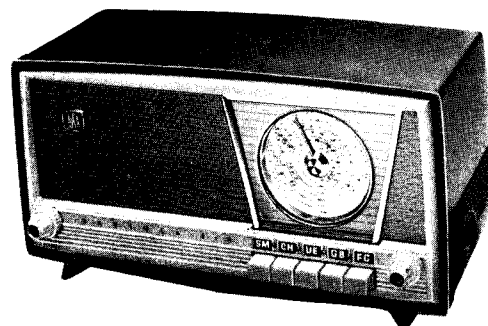




SUPERVISED SERVICE

TECHNICAL INFORMATION AND SERVICE DATA

**PRESSMATIC
MANTEL RECEIVER
Model 690-MA**



ISSUED BY
AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

GENERAL DESCRIPTION

Model 690-MA is a six valve, A.C. operated superheterodyne receiver designed for the reception of the Medium Wave Band. Features of the design include: Press-button and manual permeability tuning, high gain I.F. transformers, inverse feed-back tone control circuit, high degree of mechanical and electrical stability, high sensitivity 7" x 5" elliptical speaker, all components readily accessible on the chassis.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

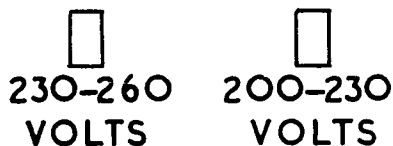
Frequency Range 540-1650 Kc/s. (555-182 metres)
 Intermediate Frequency 455 Kc/s.
 Power Supply Rating 200-260 volts A.C. 50 C.P.S.
 Power Consumption 35 watts
 Undistorted Power Output 3 watts
 Loudspeaker: 7" x 5" Permanent Magnet 36671
 Loudspeaker Transformer 21204F
 V.C. Impedance 15 ohms at 400 C.P.S.
 Dimensions: Height 7½", Width 13½", Depth 7".
 Weight approximately 10½ pounds.

Connection to Power Supply:

The receiver may be connected to any circuit supplying A.C. voltages between 200 to 230 or 230 to 260 at a frequency of 50 C.P.S.

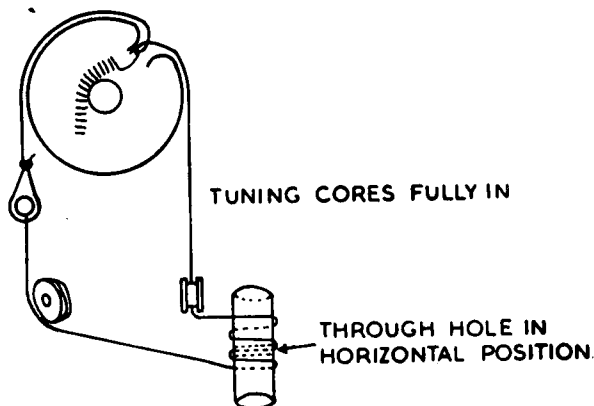
Connections on the power transformer are shown below.

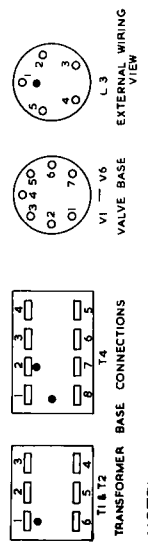
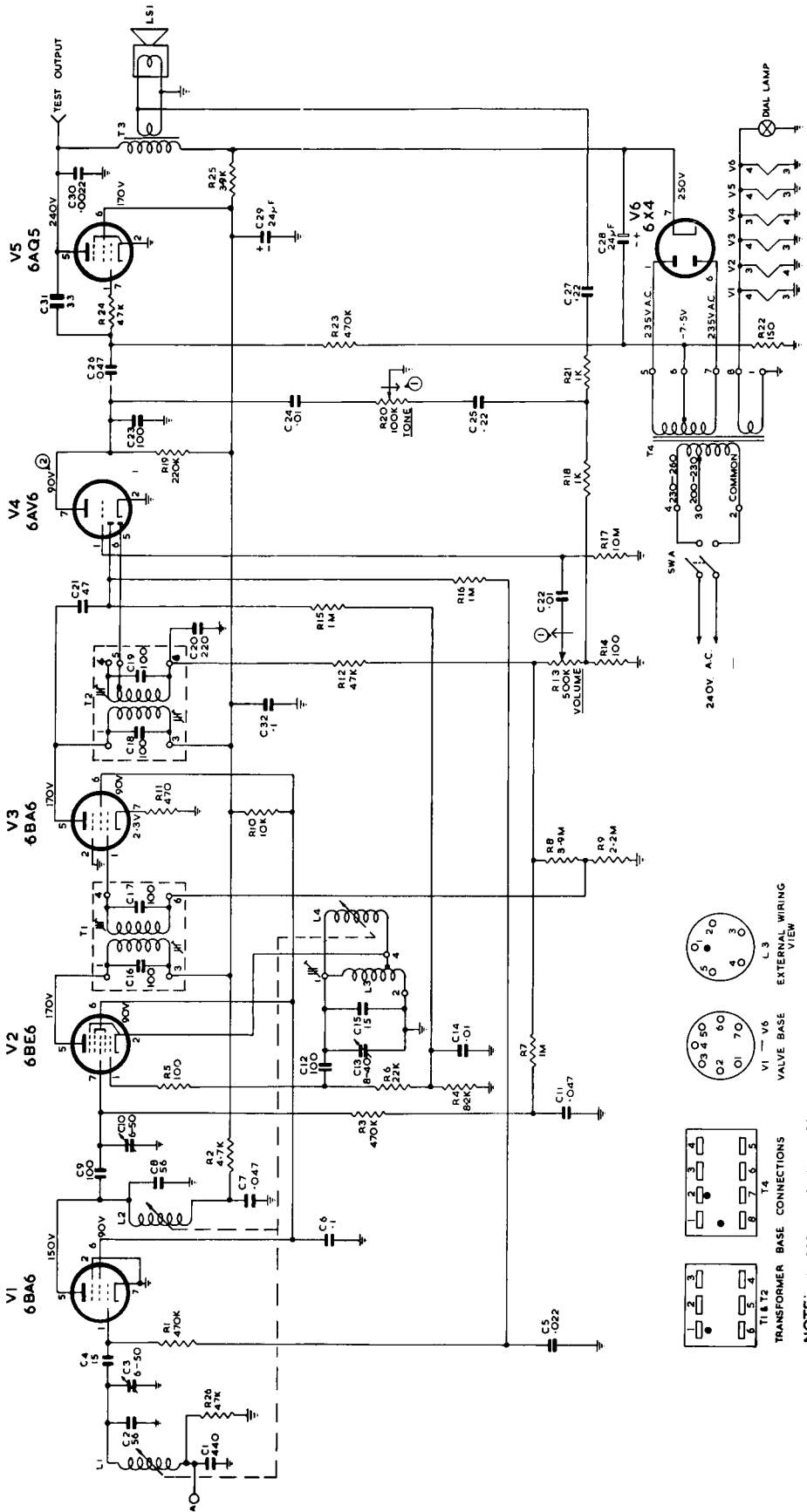
RED DOT INDICATES COMMON CONNECTION FOR ALL VOLTAGES



Valve Complement:

- (1) Radiotron 6BA6 — R.F. Amplifier.
- (2) Radiotron 6BE6 — Converter.
- (3) Radiotron 6BA6 — I.F. Amplifier.
- (4) Radiotron 6AV6 — Audio Amplifier, Detector and A.V.C.
- (5) Radiotron 6AQ5 — Audio Output.
- (6) Radiotron 6x4 — Rectifier.





NOTE: 1. ARROW INDICATES DIRECTION OF CLOCKWISE ROTATION.
 2. VARIES WITH VOLTMETER SENSITIVITY.

Chassis Removal:

Remove the Tone, Volume and Manual Tuning knobs.

Loosen the two screws closest to the front beneath the cabinet and remove the other three screws.

Remove the fret by pulling outwards at the bottom while lifting the front of the chassis by means of the tuning spindle

so that the press buttons clear the slot in the fret.

Remove the two screws in the back of the cabinet and slide out the chassis lifting slightly to clear the fret clamping plate on the bottom of the cabinet.

Installation of the chassis is the reversal of the above procedure. When replacing the fret make sure that the four rubber buffers are seating correctly around the edge.

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.

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.

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 220,000 ohm non-inductive resistor across the output terminals.

- (3) A.W.A. Output Meter, type 2M8832 or
- (4) Marconi Receiver Tester, type TF888/3 (combined Signal Generator and Output Meter).

NOTE: The replacement of any valve in the receiver will not affect the alignment of the tuned circuits in any way providing the recommended Radiotron type is used.

ALIGNMENT TABLE

A General:

| Alignment Order | Connect "High" side of Generator to: | Tune Generator to: | Tune Receiver to: | Adjust for maximum Peak Output: |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------------------------|
| 1 | 6BE6 Pin 7* | 455 Kc/s. | L.F. Limit | T2 Sec. Core (Top) |
| 2 | 6BE6 Pin 7* | 455 Kc/s. | L.F. Limit | T2 Prim. Core (Bottom) |
| 3 | 6BE6 Pin 7* | 455 Kc/s. | L.F. Limit | T1 Sec. Core (Top) |
| 4 | 6BE6 Pin 7* | 455 Kc/s. | L.F. Limit | T1 Prim. Core (Bottom) |
| Repeat the above adjustments until maximum output is obtained. | | | | |
| 5 | Aerial Lead | 1650 Kc/s. | H.F. Limit | H.F. Osc. Adj. (C13) |
| 6 | Aerial Lead | 1500 Kc/s. | 1500 Kc/s. | H.F. R.F. Adj. (C10) |
| 7 | Aerial Lead | 1500 Kc/s. | 1500 Kc/s. | H.F. Aer. Adj. (C3) |
| 8 | Aerial Lead | 600 Kc/s. | 600 Kc/s. | L.F. Osc. Padder Adj. (L3)† |
| Repeat adjustments 5, 6, 7 and 8 until no further adjustment is possible. | | | | |
| 9 | Calibration Alignment: With the receiver connected to an aerial, the dial scale calibration should now be checked and corrected if necessary. To move the pointer, pull it straight off its spindle and replace it in correct position. | | | |

* A 0.01 μ F capacitor should be connected in series with the high side of the test instrument.

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

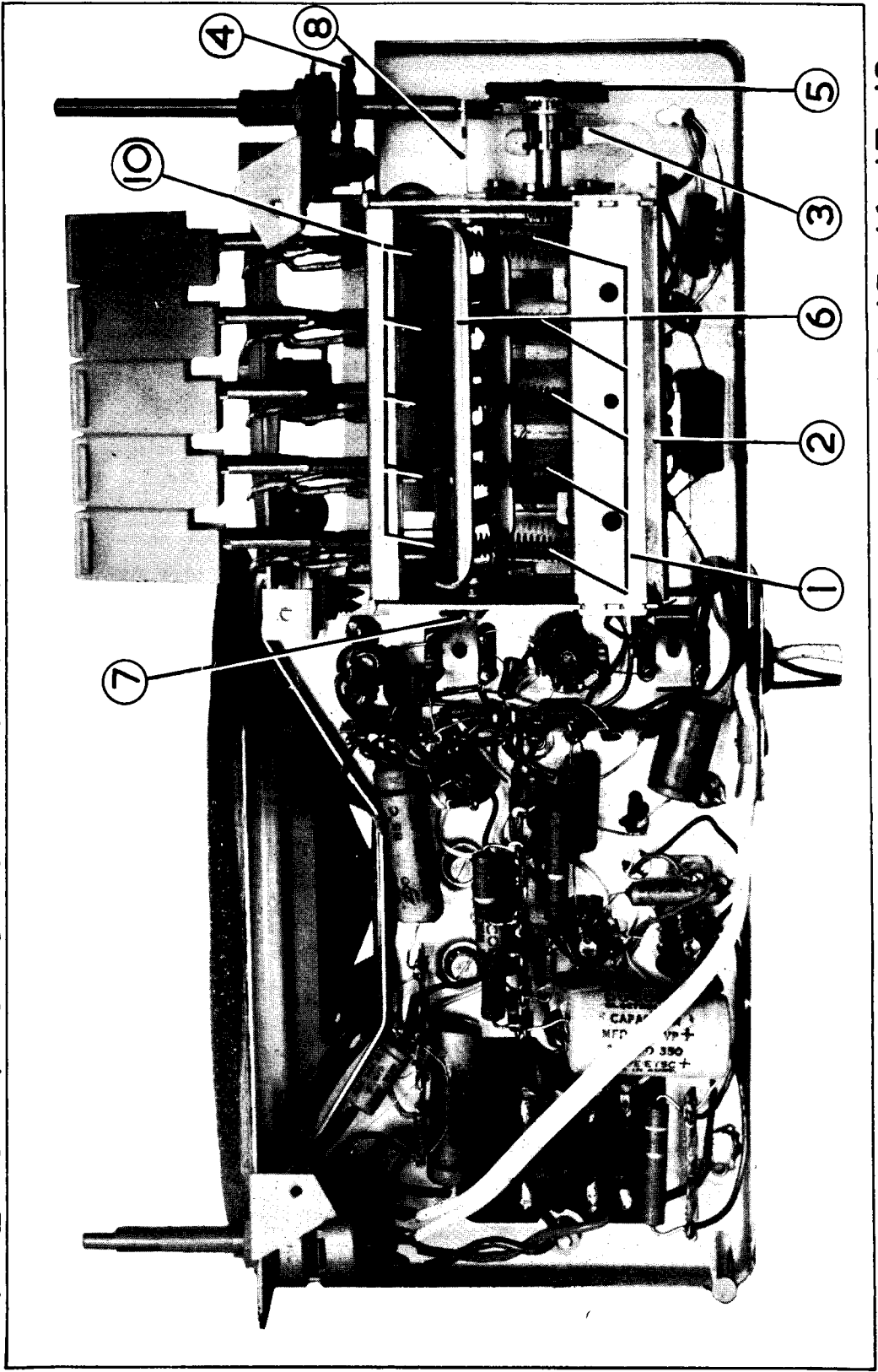
B Tuner Alignment:

The adjustment of the three tuning cores will be necessary only if a tuning core or coil has been replaced. To make this adjustment proceed as follows:

- (1) Adjust the manual drive control until a 0.560" gauge can be slipped into the left rear slot in front of the carriage lug. Use the 0.560" gauge in the manner of a feeler gauge.
- (2) Tune the signal generator to 1000 Kc/s. and connect it to the aerial terminal.
- (3) Adjust the oscillator core, then the aerial and R.F. cores until the maximum output is obtained.
- (4) Proceed with adjustments 5, 6, 7 and 8 in Table A, and then repeat adjustments 1, 2, 3, above, if necessary.
- (5) Seal the tuning core studs.

A B C D E F G H J K L

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

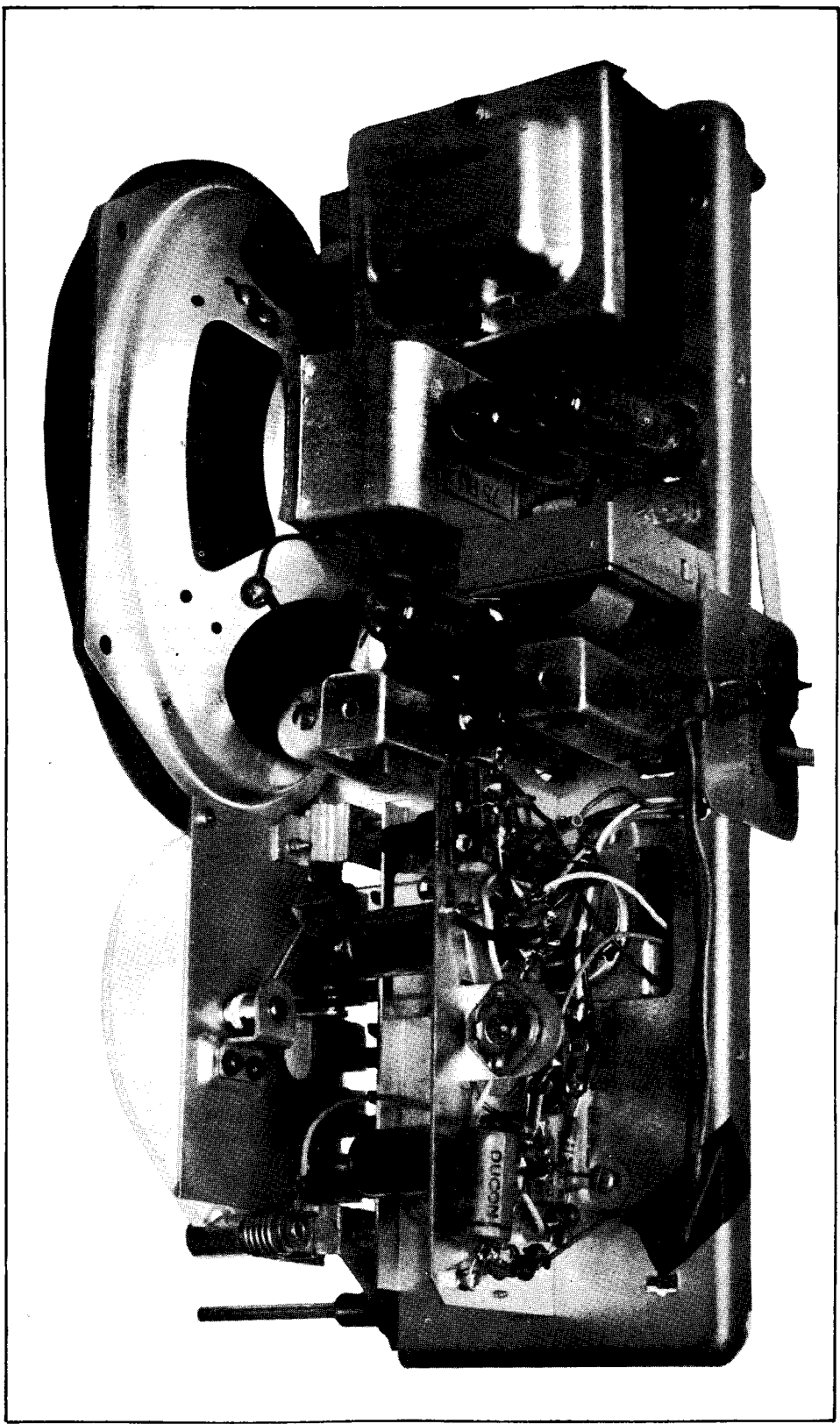
A B C D E F G H J K L

A B C D E F G H J K L

FIG. 2

A B C D E F G H J K

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 J K

FIG. 1

MECHANICAL REPLACEMENT PARTS

| Item | Part Number | Code Number |
|---------------------------------|-------------|-------------|
| Tuning Unit: | | |
| Clutch Gear Bush Assembly | 34688 | |
| Drive Shaft Bushing | 34665 | |
| Drive Spindle Assembly | 36682 | |
| Manual Drive Bracket | 35106 | |
| Pointer Assembly | 36691 | |
| Tuning Unit Assembly | 36685 | |
| Slug, Tuning | 35102 | |
| Spring, Dial Cord | 1741 | |
| Switch Assy., Muting | 35101 | |
| Chassis Assembly: | | |
| Cable, Power | 15940 | |
| Clamp, Cable | 17658 | |
| Clip, I.F. Mounting | 27780 | |
| Cover, Power Transformer | 20150 | |
| Dial Scale | 32295 | cr 32295A |
| Lamp Holder Assy., L.H. | 4194 | |
| Pointer Assembly | 36691 | |
| Screw, Coil Mounting | 34147 | |
| Shield, Dial Lamp | | |
| Cabinet Assembly: | | |
| Bezel, (Stations) | 36649 | |
| Cabinet Body | 36679 | |
| Clamp Strap | 36675 | |
| Dial Window | 36646 | |
| Fret Assembly | 36658 | |
| Dial Trim | 36645 | |
| Fret | 36642 | |
| Gasket, Dial Scale | 36687 | |
| Speaker Trim (large) | 36643 | |
| Trim (small) | 36644 | |
| Knob Ass'y, Power — Tone | 36653 | |
| Knob Assy, Tuning | 36681 | |
| Knob Assy, Volume | 36652 | |
| Label, Valve Layout | 37678 | |
| Rubber Buffer | 36406 | |
| Screw, Bezel Mounting | | 760167 |
| Station Log: | | |
| N.S.W. | 37900 | |
| Vic. | 37901 | |
| Qld. | 37902 | |
| S.A. | 37903 | |
| W.A. | 37904 | |
| Tas. | 37905 | |

When ordering, always quote the above Part Numbers and in the case of coloured parts such as cabinets, knobs etc. the colour plus the Part Number.

D. C. RESISTANCE WINDINGS

| Winding | D.C. Resistance in ohms. |
|---------------------------------------|-----------------------------|
| Tuning Coils L1, L2, and L4 | 9.5 |
| Oscillator Padder L3 | 20 |
| I.F. Transformer Windings T1 and T2 . | 18 |
| Output Transformer T3: | |
| Primary | 400 |
| Secondary | 2 |
| Power Transformer T4: | |
| Primary | 50 |
| H.T. Secondary | 350 |
| L.T. Secondary | * |

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.

* Less than 1 ohm.

SOCKET VOLTAGES

| Valve | Cathode to Chassis Volts | Screen Grid to Chassis Volts | Anode to Chassis Volts | Anode Current mA | Heater Volts |
|-------------|-----------------------------|---------------------------------|---------------------------|---------------------|-----------------|
| 6BA6 (R.F.) | 0 | 90 | 150 | 3.8 | 6.3 |
| 6BE6 | 0 | 90 | 170 | 2.3 | 6.3 |
| 6BA6 (I.F.) | 2.3 | 90 | 170 | 3.5 | 6.3 |
| 6AV6 | 0 | — | 90* | 0.4 | 6.3 |
| 6AQ5 | 0 | 170 | 240 | 26 | 6.3 |
| 6X4 | 250 | — | 235/235 AC R.M.S. | | 6.3 |

Oscillator Grid Current = 220-240 microamps over tuning range.

Total H.T. Current = 47 mA.

Voltage across back bias resistor R22 = -7.5.

The above measurements were taken with an A.V.O. model 8 meter (20,000 ohms per volt), the receiver operating from a 240 volts A.C. supply, no signal input and volume control maximum clockwise. These measurements may vary slightly if a different type of meter is used. This applies particularly to the voltage marked *.

CIRCUIT CODE — RADIOLA 690-MA

| Code No. | Description | Part No. | Fig. No. | Location |
|---------------------|---------------------------------------|----------|----------|----------|
| RESISTORS | | | | |
| R1 | 470K ohms ± 20% | | 1 | G4 |
| R2 | 4.7K ohms ± 20% | | 2 | K11 |
| R3 | 470K ohms ± 20% | | 1 | G6 |
| R4 | 8.2K ohms ± 20% | | 1 | F9 |
| R5 | 100 ohms ± 20% | | 1 | G7 |
| R6 | 22K ohms ± 20% | | 1 | G8 |
| R7 | 1 Megohm ± 20% | | 2 | F9 |
| R8 | 3.9 Megohms ± 20% | | 2 | G9 |
| R9 | 2.2 Megohms ± 20% | | 2 | H8 |
| R10 | 10K ohms ± 10% | | 2 | H7 |
| R11 | 470 ohms ± 20% | | 2 | H10 |
| R12 | 47K ohms ± 20% | | 2 | F10 |
| R13 | 500K ohms Volume Control | 37205 | 2 | D2 |
| R14 | 100 ohms ± 20% | | 2 | F3 |
| R15 | 1 Megohm ± 20% | | 2 | H9 |
| R16 | 1 Megohm ± 20% | | 2 | H8 |
| R17 | 10 Megohms ± 20% | | 2 | F8 |
| R18 | 1K ohm ± 20% | | 2 | F4 |
| R19 | 220K ohms ± 20% | | 2 | G7 |
| R20 | 100K ohms Tone Control | 37205 | 2 | E2 |
| R21 | 1K ohm ± 20% | | 2 | E5 |
| R22 | 150 ohms ± 10% | | 2 | G5 |
| R23 | 470K ohms ± 20% | | 2 | G5 |
| R24 | 47K ohms ± 20% | | 2 | H5 |
| R25 | 3.9K ohms ± 10% | | 2 | J3 |
| R26 | 47K ohms ± 20% | | 2 | K16 |
| CAPACITORS | | | | |
| C1 | 440 pF ± 2½% silvered mica | | 2 | K16 |
| C2 | 56 pF ± 5% N750 tubular | | 1 | G2 |
| C3 | 6.50 pF trimmer Aerial | 31954 | 1 | F2 |
| C4 | 15 pF ± 10% N750 tubular | | 1 | G3 |
| C5 | 0.022 μF ± 20% 400 volt working paper | | 1 | G3 |
| C6 | 0.1 μF ± 20% 400 volt working paper | | 1 | F3 |
| C7 | 0.047 μF ± 20% 400 volt working paper | | 2 | K13 |
| C8 | 56 pF ± 5% N750 tubular | | 1 | F3 |
| C9 | 100 pF ± 20% K1200 tubular | 31954 | 1 | G5 |
| C10 | 6.50 pF trimmer R.F. | | 1 | G5 |
| C11 | 0.047 μF ± 20% 200 volt working paper | | 1 | H4 |
| C12 | 100 pF ± 10% 500 volt working mica | | 1 | G8 |
| TRANSFORMERS | | | | |
| T1 | 1st I.F. Transformer | 35483 | 2 | J10 |
| T2 | 2nd I.F. Transformer | 27353 | 2 | F10 |
| T3 | Audio Output Transformer | 21204F | 1 | H12 |
| T4 | Power Transformer | 25807 | 2 | H3 |
| INDUCTORS | | | | |
| L1 | Tuning Coil Aerial | 34383 | 2 | H15 |
| L2 | Tuning Coil R.F. | 34383 | 2 | H13 |
| L3 | Oscillator Padder Coil | 36987 | 1 | F8 |
| L4 | Tuning Coil Oscillator | 34383 | 2 | H14 |
| VALVES | | | | |
| V1 | Radiotron 6BA6 | | 1 | E3 |
| V2 | Radiotron 6BE6 | | 1 | E4 |
| V3 | Radiotron 6BA6 | | 1 | G9 |
| V4 | Radiotron 6AV6 | | 1 | F11 |
| V5 | Radiotron 6AQ5 | | 1 | G13 |
| V6 | Radiotron 6X4 | | 1 | J13 |

PUSH BUTTON TUNER ASSEMBLY

Possible faults and adjustment procedure (refer to Fig. 2).

| FAULT | CAUSE | REMEDY |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manual Drive slipping | <ol style="list-style-type: none">1. Lack of clearance between slide (1) and clutch gate (2).2. Loose riveting of universal coupling (4) or clutch plate (5) to pinion shaft. | <p>Bend tang (3) of clutch gate outwards to give minimum clearance of .010" on all slides. Avoid bending too far as this will result in clutch not disengaging when button is depressed.</p> <p>Replace manual drive shaft assembly. Replace clutch assembly.</p> |
| station is detuned when Locking button | Paddle plate (6) loose. | Loosen locknut and tighten adjusting screw (7). Retighten locknut. |
| Button Sticking in | <ol style="list-style-type: none">1. Insufficient clearance of manual drive shaft in forked bracket (8).2. Button touching front fret moulding.3. Muting switch pressure too high when button is fully depressed. | <p>Adjust by bending bracket slightly to widen the slot.</p> <p>Adjust tuner position and chassis height to give clearance.</p> <p>Adjust switch setting.</p> |
| Backlash in manual drive | Excessive clearance of manual drive shaft in forked bracket. | Bend the bracket to reduce the clearance in the slot. |
| Pointer backlash or rough movement | <ol style="list-style-type: none">1. Pointer spindle or pulleys insufficiently lubricated.2. Drive cord too tight. | <p>Lubricate with light grease.</p> <p>Slacken cord so that it is lightly tensioned by the spring only.</p> |
| Station setting moves after button is used a few times. | Cam (10) on slide (1) not locking securely. | Replace tuner. It is not possible to repair in the field. |