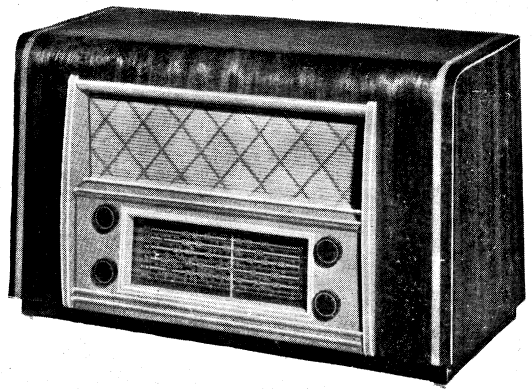


TECHNICAL INFORMATION AND SERVICE DATA

A.W.A. RADIOLA Model 656-TA

SIX VALVE, TWO BAND,
A.C. OPERATED SUPERHETERODYNE

ISSUED BY:
AMALGAMATED WIRELESS (AUSTRALASIA) LTD.



ELECTRICAL SPECIFICATIONS

Frequency Ranges:

| | |
|-------------------|--------------------------------------|
| Medium Wave | 540-1600 Kc/s. (555-187.5 Metres) |
| Short Wave | 6-18 Mc/s. (50-16 Metres) |

Intermediate Frequency 455 Kc/s.

Power Supply Rating 220-260 volts.
50-60 C.P.S.

(Models are produced with other voltage and frequency ratings.)

Power Consumption 45 watts.

Dial Lamps:

6.3 volts, 0.25 Amp. M.E.S.

Valve Complement:

- (1) 6BA6 — R.F. Amplifier
- (2) 6AE8 or X79 — Converter
- (3) 6BA6 — I.F. Amplifier
- (4) 6AV6 — Detector, A.F. Amplifier, A.V.C.
- (5) 6AQ5 — Output
- (6) 6X4 — Rectifier

Loudspeaker:

9" x 6" Electromagnet — Part No. 21529.
Transformer — TU301.
V.C. Impedance — 3 ohms at 400 C.P.S.
Field — 1,000 ohms.

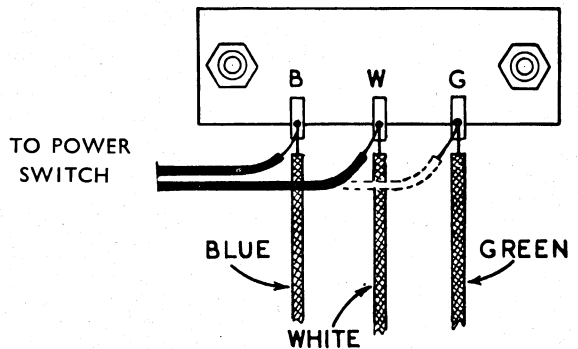
Undistorted Power Output 3 watts

Chassis Removal:

First remove the knobs by pulling them straight off their spindles.

Disconnect the loudspeaker cable.

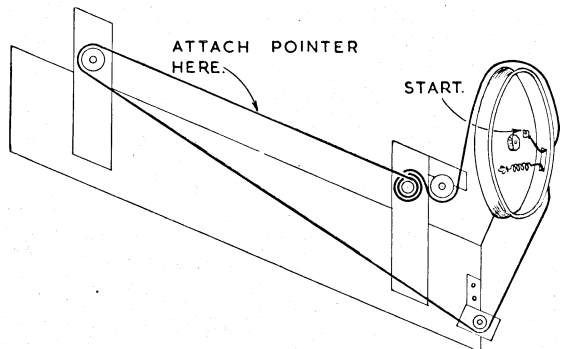
The chassis is held in the cabinet by four screws through the base of the cabinet. Removal of these enables the chassis to be withdrawn.



Connection to Power Supply:

The receiver should not be connected to any circuit supplying other than alternating current from 200-260 volts and at the frequency stated on the label within the cabinet.

The power supply connections are shown in the accompanying diagram.



Drive Cord Replacement:

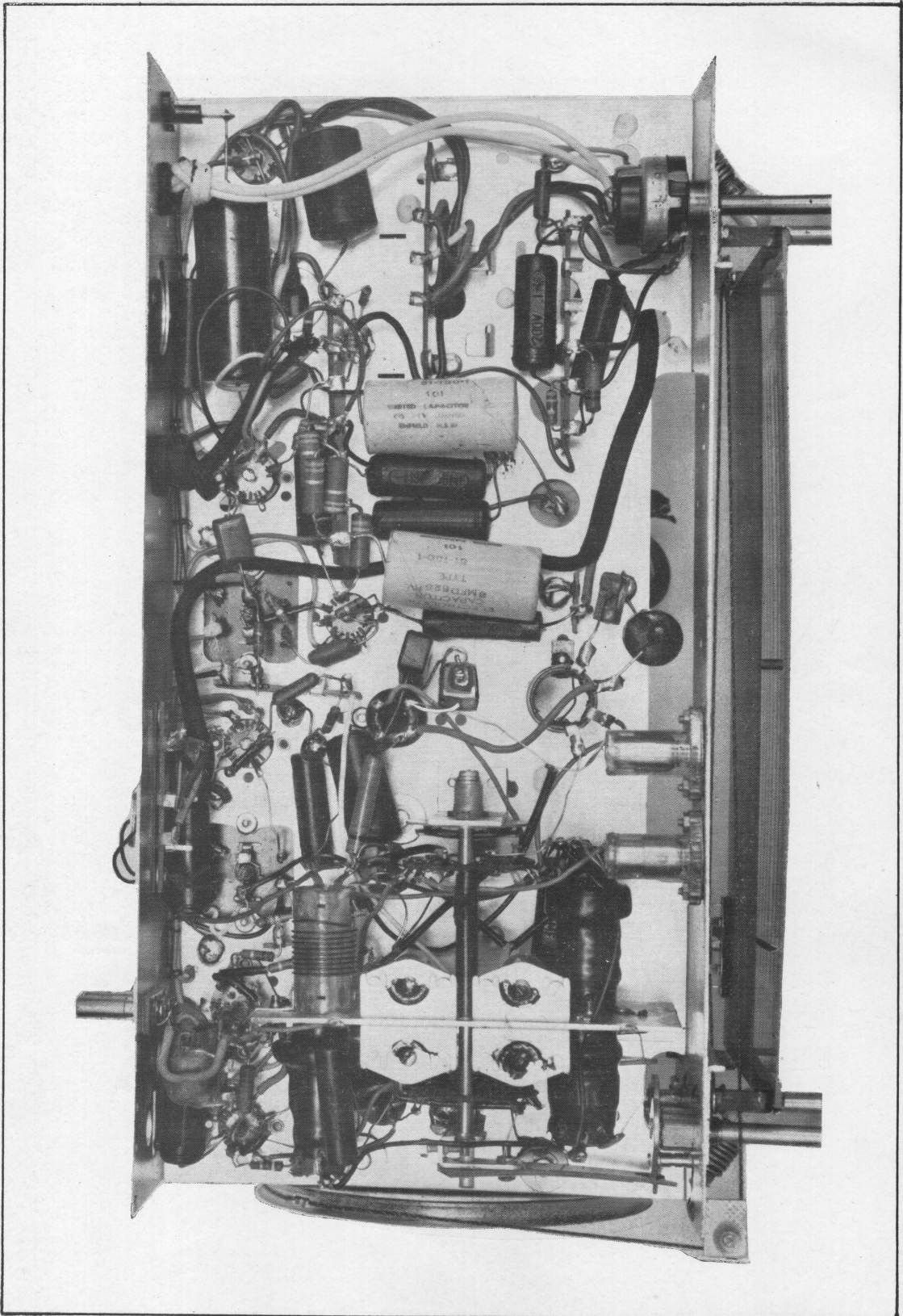
The accompanying diagram shows the route of the cord and the method of attachment.

CIRCUIT CODE — RADIOLA 656-TA

| Code No. | Description | Part No. | Fig. No. | Location | Code No. | Description | Part No. | Fig. No. | Location |
|-------------------|---------------------------------------|----------|----------|----------|----------|--|----------|----------|----------|
| INDUCTORS | | | | | | | | | |
| L1 | Filter Unit (including C1) | 9382 | 2 | K15 | C9 | 9 $\mu\mu\text{F}$ mica | | | E15 |
| L2, L3 | Aerial Coil 540-1600 Kc/s. | 15454 | 2 | H16 | C10 | 0.05 μF paper 200V working | | | H16 |
| L4, L5 | Aerial Coil 6-18 Mc/s. | 15456 | 2 | D16 | C11 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | G14 |
| L6, L7 | R.F. Coil 540-1600 Kc/s. | 23891 | 2 | D14 | C12 | 0.025 μF paper 200V working | | | E14 |
| L8, L9 | R.F. Coil 6-18 Mc/s. | 26060 | 2 | H14 | C13 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | F14 |
| L10, L11 | Oscillator Coil 540-1600 Kc/s. | 76384 | 2 | G10 | C14 | 6.8 $\mu\mu\text{F}$ ceramic | | | D13 |
| L12, L13 | Oscillator Coil 6-18 Mc/s. | 15458 | 2 | E10 | C15 | 12-430 $\mu\mu\text{F}$ tuning | 18321 | 1 | F5 |
| L14, L15 | 1st I.F. Transformer | 26673 | 1 | J7 | C16 | 0.1 μF paper 200V working | | | K16 |
| L16, L17 | 2nd I.F. Transformer | 25197 | 1 | J10 | C17 | 8 μF 525 P.V. electrolytic | | | F8 |
| L18 | Field Coil, 1,000 ohms | | | | C18 | 47 $\mu\mu\text{F}$ mica | | | H13 |
| RESISTORS | | | | | | | | | |
| R1 | 330 ohms | | 2 | J17 | C19 | 100 $\mu\mu\text{F}$ silvered mica (in 1st I.F.) | | | K13 |
| R2 | 150 ohms | | 2 | J16 | C20 | 100 $\mu\mu\text{F}$ silvered mica (in 1st I.F.) | | | K13 |
| R3 | 39,000 ohms | | 2 | J15 | C21 | 0.1 μF paper 200V working | | | K12 |
| R4 | 220 ohms | | 2 | J14 | C22 | 12-430 $\mu\mu\text{F}$ tuning | 18321 | 1 | F7 |
| R5 | 220 ohms | | 2 | J14 | C23 | 9 $\mu\mu\text{F}$ mica | | | G10 |
| R6 | 23,000 ohms | | 2 | H7 | C24 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | D11 |
| R7 | 0.1 megohm | | 2 | E13 | C25 | 440 $\mu\mu\text{F}$ padder $\pm 2\frac{1}{2}\%$ | | | G9 |
| R8 | 33,000 ohms | | 2 | H12 | C26 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | D12 |
| R9 | 0.1 megohm | | 2 | J13 | C27 | 4,000 $\mu\mu\text{F}$ padder $\pm 2\frac{1}{2}\%$ | | | D9 |
| R10 | 390 ohms | | 2 | J10 | C28 | 0.5 μF paper 200V working | | | J12 |
| R11 | 330 ohms | | 2 | H10 | C29 | 0.1 μF paper 400V working | | | K9 |
| R12 | 2.7 megohms | | 2 | J9 | C30 | 6.8 $\mu\mu\text{F}$ ceramic | | | K9 |
| R13 | 0.5 megohm volume control (Tapped) | 27145 | 1 | C17 | C31 | 100 $\mu\mu\text{F}$ silvered mica (in 2nd I.F.) | | | K9 |
| R14 | 50 ohms | | 1 | C16 | C32 | 100 $\mu\mu\text{F}$ silvered mica (in 2nd I.F.) | | | H9 |
| R15 | 2,000 ohms | | 2 | E3 | C33 | 100 $\mu\mu\text{F}$ mica | | | K8 |
| R16 | 25,000 ohms | | 2 | C3 | C34 | 100 $\mu\mu\text{F}$ mica | | | F9 |
| R17 | 4,700 ohms | | 2 | E6 | C35 | 0.01 μF paper 600V working | | | E4 |
| R18 | 50 ohms | | 2 | D6 | C36 | 0.1 μF paper 200V working | | | G8 |
| R19 | 47,000 ohms | | 2 | J9 | C37 | 0.05 μF paper 400V working | | | J7 |
| R20 | 10.0 megohms | | 2 | H9 | C38 | 0.02 μF paper 600V working | | | H3 |
| R21 | 47,000 ohms | | 2 | J7 | C39 | 0.4 μF paper 200V working | | | J5 |
| R22 | 0.27 megohm | | 2 | H8 | C40 | 68 $\mu\mu\text{F}$ mica | | | K5 |
| R23 | 47,000 ohms | | 2 | J6 | C41 | 0.0025 μF paper 600V working | | | K4 |
| R24 | 0.47 megohm | | 2 | H5 | C42 | 0.5 μF paper 400V working | | | G6 |
| R25 | 0.47 megohm | | 2 | H4 | C43 | 8 μF 525 P.V. electrolytic | | | E12 |
| R26 | 2.7 megohms | | 2 | J5 | C44 | 16 μF 525 P.V. electrolytic | | | D9 |
| | | | 2 | | C45 | 0.1 μF paper 400V working | | | D5 |
| | | | 2 | | C46 | 0.5 μF paper 200V working | | | |
| CAPACITORS | | | | | | | | | |
| C1 | 50 $\mu\mu\text{F}$ silvered mica | | 2 | K16 | T1 | TRANSFORMERS | | | |
| C2 | 12-430 $\mu\mu\text{F}$ tuning | 18321 | 1 | F3 | T2 | Loudspeaker Transformer | TU301 | 1 | G15 |
| C3 | 0.1 μF paper 200V working | | 2 | H16 | | Power Transformer 50-60 C.P.S. | 25825 | | |
| C4 | 0.05 μF paper 400V working | | 2 | G7 | | 40 C.P.S. | 25846 | | |
| C5 | 6.8 μF ceramic | | 2 | H17 | | LOUDSPEAKER | | | |
| C6 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | G15 | | 9" x 6" Electromagnetic Speaker | 21529 | | |
| C7 | 9 $\mu\mu\text{F}$ mica | | 2 | H13 | S1 | SWITCHES | | | |
| C8 | 2-20 $\mu\mu\text{F}$ air trimmer | 19659 | 2 | F15 | S2 | Range Switch | 27084 | 2 | F16 |
| | | | 2 | | | Tone-Power Switch (on R16) | | 2 | D3 |

A B C D E F G H I J K L M

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



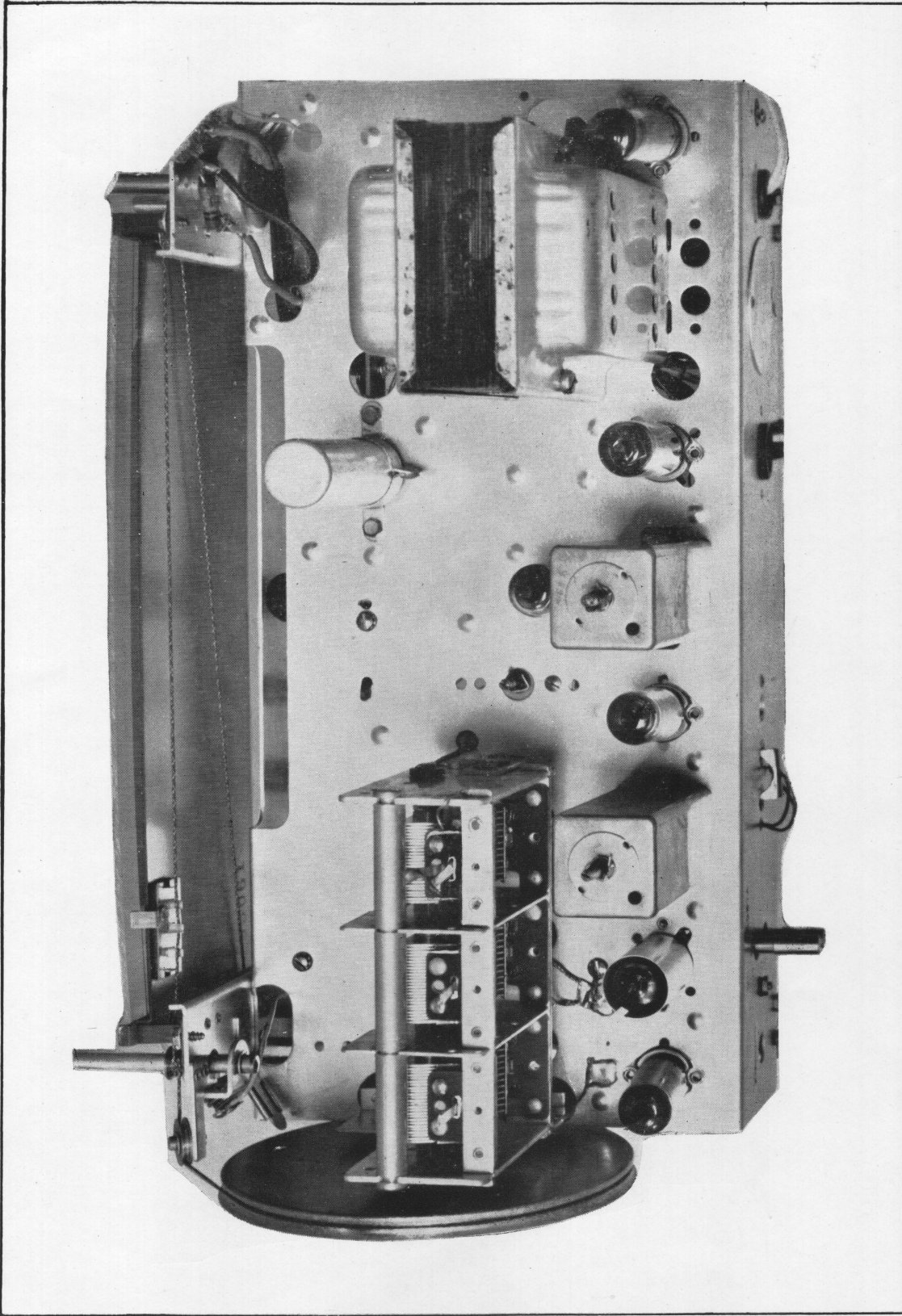
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A B C D E F G H I J K L M

FIG.2.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A B C D E F G H J K L M



A B C D E F G H J K L M

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

FIG. I.

ALIGNMENT PROCEDURE

Manufacturer's Setting of Adjustments:

The receiver is tested by the manufacturer with precision instruments and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using special equipment.

For all alignment operations connect the "low" side of the signal generator to the receiver chassis and keep the

generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

Testing Instruments:

- (1) A.W.A. Junior Signal Generator, type 2R7003, or
- (2) A.W.A. Modulated Oscillator, series J6726.

If the modulated oscillator is used, connect a 0.25 megohm non-inductive resistor across the output terminals, and for short wave alignment, an additional 400 ohms non-inductive resistor in series with the "high" output lead of the instrument.

- (3) A.W.A. Output Meter, type 2M8832.

ALIGNMENT TABLE

| Order | Connect "High" side of Generator to: | Tune Generator to: | Tune Receiver Dial to: | Adjust for Maximum Peak Output: |
|--|--|--------------------|------------------------|---------------------------------|
| 1 | R.F. Section of Gang (Centre section) | 455 Kc/s | 540 Kc/s (4QL) | L17 Core |
| 2 | R.F. Section of Gang (Centre section) | 455 Kc/s | 540 Kc/s (4QL) | L16 Core |
| 3 | R.F. Section of Gang (Centre section) | 455 Kc/s | 540 Kc/s (4QL) | L15 Core |
| 4 | R.F. Section of Gang (Centre section) | 455 Kc/s | 540 Kc/s (4QL) | L14 Core |
| Repeat the above adjustments until the maximum output is obtained. | | | | |
| 5 | Aerial Terminal | 600 Kc/s | 600 Kc/s (7ZL) | Osc. Core Adj. (L11)* |
| 6 | Aerial Terminal | 1500 Kc/s | 1500 Kc/s (3AK) | Osc. Adj. (C24) |
| 7 | Aerial Terminal | 1500 Kc/s | 1500 Kc/s (3AK) | R.F. Adj. (C13) |
| 8 | Aerial Terminal | 1500 Kc/s | 1500 Kc/s (3AK) | Aer. Adj. (C6) |
| Repeat adjustments 5, 6, 7 and 8. | | | | |
| 9 | Aerial Terminal | 16 Mc/s | 16 Mc/s | Osc. Adj. (C26)† |
| 10 | Aerial Terminal | 16 Mc/s | 16 Mc/s | R.F. Adj. (C11)§ |
| 11 | Aerial Terminal | 16 Mc/s | 16 Mc/s | Aer. Adj. (C8)§ |

* Rock the tuning control back and forth through the signal.

† Use minimum capacity peak if two can be obtained. Check to determine that C26 has been adjusted to correct peak by tuning the receiver to approximately 15.09 Mc/s where a weaker signal should be received.

§ Use maximum capacity peak if two can be obtained.

D.C. RESISTANCE OF WINDINGS

| Winding | D.C. Resistance in ohms |
|--|----------------------------|
| Aerial Coil (M.W.): | |
| Primary (L2) | 12 |
| Secondary (L3) | 5 |
| Aerial Coil (S.W.): | |
| Primary (L4) | 3 |
| Secondary (L5) | * |
| R.F. Coil (M.W.): | |
| Primary (L6) | 40 |
| Secondary (L7) | 5 |
| R.F. Coil (S.W.): | |
| Primary (L8) | * |
| Secondary (L9) | * |
| Oscillator Coil (M.W.): | |
| Primary (L10) | 1.5 |
| Secondary (L11) | 6.5 |
| Oscillator Coil (S.W.): | |
| Primary (L12) | * |
| Secondary (L13) | * |
| I.F. Filter (L1) | 17.5† |
| 1st I.F. Transformer Windings | 9 |
| 2nd I.F. Transformer Windings | 6.5 |
| Power Transformer (T2): | |
| Primary | 24 |
| Secondary | 300 |
| Loudspeaker Input Transformer (T1): | |
| Primary | 320 |
| Secondary | * |

* Less than 1 ohm.

† In some receivers this reading may be as high as 60 ohms.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.

SOCKET VOLTAGES

| VALVES | Cathode to Chassis Volts: | Screen Grid to Chassis Volts: | Anode to Chassis Volts: | Anode Current mA: | Heater Volts: |
|---------------------------------|---------------------------------|-------------------------------------|-------------------------------|-------------------------|------------------|
| 6BA6 R.F. Amp. | 2.0 | 86 | 240 | 4.4 | 6.3 |
| X79 or 6AE8.....Converter | 1.8 | 86 | 240 | 4.9 | 6.3 |
| 6BA6 I.F. Amp. M.W. | 3.5 | 86 | 240 | 5 | 6.3 |
| S.W. | 2.6 | 86 | 240 | 6 | — |
| 6AV6 A.F. Amp., Det., A.V.C. | — | — | 80V* | 0.5 | 6.3 |
| 6AQ5 Output | — | 240 | 225 | 38 | 6.3 |
| 6X4 Rectifier | 240 | — | 280/280 A.C. R.M.S. | — | 6.3 |

Total H.T. Current 70 mA.

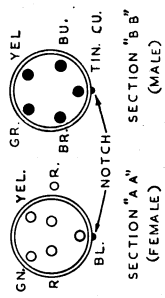
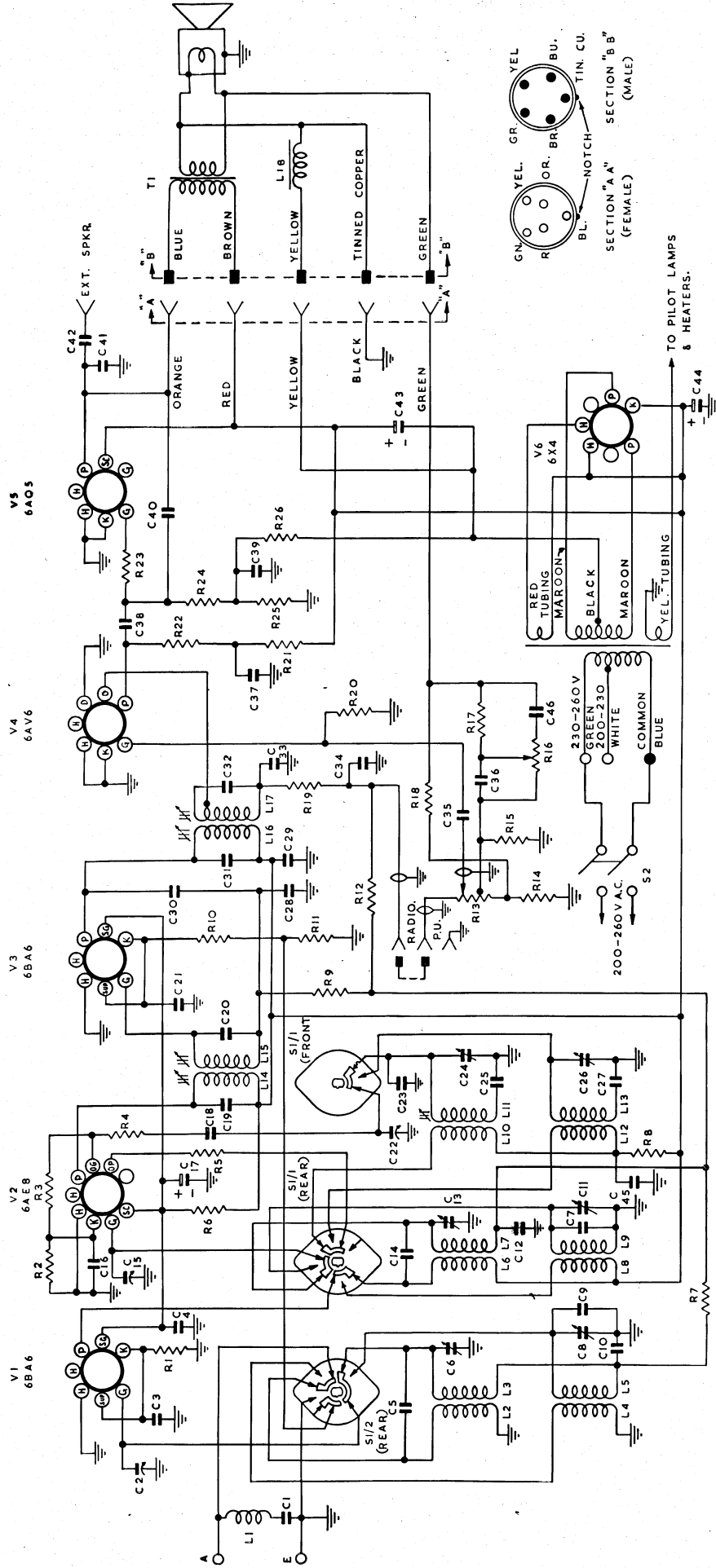
Volts across L18 75 volts.

Measured at 240 volts A.C. supply. No signal input. Volume Control maximum clockwise. Voltmeter 1,000 ohms per volt; measurements taken on highest scale giving accurate readable deflection.

* This reading may vary depending on the voltmeter used.

REPLACEMENT PARTS

| | |
|-------------------------------|-------|
| Cabinet | 28116 |
| Dial Scale | 32217 |
| Knob Assembly | 26516 |
| Knob Assembly, Range | 26519 |
| Lamp Holder | 32804 |
| Pointer | 33948 |
| Socket, 7 pin valve | 19965 |
| 9 pin valve (Code No. 793037) | |
| Spring, drive | 1741 |



TO PILOT LAMPS & HEATERS.

V5
6A05

V4
6A06

V3
6BA6

V2
6A8B

V1
6BA6

