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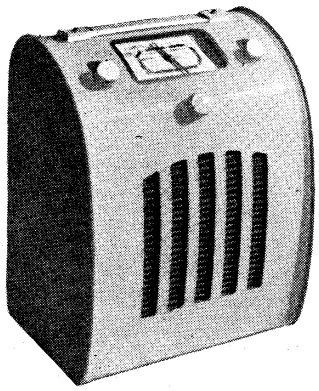
"TRADER" SERVICE SHEET

1241

EVER READY C/A & C/E

4-valve All-dry Battery Portables



THE Ever Ready model "C/E" is a 4-valve 2-band portable designed to operate from all-dry batteries. The waveband ranges are 200-550 m and 950-1,850 m.

Model "C/A" is an earlier version of the "C/E." Circuit differences between the two receivers are explained under "Associated Models." The original Model "C" receiver, which is similar in appearance to the "C/A" and "C/E", is covered in *Service Sheet* 816.

Release dates: C/A, November 1947. *C/E, September* 1948. *Original price, both models,* £11 11s. *Purchase tax and batteries extra.*

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L3, C4** (M.W.) and **L3,** loading coil **L2, C4** (L.W.), which precede heptode valve **(V1, Ever Ready DK91)** operating as frequency changer with electron coupling. Provision is made for the connection of an external aerial and earth in model C/E via frame aerial winding **L1.**

Oscillator grid coils **L4** (M.W.) and **L4, L5** (L.W.) are tuned by **C8.** Parallel trimming by **C9** (M.W.) and **C9, C10** (L.W.); series tracking by **C12** (M.W.) and **C11, C12** (L.W.). Reaction coupling from anode by anode coils **L6** (M.W.) and **L6, L7** (L.W.).

Second valve **(V2, Ever Ready DF91)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C5, L8, L9, C6** and **C14, L10, L11, C15.**

Intermediate frequency 452 kc/s.

Diode signal detector is part of single diode pentode valve **(V3, Ever Ready DAF91).** Audio frequency component in rectified output is developed across volume control **R7,** which operates as diode load, and is passed via **C18** to pentode section of **V3,** which operates as A.F. amplifier. I.F. filtering by **C16, R6, C17.**

D.C. potential developed across **R6, R7** is fed back as bias to **V1** and **V2** giving automatic gain control. Resistance-capacitance coupling by **R10, C20** and **R11** between **V3** and pentode output valve **(V4, Ever Ready DL92).** Grid bias for **V4** is provided by the voltage developed across **R13** in the H.T. negative circuit. Tone correction by **C21** in **V4** anode circuit.

GENERAL NOTES

Switches.—S1-S5 are the band/battery switches, ganged in a single rotary unit on the control panel. The unit is indicated in the rear chassis illustration, and is shown in detail in the top left corner of the circuit diagram.

Drive Cord Replacement.—About sixteen inches of good quality flax fishing line, plaited and waxed, is required for a new tuning drive. It should be run as indicated in the front illustration of the chassis.

Battery.—This is an Ever Ready "Batrymax" type B103, whose H.T. and L.T. sections are rated at 90 V and 1.5 V respectively. A diagram of the connecting plug, as seen from the free ends of the pins, is inset in the top left corner of the circuit diagram to show the polarity of the pins.

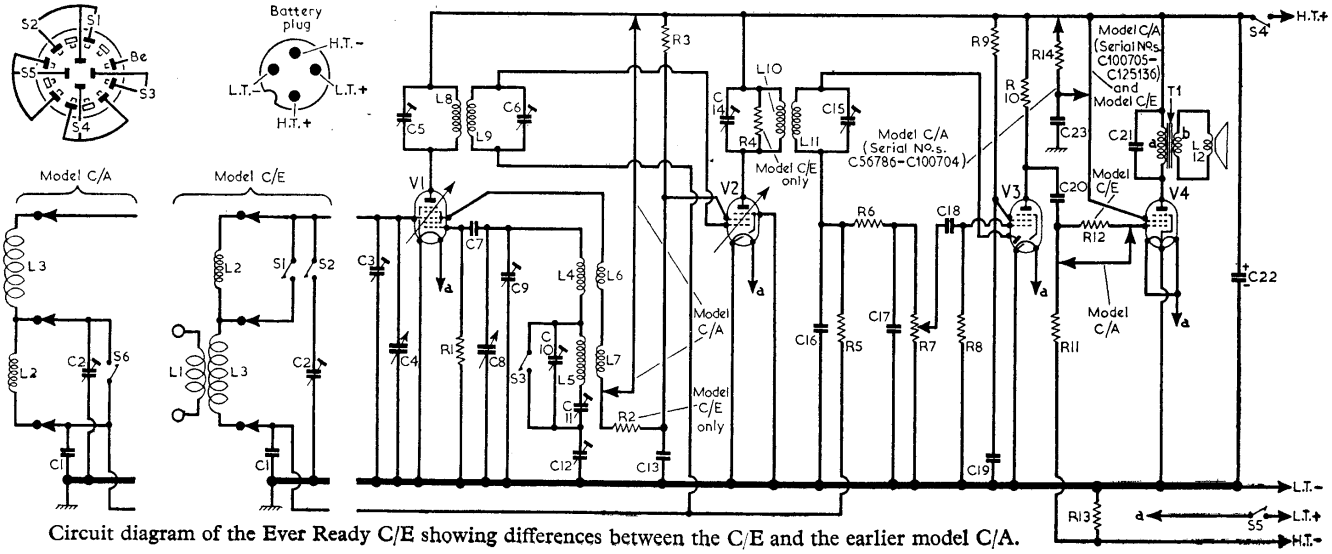
CAPACITORS		Values	Locations
C1	A.G.C. decoupling ...	0·05μF	D3
C2	L.W. aerial trim. ...	100pF	B2
C3	M.W. aerial trim. ...	50pF	A2
C4	Aerial tuning ...	444pF	A1
C5	1st I.F.T. tuning	100pF	A2
C6	1st I.F.T. tuning	100pF	A2
C7	V1 osc. C.G. ...	100pF	A1
C8	Oscillator tuning ...	444pF	A1
C9	M.W. osc. trim. ...	50pF	B2
C10	L.W. osc. trim. ...	100pF	B2
C11	L.W. osc. tracker ...	600pF	A2
C12	M.W. osc. tracker ...	600pF	A2
C13	H.T. decoupling ...	0·01μF	D4
C14	2nd I.F.T. tuning ...	100pF	B2
C15	2nd I.F.T. tuning ...	100pF	B2
C16	I.F. by-passes ...	50pF	C4
C17	I.F. by-passes ...	50pF	C4
C18	A.F. coupling ...	0·001μF	B1
C19	V3 S.G. decoupling	0·1μF	C3
C20	A.F. coupling ...	0·005μF	C3
C21*	Tone corrector ...	0·005μF	A2
C22	H.T. battery by-pass	8 μF	B1
C23†	V4 S.G. decoupling	0·1μF	—

*0·001μF in model C/A. †Model C/A (serial numbers C56786—C100704) only.

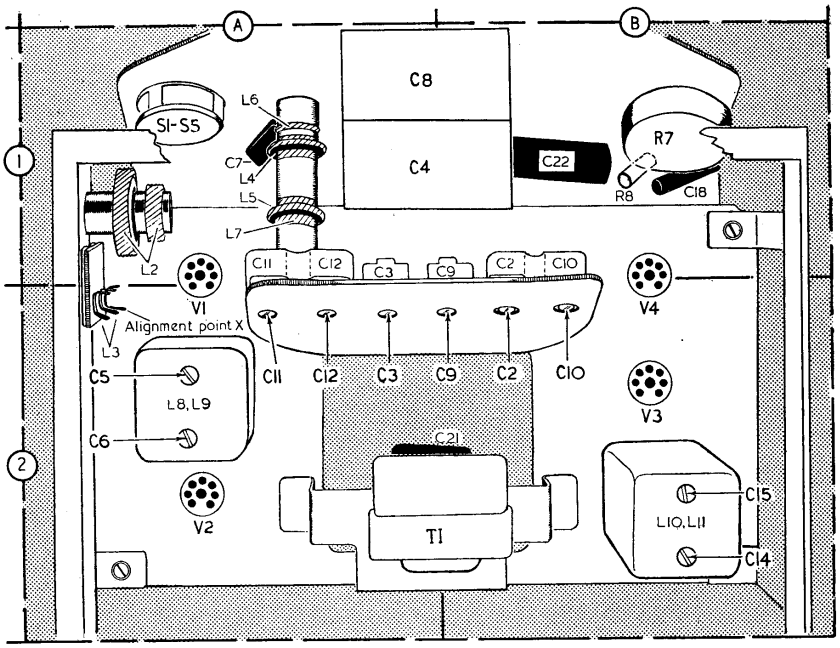
RESISTORS		Values	Locations
R1	V1 osc. C.G. ...	100kΩ	D3
R2*	Osc. anode feed ...	2·2kΩ	D4
R3†	V2 S.G. feed ...	10kΩ	D4
R4	2nd I.F.T. shunt ...	470kΩ	C4
R5	A.G.C. decoupling	10MΩ	C4
R6	I.F. filter	100kΩ	C4
R7	Volume control ...	500kΩ	B1
R8	V3 C.G.	10MΩ	B1
R9	V3 S.G. feed ...	4·7MΩ	C3
R10	V3 pentode load ...	1MΩ	C3
R11	V4 C.G.	4·7MΩ	C3
R12*	V4 C.G. stopper ...	2·2MΩ	C3
R13	V4 G.B.	820Ω	C3
R14‡	V4 S.G. feed ...	33kΩ	—

*Model C/E only. †68kΩ in model C/A. ‡Model C/A (serial numbers C56786—C100704) only.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coil	0·5	—
L2	L.W. loading coil ...	9·0	A1
L3	Frame aerial coil ...	1·0	A2
L4	Oscillator grid coils	1·5	A1
L5	Oscillator grid coils	6·0	A1
L6	Osc. reaction coils	3·0	A1
L7	Osc. reaction coils	9·0	A1
L8	1st I.F.T. Pri. ...	25·0	A2
L9	1st I.F.T. Sec. ...	25·0	A2
L10	2nd I.F.T. Pri. ...	25·0	B2
L11	2nd I.F.T. Sec. ...	25·0	B2
L12	Speech coil ...	3·0	—
T1	O.P. trans. a ...	500·0	B2
T1	O.P. trans. b ...	—	B2
S1-S5	Band/batt. switches	—	A1



Circuit diagram of the Ever Ready C/E showing differences between the C/E and the earlier model C/A.



Rear view of chassis showing all the R.F. and oscillator adjustments on panel beneath gang.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturers' information. The receiver was operated from a new set of batteries and was switched to M.W., but there was no signal input.

Voltages were measured on the 100 V range of a Model 7 Avometer, chassis being the negative connection. The total H.T. consumption was 12.4 mA, and the total L.T. consumption 250 mA. The voltage measured across **R13** was 10 V (positive connection to chassis).

Valves	Anode		Screen	
	V	mA	V	mA
V1 DK91 ...	80	0·5	35	1·5
V2 DF91 ...	80	2·3	46	1·1
V3 DAF91 ...	*	*	*	*
V4 DL92 ...	78	5·6	80	1·3

*Very low reading owing to high circuit resistance.

ASSOCIATED MODELS

Several modifications have been introduced into this receiver since the first model "C," which employed octal valves and was covered in *Service Sheet* 816. Later versions of the model "C" are designated "C/A" and "C/E," and the ranges of receiver serial numbers associated with each type are given in the table below.

Serial Number Range	Model
Up to C56785	C
C56786—C125136	C/A
C125137 upwards	C/E

Model C/E.—This *Service Sheet* was prepared from a model "C/E," which can be readily distinguished from the original model "C" by the fact that it uses 7-pin glass valves instead of octal-based valves.

Modifications.—In early versions of this receiver, from serial number C125137 to C133900, **R4** and **R12** are omitted, and **R11, C20** are connected directly to **V4** control grid.

Model C/A.—This employs the same basic chassis as the "C/E" on which this *Service Sheet* was prepared, but has the following circuit differences.

From serial number C56786 to C100704, **R14** and **C23** are connected to **V4** screen grid circuit. **R12** is omitted, and **C20, R11** are connected to **V4** control grid. The frame aerial winding **L3** and L.W. loading coil **L2** are connected as shown on the left-hand side of the main circuit diagram overleaf. **R2** is omitted and the lower end of **L7** is connected directly to H.T. positive. **R3** is 68 kΩ. **C21** is 0.001 μF. **R4** is omitted.

From serial number C100705 to C125136, the circuit is the same as for the earlier series above, except that **V4** screen grid is connected to H.T. positive.

CIRCUIT ALIGNMENT

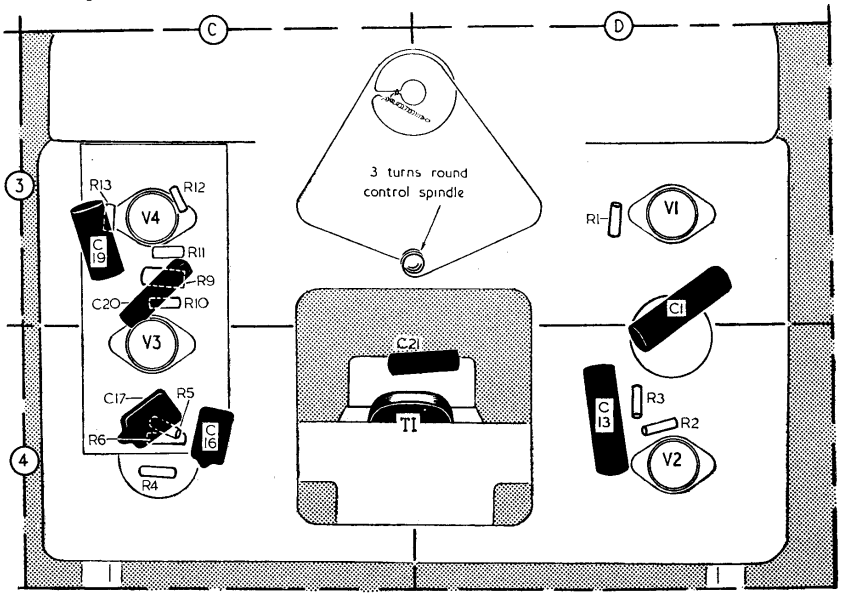
Alignment of the receiver may be carried out with the chassis either in or out of its carrying case. When making the aerial circuit adjustments, the battery should be placed in its correct position relative to the frame aerial.

I.F. Stages

1.—Connect output meter across **T1** secondary winding. Connect output of signal generator between alignment point X (location reference A2) and chassis.
2.—Switch receiver to M.W., feed in a 452 kc/s signal and adjust **C15** (B2), **C14** (B2), **C6** (A2) and **C5** (A2) for maximum output. Reduce input as circuits come into line to avoid A.G.C. operation.
3.—Repeat the adjustments in operation 2 until no further improvement results.

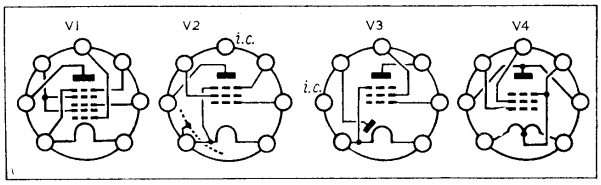
R.F. and Oscillator Stages

4.—Check that with the gang at maximum capacitance, the cursor coincides with the high wavelength ends of the tuning scales. As the alignment adjustments of the two wavebands are inter-dependent, it is important that they be adjusted in the following order.
5.—Connect signal generator leads to an injection loop of approximately six inches diameter and consisting of ten turns of insulated wire. Place the loop parallel to, and not less than twelve inches from, the receiver frame aerial coil.
6.—Switch receiver to M.W. and tune to 214 m at calibration mark between 200 m and 250 m. Feed in a 1,400 kc/s signal and adjust **C9** (B2) and **C3** (A2) for maximum output.
7.—Tune receiver to 500 m, feed in a 600 kc/s signal and adjust **C12** (A2) for maximum output.
8.—Repeat operation 6.
9.—Repeat operation 7, rocking the gang while adjusting **C12** to obtain optimum output.
10.—Switch receiver to L.W. and tune to 1,700 m. Feed in a 176.5 kc/s signal and adjust **C11** (A2) for maximum output.
11.—Tune receiver to 1,000 m, feed in a 300 kc/s signal and adjust **C10** (B2) and **C2** (B2) for maximum output.
12.—Repeat operation 10, rocking the gang while adjusting **C11** to obtain optimum results.
13.—Repeat operation 11. If more than a slight adjustment is necessary to either trimmer, repeat operations 10 and 11.



Above: Front view of chassis with sketch of drive cord system.

Right: Diagrams of the valve base connections as viewed in the chassis illustration above.



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