

ULTRA - U696

Troubadour

| CAPACITORS | | Value | Locations |
|------------|----------------------------|---------|-----------|
| C1 | Aerial series ... | 15pF | — |
| C2 | L.W. trimmer ... | 220pF | F2 |
| C3 | V1 C.G. ... | 500pF | F3 |
| C4 | 1st I.F. trans. tuning ... | 120pF | A1 |
| C5 | | 120pF | A1 |
| C6 | V1 osc. C.G. ... | 100pF | F2 |
| C7 | A.G.C. decoupling ... | 0.04μF | F3 |
| C8 | L.W. trimmer ... | 640pF | E2 |
| C9 | Osc. anode coup. ... | 100pF | A1 |
| C10 | Osc. tracker ... | 680pF | F2 |
| C11 | S.G. decoupling ... | 0.04μF | F3 |
| C12 | 2nd I.F. trans. tuning ... | 120pF | B1 |
| C13 | | 120pF | B1 |
| C14 | I.F. by-passes ... | 100pF | E2 |
| C15 | | 300pF | E2 |
| C16 | A.F. coupling ... | 0.01μF | D2 |
| C17 | | 0.01μF | D2 |
| C18 | Tone corrector ... | 0.01μF | E3 |
| C19 | | 0.01μF | C1 |
| C20* | H.T. smoothing ... | 32μF | B1 |
| C21* | | 32μF | B1 |
| C22 | Mains R.F. filtering | 0.05μF | D3 |
| C23† | M.W. aerial trim... | 30pF | A1 |
| C24† | Aerial tuning | \$528pF | A1 |
| C25† | M.W. osc. trim. | 60pF | E2 |
| C26† | L.W. osc. trim. | 60pF | E2 |
| C27† | Oscillator tuning ... | \$528pF | A1 |

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

| RESISTORS | | Values | Locations |
|-----------|----------------------|--------|-----------|
| R1 | V1 C.G. ... | 1MΩ | F3 |
| R2 | V1 osc. C.G. ... | 47kΩ | F3 |
| R3 | Osc. stabiliser ... | 3.3kΩ | F2 |
| R4 | Osc. anode feed ... | 68kΩ | F3 |
| R5 | S.G. feed ... | 27kΩ | E3 |
| R6 | A.G.C. decoupling | 1MΩ | E2 |
| R7 | Diode load ... | 470kΩ | E2 |
| R8 | I.F. stopper ... | 100kΩ | E2 |
| R9 | Volume control ... | 1MΩ | D2 |
| R10 | V3 C.G. ... | 10MΩ | E2 |
| R11 | V3 anode load ... | 100kΩ | E3 |
| R12 | V4 C.G. ... | 470kΩ | E3 |
| R13 | V4 G.B. ... | 300Ω | E3 |
| R14 | H.T. smoothing ... | 1.8kΩ | C1 |
| R15 | Scale lamp shunt... | 39Ω | D2 |
| R16 | V5 surge limiter ... | 120Ω | C1 |
| R17 | Ballast resistor ... | *910Ω | C1 |

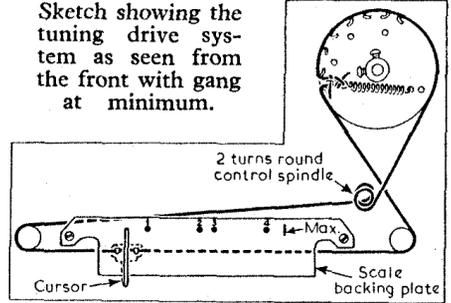
* Tapped at 700Ω + 120Ω + 90Ω from V5 heater.

| OTHER COMPONENTS | | Approx. Values (ohms) | Locations |
|------------------|----------------------------|-----------------------|-----------|
| L1 | Frame aerial ... | 1-2 | — |
| L2 | L.W. loading coil... | 9.0 | F2 |
| L3 | M.W. loading coil... | 0.5 | F2 |
| L4 | Osc. reaction coil ... | 1.7 | F2 |
| L5 | Osc. tuning coil ... | 4.6 | F2 |
| L6 | 1st I.F. trans. { Pri. ... | 8.5 | A1 |
| L7 | | Sec. ... | 8.5 |
| L8 | 2nd I.F. trans. { Pri. ... | 8.5 | B1 |
| L9 | | Sec. ... | 8.5 |
| L10 | Speech coil ... | 2.6 | — |
| T1 | O.P. trans. { Pri. ... | 270.0 | C1 |
| S1-S4 | Waveband switches | — | F2 |
| S5, S6 | Mains sw., g'd R9 | — | D2 |

CIRCUIT ALIGNMENT

The chassis should be withdrawn from the cabinet for the following alignment adjustments and with the frame aerial still connected, the back cover should be placed in its normal position relative to the chassis. The output of the

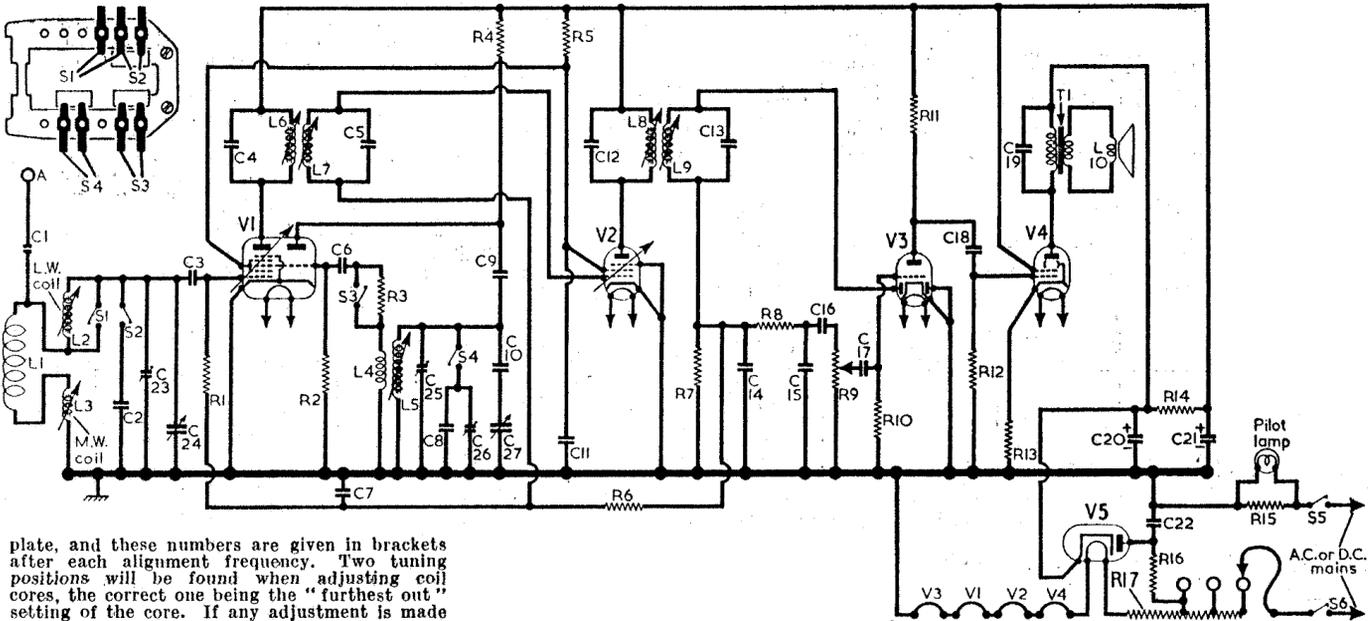
Sketch showing the tuning drive system as seen from the front with gang at minimum.



signal generator should be connected to a coil consisting of 14 turns of 18 s.w.g. enamelled copper wire wound on a 1/4 in former to a length of 1 1/4 in, and placed about 6 in from the frame aerial.

I.F. Stages.—Switch receiver to M.W. and turn gang to maximum. Feed in a 471 kc/s (637 m) signal and adjust the cores of L9 (location reference B1), L8 (E2), L7 (F3) and L6 (A1) for maximum output.

R.F. and Oscillator Stages.—Check that with the gang at maximum capacitance the cursor coincides with the vertical mark at the right-hand end of the red scale backing plate. As the tuning scale remains fixed in the cabinet when the chassis is removed, reference is made during alignment to numbered calibration points along the top edge of the scale backing



plate, and these numbers are given in brackets after each alignment frequency. Two tuning positions will be found when adjusting coil cores, the correct one being the "furthest out" setting of the core. If any adjustment is made to the M.W. trimmers or to the oscillator core then the L.W. band must be realigned.

M.W.—With the receiver switched to M.W., tune to 500 m (4 on scale), feed in a 500 m (600 kc/s) signal and adjust the cores of L5 (F2) and L3 (F2) for maximum output. If a signal generator with an accuracy within ±1 kc/s is not available for the above adjustment of L5, the receiver should be tuned to calibration mark 4 and L5 should be adjusted while rocking the tuning control of the signal generator about 500 m for maximum output.

The calibration of the receiver should then be checked on a station of known wavelength near 500 m, and if the cursor is to the right of the correct position the core of L3 should be screwed in by one turn, and if to the left the core should be screwed out by one turn, and the above procedure repeated. Tune receiver to 200 m (1 on scale), feed in a 200 m (1.500 kc/s) signal and adjust C25 (E2) and C23 (A1) for maximum output. Repeat these adjustments.

L.W.—Switch receiver to L.W., tune to 1.429 m (2 on scale), feed in a 1.429 m (210 kc/s) signal and adjust C26 (E2) and the core of L2 (F3) for maximum output.

| Valve | Anode | | Screen | | Cath. |
|-----------|------------|------|--------|-----|-------|
| | V | mA | V | mA | |
| V1 10C1 | 175 | 1.3 | 40 | 4.0 | — |
| | Oscillator | | | | |
| | 24 | 1.8 | | | |
| V2 10F9 | 175 | 3.5 | 40 | 1.0 | — |
| V3 10LD11 | 33 | 1.4 | — | — | — |
| V4 10P13 | 202 | 25.0 | 175 | 5.0 | 8.5 |
| V5 U404 | †202 | — | — | — | 210.0 |

† Each anode. A.C.

Drive Cord Replacement.—About three feet of nylon braided glass yarn is required for a new drive cord, although a few inches more would provide a more comfortable margin for tying off. The cord should be run as shown in the accompanying sketch, where the system is drawn as seen from the front with the gang at minimum capacitance.

The cursor can be fitted afterwards, and with the gang at maximum capacitance it should be

slid along the cord until it covers the short vertical line at the right-hand end of the scale backing plate, which is the correct position of alignment.

Frame Winding.—L1 is wound on the back cover of the receiver, and is terminated at two small sockets on a small terminal strip which also carries the external aerial socket. A third small socket is used as an anchorage for the isolating capacitor C1, and is joined to the upper of these two small sockets which are coded red (upper) and white (lower) to agree with their connecting leads from the chassis.