

TECHNICAL INFORMATION
AND
SERVICE DATA

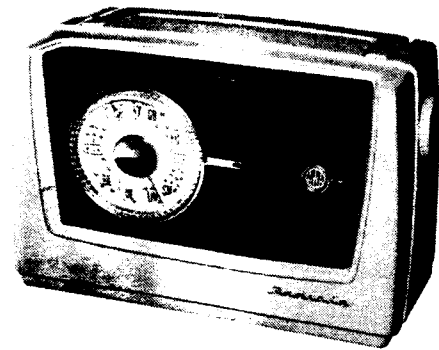
AWA RADIOLA

Portable Model 685-P

SIX VALVE, BROADCAST. DRY-CELL BATTERY or
A.C. POWER UNIT OPERATED SUPERHETERODYNE

Issued by:

AMALGAMATED WIRELESS (AUSTRALASIA) LTD.



ELECTRICAL SPECIFICATIONS

Frequency Range 540-1600 Kc/s
(555-187.5 Metres)

Intermediate Frequency 455 Kc/s

Battery Complement:

"A" and "B" Battery=One 9 and 90V pack type 733.

Battery Consumption:

"A" Battery = 50 mA

"B" Battery = 13 mA ("Full")

8 mA ("Save")

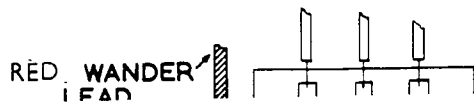
Power Unit Operation:

The receiver may be operated on the following voltage ranges by altering the transformer tapings:—

195-215 volts

216-235 volts

236-255 volts



TUNING KNOB REMOVAL

If difficulty is experienced in removing the tuning control, the following methods may be adopted:

(1) Make a loop out of approximately 14" of fine cord. Feed the cord under the tuning knob making sure that it does not foul the dial scale. (Because of the rubber mountings on the gang, this knob should rock enough to place the cord behind it.) When the cord is diagonally across the knob, pull outwards with a clockwise rotating motion.

If the cord cannot be placed behind the knob, the alternative method is —

(2) Open the receiver lid and, with the gang fully closed, push with a long shaft screwdriver against the back end of the tuning knob boss while turning this knob anti-clockwise (viewed from the gang).

Power Unit Frequency Ranges:
50-60 C.P.S.

A.C. Power Consumption:
17 watts.

Valve Complement:

(V1) 1T4 R.F. Amplifier.

(V2) 1R5 Converter

(V3) 1T4 I.F. Amplifier

(V4) 1U5 Detector, A.F. Amplifier, A.V.C.

(V5) 3V4 Output

(V6) 6X4 Rectifier.

Loudspeaker:

4" permanent magnet No. 21171

Transformer No. 21434A

V.C. Impedance, 16 ohms at 400 C.P.S.

Undistorted Power Output:
200 milliwatts.

Controls:

Tuning Control—front left-hand of cabinet.

Volume Control—left-hand end of cabinet.

Power Selector Switch—right-hand end of cabinet.

Chassis Removal:

Remove the tuning, volume and power selector control knobs. These knobs are only a push on fit; however, in the case of the tuning control, forcing the knob past its normal travel with a twisting action is necessary to overcome friction between the knob and the gang spindle.

Remove the two screws from the side and the two nuts from the base of the cabinet.

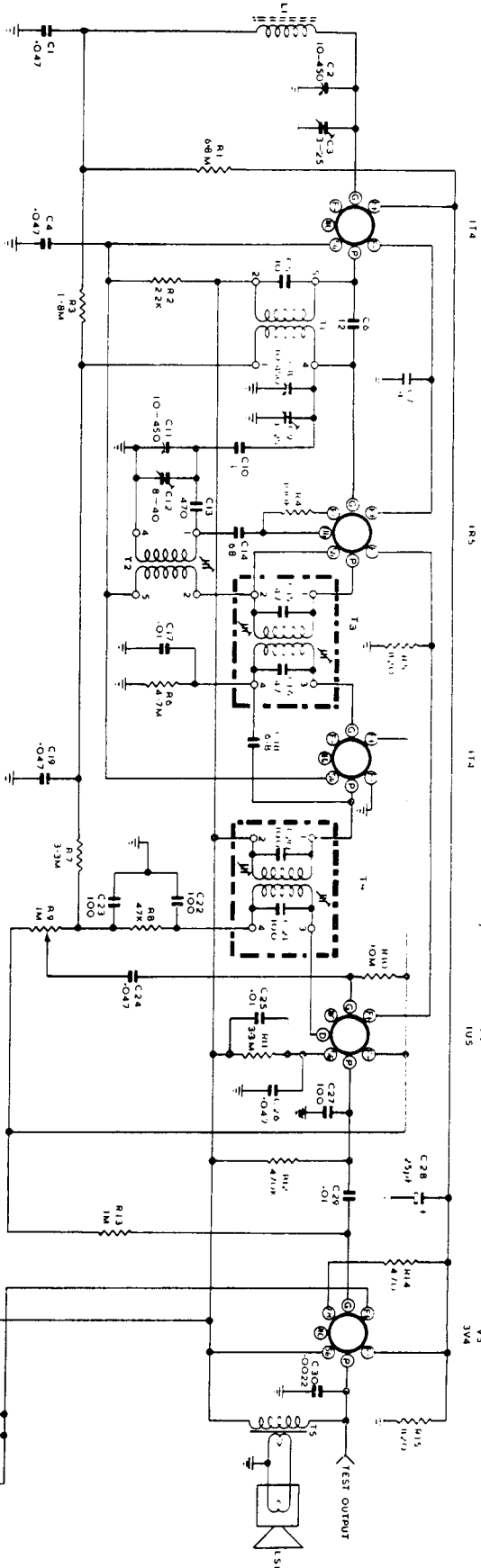
Raise the carrying handle to an upright position, open the back lid to allow the chassis, including the handle to slide out of the cabinet.

Chassis replacement is the reverse of the above. After replacing the tuning knob the pointer should be lined up on the A.W.A. monograms on either side of the dial scale. Check the calibration on some known stations and correct for any tracking error by forcing the knob past its free travel in the appropriate direction.

155V

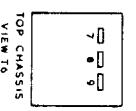
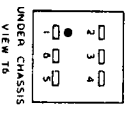
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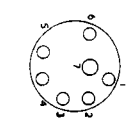
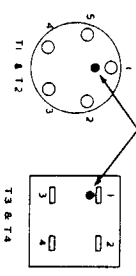


- 51 POSITIONS**
- 1 BATTERY FULL
 - 2 BATTERY LOW
 - 3 OFF
 - 4 AC
 - 5 RECTIFIER

NOTE
 OAK SWITCH VIEWED FROM KNOB END
 IN FULL ANTI-CLOCKWISE POSITION



BASE CONNECTIONS



O5 Re-positioned - now between pin 5 on T1 and junction of R1 and R3.

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 can only be re-adjusted by skilled operators using special equipment.

For all alignment operations, keep the generator output as low as possible to avoid A.V.C. action and set 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 .22 megohm non-inductive resistor across the output terminals.
- (3) A.W.A. Output Meter, type 2M8832.

ALIGNMENT TABLE

Alignment Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver to:	Adjust for maximum peak output:
1	Grid of 1T4 (I.F. Amp.)	455 Kc/s	Gang in full mesh	T4 primary and secondary
2	Grid of 1R5 Rear Section of Gang	455 Kc/s	Gang in full mesh	T3 primary and secondary
3	Grid of 1R5 Rear Section of Gang	455 Kc/s	Gang in full mesh	T4 and T3 primaries and secondaries
4	Inductively coupled to ferrite rod*	600 Kc/s	600 Kc/s	LF Osc. Adj. (T2)†
5	Inductively coupled to ferrite rod*	1650 Kc/s	Gang full open	H.F. Osc. Adj. (C12)
6	Inductively coupled to ferrite rod*	1500 Kc/s	1500 Kc/s	H.F. Aer. Adj. (C3)
7	Inductively coupled to ferrite rod*	1500 Kc/s	1500 Kc/s	H.F. R.F. Adj. (C9)

Repeat adjustments 4 to 7 until maximum output is obtained.

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 12 inches in diameter should be connected between the output terminals of the test instrument, placed concentric with the rod aerial in the handle and distant not less than 1 foot from it.

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

SOCKET VOLTAGES

VALVES	Bias Volts	Screen to Chassis Volts:	Anode to Chassis Volts:	Anode Current mA:	Filament Volts:
1T4 R.F. Amp.	—	40	90	0.5	1.3 - 1.4
1R5 Converter	—	40	40	0.5	1.3 - 1.4
1T4 I.F. Amp.	—	40	90	1.5	1.3 - 1.4
1U5 Det., A.F. Amp., A.V.C.	—	25*	35*	0.1	1.3 - 1.4
3V4 Output	-5.0	90	88	6.5	2.6 - 2.8

* Cannot be measured with an ordinary voltmeter.

Measured with no signal input. Volume control maximum clockwise.

A.C. Power Unit Operation:—

H.T. Secondary Volts = 130 AC.

6X4 Cathode to Chassis Volts = 120V DC.

Heater Volts = 6.3V AC.

D.C. RESISTANCE OF WINDINGS

Winding	D.C. Resistance in ohms
Ferrite Rod Aerial (L1)	*
R.F. Transformer T1	
Primary	85
Secondary	4.2
Osc. Transformer T2	
Primary	1.2
Secondary	3.8
1st I.F. Transformer Windings (T3) ..	27
2nd I.F. Transformer Windings (T4) ..	18
Audio Output Transformer (T5)	
Primary	460
Secondary	2
Power Transformer T6)	
Primary	150
Secondary (H.T.) ..	110
Secondary (Filament)	*

* Less than 1 ohm.

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.

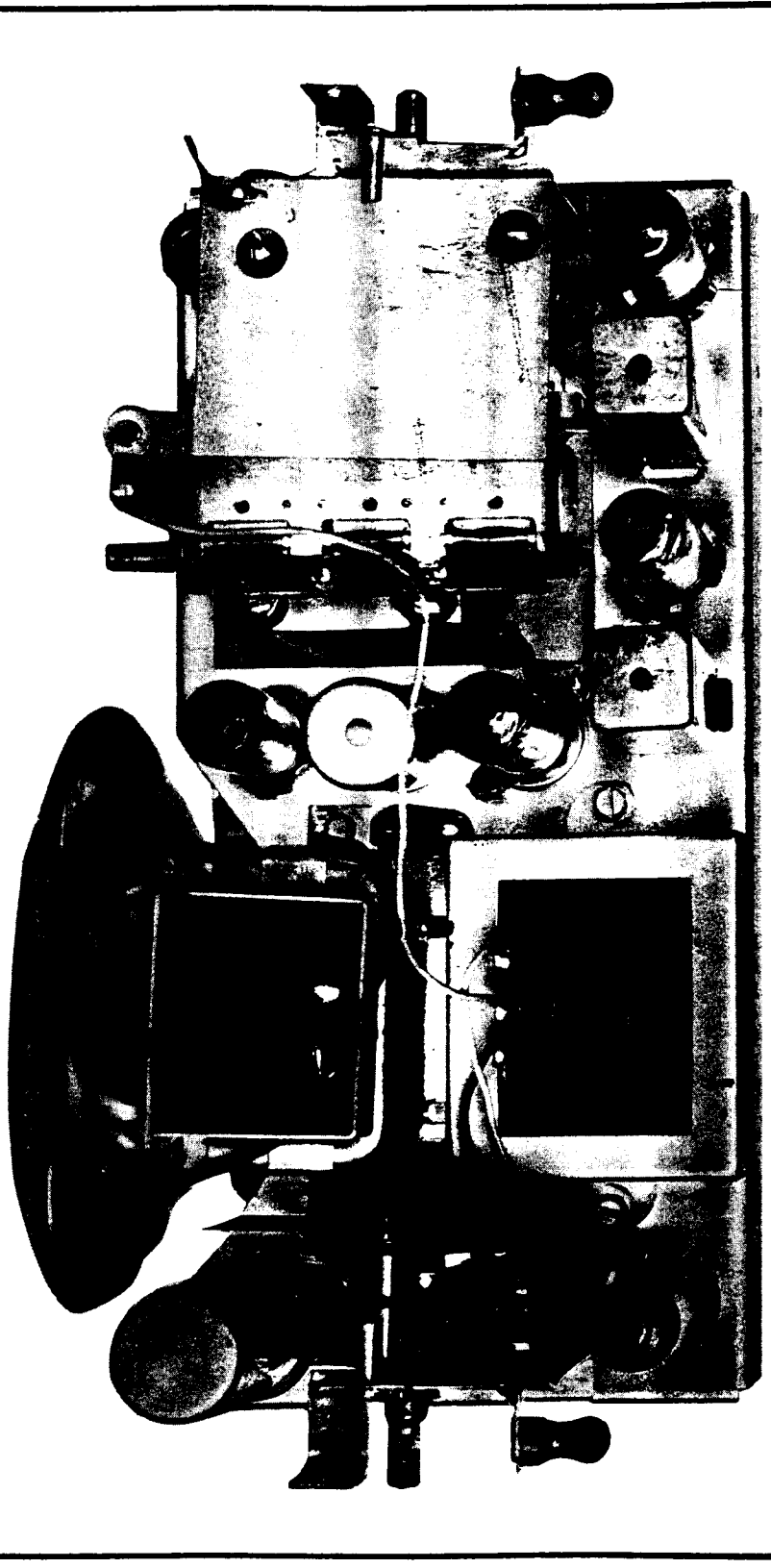
MECHANICAL REPLACEMENT PARTS

Item	Part Number
Chassis Assembly	
Clamp, Power Transformer Mounting	35917
Clamp, Speaker Mounting	35918
Clip, I.F. Mounting	27780
Cone Assembly, Speaker	34990
Cover Assembly, Chassis	35933
Fastener, Press Stud	21991
Handle Assembly	35934
Insulator, Power Switch	35942
Plug and Cable Assembly, Battery	35490
Screw, Coil Mounting	34147
Socket Assembly, Power Input	36194
Socket, Floating Assembly	35156
Socket, 7 Pin Valve	794576
Speaker, 4" Permanent Magnet	21171
Transformer, Audio Output	21434A
Cabinet Fitting	
Dial Scale:	
N.S.W.	32269
Vic.	32270
Qld.	32271
S.A.	32272
W.A.	32273
Tas.	32274
Knob Assembly, Power Selector	35946
Knob Assembly, Tuning	35944
Knob Assembly, Volume Control	35945
Nut, Chassis Mounting	35938
Screw, Chassis Mounting	35939
Washer, Chassis Mounting	32880

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.

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

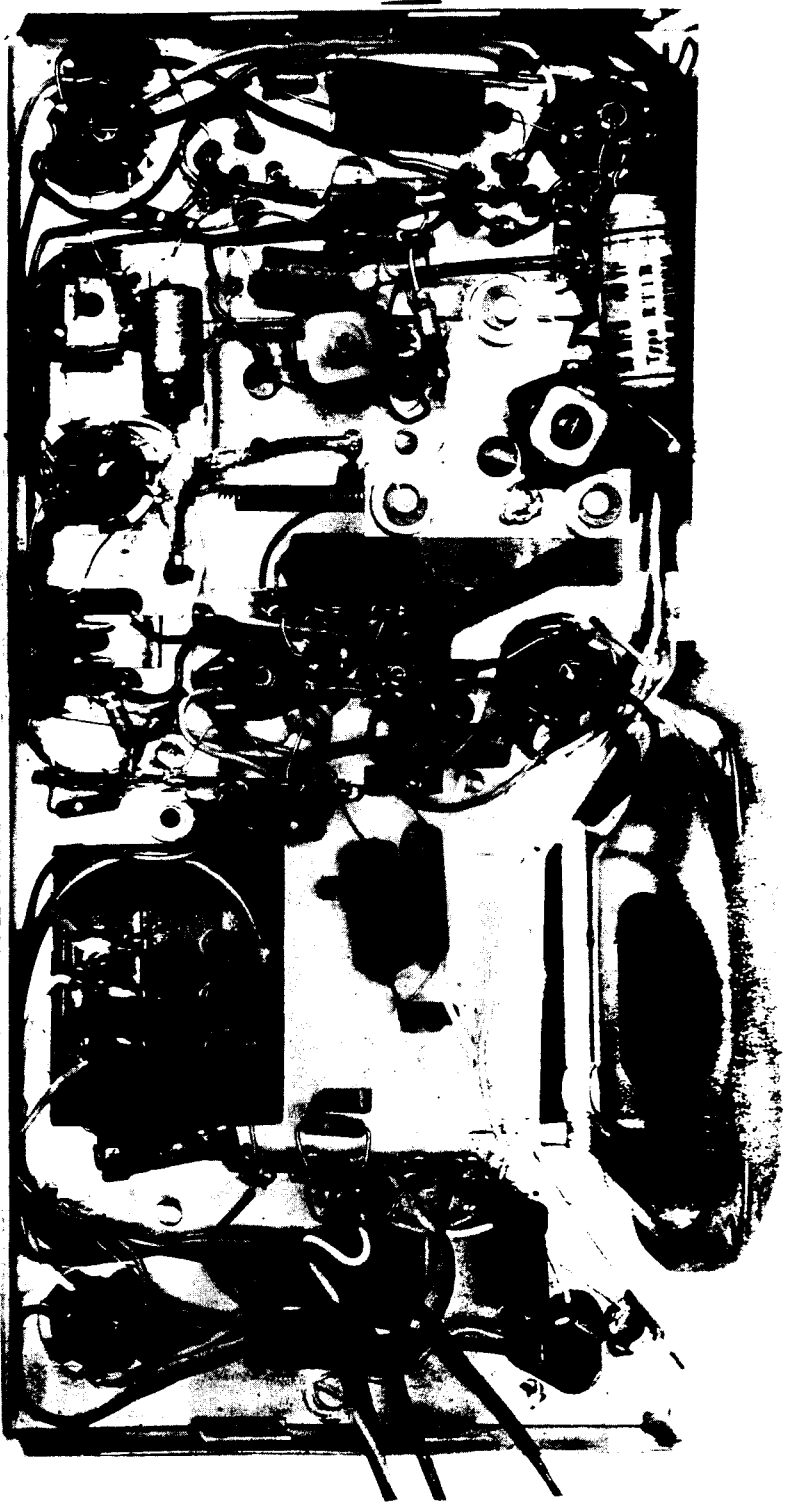


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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

A B C D E F G H I J K

CIRCUIT CODE—RADIOLOA PORTABLE MODEL 685-P

Code No.	Description	Part No.	Fig. No.	Location	Code No.	Description	Part No.	Fig. No.	Location
INDUCTORS									
L1	Ferrite Rod Aerial (in handle)	35475			C5	10 pf ±20% Bead ceramic			D3
TRANSFORMERS									
T1	R.F. Transformer	35466	2	G4	C6	12 pf ±10% N750 ceramic			D2
T2	Osc. Transformer	35467	2	D4	C7	0.1 μf paper 200V working			E2
T3	1st I.F. Transformer	27324	2	B5	C8	10-450 pf tuning (R.F.)			D6
T4	2nd I.F. Transformer	27351	2	B8	C9	3-25 pf trimmer (R.F.)			F5
T5	Audio Output Transformer (on loudspeaker L51)				C10	1 pf NPO ceramic	33304		F6
T6	Power Transformer	25835	2	C12	C11	10-450 pf tuning (Osc.)	36355		E6
RESISTORS									
R1	All Resistors ±20% unless otherwise stated				C12	8-40 pf spiral trimmer (Osc.)	231185		E5
R2	6.8 megohm ±10% 1/2 watt		1	C4	C13	470 pf ±21% padder			F3
R3	22 K ohms ±10% 1/2 watt		1	E3	C14	68 pf ±20% silvered mica			J1
R4	1.8 megohm ±10% 1/2 watt		1	C1	C15	47 pf ±5% silvered mica (in 1st I.F.)			B5
R5	100 K ohms ±10% 1/2 watt		1	J2	C16	47 pf ±5% silvered mica (in 1st I.F.)			B5
R6	4.7 megohm 1/2 watt		1	H4	C17	0.01 μf paper 400V working			K5
R7	3.3 megohm 1/2 watt		1	K5	C18	6.8 pf ±20% ceramic			K8
R8	47 K ohms 1/2 watt		1	J9	C19	0.047 μf ±10% paper 200V working			K9
R9	1 Megohm Volume Control	35367/3	2	E3	C20	100 pf ±5% silvered mica (in 2nd I.F.)			B8
R10	10 megohm 1/2 watt		1	J10	C21	1000pf ±5% silvered mica (in 2nd I.F.)			B8
R11	3.3 megohm 1/2 watt		1	E3	C22	100 pf NPO K5000 ceramic			B8
R12	470 K ohms 1/2 watt		1	G11	C23	not used.			F9
R13	1 megohm 1/2 watt		1	F9	C24	0.047 μf ±10% paper 200V working			F7
R14	470 ohms ±10% 1/2 watt		1	F5	C25	0.01 μf paper 400V working			G11
R15	820 ohms ±10% 1/2 watt		1	F14	C26	0.047 μf ±10% paper 200V working			F11
R16	470 ohms ±10% 1/2 watt		2	F15	C27	100 pf NPO K5000 ceramic			G9
R17	1.1 K ohms ±5% wire wound 3 watts		1	H14	C28	25 μf Electrolytic 40V peak			B4
R18	1.8 K ohms ±10% 1/2 watt		2	F16	C29	0.01 μf paper 400V working			E10
R19	1.1 K ohms ±5% wire wound 3 watts		1	D16	C30	0.00122 μf paper 600V working			E11
CAPACITORS									
C1	0.047 μf ±10% paper 200V working		1	F4	C31A	40 μf Electrolytic 150V working	229835		H16
C2	10-450 pf tuning (Aerial)	36355	2	G6	C31B	40 μf Electrolytic 10V working			F9
C3	3-25 pf trimmer (Aerial)	33304	1	C6	C32	40 μf Electrolytic 150V working	229570		
C4	0.047 μf ±10% paper 200V working		1	H5	LOUDSPEAKER				
SWITCH									
					L51	4" P.M. Speaker and Baffle Assy (including T5)	36196	2	H12
					S1	Power Selector	35940	2	E16
					PL1	PILOT LAMP		2	H5
						6.3V, 0.35 amps. M.E.S.			