*Supplement to The Wireless & Electrical Trader, March*

"TRADER" SERVICE SHEET
982

# ALBA 3811 (A.C.) 3812 (A.C./D.C.)

## *Covering also Associated Radiograms*

TWO basic models are covered in this Service Sheet, one the A.C. model 3811, and the other its A.C./D.C. equivalent, model 3812. The information is presented initially on the A.C. version, but the differences in the A.C./D.C. version are explained all the way through.

In the circuit diagram, which is drawn as usual in solid line for the A.C. version, the differences are shown as additions in broken line. In the component tables, separate columns are given throughout for the two sets of values and location references.

The receivers are 4-valve (plus rectifier) 3-band superhets, and each makes provision for a gramophone pick-up, with switching, and an external speaker. The A.C. model operates from A.C. mains of 110 V and 200-250 V, 40-60 c/s, and the A.C./D.C. version from mains of 200-250 V. The waveband ranges are 16-53 m, 190-560 m and 800-2,000 m.

Similar chassis are employed in the 6911, which is an autoradiogram version of the 3811; and in the 5912, which is an autoradiogram version of the 3812. The small differences in the 6911 radiogram are explained overleaf.

Other models with which this service data may be used are the A.C. radiogram 5561B, the A.C. autoradiograms 6561B, 6571B, 6581B and the A.C./D.C. radiograms 5562B (single) and 6582B (auto). Although physically their chassis are quite different from our basic models, their circuits are identical with those of the 6911 and 5912 respectively.

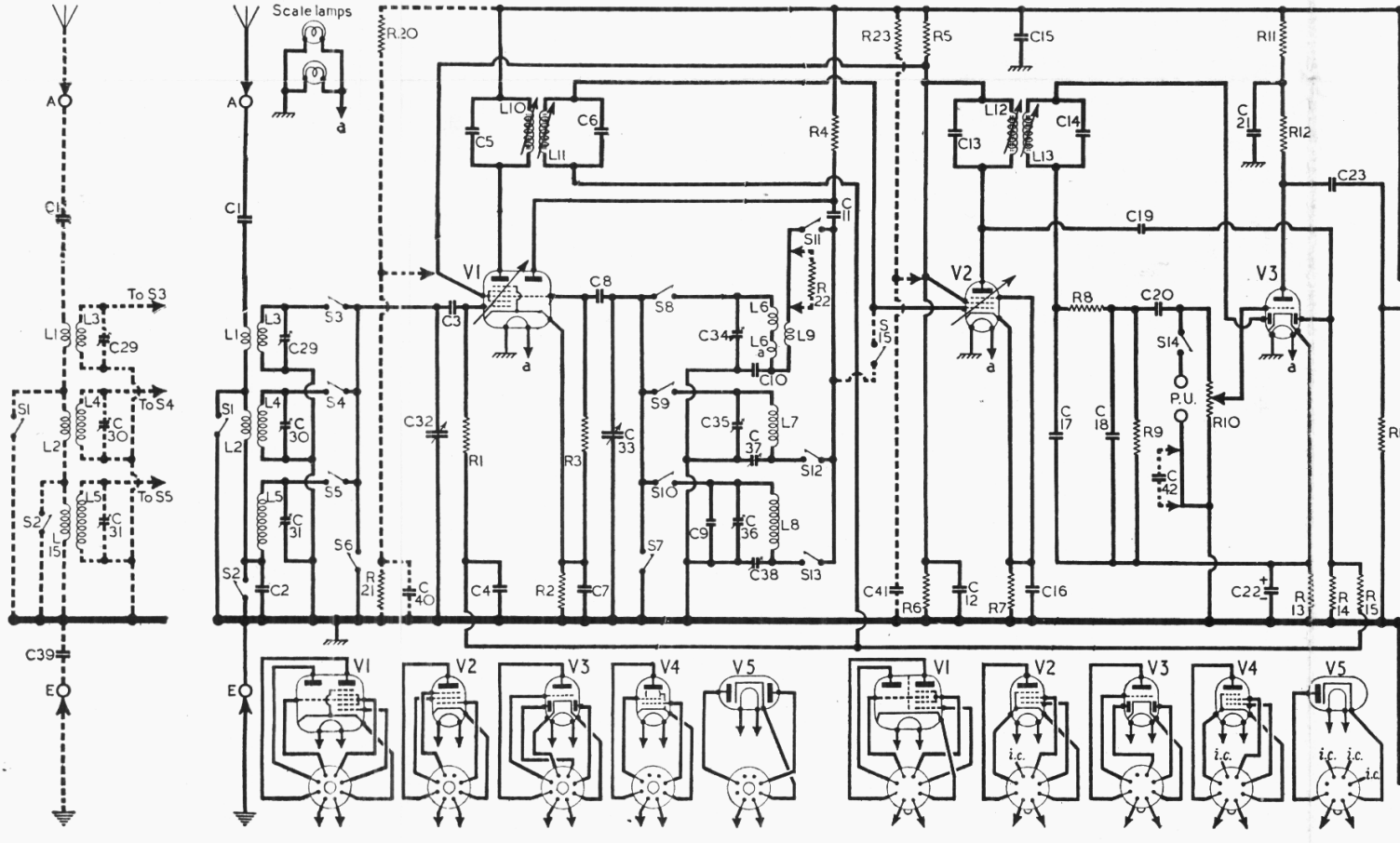
*Release dates and original prices:* 3811, 3812, *October*, 1950, £14 14*s*; 6911, 5912, *October*, 1950, £43 1*s*; 5561*B*, *July*, 1949, £34 13*s*; 6561*B*, *July*, 1949, £38 17*s*; 6571*B*, *July*, 1949, £46 4*s*; 6581*B*, *August*, 1949, £57 15*s*; 5562*B*, *July*, 1949, £38 17*s*; 6582*B*, *December*, 1949, £59 17*s*. *Purchase tax extra.*

### CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1** (S.W.), **L2** (M.W.) and "bottom" coupling capacitor **C2** (L.W.) to single tuned circuits **L3, C32** (S.W.), **L4, C32** (M.W.) and **L5, C32** (L.W.). In later models, and in all A.C./D.C. models, the L.W. aerial coupling is by **L15. C39** isolates the earth socket in the A.C./D.C. models.

First valve **(V1, Cossor 7S7** (A.C. model) or **Mullard UCH42** (A.C./D.C. model)) is a triode-heptode operating as frequency changer with internal coupling. Oscillator grid coils **L6** (S.W.), **L7** (M.W.) and **L8** (L.W.) are tuned by **C33.** Parallel trimming by **C34** (S.W.), **C35** (M.W.) and **C9, C36** (L.W.); series tracking by **C10** (S.W.), **C37** (M.W.) and **C38** (L.W.). In some chassis, tracking on S.W. is adjusted by **L6a,** which consists of the connecting lead between **L6** and **L9,** coiled up to form an inductance. Reaction coupling from anode via **C11** across the common impedance of the trackers on all wavebands, with the addition of inductive coupling by **L9** on S.W.

Second valve **(V2, Cossor 7B7** (A.C. model) or **Mullard UF41** (A.C./D.C.




Circuit diagram covering the Alba 3811, 3812 series. The main diagram, drawn in solid line, is that of the A.C. receiver 3811. Inset in in the A.C./D.C. version 3812. Inset beneath the circuit are the valve base diagrams for the two versions: on the left, with loctal bases, is the

model)) is a variable-mu R.F. pentode, operating as intermediate frequency amplifier with tuned transformer couplings **C5, L10, L11, C6** and **C13, L12, L13, C14.**

**Intermediate frequency 470 kc/s.**

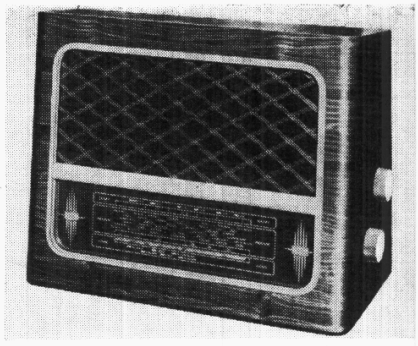
The diode signal detector is part of double diode triode valve **(V3, Cossor 7C6** (A.C. model) or **Mullard UBC41** (A.C./D.C. model)**).** A.F. component in rectified output is developed across the diode load **R9** and passed via **C20** and volume control **R10** to the grid of the triode section.

Second diode of **V3,** fed from **V2** anode via **C19,** provides a D.C. potential, which is developed across load resistor **R14** and fed back as bias to the F.C. and I.F. valves, giving automatic gain control. I.F. filtering by **C17, R8** and **R18.**

Provision is made for the connection of a gramophone pick-up across **R10** via **S14,** which closes when the waveband control is turned to the Gram position. **S6** and **S7** also close on Gram to mute radio. In the A.C./D.C. model, **S15** closes to provide further muting.

Resistance-capacitance coupling by **R12, C23** and **R16** between **V3** anode and pentode output valve **(V4, Cossor 7C5** A.C. model) or **Mullard UL41** (A.C./D.C. model)**).** Fixed tone correction in anode circuit by **C25,** and three-position tone control by **C24, R17** and **S16, S17.**

Provision is made for the connection of



The Alba 3811 and 3812.

a low impedance speaker across **T1** secondary, and when this is used the internal speaker may be muted by pulling out the speaker plug from the centre Ext. L.S. socket.

In the A.C. model, H.T. current is supplied by I.H.C. full-wave rectifying valve **(V5, Cossor 7Y4).** Smoothing by electrolytic capacitors **C27, C28** and resistor **R19, V5** heater is fed from the same winding on **T2** as the other valves.

In the A.C./D.C. version, H.T. current is supplied by half-wave rectifying valve **(V5, Mullard UY41).** Smoothing by iron-cored choke **L16** and resistor **R19** in association with capacitors **C27, C28, C43.**

The screen of **V1** is fed via H.T. potential divider **R20, R21,** and decoupled by **C40.** The valve heaters, scale lamps and ballast resistor **R25** are connected in series across the mains input. **R26** protects the scale lamps, and **R24** the rectifier, from current surges. R.F. filtering by **C44.**

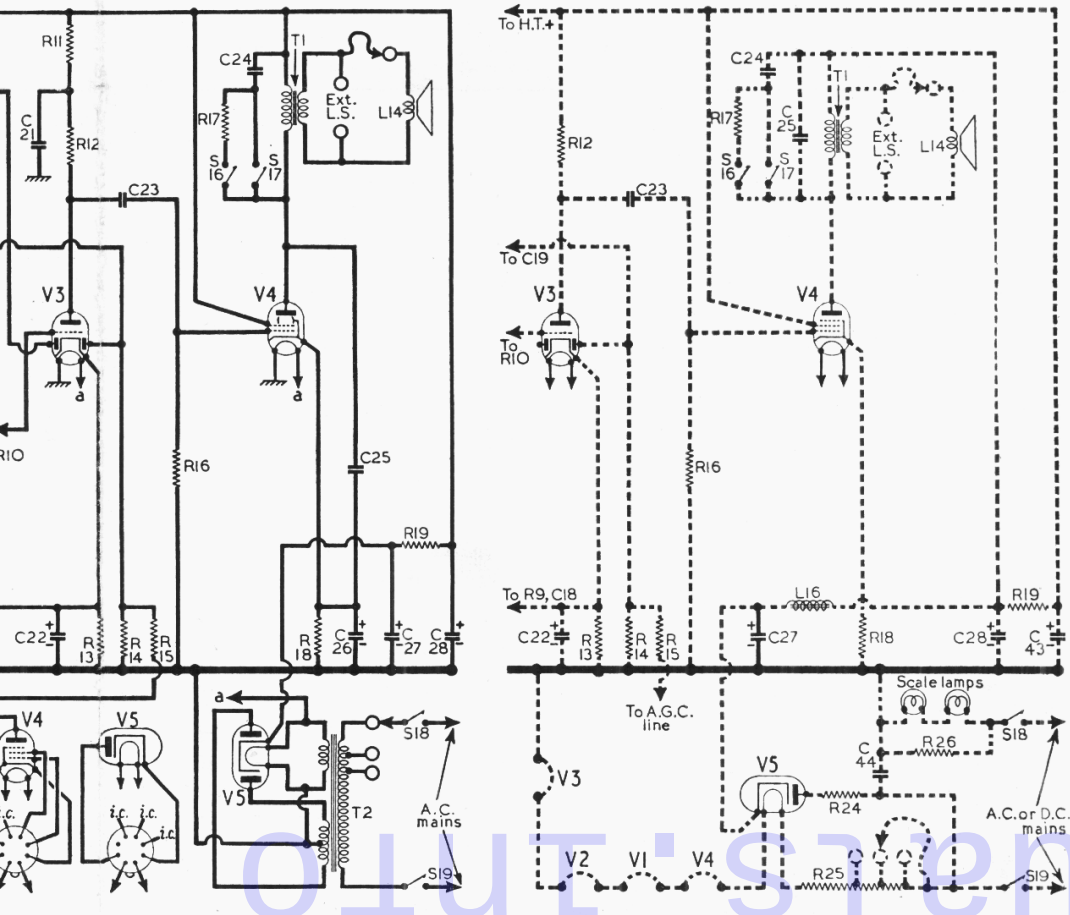
## COMPONENTS AND VALUES

| Resistors | A.C. Values | A.C. Locations | A.C./D.C. Values | A.C./D.C. Locations |
|---|---|---|---|---|
| R1 | 1MΩ | F4 | 1MΩ | K6 |
| R2 | 220Ω | F4 | 220Ω | K6 |
| R3 | 47kΩ | F3 | 47kΩ | K6 |
| R4 | 27kΩ | F3 | 27kΩ | K5 |
| R5 | 22kΩ | D4 | — | — |
| R6 | 56kΩ | E4 | — | — |
| R7 | 300Ω | F4 | 300Ω | K6 |
| R8 | 47kΩ | F3 | 47kΩ | K6 |
| R9 | 560kΩ | F3 | 560kΩ | J5 |
| R10 | 250kΩ | C2 | 250kΩ | C2 |
| R11 | 47kΩ | E4 | — | — |
| R12 | 270kΩ | E4 | 47kΩ | J6 |
| R13 | 2·2kΩ | E4 | 2·2kΩ | K6 |
| R14 | 1MΩ | E3 | 1MΩ | J6 |
| R15 | 1MΩ | E3 | 1MΩ | J6 |
| R16 | 560kΩ | E4 | 820kΩ | J6 |
| R17 | 10kΩ | D3 | 10kΩ | H5 |
| R18 | 270Ω | E3 | 200Ω | J6 |
| R19 | 560Ω | D4 | 560Ω | J6 |
| R20 | — | — | 22kΩ | K5 |
| R21 | — | — | 33kΩ | K5 |
| R22 | — | — | 100Ω | L5 |
| R23 | — | — | 90kΩ | K6 |
| R24 | — | — | 100Ω | J5 |
| R25 | — | — | *1·3kΩ | C1 |
| R26 | — | — | 60Ω | H6 |

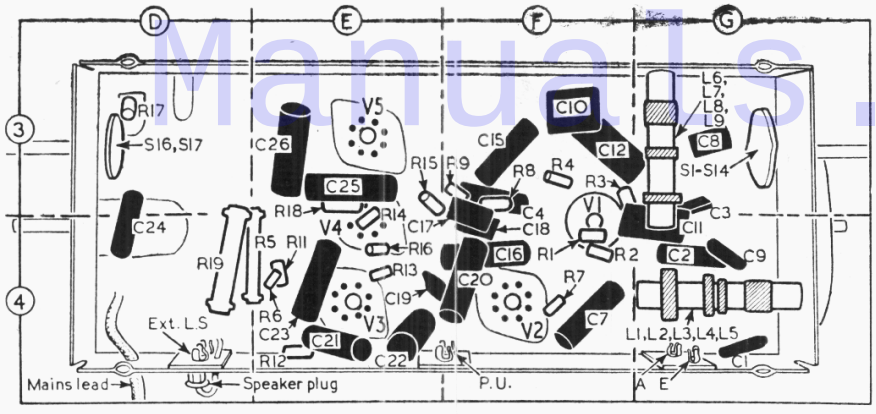
* Tapped at 800Ω + 250Ω + 250Ω from V5 heater.

| Capacitors | A.C. Values | A.C. Locations | A.C./D.C. Values | A.C./D.C. Locations |
|---|---|---|---|---|
| C1 | 200pF | G4 | 200pF | L6 |
| C2 | 0·01μF | G4 | — | — |
| C3 | 100pF | G3 | 100pF | L5 |
| C4 | 0·05μF | F3 | 0·05μF | K5 |
| C5 | 100pF | A2 | 100pF | A2 |
| C6 | 100pF | A2 | 100pF | A2 |
| C7 | 0·1μF | F4 | 0·1μF | K6 |
| C8 | 100pF | G3 | 100pF | L5 |
| C9 | 47pF | G4 | 47pF | L5 |
| C10 | 5,343pF | F3 | 5,343pF | K5 |
| C11 | 500pF | G4 | 100pF | L5 |
| C12 | 0·25μF | F3 | — | — |
| C13 | 10pF | B2 | 100pF | B2 |
| C14 | 100pF | B2 | 100pF | B2 |
| C15 | 0·1μF | F3 | 0·25μF | J5 |
| C16 | 0·1μF | F4 | 0·1μF | K6 |
| C17 | 100pF | F4 | 100pF | K5 |
| C18 | 100pF | F4 | 100pF | K6 |
| C19 | 12pF | E4 | 12pF | K6 |
| C20 | 0·005μF | F4 | 0·005μF | K6 |
| C21 | 0·1μF | E4 | — | — |
| C22* | 25μF | E4 | 25μF | J6 |
| C23 | 0·005μF | E4 | 0·005μF | J6 |
| C24 | 0·05μF | D4 | 0·05μF | H5 |
| C25 | 0·005μF | E3 | 0·005μF | J5 |
| C26* | 25μF | E3 | — | — |
| C27* | 32μF | C2 | 16μF | C2 |
| C28* | 32μF | C2 | 32μF | C2 |
| C29‡ | 65pF | A2 | 65pF | A2 |
| C30‡ | 65pF | A2 | 65pF | A2 |
| C31‡ | 65pF | A2 | 65pF | A2 |
| C32† | §528pF | A2 | §528pF | A2 |
| C33† | §528pF | A2 | §528pF | A2 |
| C34‡ | 65pF | A1 | 65pF | A1 |
| C35‡ | 65pF | A1 | 65pF | A1 |
| C36‡ | 65pF | A1 | 65pF | A1 |
| C37‡ | 500pF | A1 | 500pF | A1 |
| C38‡ | 200pF | A1 | 200pF | A1 |
| C39 | — | — | 0·05μF | K6 |
| C40 | — | — | 0·1μF | K5 |
| C41 | — | — | 0·1μF | K6 |
| C42 | — | — | 0·5μF | K5 |
| C43* | — | — | 32μF | C2 |
| C44 | — | — | 0·02μF | J5 |

* Electrolytic. †Variable. ‡ Pre-set.
§ "Swing" value, min. to max.




...er 3811. Inset in and around it are diagram sections in broken line that indicate the differences ...h loctal bases, is the A.C. complement; on the right, with B8A bases, is the A.C./D.C. complement.




Underside view of the A.C. chassis, model 3811. **L6** may be supplemented with a tracking coil **L6a,** which we show in the A.C./D.C. chassis opposite.

| OTHER COMPONENTS | | | Approx. Values (ohms) | Locations |
|---|---|---|---|---|
| | | **A.C. Model** | | |
| L1 | Aerial coupling coils | | Very low | G4 |
| L2 | | | 1·3 | G4 |
| L3 | Aerial tuning coils | | Very low | G4 |
| L4 | | | 3·2 | G4 |
| L5 | | | 12·5 | G4 |
| L6 | Oscillator tuning coils | | Very low | G3 |
| L7 | | | 2·2 | G3 |
| L8 | | | 4·8 | G3 |
| L9 | Osc. reaction | | 0·2 | G3 |
| L10 | 1st I.F. trans. | Pri. | 11·0 | A2 |
| L11 | | Sec. | 11·0 | A2 |
| L12 | 2nd I.F. trans. | Pri. | 11·0 | B2 |
| L13 | | Sec. | 11·0 | B2 |
| L14 | Speech coil | | 3·2 | — |
| T1 | Primary | | 360·0 | — |
| | Secondary | | 0·3 | |
| T2 | Primary, total | | 38·0 | |
| | H.T. sec., total | | 500·0 | C2 |
| | Heater sec. | | Very low | |
| S1-S14 | Waveband switches | | — | G3 |
| S16, S17 | Tone control sw. | | — | D3 |
| S18, S19 | Mains sw., g'd R10 | | — | C2 |
| | **A.C./D.C Model** | | | |
| L1 | Aerial coupling coils | | Very low | L6 |
| L2 | | | 1·3 | L6 |
| L3 | Aerial tuning coils | | Very low | L6 |
| L4 | | | 3·2 | L6 |
| L5 | | | 12·5 | L6 |
| L6 | Oscillator tuning coils | | Very low | L5 |
| L6a | | | Very low | L5 |
| L7 | | | 2·2 | L5 |
| L8 | | | 4·8 | L5 |
| L9 | Osc. reaction | | 0·2 | L5 |
| L10 | 1st I.F. trans | Pri. | 11·0 | A2 |
| L11 | | Sec. | 11·0 | A2 |
| L12 | 2nd I.F. trans | Pri. | 11·0 | B2 |
| L13 | | Sec. | 11·0 | B2 |
| L14 | Speech coil | | 3·2 | — |
| L15 | L.W. aerial coup. | | 50·0 | L6 |
| L16 | Smoothing choke | | 60·0 | H6 |
| T1 | Primary | | 360·0 | — |
| | Secondary | | 0·3 | |
| S1-S15 | Waveband switches | | — | L5 |
| S16, S17 | Tone control switches | | — | H5 |
| S18, S19 | Mains sw., g'd R10 | | — | C2 |

## DISMANTLING THE SET

**Removing Chassis.**—Pull off two control knobs from each side of cabinet; unsolder the four leads from the tags on the output transformer; unsolder the lead from the speech coil tag on the speaker; remove the four bolts (two cheese-head at front, two Phillips type at rear) with washers, securing the chassis to the cabinet; withdraw the chassis from the cabinet, with the right-hand corner leading to allow the control spindles to clear the cabinet.

*When replacing*, the leads to the speaker and **T1** should be connected as follows: lead from top Ext. L.S. socket to top tag on **T1**; lead from **V4** anode to second tag on **T1**; lead from H.T. line to third tag; lead from centre Ext. L.S. socket to fourth tag; lead from bottom Ext. L.S. socket to top speech coil tag on speaker.

**Removing Speaker.**—Remove the four 4BA nuts with shakeproof washers securing the rim of the speaker to the baffle.

*When replacing*, the output transformer should be on the right-hand side.

## VALVE ANALYSIS

Valve voltages and currents given in the tables (col. 3) are those measured in our receivers when they were operating from A.C. mains of 220 V. The receivers were tuned to the highest wavelength end of M.W., and the volume control set at maximum, but there was no signal input.

Voltage measurements were made with an Avo Electronic TestMeter, which introduces no appreciable voltage drop, and allowances must be made for the current taken by other meters. Chassis was the negative connection in every case.

When measuring currents, a 0.1 μF capacitor should be shunted across the meter leads to prevent instability which may give rise to erroneous readings.

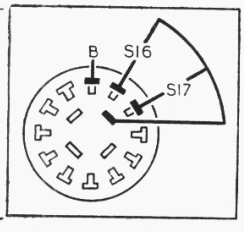
| Valve | | Anode V | Anode mA | Screen V | Screen mA | Cath. V |
|---|---|---|---|---|---|---|
| | | **A.C. Model** | | | | |
| V1 | 7S7... | 260 | 1·0 | 68 | 2·15 | 1·8 |
| | | Oscillator 150 | 3·8 | | | |
| V2 | 7B7 | 68 | 1·1 | 68 | 1·0 | 2·0 |
| V3 | 7C6 | 106 | 0·45 | — | — | 1·0 |
| V4 | 7C5 | 250 | 40·0 | 260 | 6·5 | 13·0 |
| V5 | 7Y4 | 270† | — | — | — | 300·0 |
| | | **A.C./D.C. Model** | | | | |
| V1 | UCH42 | 190 | 2·4 | 85 | 2·5 | 2·0 |
| | | Oscillator 80 | 3·6 | | | |
| V2 | UF41 | 190 | 4·2 | 80 | 1·4 | 1·8 |
| V3 | UBC41 | 150 | 0·8 | — | — | 1·8 |
| V4 | UL41 | 190 | 35·0 | 190 | 6·4 | 10·0 |
| V5 | UY41 | 220† | — | — | — | 210·0 |

† A.C.

## GENERAL NOTES

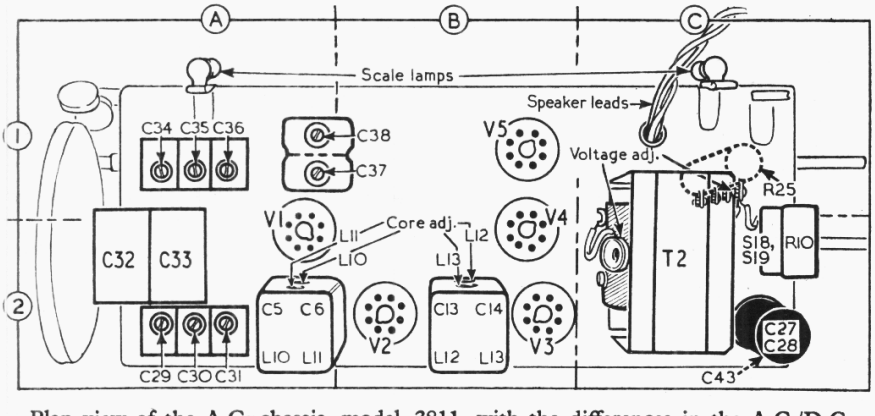
**Switches.—S1-S13** (and in the A.C./D.C. version **S15**) are the waveband switches, and **S14** is the gram pick-up switch, ganged in a single rotary unit beneath the chassis. The unit is indicated in our underside drawing of the chassis, where it is mounted on the right-hand side-member.

The tone control switch unit, seen from the remote end of an inverted chassis.




It is shown in detail in the diagram in col. 4, where it is drawn as seen from the opposite end of the inverted chassis. The table below it gives the switch positions for the four control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and **C,** closed.

**S16, S17** are the tone control switches, in a 3-position unit on a side-member of




Plan view of the A.C. chassis, model 3811, with the differences in the A.C./D.C. chassis 3812 drawn in in broken line, the mains transformer being omitted.

**the chassis. The unit, which is indicated in our underside drawing of the chassis, is** shown in detail in the diagram in col. 3, where it is drawn as seen from the opposite end of an inverted chassis.

In the fully anti-clockwise position of the control knob **S17** closes for deep tone, in the central position **S16** closes for medium tone, and in the fully clockwise position both switches are open.

**S18, S19** are the Q.M.B. mains switches, ganged with the volume control **R10.**

**Scale Lamps.** — These are two Osram lamps, with small clear spherical bulbs and M.E.S. bases. In the A.C. model they are rated at 6.3 V, 0.3 A, and in the A.C./D.C. model 3.5 V, 0.15 A.

**External Speaker.** — Two sockets are provided at the rear of the chassis for the connection of a low-impedance (about 3 Ω) external speaker. These are the outer sockets of three in a vertical row. The centre socket is provided for the internal speaker plug, withdrawal of the plug muting the speaker.

## CIRCUIT ALIGNMENT

All the R.F. and I.F. adjustments are accessible from the top of the chassis and complete alignment may be carried out with the chassis in the cabinet.

**I.F. Stages.**—Turn gang and volume control to maximum. Connect signal generator, via a 0.1 μF capacitor in each lead, to control grid (pin 6) of **V2** and chassis. Switch set to L.W., feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L13** (location reference B2) and **L12** (B2) for maximum output. Transfer "live" signal generator lead to control grid (pin 6) of **V1,** and adjust the cores of **L11** (A2) and **L10** (A2) for maximum output. During these adjustments, reduce the input as the circuits come into line to avoid AGC action.

**R.F. and Oscillator Stages.**—With the gang at maximum capacitance, the cursor should coincide with the high wavelength ends of the tuning scales. Transfer signal generator leads to **A** and **E** sockets.

**S.W.**—Switch set to S.W., tune to 16.67 m on scale, feed in a 16.67 m (18 Mc/s) signal and adjust **C34, C29** for maximum output. Tune to 50 m, feed in a 50 m (6 Mc/s) signal and check calibration. If the calibration error is large, the position of the top turn of **L6** (L5) or the spacing of the turns of **L6a** (if fitted) should be adjusted, and the alignment repeated until satisfactory calibration results.

**M.W.**—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal and adjust **C35** (A1) and **C30** (A2) for maximum output. Tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust **C37** (A1) for maximum output. Repeat these adjustments until no improvement can be obtained.

**L.W.**—Switch set to L.W., tune to 800 m on scale, feed in an 800 m (375 kc/s) signal and adjust **C36** (A1) and **C31** (A2) for maximum output. Tune to 1,949 m, feed in a 1,949 m (154 kc/s) signal and adjust **C38** (A1) for maximum output. Repeat these adjustments until no improvement can be obtained.

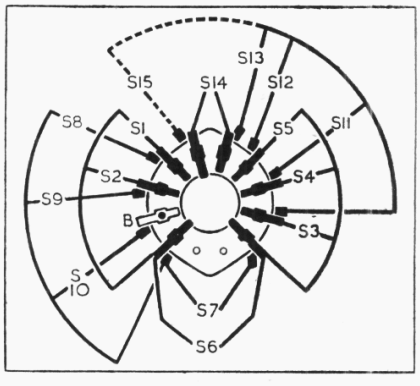
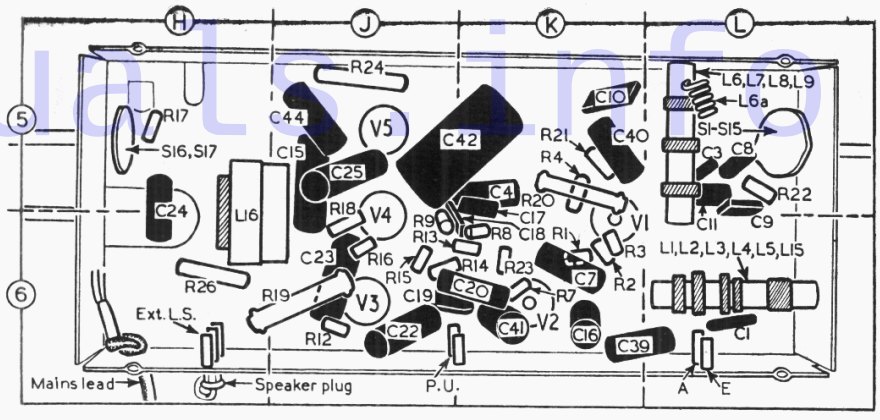



Diagram of the waveband switch unit, seen from the remote end of an inverted chassis. **S15** is omitted in the A.C. model 3811. Below is the associated switch table.

| Switch | S.W. | M.W. | L.W. | Gram |
|---|---|---|---|---|
| S1 | C | — | — | — |
| S2 | — | C | — | — |
| S3 | C | — | — | — |
| S4 | — | C | — | — |
| S5 | — | — | C | — |
| S6 | — | — | — | C |
| S7 | — | — | — | C |
| S8 | C | — | — | — |
| S9 | — | C | — | — |
| S10 | — | — | C | — |
| S11 | C | — | — | — |
| S12 | — | C | — | — |
| S13 | — | — | C | — |
| S14 | — | — | — | C |
| S15 | — | — | — | C |




Underside view of the chassis of the A.C./D.C. model 3812. Diagrams of the two switch units appear in cols. 3 and 4.

## RADIOGRAM MODIFICATIONS

In general, it may be said that the circuit differences between the 6911 A.C. ARG and the A.C. table model 3811 are the same as those between the 3811 and the 3812, excluding of course the A.C./D.C. mains input circuit and the earthy isolating capacitor.

The chassis, however, is quite different physically, and this applies also to all the A.C. radiograms associated with this Service Sheet. Their circuits are identical with that of the 6911, but their chassis are different physically.

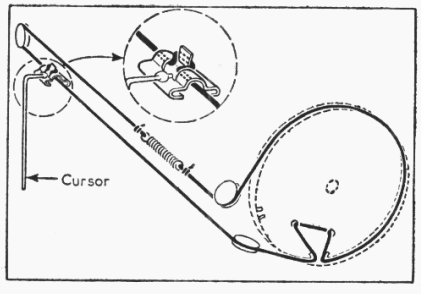
The circuit of the A.C./D.C. ARG is identical with that which we show for the 3812, and again this applies to all the A.C./D.C. radiograms, but physically the chassis are different. All the circuit details in our diagram overleaf that are drawn in broken line apply to all these A.C./D.C. models. Otherwise their diagrams conform with the main diagram, which is drawn in solid line.

## DRIVE CORD REPLACEMENT

The gang drive is direct via an epicyclic reduction device, but a cord is used for the scale drive. A new cord requires about four feet of high-grade flax fishing line, plaited and waxed.

The course followed by the cord is simple, as shown in the accompanying sketch, where the system is drawn as seen from the front right-hand corner of the chassis with the gang at maximum. The first operation is to thread the cord through the two holes in the face of the gang drum, near the gap in its rim. Then tie the tension spring to one end.

The cord can then be run as shown, tying off the other end of the cord at the free end of the spring. The cord can be drawn through the drum holes as required to bring the spring to the required position. The cursor carriage can be slipped on afterwards, the cord being slipped off one of the pulleys temporarily to allow sufficient slackness.




Three-quarter view of the drive cord system, seen from the front right-hand corner of the chassis.

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