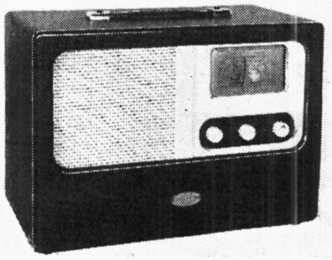
"TRADER" SERVICE SHEET

# 883

# AMPLION ADP2

## Covering also Model ADP1



The Amplion ADP2 portable.

AN all-dry battery portable with two wavebands, the Amplion ADP2 is a superhet employing four valves and using the Ever Ready No. 3 combined H.T. and L.T. battery.

The ADP1 was an earlier model using a chassis almost identical with that in the ADP2, but housed in a different case. The differences are explained under "Divergencies" overleaf.

*Release dates and original prices: ADP1 February, 1946, £13 13s (with battery); increased September, 1946, to £13 15s. ADP2, December, 1946, £13 15s (less battery), increased November, 1947, to £14 14s; reduced February, 1948, to £14 14s (with battery); then June, 1948, to £12 12s (less battery); and October, 1948, to £11 2s 6d (with battery). Purchase tax extra.*

## CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1**, **C16** (M.W.), with the addition of loading coil **L2** on L.W., precedes a heptode valve **(V1, 1A7GT)** operating as frequency changer with electron coupling.

Triode oscillator grid coils **L3** (M.W.) and **L4** (L.W.) are tuned by **C17**, with parallel trimming by **C18** (M.W.) and **C4**, **C19** (L.W.), and series tracking by **C5** (M.W.) and **C6** (L.W.). Reaction coupling from anode via **C7**, by **L5** (M.W.) and **L6** (L.W.), with additional coupling due to the inclusion of the trackers in the common grid and anode circuit.

Second valve **(V2, 1N5GT)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C20, L7, L8, C21** and **C22, L9, L10, C23.**

**Intermediate frequency 465 kc/s.**

Diode second detector is part of single diode triode valve **(V3, 1H5GT)**. Audio frequency component in rectified output is developed across manual volume control **R6**, which is also the diode load resistor, and passed via A.F. coupling capacitor **C10** and C.G. resistor **R7** to grid of triode section, which operates as A.F. amplifier. I.F. filtering by **C8, R5, C9** in diode circuit and **C11** in **V3** triode anode circuit.

D.C. potential developed across **R5, R6** in series is tapped off and fed back,

(*Continued col. 1 overleaf*)

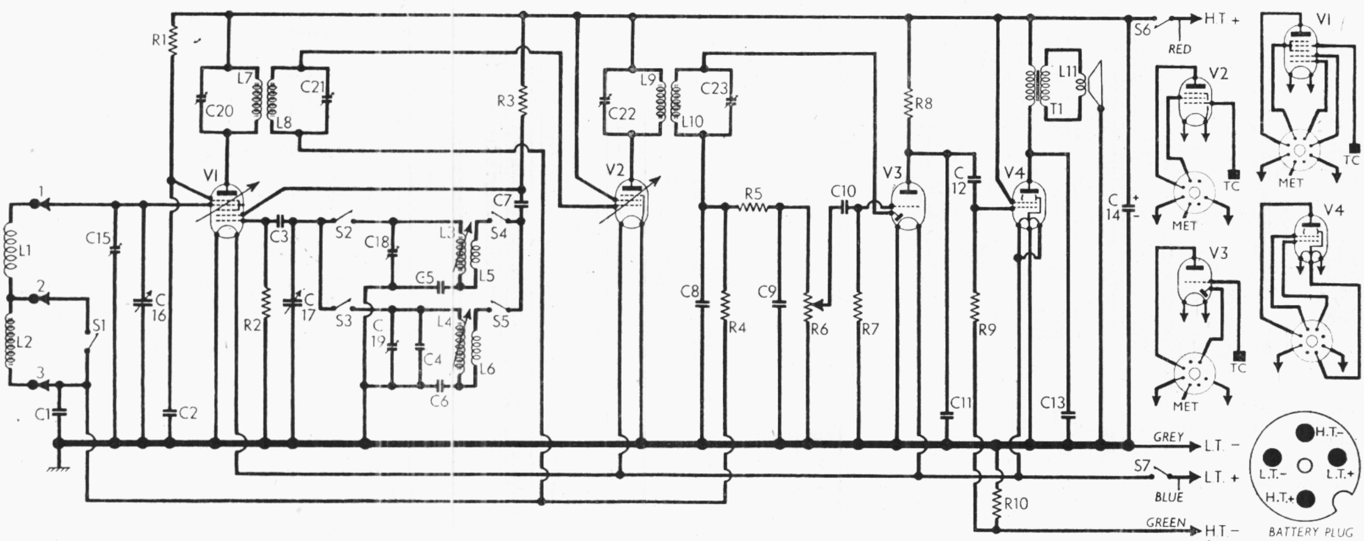
## COMPONENTS AND VALUES

| RESISTORS | | Values (ohms) | Locations |
|---|---|---|---|
| R1 | V1 S.G. feed ... | 47,000 | J5 |
| R2 | V1 osc. C.G. ... | 220,000 | K6 |
| R3 | Osc. anode load ... | 22,000 | J5 |
| R4 | A.G.C. decoupling | 2,500,000 | H5 |
| R5 | I.F. stopper ... | 47,000 | F4 |
| R6 | Volume control ... | 500,000 | H3 |
| R7 | V3 triode C.G. ... | 2,500,000 | H5 |
| R8 | V3 triode load ... | 1,000,000 | G5 |
| R9 | V4 C.G. resistor ... | 2,500,000 | F5 |
| R10 | V4 G.B. resistor ... | 560 | E6 |

| CAPACITORS | | Values (μF) | Locations |
|---|---|---|---|
| C1 | A.G.C. decoupling | 0·1 | J6 |
| C2 | V1 S.G. decoup. ... | 0·1 | J5 |
| C3 | V1 osc. C.G. ... | 0·0001 | K4 |
| C4 | Osc. L.W. trimmer | 0·0001 | J4 |
| C5 | Osc. M.W. tracker | 0·00035 | J4 |
| C6 | Osc. L.W. tracker... | 0·00015 | J4 |
| C7 | Osc. anode coup. ... | 0·002 | K5 |
| C8 | I.F. by-pass capacitors | 0·0001 | G4 |
| C9 | I.F. by-pass capacitors | 0·0001 | F6 |
| C10 | A.F. coupling ... | 0·01 | G4 |
| C11 | I.F. by-pass ... | 0·0001 | G4 |
| C12 | A.F. coupling ... | 0·02 | F5 |
| C13 | Tone corrector ... | 0·001 | E6 |
| C14* | H.T. reservoir ... | 8·0 | F4 |
| C15‡ | Aerial M.W. trim.... | — | A1 |
| C16† | Aerial tuning ... | — | B1 |
| C17† | Oscillator tuning ... | — | B1 |
| C18‡ | Osc. M.W. trim. ... | — | K4 |
| C19‡ | Osc. L.W. trim. ... | — | K5 |
| C20‡ | 1st I.F. transformer tuning | — | B2 |
| C21‡ | 1st I.F. transformer tuning | — | B2 |
| C22‡ | 2nd I.F. transformer tuning | — | C2 |
| C23‡ | 2nd I.F. transformer tuning | — | C2 |

* Electrolytic. † Variable. ‡ Pre-set.

| OTHER COMPONENTS | | Approx. Values (ohms) | Locations |
|---|---|---|---|
| L1 | Frame aerial ... | 2·1 | A2 |
| L2 | L.W. loading coil... | 12·5 | B2 |
| L3 | Oscillator tuning coils | 2·6 | [illegible] |
| L4 | Oscillator tuning coils | 6·3 | [illegible] |
| L5 | Oscillator reaction coils | 0·5 | [illegible] |
| L6 | Oscillator reaction coils | 0·6 | K5 |
| L7 | 1st I.F. trans. Pri. | 5·0 | B2 |
| L8 | 1st I.F. trans. Sec. | 5·0 | B2 |
| L9 | 2nd I.F. trans. Pri. | 9·5 | C2 |
| L10 | 2nd I.F. trans. Sec. | 9·5 | C2 |
| L11 | Speech coil ... | 2·75 | — |
| T1 | Speaker trans. Pri. | 470·0 | — |
| | Speaker trans. Sec. | 0·2 | — |
| S1-S5 | W/band switches ... | — | K3 |
| S6 | H.T. circuit switch | — | K3 |
| S7 | L.T. circuit switch | — | K3 |




Circuit diagram of the Amplion ADP2. Small differences that occur in some of these models, and the differences in the ADP1 are explained under "General Notes" overleaf.

**Circuit Description**—*continued*

through a decoupling circuit **R4, C1,** as G.B. to F.C. and I.F. valves, giving automatic gain control.

Resistance-capacitance coupling by **R8, C12, R9** between **V3** triode and beam tetrode output valve **(V4, 3Q5GT),** whose twin filament sections are wired in parallel. Fixed tone correction in anode circuit by **C13.** G.B. potential for **V4** is obtained from the drop across **R10** in the H.T. negative lead to chassis.

## CIRCUIT ALIGNMENT

It is necessary to remove the chassis from the carrying case before commencing these operations.

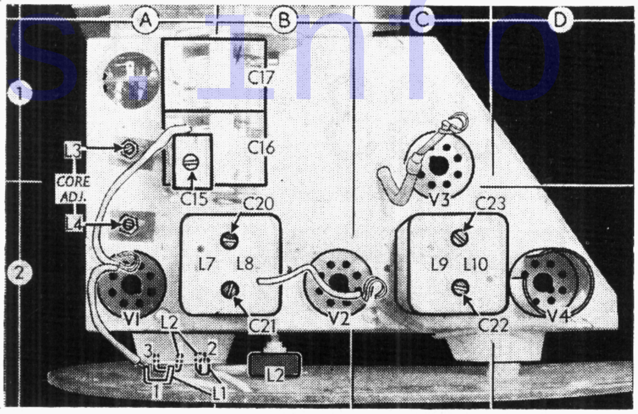
**I.F. Stages.**—Switch set to M.W., tune to 200 m on scale, turn volume control to maximum, and connect signal generator (via an 0.1 μF capacitor in the "live" lead) to control grid (top cap) of **V1** and chassis. Feed in a 465 kc/s (645.16 m) signal, and adjust **C20, C21, C22** and **C23** (location references B2, C2) for maximum output, progressively attenuating the signal generator output as the circuits are aligned, to avoid A.G.C. action.

**R.F. and Oscillator Stages.**—With the gang at maximum capacitance the pointer should be horizontal and coincident with the high-wavelength end of the M.W. scale. It may be adjusted in position by rotating it on the gang capacitor spindle. Loosely couple the signal generator by means of a 6in piece of wire laid close to the frame aerial winding.

**M.W.**—Switch set to M.W., tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust the core of **L3** (A1) for maximum output. Tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, and adjust **C18** (K4) and then **C15** (A1 if fitted) for maximum output. Repeat these operations until no improvement results.

**L.W.**—Switch set to L.W., tune to 2,000 m on scale, feed in a 2,000 m (150 kc/s) signal, and adjust the core of **L4** (A2) for maximum output. Tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal, and adjust **C19** (K5) for maximum output. Repeat these operations until no improvement results.

Plan view of the chassis. The L.W. coil **L2** is mounted on the M.W. frame aerial panel. **V4** is fitted with a close-fitting shield.




## GENERAL NOTES

**Switches.**—**S1-S7** are the waveband and battery switches, ganged in a single rotary unit beneath the chassis. This is indicated in our under-chassis view, and shown in detail in the diagram below, where it is drawn as seen from the rear of an inverted chassis. The table below gives the switch positions for the three control settings, starting from the fully anti-clockwise (off) position of the control knob. A dash indicates open, and **C,** closed.

**Batteries.**—The battery supplied with this receiver is an Ever Ready All-dry No. 3 combined 90 V H.T. and 1.5 V L.T. unit. An alternative type is the "Batrymax" 103 layer-built battery of the same voltage ratings.

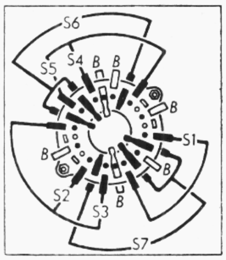
**Drive Cord Replacement.**—This is extremely simple and requires no description. It consists of a single loop of cord, anchored in the usual manner, passing half-way round the drive drum and half-way round the control spindle pulley.

The scale assembly must first be removed, however, which involves removing the pointer (pull-off) and the three control knobs with their backing plate. As the knob fixing screws are small, a watchmaker's screwdriver will be needed.

**Divergencies.**—Differences that occur in the ADP2 are that **C4,** which in our sample was 50 pF (0.00005 μF) may be 100 pF, while **C15** may be omitted altogether; Osram valves may be used instead of those we quote, and their type numbers would be X14 **(V1)**, Z14 **(V2)**, HD14 **(V3)** and N14 **(V4)**. In such versions **R10** becomes 820 Ω instead of 560Ω.

In the earlier model ADP1, the frame aerial consisted of a M.W. winding and a L.W. winding, instead of a M.W. winding (our **L1**) and a loading coil (our **L2**), and the Osram range of valves given for the ADP2 was used, **R10** again being 820 Ω.

Diagram of the waveband switch unit, as seen from the rear of an inverted chassis. Below is the associated table.




| Switch | Off | M.W. | L.W. |
|---|---|---|---|
| S1 | — | C | — |
| S2 | — | C | — |
| S3 | — | — | C |
| S4 | — | C | — |
| S5 | — | — | C |
| S6 | — | C | C |
| S7 | — | C | C |

## DISMANTLING THE SET

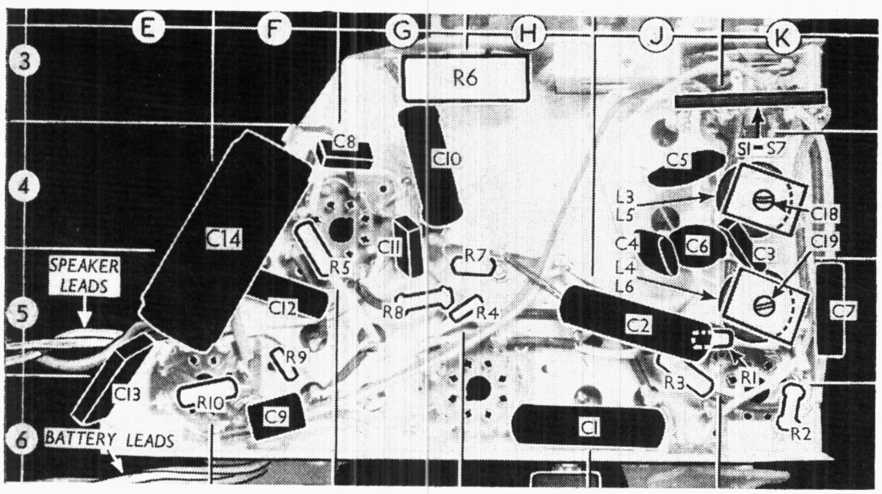
**Removing Chassis.**—Remove the two round-head wood screws securing the shelf above the battery compartment to the carrying case, and slide out the chassis, frame aerial and shelf to the extent of the speaker leads, which is sufficient for most purposes.

Remove the plywood shelf, which is secured to the chassis by three hegaxon-head self-threading screws (with metal washers).

*When replacing,* if the speaker leads have been disconnected they should be re-soldered as follows: grey to a rivet head securing the speaker transformer connecting panel, and red and blue to the two tags on this panel.

**Removing Speaker.**—Remove chassis assembly as previously described, loosen the nuts securing the three speaker retaining clamps, swivel the clamps aside, and lift out the speaker.

*When replacing,* the speaker transformer should be at the bottom.




Under-chassis view. A diagram of the S1-S7 switch unit appears in col. 2 above.

## 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 new batteries. The receiver was tuned to the lowest wavelength 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 1A7GT | { 97 / Oscillator / 70 | 1·0 / 0·9 } | 51 | 0·87 |
| V2 1N5GT | 97 | 0·68 | 97 | 0·17 |
| V3 1H5GT | 12 | 0·03 | — | — |
| V4 3Q5GT | 93 | 6·8 | 97 | 0·75 |

*Printed in England by The Cornwall Press Ltd., Paris Garden, London, S.E.1*