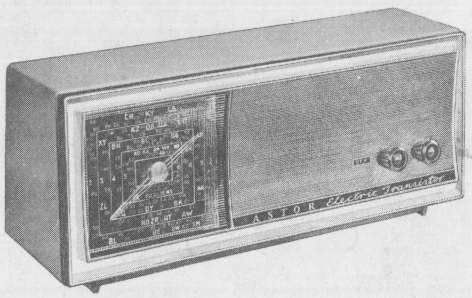
ASTOR

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
Astor House, 161-173 Sturt Street, South Melbourne.

SERVICE DATA

ASTOR MODEL "M4C"

7 TRANSISTOR SUPERHETERODYNE BROADCAST BAND MAINS OPERATED MANTEL RECEIVER



CAUTION Disconnect receiver power lead plug from mains socket before making adjustments inside the cabinet.

CHASSIS SERIAL NUMBER

Serial number is visible through a slot located in rear of cabinet.

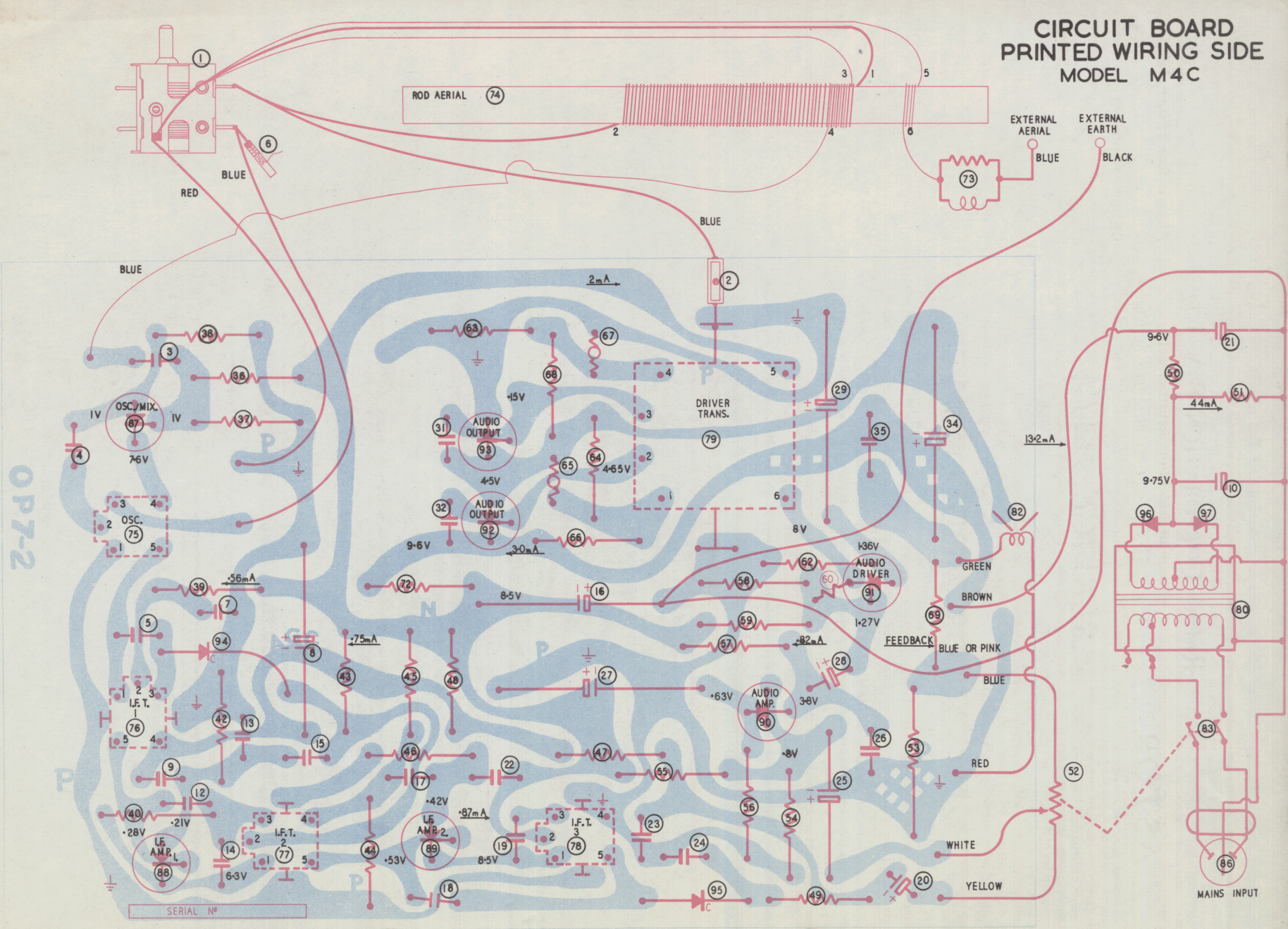
ACCESS TO INTERIOR

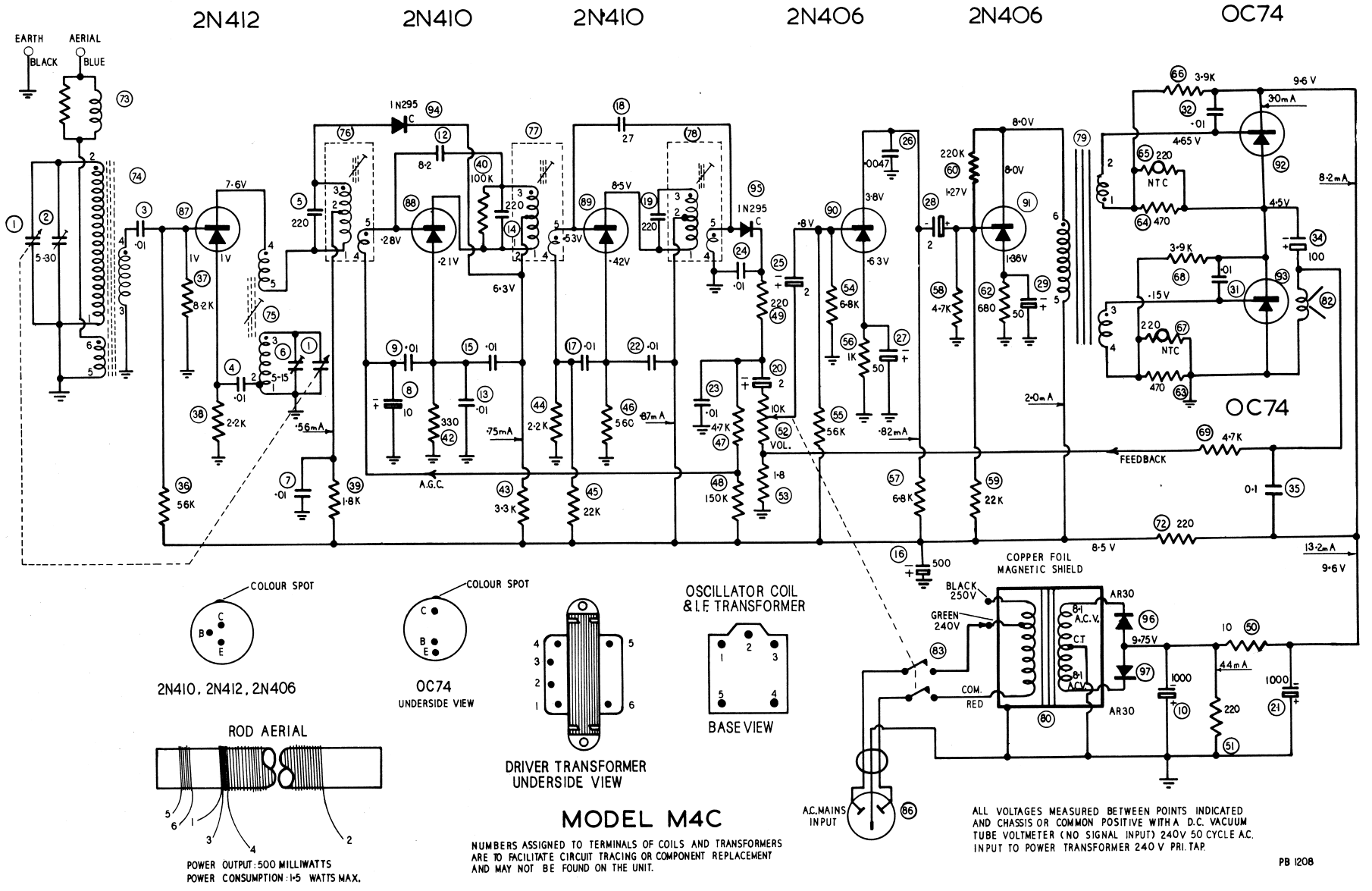
Remove two screws from rear of cabinet and two screws (external aerial and earth terminals) from base of cabinet.
Remove screw fastening cover slide to base of cabinet then remove slide.
Open cabinet by removing cabinet body from front section escutcheon.

POWER TRANSFORMER MAINS TAP ADJUSTMENT

These receivers are despatched with the mains input lead connected to the 240 volt tap of the transformer.
Before operating from 250 volt mains supply, unsolder mains input from lead from 240 volt tap lug. Resolder lead to 250 volt tap lug.

CIRCUIT BOARD PRINTED WIRING SIDE
MODEL M4C





MODEL M4C

NUMBERS ASSIGNED TO TERMINALS OF COILS AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT BE FOUND ON THE UNIT.

ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS OR COMMON POSITIVE WITH A D.C. VACUUM TUBE VOLTMETER (NO SIGNAL INPUT) 240V 50 CYCLE A.C. INPUT TO POWER TRANSFORMER 240 V PRI. TAP.

PB 1208

CIRCUIT NO.	CAPACITORS	DESCRIPTION	TOL±	RATING DCW	PART NUMBER
1.	5-30pF	Tuning-Two Gang			4000-028-02
2.	5-30pF	Trimmer-Compression			4000-023-01
3.	.01mF	Ceramic Disc.		25V	4008-039-06
4.	.01mF	Ceramic Disc		25V	4008-039-06
5.	220mF	Polystrene		125V	4004-005-03
6.	5-15pF	Trimmer-Wire Wound			4000-023-01
7.	.01mF	Ceramic Disc		25V	4008-039-06
8.	10mF	Electrolytic		6V	4005-007-02
9.	.01mF	Ceramic Disc.		25V	4008-039-06
10.	1000mF	Electrolytic		10V	4005-025-05
11.					
12.	8.2pF	Ceramic Disc-NPO.	.5pF	500V	4008-012-01
13.	.01mF	Ceramic Disc.		25V	4008-039-06
14.	220mF	Polystrene		125V	4004-005-03
15.	.01mF	Ceramic Disc.		25V	4008-039-06
16.	500mF	Electrolytic		16V	4005-014-13
17.	.01mF	Ceramic Disc.		25V	4008-039-06
18.	27mF	Ceramic Disc-NPO.	5%	500V	4008-031-04
19.	220mF	Polystyrene		125V	4004-005-03
20.	2mF	Electrolytic		6V	4005-005-06
21.	1000mF	Electrolytic		10V	4005-025-05
22.	.01mF	Ceramic Disc.		25V	4008-039-06
23.	.01mF	Ceramic Disc.		25V	4008-039-06
24.	.01mF	Ceramic Disc.		25V	4008-039-06
25.	2mF	Electrolytic		6V	4005-005-04
26.	.0047	Ceramic Disc.		500V	4008-037-01
27.	50mF	Electrolytic		3V	4005-001-02
28.	2mF	Electrolytic		6V	4005-005-06
29.	50mF	Electrolytic		3V	4005-001-02
30.					
31.	.01mF	Ceramic Disc.		25V	4008-039-06
32.	.01mF	Ceramic Disc.		25V	4008-039-06
33.					
34.	10mF	Electrolytic		12V	4005-002-15
35.	.1mF	Ceramic Disc.		25V	4008-004-04

CIRCUIT NO.	RESISTORS		TOL±	RATING WATTS	PART NUMBER
36.	56K	Carbon	10	½	4022-003-03
37.	8.2K	Carbon	10	½	4022-027-02
38.	2.2K	Carbon	10	½	4022-021-02
39.	1.8K	Carbon	10	½	4022-030-01
40.	100K	Carbon	10	½	4022-013-02
41.					
42.	330	Carbon	10	½	4022-011-01
43.	3.3K	Carbon	10	½	4022-006-01
44.	2.2K	Carbon	10	½	4022-021-02
45.	22K	Carbon	10	½	4022-026-02
46.	560	Carbon	10	½	4022-010-01
47.	4.7K	Carbon	10	½	4022-005-01
48.	150K	Carbon	10	½	4022-038-01
49.	220	Carbon	10	½	4022-017-01
50.	10	Carbon	10	½	4022-035-01
51.	220	Carbon	10	1	4022-017-03
52.	10K OHM	Volume Control SP.ST. Switch Attached			4032-007-13
53.	1.8	Wire Wound			4024-013-01
54.	6.8K	Carbon	10	½	4022-002-02
55.	56K	Carbon	10	½	4022-003-03
56.	1K	Carbon	10	½	4022-008-01
57.	6.8K	Carbon	10	½	4022-002-02
58.	4.7K	Carbon	10	½	4022-005-01
59.	22K	Carbon	10	½	4022-026-02
60.	220K	Carbon	10	½	4022-063-01
61.					
62.	680	Carbon	10	½	4022-028-02
63.	470	Carbon	10	½	4022-016-01
64.	470	Carbon	10	½	4022-016-01
65.	220	Disc-N.T.C.	10	1.25	4021-020-01
66.	3.9K	Carbon	10	½	4022-020-01
67.	220	Disc-N.T.C.	10	1.25	4021-020-01
68.	3.9K	Carbon	10	½	4022-020-01
69.	4.7K	Carbon	10	½	4022-005-01
70.					
71.					
72.	220	Carbon	10	½	4022-017-01

CIRCUIT NO.	MISCELLANEOUS	PART NUMBER
73.	Aerial Loading Coil	4036-051-01
74.	Rod Aerial	4074-011-01
75.	Oscillator Coil	4043-019-01
76.	No. 1 IF Transformer	4044-009-04
77.	No. 2 IF Transformer	4044-009-06
78.	No. 3 IF Transformer	4044-009-07
79.	Driver Transformer	4042-036-01
80.	Power Transformer	4041-017-01
81.		
82.	Speaker-5" Dia-Permag-Type 5F08/87/15	4056-006-19
83.	Switch-Mains On-Off Part of Circuit No. 52.	
84.		
85.		
86.	Mains Lead with Plug	4077-120-04
87.	Transistor - Mixer/Oscillator-Type 2N412	4128-011-02
88.	Transistor - IF AMP No. 1-Type 2N410-E (Green Spot)	4128-010-03
89.	Transistor - IF AMP No. 2-Type 2N410-B (Red Spot)	4128-010-04
90.	Transistor - Audio AMP-Type 2N406	4128-009-02
91.	Transistor - Audio Driver-Type 2N406	4128-009-02
92.	Transistor - Audio Output-Type OC74) Matched	4128-012-02
93.	Transistor - Audio Output-Type OC74) Pair	
94.	Diode - Overload-Type IN295	4127-001-01
95.	Diode - Detector / A.G.C.-Type IN295	4127-001-01
96.	Diode - Rectifier-Type AR30	4127-035-01
97.	Diode - Rectifier-Type AR30	4127-035-01

MECHANICAL

Tuning knob assy. - includes clip	7124-117-01
Volume knob assy. - includes clip	7124-116-01
Retaining clip (2) control knobs	7225-035-01
Front escutcheon assy. - includes grille	7099-003-01
Indicator plate - "OFF"	7160-014-01
Speednut - indicator plate	7152-751-01
Dial cover	7065-051-02
Dial reading	7070-021-01
Dial pointer	7173-019-02
Dial drum	7077-003-01
Bush - dial drum	7057-006-01
Grub screw (2) ¼" x 5/32" Whit - bush	7198-802-04
Tuning spindle	7224-096-01
Bush - tuning spindle	7031-027-31
Dial cord - 56 ins.	1107-002-02
Spring - dial cord	7225-039-02
Pulley - large	7174-008-01
Pulley (2) small	7174-011-01
Mount stud - long, pulley	7234-021-01
Mount stud - short, pulley	7234-021-11
Screw - ⅜" x No. 5 pan hd. mt. stud	7209-116-12
Screw - ½" x No.5 pan. hd. mt. stud	7209-116-13
Screw (3) ⅜" x 4BA csk. hd. cond. gang mt.	7196-055-75
Screw (2) ⅜" x ⅛" Whit. truss hd. gold, fastens cabinet to front assy.	7198-301-14
Screw (2) ⅝" x No. 10 chrome, ext. aerial and earth Terminals	7204-080-09
Screw (4) ½" x No. 5 pan hd. speaker mt.	7209-166-13
Washer (4) flat bakelite, speaker mt.	7261-138-12
Screw (3) ⅜" x No. 5 pan. hd. rod aerial and condenser bracket	7209-116-12
Screw (6) 3/16" x No.2 pan hd. fastens mt. panel to front assy.	7209-107-12
Washer (6) flat steel fastens mt. panel to front assy.	7261-020-07
Speednut (2) No. 10 ext. aerial and earth terminals	7152-754-03
Speednut (2) No. 4 circuit board mount bracket	7152-751-01
Screw (2) ⅜" x No. 4 bdr. hd. circuit board mt. brackets	7204-576-12
Washer (2) flat steel, circuit board mt. brackets	7261-138-12
Dedlock hex. nut. (2) control spindles	7150-858-01
Grommet (3) rubber, cond. gang mt.	7106-032-01
Grommet (2) rubber, rod aerial mt.	7106-033-03
Transistor mount spacer (14)	7120-026-01
Terminal strip assy. - 4 lug type 2E1	7231-202-01
Washer - shake proof, ⅜" int. control spindle	7262-024-01
Terminal strip assy. - 7 lug type E5E	7231-025-01
Terminal strip assy. - 5 lug type E3E	7231-023-51
Bracket - power transformer	7028-246-02
Clamp - power trans. bracket	7027-193-02
Speednut - No. 8 power trans. bracket	7152-752-01
Screw - ½" x No. 8 power trans. bracket	7201-079-39
Shield power transformer	7215-040-02
Clamp - mains lead anchor	7054-051-01

STYLING

COLOUR	CABINET PART NO.	COVER SLIDE PART NO.
Wedgewood	7039-005-01	7221-004-01
Spruce	7039-005-02	7221-004-02
Wattle	7039-005-03	7221-004-03
Charcoal	7039-005-04	7221-004-04
Cherry	7039-005-05	7221-004-05
Cinnamon	7039-005-06	7221-004-06
Willow	7039-005-07	7221-004-07
Grey	7039-005-08	7221-004-08
Flamingo	7039-005-09	7221-004-09
Squirrel	7039-005-10	7221-004-10

ALIGNMENT EQUIPMENT

Signal Generator - modulated 400 cps.
Output Meter - 15 ohm impedance
Series Capacitor - Sign. gen. for I.F.T. alignment .1 MF Part No. 4006-005-03

Alignment Tools

(a) Flat metal blade each end - Part No. 4121-001-01 for I.F.T. and osc. coil iron core adjustment.

(b) Chisel point type Part No. 4121-005-01 for trimmer cond. adjustment.

ALIGNMENT CONDITIONS

Volume Control - maximum volume (fully clockwise)
Output Level - 50 milliwatts
Output Meter Connection - across speaker voice coil
Supply Voltage Source - 240 volts - 50 cycles.

INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Dummy Aerial	Instructions
1.	To junction of term.4 of rod aerial and .01 cond. circuit No. 3.	455Kc/s	.1MF cond. in series with generator.	Turn tuning gang cond. to high freq. end stop, plates full open. Peak iron core of 3rd I.F. trans. for max. output.
2.	As oper. 1.	455Kc/s	As oper. 1.	Peak iron core of 2nd I.F. trans. for max. output
3.	As oper. 1.	455Kc/s	As oper. 1.	Peak iron core of 1st I.F. trans. for max. output
4.	Repeat operations 1, 2 and 3.			

DIAL POINTER SETTING

The dial pointer may be adjusted from the rear of the front panel. Hold pointer boss and rotate tuning mechanism.

Fully mesh the gang condenser plates and align centre of indicator line of pointer over the centre of the low frequency end of travel spot on dial.

BROADCAST ALIGNMENT

A. To inject a signal into the receiver rod aerial, connect to the active terminal of the signal generator approximately two feet of aerial wire, then fashion the wire into a vertical position.

B. Place receiver chassis so that ferrite rod aerial is uppermost and horizontal and so that the movable winding end of the ferrite rod points to the 2ft. of aerial wire. A distance of not less than 1ft. is to be between the end of the ferrite rod and the 2ft. of vertical aerial wire attached to the signal generator.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. A & B	600 Kc/s	Turn tuning gang until centre of indicator line on pointer aligns with centre of 600 Kc/s spot on dial reading. Peak iron core of oscillator coil for max. output while rocking gang to and fro through signal.
2.	As oper. 1.	1400 Kc/s	Set dial pointer line to 1400 Kc/s spot on dial. Peak oscillator and aerial trimmer condenser for maximum output.
3.	Repeat oper. 1.		
4.	Repeat oper. 2.		

Tuning range after alignment - 528:1630 Kilocycles.

FAULT LOCATION GUIDE - GENERATOR TEST

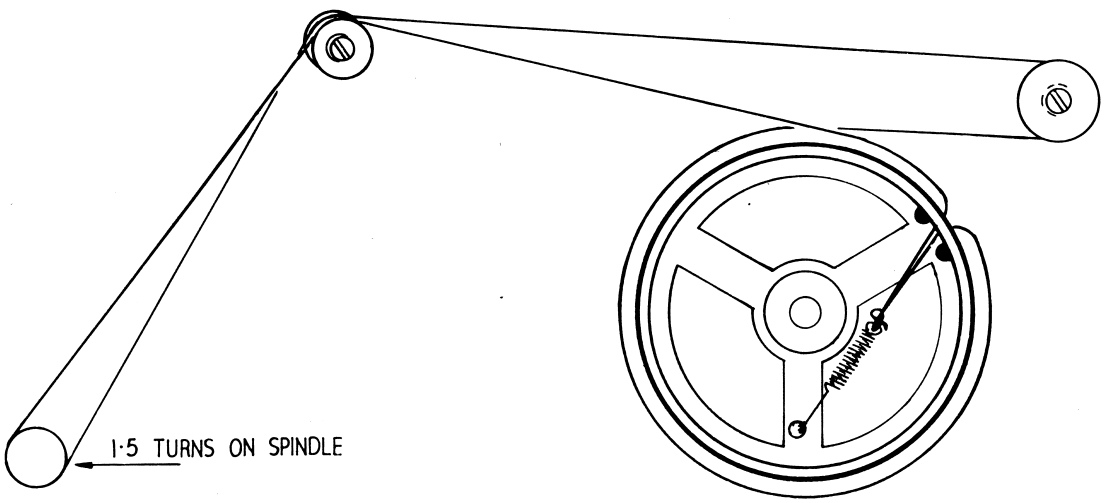
Connect generator through a 0.1 mF capacitor to the following points:-
CAUTION: Always start with low generator output. Strong signals, may, overload the receiver, or cause the AGC to function. Set volume control at maximum.

CHECKPOINT	LOCATION Circuit Nos. at Junction Point	SIGNAL GENERATOR FREQUENCY	SIGNAL STRENGTH
OC 74 Output Base	No. 32 & Driver sec.	Audio	Weak
OC 74 Output Base	No. 31 & Driver sec.	Audio	Weak
2N406 Driver Base	Nos. 58, 59, 28	Audio	Increased level
2N406 First Audio Base	Nos. 54, 55, 25	Audio	Further increase
Det. output at vol. cont.	Nos. 20, 52	Audio	Further increase
Turn tuning capacitor fully open			
Det. output at Diode	Pin 5, I.F.T. 3	455Kc/s	Weak
2N410 I.F.2. Base	Pin 5, I.F.T. 2	455Kc/s	Increased level
2N410 I.F.1. Base	Pin 5, I.F.T. 1	455Kc/s	Further increase
2N412 Converter Base	No. 3 and aerial sec.	455Kc/s	Further increase
Tune receiver to generator at broadcast frequency.			
2N412 Converter Base	No. 3 and aerial sec.	Sig. Freq.	Same level as at 455 Kc/s

FAULT LOCATION GUIDE - CLICK TEST

Connect one end of a 6.8K ohm resistor to common positive. Touch the other end on and off the following points and listen for clicks.

CHECKPOINT	LOCATION Circuit Nos. at Junction Point	STRENGTH OF CLICK
Transistor Base		
Volume control at minimum:		
OC 74 Output	No. 31 & Driver secondary	very weak
OC 74 Output	No. 32 & Driver secondary	weak
2N406 Driver	Nos. 58, 59, 28	loud
2N406 Frist Audio	Nos. 54, 55, 25	loud
Volume control at maximum:		
2N410 I.F. 2	Pin 5, I.F.T. 2	very weak
2N410 I.F. 1	Pin 5, I.F.T. 1	weak
2N412 Converter	Nos. 36, 37, 3	loud



REAR VIEW — TUNING CONDENSER PLATES FULLY MESHED

PB1173

PRECAUTIONS WHEN TESTING TRANSISTOR RECEIVERS

A. A transistor is extremely sensitive to heat. If a soldering iron is to be used close to a transistor move the transistor or place non-conductive material between the iron and transistor.

When making soldered connections to the leads of the transistors hold the lead which is being soldered between the heat source and transistor body with pliers; excess heat will be dissipated away into the pliers.

Use a soldering iron which supplies just the requirement of heat for satisfactory soldering of connections.

B. When checking components, cut the long pigtail of the component in preference to soldering from the circuit board. Components checked in this way may be returned into the circuit by pressing the ends of the pigtail together then solder. Faulty components should be removed from the circuit board by cutting through the body of the component leaving two short stubs of wire protruding (approx. $\frac{1}{8}$") above the circuit board. The pigtail leads of the new component are to be soldered to these stubs.

C. A continuity meter must not be applied to the receiver wiring with the transistor in circuit. A transistor must not be checked for continuity with an ohmmeter as the applied voltage and resultant excess current flow may result in permanent damage to the transistor. A voltmeter of at least 20,000 ohms/volt or a high impedance vacuum tube type voltmeter is a safe means of measuring circuit voltage.

D. A screwdriver or similar instrument must not be used to short components together or to the common positive. The use of this method of checking for the existance of voltage or signal clicks may result in permanent damage to the transistors and components.

CLEANING OF CABINET

Do not polish the plastic or metal sections with an abrasive material, motor car polish, boot polish or similar household cleaning fluids as permanent damage may result to the finish of the cabinet. To restore the lustre of the cabinet wipe with a soft cloth dampened with water and lightly polish with a neutral wax.

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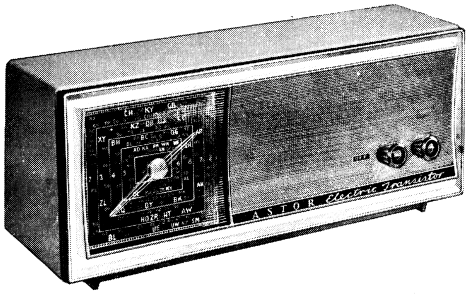

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