scale, at minimum and maximum positions of the gang capacitor.

Removing Chassis.—Remove the plastic bottom cover of the carrying case by depressing the small brass stud close to the carrying handle and lifting off the cover;

disconnect and extract the batteries, and unsolder the two black plastic-covered frame aerial connecting leads at points indicated in our circuit diagram and chassis pictures by the numbers 1 and 2;

remove the two control knobs (recessed grub screws) and withdraw the four short 6BA domed-head screws located on the black metal surround of the plastic control panel, and lift out the chassis, with battery switch on its lead.

When replacing, do not omit to resolder the frame aerial connecting leads, and adjust the tuning control knob on the gang spindle so that its dot coincides with the previously noted positions at the minimum and maximum settings of the gang capacitor.

The brass connecting strip nearest to the gang should make contact with the metal case of the U2 cell, and it should be noted that the H.T. battery may be short-circuited if it is incorrectly positioned in its clip. The price label on the battery should face outwards, towards the bottom cover.

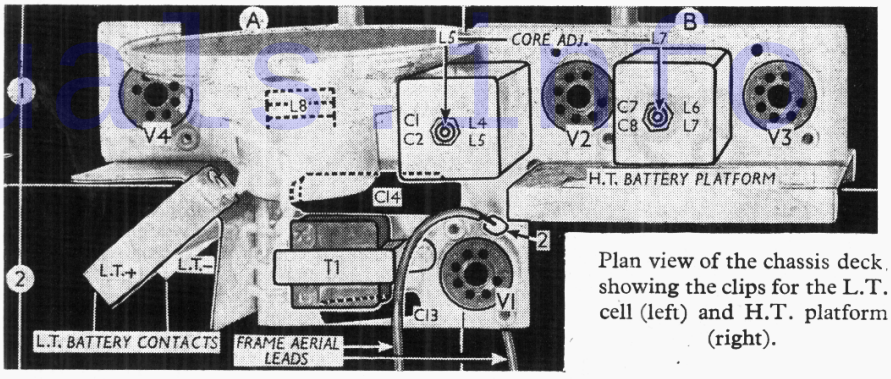
GENERAL NOTES

Switches.—As this is a single-band receiver, there are no waveband switches. **S1, S2** are the H.T. and L.T. battery circuit switches, in a spring-loaded unit fitted on the metal case and attached to the chassis by a flexible lead. The unit is indicated in our under-chassis view.

The spring-loaded plunger projects from the case so that it is depressed by the lid when this is closed, automatically switching off the receiver. The spring switches on the receiver when the lid is raised. **R9** is mounted on the switch unit.

Batteries.—The L.T. unit is an Ever Ready U2 cell or equivalent. It is mounted in a corner of the chassis between two rubber-mounted brass strips, whose polarity is indicated in our plan illustration of the chassis.

The H.T. battery is an Ever Ready Batrymax B101 or equivalent, a layer-type unit rated at 67.5 V. Care should be exercised when fitting an H.T. battery that the side carrying the price label faces outwards. If this label faces the battery platform there is a risk of the press-stud connectors short-circuiting the battery on the raised lip of the platform.



Plan view of the chassis deck, showing the clips for the L.T. cell (left) and H.T. platform (right).

CIRCUIT ALIGNMENT

I.F. Stages.—It is necessary to remove the chassis from the carrying case for these operations, but the frame aerial leads should not be disconnected. The makers state that a slotted knitting needle forms a suitable tool for adjustment of the iron-dust cores of the I.F. transformers.

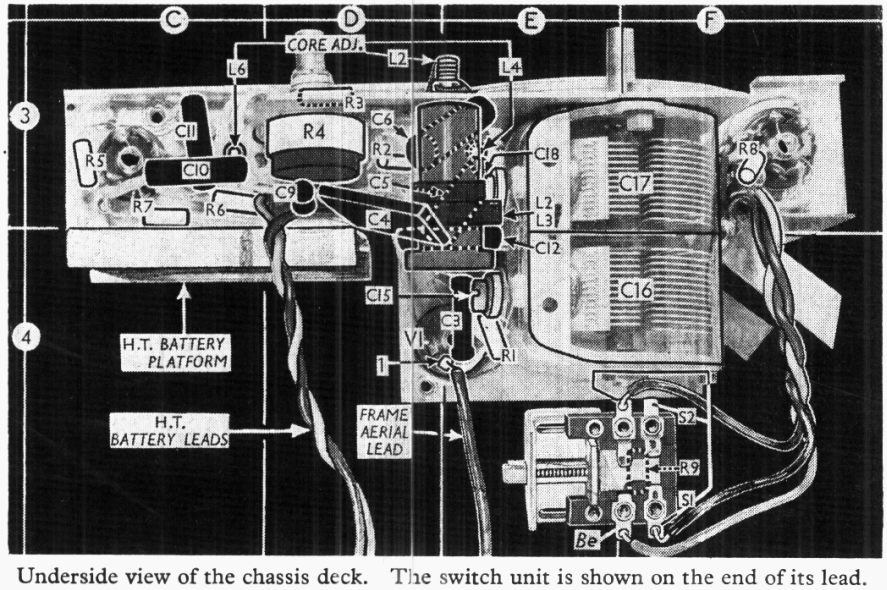
Turn the gang to minimum capacitance and the volume control to maximum, and connect signal generator, via an 0.01 μF capacitor in the "live" lead, to control grid (pin 6) of **V1** and chassis. Feed in a 465 kc/s (645.16 m) signal, and adjust the cores of **L7, L6, L5** and **L4** (location references B1, C3, A1, E3) for maximum output, progressively attenuating the signal generator output as the circuits are aligned to avoid automatic gain control action.

R.F. and Oscillator Stages.—Replace chassis and batteries in carrying case and couple signal generator output by means of a suitable loop of wire set up on the bench parallel to the frame aerial and about a foot from it.

Feed in a 500 m (600 kc/s) signal, tune it in, and check that the dot on the tuning knob coincides with the 500 m calibration point on the scale. The knob may be adjusted in position by rotating it on the gang spindle, after slackening its recessed grub screw. Tune to 214 m on scale, feed in a 214 m (1,400 kc/s) signal, and adjust **C18** (E3) and **C15** (E4) for maximum output. Repeat these operations until no improvement results.

If the sensitivity appears to be low, and difficulty is experienced in obtaining correct tracking, it will be necessary to remove the plastic control panel (four brass machine screws) in order to gain access to the oscillator iron-dust core adjustment.

Feed in a 500 m signal, tune it in, and adjust the core of **L2** (E3) with a pair of pliers, whilst rocking the gang, for maximum output. Replace the control panel, tune in the 500 m signal once more, and adjust the tuning knob in position until its dot coincides with the appropriate calibration mark on the scale. Complete the alignment by following the procedure previously described.



Underside view of the chassis deck. The switch unit is shown on the end of its lead.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a set of batteries measuring 65 V and 1.45 V on load. The receiver was tuned to the lowest wave-length on the M.W. band, and the volume control was at maximum, but there was no signal input.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 1R5	58	0·9	58	2·6
V2 1T4	58	2·0	53	1·0
V3 1S5	4	0·04	1	0·005
V4 3S4	56	2·0	58	0·55

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