ASTOR RADIO
Service Manual
1956-1960

ASTOR model DLP

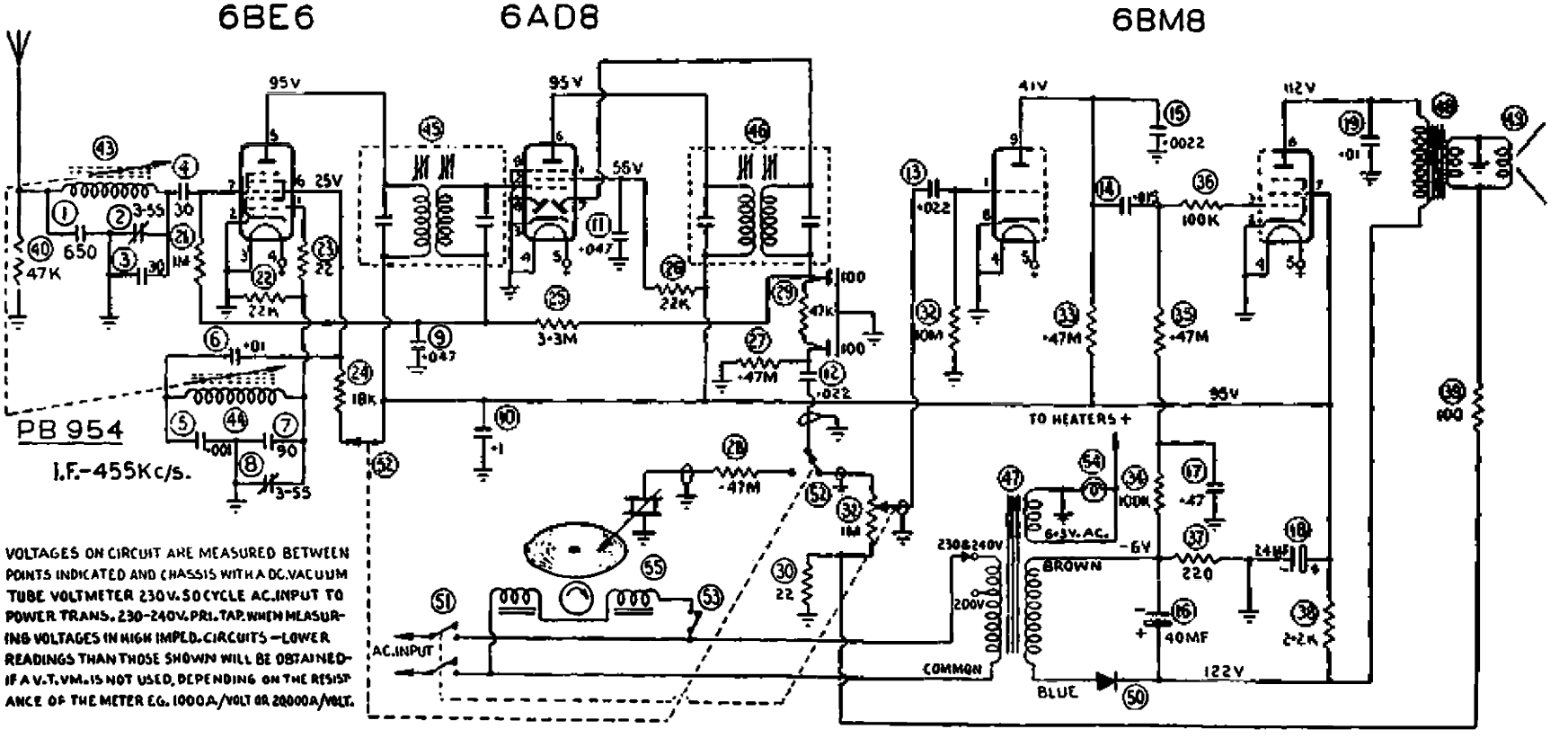
The Astor model DLP is a superheterodyne using just 2 valves, a 6BE6 mixer and a 6BM8 as detector and audio amplifier.

This manual has been compiled by Ray Kelly for the assistance of H.R.S.A. members in the restoration of Astor & Peter Pan radios produced by Radio Corporation Pty.Ltd. in the later days of valve radios, and includes some hybrid car radios. Covering 76 models and 192 pages, this manual is volume 1 of a projected series of 5, covering most major Australian manufacturers of this period .

CONTENTS

Files may contain one or more pages. By putting each model into a separate file, it could be possible to add extra information if it comes to hand, without renumbering pages. For example photographs would help in identifying models. (Ray Kelly, February 2000).

ASTOR MODEL AMR.



Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	To control grid of 6AD8 valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6BE6 valve (pin No. 7.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning drum until perm.tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave the grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output
3.				Repeat operations 1 and 2

DIAL DRUM SETTING

Turn dial drum toward the rear of plastic mount plate until the perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. The end of travel spot on dial reading near 1700 Kc/s. is to align with the indicator lines moulded on the top of the plastic mount plate. The dial drum is adjusted by loosening off the screw through the slot in the drum.

BROADCAST ALIGNMENT

NOTE: 1. Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, The dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If the 25 ft. antenna is connected it must be rolled into a small hank.

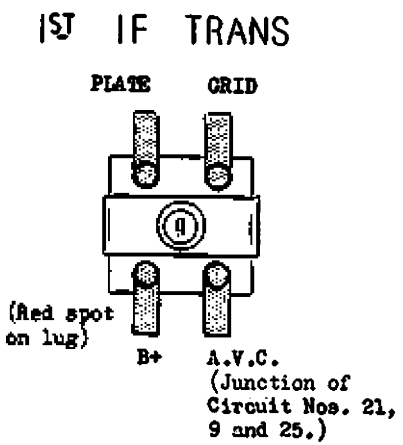
NOTE 2. The antenna and oscillator trimmer condensers are accessible through the two holes in the plastic mount plate on the right hand side of the control knobs. The oscillator trimmer being nearest to the front edge of the mount plate.

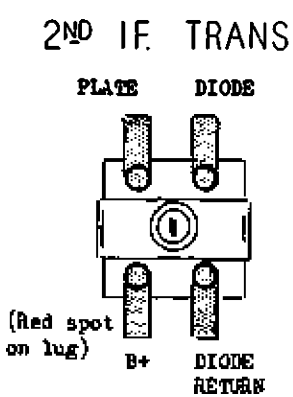
NOTE: 3. Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extrere end of the forner protruding through the rubber grommet, and the end of the iron core in the forner, when the unit is turned hard against the stop. If incorrect logging and misalignment are to be avoided no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	200MMF Mica capacitor in series with generator	Turn tuning drum until alignment spot at 1000 Kc/s. aligns with moulded indicator lines on top of plastic mt. plate. Peak oscl. trim. cond. then peak antenna coil trimmer cond. for max. output. Repeak oscl. coil trim cond.

2. Tuning range after alignment 535 - 1640 Kc/s.

3. Refit plastic mount plate with receiver attached to the cabinet.





RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

Bulletin: ANK-1.
File. Receivers AC.
Date: 2-4-54.
1.

MODEL ANK

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

TUNING RANGES:—		RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.		560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.)

THIS BULLETIN CONTAINS:—

VALVE PLACEMENT DIAGRAM #92/279

WARNING

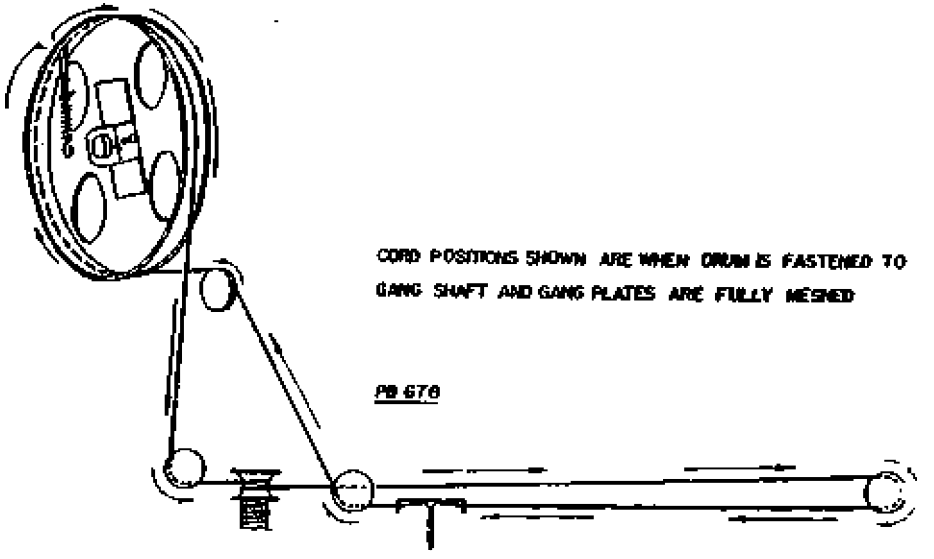
A type 6AE8 converter valve cannot be used as a direct replacement for a type 6AN7 valve due to the socket connections being different. The 6AE8 valve will burn out if it is plugged into a socket wired for a type 6AN7 valve.

SOCKET CONNECTIONS

	6AN7 Valve	6AE8 Valve
Pin No. 1.	Hexode Screen	Hexode Screen
Pin No. 2.	Hexode Control Grid	Hexode Control Grid
Pin No. 3.	Cathode	Cathode
Pin No. 4.	Heater	Heater
Pin No. 5.	Heater	Heater
Pin No. 6.	No Connection	Hexode Plate
Pin No. 7.	Hexode Plate	Triode (oscl.) Grid
Pin No. 8.	Triode (oscl.) Plate	Triode (oscl.) Plate
Pin No. 9.	Triode (oscl.) Grid	No Connection

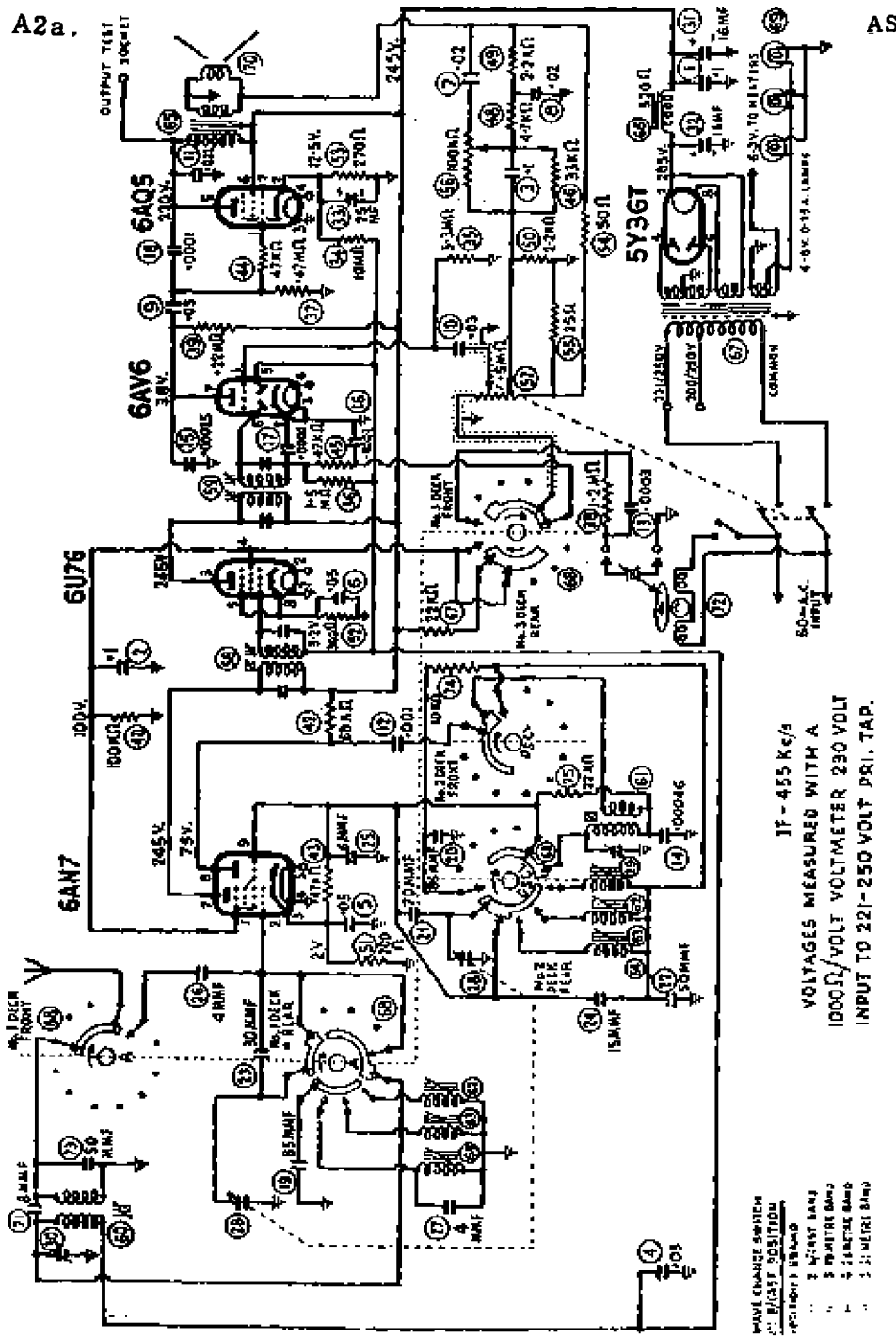
CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Tension Spring Part No. 21/698

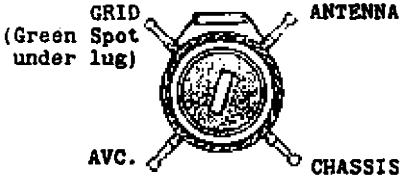


A2a.

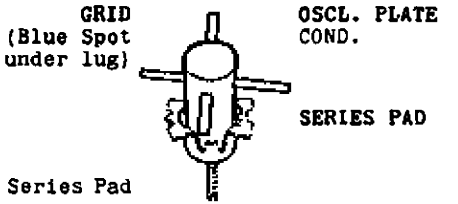
ASTOR MODEL ANK



ANTENNA TRANS.



OSCL. COIL



19, 25 AND 31 METRE ANT. TRANS.

Lead from top lug (iron core end) :-
GRID.
Lead from bottom lug (mounting end) :-
CHASSIS - EARTH.

19, 25 AND 31 METRE OSCL. COIL

Lead from top lug (iron core end) :-
GRID.
Lead from bottom lug (mounting end) :-
OSCL. PLATE COND.

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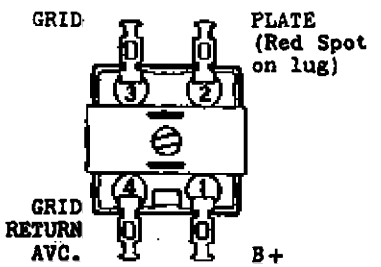
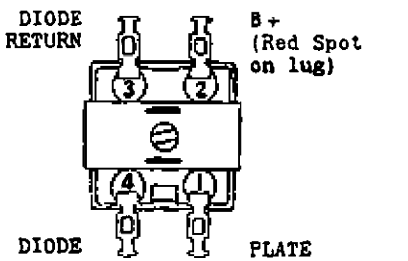
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.



ASTOR MODEL ANK

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF. (for IF. trans. alignment)
Dummy Antenna: 200MMF. Mica Capacitor.
Dummy Antenna: 400 Ohm non-inductive resistor.

ALIGNMENT CONDITIONS

Load Impedance: 5,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Alignment Tools: Type M195 and PM381. Tone Control: Treble position.

To Remove Chassis from Cabinet— Switch receiver off and disconnect receiver mains lead plug from power point socket. Remove rear cover board from cabinet, then the four control knobs from their spindles. From rear of cabinet withdraw speaker plug from righthand end of chassis, indicator lamp lead plug from connecting socket and pick-up lead plugs from sockets on chassis. Loosen off screws in AC. mains lead junction block and withdraw receiver AC. mains lead. From beneath receiver mount board remove a nut from each of the four mount screws then withdraw the two rear mount screws. The two front screws are captive and must not be removed from the chassis. Lift receiver chassis upward and to the left out of the cabinet. Refit chassis in exact reverse procedure to removing it.

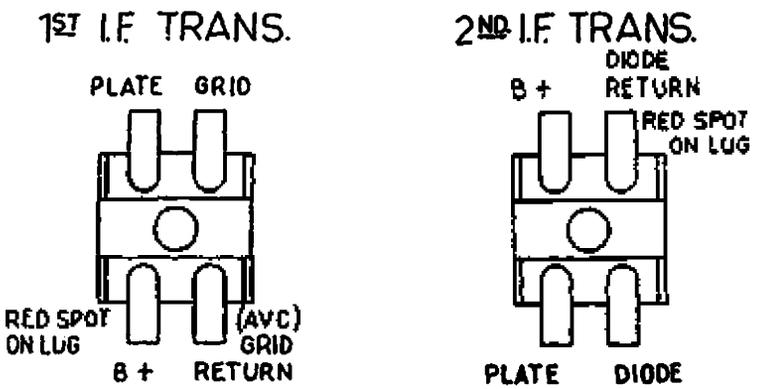
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G I.F. valve	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on valve. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve pin No. 2.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.			
5.	To antenna lead from receiver	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil inductance trim (iron core) for max. output.
6.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
7.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core of both of these transformers has been peaked for max. output.
8.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
9.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
10.	To antenna lead from receiver.	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
11.	To antenna lead from receiver.	11.8 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging and peak 25 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna lead from receiver.	15.2 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.

13. Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows:
For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and
for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.—For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove chassis from cabinet as detailed on page 2. The AC. junction strip is located at the righthand end of the chassis. Unsolder the mains lead wire from the switch on the volume control which is attached to the 221-250 volt tap and re-solder it to the 200-220 volt tap.



TRANSFORMER CONNECTIONS

ANTENNA COIL: Start of winding - furthest from mounting end - ANTENNA
" " Finish of winding - nearest to mounting end - GRID

OSCL. COIL: Start of winding - furthest from mounting end - JUNCTION OF CIRCUIT NO.No. 9 & 11
" " Finish of winding - nearest to mounting end - OSCL.GRID.

POWER TRANSFORMER

PART No. T164 40 & 50 cycle mains

PRI. Red lead - Common
" Green lead - 200V mains
" Black lead - 230 & 240V mains

Electro-static shield joined internally to centre tap of HT. secondary.

HT. Secondary.

Start - Blue lead
Centre tap - yellow lead
Finish - Blue lead

PART No. T165 40 & 50 cycle mains

PRI. Red lead - Common
" Green lead - 200V mains
" Black lead - 230 & 240V mains
" White lead - 250V mains

HT. Secondary.

Start - Blue lead
Centre tap - yellow lead
Finish - Blue lead

6.3V LT. secondary:- Start, indicator lamp tap and finish in 15 B & S winding wire leads.

5V. LT. secondary:- Start and finish in 21 B & S winding wire.

RADIO CORPORATION PTY. LTD.
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TECHNICAL BULLETIN

MODEL—— ANL

TWO UNIT GRAMO-RADIO COMBINATION

An Automatic 4 Speed Record Changer (78,45, 33-1/3, 16-2/3, r.p.n.) and an 8 valve Superheterodyne Broadcast Band Receiver.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T164)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

200-250 Volt 40 or 50 Cycle AC. Mains (Power Transformer T165)
Power trans.Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.
" " " " -white-250 Volt mains.

NOTE:

The record changer drive pulley for 40 Cycle mains operation is part No. 846/524.

POWER CONSUMPTION:

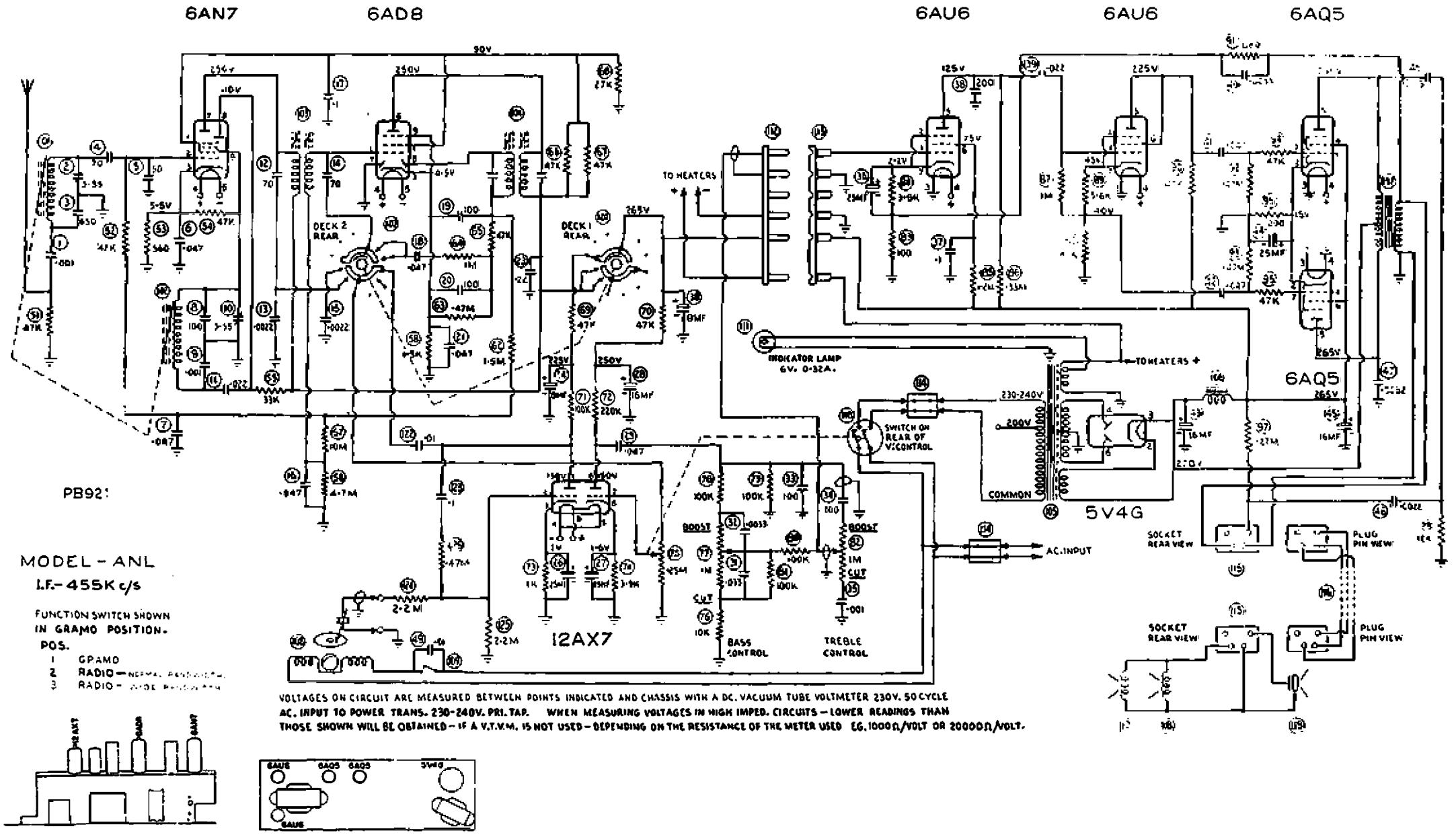
Radio Operation:- 75 Watts-approx.
Gramo Operation:- 90 Watts-approx.

TUNING RANGE:

Broadcast Band 535-1640 Kc/s. - 560-182.9 Metres.

THIS BULLETIN CONTAINS:

ASTOR Model ANL



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 230V. 50 CYCLE A.C. INPUT TO POWER TRANS. 230-240V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED E.G. 1000Ω/VOLT OR 20000Ω/VOLT.

A3b.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:

Output Meter :

Mica Capacitor : 0.01MF (for I.F. trans alignment)

Dummy Antenna : 200MMF mica capacitor

Alignment Tools : Type M195 and PM581

ALIGNMENT CONDITIONS.

Load Impedance: 2.5 Ohms (output meter connected across speaker trans secondary).

Output Level : 50 Milliwatts

Vol Control : Max.vol fully clockwise

Bass Control : Min.Bass position

Treble Control: Min.Treble position

Intermediate Freq: 455 Kc/s.

Function Switch Centre position. "Radio"(normal bandwidth)

Input Voltage : 230 volts 50 cycle AC. input to trans. 230-240 Volt tap.

NOTE: 1.
The receiver chassis has to be removed from the cabinet to make adjustments to the I.F. transformer iron cores, or to set the pointer on the dial knob to the end of travel spot at the H.F. end of the dial.

It is not necessary to remove the receiver chassis to adjust the tuning unit trimmer condensers.

NOTE: 2.
Instructions for removing the cabinet base and chassis units are detailed on the following pages of this bulletin.

I.F. TRANSFORMER ALIGNMENT.

Oper No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6AD8 IF. valve pin No.2.	455 Kc/s	0.01MF Mica capacitor in series with generator	Turn gramo - radio switch to centre position "Radio" normal bandwidth. Leave grid wire attached to valve socket.Peak 2nd IF. trans pri.and sec. for max output.
2.	To signal grid of 6AN7 valve pin No.2.	455 Kc/s	0.01MF Mica capacitor in series with generator	Turn perm tuner so that iron cores are fully out of winding on coil formers and the unit is hard against the stop. Leave grid wire attached to valve socket.Peak 1st. IF. trans.pri and sec. for max. output.
3.				Repeat operations 1 and 2

BROADCAST ALIGNMENT.

NOTE 1.
After the pointer line on the dial knob has been set to the end of travel spot near 1700 Kc/s. the receiver oscl. and aerial trim, condensers may be aligned while the template is fitted to the chassis or the template may be removed, the chassis fitted to the cabinet then align the oscl. and aerial trim, condensers using the calibrated transfer dial reading on the cabinet.

NOTE 2.
Both iron cores in the perm, tuner unit are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet and the end of the iron core in the former when the unit is turned fully anti-clockwise and is hard against the stop.

If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

NOTE 3. The 200 MMF Dummy antenna must be connected to the antenna junction lug on the chassis. Should an antenna be connected to the short antenna lead from the receiver it is to be disconnected or rolled into a small bank.

Oper. No.	Generator Connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	To antenna junction lug. on chassis	1000 Kc/s	200 MMF mica capacitor in series with generator	Turn perm tuner and dial pointer knob until the centre of the line on the knob aligns with the centre of the 1000 Kc/s spot on the template (or the dial reading on the cabinet if the receiver is fitted to the cabinet. Peak oscl. coil trimmer condenser then peak ant. coil trimmer condenser for max. output. Repeak oscl. coil trimmer condenser. Check logging at each end of tuning scale.

Tuning range after alignment 535 to 1340 Kc/s.

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TECHNICAL BULLETIN

TABLEGRAM MODEL — "ANM"

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Broadcast Receiver.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

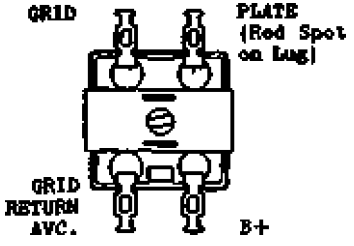
POWER CONSUMPTION:—

Radio Operation:—40 Watts.—approx.
Gramo Operation:—60 Watts.—approx.

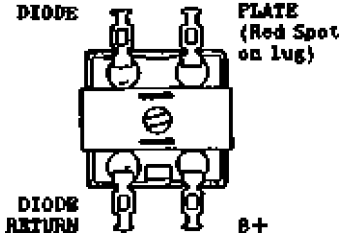
TUNING RANGE:—

535-1610 Kc/s. - 560.7-186.3 Metres.

1st IF. TRANS.



2nd IF. TRANS.



ANTENNA TRANS.

Start of winding – furthest from mounting end – Antenna.
Finish of winding – nearest to mounting end – Grid.

OSCL. COIL

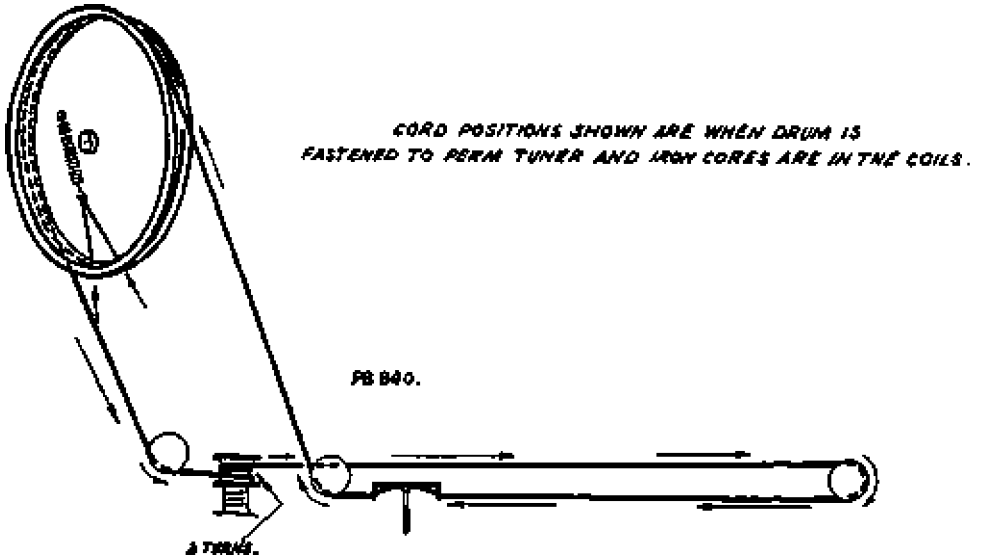
Start of winding – furthest from mounting end – Junction of circuit Nos. 6 and 9.
Finish of winding – nearest to mounting end – Oscl. grid.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE: The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200V. and 220V. on the 200-220V. tap and for any AC. voltage between 221V. and 250V. on the 221-250V. tap.
MAINS VOLTAGE ADJUSTMENT: For 200-220 volt operation:- the receiver chassis does not have to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove the cabinet base board by unscrewing the four rubber mount feet screws fastening the base to the cabinet. The AC. mains tap junction strip is located at the left hand end of the chassis. The mains lead wire from the switch on the volume control which is attached to the junction strip tap marked 221-250 volt is to be unsoldered and re-soldered to the tap marked 200-220 volt. Refit cabinet base board and rubber mount feet.

CORDING OF DIAL DRIVE

Length of cord required is 6 ft. 3 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Tension Spring Part No. 508/30C.



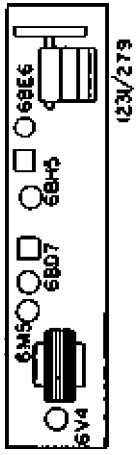
ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF. (for IF. trans. alignment)
Dummy Antenna: 200MMF. Mica Capacitor
Alignment Tools: Type 48/712 and PM581

ALIGNMENT CONDITIONS

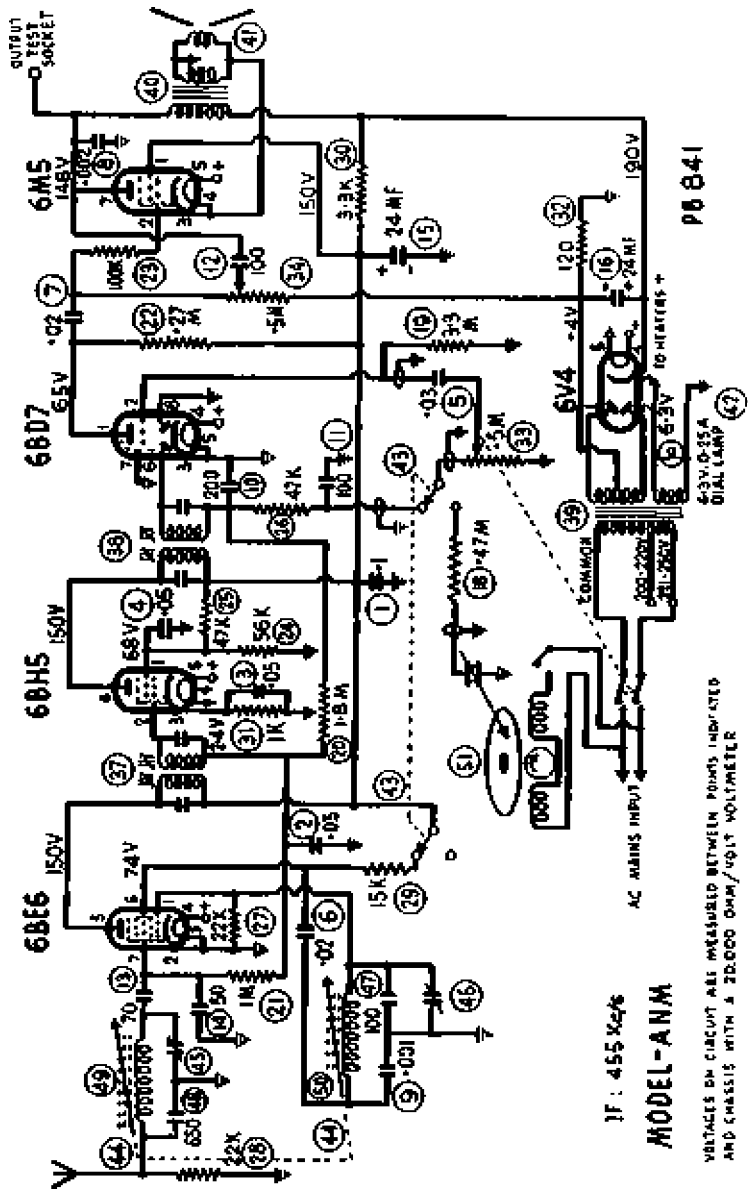
Load Impedance: 7,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully Clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Tone Control: Treble position.



Note:—The receiver chassis does not have to be removed from the cabinet to align the IF. or RF. signal stages. Only the base of the cabinet is required to be removed.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6BH5 I.F. valve pin No. 2	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Turn gramo-radio switch to radio position. Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To signal grid of 6BE6 valve pin No. 7	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Turn perm tuner so that iron cores are fully out of windings. Leave grid wire attached to valve socket Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Turn perm tuner so that iron cores are fully out of coil windings and hard against the stop. Set centre of dial pointer to align with centre of end of travel spot on dial reading near 1700 Kc/s.			
5.	To antenna lead from receiver	1000 Kc/s.	200 MMF Mica capacitor in series with generator	Turn perm tuner and dial pointer until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trim. cond. then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil. trim. cond.
6.				Repeat operations No. 4 and 5.
7.				Check logging at each end of the dial.

NOTE:—Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet and the end of the iron core in the former, when the unit is turned fully clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.



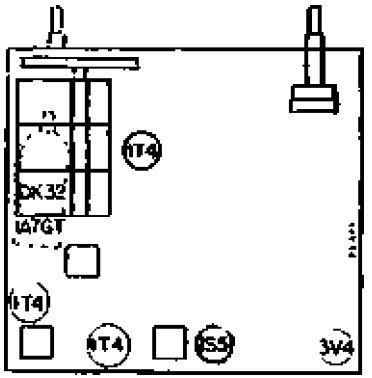
RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

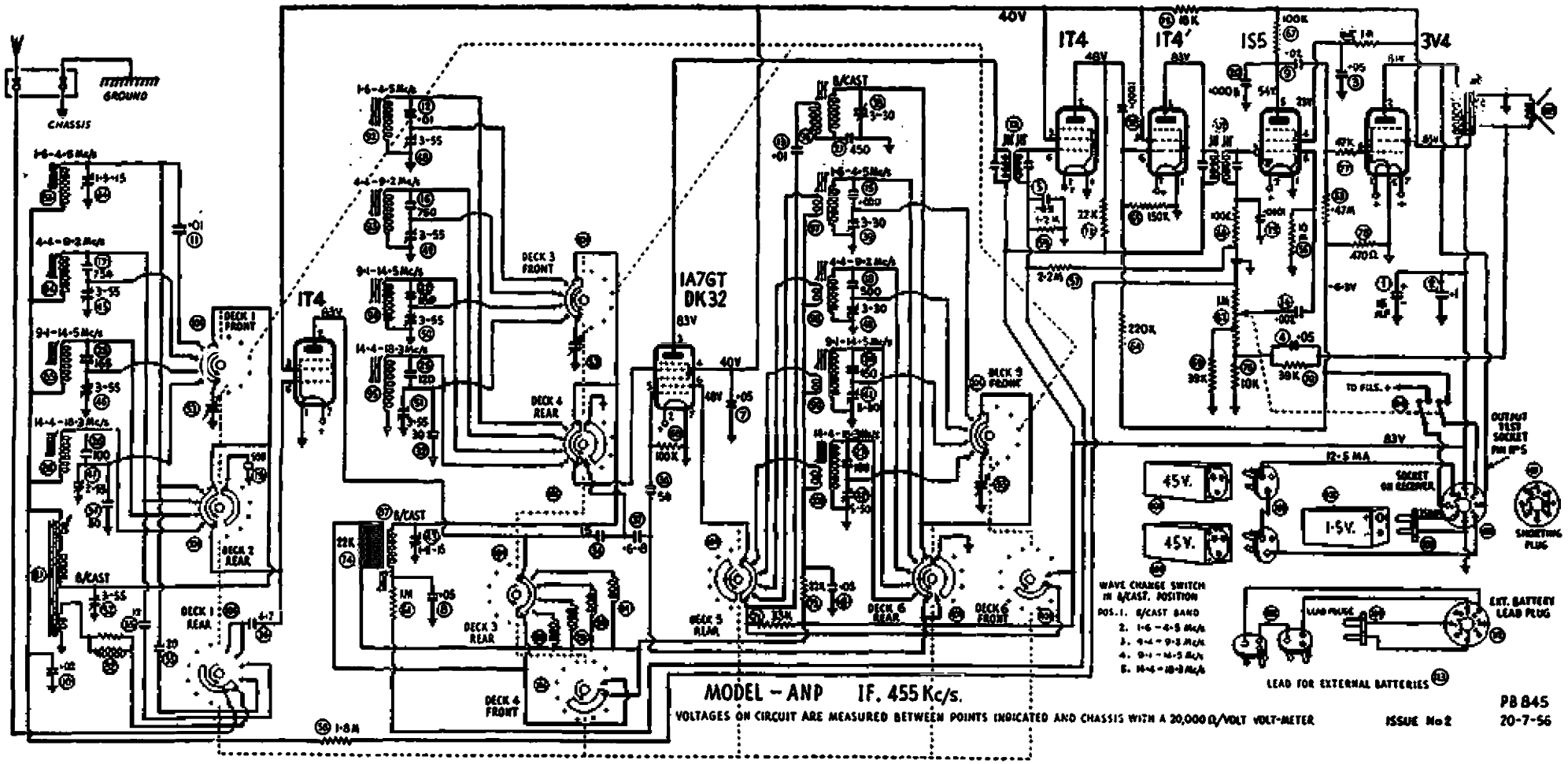
TECHNICAL BULLETIN

BULLETIN: ANP-1
File: Receivers
Portable
Date: 3-8-56
Page: 1.

MODEL "ANP"

6 VALVE SUPERHETERODYNE 5 BAND PORTABLE RECEIVER





ALIGNMENT INSTRUCTIONS

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal generator:		Load impedance:	10,000 ohms
Output meter:		Output level	25 milliwatts
Alignment tools:	Part No. M195 & PM581	''A'' battery	1.5 volts
Mica capacitor:	0.01 MF for I.F. trans alignment	''B'' battery	90 volts
		Vol. control	max. volume (fully clockwise)
Dummy antenna	400 ohm non-inductive resistor		
Alignment template:	Part No. PB832	Intermed. freq.	466 Kc/s.

TO REMOVE CHASSIS FROM CABINET

Pull control knobs straight upward off control spindles. Remove cabinet base by unscrewing the screws around the base of the cabinet. Remove cardboard battery packers and then the batteries. From the top of the cabinet, unscrew the screws fastening the dial, then unscrew and withdraw four screws on top of the cabinet. The chassis will then slide out of the cabinet. Do not remove the screws fastening the handle brackets to the cabinet. Re-fitting the chassis to the cabinet is the exact reverse procedure to removing it.

I.F. TRANS. ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fasten the dial reading off the cabinet on to the cardboard alignment template PB832 with ⅛" x ¼" screws and nuts, then fit alignment template in position on top of chassis with the four screws which fasten the chassis to the cabinet. Fit control knobs to control spindles.			
2.	To signal grid of 1T4 IF valve (pin No. 6)	455 Kc/s.	.01 MF mica capacitor in series with generator	Turn wave change switch to b/cast band position. Leave grid wire attached to valve socket. Peak 2nd IFT Pri. and sec. for max. output.
3.	To signal grid 1A7GT.	455 Kc/s.	.01 MF mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve Peak 1st IFT pri. and sec. for max. output.
4.	Repeat operations Nos. 2 and 3.			

DIAL POINTER SETTING

Fully mesh condenser gang plates and set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s.

BROADCAST BAND ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	To inject a signal into the receiver rod aerial for alignment of the broadcast band, connect to the active terminal of the signal generator output approx. 2 ft. of aerial wire, then fashion the wire into a vertical position.		
2.	Place receiver chassis with ferrite rod aerial attached so that the receiver dial is uppermost and the ferrite rod is horizontal and nearest to the operator. Move the chassis to a position so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator output, and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire. Place the ''B'' batteries in their respective positions at the ends of the chassis to provide the same amount of mass around the chassis as exists when fitted into the cabinet.		
3.	Refer para. 1 and 2	600 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the b/cast band oscl. coil inductance trim. (iron core) and the b/cast band RF trans. ind. trim. (iron core) from the base end of the trans. also peak for max. output the secondary trimmer coil on the ferrite rod. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 600 Kc/s. dial mark until after the inductance trimmers and the rod trimmer coil have been peaked for max. output.
4.	Refer para. 1 and 2	1470 Kc/s	Turn cond. gang and dial pointer until centre of dial pointer is on 1470 Kc/s. dial mark. Adjust b/cast band oscl. coil trim. cond. for logging and peak b/cast band RF trans and ferrite rod trim. conds. for max. output.
5.	Repeat operations Nos. 3 and 4.		

SHORT-WAVE BAND ALIGNMENT 1.6-4.5 Mc/s.

(This band is to be aligned before the higher frequency shortwave bands).

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To receiver external aerial and earth sockets	1.7 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 1.6-4.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.

2.	To receiver external aerial and earth sockets	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF trans. trim. cond. for max. output.
3.	To receiver external aerial and earth sockets	1.7 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position. Repeak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) then peak the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 1.7 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial and earth sockets	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. mark on dial. Readjust 1.6-4.5 Mc/s. band oscl. coil trim cond. for logging, then repeak 1.6-4.5 Mc/s. band antenna and RF trans. trim. condensers for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial and earth sockets	3 Mc/s.	400 ohm non-inductive resistor	Check tracking at 3 Mc/s.

SHORT-WAVE BAND ALIGNMENT 4.4-9.2 Mc/s.

1.	To receiver external aerial and earth sockets	4.5 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 4.4-9.2 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. mark on dial. Leave cond. gang and dial pointer set in this position and peak the 4.4-9.2 Mc/s. band oscl. coil ind. trim. (iron core) and the 4.4-9.2 Mc/s. band antenna and RF trans. ind. trim (iron cores) for max. output.
2.	To receiver external aerial and earth sockets	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Adjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then peak 4.4-9.2 Mc/s. band antenna and RF trans. trim. condensers for max output.
3.	To receiver external aerial and earth sockets	4.5 Mc/s	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. dial mark. Leave cond. gang and dial pointer set in this position. Repeak 4.4-9.2 Mc/s. band oscl. coil. ind. trim. (iron core) then peak the 4.4-9.2 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them off the 4.5 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial and earth sockets	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Readjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then repeak 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers.
5.	To receiver external aerial and earth sockets.	6.5 Mc/s.	400 ohm non-inductive resistor	Check tracking at 6.5 Mc/s.

SHORT-WAVE BAND ALIGNMENT 9.1-14.5 Mc/s.

1.	To receiver external aerial and earth sockets	9.6 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 9.1-14.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.

2.	To receiver external aerial and earth sockets	14.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. dial mark. Adjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 9.1-14.5 Mc/s. band ant. and RF trans. trim. conds. for max. output.
3.	To receiver external aerial and earth sockets	9.6 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 9.1-14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 9.6 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial and earth sockets	14.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. mark on dial. Readjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then repeak 9.1-14.5 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock the cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial and earth sockets	11.8 Mc/s.	400 ohm non-inductive resistor	Check tracking at 11.8 Mc/s.

SHORT-WAVE BAND ALIGNMENT 14.4-18.3 Mc/s.

1.	To external aerial and earth sockets	15.2 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 14.4-18.3 Mc/s. band position. Turn. cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak the 14.4-18.3 Mc/s. band oscl. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. output.
2.	To external aerial and earth sockets	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. dial mark. Adjust 14.4-18.3 Mc/s. band oscl. coil trim. cond. for logging, then peak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output.
3.	To external aerial and earth sockets	15.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 14.4-18.3 Mc/s. band oscl. coil ind. trim (iron core) and the 14.4-18.3 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 15.2 Mc/s. dial mark until after the ind. trimmer (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial and earth sockets	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. mark on dial. Readjust 14.4-18.3 Mc/s. band oscl. trim. cond. for logging, then repeak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial and earth sockets	16.2 Mc/s.	400 ohm non-inductive resistor	Check tracking at 16.2 Mc/s.

6. Remove control knobs and alignment template from the chassis, then refit the chassis to the cabinet.

TUNING RANGE AFTER ALIGNMENT

B/cast band	535-1610 Kc/s.
S/wave bands	1.6- 4.5 Mc/s.
	4.4- 9.2 Mc/s.
	9.1-14.5 Mc/s.
	14.4-18.3 Mc/s.

SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS

1.6- 4.5 Mc/s. band	aerial coil	(L201) RED & WHITE	spots on iron core end of former
,,	RF ,,	(L201) RED & WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L200) RED	spot ,, ,, ,, ,, ,, ,,

4.4- 9.2 Mc/s. band	aerial coil	(PT913)	WHITE	spot on iron core end of former
,,	RF ,,	(PT913)	WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L202)	WHITE	,, ,, ,, ,, ,, ,, ,,
9.1-14.5 Mc/s. band	aerial coil	(L204)	BLACK & WHITE	spots on iron core end of former
,,	RF ,,	(L204)	BLACK & WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L203)	BLACK	spot ,, ,, ,, ,, ,, ,,
14.4-18.3 Mc/s. band	aerial coil	(L206)	YELLOW & WHITE	spots on iron core end of former
,,	RF ,,	(L206)	YELLOW & WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L205)	YELLOW	spot ,, ,, ,, ,, ,, ,,

NOTE 1: Pin No. 5 on the external battery lead socket connects to the output valve plate. The output meter may be connected between this pin and the chassis.

NOTE 2: Check the logging of the shortwave bands on some well known shortwave stations. If a crystal calibrator is available, check the logging at several 100 Kc/s. marks on the dial.

NOTE 3: If the dial pointer does not log correctly after refitting the chassis to the cabinet, remove the dial reading from the cabinet and hold the tuning spindle with one hand; with the other hand, slide the base end of the pointer the required distance. Refit dial reading and recheck logging.

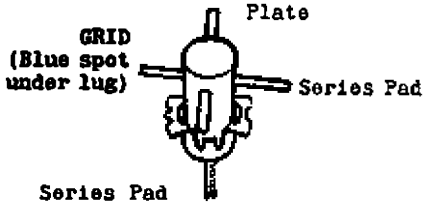
FERRITE ROD AERIAL

PRIMARY – (fixed winding 5 turns)
- Lead from end turn nearest end of rod– CHASSIS
- Lead from end turn nearest to secondary– AERIAL LOADING COIL

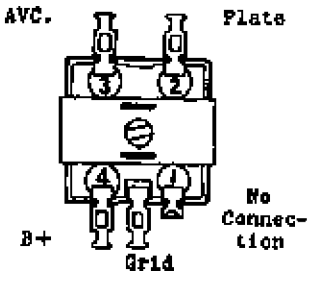
SECONDARY – (fixed winding)
- Lead from end turn nearest to fixed primary– GRID
- Lead from end turn nearest to sec. trim coil– JOINED TO LEAD FROM SEC. TRIM. COIL END TURN NEAREST FIXED SEC.

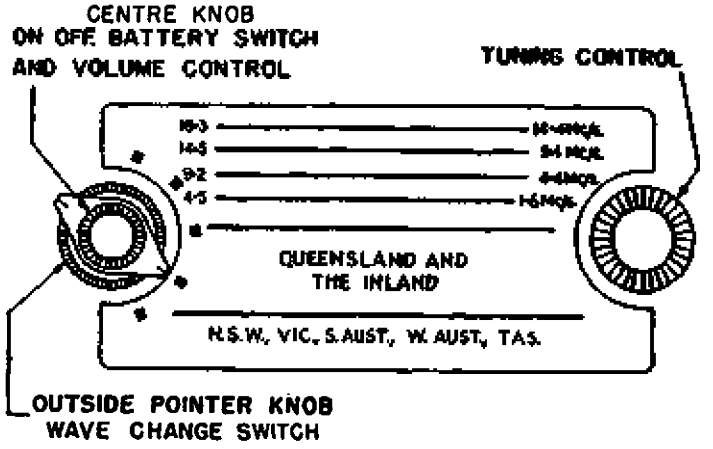
SECONDARY TRIMMER COIL – (movable winding)
- Lead from end turn nearest to fixed secondary– JOINED TO LEAD FROM FIXED SEC. END TURN NEAREST SEC. TRIM COIL.
- Lead from end turn nearest end of rod– AVC.

B/CAST. OSCL. COIL



B/CAST. RF. TRANS.





FOR OPERATION FROM:

1.5 volts ''A'' Battery
and
90 volts ''B'' Battery (two 45 volt ''B'' Batteries in series)

CURRENT CONSUMPTION:

''A'' Battery 350 milliamps
''B'' Battery 12.5 milliamps (no signal)

POWER OUTPUT:

250 Milliwatts – max.
100 Milliwatts – undistorted.

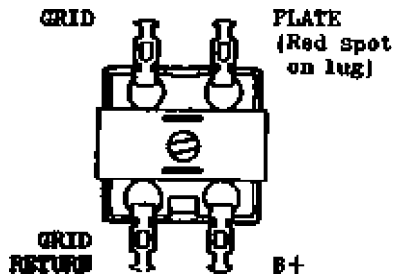
INTERMEDIATE FREQUENCY:

455 Kc/s.

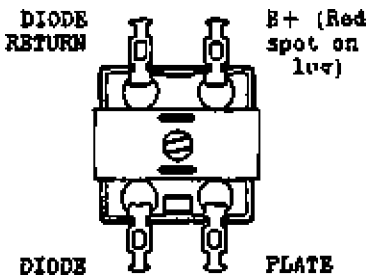
TUNING RANGES:

Broadcast Band:–	535–1610 Kc/s.	560.7 –186.3 Metres
Shortwave Tuning Ranges	1.6– 4.5 Mc/s.	187.5 – 66.66 Metres
	4.4– 9.2 Mc/s.	68.18– 32.60 Metres
	9.1–14.5 Mc/s.	32.96– 20.68 Metres
	14.4–18.3 Mc/s.	20.83– 16.39 Metres

No. 1 IF. TRANS.



No. 2 IF. TRANS.



SHORT-WAVE ANT. TRANS.

Lead from top lug (iron core end): GRID

Lead from bottom lug (mounting end): AVC

SHORT-WAVE RF. TRANS.

Lead from top lug (iron core end): GRID

Lead from bottom lug (mounting end): CHASSIS

SHORT-WAVE OSCL. COILS

SECONDARY—lead from bottom lug (mounting end)—CHASSIS
lead from top lug (iron core end)—GRID

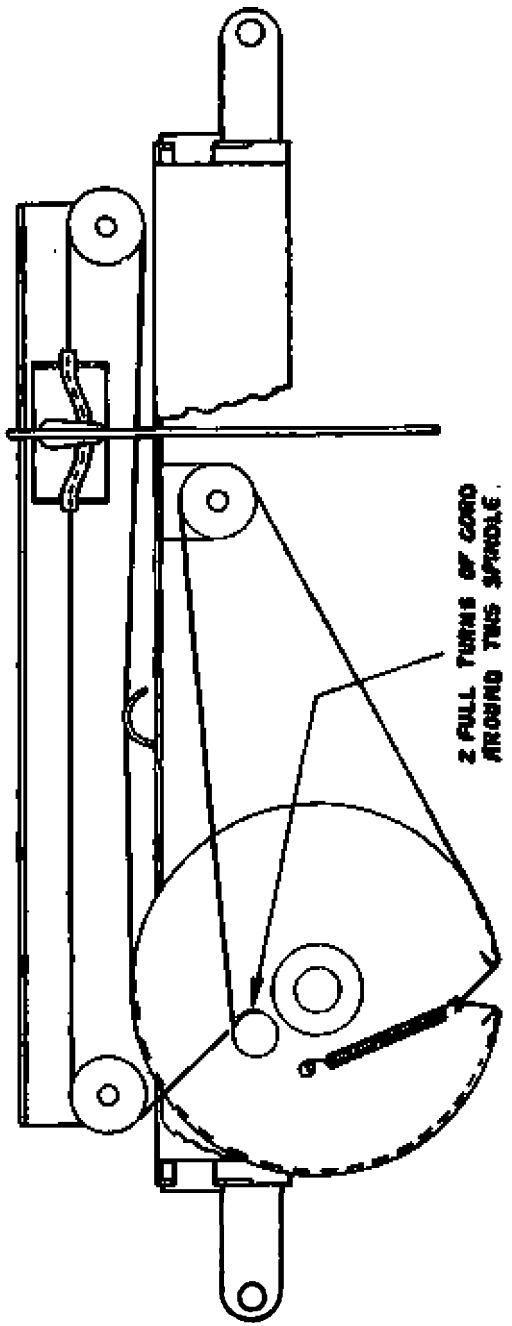
PRIMARY— lead from bottom lug (mounting end)—OSCL. PLATE
lead from top lug (iron core end)—JUNCTION OF .05 MF. COND. AND 22K OHM RESISTOR CIRCUIT Nos. 6 AND 72.

RF. AND IF. TRANSFORMERS

A. The RF transformer part No. PT890 has been changed to an RF. transformer part No. L220. The base connections and method of mounting the transformers are identical.

B. The 1st IF. transformer part No. PT864 has been changed to an IF. transformer part No. L216. The base connections and method of mounting both transformers are identical.

C. The 2nd IF. transformer part No. PT869 has been changed to an IF. transformer part No. L218. The base connections and mounting are identical for both types. The IF. transformer L218 has no condensers connected internally; therefore, when using the IF. transformer L218 a 70 MMF tubular ceramicon condenser tol. +2½% –5% part No. C209 is to be wired across the primary base lugs and a 70 MMF cond. part No. C209 is to be wired across the secondary base lugs. The condensers are to be close to the chassis and the coloured spot end of the condensers is to be wired to the B+ lug of the primary and the AVC – diode return lug of the secondary.



CORDING OF DIAL DRIVE

The length of cord required is 4 ft. 3ins. which includes about 8 in. to spare for tying to the tension spring.

Cord, Part No. 34/754.

Spring, Part No. 8/813.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

BULLETIN-ANR-1
File: RECEIVERS
BATTERY
Date: 10-1-57
Page 1

TECHNICAL BULLETIN

MODEL "ANR"

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33-1/3 r.p.m.) and an 8 Valve Superheterodyne Five Band Receiver.

FOR OPERATION FROM:—32 volt D.C. Supply.

CURRENT CONSUMPTION:—

Radio Operation:	0.85 Amps.	(Does not include dial lamps, cabinet indicator lamp or wave band indicator lamp)
,, ,,	1.1 Amps.	(Includes three dial lamps, one cabinet indicator lamp and one wave band indicator lamp all wired in series. Each lamp 6-8V. 0.25 Amp. Part No. PM678.)
Gramo Operation:	1.6 Amps.	(Includes three dial lamps, one cabinet indicator lamp and one wave band indicator lamp.)

INTERMEDIATE FREQUENCY: 455 Kc/s.

TUNING RANGES:

Broadcast Band:-	535-1610 Kc/s.	560.7 -186.3	Metres
Shortwave Tuning Ranges	1.8- 4.5 Mc/s.	187.5 - 66.66	Metres
	4.4- 9.2 Mc/s.	68.18- 32.60	Metres
	9.1-14.5 Mc/s.	32.96- 20.68	Metres
	14.4-18.3 Mc/s.	20.83- 16.39	Metres

THIS BULLETIN CONTAINS:

Technical Specifications.
Alignment Procedure.
Circuit Diagram.

Connections for IF and RF Transformers.
Valve Placement Diagram.
Dial Drive Cording Diagram.

CHASSIS SERIAL NUMBER:

1. Open record changer door and remove screw "A" located in record changer compartment — refer diagram on page 12.
2. Pull cabinet receiver door forward to approx. 45° then remove far end of hook-on tension spring from anchor bolt on inside of cabinet.
3. Lower receiver door to a horizontal position and rest the door on a padded stool.
4. The serial number is situated on the top flat section of the chassis at the left end just beneath the cartridge fuse mounted on the lip of the chassis.
5. Refit hook-on tension spring to anchor bolt and refit screw "A."

SHORT-WAVE ANT. TRANS.

Lead from top lug (iron core end):
GRID

Lead from bottom lug (mounting end):
AVC

ANTENNA TRANS. B/CAST

SHORT-WAVE RF. TRANS.

Lead from top lug (iron core end):
GRID

Lead from bottom lug (mounting end):
CHASSIS

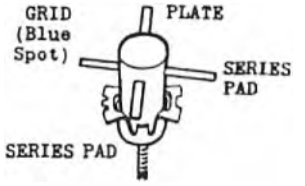
RF. TRANS. B/CAST.

SHORT-WAVE OSCL. COILS

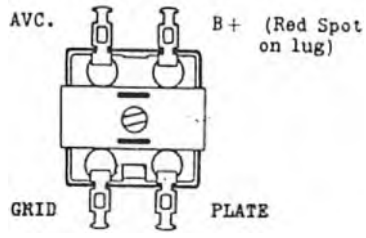
SECONDARY—
lead from bottom lug (mounting end)—CHASSIS
lead from top lug (iron core end)—GRID

PRIMARY—
lead from bottom lug (mounting end)—OSCL. PLATE
lead from top lug (iron core end)—B+

OSCL. COIL B/CAST.



No. 1 IF. TRANS.



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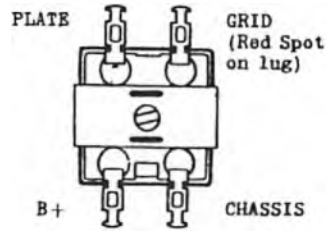
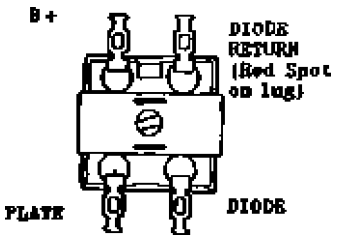


ASTOR MODEL ANR.

No. 3 IF. TRANS.



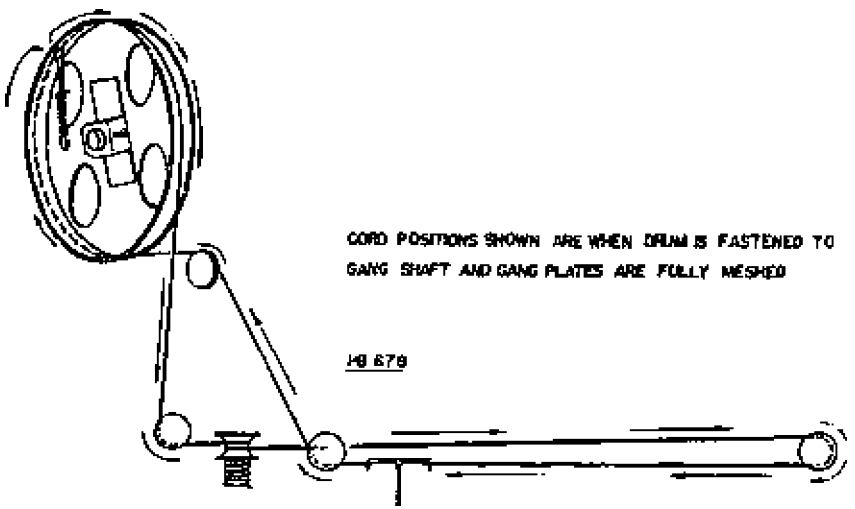
DRIVER TRANS.

PRI. Red - B+
Blue - Plate

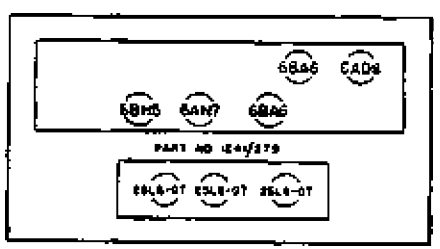
SEC. Yellow- Grid
Red - Chassis
Green - Grid

CORDING OF DIAL DRIVE

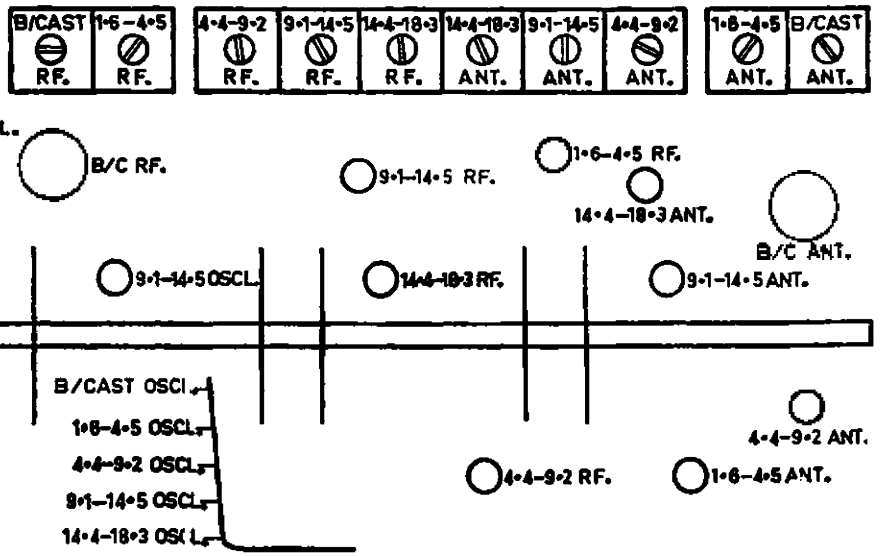
Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring. Cord part No. 34/754. Tension Spring part No. 21/698



NOTE.–One turn shown around tuning spindle pulley has been increased to two turns.

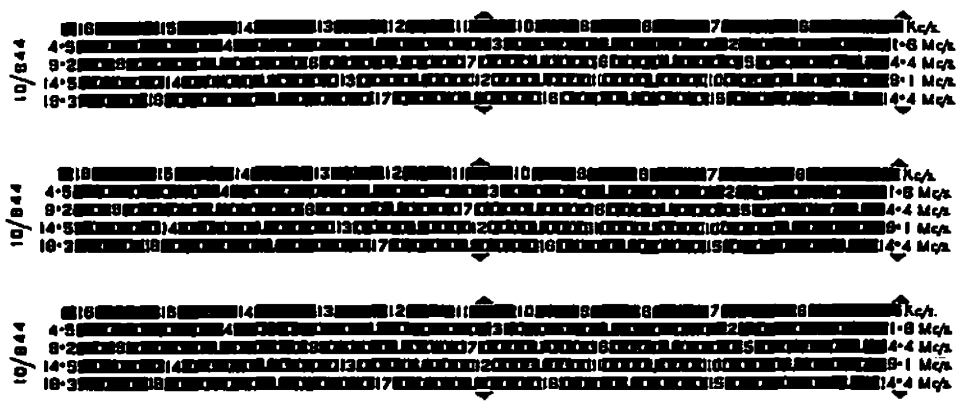


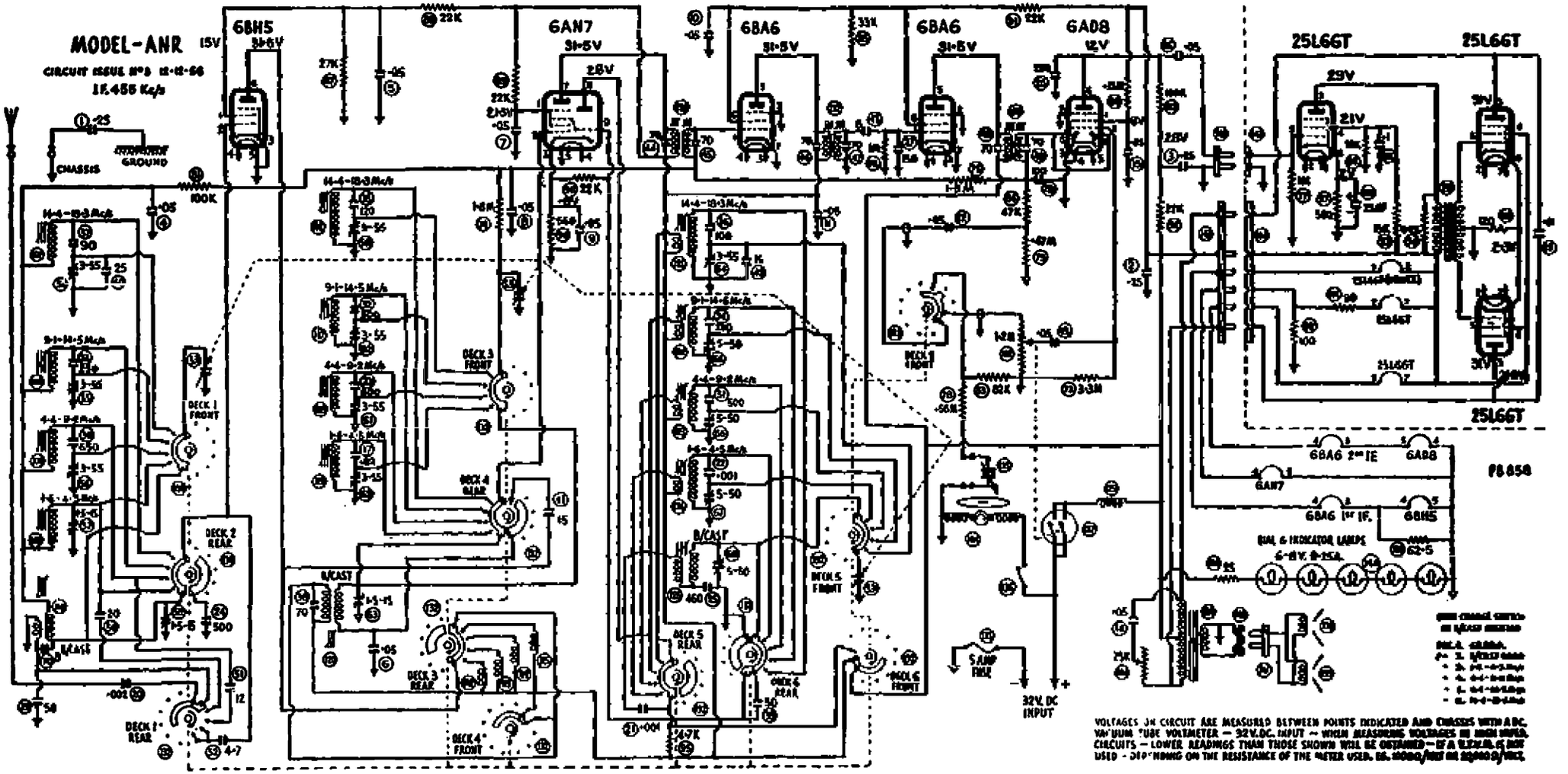
PB/864.



SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS

1.6- 4.5 Mc/s. band	aerial coil	(L201)	RED & WHITE	spots on iron core end of former	
,,	RF ,,	(L201)	RED & WHITE	,, ,, ,, ,, ,, ,, ,,	
,,	Oscl. ,,	(L221)	BLUE	spot ,, ,, ,, ,, ,, ,,	
4.4- 9.2 Mc/s. band	aerial coil	(PT913)	WHITE	spot on iron core end of former	
,,	RF ,,	(PT913)	WHITE	,, ,, ,, ,, ,, ,, ,,	
,,	Oscl. ,,	(L217)	BROWN	,, ,, ,, ,, ,, ,, ,,	
9.1-14.5 Mc/s. band	aerial coil	(L204)	BLACK & WHITE	spots on iron core end of former	
,,	RF ,,	(L204)	BLACK & WHITE	,, ,, ,, ,, ,, ,, ,,	
,,	Oscl. ,,	(L203)	BLACK	spot ,, ,, ,, ,, ,, ,,	
14.4-18.3 Mc/s. band	aerial coil	(L206)	YELLOW & WHITE	spots on iron core end of former	
,,	RF ,,	(L206)	YELLOW & WHITE	,, ,, ,, ,, ,, ,, ,,	
,,	Oscl. ,,	(L222)	VIOLET	spot ,, ,, ,, ,, ,, ,,	





VOLTAGES IN CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER — 32 V.D.C. INPUT — WHEN MEASURING VOLTAGES IN HIGH IMPEDANCE CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED. EG. 1000Ω/VOLT OR 20,000Ω/VOLT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS:

Load Impedance:	5,000 Ohms
Output Level:	50 milliwatts
Vol. Control:	Max. vol. (fully clockwise).
Tone Control:	Treble position
Intermediate freq.:	456 Kc/s.
DC. Supply:	32 Volt DC. Mains

EQUIPMENT:

Signal Generator	
Output Meter	
Mica Capacitor-	0.01 MFD.
Dummy Antenna-	200MMFD Mica capacitor
Dummy Antenna-	400 Ohm. non inductive resistor
IF. Attenuator-	Part No. M174 (.004MFD and 20K ohm resistor in series)
Alignment tools-	Part No. M195 and PM581

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 12.			
2.	Remove receiver dial background plate from chassis which is fastened by two screws, one at each end.			
3.	To control grid of 6BA6 2nd IF. valve pin No. 1	456 Kc/s.	0.01MFD. mica capacitor in series with generator	Turn wave change switch to B/cast. band. Leave grid wire attached to valve socket. Peak 3rd IF. trans. pri. and sec. for max. output.
4.	To control grid of 6BA6 1st IF. valve pin No. 1	456 Kc/s.	0.01MFD mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AH7 valve pin No. 2	456 Kc/s.	0.01MFD mica capacitor in series with generator	Cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.

BROADCAST BAND ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fasten alignment template (PB862-10/844 refer page 15), with clear adhesive tape into the channel section where the dial pointer slides. The template is to be trimmed along its edges and placed central between the two control spindles and above the pointer base.			
2.	Connect attenuator No. M174 between control grid (pin No. 1) of 2nd 6BA6 IF. valve and chassis.			
3.	Set centre of dial pointer on centre of end of travel mark on dial reading template near 550 Kc/s., cond. gang plates fully meshed.			
4.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer until dial pointer is on 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim (iron core) for max. output.
5.	To antenna terminal.	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
6.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position. Re-peak the B/cast oscl. coil ind. trim. (iron core) then peak the B/cast ant. and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s. dial mark until after the inductance trimmers of these three transformers have been peaked for max. output.
7.	To antenna terminal	1400 Kc/s.	200 MMFD. Mica capacitor in series with generator.	Repeat operation No. 5.

SHORT-WAVE BAND ALIGNMENT 1.6-4.5 Mc/s.

(This band is to be aligned before the higher frequency shortwave bands).

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna terminal	1.7 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 1.6-4.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.
2.	To antenna terminal	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF trans. trim. conds. for max. output.

3.	To antenna terminal	1.7 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position. Repeak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) then peak the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 1.7 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. mark on dial. Readjust 1.6-4.5 Mc/s. band oscl. coil trim cond. for logging, then repeak 1.6-4.5 Mc/s. band antenna and RF trans. trim. condensers for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To antenna terminal	3 Mc/s.	400 ohm non-inductive resistor	Check tracking at 3 Mc/s.

SHORT-WAVE BAND ALIGNMENT 4.4-9.2 Mc/s.

1.	To antenna terminal	4.5 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 4.4-9.2 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. mark on dial. Leave cond. gang and dial pointer set in this position and peak the 4.4-9.2 Mc/s. band oscl. coil ind. trim. (iron core) and the 4.4-9.2 Mc/s. band antenna and RF trans. ind. trim (iron cores) for max. output.
2.	To antenna terminal	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Adjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then peak 4.4-9.2 Mc/s. band antenna and RF trans. trim. condensers for max. output.

3.	To antenna terminal	4.5 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. dial mark. Leave cond. gang and dial pointer set in this position. Repeak 4.4-9.2 Mc/s. band oscl. coil. ind. trim. (iron core) then peak the 4.4-9.2 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them off the 4.5 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Readjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then repeak 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers.
5.	To antenna terminal	6.5 Mc/s.	400 ohm non-inductive resistor	Check tracking at 6.5 Mc/s.

SHORT-WAVE BAND ALIGNMENT 9.1-14.5 Mc/s.

1.	To antenna terminal	9.6 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 9.1-14.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.
2.	To antenna terminal	14.2 Mc/s.	400 ohm non-inductive resistor	Turn. cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. dial mark. Adjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 9.1-14.5 Mc/s. band ant. and RF trans. trim. conds. for max. output.

3.	To antenna terminal	9.6 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 9.1-14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 9.6 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	14.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. mark on dial. Readjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then repeak 9.1-14.5 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock the cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To antenna terminal	11.8 Mc/s.	400 ohm non-inductive resistor	Check tracking at 11.8 Mc/s.

SHORT-WAVE BAND ALIGNMENT 14.4-18.3 Mc/s.

1.	To antenna terminal	15.2 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 14.4-18.3 Mc/s. band position. Turn. cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak the 14.4-18.3 Mc/s. band oscl. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. output.
2.	To antenna terminal	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. dial mark. Adjust 14.4-18.3 Mc/s. band oscl. coil trim. cond. for logging, then peak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output.
3	To antenna terminal	15.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 14.4-18.3 Mc/s. band oscl. coil ind. trim (iron core) and the 14.4-18.3 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 15.2 Mc/s. dial mark until after the ind. trimmer (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. mark on dial. Readjust 14.4-18.3 Mc/s. band oscl. trim. cond. for logging, then repeak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To antenna terminal	16.2 Mc/s.	400 ohm non-inductive resistor	Check tracking at 16.2 Mc/s.

6. Remove control knobs, IF. attenuator and alignment template, then refit chassis to cabinet.
7. If the dial pointer does not log correctly with the stations marked on the b/cast section of the dial in the cabinet, remove the chassis from the cabinet and slide the pointer to the left or right the distance required to correct the logging, then refit the chassis.

TUNING RANGE AFTER ALIGNMENT

B/cast band	535-1610 Kc/s.
S/wave bands	1.6- 4.5 Mc/s.
	4.4- 9.2 Mc/s.
	9.1-14.5 Mc/s.
	14.4-18.3 Mc/s.

SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS

1.6- 4.5 Mc/s. band	aerial coil	(L201)	RED & WHITE	spots on iron core end of former
,,	RF ,,	(L201)	RED & WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L221)	BLUE	spot ,, ,, ,, ,, ,, ,,
4.4- 9.2 Mc/s. band	aerial coil	(PT913)	WHITE	spot on iron core end of former
,,	RF ,,	(PT913)	WHITE	,, ,, ,, ,, ,, ,, ,,
,,	Oscl. ,,	(L217)	BROWN	,, ,, ,, ,, ,, ,, ,,

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

File: Receivers
Bulletin: APK-1
Date: 18.4.58
Page: 1

TECHNICAL BULLETIN

MANTEL MODEL— APK

4 VALVE SUPERHETERODYNE BROADCAST RECEIVER

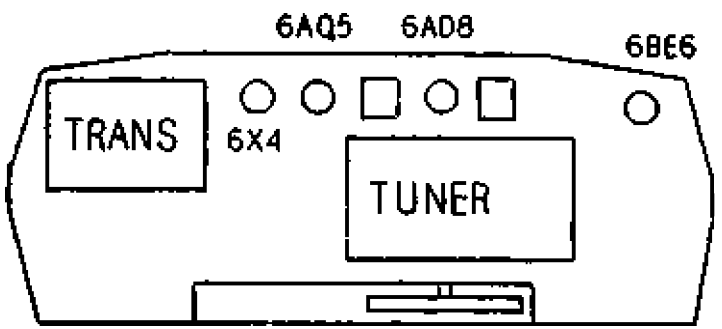
FOR OPERATION FROM:-

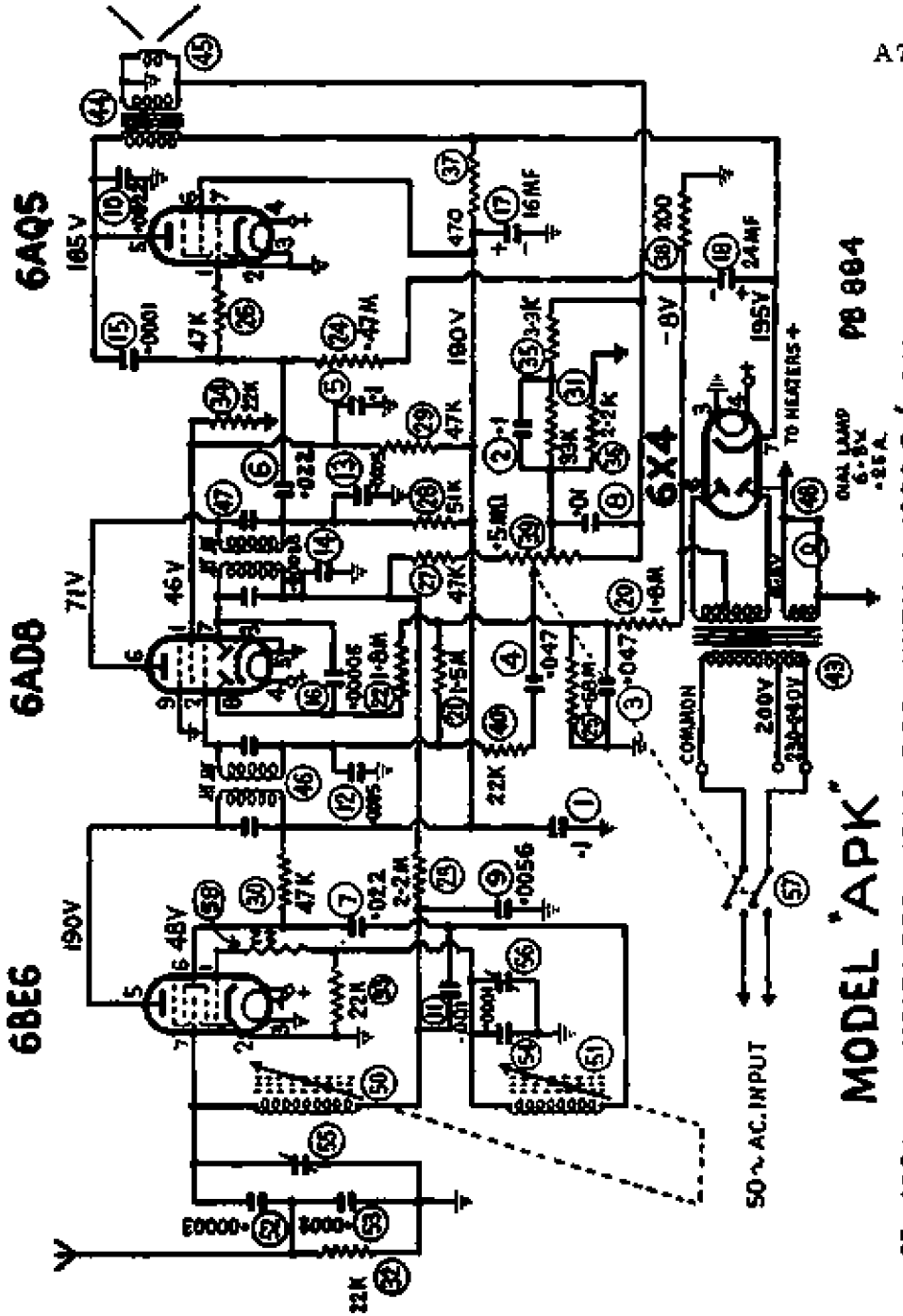
200-240 Volt 50 Cycle Supply Mains (Power Transformer PT938)
Power Trans. Primary Mains Tap - common
" " " " " - 200 Volt mains
" " " " " - 230 & 240 Volt mains

230-250 Volt 40 & 50 Cycle Supply Mains (Power Transformer PT939)
Power Trans. Primary Mains Tap - common
" " " " " - 230 Volt mains.
" " " " " - 250 Volt mains

POWER CONSUMPTION:- 40 Watts approx.

TUNING RANGE:- 535-1640 Kc/s. : 560.7-182.9 Metres.





ASTOR MODEL APK.

A7a. ALIGNMENT PROCEDURE:

EQUIPMENT:

Signal Generator	
Output Meter:	
Mica Capacitor:	0.01MF (for IF. trans.alignment)
Dummy Antenna	200MMF Mica capacitor
Alignment Tools:	Type M195 and PM581

ALIGNMENT CONDITIONS:

Load impedance:	5.500 ohms
Output Level:	50 Milliwatts
Vol. Control:	Max. Vol. fully clockwise
Intermed. Freq:	455 Kc/s.
Input Voltage	230 Volt 50 Cycle AC. input to trans. 230-240 volt pri. tap.

NOTE 1:

Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If it is connected it should be rolled into a small hank.

NOTE 2:

All alignment points are accessible when the rear section of the cabinet is removed from the front section as detailed on page 8.

NOTE 3:

Both iron cores in the perm. tuner are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit spindle is turned fully anti-clockwise and the unit is hard against the stop.

If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

IF. TRANS. ALIGNMENT

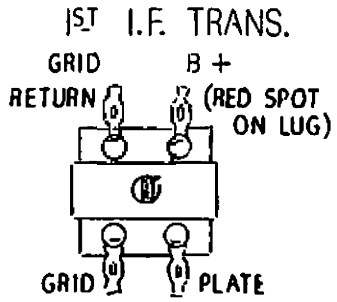
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6AD8 valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn dial/tuning knob anti- clockwise until perm. tuner iron cores are out of the windings on coil formers and the unit is hard agianst the stop. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 & 2

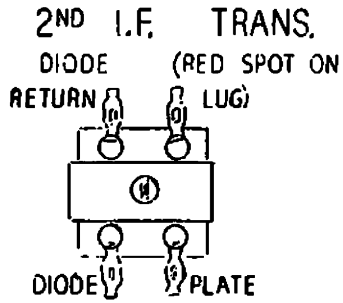
DIAL POINTER SETTING

1. Remove push-on type knob in centre of tuning knob. A piece of thin cord slid behind the knob in the form of a loop and pulled from the front is a convenient means of removing push-on type knobs.
2. Loosen the three ¼" x 3/32" CSK Head screws fastening locating washer and clear dial cover.
3. Turn perm tuner spindle fully anti-clockwise until the unit is hard against the stop.
4. Turn clear dial cover until centre of line on dial cover aligns with end of travel spot on dial reading near 1700 Kc/s.
5. Tighten the three 3/32" screws then refit push-on type centre knob.

B/CAST ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	200MMF Mica capacitor in series with generator	Turn tuning dial knob and perm. tuner until dial pointer aligns with centre of alignment spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer cond., then peak antenna coil trimmer cond. for max. output. Re-peak oscl. coil trim condenser.
2.	Check logging at each end of the dial. Tuning range after alignment 535-1640 Kc/s.			
3.	Refit rear section of cabinet			





ASTOR

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
123-130 GRANT STREET, SOUTH MELBOURNE, S.C.4

TECHNICAL BULLETIN

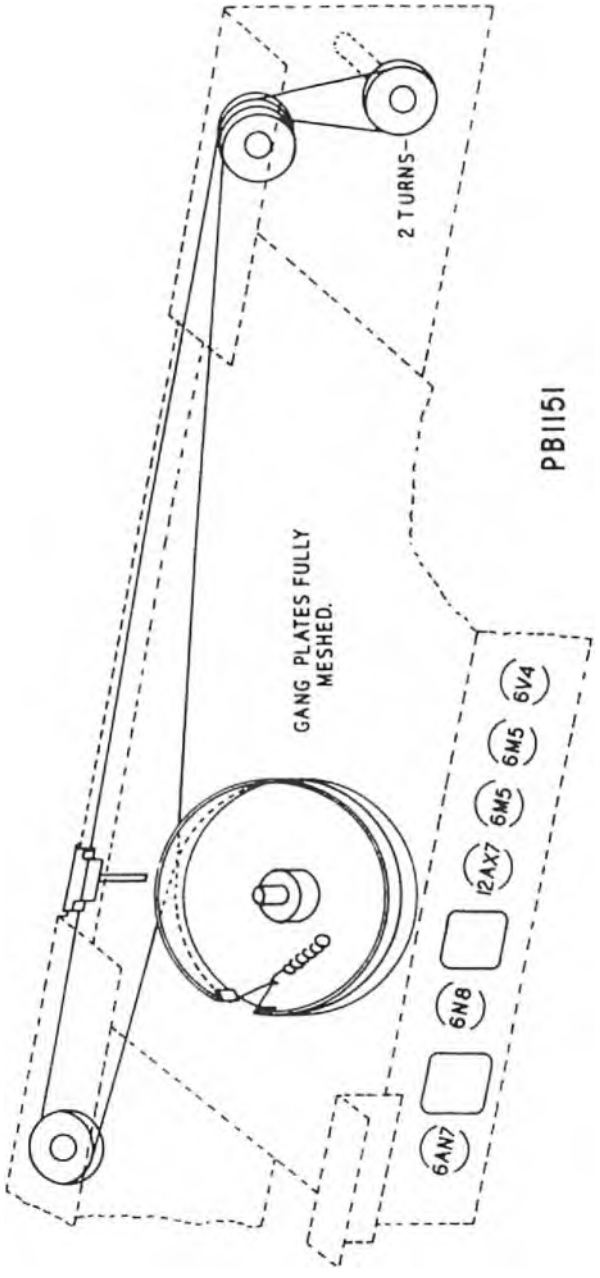
File: Receivers AC.
BULLETIN: AQL-1
Date. 16-8-60
Page: 1

PLAY-GRAM MODEL "AQL"

3 VALVE SUPERHETERODYNE BROADCAST RECEIVER AND A 4 SPEED (16-2/3, 33-1/3, 45 and 78 R.P.M.) SINGLE RECORD PLAYER.

PICK-UP ARM FITTED WITH A STEREO CARTRIDGE.

The right channel output from pick-up cartridge is terminated in a bayonet socket located on the rear of the cabinet. Before playing stereo recordings the input of an external amplifier/speaker unit (Model 'AST') is to be connected to this socket.



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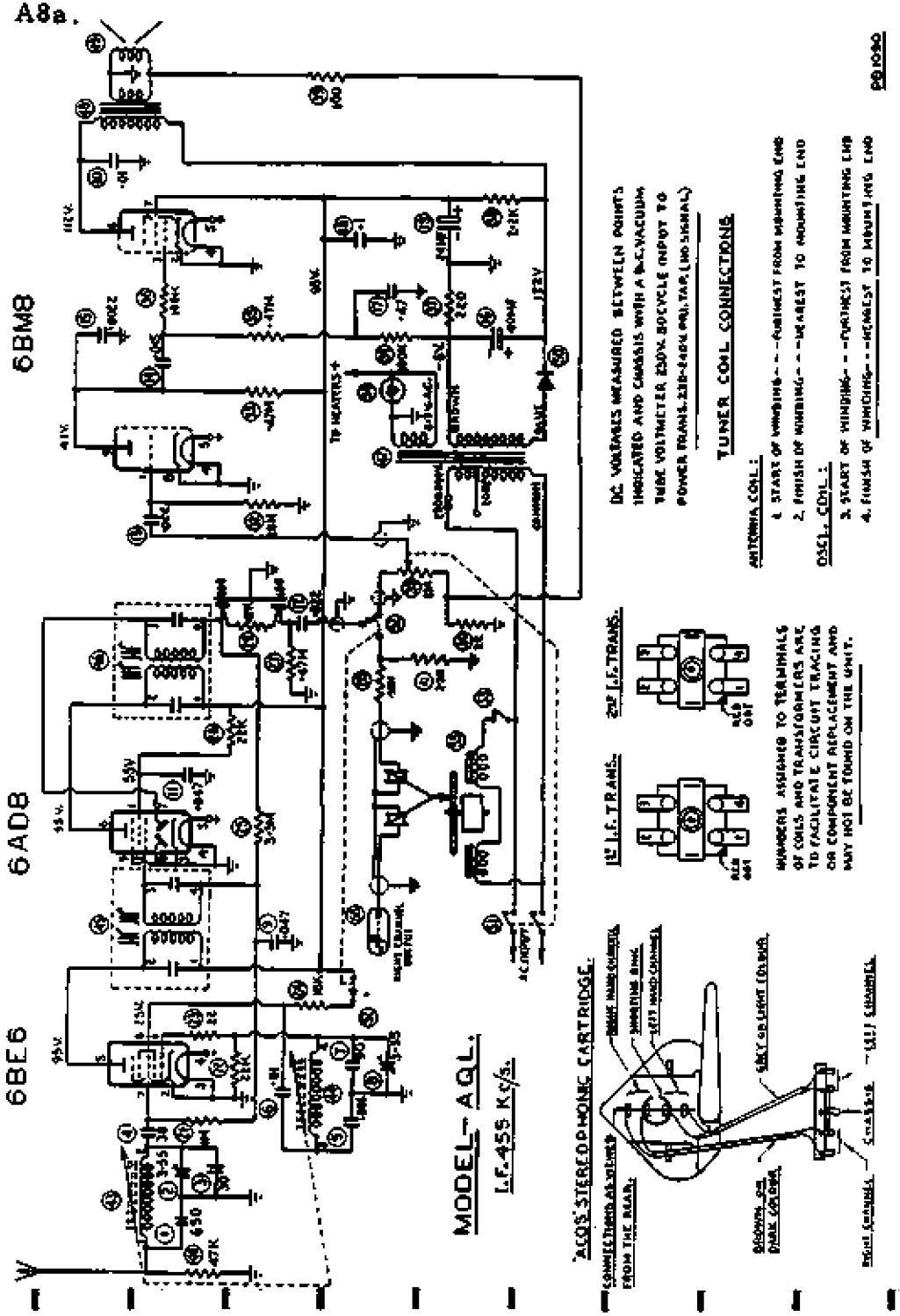


MODEL — AQL

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle Supply Mains (Power Transformer T148)
Power Trans. Primary Mains Tap-red-common
" " " " " -green 200V. mains
" " " " " -black 230 & 240V. mains.
230-250 Volt 40 or 50 Cycle Supply Mains (Power Transformer T149)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green 230V. mains.
" " " " " -black 250V. mains.

POWER CONSUMPTION:

Radio Operation: 20 Watts - approx.
Gramo Operation: 40 Watts - approx.

TUNING RANGE:

535 - 1640 Kc/s. : 560.7 - 182.9 Metres.

SERVICE INSTRUCTIONS — electrical

ALIGNMENT PROCEDURE.

EQUIPMENT:

Signal Generator:	modulated 400 C.P.S.
Output Meter :	
Mica Capacitor :	0.01 MF (for IF. trans. alignment)
Dummy Antenna :	200MMF Mica capacitor
Straight Alignment Tool:	Type PM581
Flexible Alignment Tool:	Type 46/712

ALIGNMENT CONDITIONS

Load Impedance:	7000 ohms
Output Level :	50 Milliwatts
Vol. Control :	Max. Vol. fully clockwise
Intermed. Freq:	455 Kc/s.
Input Voltage :	230 Volts. 50 Cycle AC. input to trans. 230-240 volt. pri. tap.
Gramo/Radio Switch:	Radio position (clockwise)

IF. TRANSFORMER ALIGNMENT

NOTE: Remove the record player turntable from its spindle.

Removal instructions are detailed in the Service Instruction (mechanical) section of the bulletin.

The receiver chassis does not have to be removed from the cabinet for alignment purposes.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6AD8 valve (pin No.2)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6BE6 valve (pin No.7)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning drum until perm. tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave the grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.

3. Repeat operations 1 and 2.

DIAL DRUM SETTING

Turn dial drum toward the rear of plastic mount plate until the perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. The end of travel spot on dial reading near 1700 Kc/s. is to align with the indicator lines moulded on the top of the plastic mount plate. The dial drum is adjusted by loosening off the screw through the slot in the drum.

BROADCAST ALIGNMENT

NOTE: 1. Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If the 25 ft. antenna is connected it must be rolled into a small hank.

NOTE: 2. The antenna and oscillator trimmer condensers are accessible through the two holes in the plastic mount plate on the right hand side of the control knobs. The oscillator trimmer being nearest to the front edge of the mount plate.

NOTE: 3. Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned hard against the stop. If incorrect logging and misalignment are to be avoided no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF Mica capacitor in series with generator	Turn tuning drum until alignment spot at 1000 Kc/s. aligns with moulded indicator lines on top of plastic mt. plate. Peak oscl. trim. cond. then peak antenna coil trimmer cond. for max. output. Repeak oscl. coil trim cond.

2. Tuning range after alignment 535 - 1640 Kc/s.

3. Refit plastic mount plate with receiver attached to the cabinet.

SERVICE INSTRUCTIONS—mechanical

1. ## TO OPEN BASE SECTION OF CABINET

A. Open lid of cabinet by pressing two lid release buttons one located on each side of the cabinet.

B. Place pick-up arm on rest pillar and secure it to rest pillar wire spring clip attached to rest pillar.

C. Unscrew and remove two screws located near edge of cabinet between control knobs. The other located near edge of cabinet close to speaker grille.

D. Close lid and turn cabinet completely over then open base lid section of cabinet.

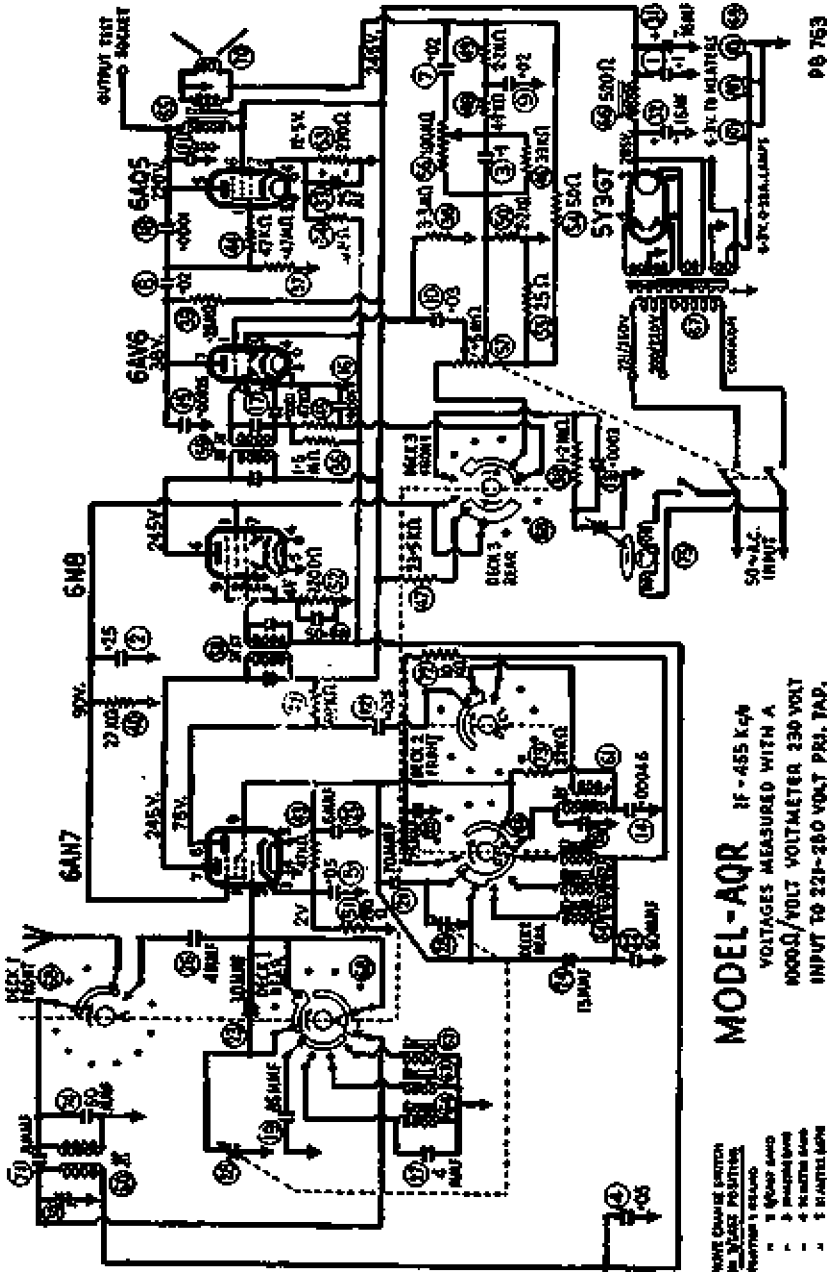
2. ## TO REMOVE TURNTABLE FROM RECORD PLAYER UNIT

A. Open the base section of cabinet as detailed in para. 1.

B. The base end of the turntable spindle fits into a three point mount die-cast housing. On the side of this housing is a leaf spring the free end of which fits into a groove in the turntable centre boss. This prevents the turntable sliding off the spindle when the unit is inverted.

C. To release the turntable to allow it to slide off the spindle insert a screwdriver between the housing and the spring then lever the spring slightly outward.

D. When the spring has been disengaged from the turntable open the top lid and remove turntable from interior of cabinet.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

Bulletin: AQR-1.
File. Receivers AC.
Date: 22-3-55.
1.

MODEL AQR

GRAMO-RADIO COMBINATION

An automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts.-approx.
Grame Operation:- 75 Watts.-approx.

TUNING RANGES:—		RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.		560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.)

THIS BULLETIN CONTAINS:—

Alignment Instructions.
Circuit Diagram.

Connections for IF. and RF. Transformers.
Dial Drive Cording Diagram.
Valve Placement Diagram.
Instructions for Changing Mains Input Voltage Tap.
Instructions for Removing Chassis from Cabinet.
Chassis Serial Number.

VALVE PLACEMENT DIAGRAM 1063/279

ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load Impedance:	5,000 ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor.	Intermed. Freq.:	455 Kc/s.
Dummy Antenna:	400 Ohm non-inductive resister.	Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Alignment Tools:	Type M195 and PM581.	Tone Control:	Treble position.

To Remove Chassis from Cabinet— Removecover board from rear of cabinet by unscrewing the screws fastening it to the cabinet, then remove the four push-on control knobs. Unplug the pick-up lead plugs from small sockets beneath gramo motor, the cabinet base indicator lamp lead plug from small socket on chassis and the speaker lead plug from R.H. end of chassis. Disconnect receiver AC. mains leads from AC. lead junction block. Unsolder from spring tension arm the earth braid connected to chassis. Release clip on tension spring at rear side edge of cabinet, then release tension arm. Fully open record compartment door and place a piece of cloth over top of the door. Remove screws and bracket at top rear edge of dial panel, then lower receiver panel door down to rest on top of record compartment door. Unscrew wood screw in bracket which is central on rear edge of chassis, also a 6/32" machine screw from bottom of bracket at each end of chassis, then lift chassis out of the cabinet. After alignment the chassis is refitted to the cabinet in the reverse procedure to removing it.

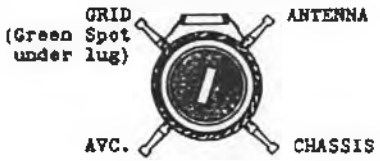
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	To control grid of 6N8 I.F. valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.			
5.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil induct-ance trim (iron core) for max. output.
6.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial read-ing. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
7.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil. ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the industance trimmer (iron core) of both of these trans-formers has been peaked for max. output.
8.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial read-ing. Adjust oscl. coil trim condenser for logging and repeak antenna trans. trim. condenser for max. output.
9.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
10.	To antenna lead from receiver.	9.6 Mc/s.	400 ohm non-inductive resister.	Turn dial pointer and cond. gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil ind. trim. (iron core) for logging and peak 31 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
11.	To antenna lead from receiver.	11.8 Mc/s.	400 ohm non-inductive resister.	Turn wave change switch to 25 metre band. Turn dial pointer and cond. gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging and peak 25 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna lead from receiver.	15.2 Mc/s.	400 ohm non-inductive resister.	Turn wave change switch to 19 metre band. Turn dial pointer and cond. gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging and peak 19 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
13.	Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.			

31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

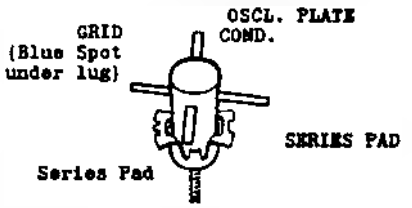
CONTROL KNOBS

	All cabinets except Mahogany	Mahogany
Tuning	17/779-3	17/779-7
Volume	17/779-2	17/779-6
Tone	17/779	17/779-4
Wave Change	167/81	167/81-2
Control Knob Spring Clips	22/755	22/755

ANTENNA TRANS.



OSCL. COIL



19, 25 AND 31 METRE ANT. TRANS.

Lead from top lug (iron core end):- GRID.

Lead from bottom lug (mounting end):- CHASSIS - EARTH.

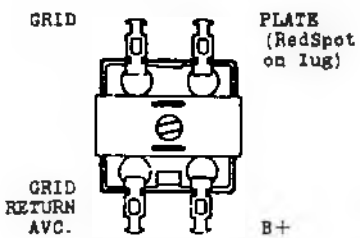
19, 25 AND 31 METRE OSCL. COIL

Lead from top lug (iron core end):- GRID.

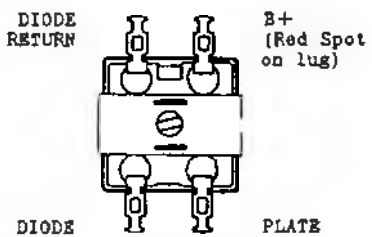
Lead from bottom lug (mounting end):- OSCL. PLATE COND.

31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.



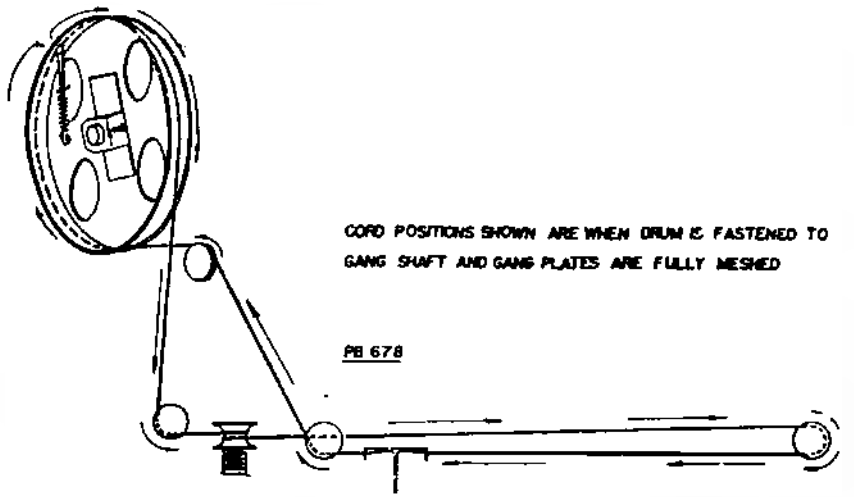
CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 8 ins., which includes about 8 ins. to spare for tying to tension spring.

Cord Part No. 34/754.

Tension Spring Part No. 27/87.

NOTE:- 1 turn shown around drive spindle changed to 2 turns.



INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.-The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.-For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove chassis from cabinet as detailed on page 2. The mains lead wire from the switch on the volume control which is attached to the 221-250 V. tap on the mains terminal strip is to be unsoldered from the 221-250 V. tap and re-soldered to the 200-220 V. tap. Refit chassis to cabinet in exact reverse procedure to removing it.

CHASSIS SERIAL NUMBER

The serial number is stamped into the top edge of the metal chassis near the power transformer and is visible from the rear of the cabinet when the cover board is removed.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL AQS

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

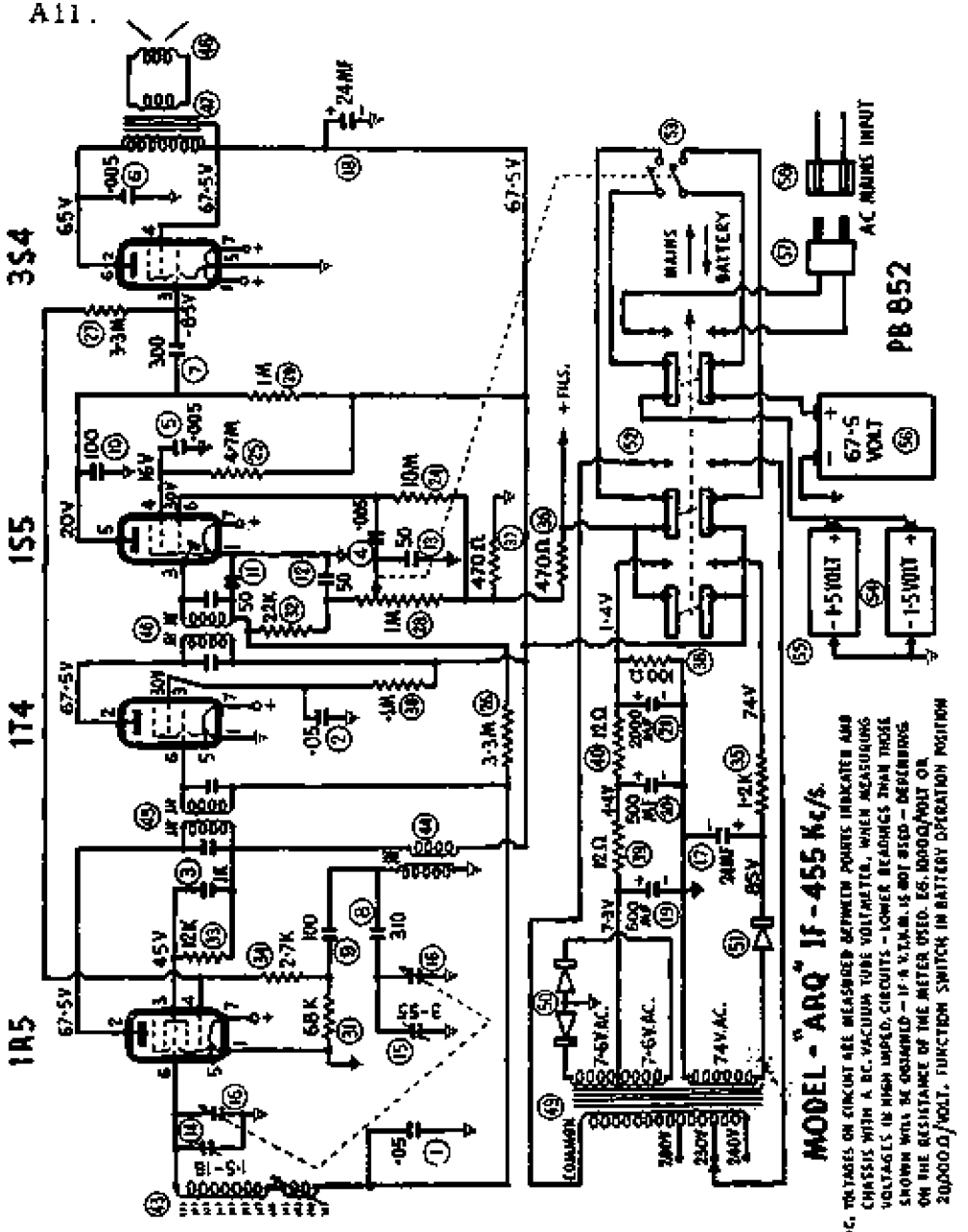
Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

TUNING RANGES:—	**RECEIVER COVERAGE:—**
Broadcast Band, 535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)	**25.86-24.79 Metres (approx.)**
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s. (Bandspread)	50.42-48.0 Metres (approx.)

THE GRAMO-RADIO COMBINATION MODEL "AQS" IS A MODEL ''HQR'' RECEIVER CHASSIS FITTED INTO A DIFFERENT TYPE CABINET. EXCEPT FOR THE PARTS LISTED BELOW WHICH ARE REQUIRED FOR FITTING TO THE DIFFERENT CABINET, ALL REFERENCE FOR ALIGNMENT PROCEDURE, CIRCUIT DIAGRAM AND PARTS LIST SHOULD BE MADE TO THE MODEL ''HQR'' SERVICE BULLETIN SHEETS.

Chassis to cabinet mount screws 1" x 5/32" Csk. Hd. Flor. Bronze	17/560-36
Cup Washer - Flor.Bronze	269/250
Dial Reading	35/816-4
Cabinet	279/221

A11.



MODEL "ARQ" SPORTSTER

AC. or BATTERY OPERATED 4 VALVE SUPERHETERODYNE

MIDGET PORTABLE RECEIVER

FOR OPERATION FROM:

AC. MAINS 50 CYCLE. 200 Volt, 230 Volt or 240 Volt (Power trans. T137).
AC. MAINS 40 CYCLE. 230 Volt or 250 Volt (Power trans. T145).
BATTERY OPERATION. 1.5 Volts "A" Battery (two 1.5 volt torch cells in parallel) and 67.5 volts "B" Battery.

POWER CONSUMPTION: AC. OPERATION

200 Volt 50 cycle AC. mains input to trans. (T137)	200 Volt tap.	37mA.
230 " " " " " " " " "	230 " "	32mA.
240 " " " " " " " " "	240 " "	32mA.
230 Volt 40 cycle AC. mains input to trans. (T145)	230 Volt tap.	34mA.
250 " " " " " " " " "	250 " "	32mA.

POWER CONSUMPTION: BATTERY OPERATION

"A" Battery 250 mA.
"B" Battery 10 mA. (no signal).

TUNING RANGE:

535 to 1810 Kilocycles. 560.7 to 186.3 Metres.

POWER OUTPUT:

180 milliwatts (max.).
100 milliwatts (undistorted).

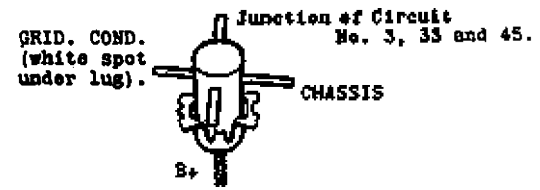
ROD AERIAL CONNECTIONS:

Fixed Winding: Lead from end turn furthest from movable winding—GRID.

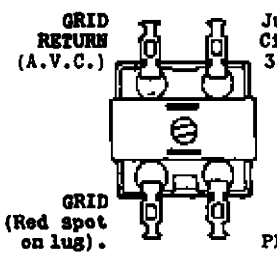
Movable Winding: Lead from end turn furthest from fixed winding—AVC.

The adjacent end turn leads of both windings are joined together as shown on the circuit diagram.

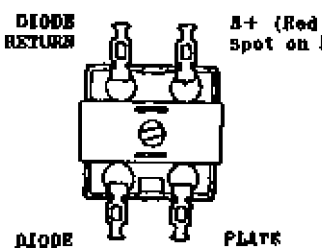
OSCL. COIL



No. 1 I.F. TRANS.



No. 2 I.F. TRANS.



ALIGNMENT INSTRUCTIONS

EQUIPMENT

Signal Generator:
Output meter:
Mica Capacitor: 0.01 MF (P/No. PC145) for IFT Alignment.
Straight Alignment Tool P/No. PM581.
Flexible Alignment Tool P/No. 48/712.

ALIGNMENT CONDITIONS

Load impedance: 5,000 ohms.
Output level: 6 milliwatts.
Volume control: Max. volume (fully clockwise).
''A'' battery 1.5 volts.
''B'' battery 67.5 volts.
I.F. frequency 455 Kc/s.

IF. TRANS. ALIGNMENT

The receiver chassis has to be removed from the leather case to align the I.F. transformers.

A. Remove tuning, volume and mains/battery push-on type knobs (a piece of thin cord in the form of a loop slid under the knob and pulled from the front is a convenient means of removing push-on type knobs.
B. Unclip three press stud fasteners at base of leather case.
C. Turn tuning condenser shaft until cond. plates are fully meshed.
D. Remove screw and nut fastening front of leather case to chassis. The screw and nut are situated approx. one inch above tuning condenser shaft.
E. Remove screw and nut fastening chassis bracket to centre of base of leather case.
F. Lift end of chassis furthest from speaker then withdraw chassis from leather case.
G. Remove ''A'' batteries, prise up lugs fastening battery box, then lift off batt. box.
H. Unfasten nut fastening corner of mount plate, then lift mount plate.

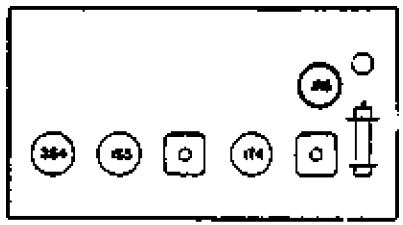
Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 1T4 valve (pin No. 6)	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IFT pri. and sec. for max. output.
2.	To signal grid of 1R5 valve (pin No. 6).	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 1st IFT pri. and sec. for max. output.
3.				Repeat operations Nos. 1 and 2.

BROADCAST ALIGNMENT:

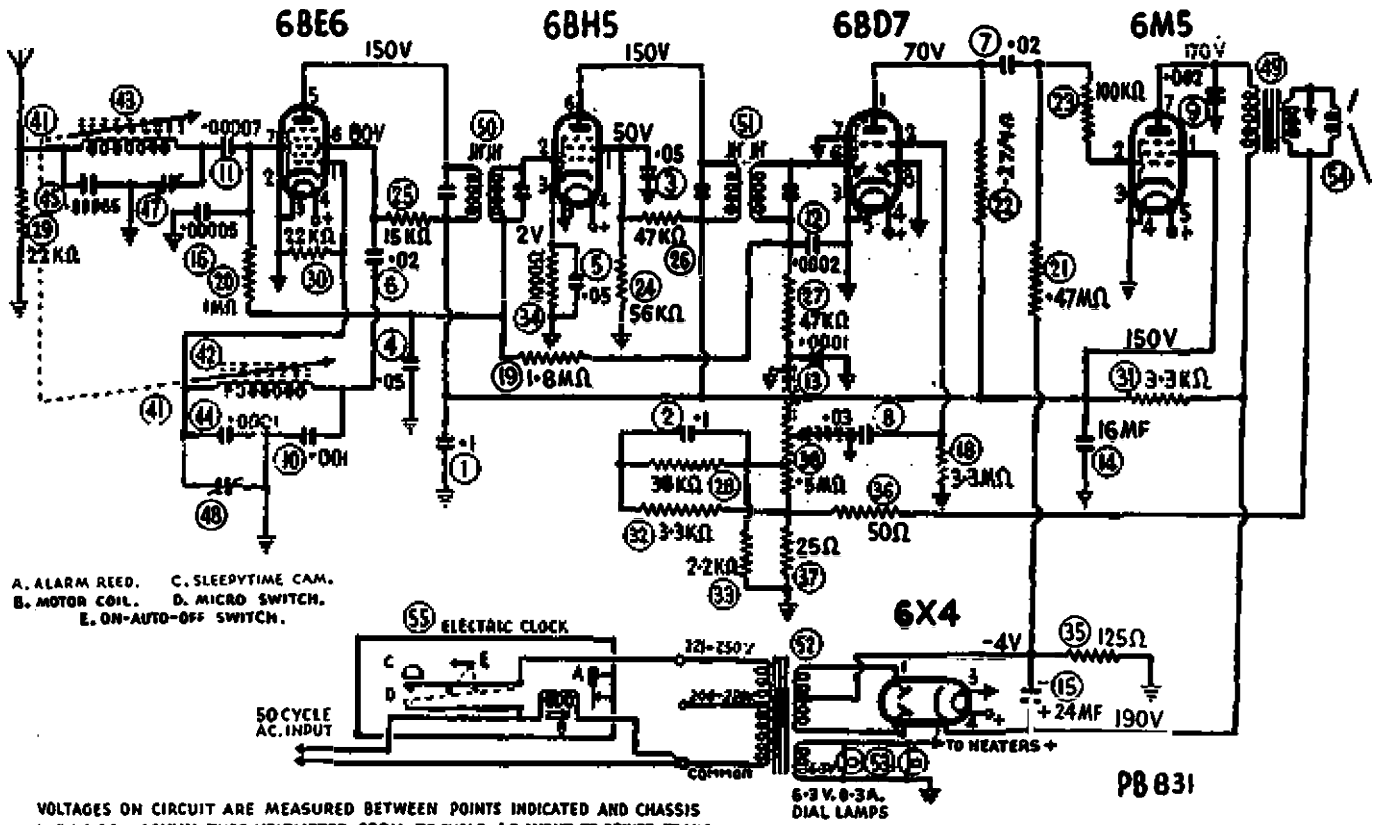
A. Refit receiver chassis to leather case.
B. Refit tuning knob.
C. TUNING KNOB POINTER SETTING: Fully mesh condenser gang plates and set centre of tuning knob pointer on centre of end of travel spot on the leather case beneath the numerals ''55.'' The three screws which fasten the chassis to the front of the condenser gang when loosened off allow the cond. gang to be moved to align the dial knob pointer to the end of travel spot. The receiver chassis has to be removed from the leather case to loosen the screws and move the cond. gang.
D. To inject a signal into the receiver rod aerial, connect to the active terminal of the signal generator approximately 2 ft. of aerial wire, then fashion the wire into a vertical position.
E. Place receiver chassis so that ferrite rod aerial is uppermost and horizontal, and so that the fixed secondary winding end of the ferrite rod points to the 2 ft. of vertical aerial wire. A distance of not less than 1 ft. is to be between the end of the ferrite rod and the 2 ft. of vertical aerial wire attached to the signal generator.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. D. and E.	600 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer aligns with centre of 600 Kc/s. spot on dial. Leave cond. gang and tuning knob pointer set in this position, then peak the oscl. coil ind. trim. (iron core) for max. output. Also peak the movable winding on the ferrite rod for max. output.
2.	Refer para. D. and E.	1470 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 1470 Kc/s. dial mark. Adjust osc. trim. cond. for logging and peak ferrite rod aerial trimmer condenser for max. output.
3.	Refer para. D. and E.	600 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 600 Kc/s. dial mark. Leave the cond. gang and tuning knob pointer set in this position. Repeak osc. coil ind. trim. (iron core) and the movable winding on the ferrite rod. Do not rock cond. gang to and fro through the signal while adjusting the trimmers or move the tuning knob pointer off 600 Kc/s. dial mark until after the trimmers have been adjusted for max. output.
4.	Refer para. D. and E.	1470 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 1470 Kc/s. dial mark. Adjust osc. coil trim. cond. for logging and peak ferrite rod aerial trim. condenser for max. output.

Tuning range after alignment 535 to 1610 Kc/s.



VALVE PLACEMENT DIAGRAM #17/279

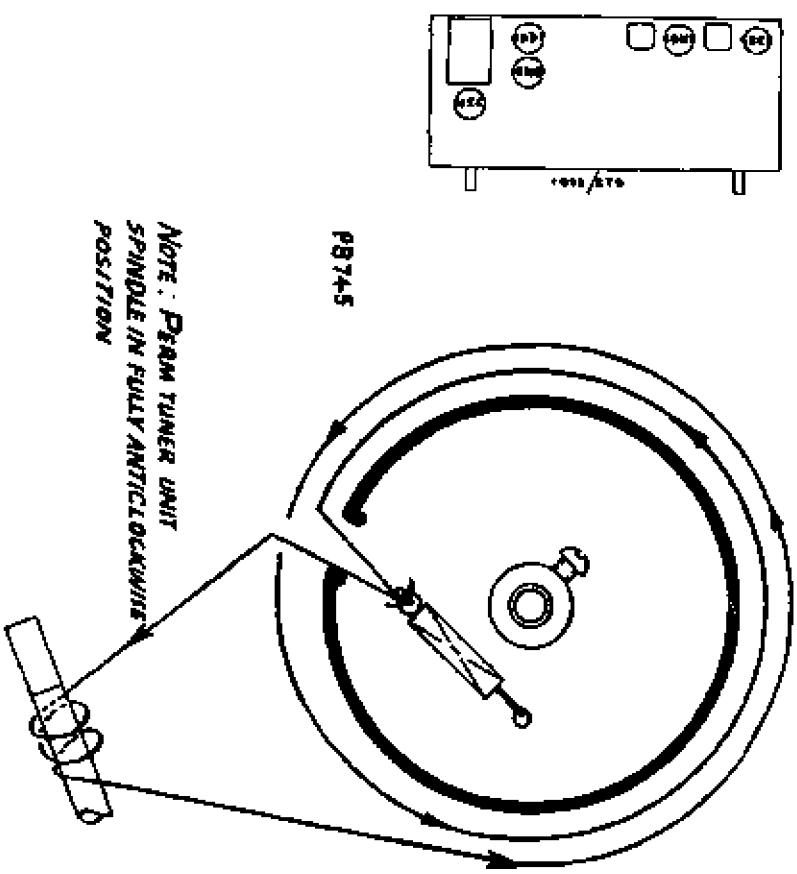


PB 831

VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 230V. 50 CYCLE AC INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED DEPENDING ON THE RESISTANCE OF THE METER E.G: 1000Ω/VOLT OR 20,000Ω/VOLT

IF. – 455 Kc/s.

MANTEL MODEL "ASQ" CLOCK RADIO



PB 745

DIAL DRIVE CORDING

The length of dial cord required is 3 ft. 6 ins. which includes 9 ins. spare for tying to the tension spring.

	Part No.
Dial cord	34/754
Dial spring	" " 508/30C
Dial drum	" " 18/785
Brass collar	" " 56/678

MANTEL MODEL "ASQ" CLOCK RADIO

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter :
Mica Capacitor : 0.01MF (for I.F. trans. alignment)
Dummy Antenna : 200 MMF. Mica Capacitor
Alignment Tool : Type M195

ALIGNMENT CONDITIONS

Load Impedance: 7000 ohms, output meter connected across spkr. trans. primary.
3.5 ohms, output meter connected across spkr. trans. secondary.
Output Level : 50 Milliwatts
Vol. Control: Max. vol. fully clockwise
Intermed. Freq.: 455 Kc/s.
Input Voltage : 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Dummy Antenna: The 200MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment, if it is connected it should be rolled up into a small hank.

ALIGNMENT: The I.F. transformer variable iron cores are accessible when the rear section of the cabinet is removed from the front section.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver from cabinet as detailed on page 5.			
2.	To signal grid of 6BH5 valve (pin No. 2)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm tuner so that iron cores are fully out of windings on coil formers. Peak 1st IF trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 and 3.
5.	Turn perm. tuner so that the iron cores are fully out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the end of travel spot on the dial reading near 1700 Kc/s.			
6.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim. cond.
7.	Tuning range after alignment 535 - 1640 Kc/s.			
8.	Check logging at each end of the dial; then refit rear section of the cabinet.			

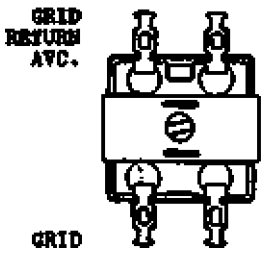
NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the former, when the unit is turned fully anti-clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAP FOR 200-220 VOLT OPERATION

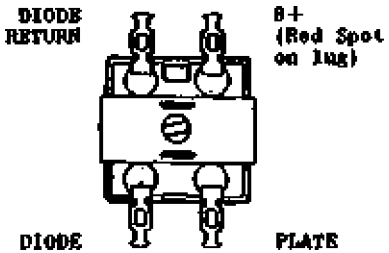
MAINS VOLTAGE: The mains voltage adjustment tap should be adjusted as follows: For any A.C. voltage between 200V. and 220V. on the 200-220V. tap and for any A.C. voltage between 221V. and 250V. on the 221-250V. tap.

A. The receiver chassis does not have to be removed from the cabinet for this adjustment.
B. Switch the receiver off and DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.
C. Unscrew and remove the self tapping screw and washer from each of the four corners of the rear section of the cabinet.
D. Prise rear section of cabinet away from front section.
E. The transformer primary mains tap terminal strip is located on the top right hand end of the chassis.
F. The lead from the electric clock which is soldered to the 221-250 volt tap is to be unsoldered and resoldered to the tap terminal marked 200-220 volt.

1st IF. TRANS.



2nd IF. TRANS.



ANTENNA TRANS.
Start of winding - furthest from mounting end - Antenna.
Finish of winding - nearest to mounting end - Grid.

OSCL. COIL
Start of winding - furthest from mounting end - Junction of circuit Nos. 6 and 10.
Finish of winding - nearest to mounting end - Oscl. grid.

POWER TRANS.
(PT938) 50 cycle
Pri. red lead - common
,, green lead - 200-220V.
,, black lead - 221-250V.

HT. Sec.
blue lead - start
yellow lead - centre tap
blue lead - finish

LT. Sec. (two windings in parallel)
start and finish in winding wire

A13.

MODEL "AST"
AUDIO AMPLIFIER

POWER OUTPUT:

1 Watt

FOR OPERATION FROM:

200-240 Volt 50 cycle AC. Mains (Power Transformer PT962)
Power trans. Primary Tap, 'C' common.
" " " " 200 Volt mains.
" " " " 230 & 240 Volt mains.

230-250 Volt 40 or 50 cycle AC. Mains (Power transformer PT963)
Power trans. Primary Tap, 'C' common.
" " " "
" " " " 230 Volt mains.
" " " " 250 Volt mains.

POWER CONSUMPTION:

30 Watts approx.

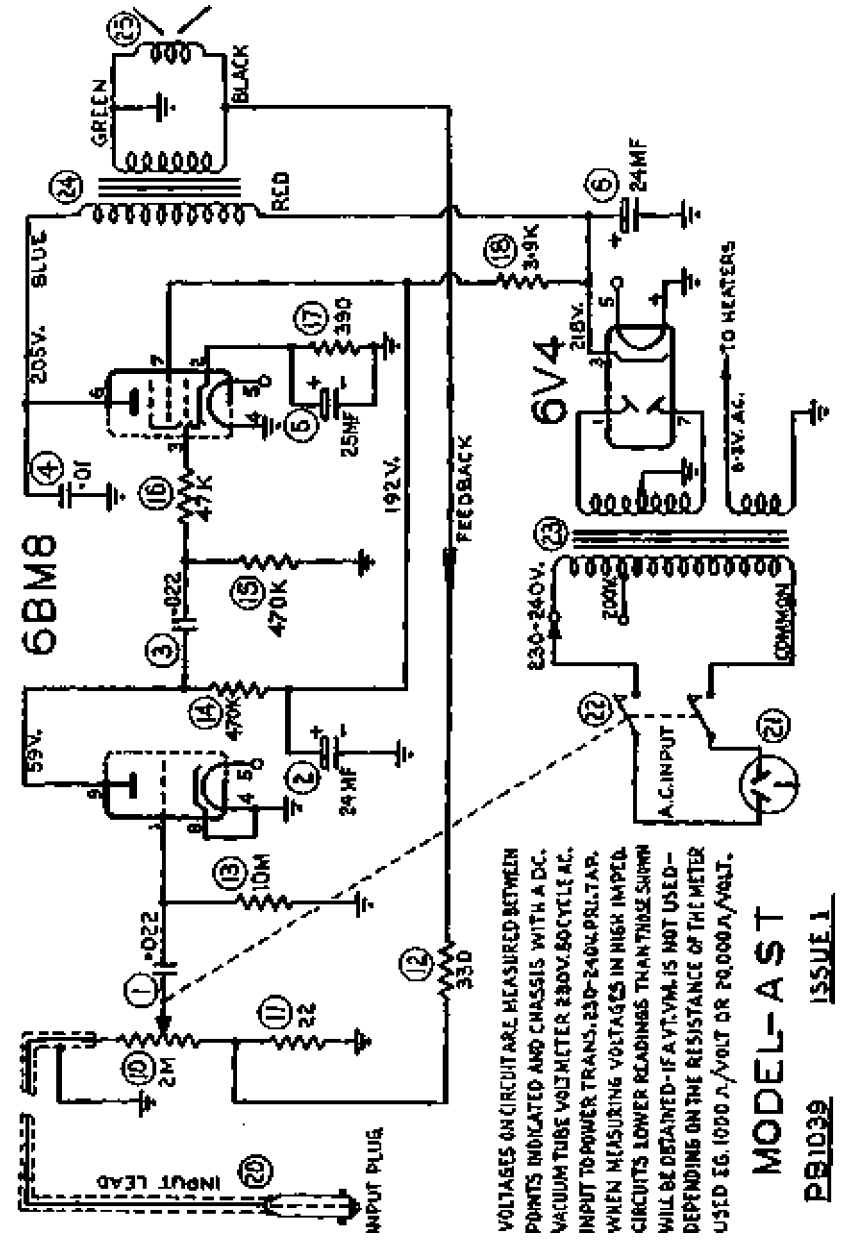
SERVICE INSTRUCTIONS (ELECTRICAL)

EQUIPMENT:

Audio Signal Generator
Output Meter

TEST CONDITIONS:

Volume Control:		maximum (fully clockwise)
Audio Signal Generator	:	1000 CPS
Signal Generator Output	:	0.1 Volt.
Output Meter	:	4 Ohms impedance Connected across secondary winding of output transformer. (Speaker voide coil disconnected.)
Mains Input Voltage	:	230 Volts 50 cycle AC. input to power transformer 230-240 Volt primary tap.



AUDIO AMPLIFIER GAIN TEST:

The amplifier chassis does not have to be removed from the cabinet to check the overall gain of the amplifier.

IMPORTANT: Before disconnecting leads from speaker voice coil terminals, note the lead colours to ensure correct phasing of the speaker when the leads are reconnected.

A. Set frequency of audio generator to 1000 cycles.

B. Adjust output level of generator to 0.1 Volt.

C. Disconnect leads from voice coil terminals on speaker.

D. Connect output meter across secondary of output transformer.

E. Connect audio signal generator output lead to input plug on free end of amplifier input lead.

1. Generator output lead 'active' to amplifier lead plug centre contact.
2. Generator output lead 'non-active' to amplifier lead plug metal casing.

F. Turn ON/OFF switch - volume control fully clockwise.

G. With a signal input of 0.1 Volt applied to amplifier input, the output meter should indicate a minimum of 600 milliwatts output. (4 Ohms impedance, output meter across transformer secondary, speaker voice coil disconnected.)

STEREOPHONIC REPRODUCTION AND SPEAKER PHASING:

STEREOPHONIC REPRODUCTION: The Model 'AST' amplifier/speaker unit may be connected to a gramo/audio amplifier for Stereophonic reproduction provided the gramo/audio amplifier incorporates a Stereo cartridge in the pick-up head and has the leads from the Stereo cartridge connected to the channels as detailed below.

A. The output lead from one channel connected to the input of the audio amplifier in the gramo/audio amplifier unit.

B. The output lead from the other channel connected to a socket situated somewhere on the gramo/amplifier cabinet. Into this socket is inserted the plug on the end of the input lead from the Model 'AST'.

SPEAKER PHASING: When Model 'AST' audio amplifier unit is connected to a gramo/audio amplifier for Stereophonic reproduction, it is essential that the speakers in both units be phased correctly.

A method used for checking the phasing of the speakers is detailed in the following paragraphs.

1. Connect the plug on the end of the amplifier input lead of the Model 'AST' to the Stereo channel socket of the gramo/audio amplifier.

2. Place the Model 'AST' cabinet approx. four feet to one side in line with the speaker cabinet of the gramo/audio amplifier.

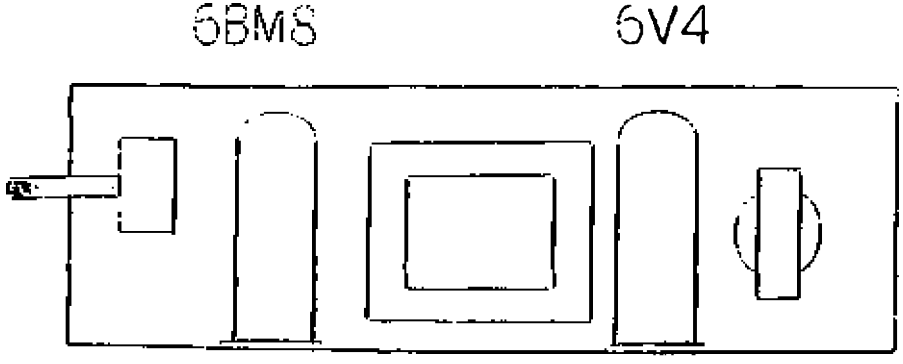
3. Play a monophonic record and accurately adjust the output of each speaker to the same volume.

4. To conduct the following test the listener should be located in a position midway between the speaker cabinets and approx. four feet away in front.

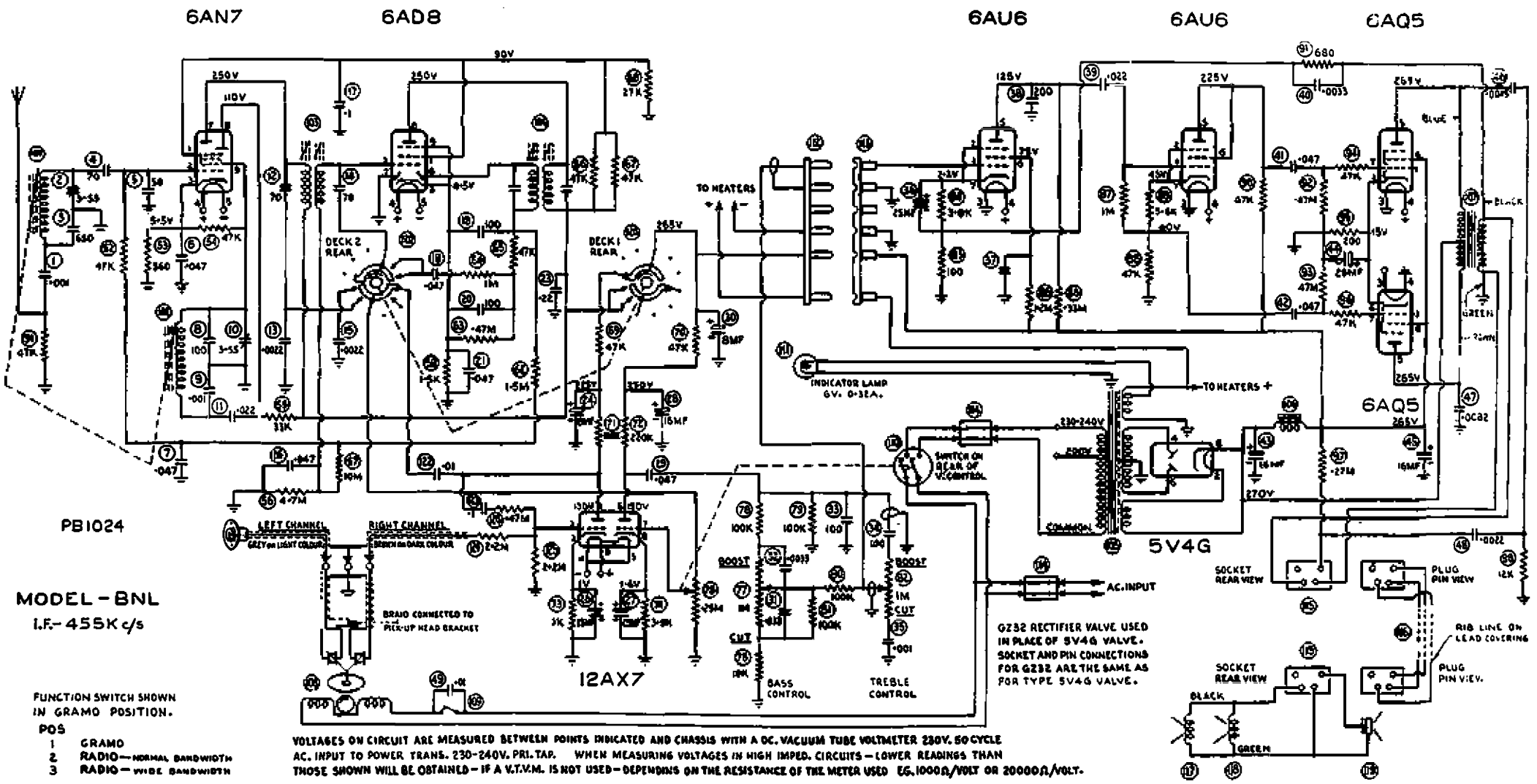
5. If the phasing is correct the reproduced sound will appear to be radiated from a point midway between the two speakers.

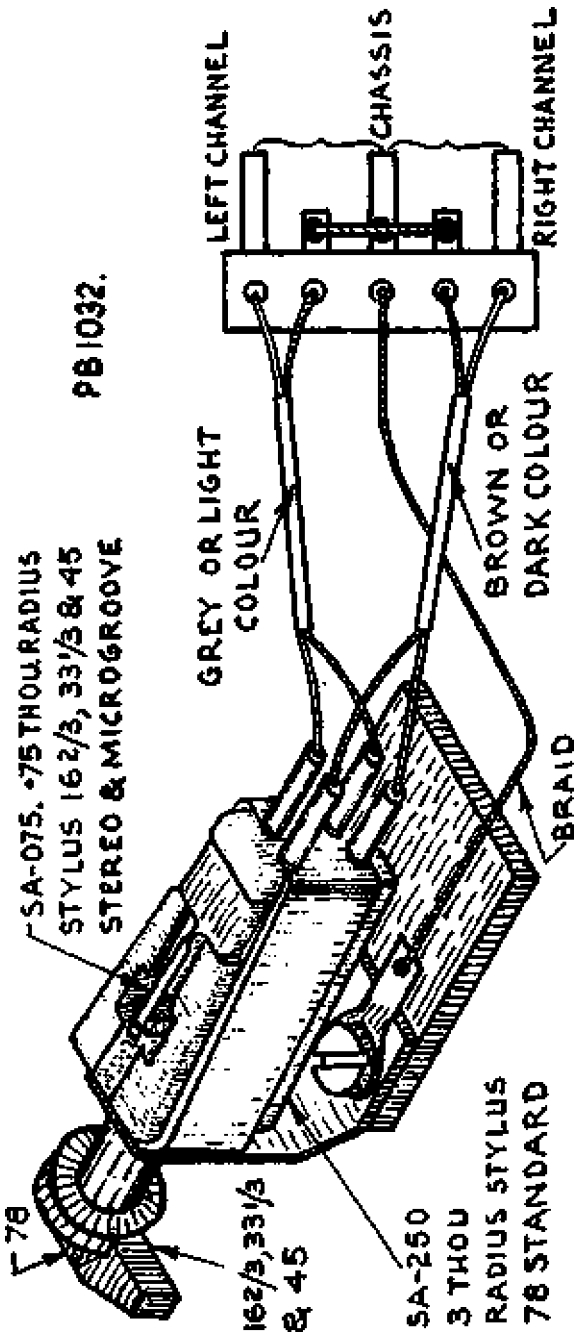
6. With incorrect phasing the quality of reproduction will be poor, it will appear to be lacking in bass response and will appear to be radiated from both speakers.

7. If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of the speaker of the Model 'AST' then repeat the test detailed above.



ASTOR MODEL BNL.





RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL — BNL

TWO UNIT GRAMO-RADIO COMBINATION

The Model 'BNL' is a Model 'ANL' two unit gramo-radio combination which has been modified so that it may be used with an additional amplifier/speaker unit for Stereophonic reproduction.

Except for the modifications detailed below, the hardware listed on page 2 and the circuit diagram attached, all reference is to be made to Model 'ANL' Service data bulletin 'ANL-1' for service instructions, alignment procedure and component parts list.

A. The four speed record changer unit part No. M439 has been changed to a four speed record changer part No. M497 which has a stereo cartridge in the head of the pick-up arm.

B. The left channel lead from the stereo cartridge is wired to a socket located on the rear of the receiver cabinet.

C. The right channel lead from the stereo cartridge is wired to the 2.2 megohm series input resistor circuit No. 124.

The end of the input lead (lead approx. 18 ft.) from the additional amplifier/speaker unit is inserted into the channel outlet socket at the rear of the cabinet.

The ON/OFF supply mains switch, tone controls and volume control on Model 'BNL' function only on the Model 'BNL'.

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load impedance	7,000 Ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. trans. alignment)	Vol. Control:	Max. Vol. Fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor	Intermed. Freq.:	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 volt pri. tap.
Alignment Tools:	Type M195 and PM581	Tone Control	Treble position.

IF. TRANS. ALIGNMENT.

NOTE:

The front section of the cabinet with the receiver chassis attached may be removed from the cabinet as a complete unit.

It is necessary to remove this section of the cabinet with receiver attached to make adjustments to the IF. transformer iron cores. It is not required to be removed for adjustment to the tuning unit trimmer condensers.

Removal instructions for front section of cabinet are detailed on the concluding pages of this bulletin.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6BH5 I.F. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn gramo-radio switch to radio position. Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To signal grid of 6BE6 valve pin No. 7	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn perm. tuner so that iron cores are fully out of winding and the unit is hard against the stop. Leave grid wire attached to valve socket. Peak 1st. I.F. trans. pri. and sec. for max. output.
3.				Repeat operations 1 and 2.

4. Refit front section of cabinet with receiver chassis attached to main section of cabinet.

MAINS VOLTAGE TAP ADJUSTMENT FOR OPERATION ON 200 VOLT MAINS

The receiver chassis has to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET AND REMOVE THE FRONT SECTION OF THE CABINET (TO WHICH THE RECEIVER CHASSIS IS ATTACHED) FROM THE MAIN SECTION OF THE CABINET AS DETAILED IN THIS BULLETIN. The mains junction strip is on top of the chassis between the power transformer and the chassis front plate. To gain access to junction strip remove the push-on type knobs, unsolder the leads attached to speaker then remove the two screws fastening the chassis to the front plate. The lead from the volume control switch which is connected to the 230-240 volt tap is to be unsoldered from the 230-240 volt tap and then re-soldered to the 200 volt tap.

TRANSFORMER CONNECTIONS

ANTENNA COIL

Start of winding - furthest from mounting end - ANTENNA
Finish of winding- nearest to mounting end. - GRID

OSCL. COIL

Start of winding - furthest from mounting end - JUNCTION OF CIRCUIT NO. 2 & 6
Finish of winding- nearest to mounting end - OSCL. GRID.

POWER TRANSFORMER (Part No. T171)

PRIMARY:

Red lead	common
Green lead	200 volt mains tap
Black lead	230 & 240 volt mains tap.

HT. SECONDARY:

Blue	start
Yellow	centre tap
Blue	finish

Electro-static shield joined internally to centre tap of H.T. secondary.

LT. SECONDARY

Start and finish in winding wire.

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TECHNICAL BULLETIN

Bulletin: BNM-1
File: Receivers AC.
Date: 8.7.58
Page: 1

TABLEGRAM MODEL — BNM

An Automatic 4 Speed Record Changer (78, 45, 33-1/3, 16-2/3, r.p.m) and a 5 valve Superheterodyne Broadcast Band Receiver.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T??1)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

NOTE: 1

When the receiver is to be operated from a 250 volt 40 or 50 cycle AC. supply mains the transformer primary connections are as for the 240 volt supply mains but a 180 Ohm 10 watt resistor Part No. R166 is to be mounted beneath the chassis and wired in the power trans. common lead (red.)

NOTE:2

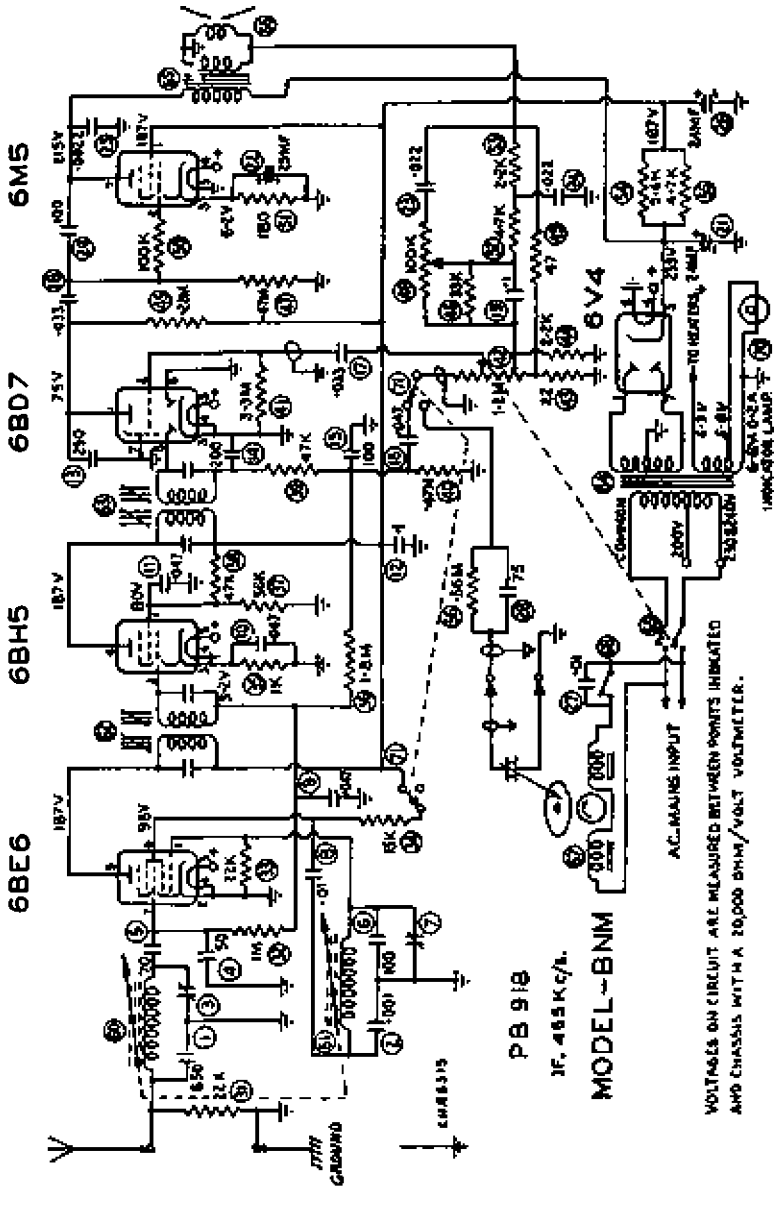
The record changer drive pulley for 40 cycle mains operation is Part No. 846/524.

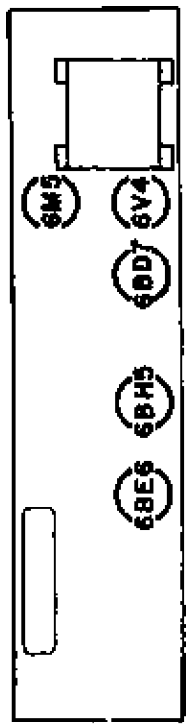
POWER CONSUMPTION:

Radio Operation:- 40 Watts-approx.
Gramo Operation:- 60 Watts-approx.

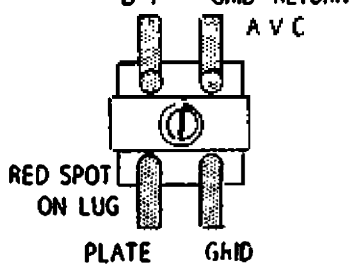
TUNING RANGE:

Broadcast Band: 535-1640 Kc/s. - 560.7-182.9 Metres.

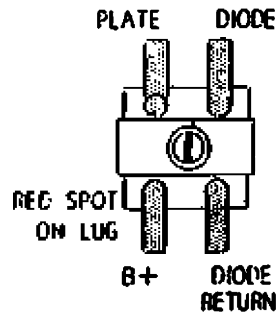




1ST I.F. TRANS.



2ND I.F. TRANS.



A16.

MODEL BNP

6 VALVE SUPERHETERODYNE 5 BAND PORTABLE RECEIVER

POR OPERATION FROM:

1.5 Volts "A" Battery
and
90 Volts "B" Battery (two 45 volt "B" Batteries in series)

CURRENT CONSUMPTION:

"A" Battery 350 milliamps.
"B" Battery 12.5 milliamps (no signal)

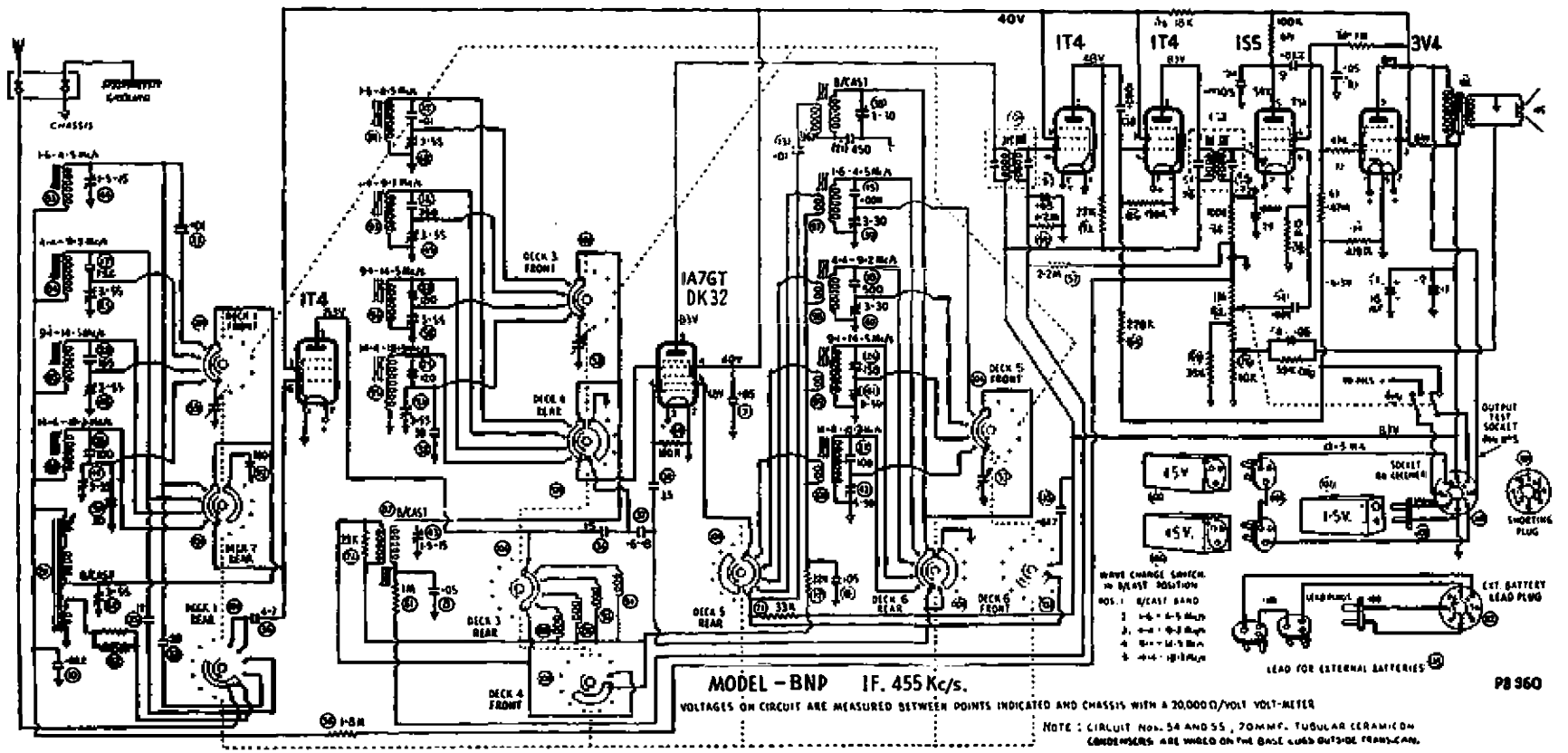
POWER OUTPUT:

250 Milliwatts - max.
100 Milliwatts - undistorted.

INTERMEDIATE FREQUENCY: 455 Kc/s.

TUNING RANGES:

Broadcast Band:-	535 - 1610 Kc/s.	560.7 - 186.3 Metres.	
Shortwave Tuning Ranges	1.6-4.5 Mc/s.	187.5-66.66	Metres
	4.4-9.2 Mc/s.	68.18-32.60	Metres
	9.1-14.5 Mc/s.	32.96-20.68	Metres
	14.4-18.3 Mc/s.	20.83-16.39	Metres



ALIGNMENT INSTRUCTIONS.

EQUIPMENT:		ALIGNMENT CONDITIONS:	
Signal generator:		Load Impedance:	10,000 Ohms
Output Meter:	:	Output Level :	25 milliwatts
Alignment tools :	Part No. M195 & PM581	"A" Battery :	1.5 volts
Mica capacitor :	0.01 MF for IF. trans alignment	"B" Battery :	90 volts
Dummy Antenna :	400 ohm non-inductive resistor	Volume Control:	max. volume (fully clockwise)
Alignment Template:	Part No. PB832	Intermed. Freq:	455 Kc/s.

TO REMOVE CHASSIS FROM CABINET.

Pull push-on type tuning knob straight up off tuning spindle. Pull push-on type volume - on/off small knob straight up off vol. control spindle. With the aid of a spike release the spring clip fastening inside of wave change switch knob to volume control shaft.
Remove cabinet base by unscrewing the screws around the base of the cabinet. Remove cardboard battery packers and then the batteries. From the top of the cabinet, unscrew the screws fastening the dial.
Remove four screws fastening plastic legend plate to cabinet, then from top of cabinet unscrew and remove four countersunk screws which festen chassis to cabinet.
The chassis will now slide out of the cabinet.
Re-fitting the chassis to the cabinet is the exact reverse procedure to removing it.

IF. TRANSFORMER ALIGNMENT:

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fasten the dial reading off the cabinet on to the cardboard alignment template PB832 with $\frac{3}{8}$" x $\frac{1}{8}$" screws and nuts, then fit alignment template in position on top of chassis with the four screws which fasten the chassis to the cabinet. Fit control knobs on to control spindles.			
2.	To signal grid of 1T4 IF. valve (pin No.6)	455 Kc/s.	.01 MF mica capacitor in series with generator	Turn wave change switch to b/cast band position. Leave grid wire attached to valve socket. Peak 2nd IFT Pri. and sec. for max. output.
3.	To signal grid of 1A7GT valve	455 Kc/s.	.01 MF mica capacitor in series with generator	Turn cond. gang plates fully mesh. Leave grid wire attached to valve. Peak 1st IFT. pri. and sec. for max. output.
4.	Repeat operations Nos. 2 and 3.			

DIAL POINTER SETTING.

Fully mesh condenser gang plates and set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s.

BROADCAST BAND ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	To inject a signal into the receiver rod aerial for alignment of the broadcast band, connect to the active terminal of the signal generator output approx. 2 ft. of aerial wire, then fashion the wire into a vertical position.		
2.	Place receiver chassis with ferrite rod aerial attached so that the receiver dial is uppermost and the ferrite rod is horizontal and nearest to the operator. Move the chassis to a position so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator output, and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire. Place the "B" batteries in their respective positions at the ends of the chassis to provide the same amount of mass around the chassis as exists when fitted into the cabinet.		
3.	Refer. para. 1 and 2	600 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the b/cast band osc. coil inductance trim. (iron core) and the b/cast band RF. trans. ind. trim. (iron core) from the base end of the trans. also peak for max. output the sec. trimmer coil on the ferrite rod. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 600 Kc/s. dial mark until after the inductance trimmers and the rod trimmer coil have been peaked for max. output.

4.	Refer para. 1 and 2	1470 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on 1470 Kc/s. dial mark. Adjust b/cast band oscl. coil trim. cond. for logging and peak b/cast band RF. trans and ferrite rod trim. conds. for max. output.
5.	Repeat operations Nos 3 and 4.		

SHORT-WAVE BAND ALIGNMENT 1.6-4.5 Mc/s.

(This band is to be aligned before the higher frequency shortwave bands)

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To receiver external aerial & earth sockets	1.7 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 1.6-4.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond.gang and dial pointer set in this position and peak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 1.6-4.5 Mc/s. band antenna and RF. trans. ind. trim. (iron cores) for max. output.
2.	To receiver external aerial & earth sockets	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of, dial pointer is on 4.2 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF. trans. trim. cond. for max. output.
3.	To receiver external aerial & earth sockets	1.7 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position. Repeak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) then peak the 1.6-4.5 Mc/s. band antenna and RF. trans. ind. trim. (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 1.7 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial & earth sockets	4.2 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. mark on dial . Readjust 1.6-4.5 Mc/s. band oscl. coil trim cond. for logging, then repeak 1.6-4.5 Mc/s. band antenna and RF trans. trim condensers for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial & earth sockets	3 Mc/s.	400 ohm non-inductive resistor	Check tracking at 3 Mc/s.

SHORT-WAVE BAND ALIGNMENT 4.4-9.2 Mc/s.

1.	To receiver external aerial & earth sockets	4.5 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 4.4-9.2 Mc/s. band position Turn cond.gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. mark on dial. Leave cond. gang and dial pointer set in this position and peak the 4.4-9.2 Mc/s. band oscl. coil ind. trim. (iron core) and the 4.4-9.2 Mc/s. band antenna and RF trans. ind. trim (iron cores)for max. output.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
2.	To receiver external aerial & earth sockets	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Adjust 4.4-9.2 Mc/s. band oscl. coil trim.cond. for logging, then peak 4.4-9.2 Mc/s. band antenna and RF trans. trim condensers for max. output.
3.	To receiver external aerial & earth sockets	4.5 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s dial mark. Leave cond. gang and dial pointer set in this position. Repeak 4.4-9.2 Mc/s. band oscl. coil ind. trim. (iron core) then peak the 4.4-9.2 Mc/s. band antenna and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them off the 4.5 Mc/s dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial & earth sockets	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Readjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then, repeak 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output.
				Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers.
5.	To receiver external aerial & earth sockets	6.5 Mc/s.	400 ohm non-inductive resistor	Check tracking at 6.5 Mc/s.
				SHORT-WAVE BAND ALIGNMENT 9.1-14.5 Mc/s.
1.	To receiver external aerial & earth sockets	9.6 Mc/s.	400ohm non-inductive resistor	Turn wave change switch to 9.1-14.5 Mc/s. band. position Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band. oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF. trans. ind. trim. (iron cores) for max. output.
2.	To receiver external aerial & earth sockets	14.2 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. dial mark. Adjust 9.1-14.5 Mc/s band oscl. coil trim. cond. for logging, then peak 9.1-14.5 Mc/s. band antenna & RF. trans. trim. conds. for max. output.

ASTOR MODEL BNP.

Oper. No.	Generetor Connection	Generator Frequency	Dummy Antenna	Instructions
3.	To receiver external aerial & earth sockets	9.6 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 9.1-14.5 Mc/s. band oscl. coil. ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. Output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 9.6 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To receiver external aerial & earth sockets	14.2 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. mark on dial. Readjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then repeak 9.1-14.5 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock the cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial & earth sockets	11.8 Mc/s.	400 Ohm non-inductive resistor	Check tracking at 11.8 Mc/s.

SHORT-WAVE BAND ALIGNMENT 14.4-18.3 Mc/s.

Oper. No.	Generetor Connection	Generetor Frequency	Dummy Antenna	Instructions
1.	To external Aerial and earth sockets	15.2 Mc/s.	400 Ohm non-inductive resistor	Turn wave change switch to 14.4-18.3 Mc/s. band position Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak the 14.4-18.3 Mc/s. band oscl. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. output.
2.	To external aerial and earth sockets	18 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. dial mark. Adjust 14.4-18.3 Mc/s. band oscl. coil trim. cond. for logging, then peak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for. max. output.
3.	To external aerial and earth sockets	15.2 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 14.4-18.3 Mc/s. band oscl. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do no rock the cond. gang to and fro through the signal or move the dial pointer off 15.2 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
4.	To receiver external aerial and earth sockets	18 Mc/s.	400 Ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. mark on dial. Readjust 14.4-18.3 Mc/s. band oscl. trim. cond. for logging, then repeak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To receiver external aerial and earth sockets	16.2 Mc/s.	400 Ohm non-inductive resistor	Check tracking at 16.2 Mc/s.

6. Remove control knobs and alignment template from the chassis, then refit the chassis to the cabinet.

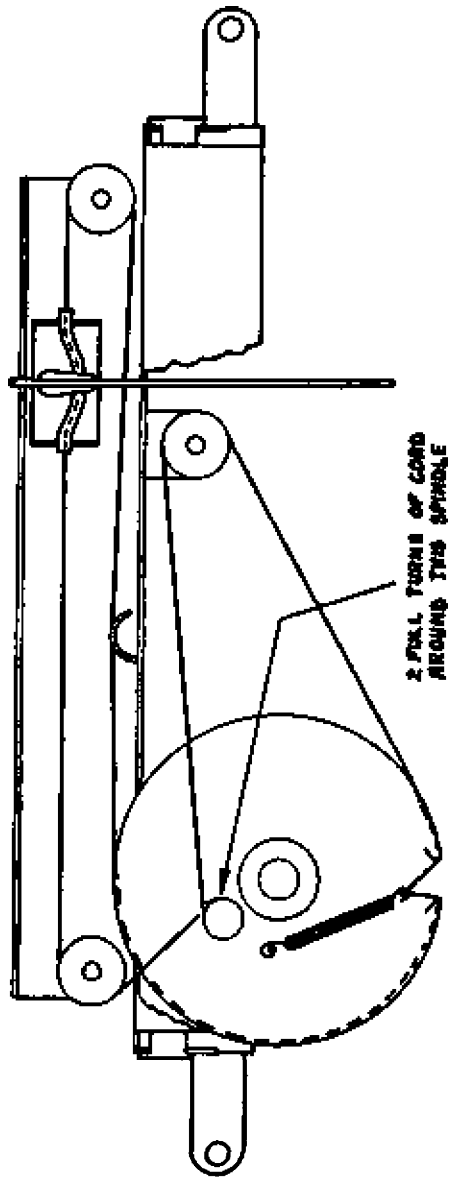
TUNING RANGE AFTER ALIGNMENT

TUNING RANGE AFTER ALIGNMENT

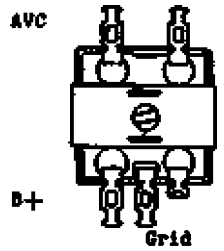
B/cast band	535 - 1610 Kc/s.
S/wave bands	1.6 - 4.5 Mc/s.
	4.4 - 9.2 Mc/s.
	9.1 - 14.5 Mc/s.
	14.4 - 18.3 Mc/s.

SHORT-WAVE COIL IDENTIFICATION SPOT COLOURS.

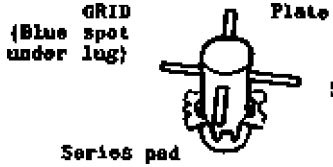
1.6 - 4.5 Mc/s.	band aerial	(L201)	RED & WHITE spots on iron core end of former.
"	RF	(L201)	RED & WHITE " " " " " " "
"	Oscl.	(L200)	RED spot " " " " " "
4.4 - 9.2 Mc/s.	band aerial	(PT913)	WHITE " " " " " " "
"	RF	(PT913)	WHITE " " " " " " "
"	Oscl.	(L202)	WHITE " " " " " " "
9.1 -14.5 Mc/s.	band aerial	(L204)	BLACK & WHITE spots on iron core end of former.
"	RF	(L204)	BLACK & WHITE " " " " " " "
"	Oscl.	(L203)	BLACK spot " " " " " "
14.4 -18.3 Mc/s.	band aerial	(L206)	YELLOW & WHITE spots " " " " " "
"	RF	(L206)	YELLOW & WHITE " " " " " " "
"	Oscl.	(L205)	YELLOW spot " " " " " "



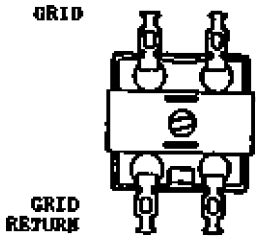
B/CAST. RF. TRANS.



B/CAST. OSCL. COIL



No. 1 IF. TRANS.



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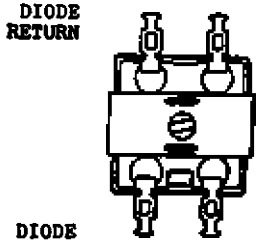


A17.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MANTEL MODEL "BNQ"

5 VALVE SUPERHETERODYNE BROADCAST RECEIVER

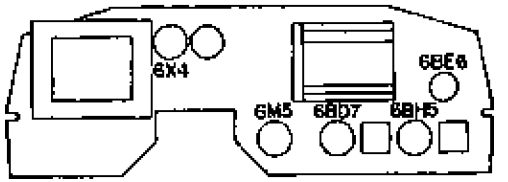
FOR OPERATION FROM:

200-240 Volt 50 Cycle AC. Supply Mains (Power Trans. PT962)
Trans. pri. taps-200V. mains and 230-240V. mains.
230-250 Volt 40 Cycle AC. Supply Mains (Power Trans. PT983)
Trans. pri. taps-230V. mains and 250V. mains.
Power Consumption 40 Watts (approx.)

TUNING RANGE:

535-1640 Kc/s. : 560.7-182.9 Metres.

THIS BULLETIN CONTAINS:



VALVE PLACEMENT DIAGRAM
1236/279

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:	
Output Meter:	
Mica Capacitor:	0.01MF (for I.F.T. alignment).
Dummy Antenna:	**200 MMF. Mica Capacitor.**
Alignment Tool	Type M195.

ALIGNMENT CONDITIONS

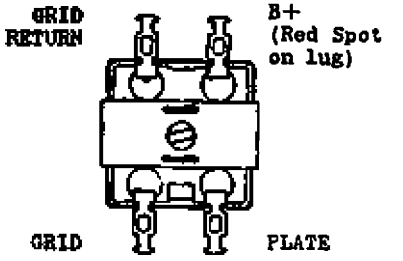
Load Impedance:	**7,000 ohms.**
Output Level:	**50 Milliwatts.**
Vol. Control:	Max. Vol. fully clock-wise.
Intermed. Freq.:	**455 Kc/s.**
Input Voltage:	230 Volts 50 Cycle A.C. **input to trans. 230V. pri. tap**
Tone Control:	**Treble position**

CLEANING AGENT FOR PLASTIC CABINET:

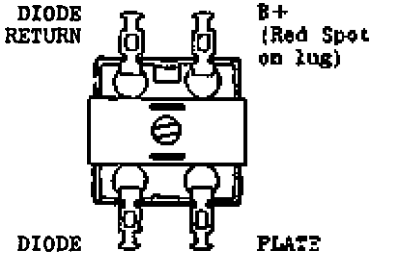
Do not polish the cabinet with an abrasive material or motor car polish, as permanent damage may result to the finish of the toughened polystyrene material of which the cabinet is made.

To restore the cabinet lustre, wipe the cabinet with a soft cloth dampened with water and lightly polish with PEPCO furniture polish.

1st IF. TRANS.



2nd IF. TRANS.



ANTENNA TRANS.:

Start of winding – furthest from mounting end – Antenna
Finish of winding – nearest to mounting end – Signal grid.

OSCL. COIL:

Start of winding – furthest from mounting end – Junction of circuit Nos 9 and 14
Finish of winding – nearest to mounting end – Oscl. grid.

POWER TRANS. (PT962) 50 cycle.

PRI.

Red lead-common.	leads
Green lead-200V.	changed
Black lead-230 & 240V.	to lugs

HT. SEC.

Blue lead-start.	leads
Yellow lead-centre tap.	changed
Blue lead-finish.	to lugs

LT. SEC. (two windings in parallel)
Start and finish in winding wire.

POWER TRANS. (PT983) 40 cycle.

PRI.

Red lead-common.	leads
Green lead-230V.	changed
Black lead-250V.	to lugs

HT. SEC.

Yellow lead-start.	leads
Blue lead-centre tap.	changed
Yellow lead-finish.	to lugs

LT. SEC. (two windings in parallel)
Start and finish in winding wire.

DUMMY ANTENNA:

The 200 MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The 200 MMF. dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment; if it is connected, is should be rolled up into a small hank.

I.F. TRANS. ALIGNMENT:

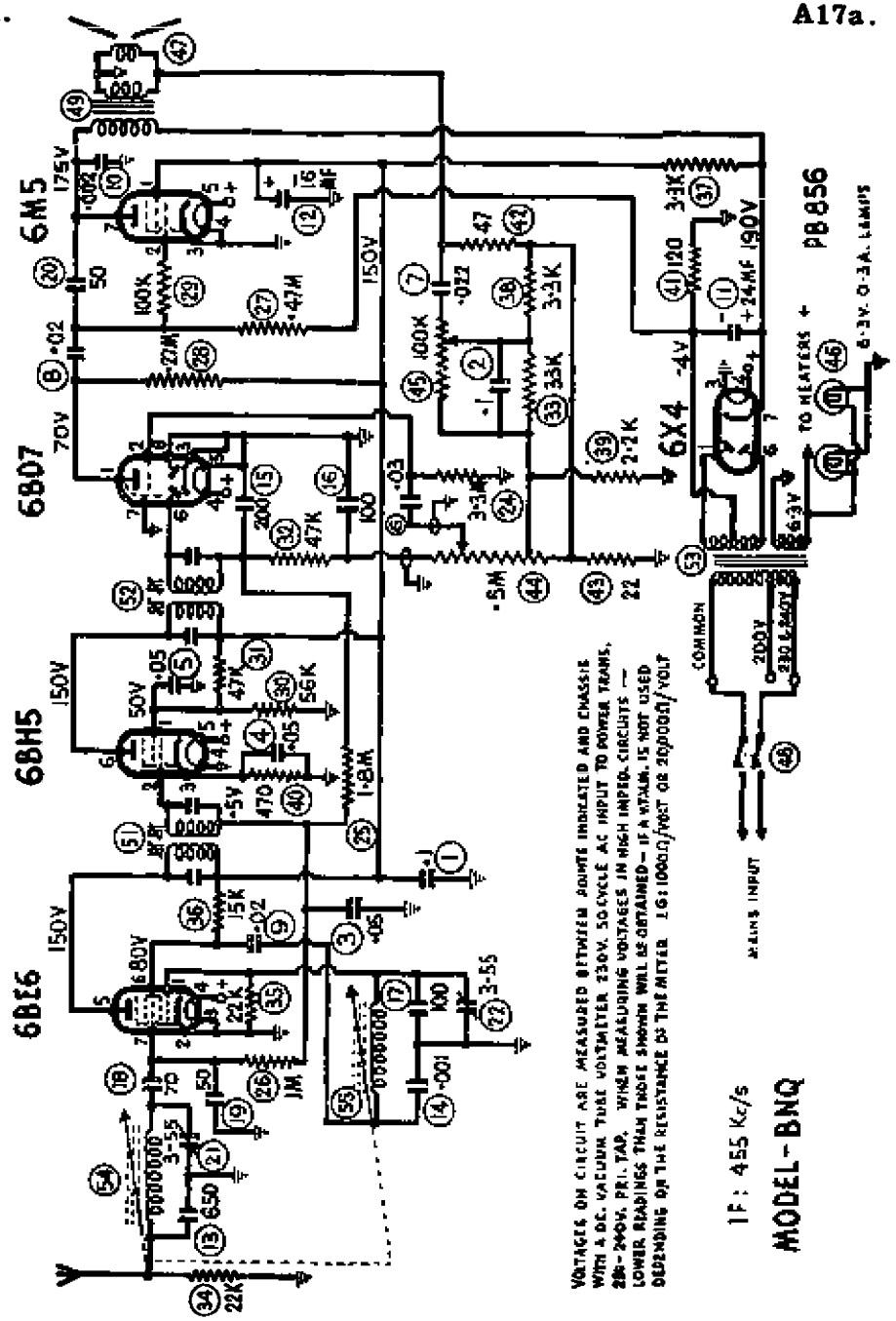
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 7.			
2.	To signal grid 455 Kc/s. of 6BH5 valve (pin No. 2).		0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To signal grid 455 Kc/s. of 6BE6 valve (pin No. 7).		0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are fully out of winding on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
4.				Repeat operations Nos. 2 and 3.

B/CAST BAND ALIGNMENT:

1.	Refit chassis to front section of cabinet.			
2.	Refit control knobs and tuning pointer knob.			
3.	DIAL POINTER SETTING			Turn tuning pointer-knob anti-clockwise until perm. tuner iron cores are out of windings on coil formers and the unit is hard against the stop. Loosen two grub screws in perm. tuner roller. Set centre of line on dial pointer to align with centre of end of travel spot on dial reading near 1700 Kc/s. Securely tighten the two grub screws.
4.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn tuning-knob and perm. tuner until centre of line on dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim cond.
5.	Tuning range after alignment 535 - 1640 Kc/s.			
6.	Check logging at each end of the band then refit rear section of cabinet.			

NOTE 1: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the former, when the perm. tuner unit spindle is turned fully anti-clockwise and is hard against the stop. If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

NOTE 2: Receivers with a perm. tuner unit fitted with iron cores having a blue spot on the end of the core must use dial reading part No. A103/835 and receivers with a perm. tuner unit with brown spot iron cores the dial reading must be part No. A103/835-1.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

TABLE MODEL BNS

7 VALVE SUPERHETEROYDNE FIVE BAND RECEIVER

FOR OPERATION FORM:-

200-240 Volt 40 or 50 Cycle Supply Mains (Power Transformer T119)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green-200V mains.
" " " " " -black-230 & 240V. mains

200-250 Volt 40 or 50 Cycle Supply Mains (Power Transformer T120)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green-200V mains.
" " " " " -black-230 & 240V mains
" " " " " -white-250V mains

POWER CONSUMPTION:-

60 Watts-approx.

TUNING RANGES:-

Broadcast Band:-	535 - 1610 Kc/s.	560.7 - 186.3 Metres
Shortwave Tuning Ranges	1.6 - 4.5 Mc/s.	187.5 - 66.66 Metres
	4.4 - 9.2 Mc/s.	68.18 - 32.60 Metres
	9.1 -14.5 Mc/s.	32.96 - 20.68 Metres
	14.4 -18.3 MMc/s.	20.83 - 16.39 Metres

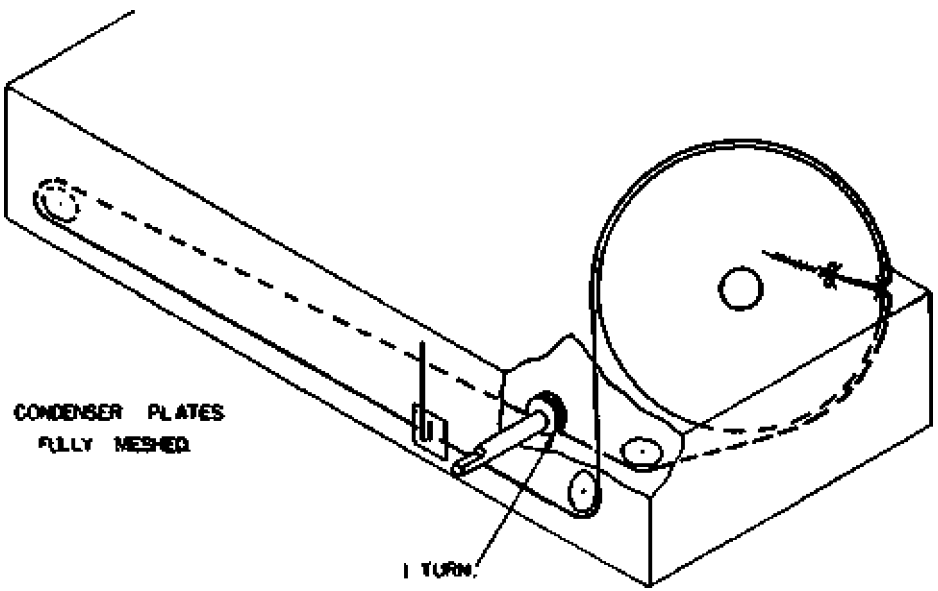
INTERMEDIATE FREQUENCY: 455 Kc/s.

THIS BULLETIN CONTAINS:-

Alignment Instructions.
Circuit Diagram.
Connections for IF. and RF. transformers.
Dial Drive Cording Diagram.
Valve Placement Diagram.

CORDING OF DIAL DRIVE

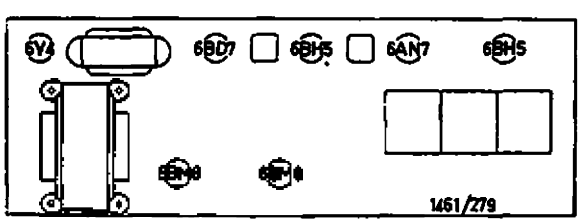
Note: 1 turn of dial cord around tuning spindle drive pulley increased to 2 turns.



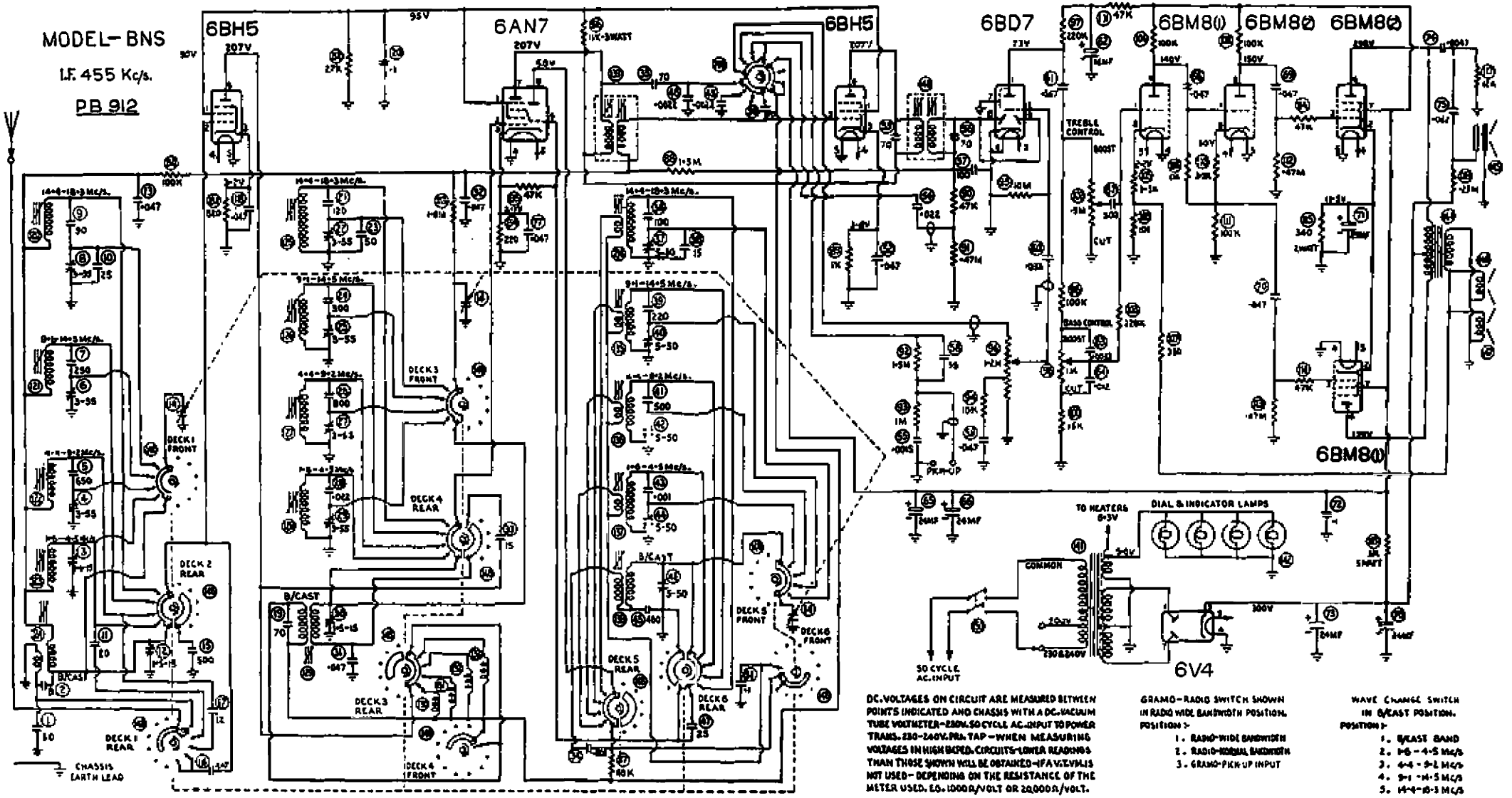
Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring.

Cord Part No. 34/784.

Tension Spring Part No. 21/698.



ASTOR MODEL BNS.



DC. VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC. VACUUM TUBE VOLTMETER - 230V. 50 CYCLE AC. INPUT TO POWER TRANS. 230-240V. PRI. TAP - WHEN MEASURING VOLTAGES IN HIGH BIASED CIRCUITS LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED IF A V.T.V.M. IS NOT USED - DEPENDING ON THE RESISTANCE OF THE METER USED. EG. 1000Ω/VOLT OR 20,000Ω/VOLT.

GRAMO - RADIO SWITCH SHOWN IN RADIO WIDE BANDWIDTH POSITION.
POSITION :-
1. RADIO - WIDE BANDWIDTH
2. RADIO - NORMAL BANDWIDTH
3. GRAMO - PICK UP INPUT

WAVE CHANGE SWITCH IN B/CAST POSITION.
POSITION :-
1. B/CAST BAND
2. 16 - 49 M/S
3. 4·4 - 9·2 M/S
4. 9·1 - 14·5 M/S
5. 14·6 - 18·3 M/S

ASTOR MODEL BNS.

ALIGNMENT PROCEDURE.

EQUIPMENT

Signal Generator:	
Output Meter :	
Mica capacitor :	0.01MF
Dummy Antenna :	200 MMF Mica capacitor
Dummy Antenna :	400 Ohm non-inductive resistor
IF. Attenuator :	.0039 MF paper condenser and a 22 K. ohm ½W resistor connected in series.
Alignment Tools:	Type M195 & PM581
Alignment Template :	Part No.PB949

ALIGNMENT CONDITIONS.

Load Impedance:	2 Ohms (output meter connected across sec. of 10,000 : 2 Ohm imped. speaker trans.
Output Level:	50 Milliwatts
Vol. Control:	Max. Vol. fully clockwise
Gramo Radio Function Switch:	Position No.2. "Radio" (normal bandwidth)
Intermed. Freq.:	455 Kc/s
Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 Volt pri. tap.
Tone Control :	Treble position

IF. TRANS ALIGNMENT.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed in the following pages of this bulletin.			
2.	To control grid of 6BH5 2nd. IF. valve pin No.2.	455 Kc/s	0.01MF Mica capacitor in series with generator	Turn wave change switch to b/cast. band. Turn gramo radio function switch to position No.2. "Radio" (normal bandwidth) Leave grid wire attached to valve socket. Peak 2nd. IF. trans. pri. and sec. for max. output.
3.	To control grid of 6AN7 valve pin No.2	455 Kc/s	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn cond. gang plates fully out of mesh. Peak 1st. IF. trans.pri. and sec. for max output.
4.	Repeat operations No.2 & 3.			

BROADCAST BAND ALIGNMENT.

NOTE: 1. Supplied with each BNS-1 Service Bulletin is an alignment template part No.PB949.

Fasten alignment template on to front of dial back plate with cellulose tape.

The centre line of the template is to be on the centre line of the dial back plate.

Should the template be lost, another template may be made by fastening the template diagram from this bulletin on to cardboard.

NOTE: 2. When the receiver has been realigned and refitted to the cabinet the dial pointer may be moved for correct logging to the station call signs on the dial in the cabinet.

In the base of the cabinet near the front is a slot through which a pair of long nose pliers may be inserted to grip the base of the dial pointer to slide it in either direction to correct the logging. Hold tuning knob tight when moving the pointer.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Connect IF. attenuator (.0039 MF and 22K. ohm resistor in series) between the signal grid (pin No.2.) of 6BH5 2nd. IF. valve and the chassis.			
2.	Set centre of dial pointer on centre of end of travel mark on dial reading template near 550 Kc/s. Condenser gang plates fully meshed.			
3.	To antenna terminal	600 Kc/s.	200MMFD Mica capacitor in series with generator.	Turn cond. gang and dial pointer until dial pointer is on 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim. (iron core) for max. output.
4.	To antenna terminal	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn cond. gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast. ant. and RF. trans. trim. condensers for max. output.
5.	To antenna terminal	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position. Re-peak the B/cast oscl. coil ind. trim. (iron core) then peak the B/cast.

				antenna and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s. dial mark until after the ind. trimmer of these three transformers have been peaked for max. output.
6.	To antenna terminal	1400 Kc/s.	200 MMFD Mica capacitor in series with generator.	Repeat operation No.4.

SHORT-WAVE BAND ALIGNMENT 1.6-4.5 Mc/s.

(This band is to be aligned before the higher frequency shortwave bands).

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna terminal	1.7 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 1.6-4.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 1.6-4.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.
2.	To antenna terminal	4.2 Mc/s	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. dial mark. Adjust 1.6-4.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 1.6-4.5 Mc/s. band antenna and RF trans. trim. cond. for max. output.
3.	To antenna terminal	1.7 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 1.7 Mc/s mark on dial. Leave the cond.gang and dial pointer set in this position. Repeak 1.6-4.5 Mc/s. band oscl. coil ind. trim. (iron core) then peak the 1.6-4.5 Mc/s. band antenna and RF trans.ind. trim. (iron cores) for max. output. Do not rock the condenser gang to and fro through the signal or move the dial pointer off the 1.7 Mc/s. dial mark until after the ind. trim (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	4.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.2 Mc/s. mark on dial. Readjust 1.6-4.5 Mc/s. band oscl. coil trim cond. for logging then repeak 1.6-4.5 Mc/s band antenna and RF trans. trim. condensers for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF. trans. trim. conds.
5.	To antenna terminal	3 Mc/s.	400 ohm non-inductive resistor	Check tracking at 3 Mc/s.

SHORT-WAVE BAND ALIGNMENT 4.4-9.2 Mc/s.

1.	To antenna terminal	4.5 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 4.4-9.2 Mc/s band position. Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. mark on diel. Leave cond. gang and dial pointer set in this position and peak the 4.4-9.2 Mc/s. band oscl. coil ind. trim. (iron core) and the 4.4-9.2 Mc/s. band antenna and RF trans. ind. trim (iron cores) for max. output.

ASTOR MODEL BNS.

2.	To antenna terminal.	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Adjust 4.4-9.2 Mc/s. band oscl. coil trim. cond. for logging, then peak 4.4-9.2 Mc/s. band antenna and RF trans. trim condensers for max. output.
3.	To antenna terminal	4.5 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 4.5 Mc/s. dial mark. Leave cond. gang and dial pointer set in this position. Repeak 4.4-9.2 Mc/s. band oscl. coil. ind. trim (iron core) then peak the 4.4-9.2 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them off the 4.5 Mc/s. dial mark until after the ind. trim. (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	9 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 9 Mc/s. dial mark. Readjust 4.4-9.2 Mc/s. band oscl. coil trim.cond. for logging, then repeak 4.4-9.2 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. condensers.
5.	To antenna terminal	6.5 Mc/s.	400 ohm non-inductive resistor	Check tracking at 6.5 Mc/s.

SHORT-WAVE BAND ALIGNMENT 9.1-14.5 Mc/s.

1.	To antenna terminal	9.6 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 9.1-14.5 Mc/s. band position. Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position, and peak the 9.1-14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band antenna and RF trans. ind. trim. (iron cores) for max. output.
2.	To antenna terminal	14.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. dial mark. Adjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then peak 9.1-14.5 Mc/s. band ant. and RF trans. trim. conds. for max. output.
3.	To antenna terminal	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn cond. gang and dial pointer until centre of dial pointer is on 9.6 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 9.1 -14.5 Mc/s. band oscl. coil ind. trim. (iron core) and the 9.1-14.5 Mc/s. band ant. and RF trans. ind trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 9.6 Mc/s. dial mark until after the ind. trim, (iron core) of the three coils has been peaked for max. output.
4.	To antenna terminal	14.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 14.2 Mc/s. mark on dial. Readjust 9.1-14.5 Mc/s. band oscl. coil trim. cond. for logging, then repeak 9.1-14.5 Mc/s. band antenna and RF trans. trim. conds. for max. output. Rock the cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim. conds.
5.	To antenna terminal	11.8 Mc/s.	400 ohm non-inductive resistor	Check tracking at 11.8 Mc/s.

SHORT-WAVE BAND ALIGNMENT 14.4-18.3 Mc/s.

1.	To antenna terminal	15.2 Mc/s.	400 ohm non-inductive resistor	Turn wave change switch to 14.4-18.3 Mc/s. band position . Turn. cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. mark on dial. Leave the cond. gang and dial pointer set in this position and peak the 14.4-18.3 Mc/s. band oscl. coil ind. trim. (iron core) and the 14.4-18.3 Mc/s. band antenna and RF trans. ind. trimmers (iron cores) for max. output.
2.	To antenna terminal	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. dial mark. Adjust 14.4-18.3 Mc/s. band oscl. coil trim. cond. for logging, then peak 14.4-18.3 Mc/s band antenna and RF trans. trim conds. for max. output.
3.	To antenna terminal	15.2 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 15.2 Mc/s. dial mark. Leave the cond. gang and dial pointer set in this position and repeak the 14.4-18.3 Mc/s. band oscl. coil ind. trim (iron core) and the 14.4-18.3 Mc/s. band ant. and RF trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 15.2 Mc/s. dial mark until after the ind. trimmer (iron core) of the three coils has been peaked for max.output.
4.	To antenna terminal	18 Mc/s.	400 ohm non-inductive resistor	Turn cond. gang and dial pointer until centre of dial pointer is on 18 Mc/s. mark on dial. Readjust 14.4-18.3 Mc/s. band oscl. trim. cond. for logging, then repeak 14.4-18.3 Mc/s. band antenna and RF trans. trim. conds. for max. output.
				Rock cond. gang to and fro through the signal while adjusting the antenna and RF trans. trim conds.
5.	To antenna terminal	16.2 Mc/s.	400 ohm non-inductive resistor	Check tracking at 16.2 Mc/s.

6. Remove IF. attenuator and alignment template, then refit chassis to cabinet.

7. If the dial pointer does not log correctly with the stations marked on the b/cast section of the dial in the cabinet, tilt the cabinet on to one end. In the base of the cabinet will be seen a slot near the front edge, through this hole grip the base of the pointer with a pair of long nose pliers and slide the pointer to the left or right the distance required to correct the logging.

Hold tuning knob tight when moving the dial pointer.

TUNING RANGE AFTER ALIGNMENT.

B/cast band	535 - 1610Kc/s.
S/wave bands	1.6 - 4.5 Mc/s.
	4.4 - 9.2 Mc/s.
	9.1 -14.5 Mc/s.
	14.4 -18.3 Mc/s.

SHORT- WAVE COIL IDENTIFICATION SPOT COLOURS.

1.6 - 4.5 Mc/s.	band	aerial	(L201)RED & WHITE spots on iron core end of former.
"		RF	(L201)RED & WHITE " " " " " " "
"		Oscl.	(L221)BLUE spot on iron core end of former.
4.4 - 9.2 Mc/s.	band	aerial	(PT913)WHITE spot on iron core end of former.
"		RF	(PT913)WHITE " " " " " " "
"		Oscl.	(L217)BROWN " " " " " " "
9.1 -14.5 Mc/s.	band	aerial	(L204)BLACK & WHITE spots on iron core end of former.
"		RF	(L204)BLACK & WHITE " " " " " " "
"		Oscl.	(L203)BLACK spot on iron core end of former.
14.4-18.3 Mc/s.	band	aerial	(L206)YELLOW & WHITE spots on iron core end of former
"		RF	(L206)YELLOW & WHITE " " " " " " "
"		Oscl.	(L222) VIOLET spot on iron core end of former.

NOTE: Check the logging of the shortwave bands on some well known shortwave stations. If a crystal calibrator is available check the logging at several 100 Kc/s. marks on the dial.

SHORT-WAVE ANT. TRANS.

Lead from top lug (iron core end):

GRID

Lead from bottom lug (mounting end):

AVC

ANTENNA TRANS. B/CAST.

SHORT-WAVE RF. TRANS.

Lead from top lug (iron core end):

GRID

Lead from bottom lug (mounting end):

CHASSIS

RF. TRANS. B/CAST.

SHORT-WAVE OSCL. COILS

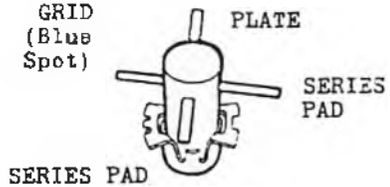
SECONDARY:

Lead from bottom lug (mounting end)—CHASSIS
Lead from top lug (iron core end) —GRID

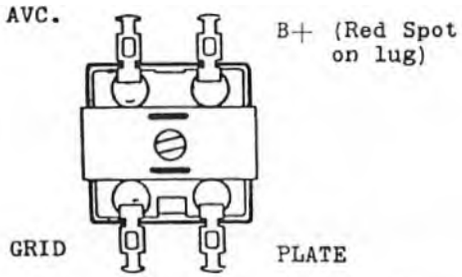
PRIMARY:

Lead from bottom lug (mounting end)—OSCL. PLATE
Lead from top lug (iron core end) —B+

OSCL. COIL B/CAST.



No. 1 IF. TRANS.



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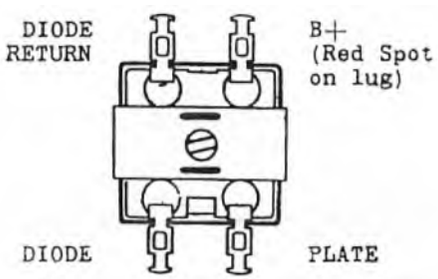
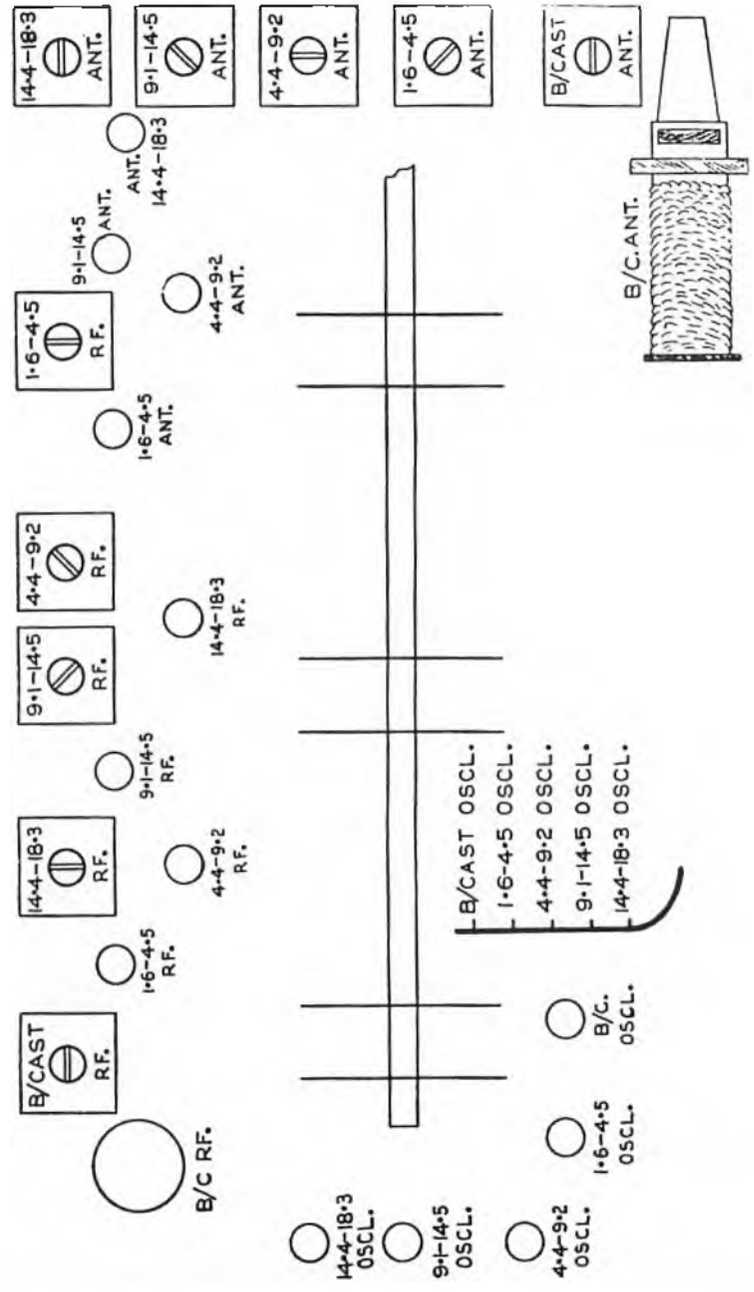
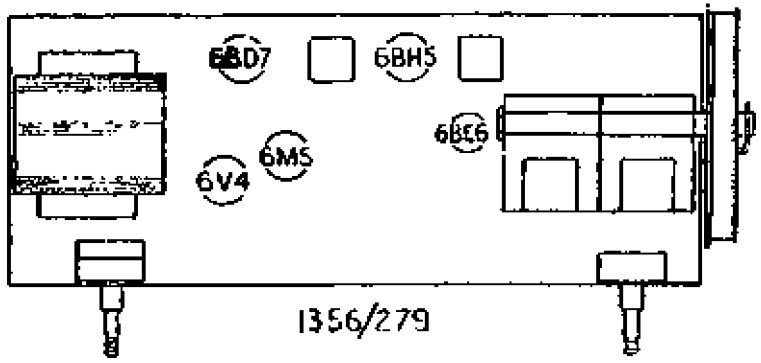
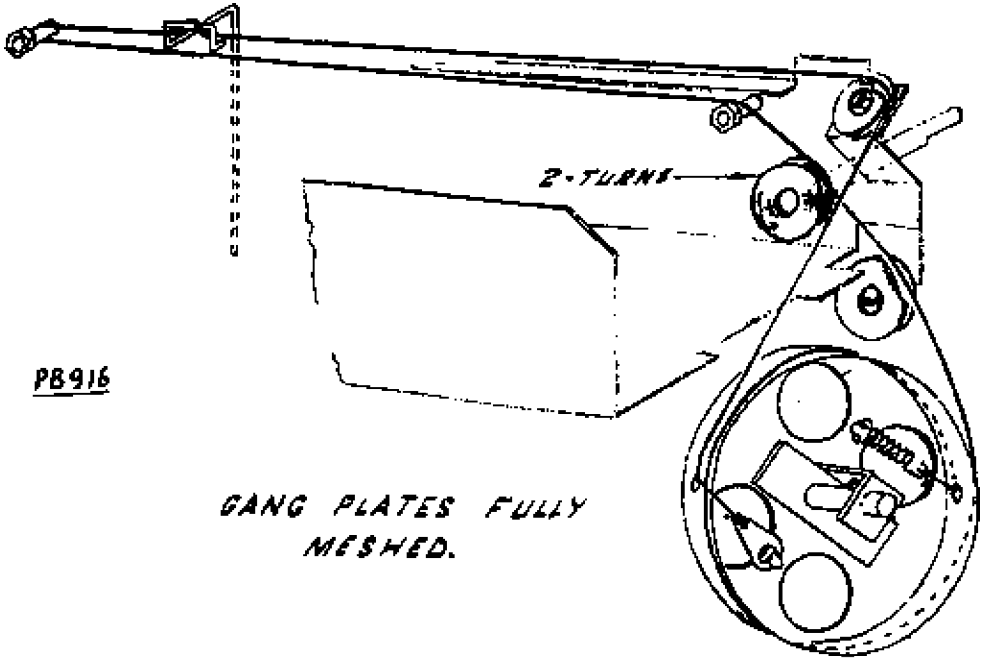








RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MANTEL MODEL "BPJ"

5 VALVE SUPERHETERODYNE BROADCAST RECEIVER.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T171)
Power trans Primary Tap-red-common
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

When the receiver is to be operated from a 250 volt 40 or 50 cycle AC. supply mains the transformer primary connections are as for the 240 volt supply mains but a 180 Ohm 10 watt resistor Part No. R166 is to be mounted beneath the chassis and wired in the power trans. common lead (red).

POWER CONSUMPTION: 40 Watts-approx.

TUNING RANGE: 535-1610 Kc/s. - 560.7-186.3 Metres.

THIS BULLETIN CONTAINS:

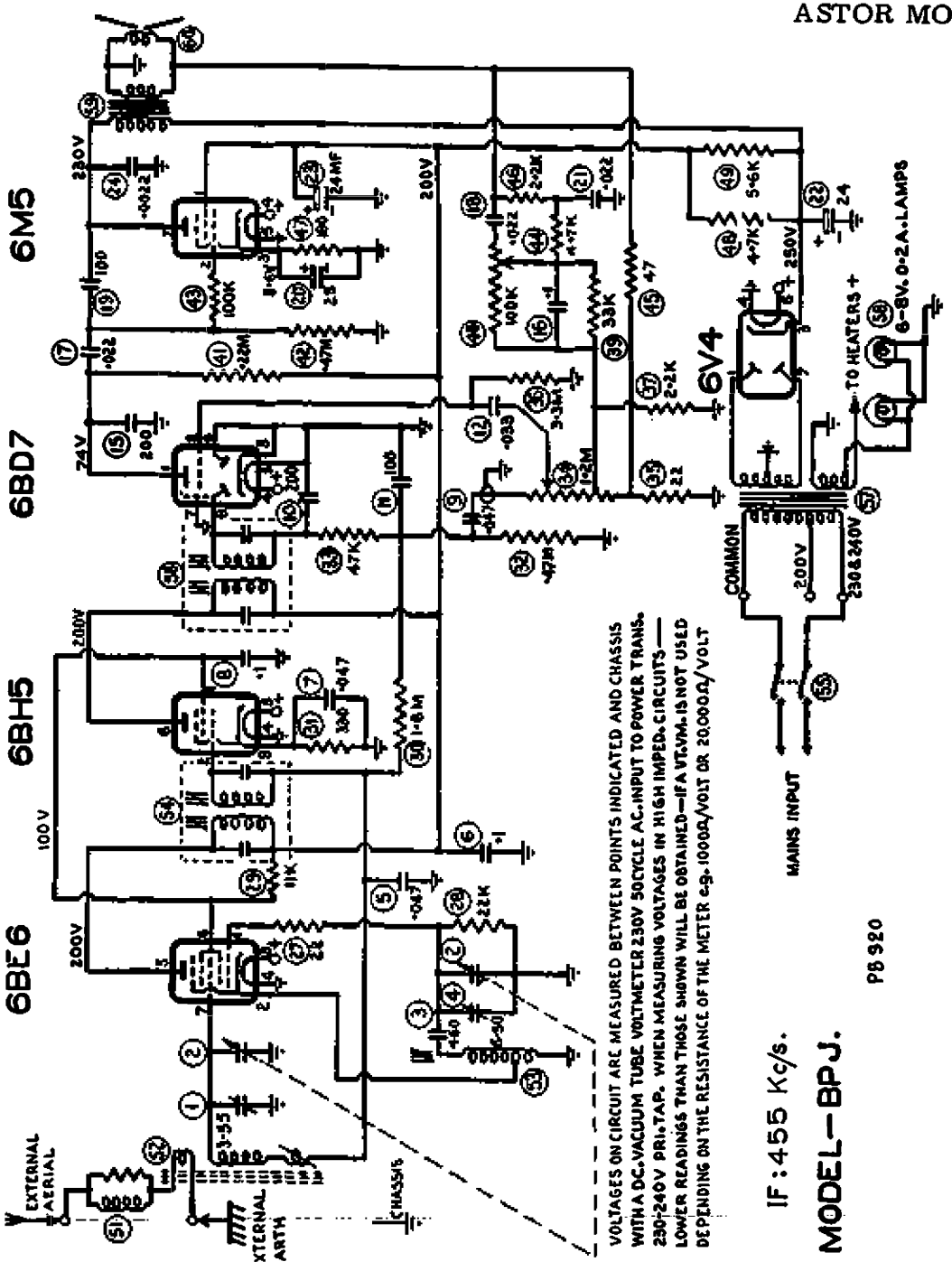
Alignment Instructions.

Circuit Diagram.

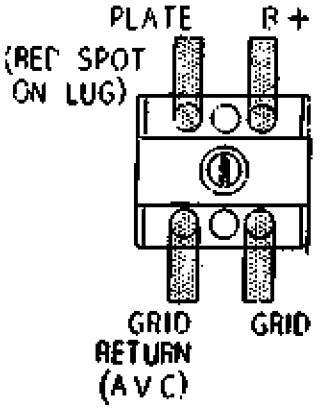
Valve Placement Diagram.

Instructions for Replacing Dial Reading.

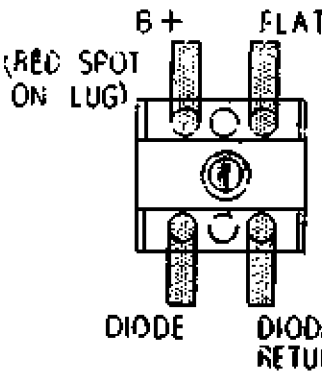
ASTOR MODEL BPJ.



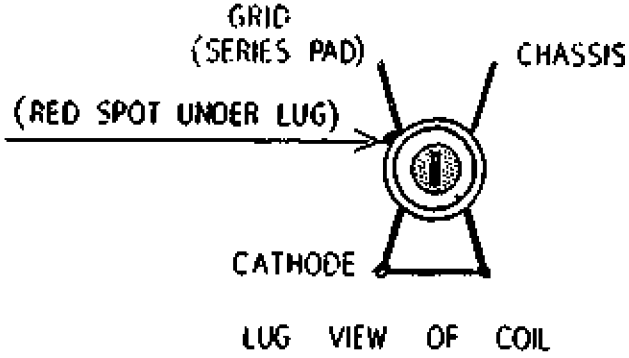
1ST I.F. TRANS.



2ND I.F. TRANS



OSCILLATOR COIL



LUG VIEW OF COIL

POWER TRANSFORMER (Part No. T171)

PRIMARY:

Red lead	common
Green lead	200 volt mains tap
Black lead	230 & 240 volt mains tap.

HT. SECONDARY:

Blue	start
Yellow	centre tap
Blue	finish

Electro-static shield joined internally to centre tap of S.T. second:

LT. SECONDARY

Start and finish in winding wire.

ALIGNMENT PROCEDURE.

EQUIPMENT.

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF Mica Capacitor for I.F. trans alignment
Dummy Antenna: 200 MMF Mica Capacitor
Straight Alignment Tool: type PM561 for b/cast. trim. adjustment
Flexible Alignment Tool; type 48/712 for b/cast. osc. coil core and I.F.T. core adjustment.

ALIGNMENT CONDITIONS.

Load Impedance: 7000 ohms
Output Level: 50 Milliwatts
Vol. Control: Max. vol. fully clockwise.
Intermediate Frequency: 455 Kc/s.
Input Voltage: 230 Volts 50 cycle AC input to trans. 230-240V. Primary tap.
Tone Control: Treble position, fully clockwise.

IF. ALIGNMENT.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	Remove receiver chassis from cabinet as detailed in the following pages of this bulletin.			
2.	To signal grid of 6BH5 valve (pin No. 2.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning control until condenser gang plates are fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans pri. and sec. for max. output.
4.				Repeat operations 2 and 3.

BROADCAST ALIGNMENT.

1. Fully mesh the condenser gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 535 Kc/s.

2.	To AVC connection of rod aerial	600 Kc/s.	200 MMF Mica capacitor in series with generator	Turn cond. gang and dial pointer to 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position, peak osc. coil ind. trim (iron core) and the sec. trimmer coil on ferrite rod aerial for max. output.

Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 600 Kc/s dial mark until after the inductance trimmer and the rod trimmer coil have been peaked for max. output.

3.	To AVC connection of rod aerial	1400 Kc/s	200 MMF Mica capacitor in series	Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. dial mark. Adjust osc. coil trim. cond. and rod aerial trim. condenser for max. output.
4.				Repeat operations 5 and 6.

5. Refit receiver chassis to cabinet.
Tuning range after alignment 535 - 1610 Kc/s.

A20

ECLIPSE RADIO PTY. LTD.

A DIVISION OF ELECTRONIC INDUSTRIES LTD.

11-21 STURT STREET, SOUTH MELBOURNE

TECHNICAL BULLETIN

BULLETIN BPM-1 **File: RECEIVERS AC.** **Date: 24/8/54**

MODEL—BPM

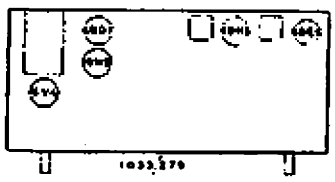
5 Valve Superheterodyne Broadcast Mantel Model Receiver

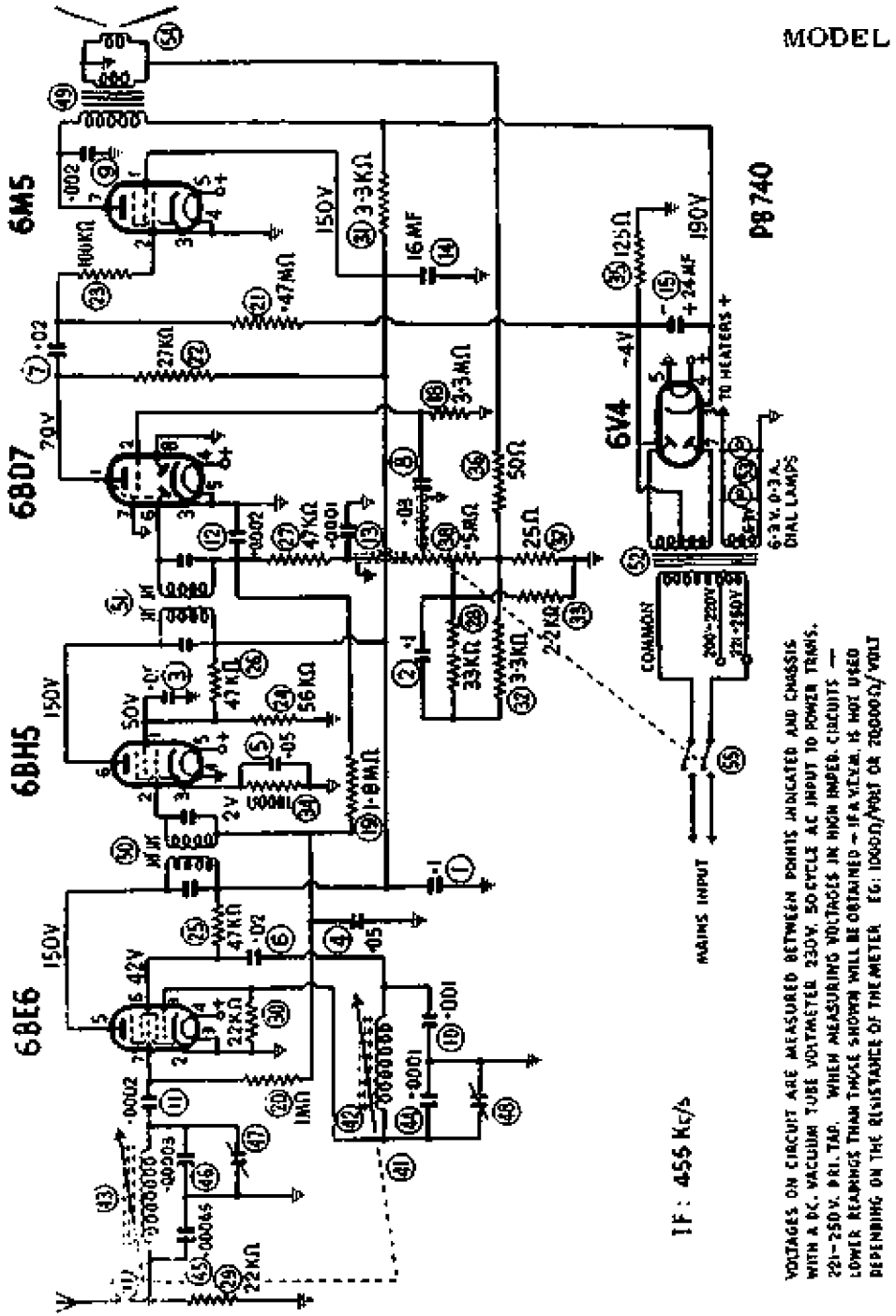
FOR OPERATION FROM:

200-250 Volt 50 Cycle AC. Supply Mains.
Power trans. primary mains taps: 200-220 volts and 221-250 volts.
Power Consumption 40 Watts (approx.)

TUNING RANGE:

535-1640 Kc/s. : 560.7-182.9 Metres





VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 230V. 50CYCLE A.C. INPUT TO POWER TRANS. 220-240V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A VTVM. IS NOT USED DEPENDING ON THE RESISTANCE OF THE METER EG: 10000Ω/VOLT OR 20000Ω/VOLT

MODEL BPM

ALIGNMENT PROCEDURE

A20a.

EQUIPMENT

Signal Generator:
Output Meter :
Mica Capacitor : 0.01MF (for I.F. trans. alignment)
Dummy Antenna : 200 MMF. Mica Capacitor
Alignment Tool : Type M195

ALIGNMENT CONDITIONS

Load Impedance : 7,000 ohms
Output Level : 50 Milliwatts
Vol. Control : Max. Vol. fully clockwise.
Intermed. Freq. : 455 Kc/s.
Input Voltage : 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Dummy Antenna: The 200MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment, if it is connected it should be rolled up into a small hank.

ALIGNMENT: The I.F. transformer variable iron cores and the trimmer condensers beneath the perm tuner are accessible when the rear section of the cabinet is removed from the front section.
A short thin screw-driver or a long thin screw driver (having a slight bend) inserted through the holes in the chassis is used for adjusting the screw in the perm tuner trim. condensers.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	From each of the four corners of rear section of cabinet remove the screw and washer then prise the rear section of cabinet off the front section.			
2.	To signal grid of 6BH5 valve (pin No. 2)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm tuner so that iron cores are fully out of windings on coil formers. Peak 1st IF trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 and 3.
5.	Turn perm. tuner so that the iron cores are fully out of the windings on the coil formers and hard against the stop. Set the centre of the dial pointer on the end of travel spot on the dial reading near 1700 Kc/s. From the rear of the dial the pointer may be moved with a pair of long nose pliers.			
6.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim. cond.
7.	Tuning range after alignment 535 - 1640 Kc/s.			
8.	Check logging at each end of the dial: then refit rear section of the cabinet.			

NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet and the end of the iron cores in the former, when the unit is turned fully anti-clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the screw end of the iron core.

MODEL - BQL

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T202)
Power trans. Primary Tap-red-common
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains

200-250 Volt 40 or 50 Cycle AC. Mains (Power transformer T203)
Power trans. Primary Tap-red-common
" " " " -green-200 Volt mains.
" " " " -black-230-240 Volt mains
" " " " -white-250 Volt mains

NOTE: Record changer drive pulley for 40 cycle mains operation is Part No: 346/524

POWER CONSUMPTION:

Radio Operation - 50 Watts-approx.
Gramo Operation - 75 Watts-approx.

TUNING RANGE: 535-1640 Kc/s. - 560.7-182.9 Metres.

ALIGNMENT PROCEDURE.

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:	Modulated 400 CPS.	Output Meter:	Connect output meter across secondary winding of one output transformer
Output Meter :			
Mica Capacitor :	0.01MF. (for IF. trans. alignment)		
Dummy antenna :	200MMF Mica Capacitor	Output Level:	50 milliwatts speaker voice coil disconnected 20 milliwatts speaker voice coil connected
Alignment Tools :			
	(a) type M195 for IF. transformer alignment.		
	(b) type PM581 for broadcast trimmer alignment	Output Meter Impedance:	4 Ohms.
		Vol. Control:	Max. Vol. Fully clockwise
		Interned. Freq.	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 volt pri. tap.
		Tone control :	Treble position. Fully clockwise.

TRANSFORMER CONNECTIONS.

POWER TRANSFORMER.

PART NO. T202 40 & 50 cycle mains	PART NO. T203 40 & 50 cycle mains
PRI. Red lead - Common	PRI. Red lead - Common
" Green lead - 200V mains	" Green lead - 200V mains
" Black lead - 230 & 240V mains	" Black lead - 230 & 240V mains
	" White lead - 250V mains

Electro-static shield joined internally to centre tap of HT. secondary.

HT. Secondary	HT. Secondary
Start - Blue lead	Start - Blue lead
Centre tap - yellow lead	Centre tap - yellow lead
Finish - Blue lead	Finish - Blue lead
LT. Secondary	LT. Secondary
Start and finish in winding wire	Start and finish in winding wire

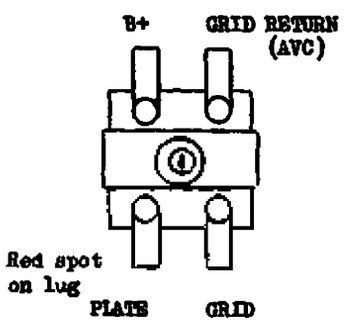
ANTENNA COIL

Start of winding - furthest from mounting end - Junction of Circuit No. 2, 41 and antenna.
Finish of winding - nearest to mounting end - Junction of Circuit No. 1, and 3

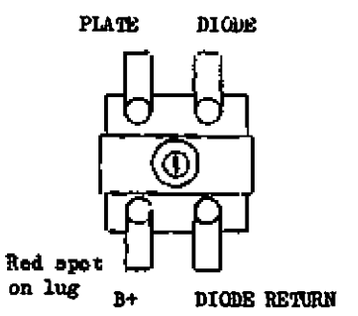
OSCILLATOR COIL.

Start of winding - furthest from mounting end - Junction of Circuit No. 6 and 8
Finish of winding - nearest to mounting end - Junction of Circuit No. 5 7, 43, and 44.

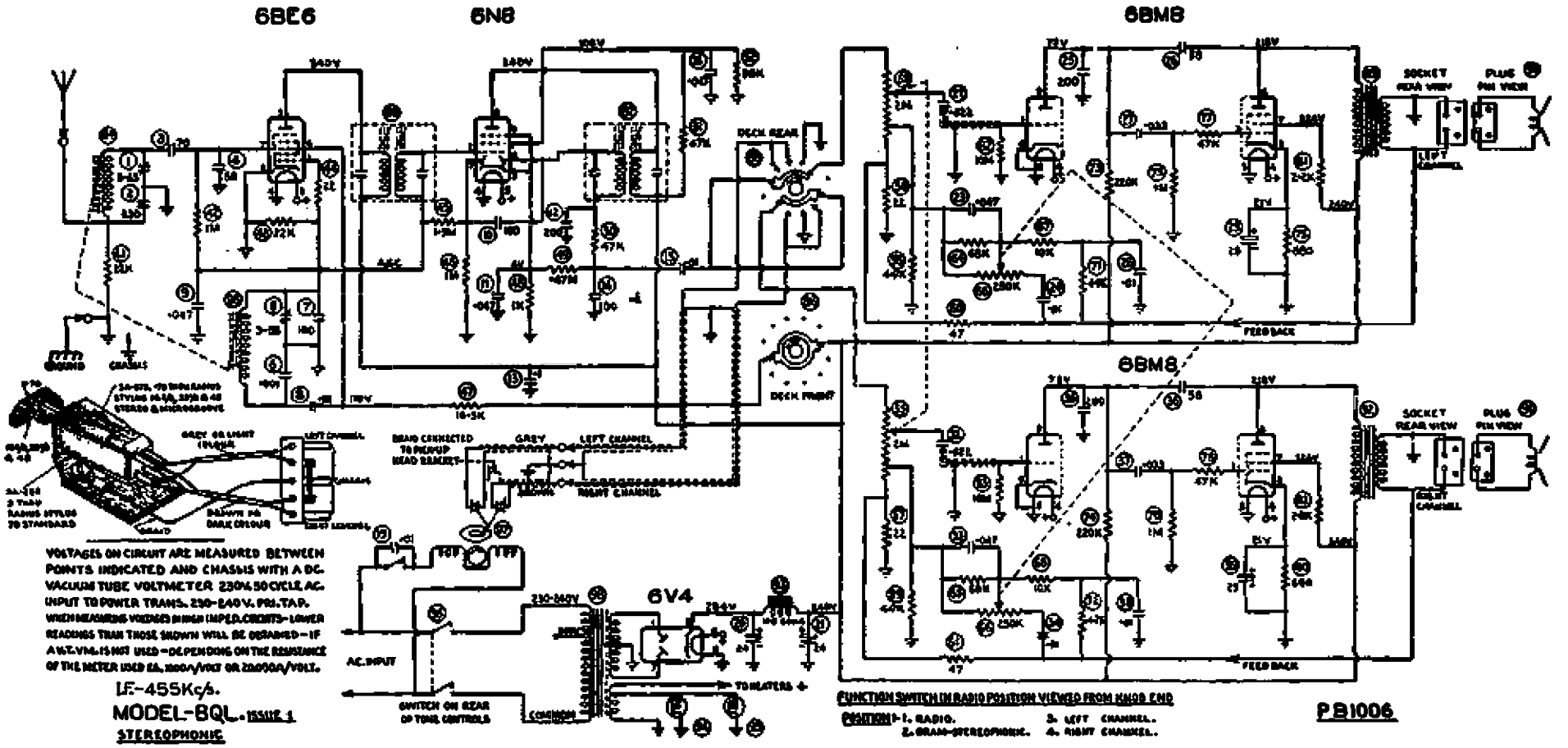
1ST I.F. TRANS.



2ND I.F. TRANS.



A22. ASTOR MODEL BQL.



Open lid of cabinet and secure pick-up arm under rest pillar clip.

Remove the screws fastening the rear panel then remove panel from cabinet.

With the rear of the cabinet toward operator place the cabinet on to a table so that end of the cabinet adjacent to the record changer is against the flat surface of the table.

IF. TRANSFORMER ALIGNMENT.

Oper No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6N8 IF. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn grano-radio switch to radio position. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To signal grid of 6N8 valve pin No. 7.	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn perm. tuner so that iron cores are fully out of winding and the unit is hard against the stop. Leave grid wire attached to valve socket. Peak 1st. IF. trans. pri. and sec. for max. output.
3.				Repeat operations 1 and 2.

TUNING DISC SETTING.

Insert a sharp pointed thin spike in hole in gold coloured metal cover in centre of moulded tuning disc, then lever cover out of the disc.

Loosen the three ¼" x 3/32" Whit. csk. hd. screws fastening the washer in centre of tuning disc.

Turn the tuning spindle anti-clockwise until perm tuner unit iron cores are out of windings on coil formers and unit is hard against stop.

Set the centre of the indicator line on the tuning disc to align with the centre of the end of travel spot near 1700 Kc/s, on the dial reading.

Securely tighten the three 3/32" screws in centre washer then refit cover to the centre of tuning disc.

BROADCAST ALIGNMENT

NOTE: 1

Both iron cores in the perm. tuner unit are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet and the end of the iron core in the former, when the unit spindle is turned fully anti-clockwise and is hard against the stop,

If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

NOTE: 2.

The 200 MMF Dummy antenna must be connected to the antenna junction lug on the chassis. Should an antenna be connected to the short antenna lead from the receiver it is to be disconnected or rolled into a small bank.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner and tuning disc. until centre of indicator line on tuning disc. aligns with centre of 1000 Kc/s spot on dial reading. Peak oscl. coil trimmer cond. then peak ant. coil trimmer cond.for maximum output. Repeak oscl. coil trimmer cond.
2.	Check logging at each end of tuning dial.			

Tuning range after alignment 535 to 1640 Kc/s.

AUDIO AMPLIFIER GAIN TEST

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	(A) Connect output meter across secondary winding of one channel output transformer.
			(B) Tune receiver to generator 1000 Kc/s signal.
			(C) Adjust signal input until output meter reads 20 milliwatts (volume control turned maximum clockwise, speaker voice coil connected).
			(D) Leave input signal set at this level. Disconnect output meter and then connect output meter across the secondary winding of the other channel output transformer and note the output meter reading. (volume control turned maximum clockwise, speaker voice coil connected.)
			(E) The difference in output between the amplifier channels must not exceed 7 milliwatts.

MODEL BRK.

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and an 8 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

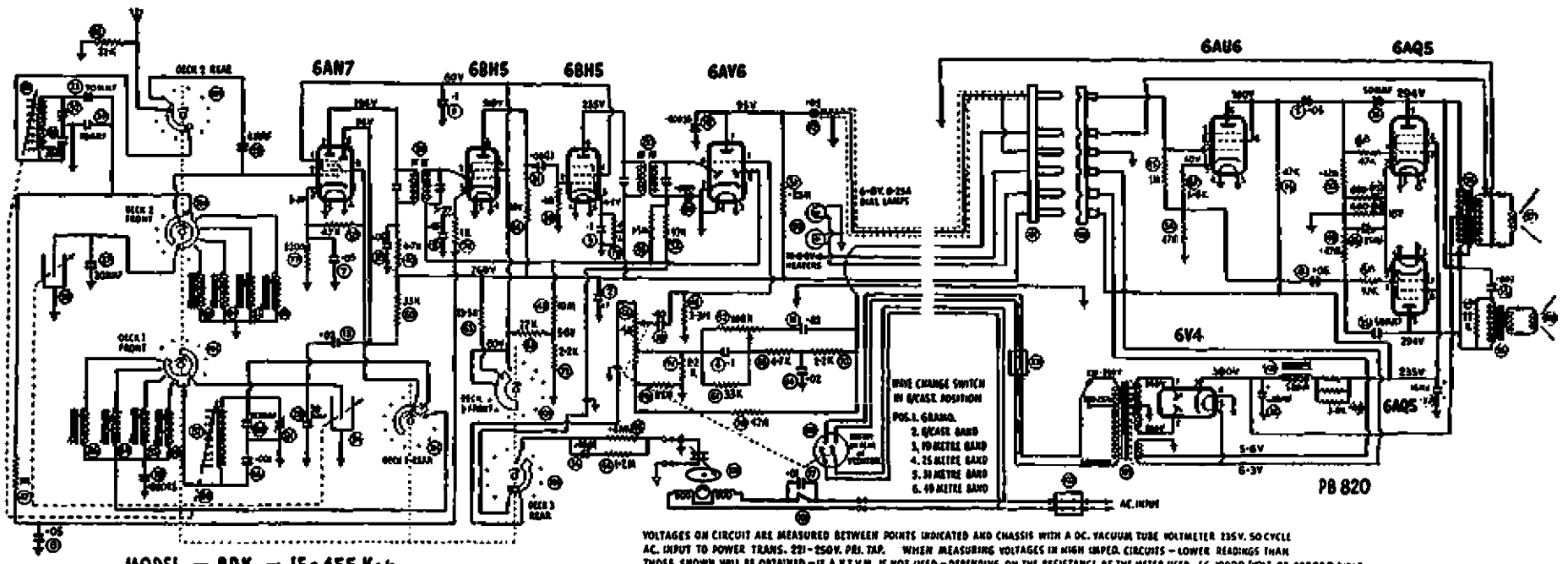
200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

TUNING RANGES:— **RECEIVER COVERAGE:—**

Broadcast Band, 535-1610 Kc/s.			560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)		20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)		25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)		31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s.	(Bandspread)		50.42-48.0 Metres (approx.)



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 235V. 50 CYCLE AC. INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED E.G. 1000Ω/VOLT OR 20000Ω/VOLT

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:

Output Meter:

Mica Capacitor: 0.01MF (for IF. trans. alignment)

Dummy Antenna: 200MMF Mica capacitor

Dummy Antenna: 400 Ohm non-inductive resistor

Alignment Tools: Type M195 and PM581

ALIGNMENT CONDITIONS

Load Impedance: 2 Ohms (output meter connected across sec. of 10,000-2 Ohm imped. trans. circuit No. 95)

Output Level: 50 Milliwatts

Vol. Control: Max. Vol. fully clockwise

Intermed. Freq.: 455 Kc/s.

Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 Volt pri. tap

Tone Control: Treble position

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver power supply chassis and tuning unit chassis from cabinet as detailed on page 11.			
2.	Remove dial back plate from tuning unit chassis:- A. Loosen off grub screws in tone control gear wheel hub, then pull gear wheel straight upward off the control spindle. B. Unscrew large nut fastening small metal gear plate to bush on tone control. C. From volume control shaft remove small gear plate with gears attached by pulling it straight upward. D. Remove dial pointer by prising up centre clip which fastens it to dial cord at rear of pointer carriage. E. Remove from each end of dial plate the large lock nut fastening dial plate to chassis.			
3.	Connect speaker leads and leads from tuning unit chassis to power supply chassis.			
4.	To control grid of 6BH5 2nd IF. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn wave change switch to b/cast band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AN7 valve, pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
6.	Refit dial back plate and dial pointer, then gear wheel and plate assy. to volume control shaft, also gear wheel to tone control shaft. Make sure that the gear wheel teeth mesh correctly.			

B/CAST AND S/WAVE ALIGNMENT

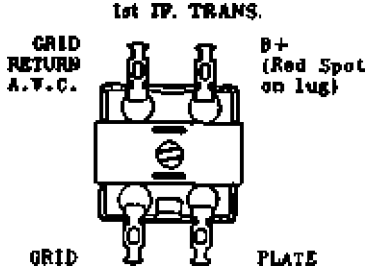
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200MMF mica capacitor in series with generator	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast oscl. coil trimmer cond., then peak b/cast antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band must be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.8 Mc/s. mark on the dial. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.

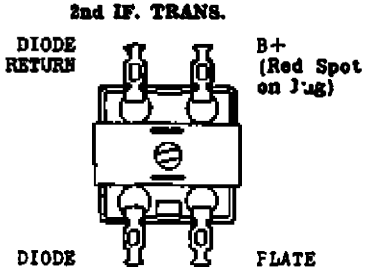
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
9.	To antenna lead	15.2 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging, then peak 19 metre antenna coil ind. trim (iron core) for max. output.
10.	To antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to an exact dimension. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.



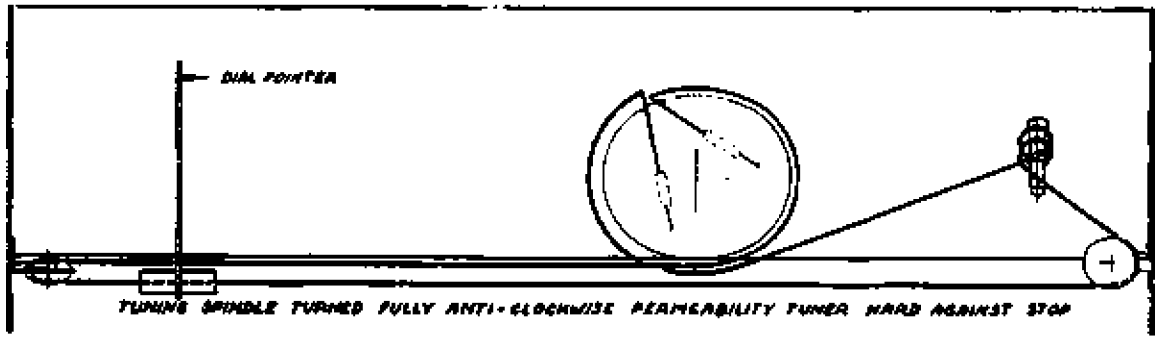


CIRCUIT ALTERATION (1-3-56)

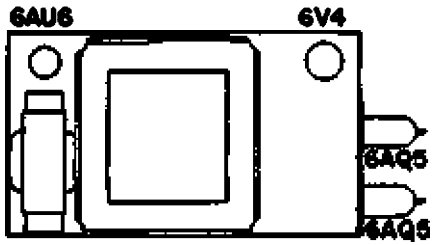
The 520 Ohm filter choke circuit No. part No. PT806 has been deleted from the circuit. No other changes are made to the circuit when this deletion is made.

CORDING OF DIAL DRIVE

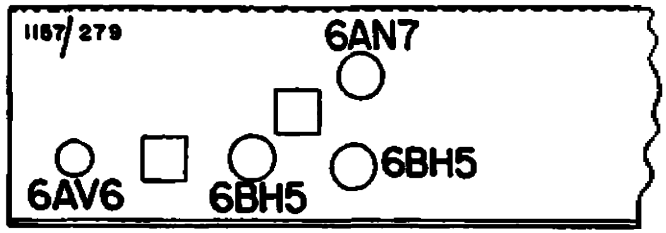
Length of cord required is 4 ft. 6 ins., which includes about 8 ins. to spare for tying to tension springs.
Cord Part No. 34/754.
Tension Spring (2) Part No. 504/30C.



PB 745



VALVE PLACEMENT DIAGRAM
1156/279



VALVE PLACEMENT DIAGRAM

POWER CONSUMPTION

AC. OPERATION:

200 Volt 50 cycle AC. mains input to trans. (T137)	200 Volt tap.	37mA.
230 " " " " " " " " "	230 " "	32mA.
240 " " " " " " " " "	240 " "	32mA.
230 Volt 40 cycle AC. mains input to trans. (T145)	230 Volt tap.	34mA.
250 " " " " " " " " "	250 " "	32mA.

BATTERY OPERATION:

Function Switch "Save" Position:	"A"	Battery 250 mA.
" " " "	"B"	Battery 7 mA. (no signal)
Function Switch "Full" Position:	"A"	Battery 250 mA.
" " " "	"B"	Battery 10 mA (no signal)

ALIGNMENT INSTRUCTIONS

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator;	Load impedance: 5,000 ohms.
Output meter:	Output level: 6 milliwatts.
Mica Capacitor: 0.01 MF (P/No. PC145) for IFT Alignment.	Volume control: Max. volume (fully clockwise).
Straight Alignment Tool P/No. PM581.	"A" battery 1.5 volts.
Flexible Alignment Tool P/No. 48/712.	"B" battery67.5 volts.
	I.F. frequency 455 Kc/s.

IF. TRANS. ALIGNMENT

The receiver chassis has to be removed from the leather case to align the I.F. transformers.

A. Remove tuning, volume and mains/battery/on-off push-on type knobs (a piece of thin cord in the form of a loop slid under the knob and pulled from the front is a convenient means of removing push-on type knobs.

B. Unclip press stud fasteners at rear of leather case.

C. Turn tuning condenser shaft until condenser plates are fully meshed.

D. Lift leather case flap and remove moulded back panel.

E. From beneath leather case remove screw and nut fastening chassis bracket to base of leather case.

F. Remove two self tapping screws fastening chassis mount brackets to the metal plate at top corners of the leather case

G. Lift end of chassis furthest from speaker then withdraw chassis from leather case.

H. Remove "A" batteries, prize up lugs fastening battery box, then lift off battery box.

I. Remove nut fastening corner of mount plate, then lift off mount plate.

J. Refit "A" batteries into battery box.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 1T4 valve (pin No.6)	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IFT pri. and sec. for max. output.
2.	To signal grid of 1R5 valve (pin No. 6.)	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 1st IFT pri. and sec. for max. output.
3.				Repeat operations Nos. 1 & 2.

BROADCAST ALIGNMENT:

A. Refit receiver chassis to leather case.

B. Refit tuning knob.

C. TUNING KNOB POINTER SETTING: Fully mesh condenser gang plates and set centre of tuning knob pointer on centre of end of travel spot on the leather case escutcheon beneath the numerals "55." Three screws on the front of the chassis and which fasten the chassis to the front of the condenser gang when loosened off allow the cond. gang to be moved to align the dial knob pointer to the end of travel spot. The receiver chassis has to be removed from the leather case to loosen the screws and move the cond. gang.

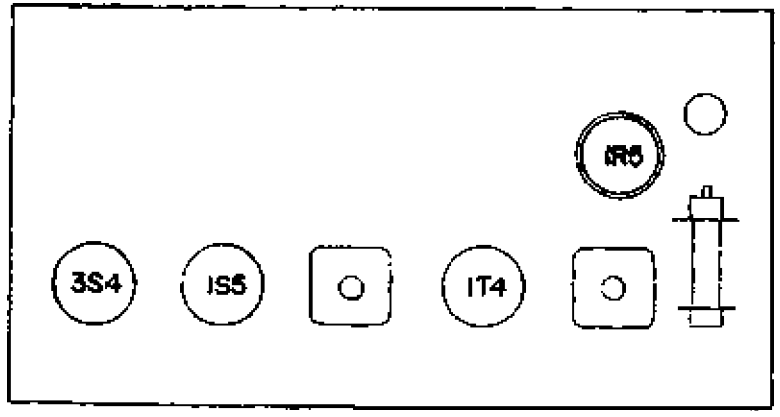
D. To inject a signal into the receiver rod aerial, connect to the active terminal of the signal generator approximately 2 ft. of aerial wire, then fashion the wire into a vertical position.

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

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. D. and E.	600 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer aligns with centre of 600 Kc/s. spot on dial. Leave cond. gang and tuning knob pointer set in this position, then peak the osc. coil ind. trim. (iron core) for max. output. Also peak the movable winding on the ferrite rod for max. output.

2.	Refer para. D. and E.	1470 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 1470 Kc/s. dial mark. Adjust osc. trim. cond. for logging and peak ferrite rod aerial trimmer condenser for max, output.
3.	Refer para. D. and E.	600 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 600 Kc/s. dial mark. Leave the cond. gang and tuning knob pointer set in this position. Repeak osc. coil ind. trim. (iron core) and the movable winding on the ferrite rod. Do not rock cond. gang to and fro through the signal while adjusting or move the tuning knob pointer off 600 Kc/s. dial mark until after the trimmers have been adjusted for max. output.
4.	Refer para. D. and E.	1470 Kc/s.	Turn cond. gang and tuning knob until centre of tuning knob pointer is on 1470 Kc/s. dial mark. Adjust osc. coil trim. cond. for logging and peak ferrite rod aerial trim. condenser for max. output.

Tuning range after alignment 535 to 1610 Kc/s.



VALVE PLACEMENT DIAGRAM

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A23a.

TECHNICAL BULLETIN

MODEL—BRQ—"SPORTSTER" PORTABLE

4 VALVE SUPERHETERODYNE PORTABLE RECEIVER WITH BATTERY REACTIVATION

FOR OPERATION FROM:

AC. MAINS 50 CYCLE. 200 Volt, 230 Volt or 240 Volt (Power trans. T137)
Trans. Primary Tap - red - common
" " " -green- 200 Volt mains
" " " -black- 230 Volt mains
" " " -yellow-240 Volt mains

AC. MAINS 40 CYCLE: 230 Volt or 250 Volt (Power trans. T145)
Trans Primary Tap - red - common
" " " -green- 230 Volt mains
" " " -black- 250 Volt mains

BATTERY OPERATION. 1.5 Volts 'A' Battery (two 1.5 volt torch cells in parallel) and 67.5 volts 'B' Battery.

POWER CONSUMPTION - Refer page 2.

FUNCTION SWITCH POSITIONS: Left to right (clockwise)

Position 1. SAVE - internal battery operation
" 2. FULL - internal battery operation
" 3. OFF - receiver switched "off"
" 4. MAINS - operation from AC. mains.
" 5. RE-ACT - battery reactivation

TUNING RANGE: 535 to 1610 Kc/s - 560.7 to 186.3 Metres.

POWER OUTPUT: 180 milliwatts (max.)
100 milliwatts (undistorted)

THIS BULLETIN CONTAINS:

ASTOR MODEL BRQ.

TRANSFORMER CONNECTIONS.

PC 88 TRANS. (T 137) 50 CYCLE

Pri. red lead - common
" green lead - 230V.
" black lead - 230V.
" yellow lead - 210V.
H.T. Sec.
yellow lead - start
blue lead - finish
L.T. Sec.
orange lead - start
brown lead - centre tap
orange lead - finish

POWER TRANS. (T 145) 40 CYCLE

Pri. red lead - common
" green lead - 230V.
" black lead - 250V.
"
H.T. Sec.
yellow lead - start
blue lead - finish
L.T. Sec.
Orange lead - start
brown lead - centre tap
orange lead - finish

ROD AERIAL CONNECTIONS:

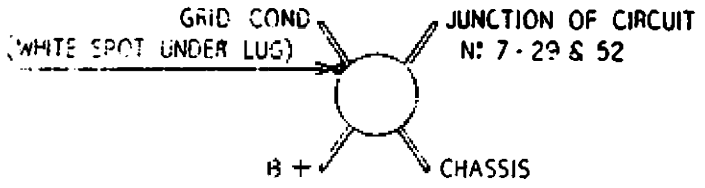
Fixed Winding: Lead from end turn furthest from movable winding - GRID.

Movable Winding: Lead from end turn furthest from fixed winding-AVC.

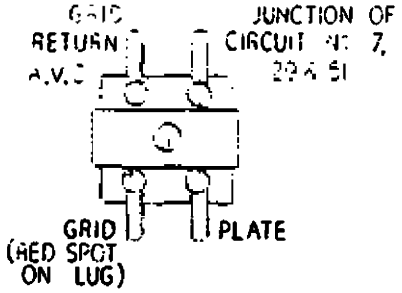
The adjecent end turn leads of both windings are joined together as shown on the circuit diagram.

OSCILLATOR COIL

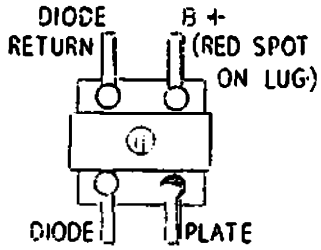
LUG VIEW OF COIL

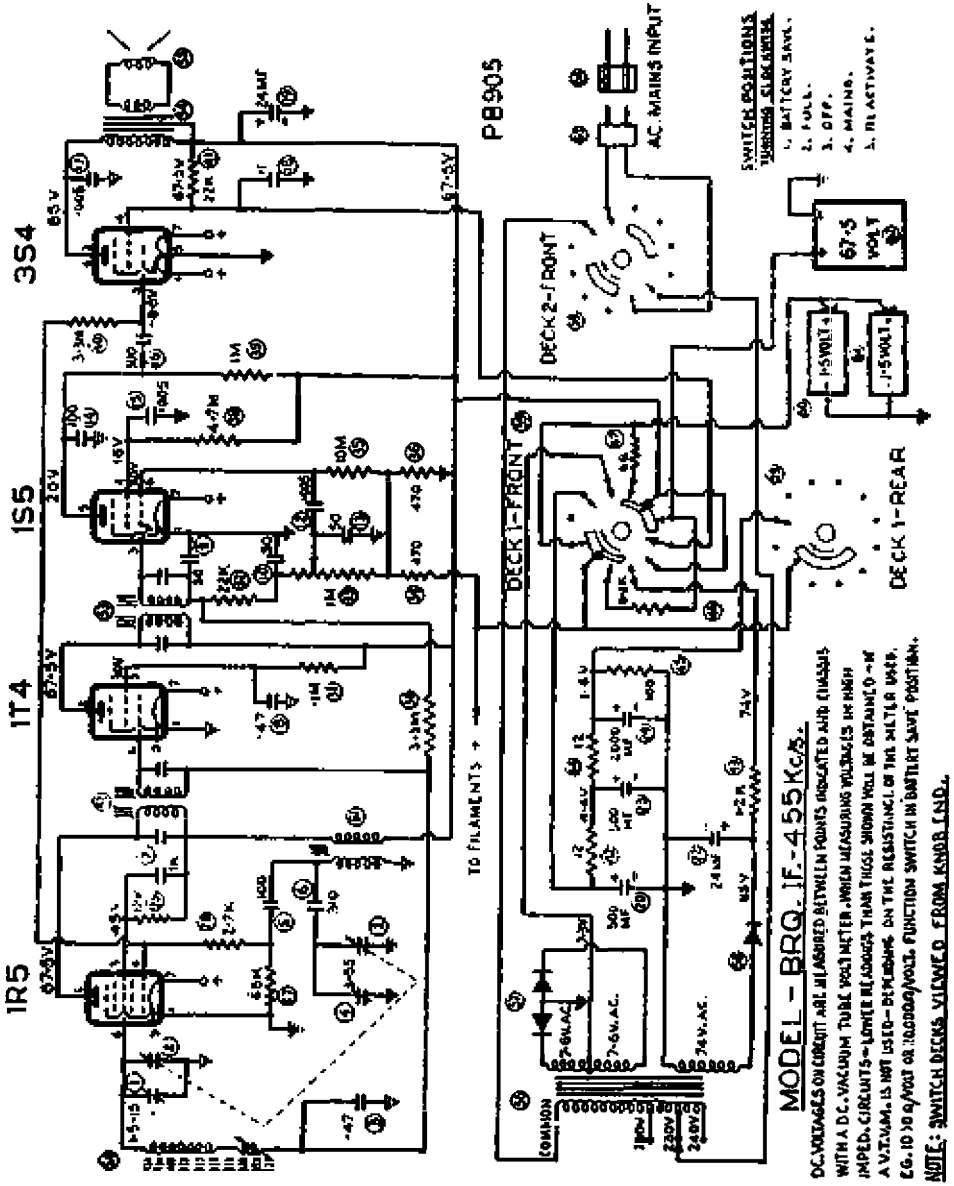


1ST I.F. TRANS.

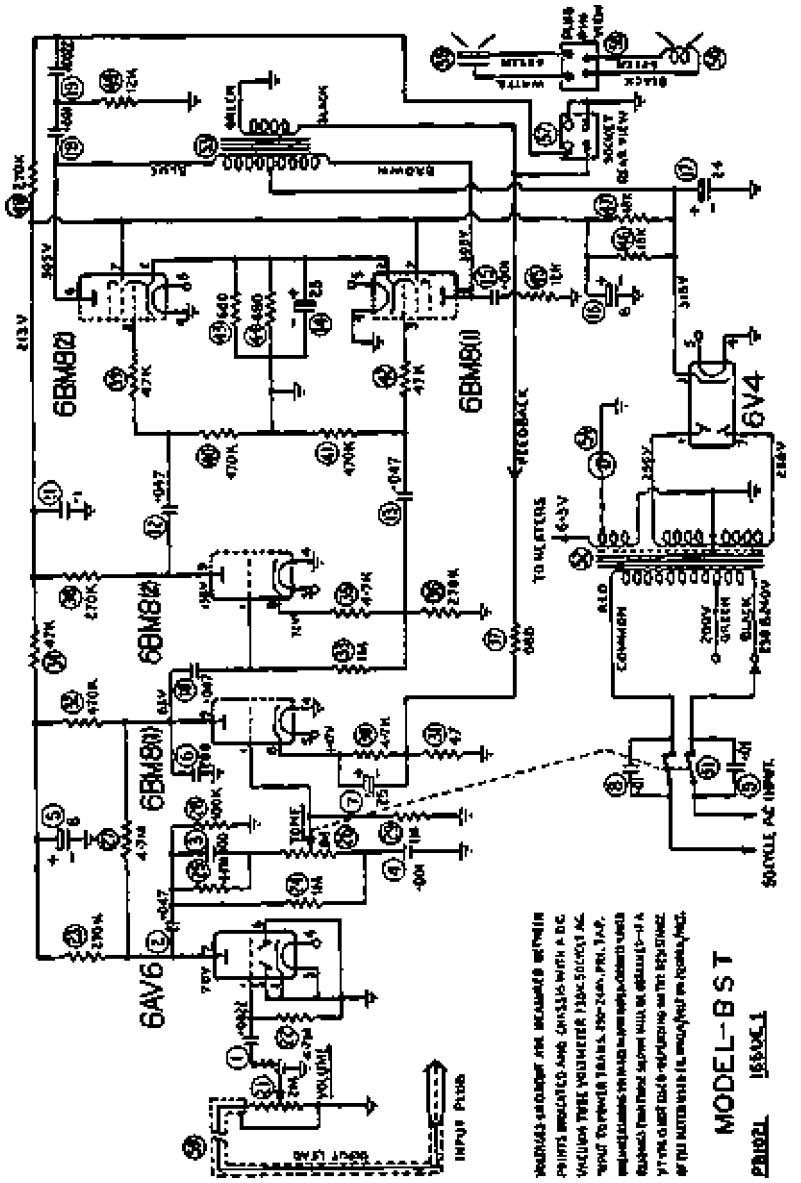


2ND I.F. TRANS.





MODEL "BST"
AUDIO AMPLIFIER



POWER OUTPUT: 4 Watts

FOR OPERATION FROM:

200-240 Volt 50 cycle AC. Mains (Power Transformer T119)
Power trans. Primary Tap, red-common.
" " " " green-200 Volt mains.
" " " " black-230 & 240 Volt mains.

200-250 Volt 40 or 50 cycle AC. Mains (Power transformer T120)
Power trans. Primary Tap, red-common
" " " " green-200 Volt mains.
" " " " black-230-240 Volt mains.
" " " " white-250 Volt mains.

POWER CONSUMPTION: 44 Watts approx.

SERVICE INSTRUCTIONS (ELECTRICAL)

EQUIPMENT:

Audio Signal Generator
Output Meter

TEST CONDITIONS:

Volume Control	:	maximum (fully clockwise)
Tone Control	:	treble (fully clockwise)
Audio Signal Generator	:	1000 CPS.
Signal Generator Output	:	0.1 Volt.
Output Meter	:	2.5 Ohms impedance Connected across secondary winding of output transformer. (Speaker voice coil disconnected)
Mains Input Voltage	:	230 Volts 50 cycle AC. input to power transformer 230-240 Volt primary tap.

ASTOR MODEL BST.

AUDIO AMPLIFIER GAIN TEST:

The amplifier chassis does not have to be removed from the cabinet to check the overall gain of the amplifier.

IMPORTANT: Before disconnecting leads from low frequency speaker voice coil terminals, note the lead colours to ensure correct phasing of the speaker when the leads are reconnected.

A. Set frequency of audio generator to 1000 cycles.

B. Adjust output level of generator to 0.1 Volt.

C. Disconnect leads from voice coil terminals on speaker.

D. Connect output meter across secondary of output transformer.

E. Connect audio signal generator output lead to input plug on free end of amplifier input lead.

1. Generator output lead 'active' to amplifier lead plug centre contact.
2. Generator output lead 'non-active' to amplifier lead plug metal casing.

F. Turn ON/OFF switch - tone control fully clockwise also volume control fully clockwise.

G. With a signal input of 0.1 Volt applied to amplifier input, the output meter should indicate a minimum of four watts output. (2.5 Ohms impedance, output meter across transformer secondary, speaker voice coil disconnected).

STEREOPHONIC REPRODUCTION AND SPEAKER PHASING:

STEREOPHONIC REPRODUCTION: The Model 'BST' amplifier/speaker unit may be connected to a grano/audio amplifier for Stereophonic reproduction provided the grano/audio amplifier incorporates a Stereo cartridge in the pick-up head and has the leads from the Stereo cartridge connected to the channels as detailed below.

A. The output lead from one channel connected to the input of the audio amplifier in the grano/audio amplifier unit.

B. The output lead from the other channel connected to a socket situated somewhere on the grano/amplifier cabinet. Into this socket is inserted the plug on the end of the input lead from the Model 'BST'.

SPEAKER PHASING: When Model 'BST' audio amplifier unit is connected to a grano/audio amplifier for Stereophonic reproduction, it is essential that the speakers in both units be phased correctly.

A method used for checking the phasing of the speakers is detailed in the following paragraphs.

1. Connect the plug on the end of the amplifier input lead of the Model 'BST' to the Stereo channel socket of the grano/audio amplifier.

2. Place the Model 'BST' cabinet approx. four feet to one side in line with the speaker cabinet of the grano/audio amplifier.

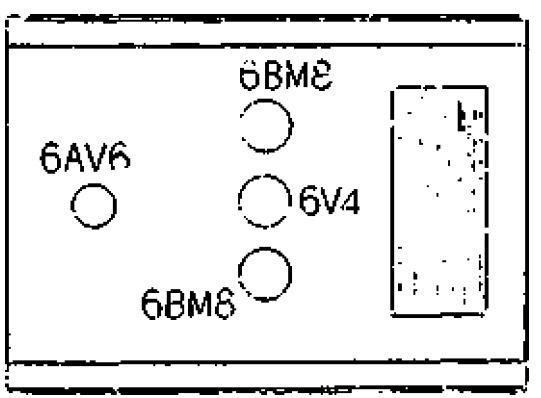
3. Play a monophonic record and accurately adjust the output of each speaker to the same volume.

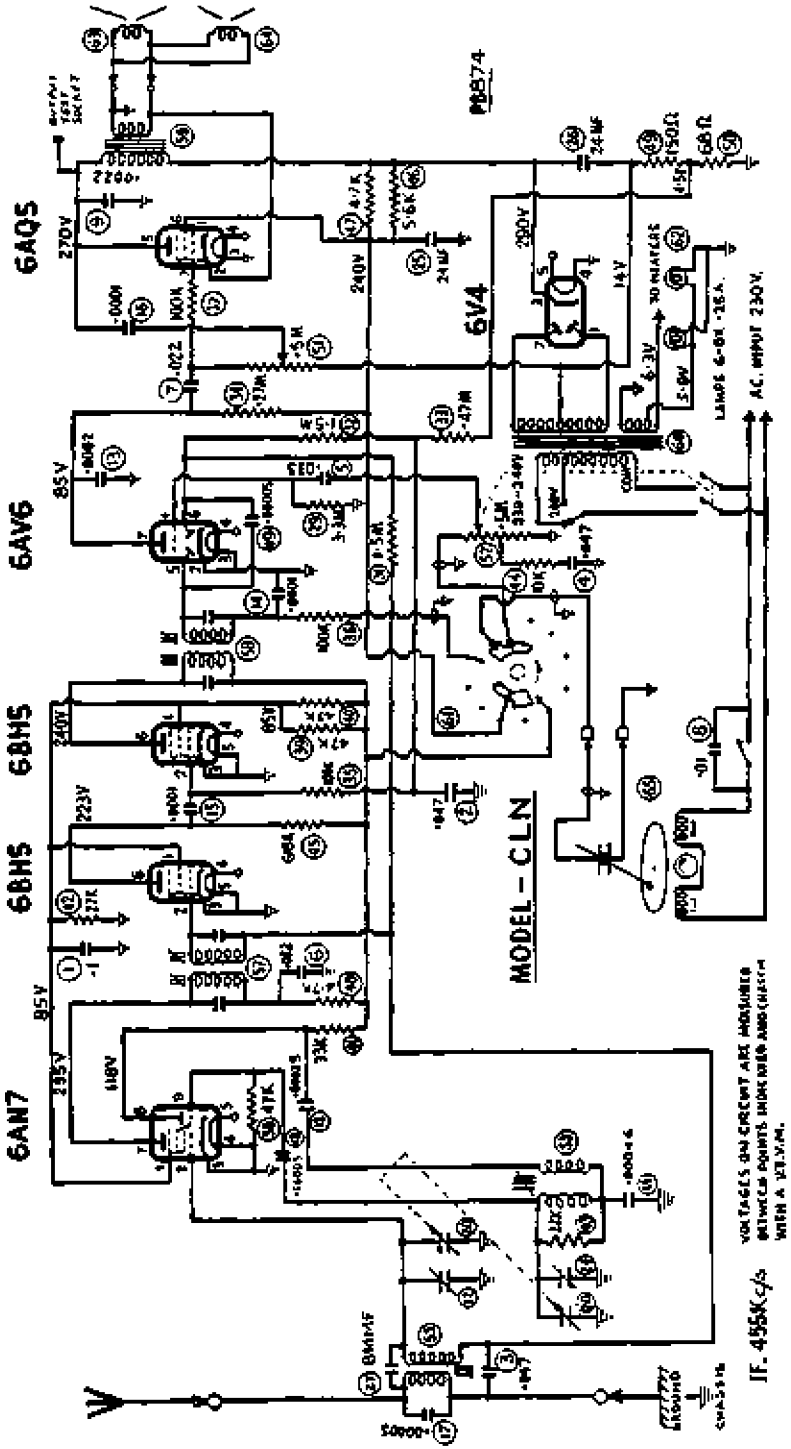
4. To conduct the following test the listener should be located in a position midway between the speaker cabinets and approx. four feet away in front.

5. If the phasing is correct the reproduced sound will appear to be radiated from a point midway between the two speakers.

6. With incorrect phasing the quality of reproduction will be poor, it will appear to be lacking in bass response and will appear to be radiated from both speakers.

7. If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of the low frequency speaker of the Model 'BST' then repeat the test detailed above.





RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL CLN.

GRAMO-RADIO COMBINATION

An Automatic 4 Speed Record Changer (78, 45, 33-1/3, 16-2/3, r.p.m.) and a 6 valve Superheterodyne Broadcast Band Receiver.

FOR OPERATION FORM.

200-240 Volt 50 Cycle AC. Mains (Power Transformer T119)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

200-250 Volt 40 Cycle AC. Mains (Power Transformer T120)
Power trans.Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.
" " " " -white-250 Volt mains.

POWER CONSUMPTION.

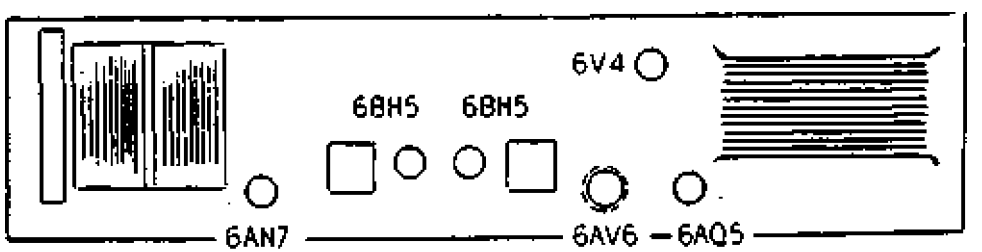
Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

TUNING RANGE

Broadcast Band: 535-1610 Kc/s. - 560.7-186.3 Metres.

THIS BULLETIN CONTAINS

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF Transformers
5. Dial Drive Cording Diagram
6. Valve Placement Diagram.
7. Instructions for Removing and Refitting Receiver Chassis and Record changer from Cabinet.
8. Instructions for Changing Mains Voltage Tap Position.
9. Chassis Serial Number.



A25a.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:	
Output Meter:	
Mica Capacitor:	0.01MF. (for IF. trans. alignment)
Dummy Antenna:	200MMF. Mica Capacitor
Alignment Tools:	Type M195 and PM581

ALIGNMENT CONDITIONS

Load Impedance:	5,000 Ohms.
Output Level;	50 Milliwatts.
Vol. Control:	Max. Vol. fully clockwise.
Intermed. Freq.:	455 Kc/s.
Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 volt pri.tap.
Tone Control	Treble position.

IF. TRANS. ALIGNMENT

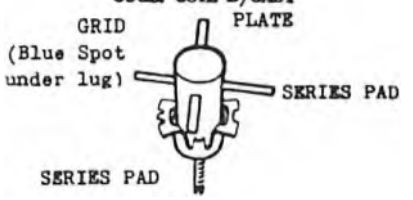
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 6.			
2.	Connect speaker leads to speaker sockets.			
3	To control grid of 6BH5 2nd IF. valve (pin No.2)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
4.	To control grid of 6AN7 valve (pin No.2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
5.				Repeat operations No. 3 and 4.

B/CAST ALIGNMENT

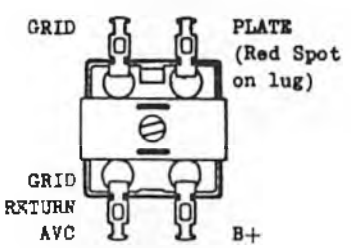
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial readingnear 540 Kc/s.			
2.	To antenna lead	600 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil ind. trim (iron core) for max. output.
3.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim cond. for logging and peak ant. trans. trim. cond. for max. output.
4.	To antenna lead from receiver	600 Kc/s.	200 MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim (iron core) and peak the ant. trans. ind. trim. (iron core) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.
5.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl coil trim condenser for logging and re-peak antenna trans. trim. condenser for max. output.

ANTENNA TRANS. B/CAST

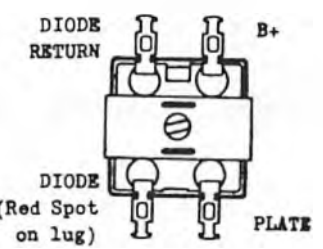
OSCL. COIL B/CAST



1st IF. TRANS.



2nd IF. TRANS.



INSTRUCTIONS FOR REMOVING A RECORD PLAYER TURNTABLE WHICH HAS SEIZED ON THE TURNTABLE SPINDLE

1. Allow the unit to be cool, i.e. the spindle and turntable bearing not to be warm due to friction or by operating the unit.

2. Apply a small quantity of penetrene to the hole in the top of the spindle.

3. Fasten the pick-up to its rest pillar, then turn the unit upside down.

4. Insert a wedge between the cabinet and the turntable metal motor mount plate. Do not press the wedge in too far to avoid undue strain on the motor mounting.

5. Dip a piece of rigid wire into the penetrene to form a blob of penetrene on the end of the wire. Insert the wire between the cabinet and the motor mount plate and apply the penetrene to the junction of the turntable spindle and the turntable boss (where the spindle enters the boss).

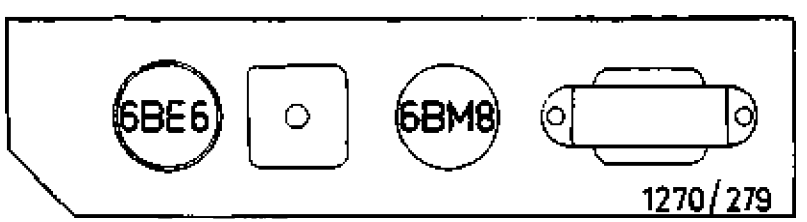
6. After about minutes, remove wedge and turn unit right-side up.

7. The turntable revolves on a fixed spindle. Ease turntable up and around on spindle; do not use great force. If the turntable does not move repeat para. 2 to 6.

8. When the turntable is removed, apply to the spindle a slight application of light oil (sewing machine oil or 3A320). The spindle may be given a rub or two with very fine emery paper before applying the oil if the turntable was difficult to remove.

9. No further seizure of the turntable on the spindle should be encountered once the oil is applied to the spindle.

10. Under no circumstances allow oil to be placed on the rubber drive pulley or the inside rim of the turntable.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.
TECHNICAL BULLETIN

PLAY-GRAM MODEL "CML"

A 2 VALVE SUPERHETERODYNE BROADCAST RECEIVER AND A 4 SPEED (16⅔, 33⅓, 45 and 78 R.P.M.) SINGLE RECORD PLAYER.

FOR OPERATION FROM:

200-240 Volt 50 Cycle Supply Mains (Power Transformer T148
Power Trans. Primary Mains Tap-red-common.
,, ,, ,, ,, ,,-green 200V. mains
,, ,, ,, ,, ,,-black 230 & 240V. mains.
230-250 Volt 40 Cycle Supply Mains (Power Transformer T149
Power Trans. Primary Mains Tap-red-common.
,, ,, ,, ,, ,,-green 230V. mains
,, ,, ,, ,, ,,-black 250V. mains.

POWER CONSUMPTION:

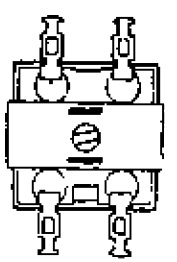
Radio Operation: 18 Watts.-approx.
Gramo Operation: 38 Watts.-approx.

TUNING RANGE:

535-1640 Kc/s.: 560.7-182.9 Metres.

IF. TRANS.

GRID RETURN — 8 - (Red Spot on Lug)



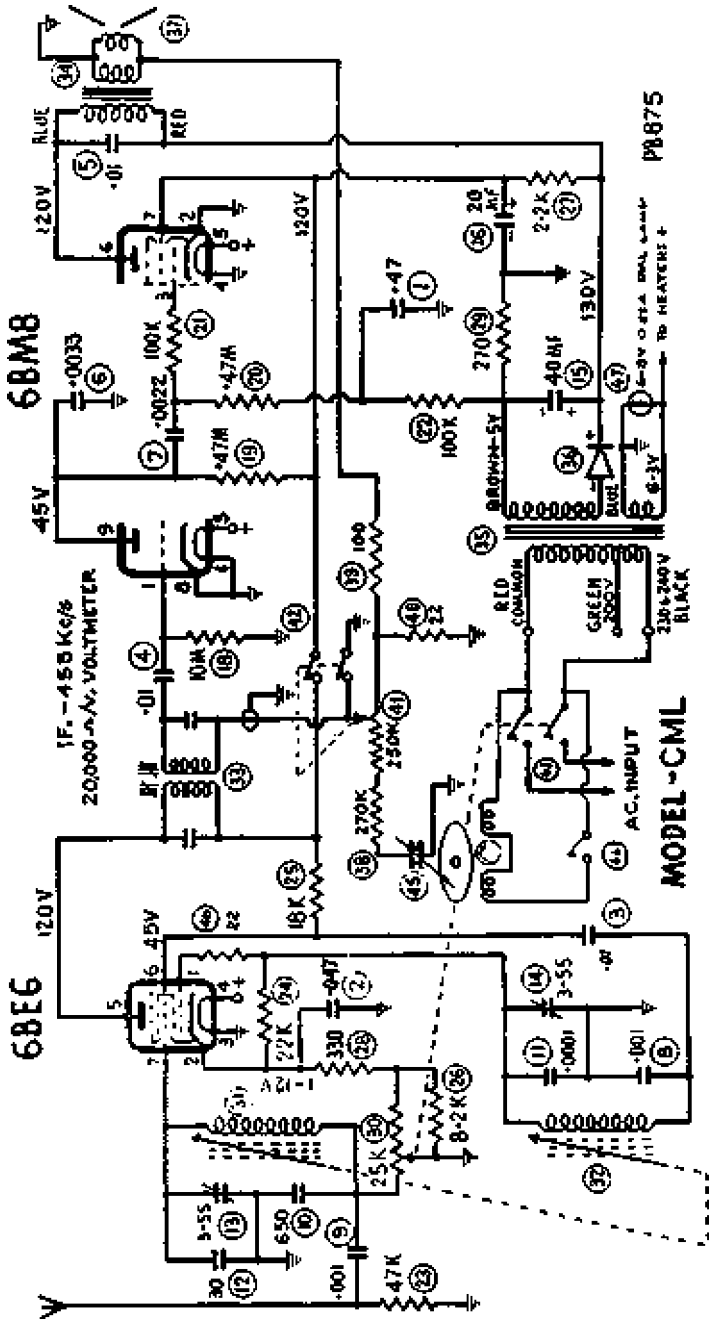
GRID — PLATE

ANTENNA TRANS.:

Start of winding – furthest from mounting end – Junction of circuit Nos. 9, 10 & 30.
Finish of winding – nearest to mounting end – Signal grid.

OSCL. COIL:

Start of winding – furthest from mounting end – Oscl. grid.
Finish of winding – nearest to mounting end – Junction of circuit Nos. 3 & 5.



MODEL CML.

ALIGNMENT PROCEDURE:

EQUIPMENT:

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF (for IF. trans. alignment)
Dummy Antenna: 200MMF Mica Capacitor
Straight Alignment Tool: Type PM581
Flexible Alignment Tool: Type 48/712

ALIGNMENT CONDITIONS:

Load Impedance: 7,000 ohms.
Output Level: 50 Milliwatts
Vol. Control: Max. Vol. fully clockwise
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 230-240 volt pri. tap

NOTE 1:
Dummy Antenna: The 200 MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The dummy antenna must be connected to the junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If the 25 ft. antenna is connected it should be fully rolled up into a small hank.

NOTE 2:
The motor mount plate has to be removed from the cabinet to align the IF transformer and RF signal circuits.

1. Unscrew and remove the five screws A, B, C, D & E shown on the drawing on Page 9.
2. Lift up rear edge of motor mount plate and at the same time slide motor mount plate towards rear of cabinet so that mount plate disengages with a bracket on inside of front of cabinet.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
3.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn tuning drum until perm. tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave grid wire attached to valve socket. Peak IF. trans. pri. and sec. for max. output.

DIAL DRUM SETTING:
Turn dial drum toward the rear of motor mount plate until the perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. The end of travel spot on dial reading near 1700 Kc s. is to align with the indicator arrows moulded on the top of the motor mount plate. The dial drum is adjusted by loosening off the screw in the centre of the drum and is accessible through the slot in the drum.

4.	To antenna junction lug on chassis.	1000 Kc/s.	200MMF Mica capacitor in series with generator.	Turn tuning drum until alignment spot at 1000 Kc/s. aligns with moulded arrows on top of motor plate. Peak oscl. coil trimmer cond., then peak antenna coil trimmer cond. for max. output. Re-peak oscl. coil trim condenser.

5. Tuning range after alignment 535-1640 Kc s.
6. Refit motor mount plate with receiver attached to the cabinet.

NOTE:
Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned hard against the stop.

If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same [illegible] specified [illegible] end of the iron core.

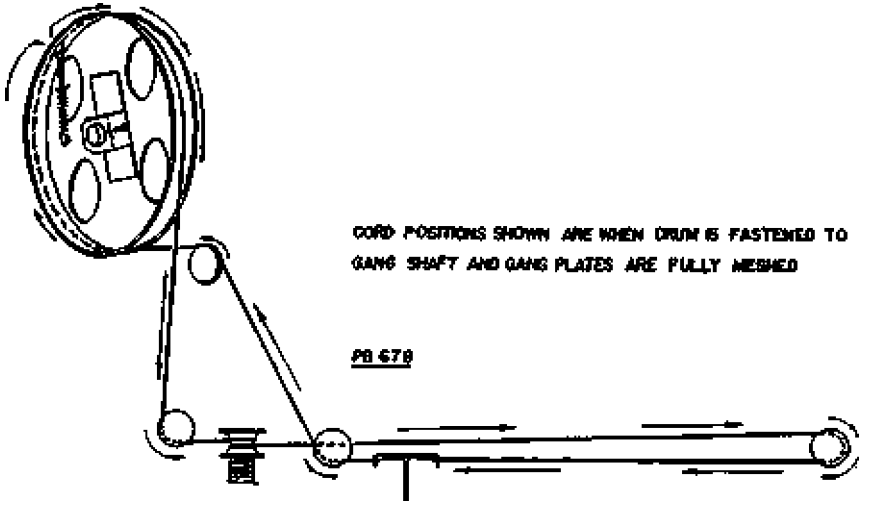
CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring.

Cord Part No. 34/754.

Tension Spring Part No. 21/698.

Note:- 1 turn shown around drive spindle changed to 2 turns.



INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.-The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.-For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove chassis from cabinet as detailed on page 2.

The mains lead wire from the switch on the volume control which is attached to the 221-250 V. tap on the mains terminal strip is to be unsoldered from the 221-250 V. tap and re-soldered to the 200-220 V. tap.

CHASSIS SERIAL NUMBER

The serial number is stamped into the top edge of the metal chassis near the power transformer and is visible from the rear of the cabinet when the cover board is removed.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A27.

TECHNICAL BULLETIN

MODEL CNK

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

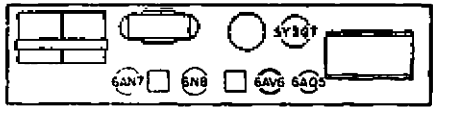
200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

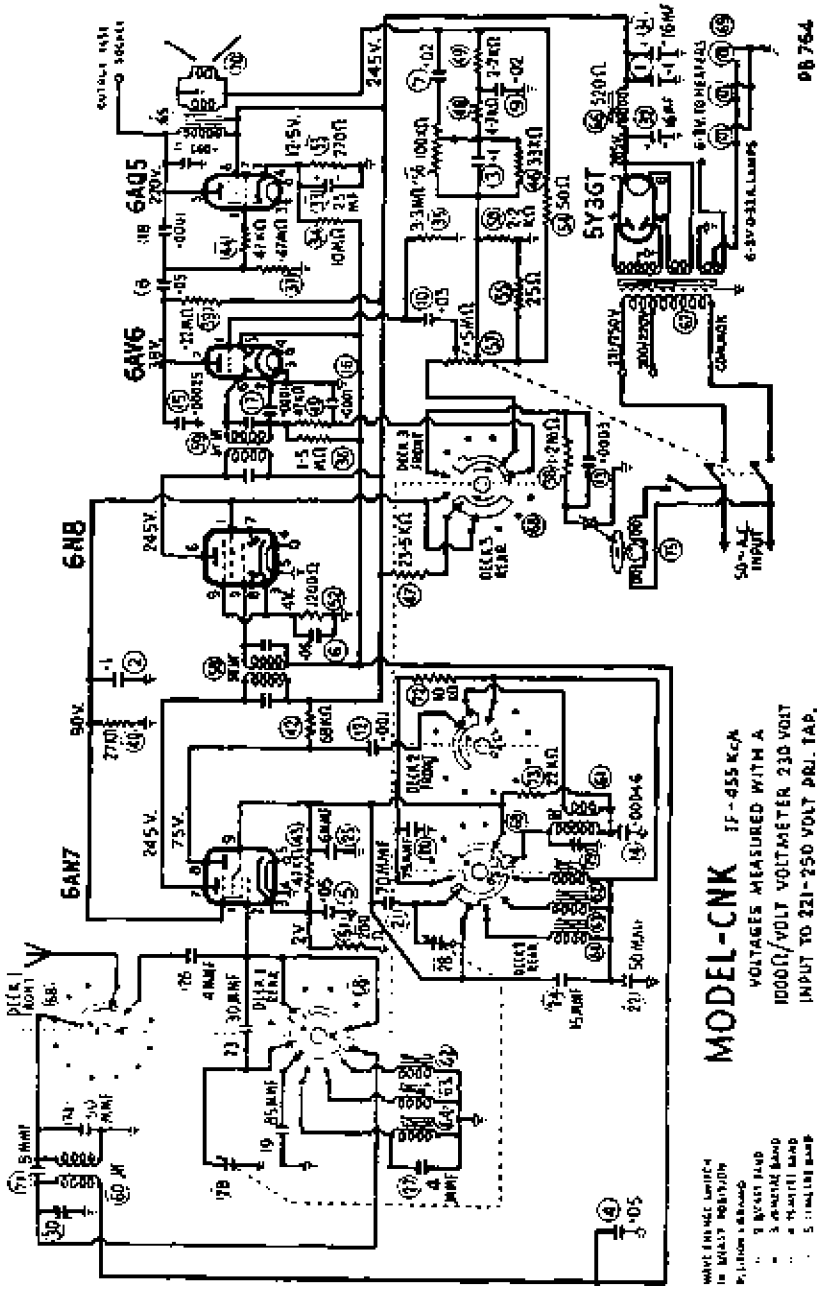
TUNING RANGES:—		RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.		560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.8-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.)

THIS BULLETIN CONTAINS:—

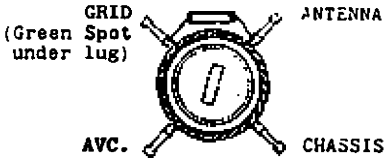


VALVE PLACEMENT DIAGRAM 1063/279

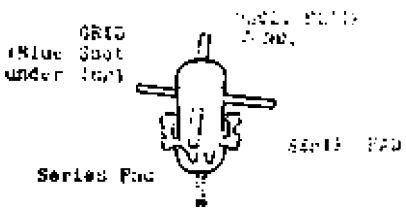
ASTOR MODEL CNK.



ANTENNA TRANS.



OSCL. COIL



19, 25 AND 31 METRE ANT. TRANS.

Lead from top lug (iron core end):- **GRID.**

Lead from bottom lug (mounting end):- **CHASSIS - EARTH.**

19, 25 AND 31 METRE OSCL. COIL

Lead from top lug (iron core end):- **GRID.**

Lead from bottom lug (mounting end):- OSCL. PLATE COND.

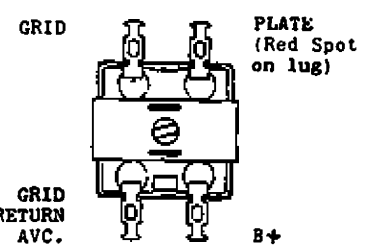
---

31 Metre spreadband coil, RED spot on iron core end of former.

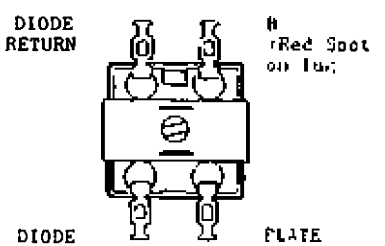
25 Metre spreadband coil, WHITE spot on iron core end of former

19 Metre spreadband coil. BLUE spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.



ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load Impedance:	5,000 ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor.	Intermed. Freq.:	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Dummy Antenna:	400 Ohm non-inductive resistor.		
Alignment Tools:	Type M195 and PM581.	Tone Control:	Treble position.

To Remove Chassis from Cabinet— DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove three push-on type control knobs from spindles near radio-dial and wave change switch knob from right hand side of cabinet. Remove screws fastening cabinet back to cabinet. Withdraw speaker lead plug from socket at end of chassis and pick-up lead plugs from small sockets beneath gramo unit. Disconnect cabinet base indicator lamp lead plug from its socket and receiver AC. mains leads from AC. junction block on cabinet. Remove small wood screw fastening tone control bracket to underside of receiver mount board. Remove a nut from each of two captive screws through brackets at each end of receiver chassis; then lift receiver chassis out of cabinet. Refit the chassis to the cabinet in the exact reverse procedure to removing it.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6N8 I.F. valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.				Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.
5.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil inductance trim (iron core) for max. output.
6.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
7.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil. ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.
8.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and repeak antenna trans. trim. condenser for max. output.
9.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
10.	To antenna lead from receiver.	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn dial pointer and cond. gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil ind. trim. (iron core) for logging and peak 31 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
11.	To antenna lead from receiver.	11.8 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 25 metre band. Turn dial pointer and cond. gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging and peak 25 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna lead from receiver.	15.2 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 19 metre band. Turn dial pointer and cond. gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
13.	Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.			

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31 Metre spreadband coil, RED spot on iron core end of former.

25 Metre spreadband coil, WHITE spot on iron core end of former.

19 Metre spreadband coil, BLUE spot on iron core end of former.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

Bulletin: CNM-1.
File: Receivers AC.
27/4/55.
Page 1.

GRAMO-RADIO COMBINATION MODEL—"CNM"

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Broadcast Receiver.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:-55 Watts.-approx.
Gramo Operation:-75 Watts.-approx.

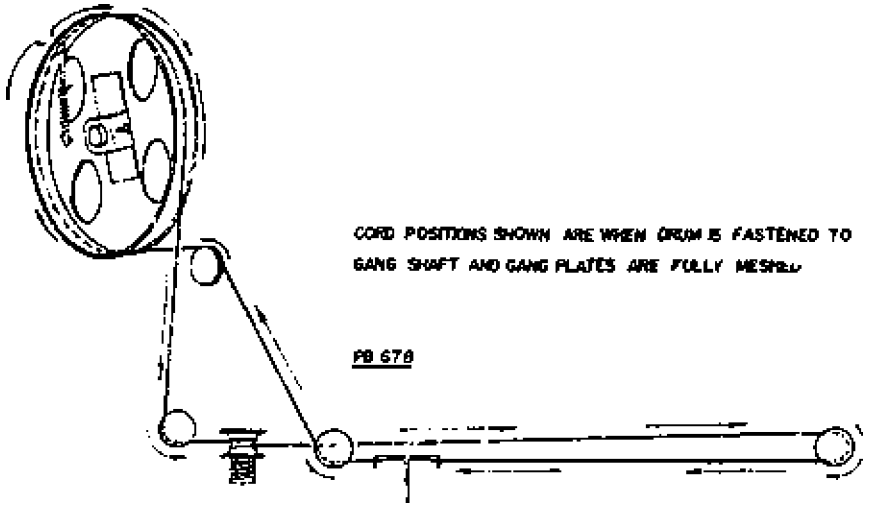
TUNING RANGE:—

535-1610 Kc/s. - 560.7-186.3 Metres.

CORDING OF DIAL DRIVE

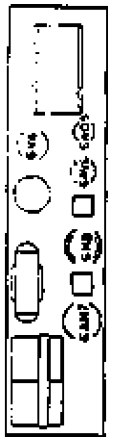
Length of cord required is 5 ft. 6ins., which includes about 8 ins. to spare for tying to tension spring. Cord Part No. 34/754. Tension Spring Part No. 21/698.

NOTE: 1 turn shown on drive shaft increased to 2 turns.

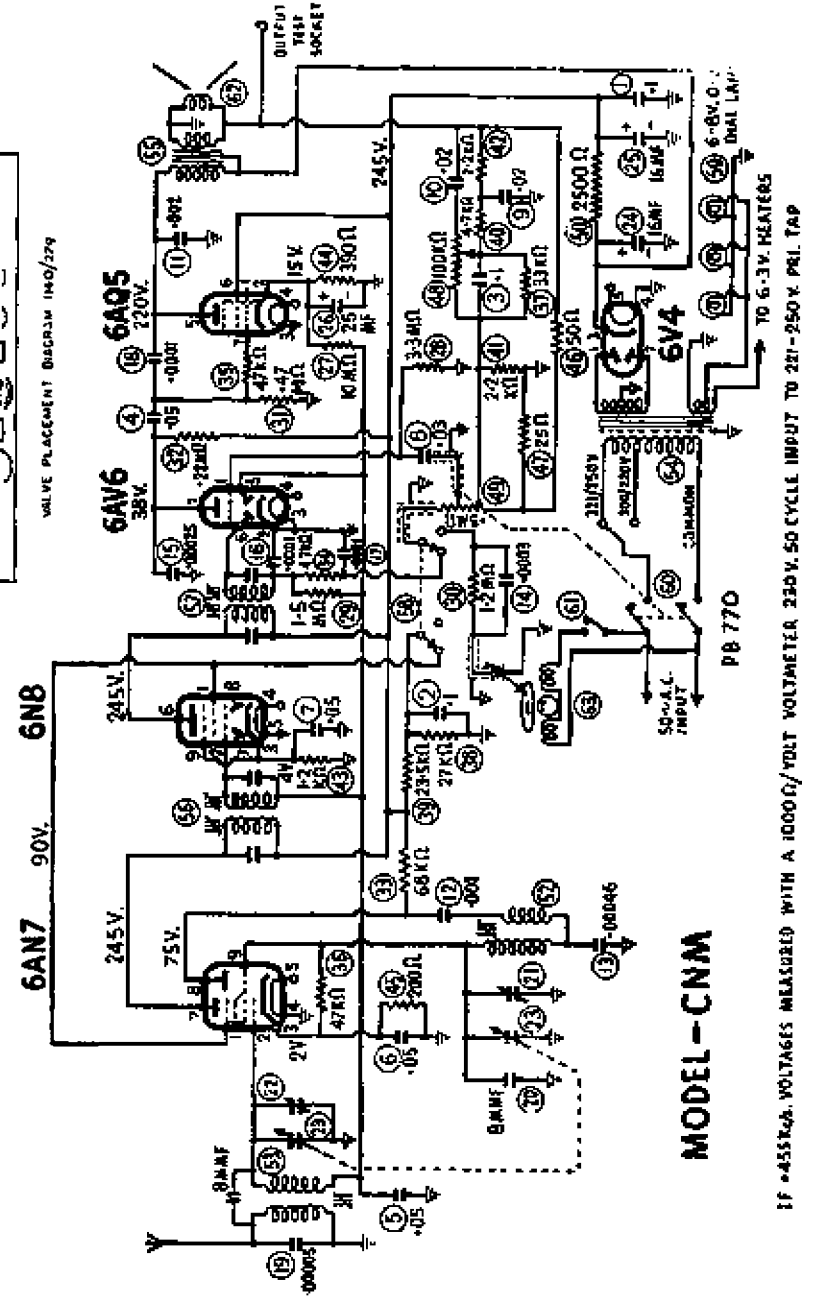


CORD POSITIONS SHOWN ARE WHEN DRUM IS FASTENED TO GANG SHAFT AND GANG PLATES ARE FULLY MESHED

PB 678



VALVE PLACEMENT DIAGRAM 1440/279



ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF. (for IF. trans. alignment)
Dummy Antenna: 200MMF. Mica Capacitor

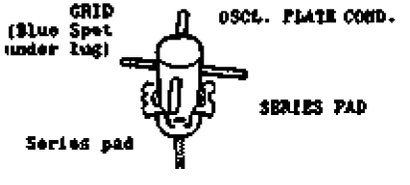
Alignment Tools: Type M195 and PM581.

ALIGNMENT CONDITIONS

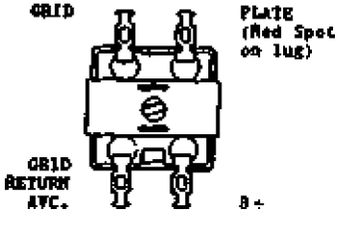
Load Impedence: 5,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap
Tone Control: Treble position.

ANTENNA TRANS.

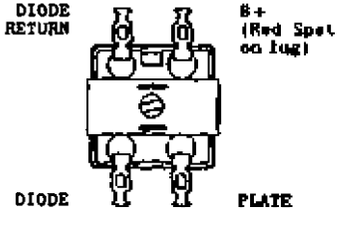
OSCL. COIL



1st IF. TRANS.



2nd IF. TRANS.



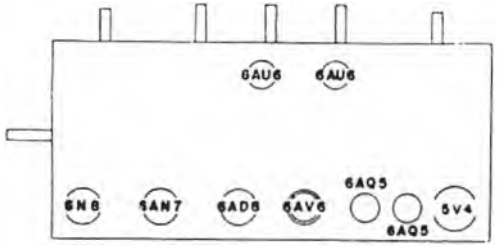
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6N8 I.F. valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Fully mesh the cond. gang plates. Set the centre of the end of travel mark on			the centre of the dial pointer to align with the dial reading near 540 Kc/s.
5.	To antenna lead from receiver	600 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil inductance trim (iron core) for max. output.
6.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
7.	To antenna lead from receiver	600 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.
8.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and repeak antenna trans. trim. condenser for max. output.

Tuning range after alignment: 535-1610 Kc/s.

MODEL — "CPP" — CONCERTMASTER

GRAMO-RADIO COMBINATION

An automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 9 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.



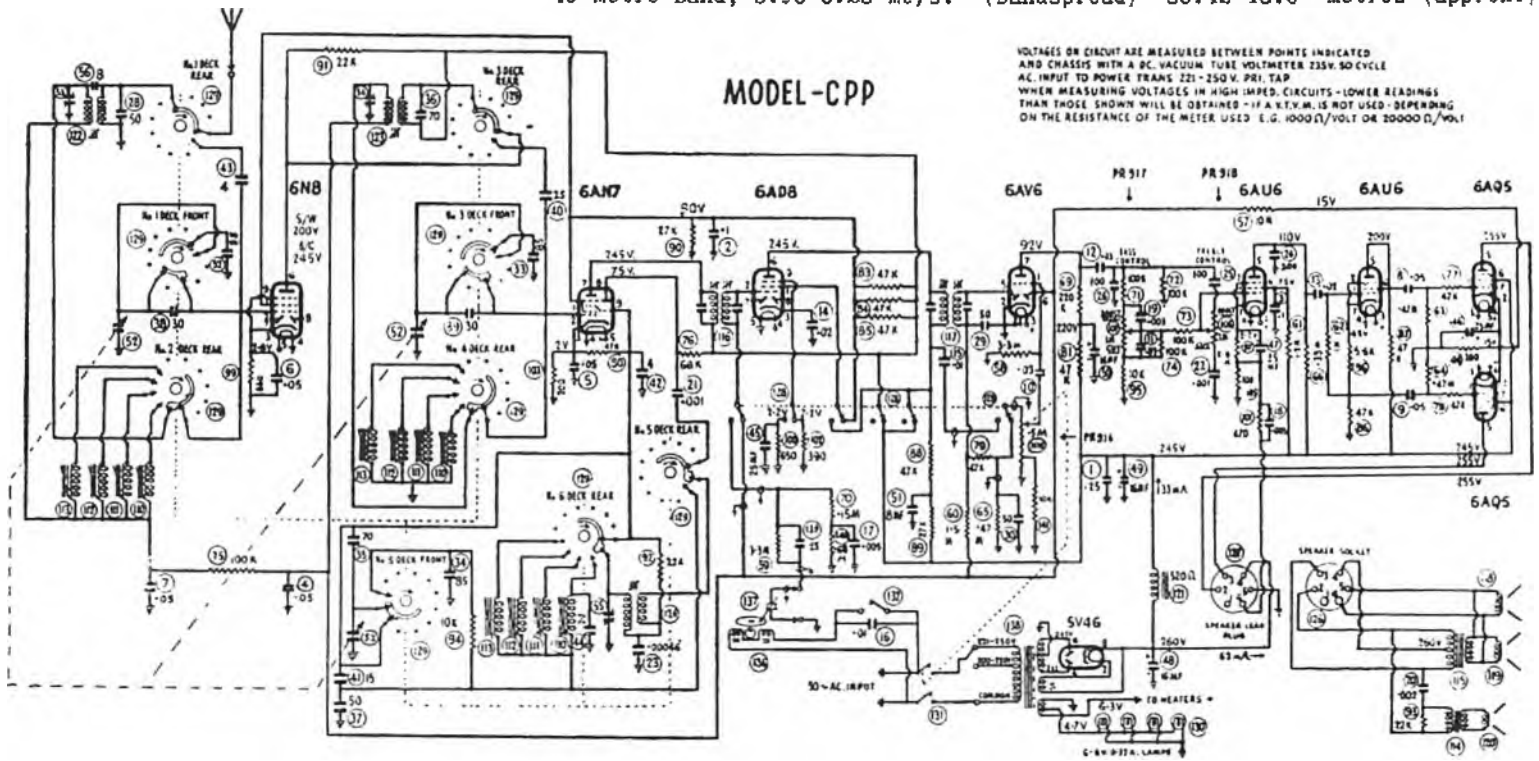
VALVE PLACEMENT DIAGRAM 1252/279

POWER CONSUMPTION:—

Radio Operation:— 80 Watts.-epprox.
Gramo Operation:—100 Watts.-epprox.

TUNING RANGES:— **RECEIVER COVERAGE:—**

Broadcast Band, 535-1610 Kc/s.			560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres	(approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres	(approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres	(approx.)
49 Metre Band, 5.95-6.25 Mc/s.	(Bandspread)	50.42-48.0 Metres	(approx.)



ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS

Load Impedance: 10,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Bass Tone Control: Min. Bass Position.
Treble Tone Control: Min. Treble Position.
Intermed. Freq.: 455 Kc/s.
Supply Mains: 230 volts 50 cycle
AC. input to trans. 221-250V. primary tap.

EQUIPMENT

Signal Generator.
Output Meter.
Mica Capacitor: 0.01MF. (For I.F.T. alignment).
Dummy Antenna: 200MMF. Mica capacitor.
Dummy Antenna: 400 ohm. non-inductive resistor.
Alignment Tools: Type M195 and PM581.
IF. Attenuator: Type M174. This attenuator consists of a 20K ohm ½ w. resistor and a .004MF. cond. wired in series and having clips attached for connecting to the chassis and IF. valve signal grid during alignment of the RF. signal circuits.

Remove chassis from cabinet — refer page 12.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6AD8 IF. valve pin No. 2.	455 Kc/s.	0.01MF mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid wire attached to valve socket. Peak 2nd. IF. trans. pri. and sec. for max. output.
2.	To signal grid of 6AN7 valve. Pin No. 2.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st. IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s. Condenser gang plates fully meshed.			
5.	Connect IF. attenuator type M174 between receiver chassis and signal grid of 6AD8 IF. valve pin No. 2.			
6.	To antenna terminal.	600 Kc/s.	200 MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim. (iron core) for max. output.
7.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn. cond. gang and dial pointer until centre of pointer aligns with 1400 Kc/s. spot on dial reading. Adjust B/cast oscl. coil trim. condenser for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
8.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and re-peak the B/cast oscl. coil. ind. trim. iron core for max. output, then peak the B/cast antenna and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 600 Kc/s. dial mark, until after the ind. trimmers (iron cores) of both these transformers have been peaked for max. output.
9.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer to 1400 Kc/s. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
10.	Turn wave change switch to 49 metre band (this band must be aligned before the 31 metre, 25 metre and 19 metre bands).			
11.	To antenna terminal.	6.05 Mc/s.	400 ohm non-inductive resistor.	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 6.05 Mc/s. dial mark. Adjust 49 metre band oscl. coil ind. trim. (iron core) for logging and peak 49 metre ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna terminal.	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 31 metre band. Turn cond. gang and dial pointer until centre of pointer aligns with centre of 9.6 Mc/s. dial mark. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

13.	To antenna terminal.	11.8 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 25 metre band. Turn cond. gang and dial pointer until centre of pointer aligns with centre of 11.8 Mc/s. dial mark. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.
14.	To antenna terminal.	15.2 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 19 metre band. Turn cond. gang and dial pointer until centre of pointer aligns with centre of 15.2 Mc/s. dial mark. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

15. Disconnect IF. attenuator from receiver.

16. Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.

SHORTWAVE COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.—For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove the chassis from the cabinet as detailed on page 12. The mains lead wire from the switch on the volume control which is attached to the 221-250 volt tap is to be un-soldered from the 221-250 V. tap and then re-soldered to the 200-220 volt tap. Refit the chassis to the cabinet in the exact reverse procedure to removing it

49, 25, 31 AND 19 METRE ANT. TRANS.

Lead from top lug (iron core end) :— GRID.

Lead from bottom lug (mounting end) :—A.V.C.

19, 25, 31 AND 49 METRE RF. TRANS.

Lead from top lug (iron core end) :— GRID.

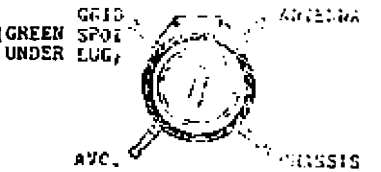
Lead from bottom lug (mounting end) :—CHASSIS-EARTH.

19, 25, 31 AND 49 METRE OSCL. COIL

Lead from top lug (iron core end) :— GRID.

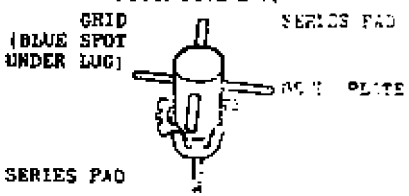
Lead from bottom lug (mounting end) :—OSCL. PLATE.

ANTENNA TRANS. B C. (IRON CORED)

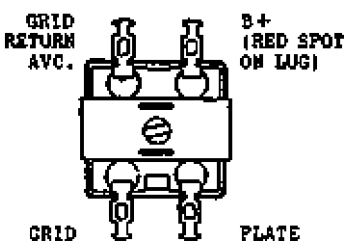


RF. TRANS B C. (IRON CORED)

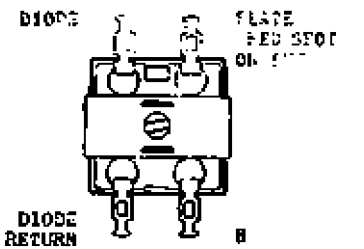
OSCL. COIL B C.

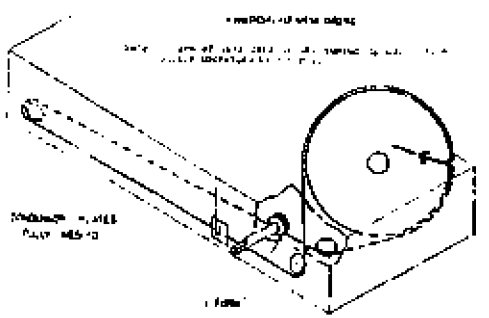


1st IF. TRANS.



2nd IF TRANS.





MODEL CRK.

GRAMO-RADIO COMBINATION

ASTOR MODEL CRK.

An automatic 4 Speed Record Changer (78,45,33-1/3,16-2/3 r.p.m.) and an 8 valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FORM:-

200-240 Volt 50 Cycle Supply Mains (Power Transformer T119)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green-200V mains.
" " " " " -black-230 & 240V. mains.

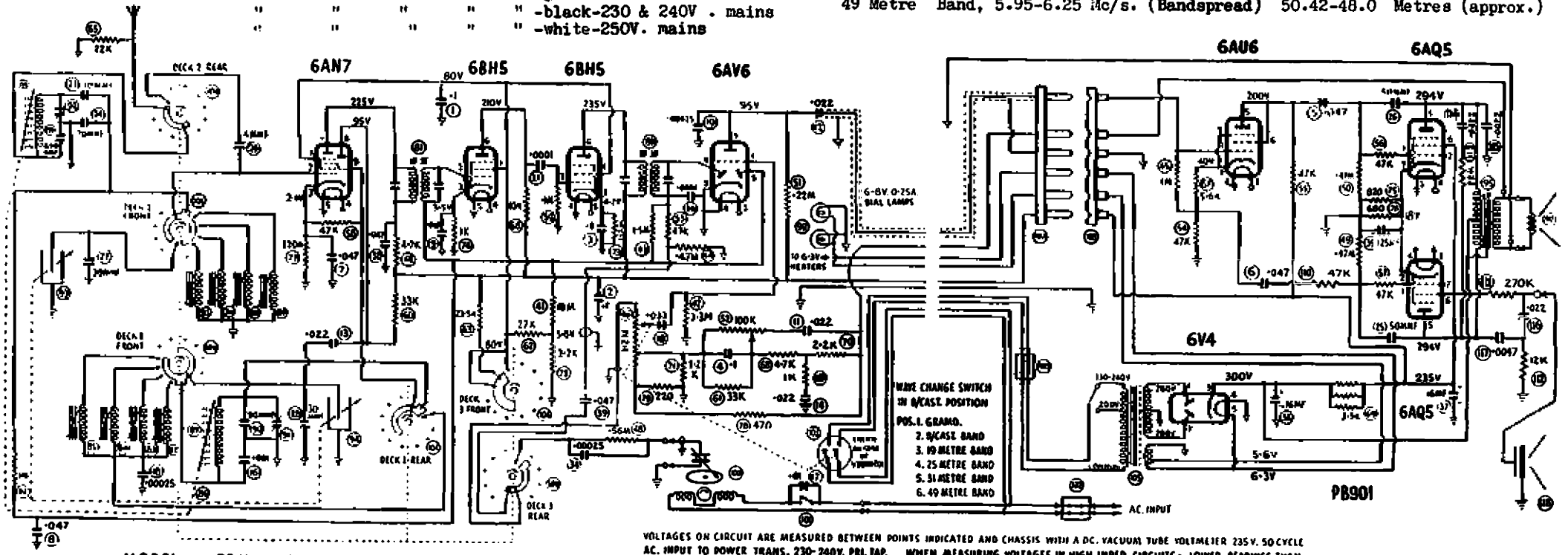
200-250 Volt 40 Cycle Supply Mains (power Transformer T120)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green-200V mains
" " " " " -black-230 & 240V . mains
" " " " " -white-250V. mains

POWER CONSUMPTION:-

Radio Operation:- 55 watts-approx.
Gramo Operation:- 75 Watts-approx.

TUNING RANGES:- **RECEIVER COVERAGE:-**

Broadcast Band, 535-1610 Kc/s.			560.7-186.3 Metres.
19 Metre Band, 14.9-15-5 Mc/s.	(Bandspread)		20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)		25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.6 Mc/s.	(Bandspread)		31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s.	(Bandspread)		50.42-48.0 Metres (approx.)



MODEL — CRK — IF = 455 Kc/s

VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 235 V. 50 CYCLE A.C. INPUT TO POWER TRANS. 230-240V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED EG. 1000Ω/VOLT OR 20000Ω/VOLT

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:		Load Impedance:	2 Ohms (output meter connected across sec. of 10,000-2 Ohm imped. trans. Circuit No. 95)
Output Meter:			
Mica Capacitor:	0.01MF (for IF. trans. alignment		
Dummy Antenna:	200 MMF Mica capacitor	Output Level:	50 Milliwatts
Dummy Antenna:	400 Ohm non-inductive resistor	Vol. Control:	Max. Vol. fully clockwise
Alignment Tools:	Type M195 and PM581	Intermed Freq.:	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 Volt pri. tap
		Tone Control:	Treble position

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver power supply chassis and tuning unit chassis from cabinet as detailed on page 9.			
2.	Remove dial back plate assembly from tuning unit chassis.- A. Pull dial pointer up, then twist it over to rear of dial background. B. Slide dial lamp sockets off edge of dial background. C. Unscrew and remove two screws from mount plate at each end of dial background. D. Pull dial background assy. forward straight off control spindles.			
3.	Connect speaker leads and leads from tuning unit chassis to power supply chassis.			
4.	To control grid of 6BH5 2nd IF. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn wave change switch to b/cast band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AN7 valve, pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output
6.	Refit dial plate assembly and dial pointer.			

B/CAST AND S/WAVE ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200MMF Mica capacitor in series with generator	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast oscl. coil trimmer cond., then peak b/cast antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band to be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 Ohm Non-inductive resistor in series with generator	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.6 Mc/s. mark on the dial.

ASTOR MODEL CRK.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
				Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.
9.	To antenna lead	15.2 Mc/s.	400 Ohm non inductive resistor in series with generator	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging, then peak 19 metre antenna coil ind. trim (iron core) for max. output.
10.	To Antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

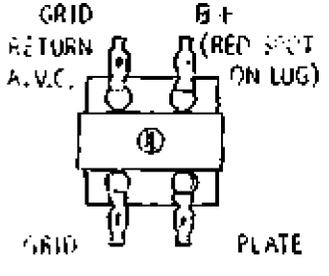
NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to an exact dimension. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

YELLOW	49 Metre spreadband coil, YELLOW spot on iron core end of former.
RED	31 Metre spreadband coil, RED spot on iron core end of former.
WHITE	25 Metre spreadband coil, WHITE spot on iron core end of former.
BROWN	19 Metre spreadband coil, BROWN spot on iron core end of former.

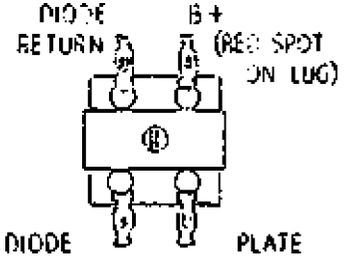
SHORT WAVE SPREADBAND COIL IDENTIFICATION COLOURS

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

1ST. I.F. TRANS.

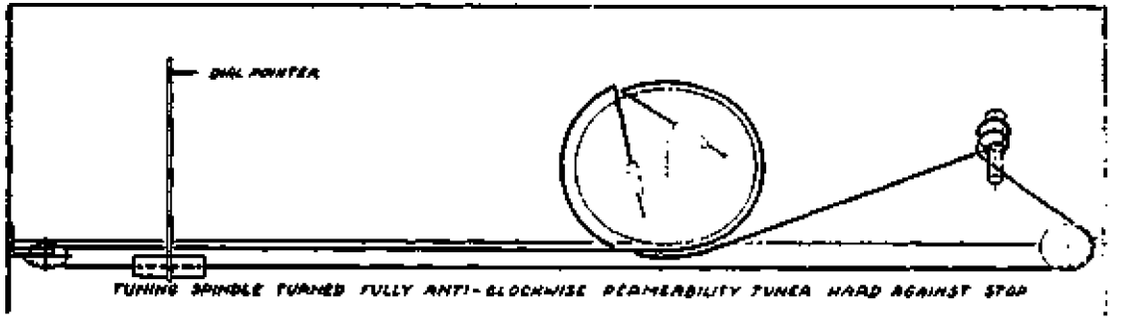


2ND. I.F. TRANS.

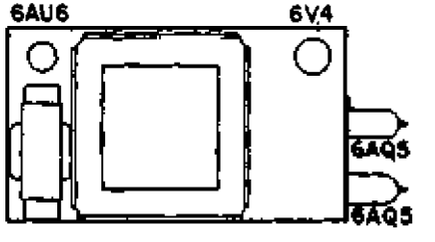


CORDING OF DIAL DRIVE

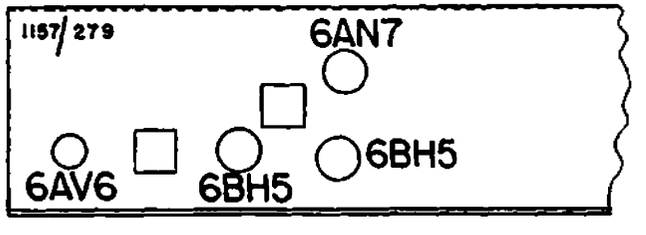
Length of cord required is 4 ft. 6 ins., which includes about 8 ins. to spare for tying to tension springs.
Cord Part No. 34/754.
Tension Spring (2) Part No. 503/30C.



PE 788



VALVE PLACEMENT DIAGRAM
1156/279



VALVE PLACEMENT DIAGRAM

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL DLN.

GRAMO-RADIO COMBINATION

An Automatic 4 Speed Record Changer (78, 45, 33-1/3, 16-2/3, r.p.m.)and a 6 valve Superheterodyne Broadcast Band Receiver.

FOR OPERATION FROM

200-240 Volt 50 Cycle AC. Mains (Power Transformer T119)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

200-250 Volt 40 & 50 Cycle AC. Mains (Power Transformer T120)
Power trans. Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.
" " " " -white-250 Volt mains.

POWER CONSUMPTION.

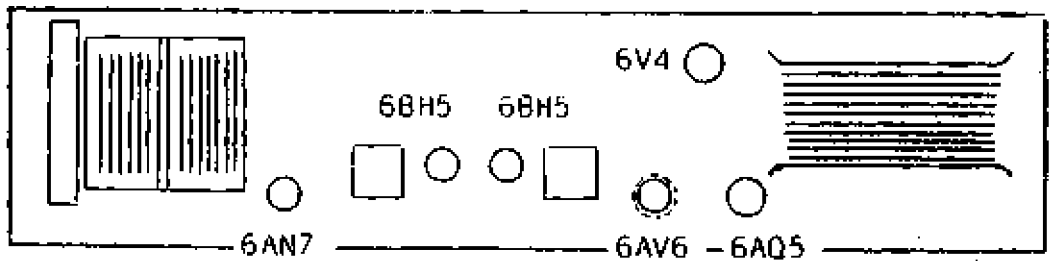
Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

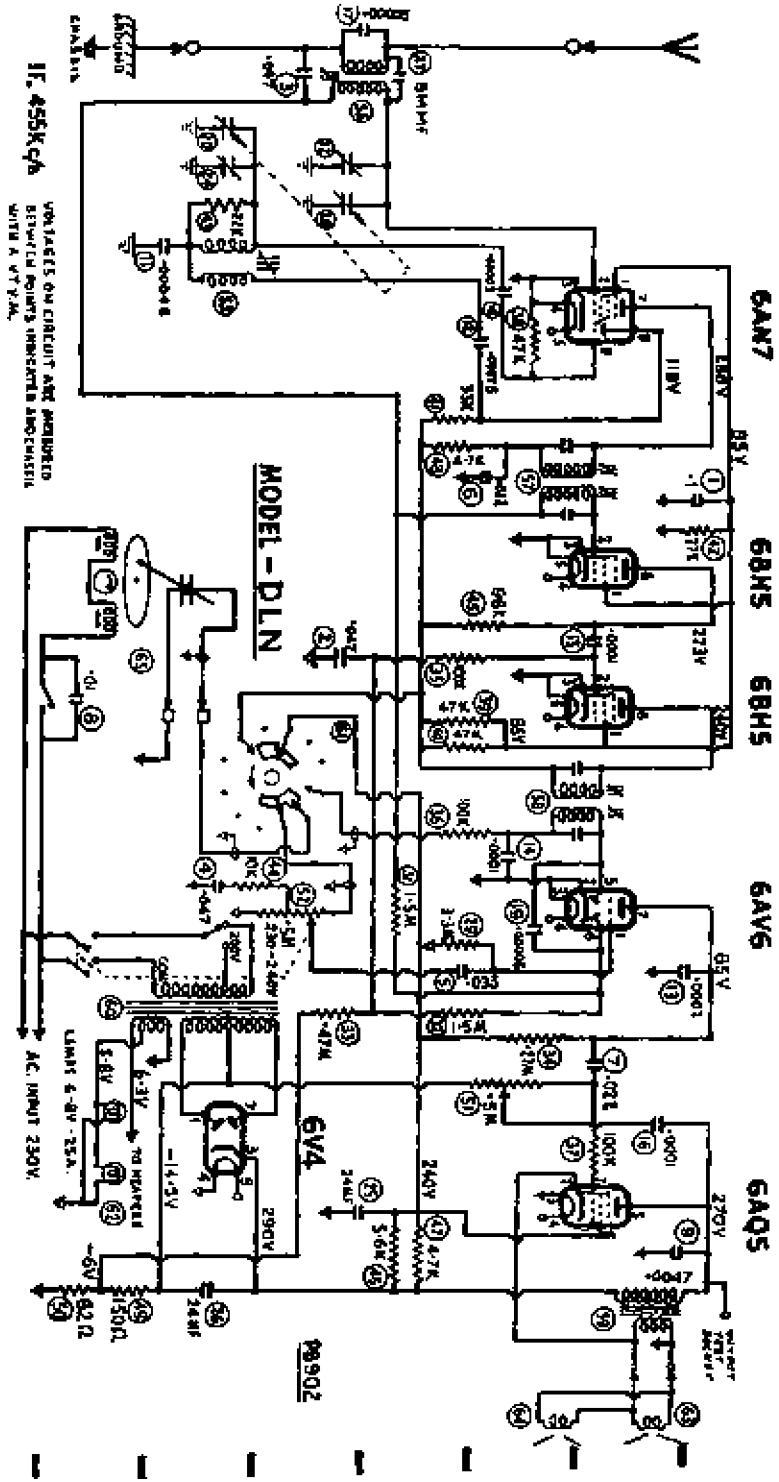
TUNING RANGE

Broadcast Band: 535-1610 Kc/s. - 560.7-186.3 Metres.

THIS BULLETIN CONTAINS

Alignment Instructions.
Circuit Diagram.
Connections for IF. and RF Transformers
Dial Drive Cording Diagram
Valve Placement Diagram.





ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:		Load Impedance:	5,000 Ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. Trans. alignment)	Vol. Control:	Max. Vol. fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor	Intermed. Freq.:	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans.
Alignment Tools:	Type M195 and PM561		230-240 volt pri.tap.
		Tone Control	Treble position.

ALIGNMENT CONDITIONS

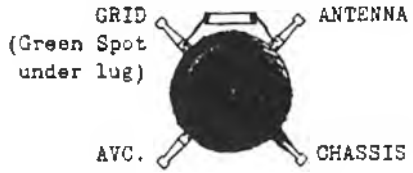
IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 6.			
2.	Connect speaker leads to speaker sockets.			
3.	To control grid of 6BE5 2nd IF. valve (pin No.2)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output
4.	To control grid of 6AN7 valve (pin No.2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
5.				Repeat operations No.3 and 4.

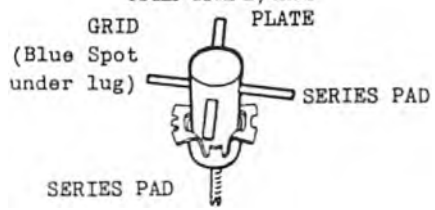
B/CAST ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.			
2.	To antenna lead	600 Kc/s.	200MMF.Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil ind. trim (iron core) for max. output.
3.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading.Adjust oscl. coil trim cond. for logging and peak ant. trans. trim.cond. for max. output.
4.	To antenna lead from receiver	600 Kc/s.	200 MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim (iron core) and peak the ant. trans. ind. trim. (iron core) for max. output. Do not rock the cond. gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.
5.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and re-peak antenna trans. trim. condenser for max. output.

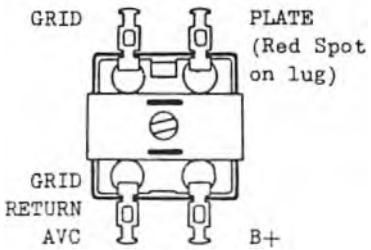
ANTENNA TRANS. B/CAST



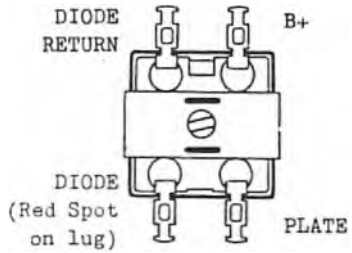
OSCL. COIL B/CAST



1st IF. TRANS.



2nd IF. TRANS.



CIRCUIT COMPONENT CHANGE TO ELIMINATE INSTABILITY

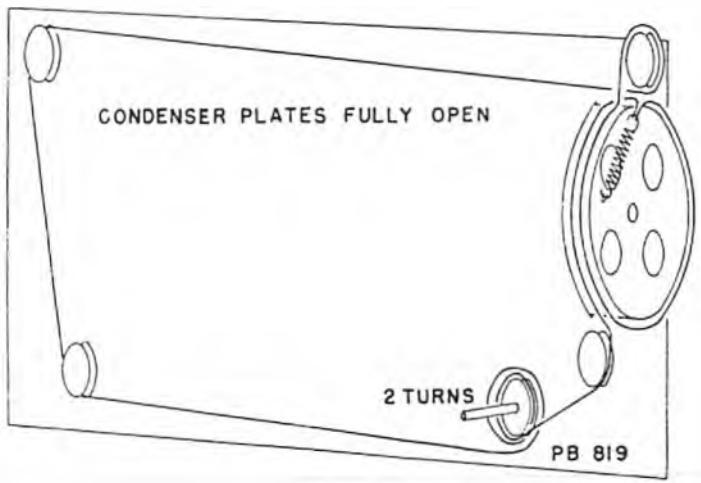
A. Circuit No. 9 a .0022 MF 600V. condenser has been changed to a .0047 MF paper condenser. 600V DCW. Part No. 34723

B. Circuit No. 50 a 68 ohm resistor has been changed to an 82 Ohm carbon resistor tol. ±10% 1 watt Part No. PR884.

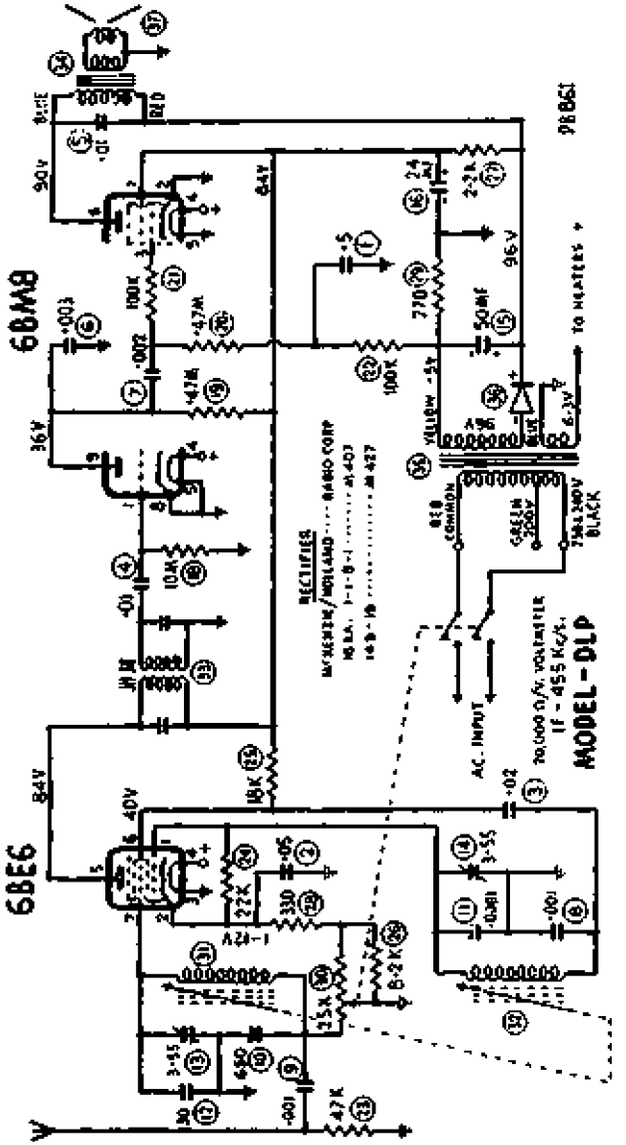
C. The parts list on page 3 and 4 details the new parts. The changes are included in the circuit diagram in this bulletin.

CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring. Cord Part No. 34/754. Tension Spring Part No. 21/698.

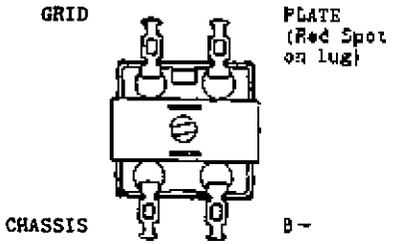


ASTOR MODEL DLP.



Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn tuning control anti-clockwise until perm. tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave grid wire attached to valve socket. Peak IF. trans. pri. and sec. for max. output.
2.	To antenna junction lug on chassis	1000 Kc/s.	200MMF Mica capacitor in series with generator.	Turn tuning control until dial pointer aligns with centre of alignment spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer cond., then peak antenna coil trimmer cond. for max. output. Re-peak oscl. coil trim condenser.
3.	Check logging at each end of the dial. Tuning range after alignment 535-1640 Kc/s.			

IF. TRANS.



ANTENNA TRANS.:
Start of winding-furthest from mounting end-Signal grid.
Finish of winding-nearest to mounting end-Junction of circuit Nos. 9, 10 & 30.
A small quantity of receivers were despatched from the factory with the connections to the aerial coil reversed. This will cause a 2DB drop in overall gain. Receivers returned for service are to be checked and have the connections corrected if found incorrect.

OSCL. COIL:
Start of winding-furthest from mounting end-Junction of circuit Nos.3 & 8.
Finish of winding-nearest to mounting end-Oscl. grid.

POWER TRANS. (T141) 50 cycle

PRI.
Red lead-common.
Green lead-200V. mains tap.
Black lead-230 & 240V. mains tap.
HT. SEC.
Blue lead-start.
Yellow lead-finish.
LT. SEC.
Start and finish in winding wire.

POWER TRANS. (T142) 40 cycle

PRI.
Red lead-common.
Green lead-230V. mains tap.
Black lead-250V. mains tap.
HT. SEC.
Blue lead-start.
Yellow lead-finish.
LT. SEC.
Start and finish in winding wire.

ALIGNMENT PROCEDURE:

EQUIPMENT:		ALIGNMENT CONDITIONS:	
Signal Generator:		Load Impedance:	7,000 ohms.
Output Meter:		Output Level:	50 Milliwatts
Mica Capacitor:	0.01MF (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise
Dummy Antenna:	200MMF Mica Capacitor	Intermed. Freq.:	455 Kc/s.
Alignment Tools:	Type M195 and PM581	Input Voltage:	230 Volts 50 Cycle AC. input to trans. 230-240 volt pri. tap

NOTE 1:
Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If it is connected it should be rolled up into a small hank.

NOTE 2:
The receiver chassis does not have to be removed from the cabinet for alignment of the IF. or RF. signal circuits. All alignment functions may be made when the rear section of the cabinet is removed from the front section.

NOTE 3:
To remove cabinet rear section from front section, prise off the two spring clips from the cabinet base with a thin blade screwdriver or knife, then at the base of the cabinet insert the thin blade screwdriver or knife into the crevice between the two cabinet sections and prise the rear section of the cabinet away from the front section.

NOTE 4:
Dial Pointer Setting: Turn tuning knob anti-clockwise until perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set centre of transparent dial pointer line on centre of end of travel spot on dial reading near 1700 Kc/s.

NOTE 5:
Positioning of the dial pointer may be made by loosening the two grub screws fastening the tuning spindle to the core carriage roller. Set the centre of the dial pointer on centre of end of travel spot on dial reading near 1700 Kc/s. then with the iron cores out of the windings on the coil formers and the core carriage hard against the stop securely tighten the two grub screws.

NOTE 6:
Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned fully anti-clockwise and is hard against the stop.
If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

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TECHNICAL BULLETIN

MANTEL MODEL "DLP"

2 VALVE SUPERHETERODYNE BROADCAST RECEIVER

FOR OPERATION FROM:

200-240 Volt 50 Cycle Supply Mains (Power Transformer T141)
Power Trans. Primary Mains Tap-red-common.
.. ..-green 200V. mains.
.. ..-black-230 & 240V. mains.

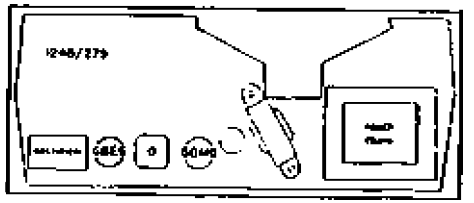
230-250 Volt 40 Cycle Supply Mains (Power Transformer T142)
Power Trans. Primary Mains Tap-red-common.
.. ..-green-230V. mains.
.. ..-black-250V. mains.

POWER CONSUMPTION:
18 Watts approx.

TUNING RANGE:
535-1640 Kc/s. : 560.7-182.9 Metres.

THIS BULLETIN CONTAINS:
Alignment Instructions.
Circuit Diagram.

Instructions for Changing Mains Voltage Tap.
Instructions for Removing Chassis from Cabinet.
Valve Placement Diagram.
Instructions for Replacing Dial.



A33.

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TECHNICAL BULLETIN

Bulletin: DML-2
File: RECEIVERS ..C.
Date: 20.8.59
Page: 1.

MODEL — DML

PORTABLE GRAMO-RADIO UNIT

MODIFICATIONS FOR STEREOPHONIC

Modifications have been made so that Model 'DML' may be used with an additional amplifier/speaker unit for Stereophonic reproduction.

(A) The four speed, single record player unit part No. M468 has been changed to a four speed, single record player part No. M505 which has a stereo cartridge in the head of the pick-up arm.

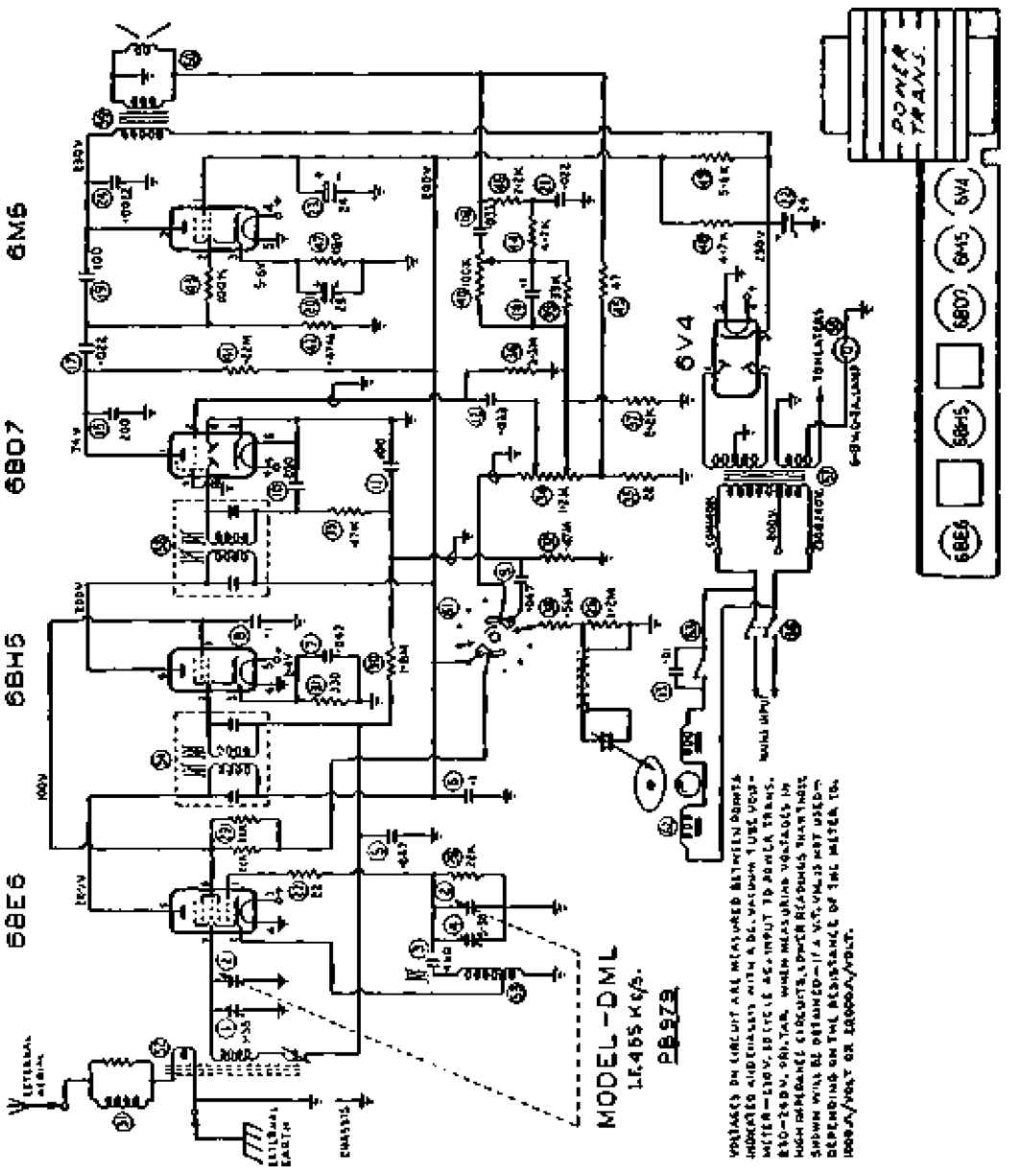
(B) The stereo cartridge left channel lead is wired to the receiver audio amplifier (junction of circuit No. 26 and 38.)

(C) Circuit No. 26, a 1.2 megohm resistor is changed to a 560K ohm 10% ½W carbon resistor part No. R5642 to eliminate acoustic feedback (boom) when some records are being played.

(D) The right channel lead from the stereo cartridge is wired to a socket located central on the rear of the plastic cabinet.

The end of the input lead (lead approx. 18 ft) from the additional amplifier/speaker unit is inserted into the right channel outlet socket at the rear of the cabinet.

The ON/OFF supply mains switch, tone control and volume control on Model 'DML' function only on the Model 'DML'.



MODEL —— DML

RADIO PLAYER

A33a.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer P.301)
Power trans. Primary Tap - red - common
" " " " - green - 200 Volt mains
" " " " -black - 230 & 240 Volt mains

NOTE: 1 When the receiver is to be operated from a 250 Volt 40 or 50 cycle AC. supply main the transformer primary connections are as for the 240 volt supply mains but a 180 Ohm 10 Watt resistor Part No. R166 is to be mounted beneath the chassis and wired in the power trans. common lead (red).

NOTE: 2 The record player four speed drive pulley for 40 cycle mains operation is Part No. 846/524.

POWER CONSUMPTION:

Radio Operation: 40 Watts - approx.
Gramo Operation: 60 Watts - approx.

TUNING RANGE:

535 - 1610 Kilocycles
560.7 - 186.3 Metres.

ALIGNMENT PROCEDURE.

EQUIPMENT:

Signal Generator:	modulated 400CPS.	
Output Meter	:	
Mica Capacitor	:	0.01 MF Mica capacitor, for IF. trans alignment.
Dummy Antenna	:	200 MMF Mica capacitor
Alignment Tool	:	Straight type P1501 for b/cast. trim. adjustment.
Alignment Tool	:	Flexible type 48/712 for b/cast osc. coil core and IFT. core adjustment

ALIGNMENT CONDITIONS:

Load Impedance:		7000 Ohms
Output Level	:	50 Milliwatts
Vol. Control	:	Max. vol. (fully clockwise)
Tone Control	:	treble position (fully clockwise)
Intermediate Frequency	:	455 K/s
Input Voltage:		230 Volts 50 cycle AC. input to 230-240V. pri. tap.
Gramo/Radio Switch	:	Radio position

ASTOR MODEL DML.

IF. TRANSFORMER ALIGNMENT.

It is not necessary to remove the chassis from the cabinet to adjust the iron cores in the IF. transformers.

Make sure the pick-up arm is anchored to its rest pillar.

Place the cabinet on a table with the base of the cabinet uppermost.

Remove the four screws from the base of the cabinet, then lift base section of cabinet upward on the hinges.

Operation	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6BH5 valve (pin No.2.)	455 Kc/s	0.01MF Mica capacitor in series with generator	Turn gramo-radio switch to radio position. Leave grid wire attached to valve socket Peak 2nd IF. trans. pri. and sec. iron cores for max. output.
2.	To signal grid of 6B26 converter valve (pin No.7.)	455 Kc/s	0.01MF Mica capacitor in series with generator	Turn tuning drum until tuning condenser plates are fully out of mesh. Leave grid wire attached to valve socket. Peak 1st. IF. trans. pri. and sec. iron cores for max. output.

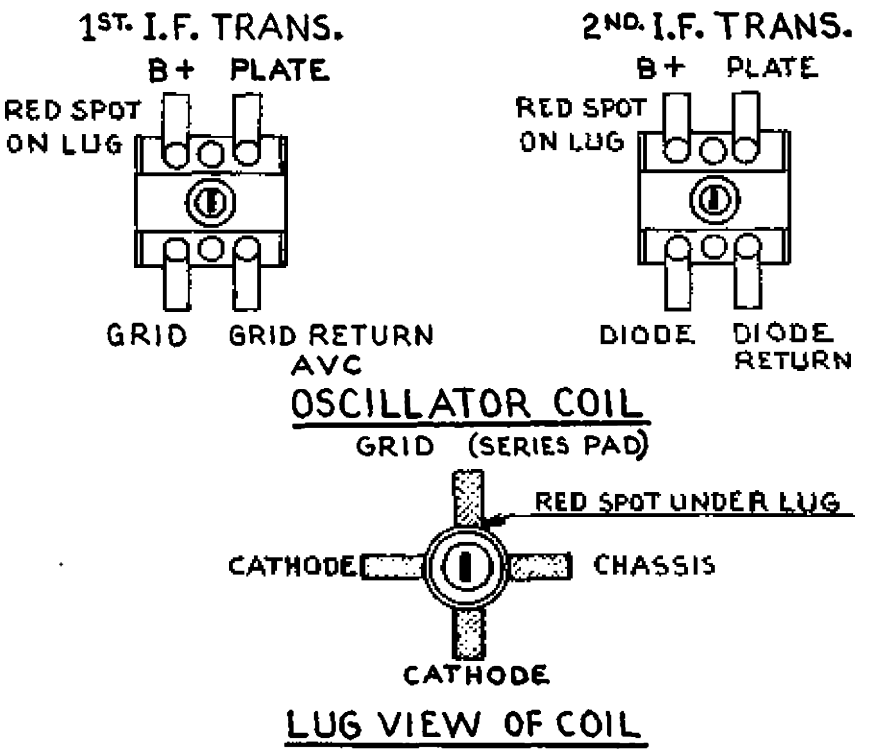
DIAL DRUM SETTING:

Fully mesh the condenser gang plates. Set the centre of the end of travel spot near 535 Kc/s on dial reading to align with the indicator line across dial reading aperture. The dial reading drum is adjusted by loosening the screw in the bush of the drum.

BROADCAST ALIGNMENT.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	To A.V.C. connection of rod aerial	600 Kc/s	200 MMF capacitor in series with generator	Turn tuning drum until alignment spot at 600 Kc/s on dial reading aligns with indicator line of aperture Leave cond. gang set in this position, peak osc. coil ind. trim (iron core) and osc. trimmer coil on ferrite rod aerial for max. output. Do not rock thecond. gang to and fro through the signal or move the dial drum off the 600 Kc/s dial mark until after the ind. trim. and rod aerial trim. coil have been peaked for max. output.
2.	To A.V.C. connection of rod aerial	1400 Kc/s	200 MMF capacitor in series with generator	Turn tuning drum until alignment spot at 1400 Kc/s on dial reading align with indicator line of aperture. Adjust osc. coil trim. cond., and rod. aerial trim. cond. for max. output.
3.				Repeat operations 1 and 2
4.	Tuning range after alignment 535 - 1610 Kc/s.			
5.	Close base section of cabinet and secure with the four screws.			

Circuit No.	Description	Tol+	Rating	Part No.



DUMMY ANTENNA:

The 200 MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The 200 MMF. dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment; if it is connected, it should be rolled up into a small hank.

I.F. TRANS. ALIGNMENT:

	Generator Connections	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 6.			
2.	To signal grid of 6BH5 valve (pin No.2).	455 Kc/s.	0.01MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No.7).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are fully out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 & 3.

B/CAST BAND ALIGNMENT:

1.	Refit chassis to front section of cabinet.			
2.	Refit control knobs and tuning pointer knob.			
3.	DIAL POINTER SETTING			Turn tuning pointer-knob anticlockwise until perm. tuner iron cores are out of windings on coil formers and the unit is hard against the stop. Loosen two grub screws in perm. tuner roller. Set centre of line on dial pointer to align with centre of end of travel spot on dial reading near 1700 Kc/s. Securely tighten the two grub screws.
4.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator.	Turn tuning-knob and perm. tuner until centre of line on dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max.output. Repeak oscl. coil trim cond.
5.	Tuning range after alignment 535 - 1640 Kc/s.			
6.	Check logging at each end of the band then refit rear section of cabinet.			

NOTE 1: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the

ANTENNA TRANS:

Start of winding - furthest from mounting end - Antenna
Finish of winding - nearest to mounting end - Signal grid.

OSCL. COIL:

Start of winding-furthest from mounting end - Junction of circuit Nos. 9 and 14.
Finish of winding - nearest to mounting end - Oscl. grid.

POWER TRANS. (PT962)

PRI.

Red lead-common.	(leads
Green lead-200V.	(changed
Black lead-230 & 240V.	(to lugs

HT. SEC.

Blue lead-start.	(leads
Yellow lead-centre tap.	(changed
Blue lead-finish.	(to lugs

LT. SEC. (two windings in parallel)
Start and finish in winding wire.

POWER TRANS. (PT963)

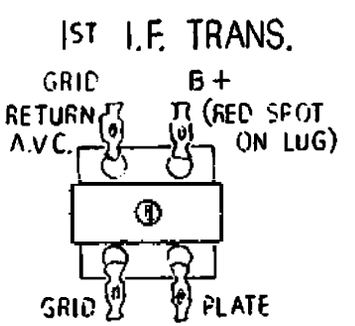
PRI.

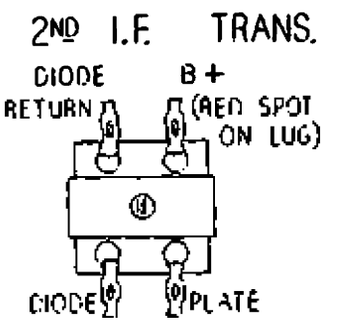
Red lead-common	(leads
Green lead-230V.	(changed
Black lead-250V.	(to lugs

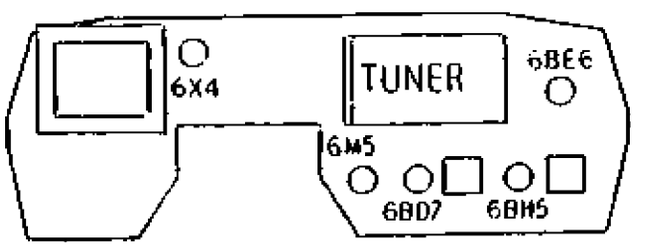
HT. SEC.

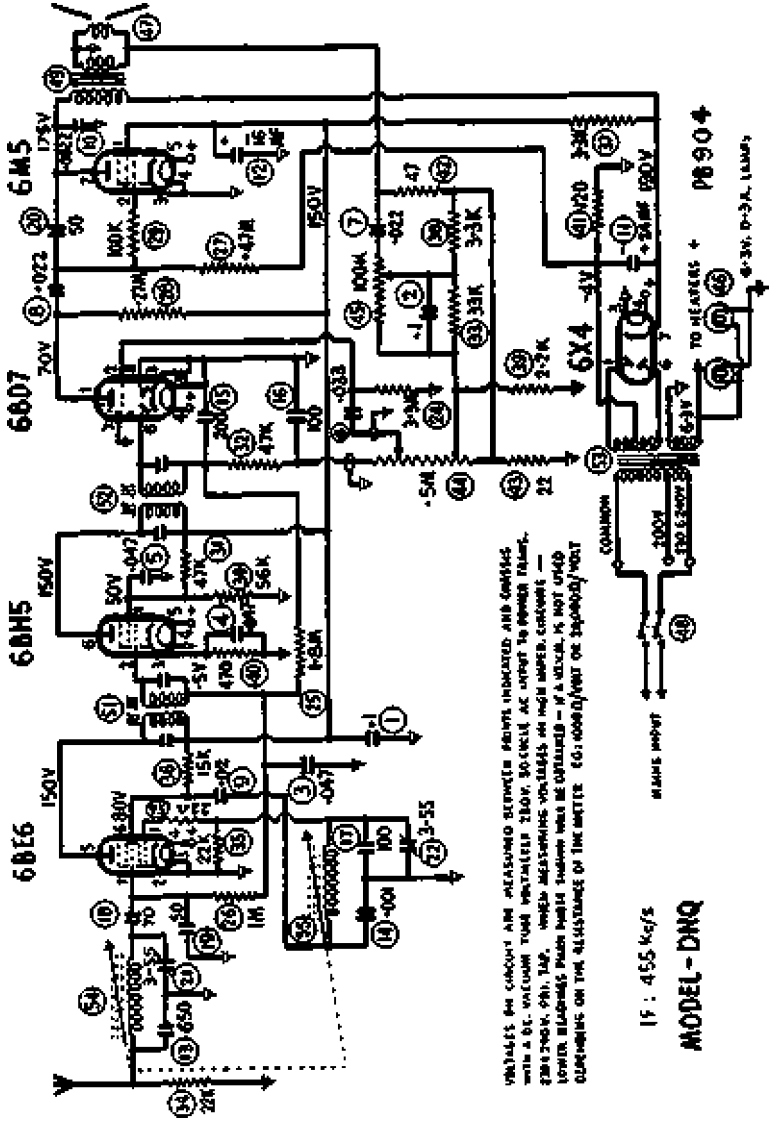
Yellow lead-start.	(leads
Blue lead-centre tap.	(changed
Yellow lead-finish.	(to lugs

LT. SEC. (two windings in parallel)
Start and finish in winding wire.









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A35a

TECHNICAL BULLETIN

MANTEL MODEL—DNQ

5 VALVE SUPERHETERODYNE BROADCAST RECEIVER

FOR OPERATION FROM:-

200-240 Volt 50 Cycle Supply Mains (Power Transformer PT962)

Power Trans. Primary Mains Tap-red-common. (leads
" " " " " -green-200V mains. (changed
" " " " " -black-230 & 240V. mains(to lugs

230-250 Volt 40 & 50 Cycle Supply Mains (Power Transformer PT983)

Power Trans. Primary Mains Tap-red-common (leads
" " " " " -green-230V mains (changed
" " " " " -black-250V mains (to lugs

POWER CONSUMPTION:- 40 Watts-approx.

TUNING RANGE:- 535-1640 Kc/s. : 560.7-182.9 Metres.

THIS BULLETIN CONTAINS:

ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load Impedance:	7,000 ohms.
Output Meter:		Output Level:	50 Milliwatts
Mica Capacitor:	0.01mF (for I.F. alignment).	Vol.Control :	Max. Vol. Fully Clockwise
		Interned. Freq.:	455 Kc/s.
Dummy Antenna:	200 M.F. Mica Capacitor	Input Voltage:	230 Volts 50 Cycle A.C. Input to trans. 230V. pri. tap
Alignment Tool	Type M195	Tone Control:	Treble position

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TECHNICAL BULLETIN

MODEL DQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

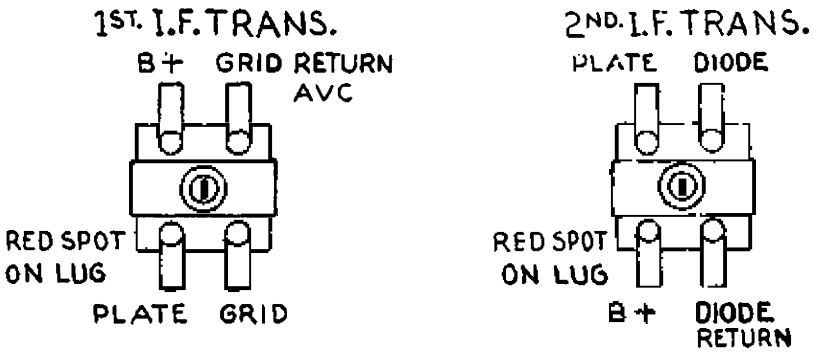
Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

TUNING RANGES:—	RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s. (Bandspread)	50.42-48.0 Metres (approx.)

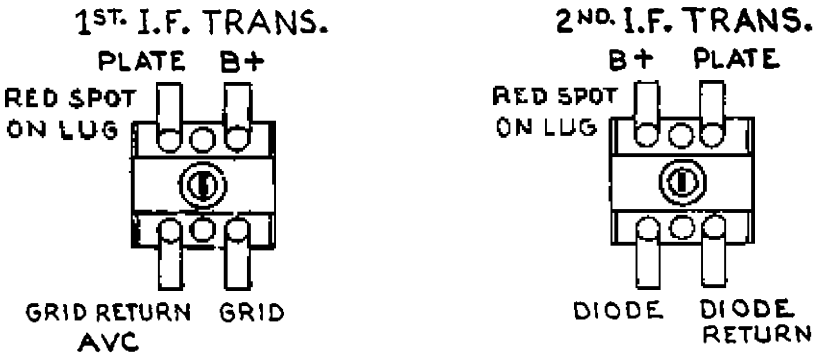
THE GRAMO-RADIO COMBINATION MODEL "DQR" IS A MODEL ''HQR'' RECEIVER CHASSIS FITTED INTO A DIFFERENT TYPE CABINET. EXCEPT FOR THE PARTS LISTED BELOW WHICH ARE REQUIRED FOR FITTING TO THE DIFFERENT TYPE CABINET, ALL REFERENCE FOR ALIGNMENT PROCEDURE, CIRCUIT DIAGRAM AND PARTS LIST SHOULD BE MADE TO THE MODEL ''HQR'' SERVICE BULLETIN SHEETS.

Chassis to cabinet mount screws 1" x 5/32" Csk. Hd. Flor. Bronze	17/560-36
Cup Washer - Flor.Bronze	269/250
Dial Reading	35/816-3
Cab. Indicator Light Bezel Socket Assy	A128/30C
Cabinet Assy. - Walnut	277/221-1
Cabinet Assy. - Rose Mahogany	277/221-2
Cabinet Assy. - Brown Mahogany	277/221-3
Cabinet Assy. - Light Walnut	277/221-4

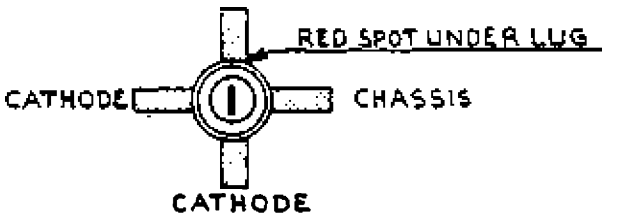
CONNECTIONS FOR I.F. TRANS. PART No. PT869



CONNECTIONS FOR I.F. TRANS. PART No. L284



OSCILLATOR COIL



LUG VIEW OF COIL

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

TABLEGRAM MODEL—— ENK

An Automatic 4 Speed Record Changer (78, 45, 33-1/3, 16-2/3, r.p.m) and a 5 valve Superheterodyne Broadcast Band Receiver.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T171)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

NOTE: 1

When the receiver is to be operated from a 250 volt 40 or 50 cycle AC. supply mains the transformer primary connections are as for the 240 volt supply mains but a 160 Ohm 10 watt resistor Part No. R166 is to be mounted beneath the chassis and wired in the power trans. common lead (red.)

NOTE: 2

The record changer drive pulley for 40 cycle mains operation is Part No. 846/524.

POWER CONSUMPTION:

Radio Operation:- 40 watts-approx.
Gramo Operation:- 60 watts-approx.

TUNING RANGE:

Broadcast Band: 535-1610 Kc/s. - 560.7-186.3 Metres.

THIS BULLETIN CONTAINS:

ASTOR MODEL ENK.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:	Modulated 400 CPS.
Output Meter :	
Mica Capacitor :	0.01MF Mica Capacitor Part No. PC145 for I.F. trans. alignment
Alignment Tool :	Straight type Part No. PM581 for b/cast. trim. adjustment
Alignment Tool :	Flexible type Part No. 48/712 for b/cast. osc. coil core and I.F.T. core adjustment

ALIGNMENT CONDITIONS

Load Impedance:	7000 Ohms
Output Level :	50 Milliwatts
Vol. Control :	Max. vol. fully clockwise.
Intermediate Frequency :	455 Kc/s,
Input voltage :	230V 50 cycle AC. input to trans. 230-240V. Pri. tap.
Tone Control :	Treble position fully clockwise
Grano-radio Switch :	Radio position.

I.F. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	It is not necessary to remove the chassis from the cabinet to adjust the iron cores in the IF. transformers. Only the cabinet base has to be removed from the cabinet.			
2.	Make sure pick-up arm is anchored to its rest pillar.			
3.	Unscrew and remove three screws and four rubber cushion feet located around edge of cabinet base then remove cabinet base.			
4.	To signal grid of 6BH5 valve (pin No.2.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
5.	To signal grid of 6BE6 valve (pin No.7)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning control until condenser gang plates are fully out of mesh. Leave grid wire attached to valve socket. Peak 1st. I.F. trans pri. and sec. iron cores for max. output.
6.				Repeat operations 4 and 5.

BROADCAST ALIGNMENT

NOTE 1. Before access to the adjustment points may be made on this receiver for complete adjustment of the RF. stages it is necessary to:-

"A" Remove the chassis from the cabinet.

"B" Remove the front section of the cabinet from the main section.

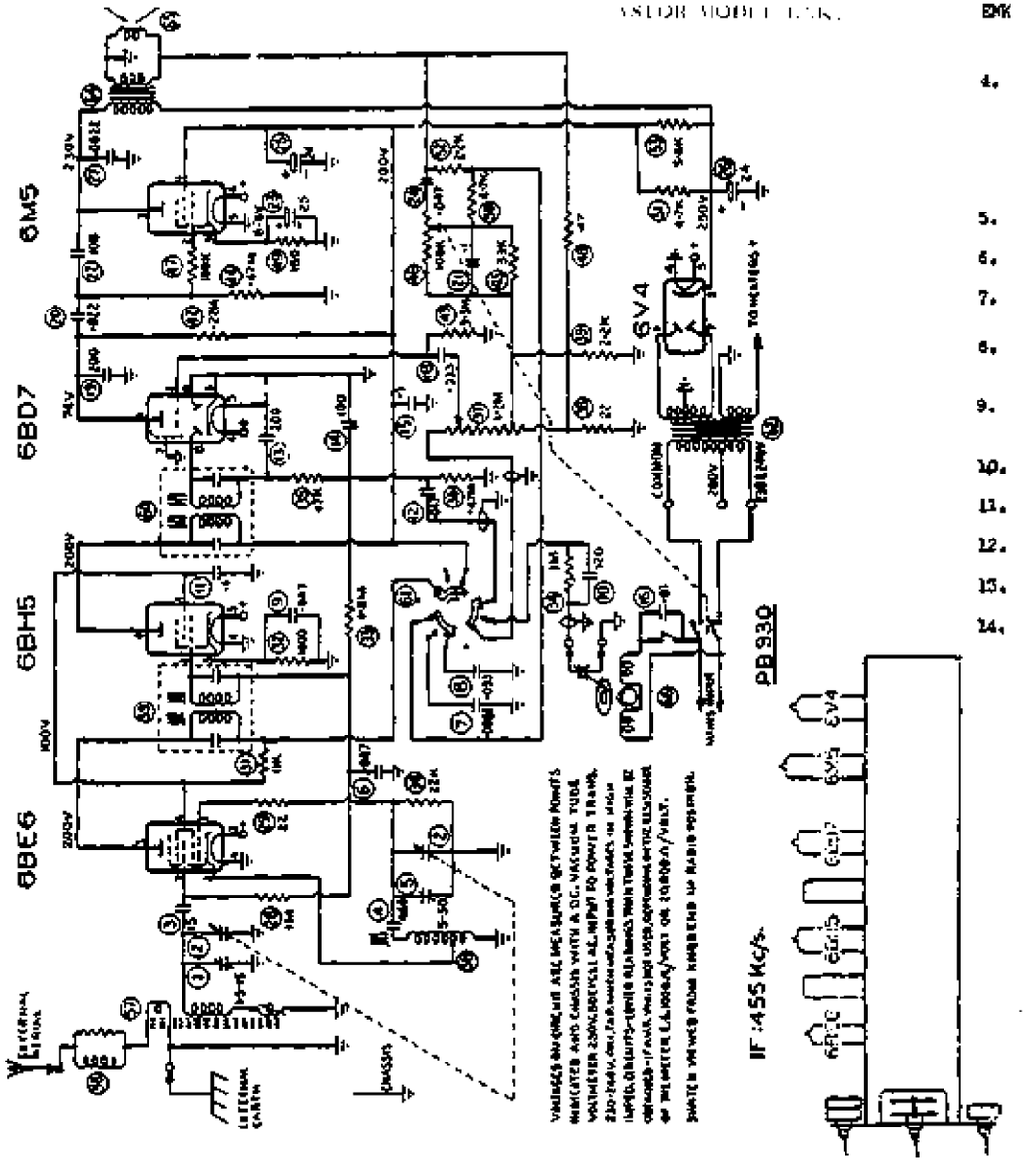
"C" Refit back into the cabinet only the chassis and attach the control knobs to the spindles.

Instructions for removing and refitting the chassis also for removing the front section of the cabinet are detailed in the following pages of this bulletin.

NOTE 2. To inject a signal into the ferrite rod aerial connect to active terminal of signal generator RF. output approximately 2 ft. of aerial wire then fashion the aerial wire into a vertical position.

NOTE 3. Tilt cabinet backward until it rests on its rear end. Turn cabinet so that control knob side of cabinet is nearest to 2 ft. of vertical aerial wire. A distance of not less than 1 ft. 6 ins is to be between the control knob side of the cabinet and the 2 ft. of vertical wire connected to signal generator.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	Fully mesh condenser gang plates then fit push-on type transparent disc so that centre of line on disc aligns with centre of end of travel mark on dial reading near 535 Kc/s.			
2.	Reconnect speaker leads to receiver			
3.	Refer note 2 & 3	600 Kc/s.	Refer note 2 & 3	Turn cond. gang and transparent disc until line on disc is on 600 Kc/s. dial mark. Leave the cond. gang and disc set in this position then peak osc. coil ind. trim. (iron core) and the sec. trimmer coil on ferrite rod aerial for max. output. Do not rock the cond. gang to and fro through the signal or move the line on the disc off the 600 Kc/s. dial mark until after the ind. trimmer and the rod aerial trimmer coil have been peaked for max. output.



4.	Refer Note 2 & 3	1400 Kc/s.	Refer note 2 & 3	Turn cond. gang and transparent disc until line on disc is on 1400 Kc/s. dial mark. Adjust osc. coil trim. cond. then rod aerial trim. cond. for max output.
5.				Repeat operations 3 and 4

6. Tuning range after alignment 535-1610 Kc/s.

7. Remove the control knobs and pointer disc and unsolder speaker leads from terminal strip.

8. Remove chassis from cabinet and then remove the chassis support bracket from side of cabinet.

9. Refit front section of cabinet to main section of cabinet. NOTE Refitting is the reverse procedure to removing it. Securely tighten the screws.

10. Refit chassis support bracket to side of cabinet .

11. Refit chassis to cabinet . and reconnect speaker leads.

12. Refit transparent dial disc and check logging.

13. Refit push-on type control knobs.

14. Refit cabinet base to cabinet and securely tighten the screws.

---

	mica condenser	10%	500V DCW	
	F wire wound trimmer condenser	2%	500V DCW	FC728 C157
	paper condenser	20%	100V DCW	B4733
	F Paper condenser	20%	400V DCW	F8223
	" "	20%	100V DCW	B8333
	" "	20%	200V DCW	B4733
	Silvered mica condenser	2.5%	500V DCW	C170
	aper condenser	20%	400V DCW	F1043
	Paper "	20%	200V DCW	B4733
	Silvered mica condenser	10%	500V DCW	FC996
LMF	Silvered mica condenser	10%	500V DCW	FC994
MF	Paper condenser	20%	400V DCW	F1043
MF	Paper condenser	20%	600V DCW	G1033
MF	Paper condenser	20%	200V DCW	B3333
LMF	Silvered mica condenser	10%	500V DCW	FC996

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	Remove the record player turntable from its spindle then remove the six screws fastening the plastic mount plate to the cabinet base. Removal instructions are detailed on the later pages of this bulletin.			
2.	To control grid of 6AD8 valve (pin No.2.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max.output.
3.	To control grid of 6ZE6 valve (pin No.7.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning drum until perm. tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave the grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
4.				Repeat operations 2 and 3.
5.	Refit the receiver chassis to the plastic mount plate.			

DIAL DRUM SETTING.

Turn dial drum toward the rear of the plastic mount plate until the perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. The end of travel spot on dial reading near 1700 Kc/s. is to align with the indicator arrows moulded on the top of the plastic mount plate. The dial drum is adjusted by loosening off the screw through the slot in the drum

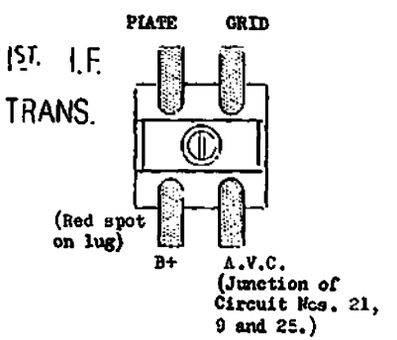
BROADCAST ALIGNMENT.

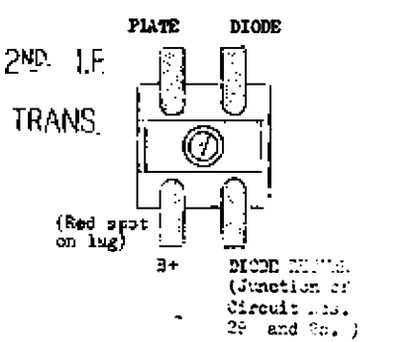
NOTE:1 Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, The dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment; If the 25 ft. antenna is connected it must be rolled into a small hank.

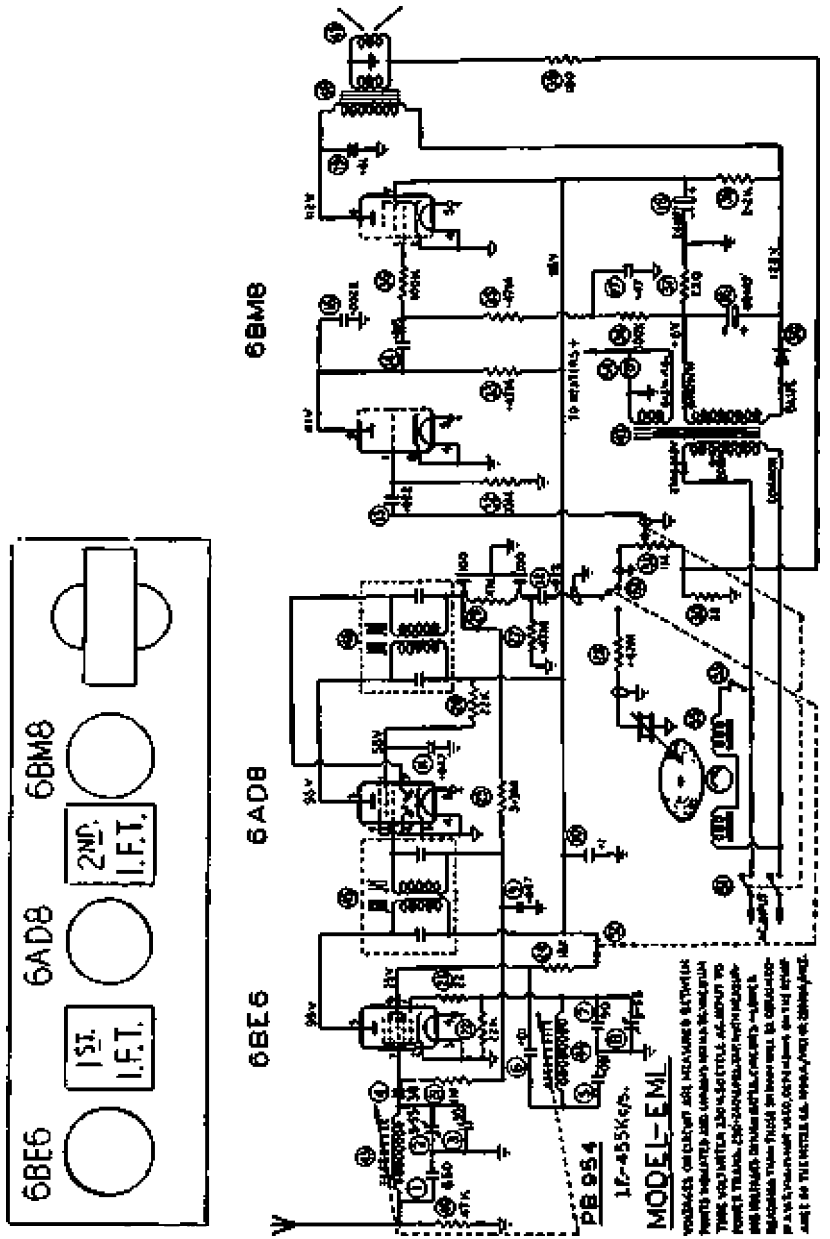
NOTE: 2. The antenna and oscillator trimmer condensers are accessible through the two holes in the plastic mount plate on the right hand side of the control knobs. The oscillator trimmer being nearest to the front edge of the mount plate.

NOTE: 3. Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned hard against the stop.
If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension.
Both iron cores must have the same colour identification spot on the end of the iron core.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions.
1.	To antenna junction lug on chassis	1000 Kc/s.	200MMF Mica capacitor in series with generator	Turn tuning drum until alignment spot at 1000 Kc/s. aligns with moulded arrows on top of plastic mt. plate Peak oscl coil trim cond. then peak antenna coil trimmer cond. for max. output. Re-peak oscl. coil trim.cond.
2.	Tuning range after alignment 535 - 1640 Kc/s.			
3.	Refit plastic mount plate with receiver attached to the cabinet.			







MODEL— EML

PLAY - GRAM

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle Supply Mains (Power Transformer T148)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green 200V. mains
" " " " " -black 230 & 240V. mains.
230-250 Volt 40 or 50 Cycle Supply Mains (Power Transformer T149)
Power Trans. Primary Mains Tap-red-common.
" " " " " -green 230V. mains.
" " " " " -black 250V. mains.

POWER CONSUMPTION:

Radio Operation: 20 Watts - approx.
Gramo Operation: 40 Watts - approx.

TUNING RANGE:

535 - 1640 Kc/s. : 560.7 - 182.9 Metres.

ALIGNMENT PROCEDURE.

EQUIPMENT:

Signal Generator:
Output Meter :
Mica Capacitor 0,01MF (for IF. trans. alignment)

Dummy Antenna : 200MMF Mica capacitor.
Straight Alignment Tool: Type PM581
Flexible Alignment Tool: Type 48/712

ALIGNMENT CONDITIONS

Load Impedance: 7000 ohms
Output Level : 50 Milliwatts
Vol. Control : Max. Vol. fully clockwise.

Intermed. Freq: 455 Kc/s.
Input Voltage : 230 Volts. 50 Cycle AC. input to trans. 230-240 volt. pri. tap.

Gramo/Radio Switch: Radio position (clockwise)

IF. TRANS ALIGNMENT.

NOTE: The plastic mount plate to which the record player unit and the receiver chassis are mounted has to be removed from the cabinet to align the IF. transformers.

A39.

ECLIPSE RADIO PTY. LTD.

(A DIVISION OF ELECTRONIC INDUSTRIES LTD.)

11-21 STURT STREET, SOUTH MELBOURNE

TECHNICAL BULLETIN

BULLETIN FNQ—1 **File: RECEIVERS AC.** **Date: 9/6/54**

MODEL—FNQ

4 Valve Superheterodyne Broadcast Mantel Model Receiver

For Operation From:

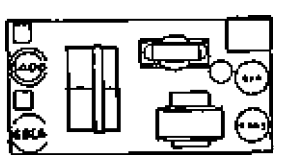
200-250 Volts 50 Cycle AC. Mains Supply.
Power trans. primary mains taps: 200-220 volts and 221-250 volts.
Power Consumption 40 Watts (approx.)

Tuning Range:

535 - 1640Kc/s.: 560.7 - 182.9 Metres.

This Bulletin Contains:

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF. Transformers.



VALVE PLACEMENT DIAGRAM

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:

Output Meter:

Mica Capacitor : 0.01MF (for I.F. trans. alignment)

Dummy Antenna : 200MMF. Mica Capacitor

Alignment Tools : Type M195 and PM581.

ALIGNMENT CONDITIONS

Load Impedance : 5,500 ohms

Output Level : 50 Milliwatts

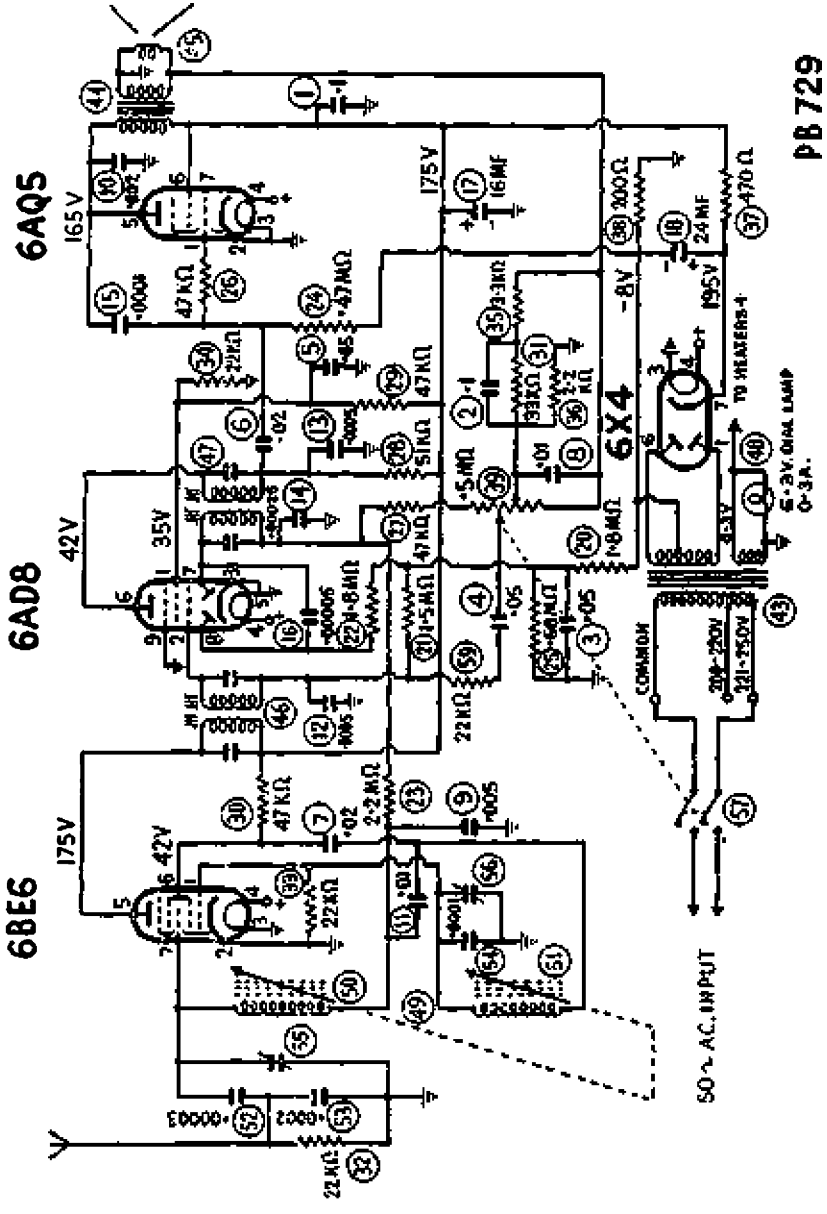
Vol. Control : Max. Vol. fully clockwise.

Intermed. Freq.: 455 Kc/s.

Input Voltage : 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Dummy Antenna: The 200MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment, if it is connected it should be rolled up into a small hank.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				To remove chassis from cabinet, prise off push on knob from vol. control spindle and centre knob from dial reading. Remove dial reading by unscrewing three screws in metal disc in centre of dial. Remove three screws from cabinet back, then, from beneath cabinet, two screws which fasten the cabinet to the chassis.
2.				To represent the pointer on the cabinet, connect a piece of stiff wire to the chassis and fashion it into position so that the wire is perpendicular to the centre of the perm. tuner dial shaft.
3.				Turn perm. tuner dial spindle fully anti-clockwise, then fit dial reading so that centre of end of travel spot on H.F. end of dial reading aligns with centre of wire pointer.
4.	To control grid of 6AD8 valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
5.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn dial and perm. tuner fully anti-clockwise. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
6.				Repeat operations Nos. 4 and 5.
7.	To antenna junction lug on chassis	1000 Kc/s.	200MMF Mica capacitor in series with generator.	Turn perm. tuner and dial until centre of 1000 Kc/s. spot on dial aligns with centre of wire pointer. Peak oscl. coil trim. cond. then peak antenna trans. trim. cond. for max. output. Re-peak oscl. coil trim. cond.
8.				Check logging at each end of the dial.



IF. 455 K/s VOLTAGES MEASURED WITH A 1000 Ω/VOLT VOLTMETER

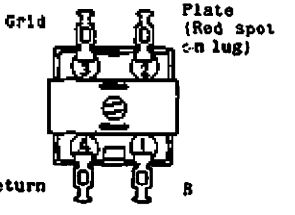
9. Remove dial cords, and wire pointer attached to chassis; then refit chassis to cabinet. Turn perm. tuner and dial spindle fully anti-clockwise. Refit dial cords so that centre of one of travel spot on H.F. end of dial aligns with centre of pointer mark on cabinet.

10. Check logging at each end of the dial. Tuning core adjustment 525-1640 Kc/s.

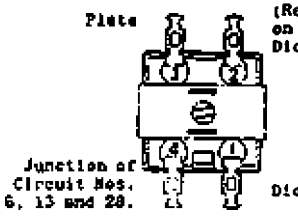
NOTE: Both iron cores of the perm. tuner are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned fully anti-clockwise and is hard against the stop.

If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the screw end of the iron core.

No. 1 IF. TRANS.



No. 2 IF. TRANS.



ANTENNA TRANS.

Start of winding - furthest from mounting end - AVC.
Finish of winding - nearest to mounting end - Signal grid.

OSCL. COIL.

Start of winding - furthest from mounting end - Junction of circuit Nos. 7 and 11.
Finish of winding - nearest to mounting end - Oscl. grid.

ASTOR MODEL FQM.

ALIGNMENT PROCEDURE

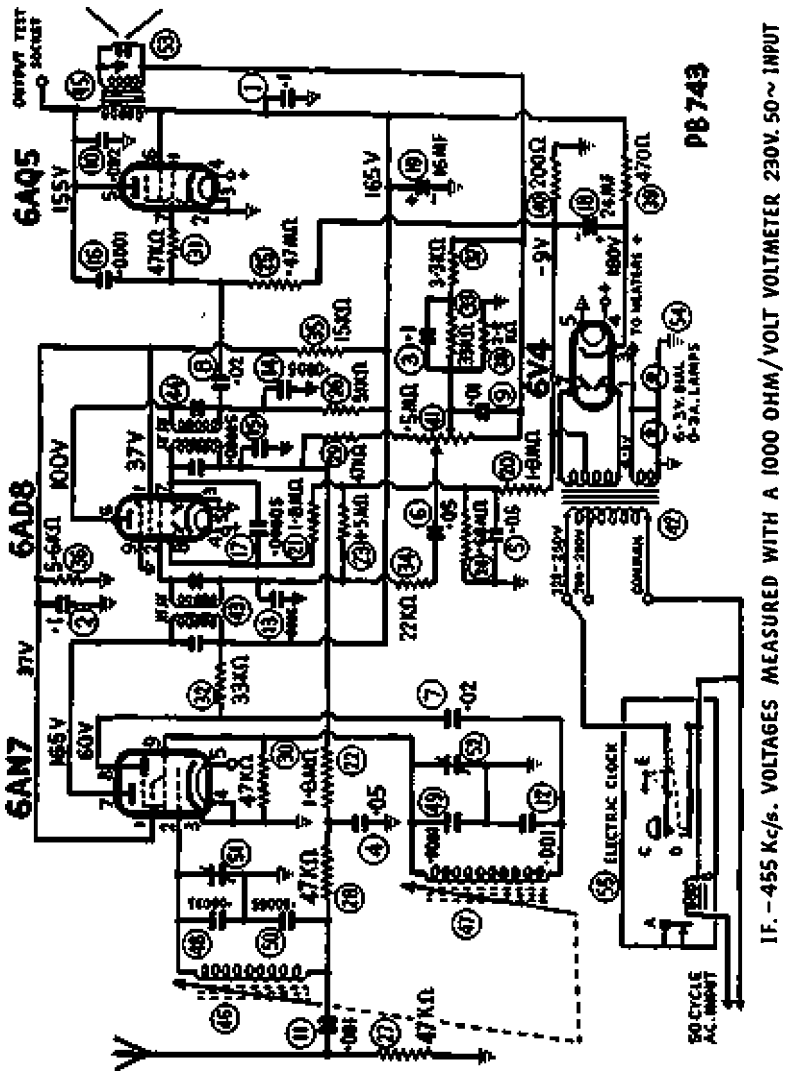
EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator	:	Load impedance	: 5,500 ohms
Output meter	:	Output level	: 50 Milliwatts
Mica capacitor	: 0.01MF (for I.F. trans. alignment)	Vol. control	: Max. vol. fully clockwise
Dummy antenna	: 200 MMF Mica Capacitor	Intermed. Freq.	: 455 Kc/s.
Alignment tool	: Type M195	Input voltage	: 230 volts 50 cycle AC. input to trans. 221-250 volt pri. tap.

DUMMY ANTENNA: The 200 MMF Dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment if it is connected it should be rolled up into a small hank.

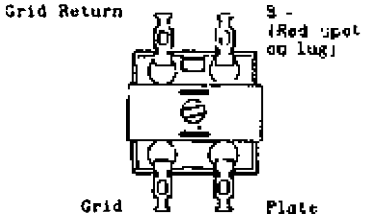
ALIGNMENT: The I.F. transformer variable iron cores and the trimmer condensers on the perm. tuner are accessible when the rear section of the cabinet is removed from the front section.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	From each of the four corners of rear section of cabinet remove the screw and washer then prise rear section of cabinet off the front section.			
2.	To signal grid of 6AD8 valve (pin No. 2)	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6AN7 valve (pin No. 2)	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm tuner so that iron cores are fully out of windings on coil formers. Peak 1st I.F. trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 and 3.
5.	DIAL POINTER: Turn perm. tuner so that iron cores are fully out of windings on the coil formers and hard against the stop. Set the centre of the dial pointer on the end of travel spot on the dial reading near 1700 Kc/s. From the front of the cabinet the dial pointer may be moved by prising out the spring clip at each end of the dial. Hold the tuning knob with one hand and with a pair of long nose pliers move the top of the dial pointer so that it slides on the dial cord.			
6.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim. cond.
7.	funing range after alignment 535 - 1640 Kc/s.			
8.	Check logging at each end of the dial; then refit rear section of the cabinet.			

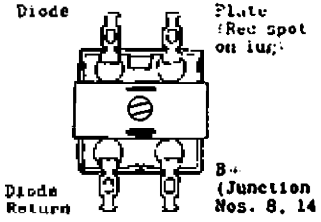
NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the former, when the unit is turned fully clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must [illegible] identification spot on the screw end of the iron core.



No. 1 IF. TRANS.



No. 2 IF. TRANS.



ANTENNA TRANS.
Start of winding - furthest from mounting end - AVC.
Finish of winding - nearest to mounting end - Signal Grid.

OSCL. COIL
Start of winding - furthest from mounting end - Junction of circuit Nos. 7 and 12.
Finish of winding - nearest to mounting end - Oscl. grid.

POWER TRANSFORMER

Pri. red lead - common.
Pri. green lead - 200-220V.
Pri. black lead - 221-250V.

HT. Sec.
Blue lead - start.
Yellow lead - centre tap.
Blue lead - finish.

LT. Sec. (two windings in parallel)
Start and finish
in winding wire.

DIAL READING MODIFICATION

The dial reading consisted of a printed strip and in front of which was a transparent bar which is held in position in the cabinet by a spring clip at each end of the transparent bar.

The above has been changed so that the dial reading is printed on the rear side of the transparent bar and which is held to the cabinet by the same type spring clip.

Printed dial reading (four printed dial readings)	A115/785	Printed dial bar: Vic.-Tas.		25/785-1
		.. .. ..	S.A.-W.A.	25/785-2
Transparent dial bar	25/785	.. .. ..	Q'ld.	25/785-3
		.. .. ..	N.S.W.	25/785-4

ECLIPSE RADIO PTY. LTD.

11-21 STURT STREET, SOUTH MELBOURNE

TECHNICAL BULLETIN

BULLETIN FQM-1 File: RECEIVERS AC. Date: 1 10 54

MODEL "FQM" CLOCK RADIO

4 Valve Superheterodyne Broadcast Receiver.

For Operation From:

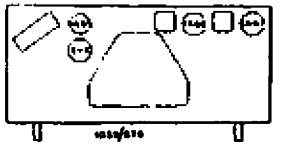
200-250 Volt 50 Cycle AC. Supply Mains.
Power trans. primary mains taps: 200-220 volts and 221-250 volts.
Power Consumption 33.5 Watts Radio and Clock.
4.5 Watts Clock only.

Tuning Range:

535-1640 Kc/s. : 560.7-182.9 Metres

This Bulletin Contains:

Alignment Instructions.
Circuit Diagram.
Component
Connections for Transformers.
Valve Placement Diagram.



A41.

MODEL FQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

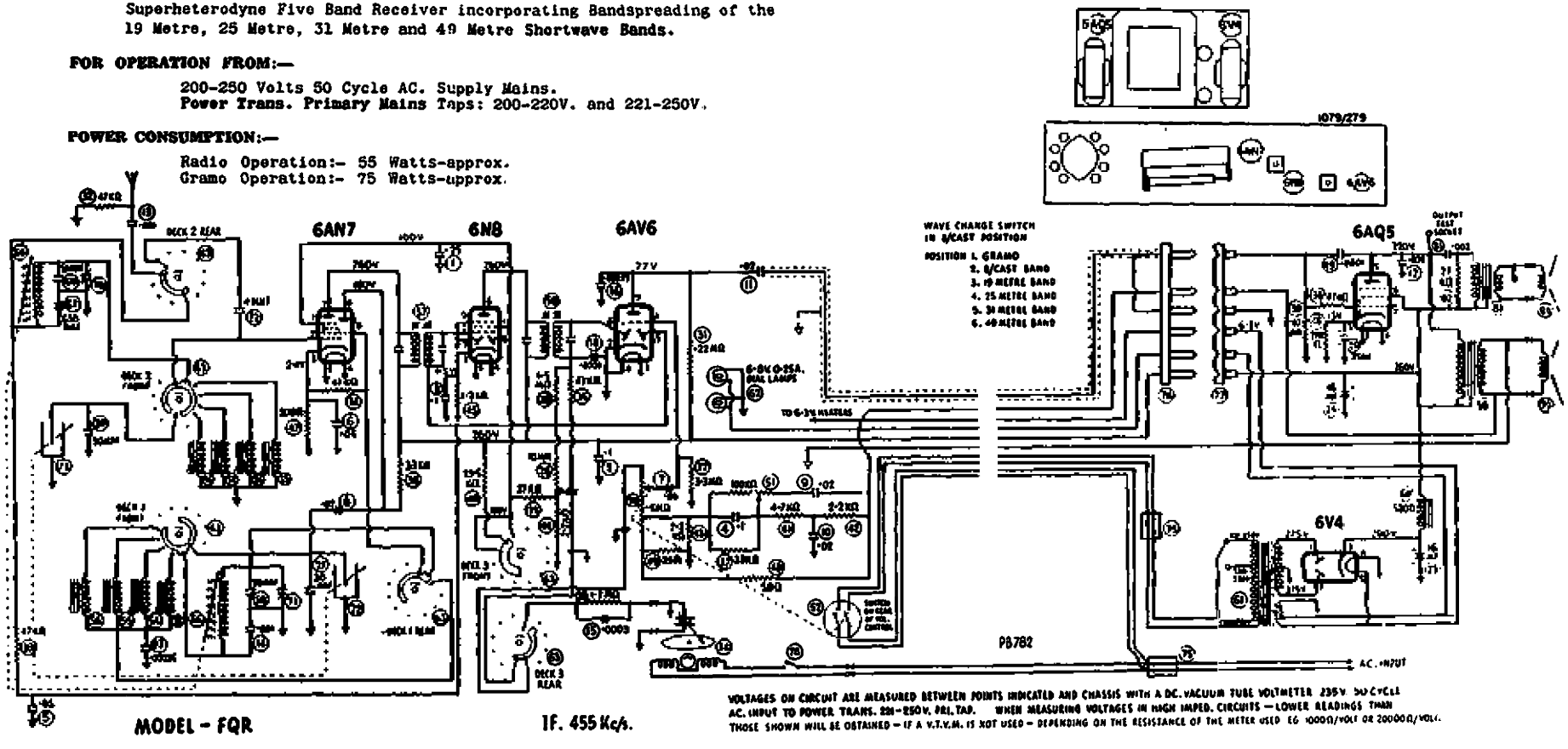
POWER CONSUMPTION:—

Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

TUNING RANGES:—

Broadcast Band,	535-1610	Kc/s.		560.7-186.3 Metres.
19 Metre Band,	14.9-15.5	Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band,	11.6-12.1	Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band,	9.4-9.8	Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.
49 Metre Band,	5.95-6.25	Mc/s.	(Bandspread)	50.42-48.0 Metres (approx.

RECEIVER COVERAGE:—



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 235V. 50 CYCLE A.C. INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED EG 1000Ω/VOLT OR 20000Ω/VOLT.

ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load Impedance:	5,000 ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor.	Intermed. Freq.:	455 Kc/s.
Dummy Antenna:	400 Ohm non-inductive resistor.	Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Alignment Tools:	Type M195 and PM581.	Tone Control:	Treble position.

I.F. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver power supply chassis and tuning unit chassis from cabinet as detailed on page 9.			
2.	Remove dial back plate from tuning unit chassis:- A. Loosen off grub screws in tone control gear wheel hub, then pull gear wheel straight upward off the control spindle. B. Unscrew large nut fastening small metal gear plate to bush on tone control. C. From volume control shaft remove small gear plate with gears attached by pulling it straight upward. D. Remove dial pointer by prising up centre clip which fastens it to dial cord at rear of pointer carriage. E. Remove from each end of dial plate the large lock nut fastening dial plate to chassis.			
3.	Connect speaker leads and leads from tuning unit chassis to power supply chassis.			
4.	To control grid of 6N8 valve pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Turn wave change switch to b/cast. band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AN7 valve, pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
6.	Refit dial back plate, dial pointer, gear wheel and plate assy. to volume control shaft and gear wheel to tone control shaft. Make sure that the gear wheel teeth mesh correctly.			

B/CAST. AND S/WAVE. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200 MMF mica capacitor in series with generator.	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast. oscl. coil trimmer cond., then peak b/cast. antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band must be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.8 Mc/s. mark on the dial. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.

9.	To antenna lead	15.2 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for max. output.
10.	To antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to an exact dimension. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

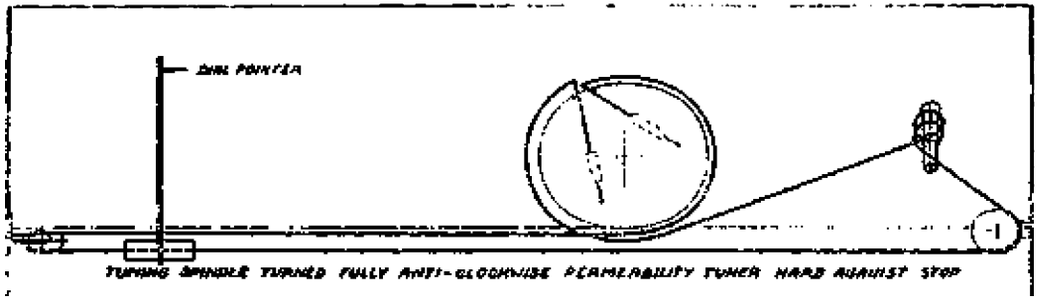
MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT: For 200-220 volt operation: The receiver or the power unit chassis do not have to be removed from the cabinet for the adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.

Remove cabinet back board from the cabinet by unscrewing the screws fastening it to the cabinet. From the rear of the cabinet, the mains tap terminal strip may be seen on the side of the power unit chassis mounted to the base of the cabinet. Unsolder the mains lead wire from the AC. junction block which is attached to the mains terminal strip tap marked 221-250V. and re-solder it to the terminal strip tap marked 200-250V. Refit cabinet back board to cabinet.

CORDING OF DIAL DRIVE

Length of cord required is 4 ft. 6 ins., which includes about 8 ins. to spare for tying to tension springs.
Cord Part No. 34/754.
Tension Spring (2) Part No. 508/30 C.



PB 785

TRANSFORMER CONNECTIONS

B/CAST ANTENNA TRANS.
Start of winding — furthest from mounting end — Antenna, A.V.C.
Finish of winding — nearest to mounting end — Grid.

B/CAST OSCL COIL.
Start of winding — furthest from mounting end — Oscl. plate.
Finish of winding — nearest to mounting end — Oscl. grid.

19, 25, 31 AND 49 METRE ANT. TRANS.	19, 25, 31 AND 49 METRE OSCL. COIL
Lead from top lug (iron core end):— GRID.	Lead from top lug (iron core end):— GRID.
Lead from bottom lug (mounting end):— CHASSIS — EARTH.	Lead from bottom lug (mounting end):— OSCL. PLATE COND.

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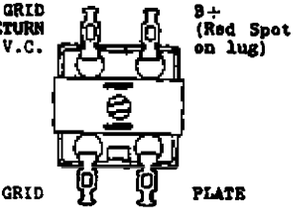
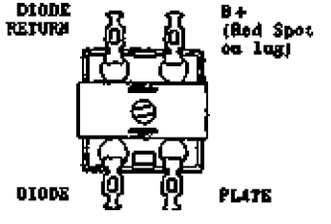
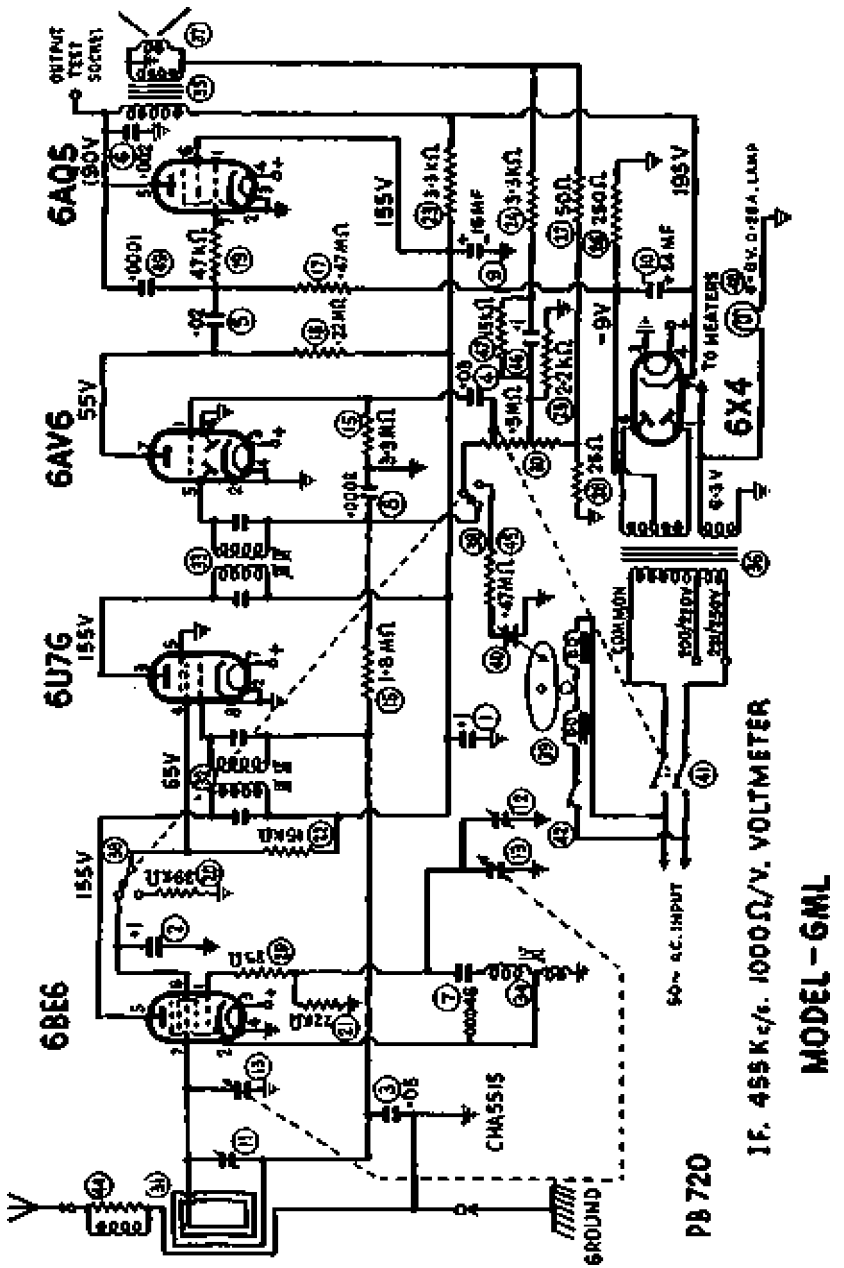
49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.





RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL "GML" MICROGRAM

A. 5-Valve Superheterodyne Broadcast Receiver
and
A. 3-speed (33⅓, 45 and 78 R.P.M.) Single Record Player

For operation from:-

200-250 Volts 50 Cycle AC Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

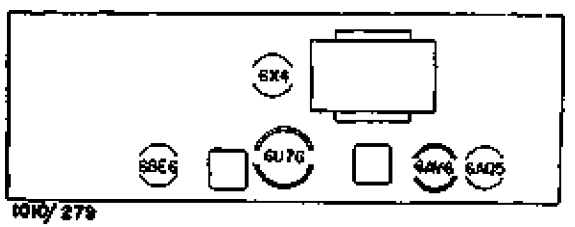
Power Consumption:-

Radio Operation:- 40 Watts.-approx.
Gramo Operation:- 60 Watts.-approx.

Tuning Range:-

535-1610 Kc/s.: 560.7 - 186.3 Metres.

This Bulletin contains:-



VALVE PLACEMENT DIAGRAM

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:

Output Meter:

Mica Capacitor : 0.01MF (for I.F. trans. alignment)

Dummy Antenna : 200MMF. Mica Capacitor

Alignment Tools : Type M195 and PM581.

ALIGNMENT CONDITIONS

Load Impedance : 5,500 Ohms when output meter is connected across speaker transformer primary.

Load Impedance : 4 Ohms when output meter is connected across speaker transformer secondary.

Output Level : 50 Milliwatts
Vol. Control : Max. Vol. fully clockwise
Intermed. Freq.: 455 Kc/s.
Input Voltage : 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

1. Remove push-on type control knobs.
2. Fasten clip on to pick-up arm.
3. Remove two screws, cup washers and rubber washers situated each side of motor mount plate near side of cabinet.
4. Prise up motor mount plate with motor attached.
5. Disconnect pick-up lead plugs from their sockets.
6. Unsolder AC. leads to motor at the terminal strip or unfasten the leads inside the switch terminal box on the motor mount plate.
7. Remove two screws fastening loop aerial to cabinet.
8. Remove the nut and washers on each screw protruding through the two brackets on the rear of chassis and the nut and washer on each screw protruding through the two slotted brackets on the front of the chassis.
9. Tilt chassis on its power transformer end.

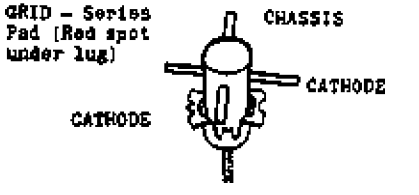
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
10.	To control grid of 6U7G valve	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Leave grid cap on valve. Peak 2nd I.F. trans. pri. and sec. for max. output.
11.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
12.				Repeat operations No. 10 and 11.
13.	Refit chassis to cabinet and make sure the nuts on the mount screws are tightened securely.			
14.	Refit push-on type control knobs.			
15.	Refit loop aerial to cabinet.			
16.	Fully mesh the cond. gang. plates and set the centre of the control knob pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.			
17.	To AVC end of loop aerial (outside turn of sec.)	600 Kc/s.	200 MMF Mica capacitor in series with generator	Turn cond. gang and control knob pointer to 600 Kc/s. and peak the oscl. coil ind. trim (iron core) for max. output. Rock the gang to and fro through the signal while adjusting.
18.	To AVC end of loop aerial (outside turn of sec.)	1400 Kc/s.	200 MMF Mica capacitor in series with generator	Turn cond. gang and control knob pointer to 1400 Kc/s. Adjust oscl. coil trim. condenser for logging and peak loop aerial trim. cond. for max. output. The loop aerial must be in its mounted position when the loop trimmer is being peaked.
19.	Repeat operations No. 17 and 18.			
20.	Refit motor assembly to cabinet in exact reverse procedure to removing it.			

LOOP AERIAL

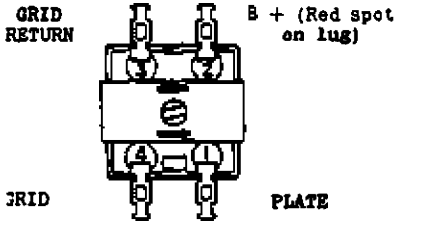
Primary (3 turns)
Outside turn – AERIAL LOADING COIL
Inside turn – EARTH SOCKET AND CHASSIS

Secondary
Outside turn – AVC.
Inside turn - GRID.

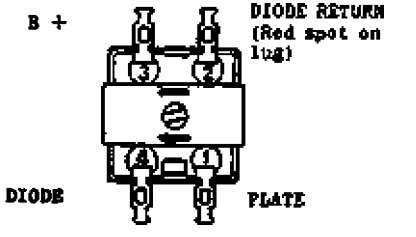
OSCL. COIL



No. 1 I.F. TRANS.

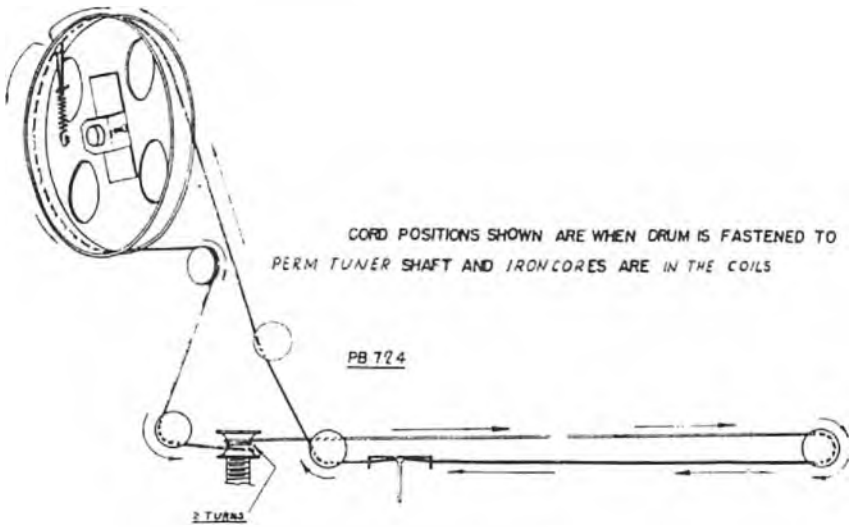


No. 2 I.F. TRANS.



CORDING OF DIAL DRIVE

Length of cord required is 6 ft. 3 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Tension Spring Part No. 21/698.



TYPE 6U7G VALVE CHANGED TO TYPE 6N8 VALVE

The third and future production runs of Model ''GNM'' receivers will use a type 6N8 valve in place of the type 6U7G valve.

VALVE BASE CONNECTIONS

	6U7G	6N8
Pin No. 1	No connection	Screen
,, 2	Heater	Signal grid
,, 3	Plate	Cathode
,, 4	Screen grid	heater
,, 5	Suppressor grid	heater
,, 6	No connection	plate
,, 7	Heater	Diode
,, 8	Cathode	Diode
,, 9	———	Suppressor grid
Grid Cap	Signal grid	———

CIRCUIT COMPONENT CHANGES

A. Cathode bias resistor 300 ohms changed to 1200 ohm resistor tol. ± 10% ½ watt part No. R1222.

B. Screen bleed resistor 100,000 ohms changed to 27,000 ohm resistor tol. ± 10% 1 watt part No. Z2732.

C. Screen feed resistor 22,000 ohms or 27,000 ohms 1 watt changed to 23,500 ohms 2 watt consisting of two 47,000 ohm resistors tol. ± 10% 1 watt part No. 24732 wired in parallel.

D. 6U7G valve socket 8 pin changed to 9 pin socket part No. 279/250 and adaptor plate part No. 33/698.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A43.

TECHNICAL BULLETIN

TABLEGRAM MODEL — "GNM"

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Broadcast Receiver.

FOR OPERATION FROM:—

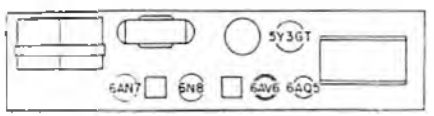
200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

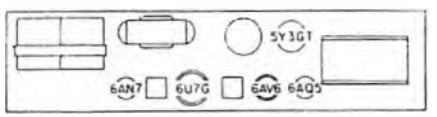
Radio Operation:—55 Watts.-approx.
Gramo Operation:—75 Watts.-approx.

TUNING RANGE:—

535-1610 Kc/s. — 560.7-186.3 Metres.

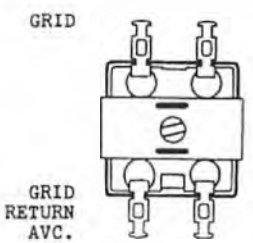


VALVE PLACEMENT DIAGRAM 1063/279

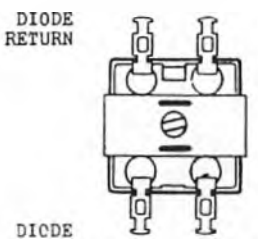


VALVE PLACEMENT DIAGRAM 992/279

1st IF. TRANS.



2nd IF. TRANS.



ANTENNA TRANS.

Start of winding – furthest from mounting end – AVC.
Finish of winding – nearest to mounting end – Signal grid.

OSCL. COIL

Start of winding – furthest from mounting end – Junction of circuit Nos. 11 and 13.
Finish of winding – nearest to mounting end – Oscl. grid.

ASTOR MODEL GNM.

ALIGNMENT PROCEDURE

EQUIPMENT

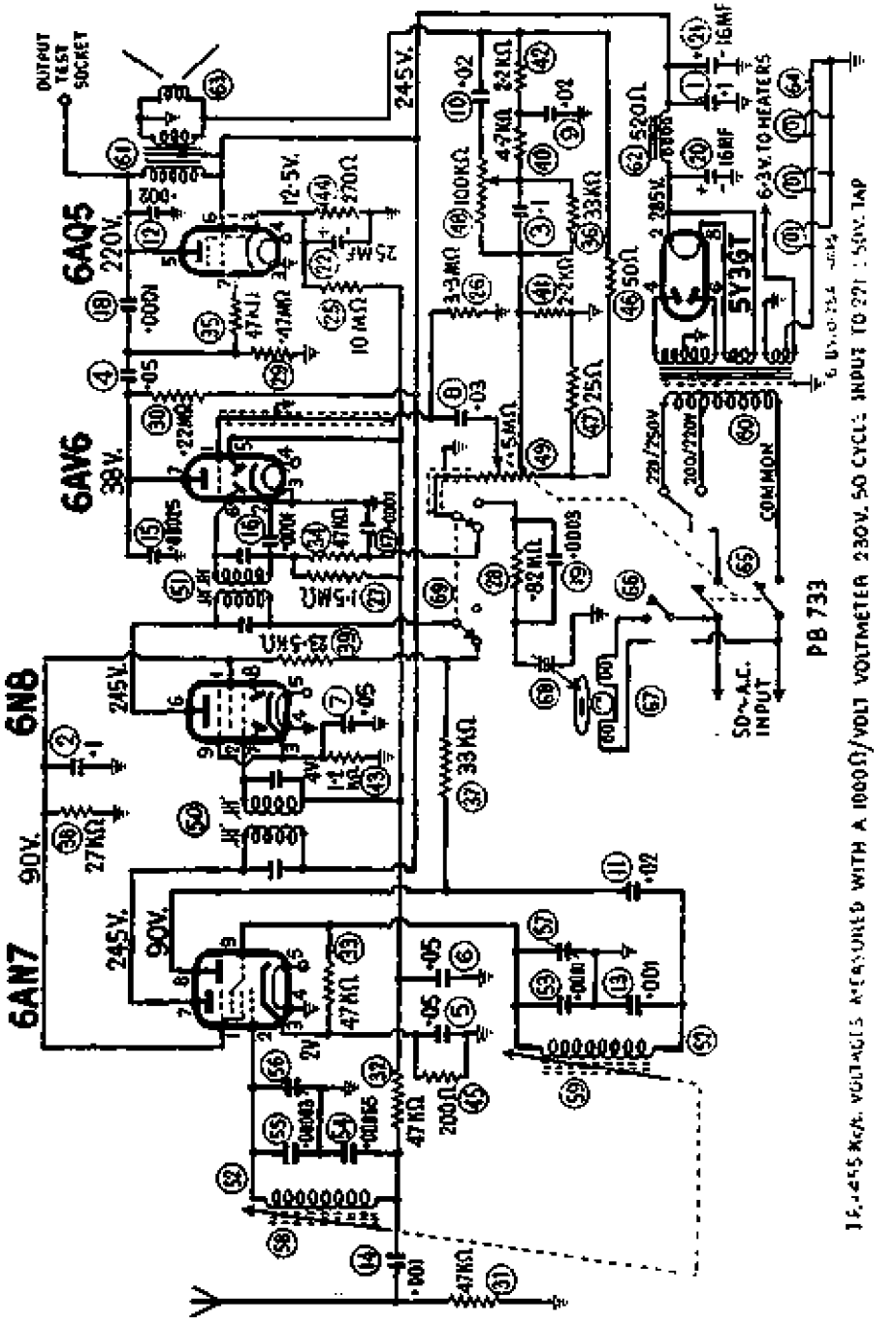
Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF. (for IF. trans. alignment)
Dummy Antenna: 200MMF. Mica Capacitor
Alignment Tools: Type M195 and PM581.

ALIGNMENT CONDITIONS

Load Impedance: 5,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Tone Control: Treble position.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of I.F. valve (6U7G grid cap) (6N8 pin No. 2)	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Remove chassis from cabinet. Leave grid wire attached to valve. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To signal grid of 6AN7 valve pin No. 2	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Turn perm tuner so that iron cores are fully out of windings. Leave grid wire attached to valve. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Turn perm tuner so that iron cores are fully out of coil windings and hard against the stop. Set centre of dial pointer to align with centre of end of travel spot on dial reading near 1700 Kc/s.			
5.	To antenna lead from receiver	1000 Kc/s.	200 MF Mica capacitor in series with generator	Turn perm tuner and dial pointer until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trim. cond. then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil. trim. cond.
6.				Repeat operations No. 4 and 5.
7.				Check logging at each end of the dial.

NOTE:-Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet and the end of the iron core in the former, when the unit is turned fully clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the screw end of the iron core.



MANTEL MODEL "GPM"

5 VALVE SUPERHETERODYNE BROADCAST RECEIVER

FOR OPERATION FROM:

200-250 Volt 50 Cycle A.C. Supply Mains.
Power Consumption 40 Watts (approx.).

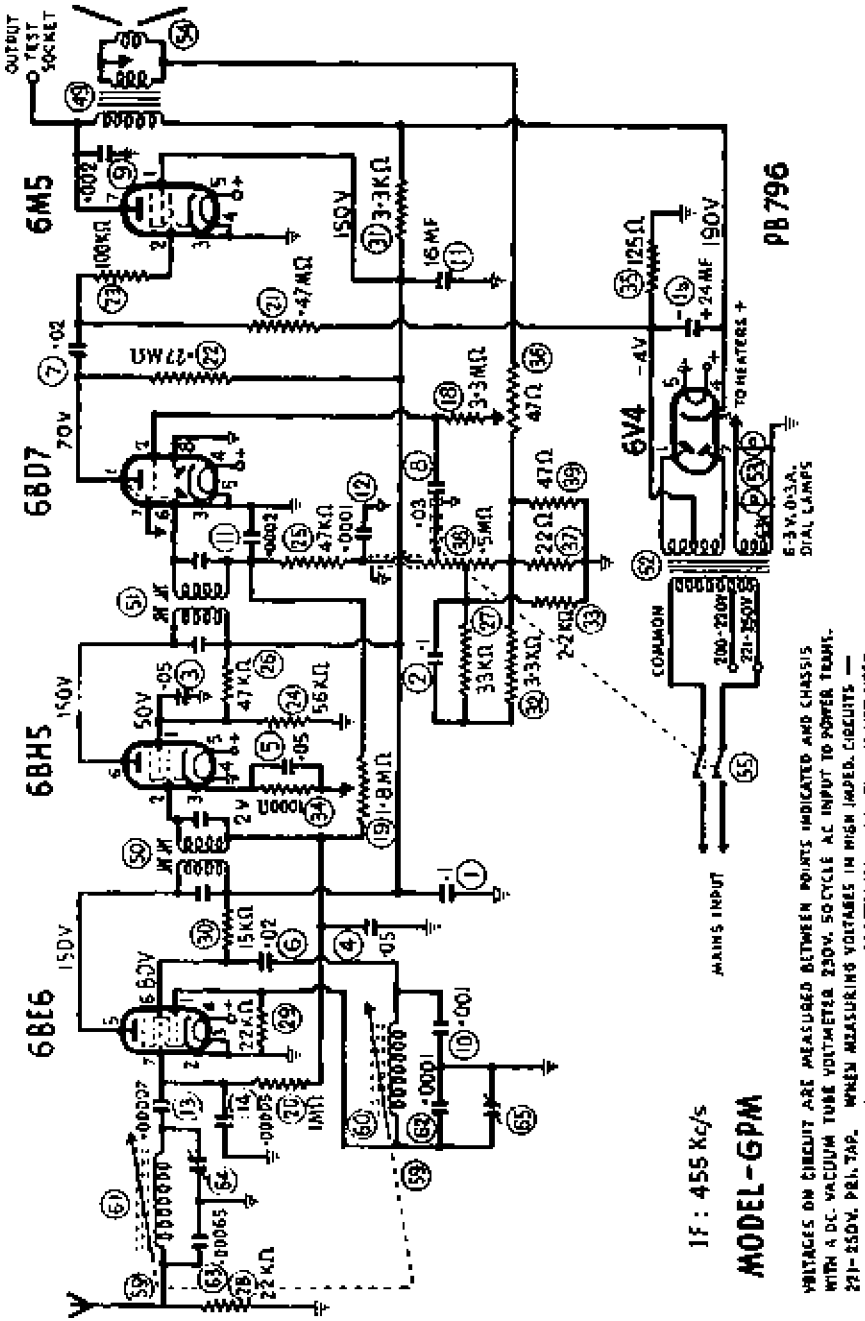
TUNING RANGE:

535-1640 Kc/s. : 560.7-182.9 Metres.

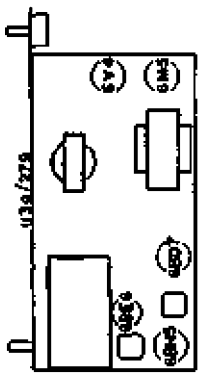
CORDING OF DIAL DRIVE

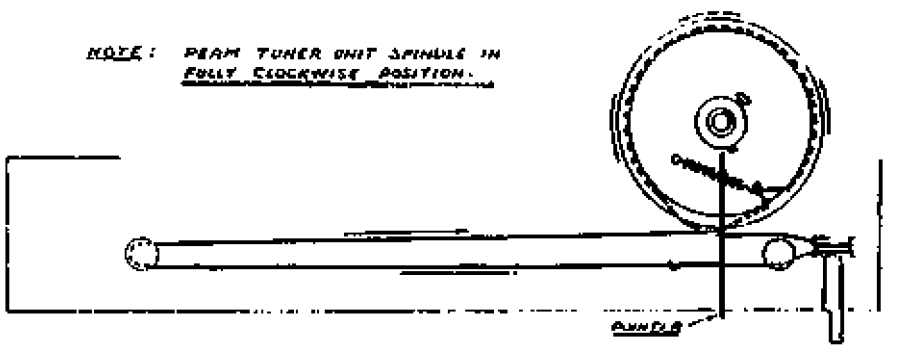
Length of cord required is 5 ft., which includes about 8 ins. to spare for tying to tension spring.

Cord part No.	34/754
Spring part No.	508/30C
Dial Pointer part No.	A116/755

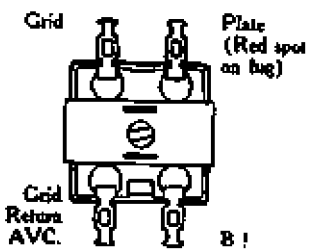


VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER. 230V. 50 CYCLE A.C. INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IS A METER IS NOT USED DEPENDING ON THE RESISTANCE OF THE METER. E6: 1000Ω/VOLT OR 20000Ω/VOLT





No. 1 IF. TRANS.



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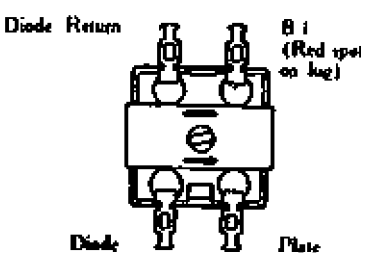


ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF (for trans. alignment).

Dummy Antenna: 200 MMF. Mica Capacitor.
Alignment Tool: Type M195.

ALIGNMENT CONDITIONS

Load Impedance: 7,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle A.C. input to trans.
221-250 volt pri. tap.

DUMMY ANTENNA:

The 200 MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment. The 200 MMF. dummy antenna must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment; if it is connected, it should be rolled up into a small bank. Should a plate antenna be fitted into the rear section of the cabinet in addition to the 25 ft. antenna, the lead from the plate antenna must be disconnected from the antenna junction lug on the chassis during alignment.

I.F. TRANS. ALIGNMENT:

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				Unscrew and remove four screws from rear of cabinet then prise rear section of cabinet away from front section. If a plate antenna is fitted, disconnect the lead from the antenna at the antenna junction lug on the chassis.
2.	To signal grid 455 Kc/s. of 6BH5 valve (pin No. 2).		0.01MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To signal grid 455 Kc/s. of 6BE6 valve (pin No. 7).		0.01MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are fully out of winding on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
4.				Repeat operations Nos. 2 and 3.

B/CAST BAND ALIGNMENT:

1.				Place receiver chassis on its back so that front section of cabinet is uppermost.
2.				Remove two push-on type control knobs by pulling them straight up off the spindles.
3.				Remove dial reading by unscrewing four hex. head chrome plated screws and washers fastening dial to cabinet.
4.				Remove two Csk. head screws and washers fastening base of front section of cabinet to chassis.
5.				Lift front section of cabinet up and over top of chassis. The dial pointer will slide through slot in front of cabinet. The cabinet with speaker attached is to rest against chassis end rear brackets.
6.				Fit control knob, then set the dial up so that it rests between control spindles and edge of cabinet, dial pointer in front of dial.
7.	Dial Pointer Setting			Move dial reading until control spindles are central with spindle holes in moulded skirts of dial reading. Turn tuning control knob anti-clockwise until perm. tuner iron cores are out of windings on coil formers and the unit is hard against the stop. Set dial pointer on end of travel spot on dial reading near 1700 Kc/s.
8.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak osc. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak osc. coil trim cond.
9.	Tuning range after alignment 535 — 1640 Kc/s.			
10.	Check logging at each end of the band then refit chassis to cabinet.			

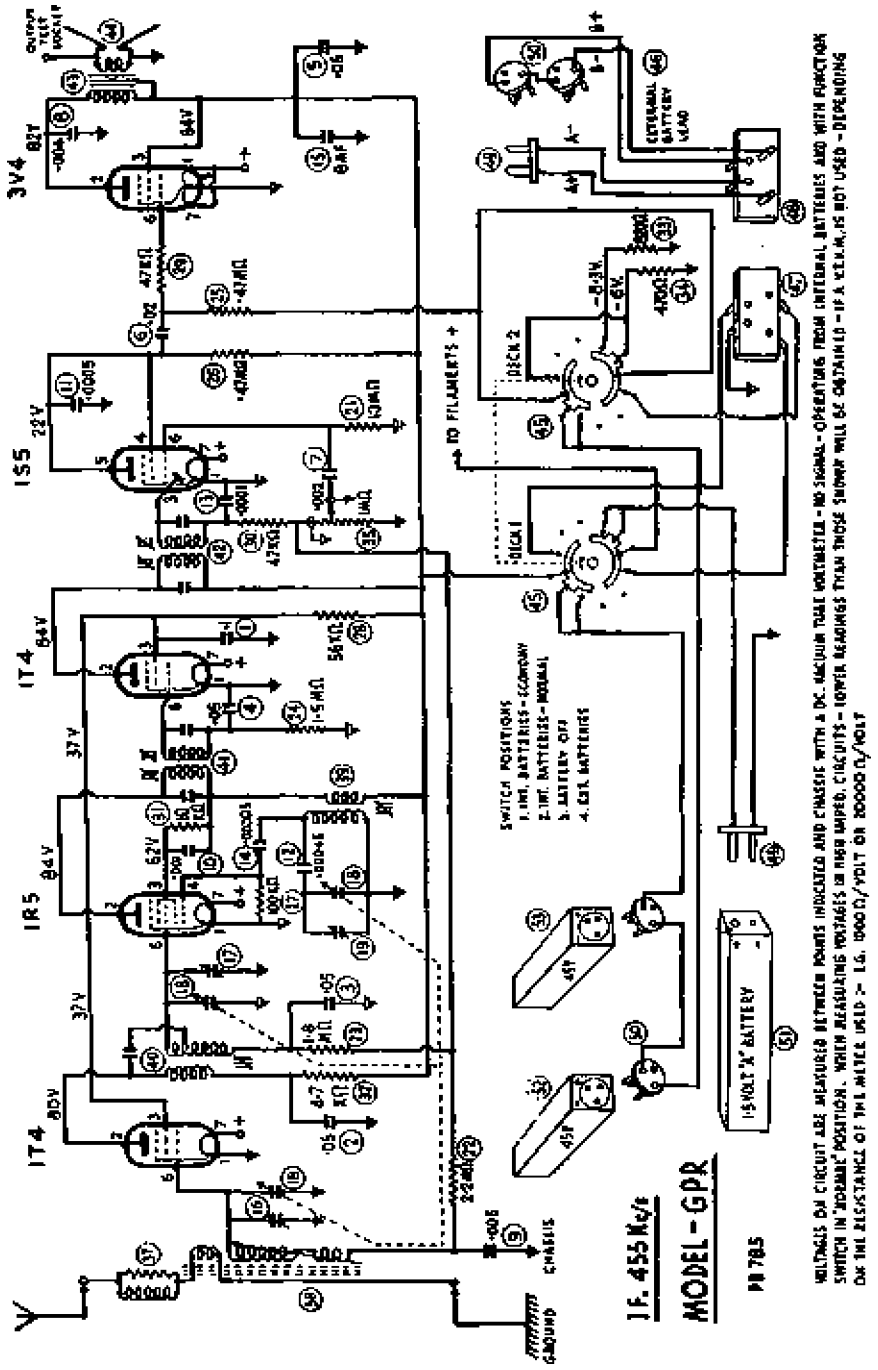
NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the form, when the perm. tuner unit spindle is turned fully anti-clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

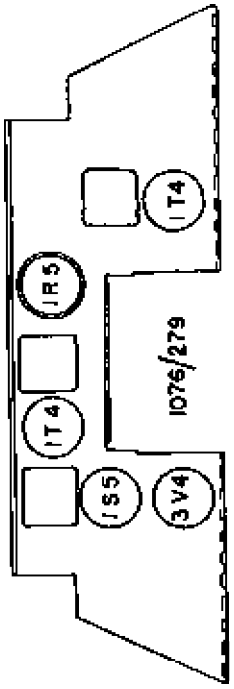
INSTRUCTIONS FOR REMOVING CHASSIS FROM CABINET

1. Unscrew and remove four screws from rear of cabinet then prise rear section of cabinet away from front section.
2. Unsolder lead attached to plate aerial if a plate aerial is fitted inside the top of the cabinet.
3. Remove two push-on knobs from control spindles by pulling them straight off the spindles.
4. Unscrew and remove four hex. head chrome plated screws and washers fastening dial to cabinet.
5. Unsolder speaker and dial lamp leads from terminal strip on top of chassis.
6. Unscrew and remove two Csk. head screws and washers from beneath front section of cabinet.
7. Withdraw chassis from cabinet so that dial pointer slides through long slot in cabinet.

CHASSIS SERIAL NUMBER

The chassis serial number is stamped into the rear edge of the metal chassis. When viewing the receiver from the rear it is visible through the lower slot in the cabinet back at the left or by removing the four screws in the cabinet back. It may be prised away from the front section.





RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.
526-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

"MODEL GPR"

5 VALVE SUPERHETERODYNE PORTABLE RECEIVER

FOUR POSITION BATTERY SWITCH

1. Economy – Internal Batteries.
2. Normal – Internal Batteries.
3. Receiver "OFF."
4. External Batteries.

FOR OPERATION FROM:

1.5 volt "A" battery and
90 volts "B" battery. (Two 45 volt "B" batteries connected in series.)

BATTERY CONSUMPTION:

Internal Batteries:–ECONOMY–	"A" Battery.	300	mA.
	"B" Battery.	8.5	mA.
Internal Batteries:–NORMAL–	"A" Battery.	300	mA.
	"B" Battery.	13	mA.
External Batteries:–	"A" Battery.	300	mA.
	"B" Battery.	13	mA.

TUNING RANGE:

535 to 1620 Kilocycles. 560.7 to 185.18 Metres.

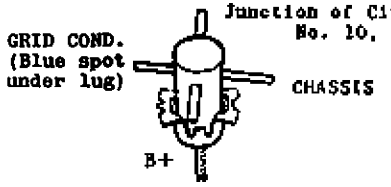
INTERMEDIATE FREQUENCY:

455 Kc/s.

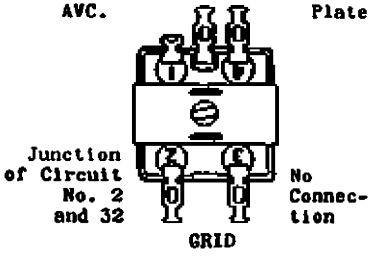
POWER OUTPUT:

250 milliwatts (max.).
100 milliwatts (undistorted).

OSCL. COIL



RF. TRANS.



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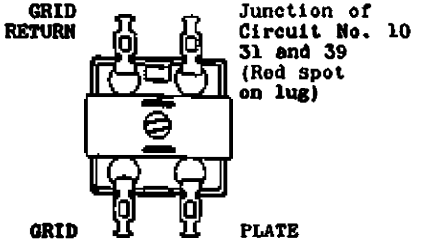

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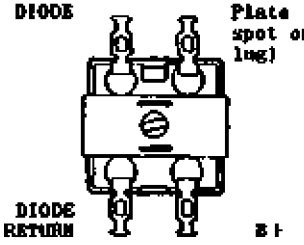


ASTOR MODEL GPR.

ALIGNMENT INSTRUCTIONS:

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator:	Load Impedance: 10,000 ohms.
Output Meter:	Output Level: 25 milliwatts.
	Volume Control: Max. vol. (fully clockwise).
Mica Capacitor: 0.01MF (part No. PC145) for I.F.T. Alignment.	"A" Battery: 1.5 volts.
	"B" Battery: 90 volts (two 45 volt "B" batteries connected in series).
Alignment Tools: Part No. PM581 and M195.	Intermediate Freq.: 455 Kc/s.

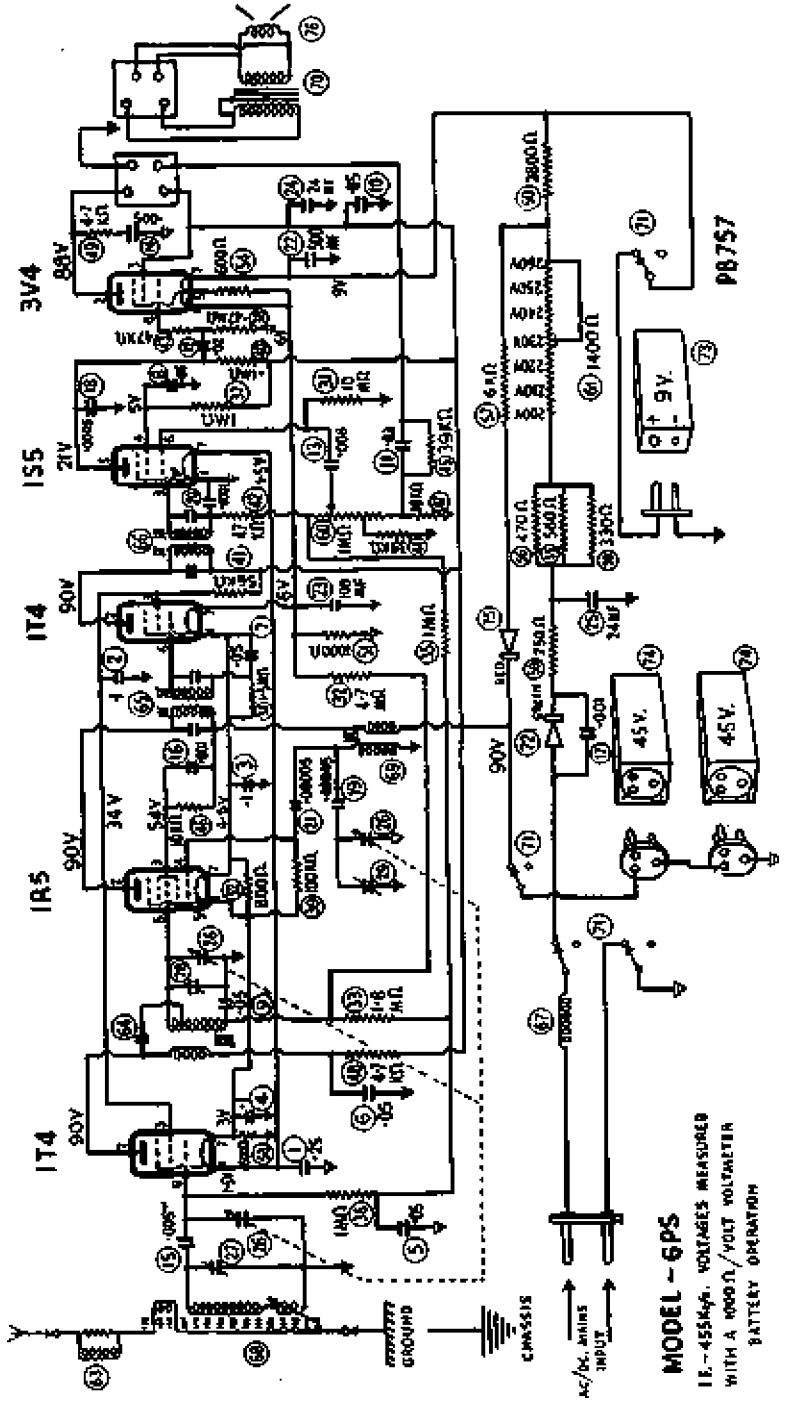
TO REMOVE CHASSIS FROM CABINET: Turn receiver battery/off switch to the "OFF" position.

Remove the dial pointer centre tuning push-on knob by pulling it straight off the tuning control spindle. Remove volume control and ON/OFF switch knobs. Unscrew and remove two screws through top ridge of cabinet, then from top of cabinet prise rear section of cabinet away from front section. Remove small plugs from battery sockets, then remove the batteries. Disconnect from speaker the lead connecting speaker frame to chassis.

The chassis is held in the cabinet by a ¼" x 5/32" Whit. screw and nut at each end of the chassis. Loosen off these two screws, withdraw speaker lead plug from socket on chassis, then lift the chassis out of the cabinet.

Operation.	Generator connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	The wire connecting the speaker frame to the receiver chassis which was disconnected when removing the chassis from the cabinet is to be reconnected during alignment of the receiver.			
2.	To control grid of IT4 IF valve (pin No. 6)	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF trans. pri. and sec. for max. output.
3.	To control grid of IR5 valve (pin No. 6).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn gang plates fully out of mesh. Peak 1st IF trans. pri. and sec. for max. output.
4.	Repeat operations No. 2 and 3.			
5.	ALIGNMENT TEMPLATE: A cardboard alignment template part No. PB 758 is available from the factory. The template may be made by using the diagram on page 10 and fastening it to a piece of cardboard.			
6.	DIAL POINTER SETTING: Fit alignment jig to chassis, then fit push-on pointer-tuning knob to tuning spindle. Fully mesh cond. gang plates and set centre of dial pointer on centre of end of travel spot on template near 540 Kc/s.			
7.	To inject a signal into the receiver rod aerial connect to the active terminal of the signal generator approx. 2 ft. of aerial wire, then fashion the wire into a pertical position.			
8.	Place receiver chassis in a horizontal position with the rod aerial uppermost and so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire.			
9.	Refer para. 7 and 8.	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the cond. gang and dial pointer set in this position and peak osc. coil ind. trim. (iron core) and then from the base of the RF trans. peak the RF. trans. ind. trim. (iron core). Also peak for max. output the secondary trimmer coil on the ferrite rod by sliding the trimmer coil along the aerial rod.
10.	Refer para. 7 and 8.	1400 Kc/s.		Turn cond. gang and dial pointer until centre of pointer is on 1400 Kc/s. mark on template. Adjust osc. coil trim. cond. for logging and peak RF trans. trim. cond., then rod aerial trimmer cond. for max. output.
11.	Refer para. 7 and 8.	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the gang and dial pointer set in this position. Repeak osc. coil ind. trim. (iron core RF. trans. ind. trim. (iron core) and the secondary trim. coil on the ferrite rod. Do not rock the gang to and fro through the signal while adjusting the trimmers or move the dial pointer off 600 Kc/s. dial template mark until after the ind. trimmer of these three coils has been peaked for max. output.
12.	Refer para. 7 and 8.	1400 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. mark on dial template. Adjust oscl. coil trim. cond. for logging and peak RF trans. and ferrite rod aerial trimmer conds. for max. output.
13.	Refit receiver chassis to cabinet in the exact reverse procedure to removing it.			

TUNING RANGE AFTER ALIGNMENT, 535 to 1620 Kc/s.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL "GPS"

5 VALVE SUPERHETERODYNE UNIVERSAL PORTABLE RECEIVER.
WITH BATTERY REACTIVATION

FOR OPERATION FROM:

195-260 Volt 40-60 Cycle A.C. electric supply mains.
195-260 Volt D.C. electric supply mains or
9 volts ''A'' battery and
90 volts ''B''battery. (Two 45 volt ''B'' batteries connected in series.)

POWER CONSUMPTION:

Battery operation:-	50Ma.	''A'' Battery.
	11Ma.	''B'' Battery.
A.C. operation:-	90Ma.	230 volts 50 cycle A.C. input to receiver. Mains resistor adjustable clip adjusted to 8.7 volts D.C. across valve filament circuit.
D.C. operation:-	65Ma.	230 volts D.C. input to receiver. Mains resistor adjustable clip adjusted to 8.7 volts D.C. across valve filament circuit.

TUNING RANGE:

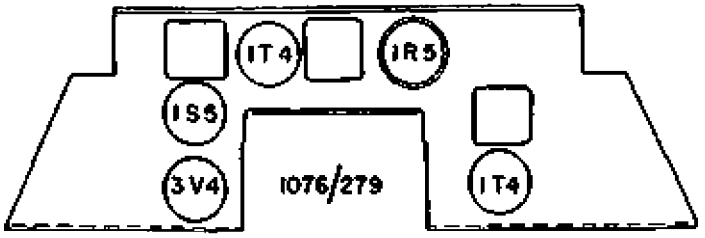
535 to 1620 Kilocycles. 560.7 to 185.18 Metres.

POWER OUTPUT:

250 milliwatts (max.).
100 milliwatts (undistorted).

THIS BULLETIN CONTAINS:-

Technical Data.
Alignment Procedure.
Circuit Diagram.



ASTOR MODEL GPS.

ALIGNMENT INSTRUCTIONS

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator:	Load Impedance: 10,000 ohms.
Output Meter:	Output Level: 25 milliwatts.
Safety Lamp: 230 volt 40 watt incandescent lamp.	Volume Control: Max. vol. (fully clockwise).
Mica Capacitor: 0.01MF (part No. PC145) for I.F.T. Alignment.	"A" Battery: 9 volts.
	"B" Battery: 90 volts (two 45 volt "B" batteries connected in series).
Alignment Tools: Part No. PM581 and M195.	Intermediate Freq.: 455 Kc/s.

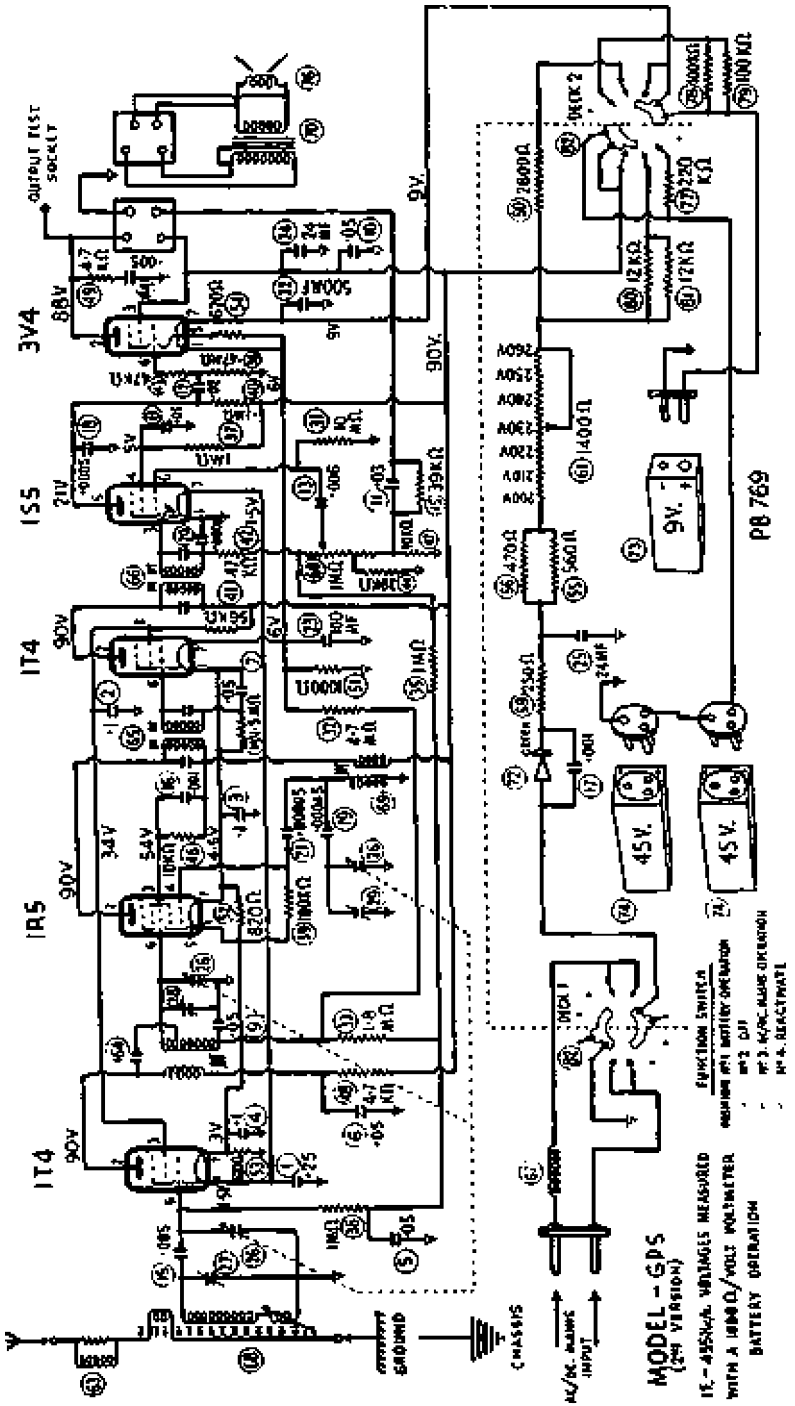
TO REMOVE CHASSIS FROM CABINET: Turn receiver ON/OFF switch to the "OFF" position and withdraw the AC/DC mains lead plug from the small socket at the rear of the receiver cabinet.

Remove the dial pointer centre tuning push-on knob by pulling it straight off the tuning control spindle. Remove volume control and ON/OFF switch knobs by loosening off the small grub screws in the knobs. (The first production run had push-on type knobs and no grub screws). Unscrew and remove two screws through top ridge of cabinet, then from top of cabinet prise rear section of cabinet away from front section. Disconnect from speaker the lead connecting speaker frame to chassis.

The chassis is held in the cabinet by a ¾" x 5/32" Whit. screw and nut at each end of the chassis. Loosen off these two screws, withdraw speaker lead plug from socket on chassis then lift the chassis out of the cabinet.

Opera-tion.	Generator connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	The receiver may be aligned when operating it from batteries or from the A.C. or D.C. mains. When operating it from the A.C. or D.C. mains apply the safety lamp between the receiver chassis and ground to make sure the chassis is not above earth potential; if it is, reverse the receiver plug in the power point/light socket.			
2.	The wire connecting the speaker frame to the receiver chassis which was disconnected when removing the chassis from the cabinet is to be reconnected during alignment of the receiver.			
3.	To control grid of 1T4 IF valve (pin No. 6)	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF trans. pri. and sec. for max. output.
4.	To control grid of 1R5 valve (pin No. 6).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attatched to valve socket. Turn gang plates fully out of mesh. Peak 1st IF trans. pri. and sec. for max. output.
5.	Repeat operations No. 3 and 4.			
6.	ALIGNMENT TEMPLATE: Supplied with each 'GPS' Service Bulletin is a cardboard alignment template. Should this template be lost another one may be made by using the diagram on page 12 and fastening it to a piece of cardboard.			
7.	DIAL POINTER SETTING: Fit alignment jig to chassis, then fit push-on pointer-tuning knob to tuning spindle. Fully mesh cond. gang plates and set centre of dial pointer on centre of end of travel spot on template near 540 Kc/s.			
8.	To inject a signal into the receiver rod aerial connect to the active terminal of the signal generator approx. 2 ft. of aerial wire then fashion the wire into a vertical position.			
9.	Place receiver chassis in a horizontal position with the rod aerial furthermost and so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire.			
10.	Refer para. 8 and 9	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the cond. gang and dial pointer set in this position and peak osc. coil ind. trim. (iron core) and then from the base of the RF trans. peak the RF. trans. ind. trim. (iron core). Also peak for max output the secondary trimmer coil on the ferrite rod by sliding the trimmer coil along the aerial rod.
11.	Refer para. 8 and 9	1400 Kc/s.		Turn cond. gang and dial pointer until centre of pointer is on 1400 Kc/s. dial mark on template. Adjust osc. coil trim. cond. for logging and peak RF trans. trim. cond. then rod aerial trimmer cond. for max. output.
12.	Refer para. 8 and 9	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the gang and dial pointer set-in this position. Repeak osc. coil ind. trim. (iron core) RF. trans. ind. trim. (iron core) and the secondary trim. coil on the ferrite rod. Do not rock the gang to and fro through the signal while adjusting the trimmers or move the dial pointer off 600 Kc/s. dial template mark until after the ind. trimmer of these three coils have been peaked for max. output.
13.	Refer para. 8 and 9	1400 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. mark on dial template. Adjust oscl. coil trim. cond. for logging and peak RF trans. and ferrite rod aerial trimmer conds. for max. output.
14.	Refit receiver chassis to cabinet in the exact reverse procedure to remove it. Make sure that the grub screws in the control knobs are tightened securely.			

TUNING RANGE AFTER ALIGNMENT, 535 to 1620 Kc/s.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A46b.

TECHNICAL BULLETIN

"MODEL GPS" (2nd Version)

5 VALVE SUPERHETERODYNE UNIVERSAL PORTABLE RECEIVER

Function Switch Positions

1. Internal Battery Operation.
2. Receiver "Off."
3. AC. or DC. Mains Operation.
4. Battery Reactivation.

FOR OPERATION FROM:
195-260 Volt 40-60 Cycle A.C. electric supply mains.
195-260 Volt D.C. electric supply mains or
9 volts ''A'' battery and
90 volts ''B''battery. (Two 45 volt ''B'' batteries connected in series.)

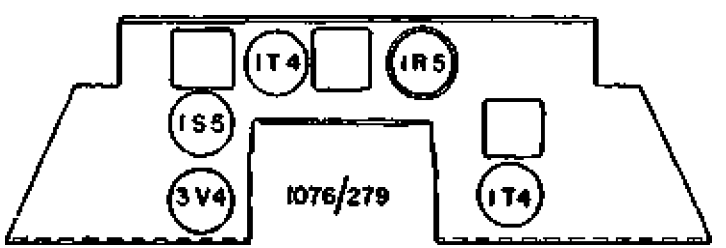
POWER CONSUMPTION:

Battery operation:-	50mA.	''A'' Battery.
	11mA.	''B'' Battery.
A.C. operation:-	100mA.	230 volts 50 cycle A.C. input to receiver. Mains resistor adjustable clip adjusted to 230V. position
D.C. operation:-	60mA.	230 volts D.C. input to receiver. Mains resistor adjustable clip adjusted to 230V. position.

TUNING RANGE:
535 to 1620 Kilocycles. 560.7 to 185.18 Metres.

POWER OUTPUT:
250 milliwatts (max.).
100 milliwatts (undistorted).

THIS BULLETIN CONTAINS:-
1. Technical Data.
2. Alignment Procedure.
3. Circuit Diagram.



ALIGNMENT INSTRUCTIONS

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator:	Load Impedance: 10,000 ohms.
Output Meter:	Output Level: 25 milliwatts.
Safety Lamp: 230 volt 40 watt incandescent lamp.	Volume Control: Max. vol. (fully clockwise).
Mica Capacitor: 0.01MF (part No. PC145) for I.F.T. Alignment.	''A'' Battery: 9 volts.
Alignment Template: Part No. PB758	''B'' Battery: 90 volts (two 45 volt ''B'' batteries connected in series).
Alignment Tools: Part No. PM581 and M195.	Intermediate Freq.: 455 Kc/s.

TO REMOVE CHASSIS FROM CABINET: Turn the receiver switch marked "BATT"-"OFF"-"MAINS"-"REACT" to the "OFF" position and withdraw the AC/DC mains lead plug from the small socket at the rear of the receiver cabinet.

Remove the dial pointer centre tuning push-on knob by pulling it straight off the tuning control spindle. Remove volume control and ON/OFF switch knobs by loosening off the small grub screws in the knobs. (The first production run had push-on type knobs and no grub screws). Unscrew and remove two screws through top ridge of cabinet, then from top of cabinet prise rear section of cabinet away from front section. Disconnect from speaker the lead connecting speaker frame to chassis.

The chassis is held in the cabinet by a ¼" x 5/32" Whit. screw and nut at each end of the chassis. Loosen off these two screws, withdraw speaker lead plug from socket on chassis then lift the chassis out of the cabinet.

Opera-tion.	Generator connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	The receiver may be aligned when operating it from batteries or from the A.C. or D.C. mains. When operating it from the A.C. or D.C. mains apply the safety lamp between the receiver chassis and ground to make sure the chassis is not above earth potential; if it is, reverse the receiver plug in the power point socket.			
2.	The wire connecting the speaker frame to the receiver chassis which was disconnected when removing the chassis from the cabinet is to be reconnected during alignment of the receiver.			
3.	To control grid of IT4 IF valve (pin No. 6)	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF trans. pri. and sec. for max. output.
4.	To control grid of IR5 valve (pin No. 6).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn gang plates fully out of mesh. Peak 1st IF trans. pri. and sec. for max. output.
5.	Repeat operations No. 3 and 4.			
6.	ALIGNMENT TEMPLATE: A cardboard alignment template part No. PB 758 is available from the factory. The template may be made by using the diagram on page 12 and fastening it to a piece of cardboard.			
7.	DIAL POINTER SETTING: Fit alignment jig to chassis, then fit push-on pointer-tuning knob to tuning spindle. Fully mesh cond. gang plates and set centre of dial pointer on centre of end of travel spot on template near 540 Kc/s.			
8.	To inject a signal into the receiver rod aerial connect to the active terminal of the signal generator approx. 2 ft. of aerial wire then fashion the wire into a vertical position.			
9.	Place receiver chassis in a horizontal position with the rod aerial uppermost and so that the fixed primary winding end of the rod aerial points to the 2 ft. of aerial wire attached to the generator and so that the fixed primary winding is not closer than 2 ft. from the 2 ft. of aerial wire.			
10.	Refer para. 8 and 9	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the cond. gang and dial pointer set in this position and peak osc. coil ind. trim. (iron core) and then from the base of the RF trans. peak the RF. trans. ind. trim. (iron core). Also peak for max. output the secondary trimmer coil on the ferrite rod by sliding the trimmer coil along the aerial rod.
11.	Refer para. 8 and 9	1400 Kc/s.		Turn cond. gang and dial pointer until centre of pointer is on 1400 Kc/s. dial mark on template. Adjust osc. coil trim. cond. for logging and peak RF trans. trim. cond. then rod aerial trimmer cond. for max. output.
12.	Refer para. 8 and 9	600 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 600 Kc/s. mark on dial template. Leave the gang and dial pointer set in this position. Repeak osc. coil ind. trim. (iron core) RF. trans. ind. trim. (iron core) and the secondary trim. coil on the ferrite rod. Do not rock the gang to and fro through the signal while adjusting the trimmers or move the dial pointer off 600 Kc/s. dial template mark until after the ind. trimmer of these three coils have been peaked for max. output.
13.	Refer para. 8 and 9	1400 Kc/s.		Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. mark on dial template. Adjust oscl. coil trim. cond. for logging and peak RF trans. and ferrite rod aerial trimmer conds. for max. output.
14.	Refit receiver chassis to cabinet in the exact reverse procedure to removing it. Make sure that the grub screws in the control knobs are tightened securely.			

TUNING RANGE AFTER ALIGNMENT, 535 to 1620 Kc/s.

ALIGNMENT EQUIPMENT

R.F. Signal Generator	-	modulated 400 cps.
A.F. Signal Generator	-	9000 cps.
Output Meter	-	15 ohm impedance.
Series Capacitor	-	R.F. Sig. Gen. for I.F.T. alignment .01 MF Part No. PC145.

Alignment Tools

(a) Blade tip type Part No. BM881 for trimmer cond. adjustment.

(b) Hexagonal tip type Part No. 418/81 for I.F.T. core adjustment.

(c) Flexible rod type Part No. 46/712 for osc. coil core adjustment.

I.F. attenuator - Part No. M447.

ALIGNMENT CONDITIONS

The receiver chassis does not have to be removed from the cabinet for alignment purposes; refer para. 3 Service Instructions mechanical.

Function Switch	-	Radio position.
Volume Control	-	maximum volume (fully clockwise)
Tone Control	-	maximum treble (fully clockwise)
Output Level	-	50 milliwatts.
Output Meter Connection	-	across secondary of one output transformer, speaker voice coil disconnected.

INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

IMPORTANT: It will be found that maximum output peaks will be obtained at two positions of the I.F. transformer adjustable cores, the correct setting is the one where the cores are the furthest apart.

NOTE: The final peaking of the cores nearest the top of the I.F. transformers should be performed last.

This is necessary so that the upper cores will not be disturbed when withdrawing the hexagonal alignment tool.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	.01 MF cond. in series, to grid end of rod aerial.	455 Kc/s.	Turn tuning control to high freq. end of travel. Peak 2nd I.F. trans. pri. and sec. iron cores for max. output.
2.	As Oper.1.	455 Kc/s.	Peak 1st I.F. trans. pri. and sec. iron cores for max. output.

ASTOR

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
Astor House, 164-173 Sturt Street, South Melbourne.

SERVICE DATA

ASTOR MODEL "GRW"

CONCERTMASTER STEREOGRAM

6 VALVE SUPERHETERODYNE BROADCAST BAND RECEIVER

AND A 4 SPEED RECORD CHANGER

FUNCTION:	Radio – Gramo Mono – Gramo Stereo
TUNING RANGE:	535 – 1640 Kilocycles
INTERMEDIATE FREQUENCY:	455 Kilocycles
RECORD CHANGER:	COLLARO "STUDIO" 4 Speed (16-2/3, 33-1/3, 45 and 78 RPM)
PICK-UP CARTRIDGE:	Crystal – Ronette type STEREO – 105
SPEAKERS:	8" diameter permag. each channel
SPEAKER VOICE COIL IMPEDANCE:	15 Ohms
POWER OUTPUT:	2.25 Watts each channel
MAINS INPUT VOLTAGE TAPS:	200, 230 & 240, 250.
MAINS FREQUENCY:	50 Cycles
POWER CONSUMPTION:	Radio Operation – 55 Watts Gramo Operation – 90 Watts
VALVE COMPLEMENT:	6AN7 Mixer – Oscillator 6N8 I.F. Amplifier – Detector 12AX7 Audio Amplifier (one section each channel) 6M5 Audio Output (left channel) 6M5 Audio Output (right channel) 6V1 H.T. Rectifier

ASTOR MODEL GRW.

SETTING THE DIAL POINTER

Turn tuning control until the tuning condenser gang is at the low frequency end of travel stop, condenser plates fully meshed. Set the centre of dial pointer to the centre of the end of travel spot, left hand end of dial reading.

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 vertical wire at a position in line with ferrite rod aerial and located at a position not less than 1 ft. from the inductance trimmer end of ferrite rod.

C. Connect I.F. attenuator between pin 2 of 6N8 valve socket and chassis.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. A & B.	600 Kc/s.	Turn tuning cond. gang and dial pointer to 600 Kc/s dial mark. Leave cond. gang and pointer set in this position, adjust osc. coil iron core and rod aerial inductance trimmer (metal ring) for max. output.
NOTE:	Do not rock the cond. gang to and fro through signal until this operation is completed.		
2.	Refer para. A & B.	1400 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on centre of 1400 Kc/s mark on dial. Adjust osc. and aerial trimmer condensers for max. output.
3.	Repeat operations 1 and 2.		

Tuning range after alignment 535 - 1640 Kc/s.

AUDIO AMPLIFIER GAIN AND BALANCE TEST

Function Switch	-	Mono position.
Volume Control,	-	maximum volume (fully clockwise)
Tone Control	-	maximum treble (fully clockwise)
Output Meter and Speaker Connections	-	output meter across one channel output (speaker voice coil disconnected) and a speaker voice coil across the other channel output.
Audio Generator Frequency	-	1000 cps.
Audio Generator Connection		Before proceeding note colours of leads and connections, then disconnect amplifier input leads from pick-up sockets. Connect generator to one of the input leads to amplifier.

Audio Generator Output - 100 millivolts.

With equipment connected as above the output meter should read between .1 and .6 watts.

Leave input signal set at 100 mV; exchange output meter and speaker connections to opposite channels.

Check output meter reading which should be between .05 and .6 watts.

The difference in output between the two channels must not exceed 25 or 150 milliwatts (approx.).

SPEAKER PHASING

It is essential that the speakers be phased correctly.

If a speaker has to be removed for service, note the lead connections to ensure correct phasing when reconnecting.

A method used for checking the phasing of the speakers is detailed in the following paragraphs.

1. Play a monophonic record.

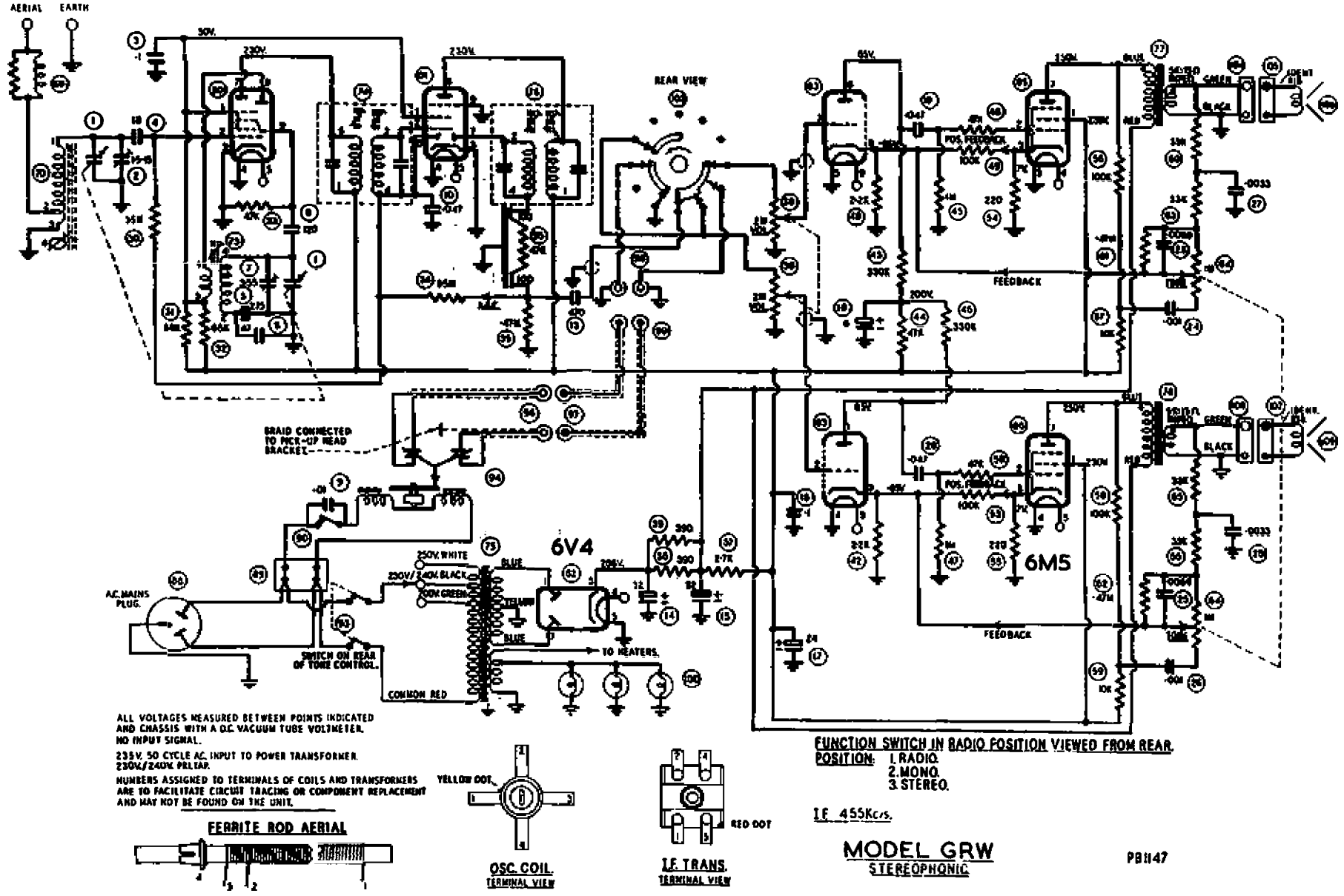
2. To conduct the following test the listener should be located at a position four feet away in front of the centre of the cabinet.

3. If the phasing is correct the reproduced sound will appear to be radiated from a point near the centre of cabinet front.

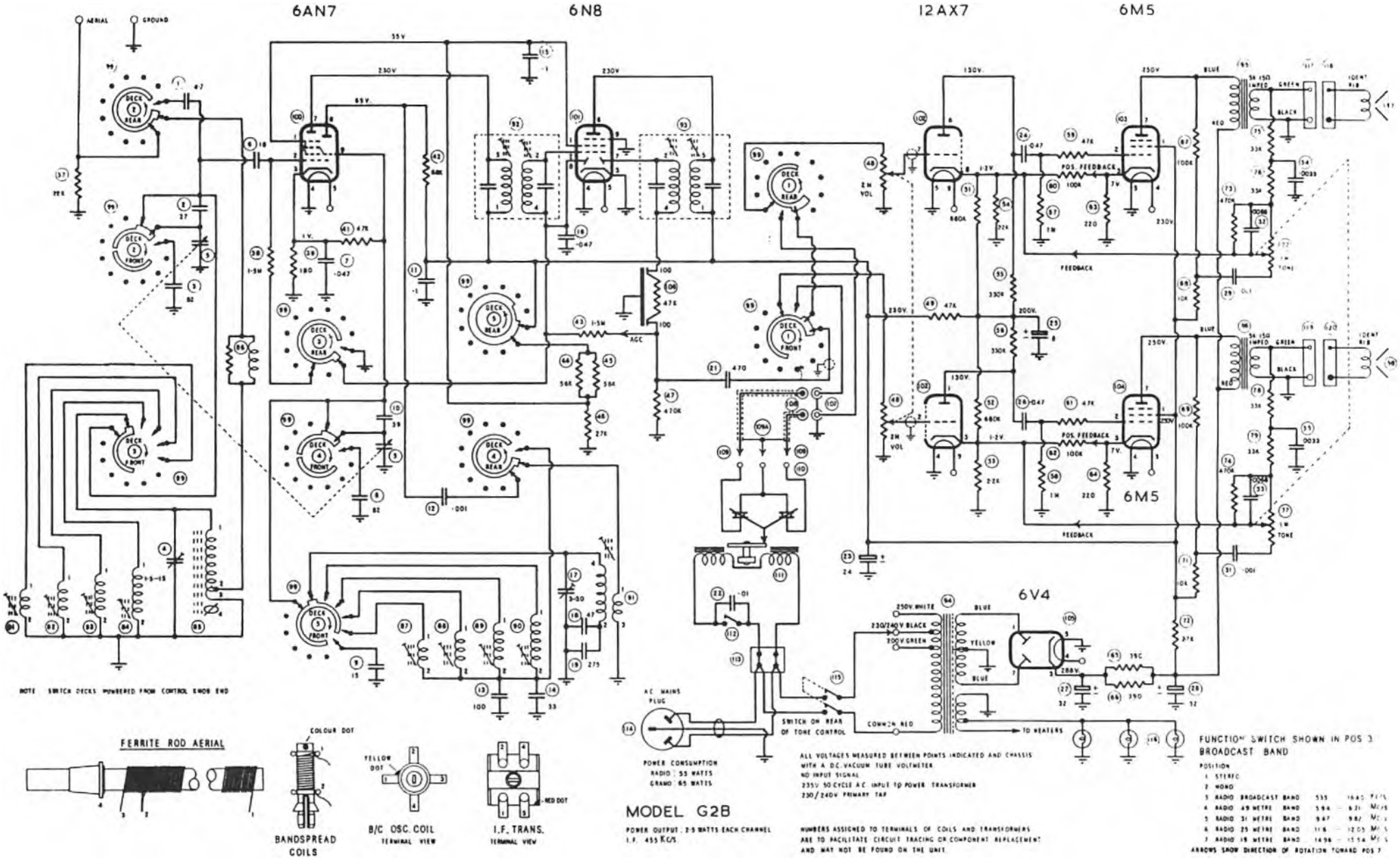
4. With incorrect phasing the quality of reproduction will be poor, it will appear to be lacking in bass response and will appear to be radiated from both ends of the cabinet.

5. If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of one speaker then repeat the test detailed above.

6AN7 6N8 ASTOR MODEL GRW. 12AX7 6M5 A47b.



ASTOR MODEL G2B.



AUDIO AMPLIFIER GAIN AND BALANCE TEST

Function Switch :	Mono position
Volume Control :	Max. volume (fully clockwise)
Tone Control :	Max. treble (fully clockwise)
Output Meter and Speaker Connections :	Output meter across one channel output (speaker voice coil disconnected) and a speaker voice coil across the other channel output
AF. Gen. Freq. :	1000 cps.
AF. Gen. Connection :	Before proceeding note colours of leads and connections, then disconnect amplifier input leads from pick-up sockets. Connect generator to one of the input leads to amplifier.
AF. Gen. Output :	100 millivolts.

With equipment connected as above the output meter should read between .25 and .6 watts

Leave input signal set at 100 mV. then transfer output meter and speaker connections to opposite channel

Check output meter reading which should be between .25 and .6 watts.

The difference in output between the two channels must not exceed 2DB or .15 watts (approx.).

SPEAKER PHASING

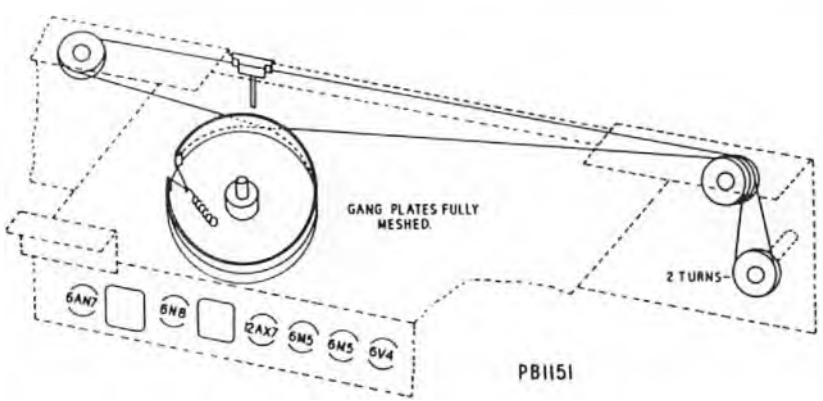
It is essential that the speakers be phased correctly. If a speaker is removed for service, note lead connections to ensure correct phasing when reconnecting. A method for checking the phasing is detailed as follows :-

a) Play a monophonic record.

b) If the phasing is correct the reproduced sound will appear to be radiated from a point near the centre of the cabinet. The listener should be located 4 feet away in front of the cabinet.

c) With incorrect phasing the quality of reproduction will be poor. It will appear to be lacking in bass response and will appear to be radiated from both ends of the cabinet

d) If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of one speaker then repeat the test detailed above



ASTOR

RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

Astor House, 161-173 Sturt Street, South Melbourne.

SERVICE DATA

ASTOR MODEL G 2B

CONCERTMASTER STEREOGRAM-RADIO

An automatic four speed record changer and a 6 valve superheterodyne five band receiver incorporating band spreading of the 49 metre, 31 metre, 25 metre and 19 metre shortwave bands.

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

CHASSIS SERIAL NUMBER

The number is stamped into metal chassis and is visible through a slot in front wall of record changer compartment.

NOTE: Some first production run chassis have the serial number stamped into the chassis adjacent to mains lead anchor point. No viewing aperture is provided in these receivers

ASTOR MODEL G2B.

ALIGNMENT EQUIPMENT

R. F Signal Generator :	Modulated 400 cps.
A. F Signal Generator :	1000 cps.
Output Meter :	15 ohms imped.
Series Capacitor :	I. F. T. alignment .01 mF Part No. 4003-031-02
Dummy Aerial :	Short Wave Bands - 400 ohm non-inductive resistor.
Alignment Tools :	Blade tip type, Part No PM581 or 4121-015-01 for I. F. T. and trimmer adjustment.
	Flexible rod type Part No. 4121-018-01 for B'c osc. and bandspread coils adjustment.
I F Attenuator :	Part No. M447 or 4121-007-02

ALIGNMENT CONDITIONS

The chassis does not have to be removed from the cabinet for alignment purposes; refer paragraph: ACCESS TO CHASSIS

Function Switch :	Radio position.
Volume Control :	Max. volume (fully clockwise)
Tone Control :	Max. treble (fully clockwise)
Output Level :	50 milliwatts
Output Meter Connection :	Across sec. of one output trans. speaker voice coil disconnected.

INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

Oper No.	RF. Sig. Gen. Connection	Generator Frequency	Instructions
1	.01 mF cond. in series, to grid end of rod aerial	455 Kc/s.	Turn tuning control to HF. end of travel. Peak 2nd IFT. pri. and sec. cores for max.
2.	As oper. 1.	455 Kc/s.	Peak 1st IFT. pri. and sec. cores for max.

Dial Pointer Setting

Turn tuning control until cond. gang is at LF. end of travel stop, cond. plates fully meshed. Set centre of dial pointer on centre of end of travel spot at left end of dial.

Broadcast Alignment

A. To inject a signal into rod aerial, connect to Sig. Gen. active terminal approx. two feet of aerial wire, then fashion wire to a vertical position.

B Place vertical wire in line with rod aerial and not less than 1 ft. from inductance trimmer end.

C Connect IF. attenuator between pin 2 of 6N8 socket and chassis.

3.	Refer para A & B	600 Kc/s.	Turn cond. gang and dial pointer to 600 Kc/s dial mark. Leave cond. gang and pointer set in this position. Adjust osc1 coil core and rod aerial ind. trim (metal ring) for max.

NOTE: Do not rock cond. gang to and fro thru signal.

Oper. No.	RF. Sig. Gen. Connection	Generator Frequency	Instructions
4.	Refer para. A. & B.	1400 Kc/s	Turn cond. gang & pointer so that centre of pointer is on 1400 Kc/s mark on dial. Adjust osc. & aerial trim. conds. for max.
5.	Repeat operations 1 and 2		Tuning range after alignment 515-1640 Kc/s

SHORT-WAVE ALIGNMENT

Turn function switch to 49 Metre band (this band must be aligned before the 31, 25 and 19 Metre bands).

NOTE : Turn the iron core of the oscillator coil being aligned until the iron core is almost fully out of the coil former, then turn the iron core so that it re-enters the coil and a signal is obtained.

Screwing the iron core into oscillator coil about 5 turns will produce another peak. This peak is the image which occurs with the oscillator frequency 455 Kc/s. lower than the signal frequency. The correct peak is the one with the iron core furthest out of the coil former and is the oscillator frequency 455 Kc/s higher than the signal frequency.

6.	To aerial lead	6.05 Mc/s 400 ohm non-inductive resistor in series with gen.	Turn tuning control until pointer aligns with 6.05 Mc/s spot on dial. Adjust iron core of 49 Metre band osc. coil for logging. Peak 49 Metre aerial coil iron core for max. Rock tuning cond. through signal while adjusting.
7.	To aerial lead	9.6 Mc/s as oper. 6	Turn tuning control until pointer aligns with 9.6 Mc/s spot on dial. Adjust iron core of 31 Metre band osc. coil for logging. Peak 31 Metre aerial coil iron core for max. Rock tuning cond. through signal while adjusting.
8.	To aerial lead	11.8 Mc/s as oper. 6	Turn tuning control until pointer aligns with 11.8 Mc/s spot on dial. Adjust iron core of 25 Metre band osc. coil for logging. Peak 25 Metre aerial coil iron core for max. Rock tuning cond. through signal while adjusting.
9.	To aerial lead	15.2 Mc/s as oper. 6	Turn tuning control until pointer aligns with 15.2 Mc/s spot on dial. Adjust iron core of 19 Metre band osc. coil for logging. Peak 19 Metre aerial coil iron core for max. Rock tuning cond. through signal while adjusting.
10.	Disconnect IF. Attenuator from receiver		
11.	Check logging of the shortwave bands on some well-known shortwave stations If a crystal calibrator is available, check the logging at each 100 Kc/s mark on dial.		

SERVICE INSTRUCTIONS — electrical

ALIGNMENT EQUIPMENT

R.F. Signal Generator	-	modulated 400 cps.
A.F. Signal Generator	-	1000 cps.
Output Meter	-	15 ohm impedance.
Series Capacitor	-	R.F. Sig. Gen. for I.F.T. alignment .01 MF Part No.Pc145.

Alignment Tools

(a) Blade tip type Part No. PM581 for trimmer cond. adjustment.

(b) Hexagonal tip type Part No. 418/81 for I.F.T. core adjustment.

(c) Flexible rod type Part No. 48/712 for osc. coil core adjustment.

I.F. attentuator - Part No. M447.

ALIGNMENT CONDITIONS

The receiver chassis does not have to be removed from the cabinet for alignment purposes; refer para. 2 Service Instructions mechanical.

Function Switch	-	Radio position.
Volume Control	-	maximum volume (fully clockwise)
Tone Control	-	maximum treble (fully clockwise)
Output Level	-	50 milliwatts.
Output Meter Connection	-	across secondary of one output transformer, speaker voice coil disconnected.

INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

IMPORTANT: It will be found that maximum output peaks will be obtained at two positions of the I.F. transformer adjustable cores, the correct setting is the one where the cores are the furthest apart.

NOTE: The final peaking of the cores nearest the top of the I.F. transformers should be performed last.

This is necessary so that the upper cores will not be disturbed when withdrawing the hexagonal alignment tool.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	.01 MF cond. in series, to grid end of rod aerial.	455 Kc/s.	Turn tuning control to high freq. end of travel. Peak 2nd I.F. trans. pri. and sec. iron cores for max. output.
2.	As Oper.1.	455 Kc/s.	Peak 1st I.F. trans. pri. and sec. iron cores for max. output.

ASTOR

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

A49.

SERVICE DATA

ASTOR MODEL "G 3A"

STEREOGRAM

5 VALVE SUPERHETERODYNE BROADCAST BAND RECEIVER

AND A 4 SPEED RECORD CHANGER

FUNCTION:	Radio – Gramo Mono – Gramo Stereo
TUNING RANGE:	535 – 1640 Kilocycles
INTERMEDIATE FREQUENCY:	455 Kilocycles
RECORD CHANGER:	COLLARO "STUDIO" 4 Speed (16-2/3, 33-1/3, 45 and 78 RPM)
PICK-UP CARTRIDGE:	Crystal – Ronette type STEREO – 105
SPEAKERS:	6" diameter permag, each channel
SPEAKER VOICE COIL IMPEDANCE:	15 Ohms
POWER OUTPUT:	2.25 Watts each channel
MAINS INPUT VOLTAGE TAPS:	200, 230 & 240, 250.
MAINS FREQUENCY:	50 Cycles
POWER CONSUMPTION:	Radio Operation – 55 Watts Gramo Operation – 90 Watts
VALVE COMPLEMENT:	6AN7 Mixer–Oscillator 6N8 I.F. Amplifier – Detector 6GW8 Audio Amplifier and Output (left channel) 6GW8 Audio Amplifier and Output (right channel) 6V4 H.T. Rectifier

SETTING THE DIAL POINTER

Turn tuning control until the tuning condenser gang is at the low frequency end of travel stop, condenser plates fully meshed. Set the centre of dial pointer to the centre of the end of travel spot, left hand end of dial reading.

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 vertical wire at a position in line with ferrite rod aerial and located at a position not less than 1 ft. from the inductance trimmer end of ferrite rod.

C. Connect I.F. attenuator between pin 2 of GN8 valve socket and chassis.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. A & B.	600 Kc/s	Turn tuning cond.gang and dial pointer to 600 Kc/s dial mark. Leave cond. gang and pointer set in this position, adjust osc. coil iron core and rod aerial inductance trimmer (metal ring) for max. output.
NOTE:	Do not rock the cond. gang to and fro through signal until this operation is completed.		
2.	Refer para. A & B.	1400 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer is on centre of 1400 Kc/s mark on dial. Adjust osc. and aerial trimmer condensers for max. output.
3.	Repeat operations 1 and 2.		

Tuning range after alignment 535-1640 Kc/s.

AUDIO AMPLIFIER GAIN AND BALANCE TEST

Function Switch	-	Mono position.
Volume Control	-	maximum volume (fully clockwise)
Tone Control	-	maximum treble (fully clockwise)
Output Meter and Speaker connections	-	output meter across one channel output (speaker voice coil disconnected) and a speaker voice coil across the other channel output.
Audio Generator Frequency	-	1000 cps.
Audio Generator Connection		Before proceeding note colours of leads and connections, then disconnect amplifier input leads from pick-up sockets. Connect generator to one of the input leads to amplifier.

Audio Generator Output - 100 millivolts.

With equipment connected as above the output meter should read between .25 and .6 watts.

Leave input signal set at 100 mV; exchange output meter and speaker connections to opposite channels.

Check output meter reading which should be between .25 and .6 watts.

The difference in output between the two channels must not exceed 2DB or 150 milliwatts (approx.).

SPEAKER PHASING

It is essential that the speakers be phased correctly.

If a speaker has to be removed for service, note the lead connections to ensure correct phasing when reconnecting.

A method used for checking the phasing of the speakers is detailed in the following paragraphs.

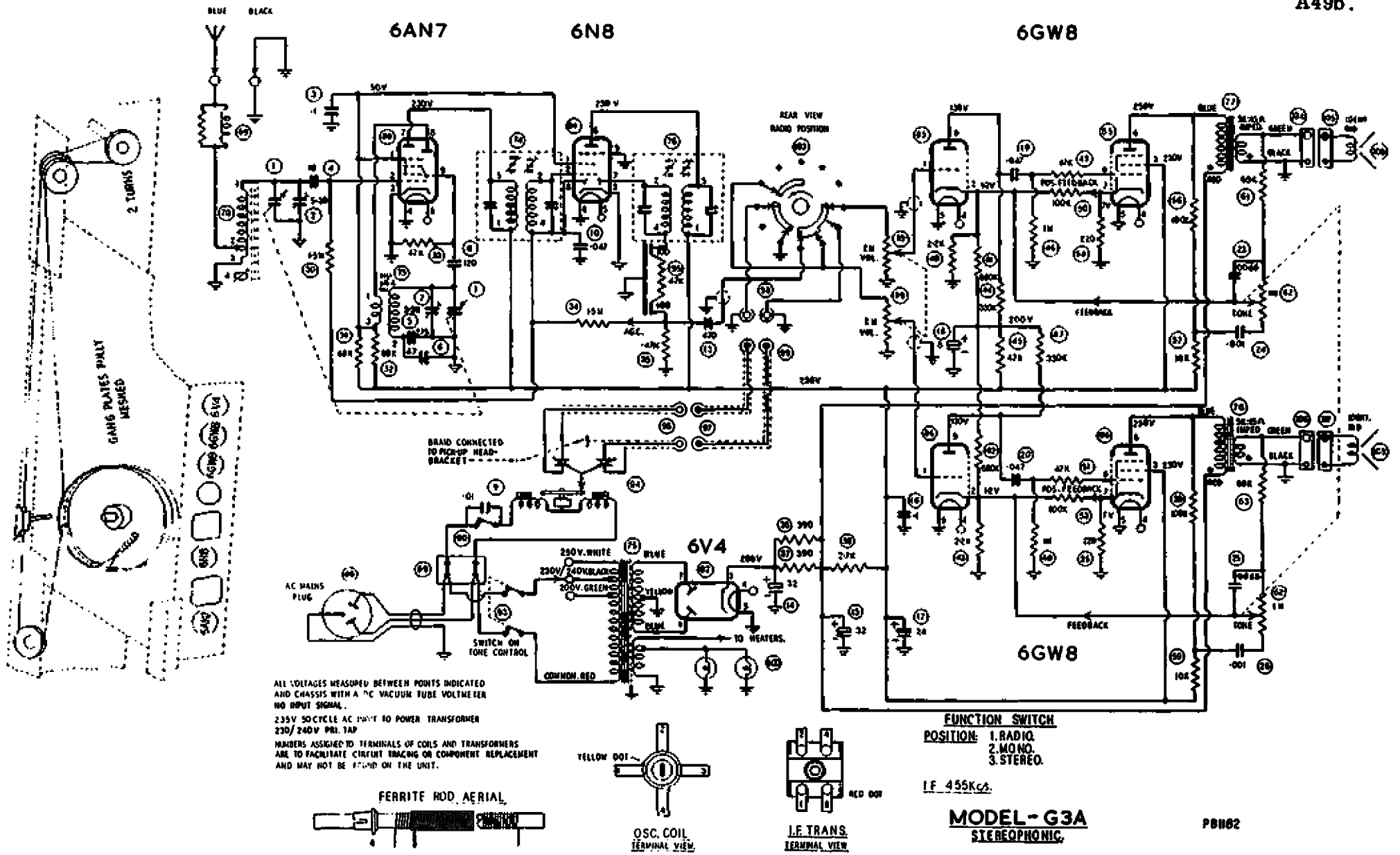
1. Play a monophonic record.

2. To conduct the following test the listener should be located at a position four feet away in front of the centre of the cabinet.

3. If the phasing is correct the reproduced sound will appear to be radiated from a point near the centre of cabinet front.

4. With incorrect phasing the quality of reproduction will be poor, it will appear to be lacking in bass response and will appear to be radiated from both ends of the cabinet.

5. If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of one speaker then repeat the test detailed above.


6AN7
6N8
6GW8
6V4
6GW8
BLUE
BLACK
2 TURNS
GANG PLATES FULLY MESHED
REAR VIEW RADIO POSITION
BRAID CONNECTED TO PICK-UP HEAD-BRACKET
AC MAINS PLUG
SWITCH ON TONE CONTROL
250V. WHITE
230V. BLACK
200V. GREEN
YELLOW
BLUE
COMMON. RED
TO HEATERS.
FEEDBACK
TONE
ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC VACUUM TUBE VOLTMETER NO INPUT SIGNAL.
235V 50 CYCLE AC INPUT TO POWER TRANSFORMER 230/240V PRI. TAP
NUMBERS ASSIGNED TO TERMINALS OF COILS AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT BE FOUND ON THE UNIT.
FERRITE ROD AERIAL
YELLOW DOT
OSC. COIL
TERMINAL VIEW
RED DOT
I.F. TRANS.
TERMINAL VIEW
FUNCTION SWITCH
POSITION: 1. RADIO.
2. MONO.
3. STEREO.
I.F. 455Kcs.
MODEL - G3A
STEREOPHONIC.
PB1162

ASTOR MODEL HPP.

ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS

Load Impedance: 10,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Bass Tone Control: Min. Bass Position.
Treble Tone Control: Min. Treble Position.
Intermed. Freq.: 455 Kc/s.
Supply Mains: 230 volts 50 cycle AC. input to trans. 221-250V. primary tap.

EQUIPMENT

Signal Generator.
Output Meter.
Mica Capacitor: 0.01MF. (For I.F.T. alignment).
Dummy Antenna: 200MMF. Mica capacitor.
Dummy Antenna: 400 ohm. non-inductive resistor.
Alignment Tools: Type M195 and PM581.
IF. Attenuator: Type M174. This attenuator consists of a 20K ohm ½ w. resistor and a .004MF. cond. wired in series and having clips attached for connecting to the chassis and IF. valve control grid during alignment of the RF. signal circuits.

To remove chassis from cabinet to align the trimmers of the RF. and IF. circuits. Remove the five push-on type control knobs from front of cabinet, wave change switch knob near record changer and gramo vol. control knob from L.H. side of cabinet by pulling the knobs straight off their spindles.

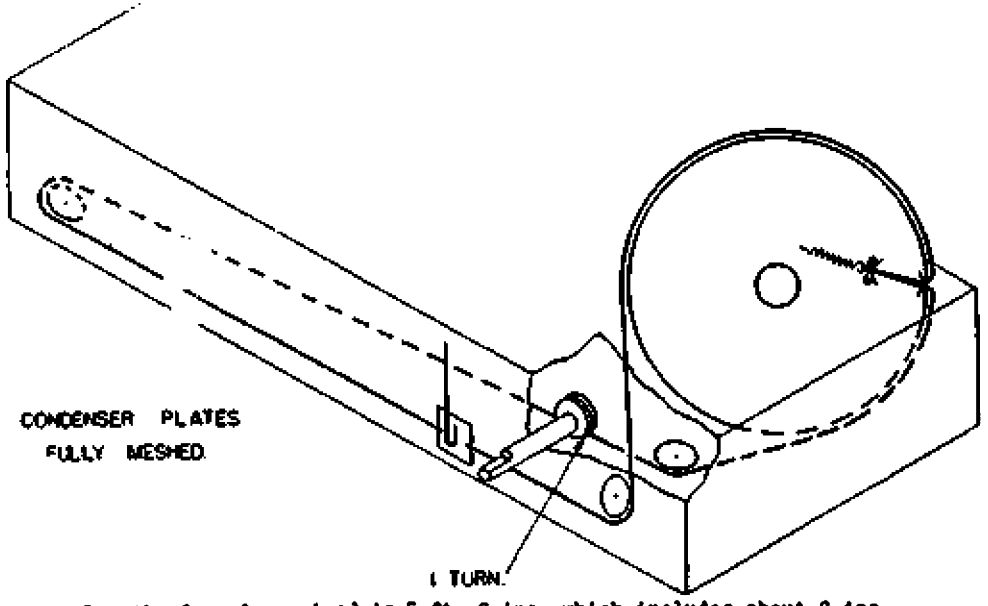
Remove the screws holding the cabinet back to the cabinet. Disconnect the receiver chassis AC mains leads from the AC junction block and the cabinet indicator lamp lead plug from its socket. Pull the pick-up leads out of the sockets on rear of receiver chassis. Remove four screws fastening gramo vol. control bracket on inside of left hand end of cabinet. On the rear edge of the chassis, at each end, a screw through a metal strip fastens the chassis to the cabinet; remove these two screws then slide the chassis out of the cabinet.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G IF. valve.	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on valve. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve. Pin No. 2.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s. Condenser gang plates fully meshed.			
5.	Connect IF. attenuator type M174 between receiver chassis and control grid of 6U7G IF. valve.			
6.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim. (iron core) for max. output.
7.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with 1400 Kc/s. spot on dial reading. Adjust B/cast oscl. coil trim. condenser for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
8.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial spot. Leave the gang and dial pointer set in this position and re-peak the B/cast oscl. coil. ind. trim. (iron core) for max. output, then peak the B/cast antenna and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the cond gang to and fro through the signal or move the dial pointer off 600 Kc/s. dial mark, until after the ind. trimmers (iron cores of both of these transformer have been peaked for max. output.
9.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
10.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
11.	To antenna terminal.	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna terminal.	11.8 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

13.	To antenna terminal.	15.2 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

14. Disconnect IF. attenuator from receiver.
15. Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

CORDING OF DIAL DRIVE



Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring.
Cord Part No. 34/754.
Tension Spring Part No. 21/698.

INSTRUCTIONS FOR CHANGING MAIN VOLTAGE INPUT TAPS

MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.—For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove the chassis from the cabinet as detailed on page 2. Unsolder the mains lead wire from the switch on the volume control which is attached to the 221-250 volt tap and re-solder it to the 200-220 volt tap. Refit the chassis to the cabinet in the exact reverse procedure to removing it.

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TECHNICAL BULLETIN

MODEL—"IIPP"—CONCERTMASTER

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 9 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

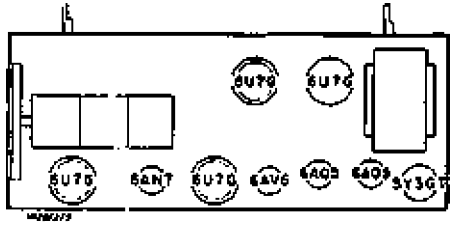
POWER CONSUMPTION:—

Radio Operation:—80 Watts.—approx.
Gramo Operation:—100 Watts.—approx.

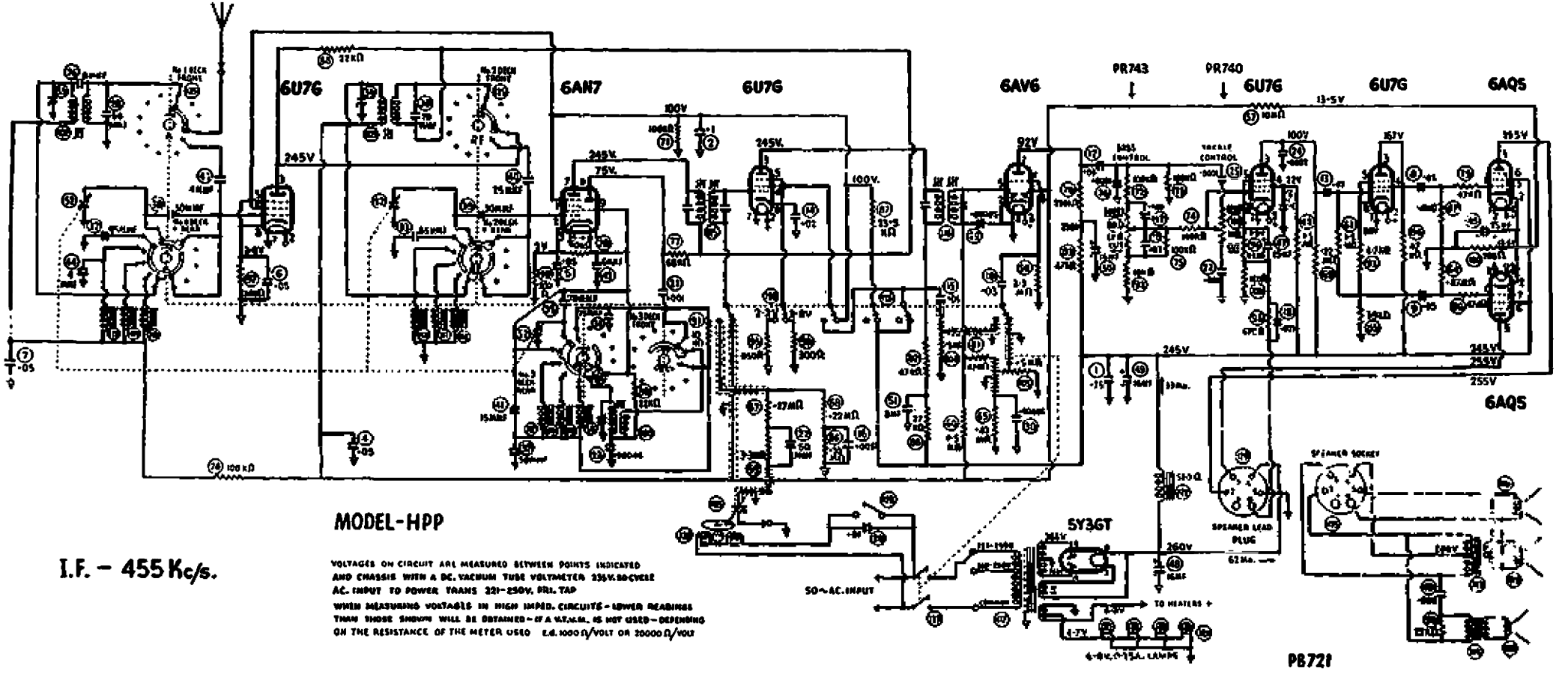
TUNING RANGES:—	**RECEIVER COVERAGE:—**
Broadcast Band, 535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)

THIS BULLETIN CONTAINS:—

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF. Transformers.
5. Dial Drive Cording Diagram.
6. Valve Placement Diagram.
7. Instructions for Changing Mains Input Voltage Tap.
8. Instructions for Removing Chassis from Cabinet.



ASTOR MODEL HPP.



MODEL-HPP

I.F. – 455 Kc/s.

VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 250V. 50 CYCLE A.C. INPUT TO POWER TRANS 221–250V. PRI. TAP

WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS – LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED – IF A V.T.V.M. IS NOT USED – DEPENDING ON THE RESISTANCE OF THE METER USED E.G. 1000 Ω/VOLT OR 20000 Ω/VOLT

ALIGNMENT PROCEDURE — MODEL "HQ"

EQUIPMENT:

Signal Generator :
Output Meter :
Mica Capacitor : 0.01MF (for I.F. trans. alignment)
Dummy Antenna : 200MMF Mica Capacitor.
Alignment Tools : Type M195 and PM581.

ALIGNMENT CONDITIONS:

Load Impedance : 5,000 ohms.
Output level : 50 Milliwatts.
Vol. Control : Max. Vol. fully clockwise.
Intermed. Freq. : 455 Kc/s.
Input Voltage : 230 Volts 50 Cycle. A.C. input to trans. 230-250 volt pri. tap.

DUMMY ANTENNA:

The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment; if it is connected it should be rolled up into a small hank.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6B8G tube	455 Kc/s.	0.01MF Mica capacitor in series with generator	Remove chassis from cabinet, refit dial to dial shaft. Leave grid cap on tube. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6A8G tube	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid cap on tube. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.				Fully mesh the cond. gang plates. Connect a piece of stiff wire to the chassis and fashion it into a vertical position behind the dial and directly above the centre of the dial shaft to represent the dial pointer on the cabinet. Adjust the dial by moving the drum on the cond. gang shaft until the centre of the pointer aligns with the centre of the end of travel mark on the dial reading near 540 Kc/s.
5.	To antenna junction lug on chassis	600 Kc/s.	200MMF Mica capacitor in series with generator	Turn cond. gang and dial until 600 Kc/s. spot on dial aligns with centre of pointer. Leave the gang and dial set in this position and peak the oscl. coil inductance trim. (iron core) for max. output.
6.	To antenna junction lug on chassis	1400 Kc/s.	200MMF Mica capacitor in series with generator	Turn cond. gang and dial until 1400 Kc/s. spot on dial aligns with centre of pointer. Adjust oscl. coil trim. condenser or logging and peak antenna trans. trim. condenser for max. output.

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DIVISION OF ELECTRONIC INDUSTRIES LTD
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A51.

TECHNICAL BULLETIN

MANTEL MODEL "HQ"

4 Tube Superheterodyne Broadcast Receiver.

FOR OPERATION FROM:

200-250 Volt 50 Cycle A.C. Mains Supply.

Power Consumption 40 Watts (approx.).

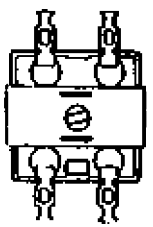
TUNING RANGE:

535-1640 Kc/s. : 560.7-182.9 Metres.

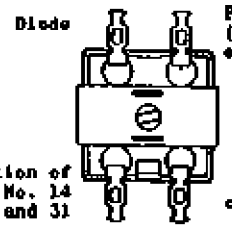
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
7.	To antenna junction lug on chassis	600 Kc/s.	200MMF Mica capacitor in series with generator	Turn cond. gang and dial until 600 Kc/s. spot on dial aligns with centre of pointer. Leave the gang and dial set in this position. Re-peak oscl. coil. ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers have been peaked for max. output.
8.	To antenna junction lug on chassis	1400 Kc/s.	200MMF Mica capacitor in series with generator	Turn cond. gang and dial until 1400 Kc/s. spot on dial aligns with centre of pointer. Adjust oscl. coil trim. condenser for logging and re-peak antenna trans. trim. condenser for max. output.

Tuning range after alignment: 535-1640 Kc/s.

No. 1 IF. TRANS.:



No. 2 IF. TRANS.:



6BE6 CONVERTER TUBE

The type 6A8G converter tube used in the Model "HQ" receiver has been changed to a type 6BE6 converter tube.

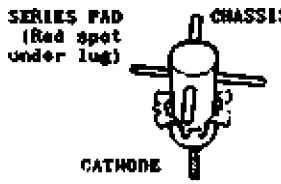
A new circuit using a 6BE6 tube in the converter stage is shown on page 8

The socket connections and new components required for the 6BE6 tube and the connections for the new oscillator coil are detailed below:—

NEW COMPONENTS

Circuit No.	Description	Part No.
	7 pin socket	A104/58
	Socket Mount Plate	15/698
	Eyelets-socket mounting	2/291-1
	Eyelets-adaptor plate mtg.	4/291
54.	20,000 Ohm ½ watt resistor	PR166
55.	30,000 Ohm 1 watt resistor	PR156
	6BE6 tube	-
56.	Oscillator coil	PT659

OSCILLATOR COIL CONNECTIONS:



6BE6 SOCKET CONNECTIONS:

Pin No. 1.	Oscl. grid	Pin No. 4.	Heater
Pin No. 2.	Cathode	Pin No. 5.	Plate
Pin No. 3.	Heater	Pin No. 6.	Screen
Pin No. 7.	Signal grid		

CIRCUIT COMPONENT CHANGE:

To improve the power output on strong signals with current production 6R8G valves the following circuit components have been changed—

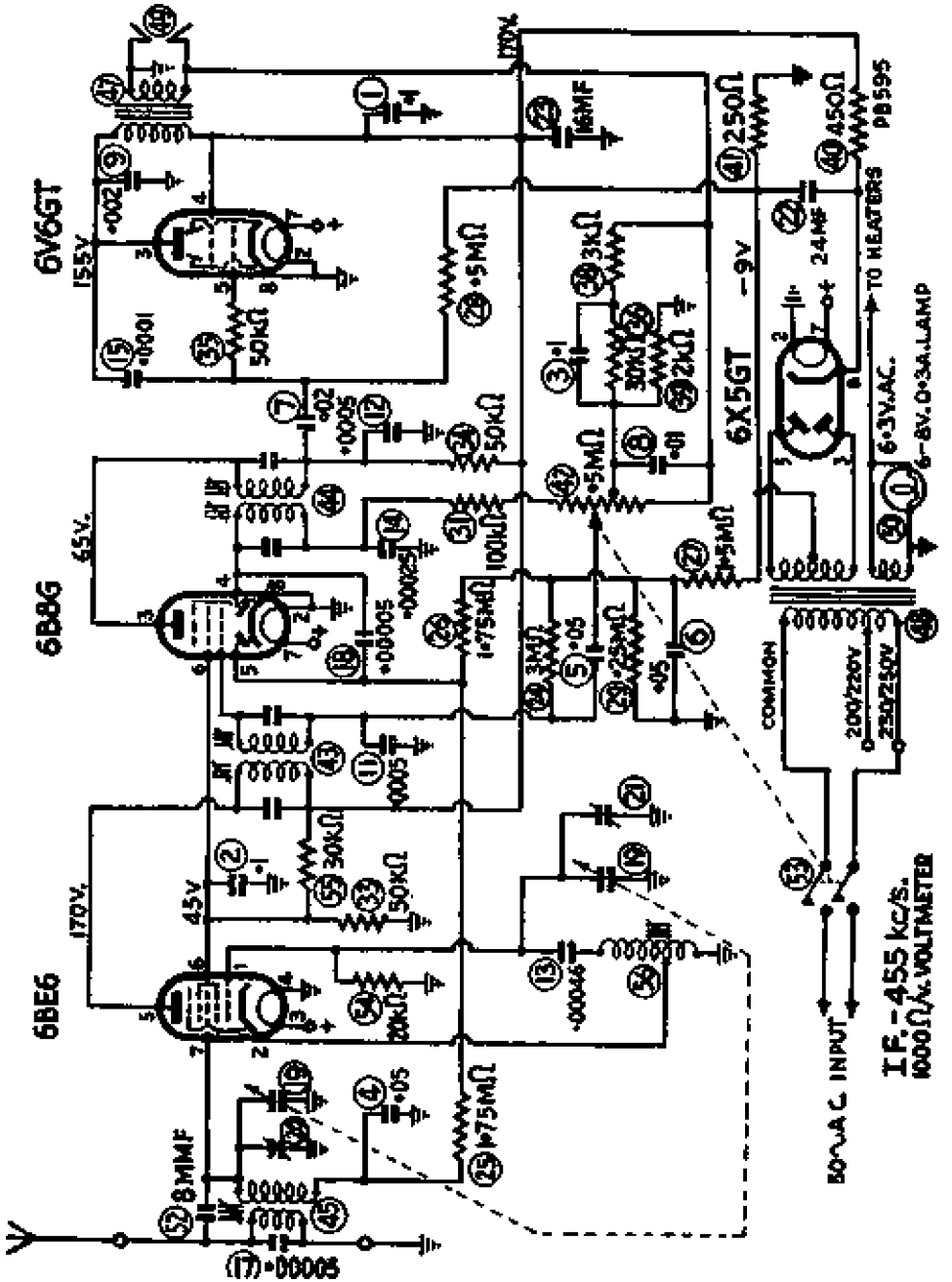
A. Circuit No. 24, a 3 Megohm resistor, changed to a 1.5 Megohm carbon resistor, tol. ±10%, ½ Watt, Part No. PR388, new circuit No. 57.

B. Circuit No. 27, a 1.5 Megohm resistor, changed to a 1 Megohm carbon resistor, tol. ±10%, ½ Watt, Part No. PR246, new circuit No. 58.

CIRCUIT MODIFICATION:

The end of the 1.75 Megohm AVC bias filter resistor circuit No. 25, which is connected to the 6B8G valve diode (pin No. 5) and the junction of the .00005 MFD condenser Circuit No. 18 and the 1.75 Megohm filter resistor circuit No. 26, has been changed from this position and is connected to the junction of the volume control and the 100,000 Ohm resistor circuit No. 31.

This change applies simple AVC to the converter valve instead of delayed AVC bias.



DIAL-KNOB ASSEMBLY:

Early production of the Model "HQ" receiver had the dial reading and the tuning knob as a complete moulding and which was a push-on fitting to the varb. cond. drive shaft. Part numbers for these dials are listed on page 8.

This moulding has been changed so that the dial reading and the push-on tuning knob are separate parts. From the outside of the cabinet the dial reading position before being tightened to the bush on the drive spindle with screws can be varied for more accurate logging. Wobble when the dial reading is turned has been eliminated.

NEW COMPONENTS USED WITH THE NEW DIAL ASSEMBLY:

	Part No.
Variable condenser with different drive assembly	PC86S
Drive spindle bush	29/755
Drive spindle bush grub screw (2) ¼" x 5/32" Whit.	30/560-7
Dial reading N.S.W.	35/755-2
Dial reading Vic.-Tas.	35/755-3
Dial reading Q'land	35/755-4
Dial reading-S.A.-W.A.	35/755-5
Dial locating washer	30/755
Dial locating washer fastening screws (3) ¼" x 3/32" Csk. Hd. Whit.	5/560-4
Paper washer-behind knob	6/449-4
Felt washer-between knob and paper washer	79/30C-1
Knob circlip	22/755
Knob	27/755

6AD8 VALVE SUBSTITUTE FOR 6B8G VALVE

The next production run of the Model "HQ" Receiver will use a 6AD8 valve in place of the 6B8G valve. The change is due to 6B8G valves being in short supply. Modifications to the circuit and circuit components are as follows—

1. The diode end of the 1.75 Megohm A.V.C. bias filter resistor circuit No. 25 is connected to the junction of the 100,000 Ohm. resistor circuit No. 31, the .00025 MFD Cond. and the 2nd I.F. Transformer, circuit No. 44.
2. Circuit No. 31, a 100,000 Ohm resistor, is changed to a 50,000 Ohm carbon resistor, tol. ±10% ½ watt, Part No. PR160, new circuit No. 69.

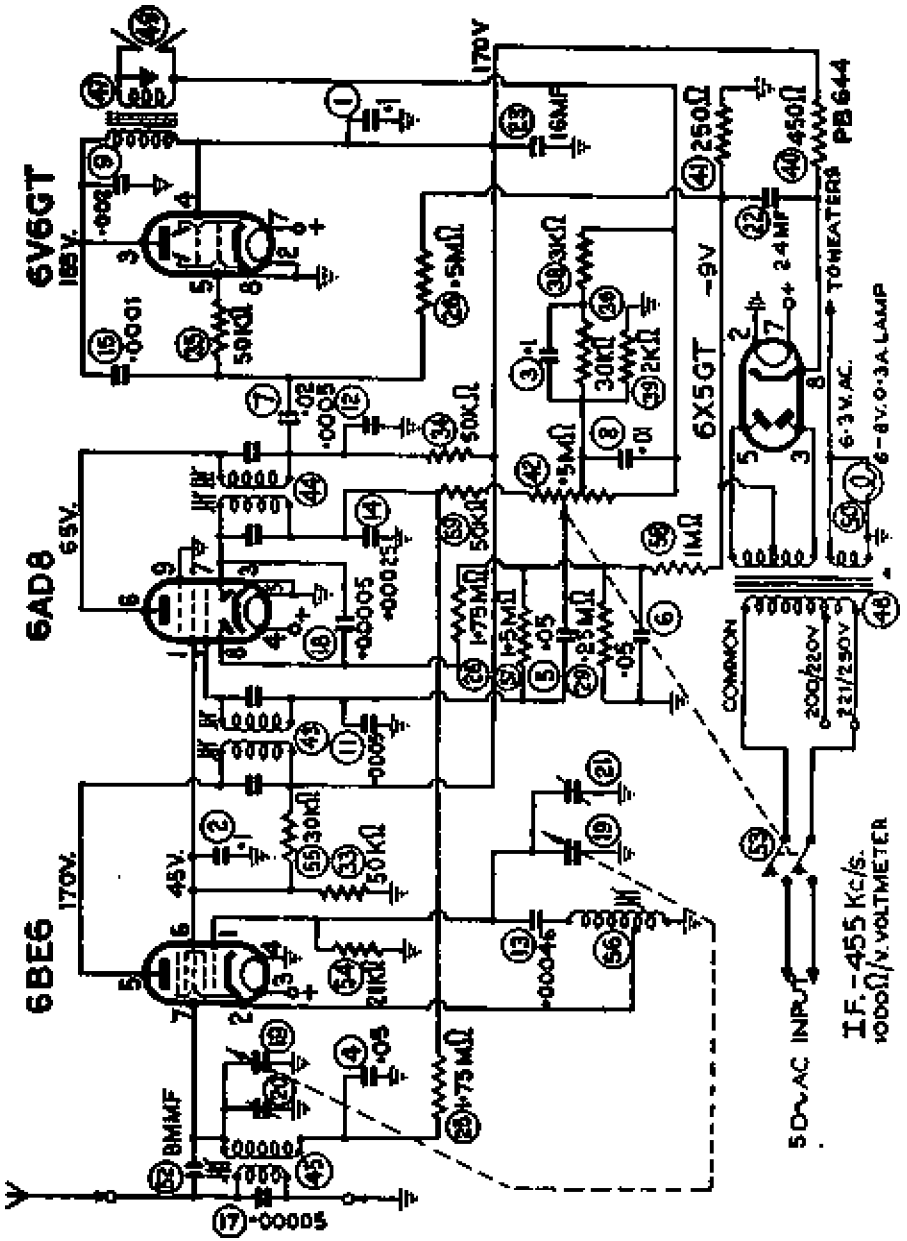
VALVE SOCKET CONNECTIONS:

	6B8G	6AD8
Pin No. 1	Chassis	Screen Grid
Pin No. 2	Heater-	Signal Grid
Pin No. 3	Plate	Cathode-Chassis
Pin No. 4	Diode	Heater+
Pin No. 5	AVC Diode	Heater-
Pin No. 6	Screen	Plate
Pin No. 7	Heater+	AVC Diode
Pin No. 8	Cathode-Chassis	Diode
Pin No. 9		Suppressor Grid-Chassis

NEW PARTS REQUIRED:

	Part No.
9-Pin Valve Socket	279/250
Valve Socket Adaptor Plate	33/698
6AD8 Valve	6AD8
50,000 Ohm, ½ Watt Resistor	PR160

A new circuit diagram which shows a 6AD8 valve is on page 10.



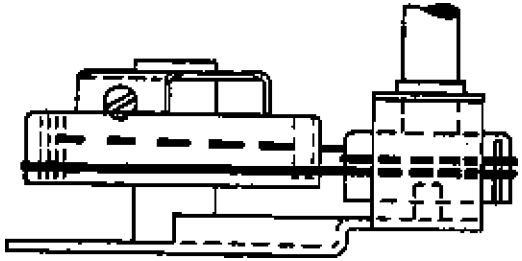
ASTOR MODEL HQ.

CORDING OF DIAL DRIVE:

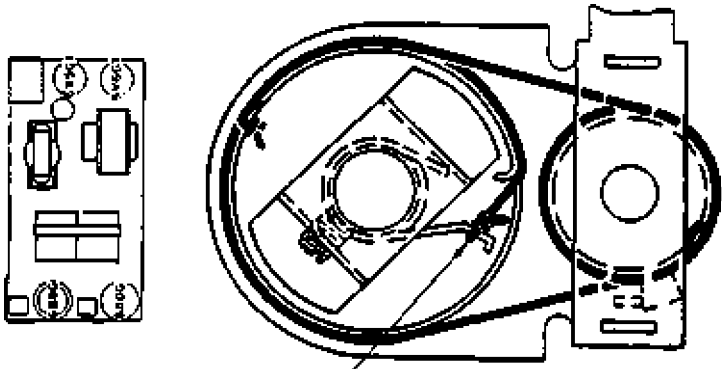
Length of cord required is 2 ft., which includes about 6" to spare for tying to tension spring .

Cord Part No. 7/282.

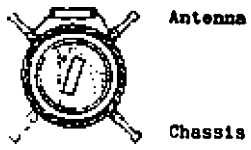
Tension Spring Part No. 3/753.



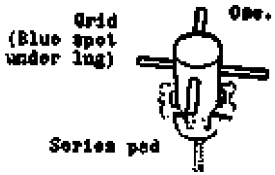
CONDENSER PLATES
FULLY MESHED.

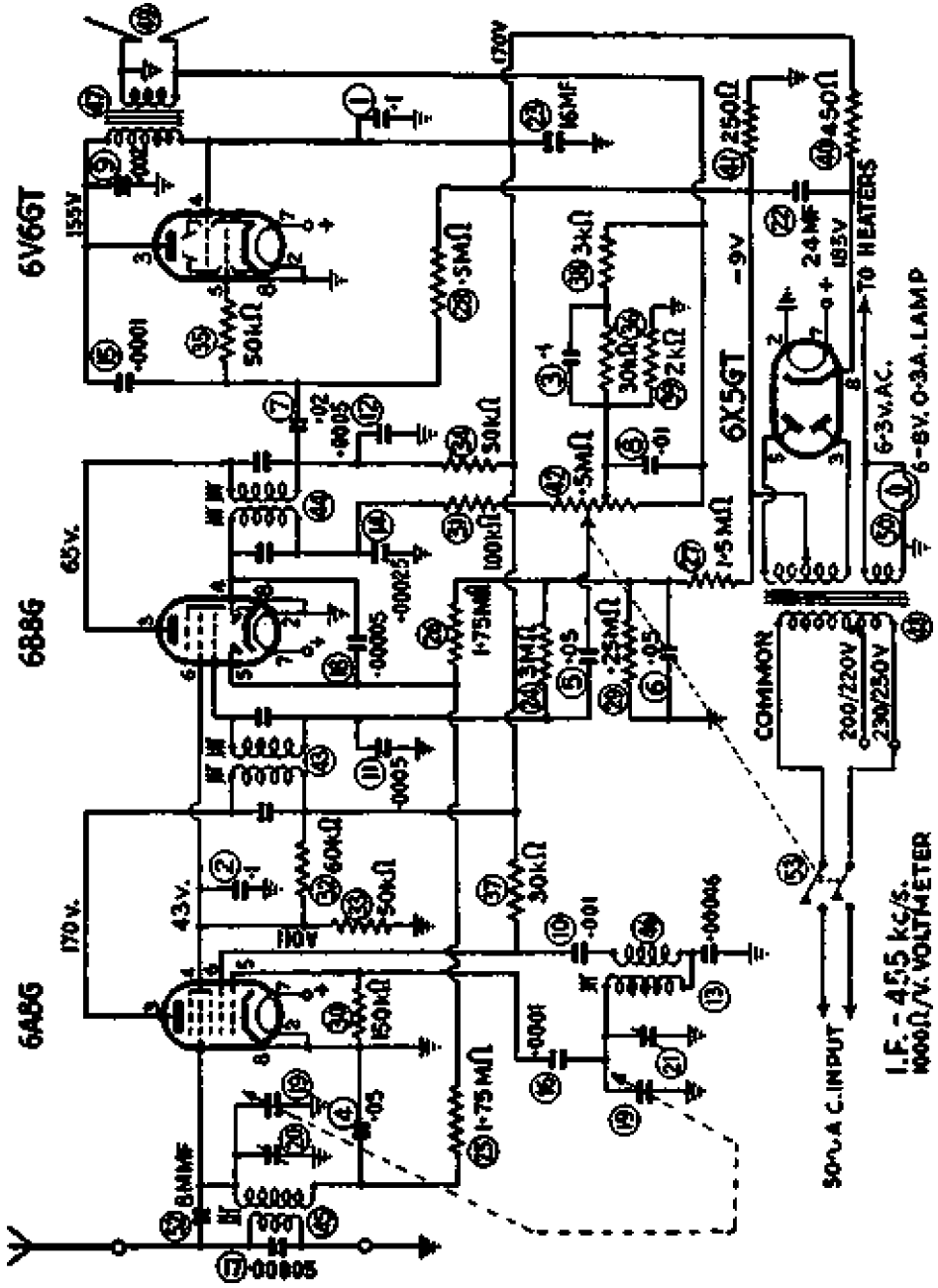


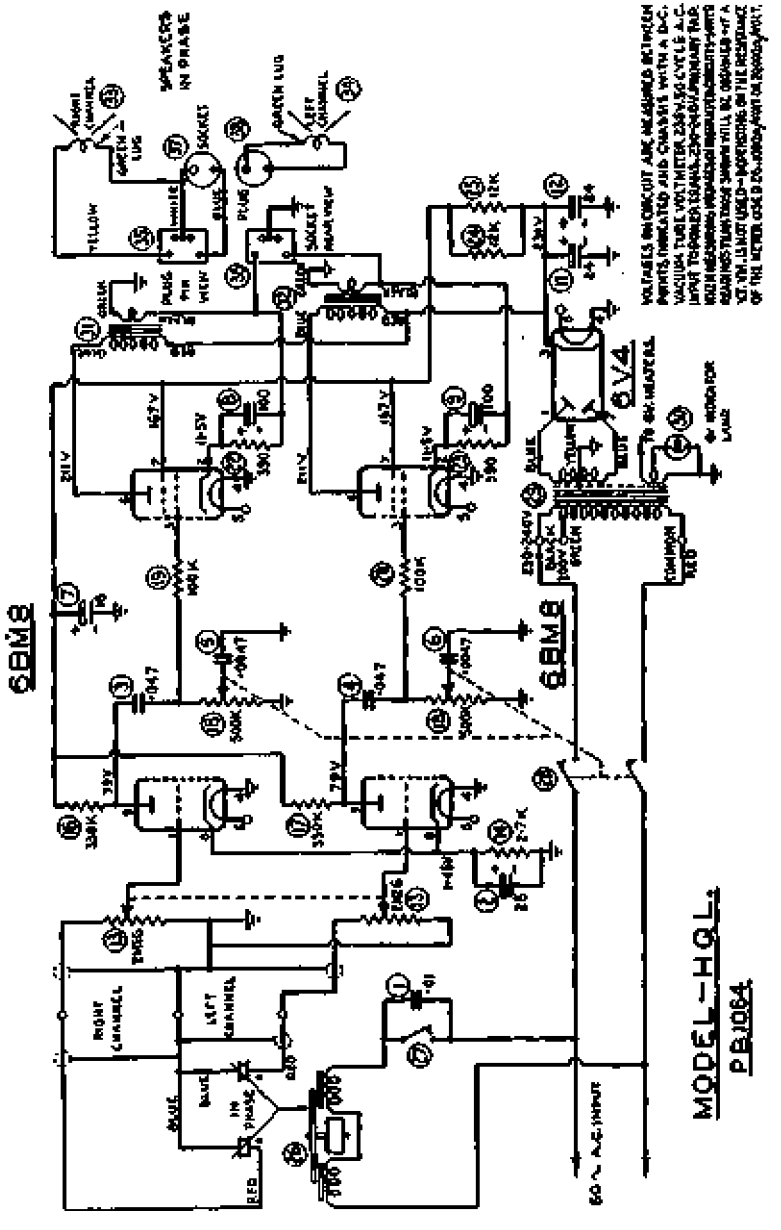
ANTENNA TRANS.:



OSCIL. COIL:







ASTOR MODEL — HQL

STEREOPHONIC RECORD PLAYER

3 VALVE 2 CHANNEL AUDIO AMPLIFIER AND A 4 SPEED SINGLE RECORD PLAYER (16-2/3, 33-1/3, 45 and 78 R.P.M.)

POWER OUTPUT:

0.5 watt

FOR OPERATION FROM:

200-240V 50 cycle and 250V 40 cycle or 50 cycle AC Mains (Power Transformer T251).

Power trans. Primary Tap, red - common.
" " " " green - 200V 50 cycle mains.
" " " " black - 230 & 240V 50 cycle mains.
" " " " orange - 250V 40 or 50 cycle mains.

POWER CONSUMPTION:

64 Watts approx.

SERVICE INSTRUCTIONS (ELECTRICAL)

EQUIPMENT:

Audio Signal Generator
Output Meter

TEST CONDITIONS:

Volume Control	:	maximum (fully clockwise)
Tone Control	:	maximum treble (fully clockwise)
Audio Signal Generator	:	1000 CPS
Signal Generator Output	:	0.1 Volt.
Output Meter	:	4 Ohms impedance. Connected alternatively across secondary winding of each output transformer. (Speaker voice coils disconnected).
Mains Input Voltage	:	235 Volts 50 cycle AC. input to power transformer 230-240 Volt primary tap.

ASTOR MODEL HQL.

AUDIO AMPLIFIER GAIN TEST:

The amplifier chassis/record player unit has to be removed from the cabinet to check the overall gain of the amplifiers.

IMPORTANT: Before disconnecting pick-up leads from terminals of volume controls, identify the leads to ensure correct channel connection when the leads are reconnected.

A. Set frequency of audio generator to 1000 cycles.

B. Adjust output level of generator to 0.1 volt.

C. Disconnect pick-up leads from terminals of volume controls.

D. Disconnect the 4 pin plug attached to speaker leads from socket of amplifier.

E. Connect output meter across secondary winding of left-channel output transformer.

F. Connect audio signal generator output lead to input terminal lug of left channel volume control(control nearest mount bush).

1. Generator output lead 'active' to volume control terminal lug.
2. Generator output lead 'non-active' to amplifier chassis.

G. Turn ON/OFF switch - tone control fully clockwise.

H. Turn volume control to maximum, fully clockwise.

I. With a signal input of 0.1 volt applied to amplifier input, the output meter should indicate a minimum of 500 milliwatts output.

J. Repeat paragraphs A to I with audio signal generator connected to right channel volume control and the output meter connected to secondary winding of right channel output transformer.

AUDIO AMPLIFIER BALANCE TEST:

A. Set frequency of audio signal generator to 1000 cycles.

B. Connect audio signal generator output lead to right channel volume control input lug.

C. Connect plug on speaker lead to four pin socket of amplifier.

D. Connect output meter across secondary winding of right-channel output transformer.

E. Turn tone control and volume control fully clockwise.

F. Adjust output of audio signal generator until output meter indicates 25 Milliwatts.

G. With the controls and signal generator set, connect audio signal generator output lead to left channel volume control input lug and the output meter across the secondary winding of the left channel output transformer.

H. The difference in output between the two channels must not exceed 8 milliwatts.

SPEAKER PHASING:

It is essential that the speakers be phased correctly.

If a speaker has to be removed for service, note the lead connections to ensure correct phasing when reconnecting.

A method used for checking the phasing of the speakers is detailed in the following paragraphs.

1. Place the speaker cabinets in line approx. four feet apart.

2. Play a monophonic record.

3. To conduct the following test the listener should be located in a position midway between the speaker cabinets and approx. four feet away in front.

4. If the phasing is correct the reproduced sound will appear to be radiated from a point midway between the two speakers.

5. With incorrect phasing the quality of reproduction will be poor, it will appear to be lacking in bass response and will appear to be radiated from both speakers.

6. If the speakers are incorrectly phased, reverse the leads connected to the voice coil terminals of one speaker then repeat the test detailed above.

MODEL HQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

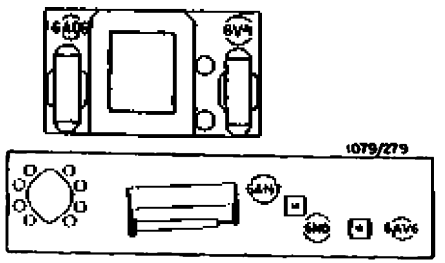
POWER CONSUMPTION:—

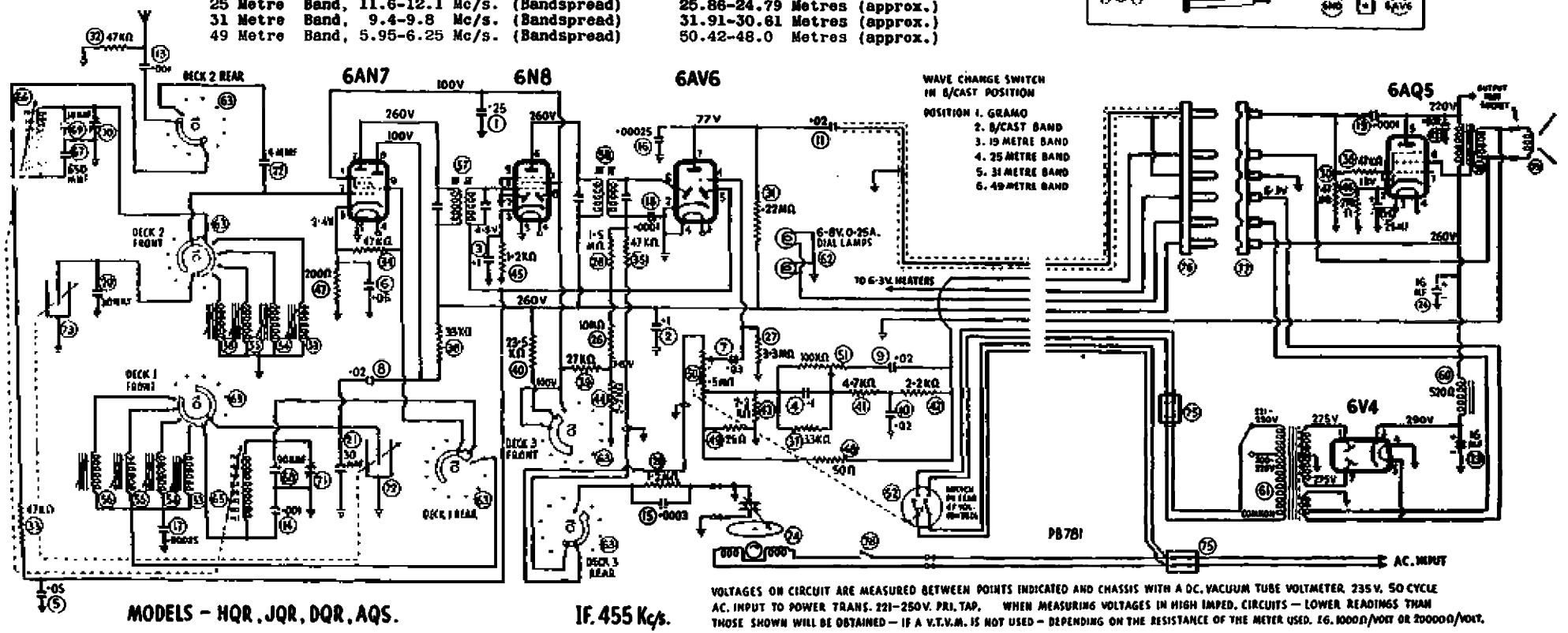
Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

TUNING RANGES:—

Broadcast Band, 535-1610 Kc/s.		560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s.	(Bandspread)	50.42-48.0 Metres (approx.)

RECEIVER COVERAGE:—





MODELS - HQR, JQR, DQR, AQS.

I.F. 455 Kc/s.

VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER. 235 V. 50 CYCLE A.C. INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED. EG. 1000Ω/VOLT OR 20000Ω/VOLT.

ASTOR MODEL HQR.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:	
Output Meter:	
Mica Capacitor:	0.01MF. (for IF. trans. alignment)
Dummy Antenna:	200MMF. Mica Capacitor.
Dummy Antenna:	400 Ohm non-inductive resistor.
Alignment Tools:	Type M195 and PM581.

ALIGNMENT CONDITIONS

Load Impedance:	5,000 ohms.
Output Level:	50 Milliwatts.
Vol. Control:	Max. Vol. fully clockwise.
Intermed. Freq.:	455 Kc/s.
Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Tone Control:	Treble position.

I.F. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver power supply chassis and tuning unit chassis from cabinet as detailed on page 6.			
2.	Remove dial back plate from tuning unit chassis:- A. Loosen off grub screws in tone control gear wheel hub, then pull gear wheel straight upward off the control spindle. B. Unscrew large nut fastening small metal gear plate to bush on tone control. C. From volume control shaft remove small gear plate with gears attached by pulling it straight upward. D. Remove dial pointer by prising up centre clip which fastens it to dial cord at rear of pointer carriage. E. Remove from each end of dial plate the large lock nut fastening dial plate to chassis.			
3.	Connect speaker leads and leads from tuning unit chassis to power supply chassis.			
4.	To control grid of 6N8 valve pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Turn wave change switch to b/cast. band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AN7 valve, pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
6.	Refit dial back plate, dial pointer, gear wheel and plate assy. to volume control shaft and gear wheel to tone control shaft. Make sure that the gear wheel teeth mesh correctly.			

B/CAST. AND S/WAVE. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200 MMF mica capacitor in series with generator.	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast. oscl. coil trimmer cond., then peak b/cast. antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band must be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.8 Mc/s. mark on the dial. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.

9.	To antenna lead	15.2 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for max. output.
10.	To antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to an exact dimension. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

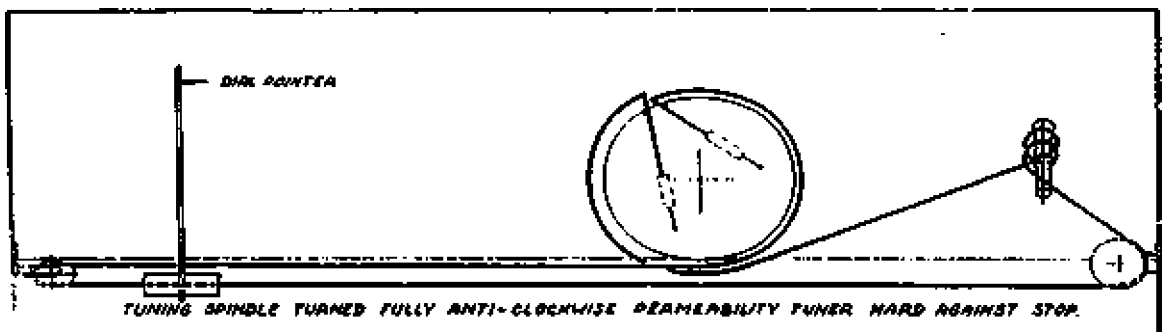
MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT: For 200-220 volt operation: The receiver or the power unit chassis do not have to be removed from the cabinet for the adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.

Remove cabinet back board from the cabinet by unscrewing the screws fastening it to the cabinet. From the rear of the cabinet, the mains tap terminal strip may be seen on the side of the power unit chassis mounted to the base of the cabinet. Unsolder the mains lead wire from the AC. junction block which is attached to the mains terminal strip tap marked 221-250V. and re-solder it to the terminal strip tap marked 200-250V. Refit cabinet back board to cabinet.

CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Tension Spring (2) Part No. 508/30C.



TRANSFORMER CONNECTIONS

B/CAST ANTENNA TRANS.
Start of winding – furthest from mounting end – Antenna, A.V.C.
Finish of winding – nearest to mounting end – Grid.

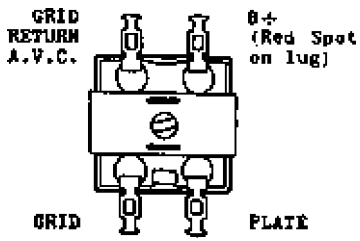
B/CAST OSCL COIL.
Start of winding – furthest from mounting end – Oscl. plate.
Finish of winding – nearest to mounting end – Oscl. grid.

19, 25, 31 AND 49 METRE ANT. TRANS.	19, 25, 31 AND 49 METRE OSCL. COIL
Lead from top lug (iron core end):– GRID.	Lead from top lug (iron core end):– GRID.
Lead from bottom lug (mounting end):– CHASSIS – EARTH.	Lead from bottom lug (mounting end):– OSCL. PLATE COND.

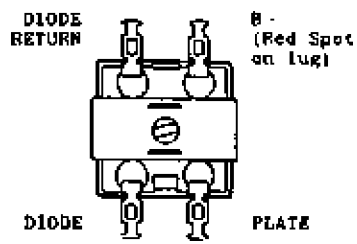
---

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.



A54.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL HQS

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

TUNING RANGES:—	RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s. (Bandspread)	50.42-48.0 Metres (approx.)

THE GRAMO-RADIO COMBINATION MODEL "HQS" IS A MODEL ''HQR'' RECEIVER CHASSIS FITTED INTO A DIFFERENT TYPE CABINET. EXCEPT FOR THE PARTS LISTED BELOW WHICH ARE REQUIRED FOR FITTING TO THE DIFFERENT TYPE CABINET, ALL REFERENCE FOR ALIGNMENT PROCEDURE, CIRCUIT DIAGRAM AND PARTS LIST SHOULD BE MADE TO THE MODEL ''HQR'' SERVICE BULLETIN SHEETS.

Chassis to cabinet mount screws 1" x 5/32" Csk. Hd. Flor. Bronze	17/560-36
Cup Washer - Flor.Bronze	269/250
Cabinet Receiver Door Wire and Anchor Assy.	380/250
Cabinet Receiver Door Stay Arm	387/250
Cabinet	280/221

19, 25 AND 31 METRE ANT. TRANS.

Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
AVC.

19, 25 AND 31 METRE RF. TRANS.

Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
CHASSIS

19, 25 AND 31 METRE OSCL. COIL

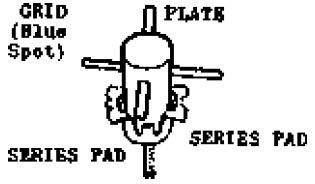
Lead from top lug (iron core end):-
GRID

Lead from bottom lug (mounting end):-
PLATE

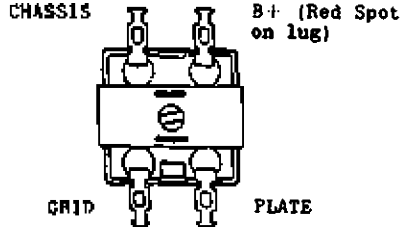
ANTENNA TRANS. B/CAST.

RF. TRANS. B/CAST.

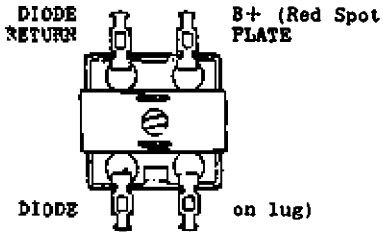
OSCL. COIL B/CAST.



1st IF. TRANS.



2nd IF. TRANS.



RADIO CORPORATION PTY. LTD. **A55.**

DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MANTEL MODEL "HR"

5 Valve Superheterodyne Four Band Receiver Incorporating Bandspreading of the 19, 25 and 31 Metre Shortwave Bands.

FOR OPERATION FROM:

1.5 Volts ''A'' Battery
and
90 Volts ''B'' Battery
} Plug-in type batteries.
(Two 45 Volt ''B'' Batteries in Series)

POWER CONSUMPTION:

''A'' Battery:-300 Milliamps (does not include dial lamps)
''B'' Battery:- 11 Milliamps (no signal)

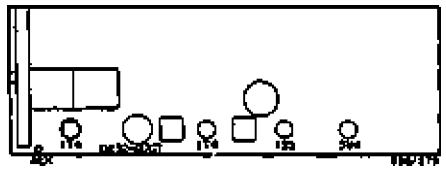
POWER OUTPUT:

250 Milliwatts-max.
100 Milliwatts-undistorted

TUNING RANGES:		**RECEIVER COVERAGE (approx.):**
Broadcast Band	535-1610 Kc/s	560.7-186.3 Metres
19 Metre Band	14.9-15.6 Mc/s	(Bandspread) 20.13-19.29 Metres
25 Metre Band	11.6-12.1 Mc/s	(Bandspread) 25.86-24.79 Metres
31 Metre Band	9.4-9.8 Mc/s	(Bandspread) 31.91-30.63 Metres

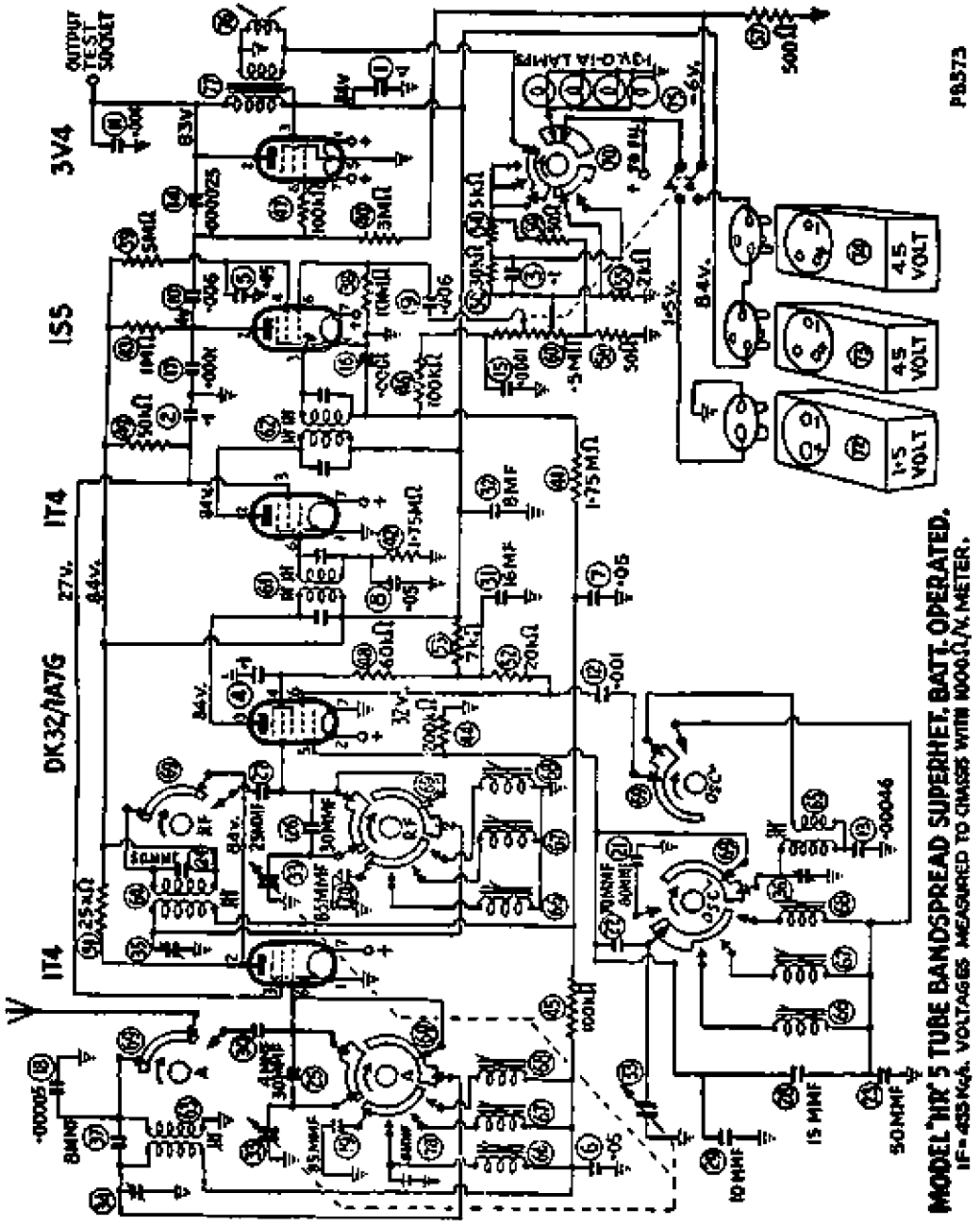
THIS BULLETIN CONTAINS:

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for I.F. and R.F. Trans.
5. Valve Placement Diagram.
6. Dial Drive Cording Diagram.
7. Battery Replacement Diagram.



VALVE PLACEMENT DIAGRAM

ASTOR MODEL HR.

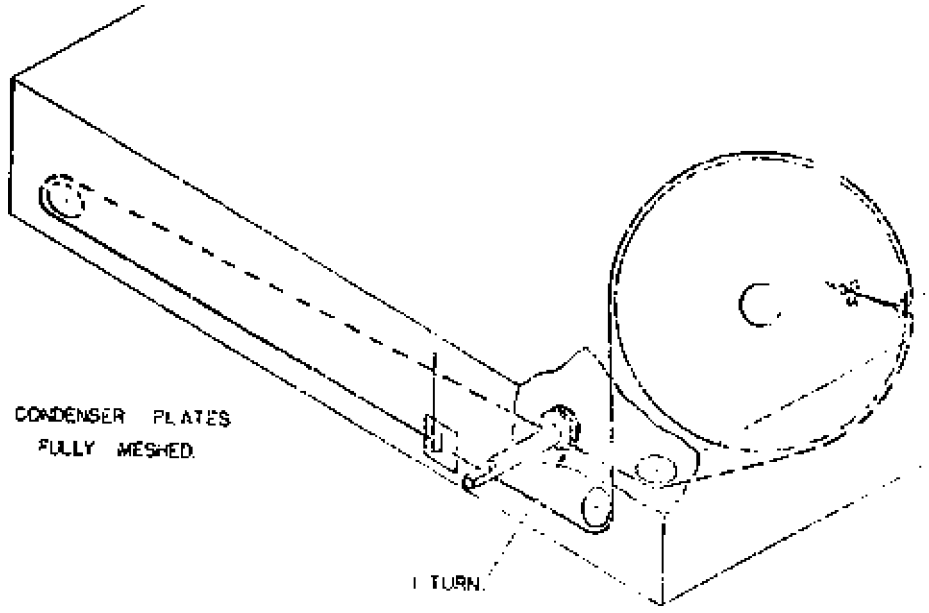


CORDING OF DIAL DRIVE:

The length of cord required is 5 ft. 6 in. which includes about 6in. to spare for tying to the tension spring.

Dial cord Part No. 7/282.

Tension spring part No.21/698.



ALIGNMENT INSTRUCTIONS — MODEL "HR"

ALIGNMENT CONDITIONS:

Load impedance 10,000 Ohms

Output Level 25 Milliwatts

Volume Control, Max. Vol. (fully clockwise)

Tone Control, Treble Tone position No. 4

Intermediate freq. 455 Kc/s.

Battery Supply "A" Battery 1.5 Volts
"B" Battery 90 Volts

EQUIPMENT:

Signal Generator

Output Meter

Mica Capacitor 0.01 MFD
Dummy Antenna 200 MMFD Mica Capacitor

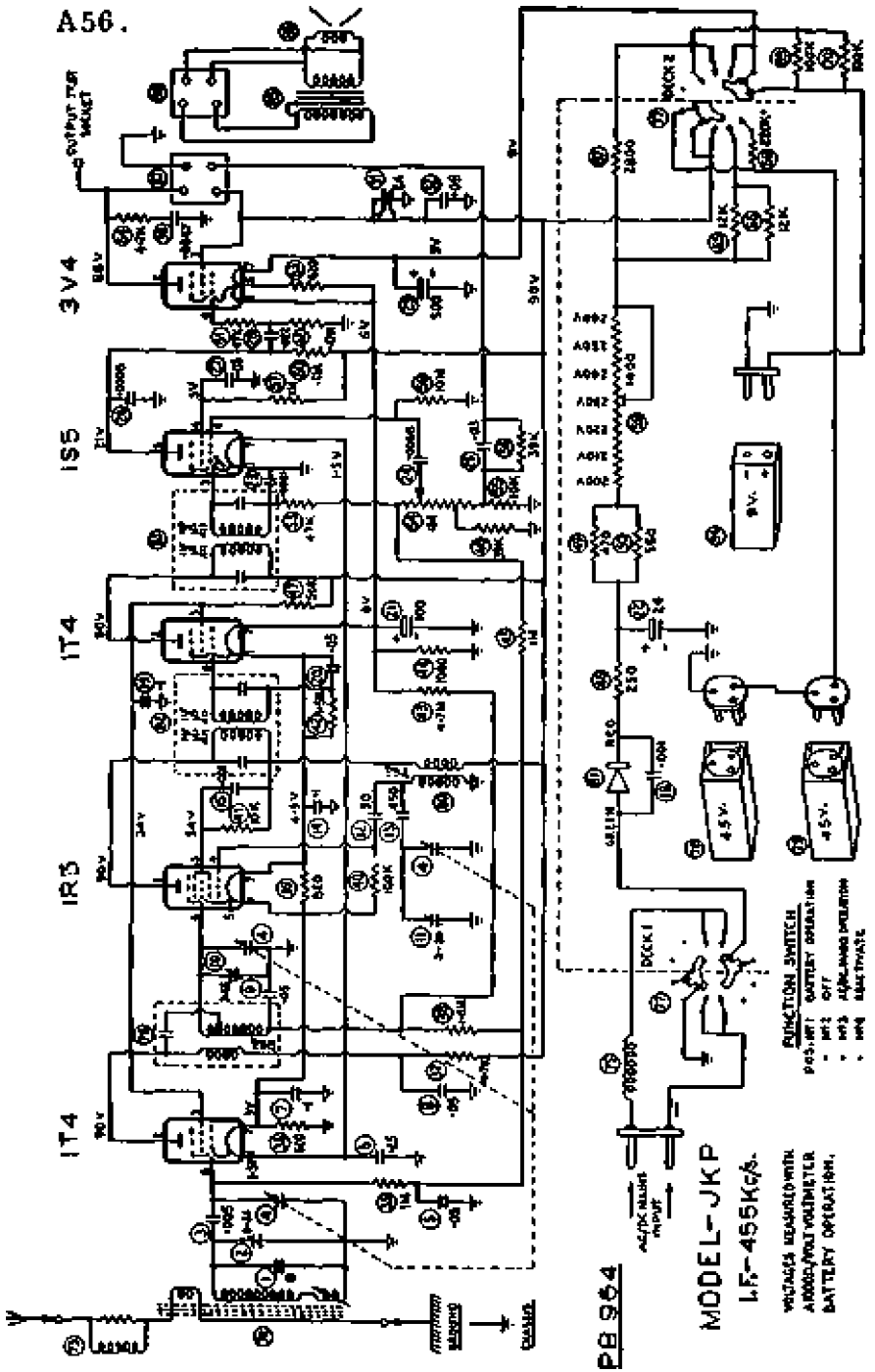
Dummy Antenna 400 Ohm non-inductive resistor

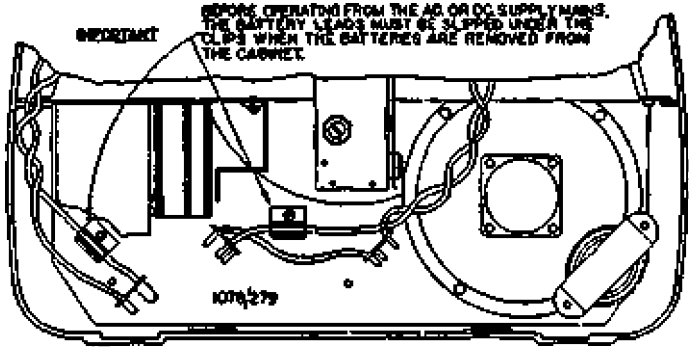
Alignment Tools Type M195 and PM581

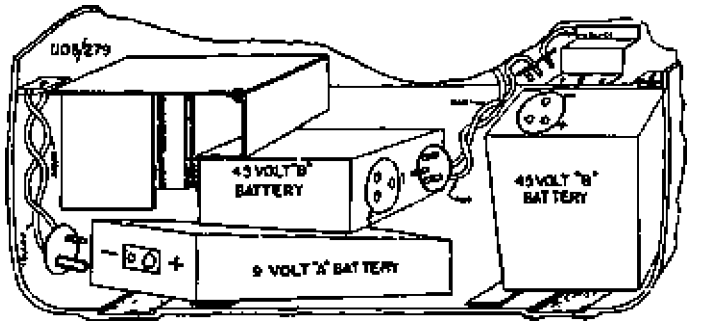
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1	To control grid of 1T4 IF tube (pin No. 6)	455 Kc/s	0.01MFD mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid wire attached to socket pin. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of DK32/1A7GT	455 Kc/s	0.01MFD mica capacitor in series with generator.	Gang plates fully out of mesh. Leave grid cap on tube. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.				Set centre of dial pointer on centre of end of travel mark near 550 Kc/s cond. gang plates fully meshed.
4.	To antenna terminal	600 Kc/s	200MMFD mica capacitor in series with generator.	Turn gang and dial pointer until dial pointer is on 600 Kc/s dial mark. Leave the gang and dial pointer set in this position and peak the B/cast. oscl. coil. ind. trim. (iron core) or max. output.
5.	To antenna terminal	1400 Kc/s	200MMFD mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s dial mark. Adjust B/cast. oscl. coil. trim. cond. for logging and peak B/cast. ant. and RF. trans. trim. condensers for max. output.
6.	To antenna terminal	600 Kc/s	200MMFD mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s dial mark. Leave the gang and dial pointer set in this position. Re-peak the B/cast. oscl. coil. ind. trim. (iron core) then peak the B/cast. ant. and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s dial mark until after the inductance trimmers of these three transformers have been peaked for max. output.
7.	To antenna terminal	1400 Kc/s	200MMFD mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s dial mark. Adjust B/cast. oscl. coil. trim. cond. for logging and peak B/cast. ant. and RF. trans. trim. condensers for max. output.
8.				Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).
9.	To antenna terminal	9.6 Mc/s	400 Ohm non-inductive resistor in series with generator.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
10.	To antenna terminal	11.8 Mc/s	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
11.	To antenna terminal	15.2 Mc/s	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak ant. and RF. trans. trims. (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
12.	Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available check the logging at each 100 Kc/s mark on the dial.			

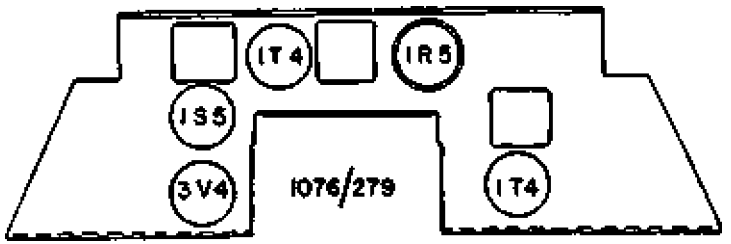
A56.

ASTOR MODEL JKP.

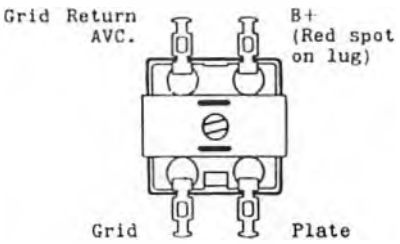




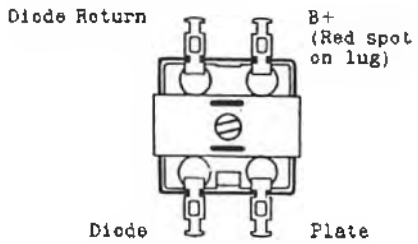




No. 1 IF. TRANS.



No. 2 IF. TRANS.



ANTENNA TRANS.

Start of winding - furthest from mounting end - Antenna.
Finish of winding - nearest to mounting end - Grid.

OSCL. COIL

Start of winding - furthest from mounting end - Junction of circuit Nos. 6 and 10.
Finish of winding - nearest to mounting end - Oscl. grid.

POWER TRANS. (PT938) 50 cycle

Pri. red lead - common
,, green lead - 200-220V.
,, black lead - 221-250V.

HT. Sec.

blue lead - start
yellow lead - centre tap
blue lead - finish

LT. Sec. (two windings in parallel)

start and finish
in winding wire

POWER TRANS. (PT939) 40 cycle

Pri. red lead - common
,, green lead - 220-250V.
,, black lead - 251-260V.

HT. Sec.

Yellow lead - start
blue lead - centre tap
yellow lead - finish

LT. Sec. (two windings in parallel)

start and finish
in winding wire

RADIO CORPORATION PTY. LTD. A57.

DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MANTEL MODEL "JPM"

5 Valve Superheterodyne Broadcast Receiver.

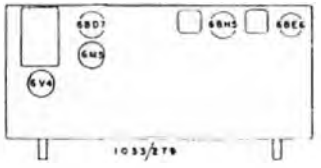
For operation from:-

200-250 Volt 50 Cycle AC. Supply Mains.
Power Consumption 40 Watts (approx.)

Tuning Range:-

535-1640 Kc/s. : 560.7-182.9 Metres

This Bulletin contains:-



ASTOR MODEL JPM.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter :
Mica Capacitor : 0.01MF (for I.F. trans. alignment)
Dummy Antenna : 200 MMF. Mica Capacitor
Alignment Tool : Type M195

ALIGNMENT CONDITIONS

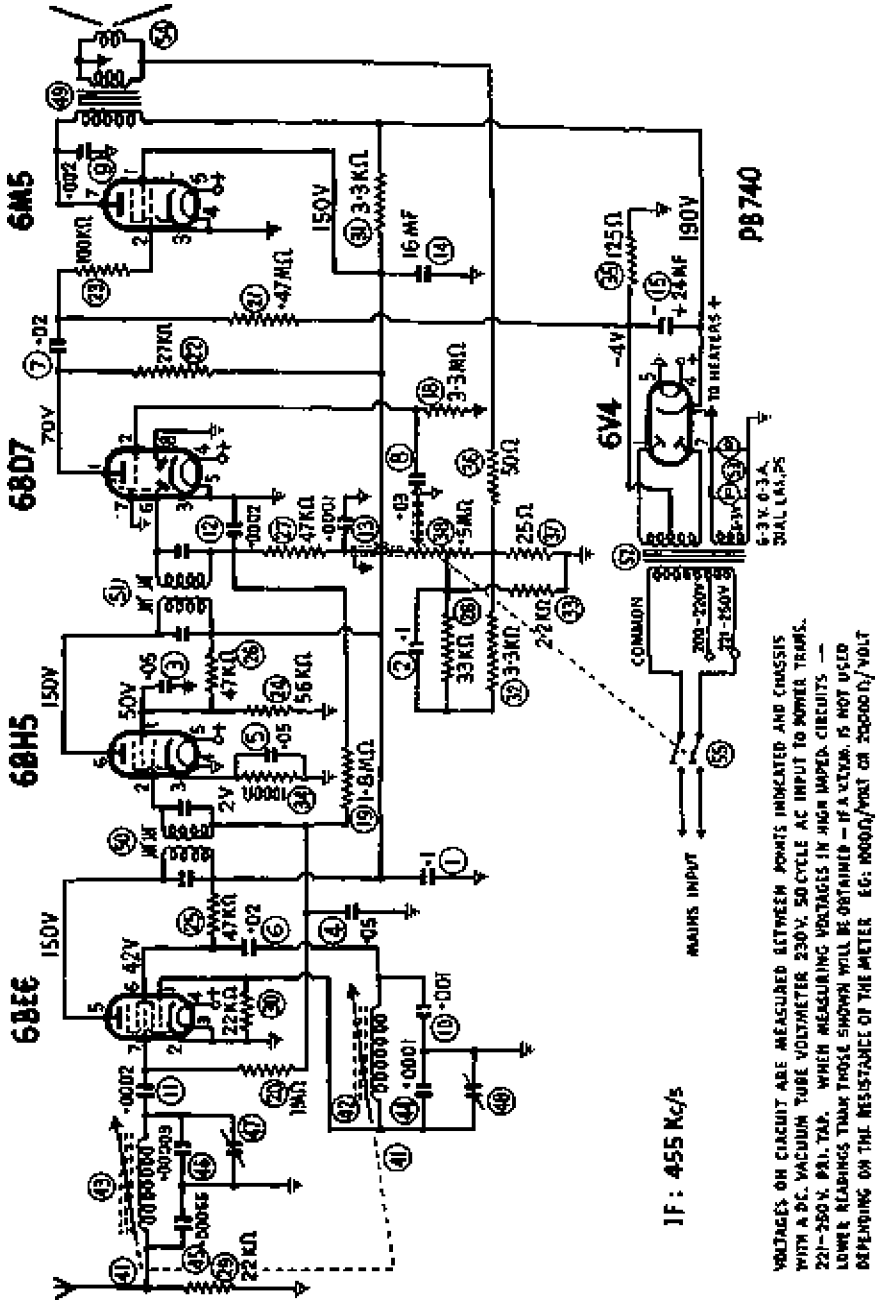
Load Impedance : 7,000 ohms
Output Level : 50 Milliwatts
Vol. Control : Max. Vol. fully clockwise.
Intermed. Freq.: 455 Kc/s.
Input Voltage : 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Dummy Antenna: The 200MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment, if it is connected it should be rolled up into a small hank.

ALIGNMENT: The I.F. transformer variable iron cores and the trimmer condensers beneath the perm tuner are accessible when the rear section of the cabinet is removed from the front section.
A short thin screw-driver or a long thin screw driver (having a slight bend) inserted through the holes in the chassis is used for adjusting the screw in the perm tuner trim. condensers.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	From each of the four corners of rear section of cabinet remove the screw and washer then prise the rear section of cabinet off the front section.			
2.	To signal grid of 6BH5 valve (pin No. 2)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm tuner so that iron cores are fully out of windings on coil formers. Peak 1st IF trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 and 3.
5.	Turn perm. tuner so that the iron cores are fully out of the windings on the coil formers and hard against the stop. Set the centre of the dial pointer on the end of travel spot on the dial reading near 1700 Kc/s. From the rear of the dial the pointer may be moved with a pair of long nose pliers.			
6.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim. cond.
7.	Tuning range after alignment 535 - 1640 Kc/s.			
8.	Check logging at each end of the dial; then refit rear section of the cabinet.			

NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the former, when the unit is turned fully anti-clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the screw end of the iron core.



RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

File: Receivers AC.
Bulletin: JPM-2.
Date: 26-11-54.
1.

TECHNICAL BULLETIN

CIRCUIT MODIFICATION

1. The modifications listed below have been made to the Model JPM to reduce cross modulation. A new circuit diagram covering the modifications is shown on page 2.

   A. Circuit No. 25 a 47K. ohm resistor changed to a 15K. ohm 1 watt resistor, new circuit No. 56. Screen voltage increase to 80 volts.

   B. The permeability tuning unit part No. L121 is changed to a new perm tuner part No. L125. The perm tuner L125 is the same as tuner L121 except that the .00003 MF cond. circuit No. 46 on the old circuit is deleted.

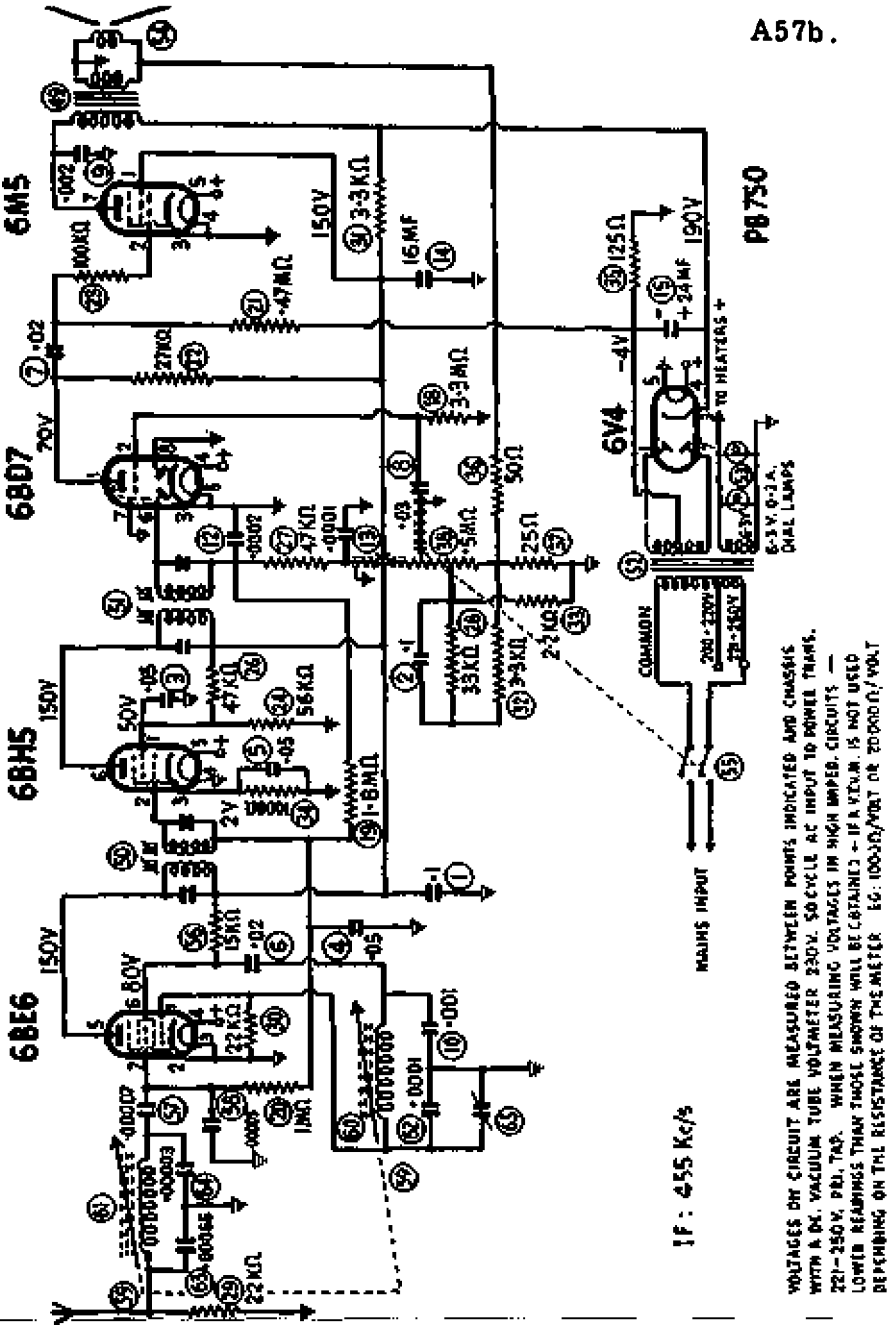
   C. The .0002 MF cond. circuit No. 11 is changed to a .00007 MF cond. new circuit No. 57.

   D. A .00005 MF cond. is wired from the grid of the 6BE6 valve to the chassis. New circuit No. 58.

2. Before the above changes were made, a small quantity of receivers were released with only the 47K. ohm resistor circuit No. 25 changed to a 15K. ohm resistor.

3. The 5" permag. speaker part No. K126 cone No. F90 has been changed to an improved 5" permag. speaker part No. K196 cone No. F87, this change is not related to the above circuit modification.

A57b.



19, 25, 31 AND 49 METRE ANT. TRANS.

Lead from top lug (iron core end):-
GRID.

Lead from bottom lug (mounting end):-A.V.C.

19, 25, 31 AND 49 METRE RF. TRANS.

Lead from top lug (iron core end):-
GRID.

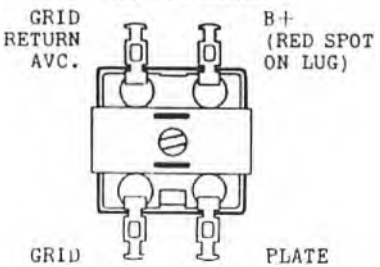
Lead from bottom lug (mounting end):-CHASSIS-EARTH.

19, 25, 31 AND 49 METRE OSCL. COIL

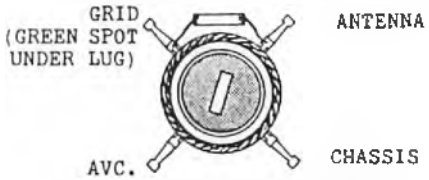
Lead from top lug (iron core end):-
GRID.

Lead from bottom lug (mounting end):-OSCL. PLATE.

1st IF. TRANS.

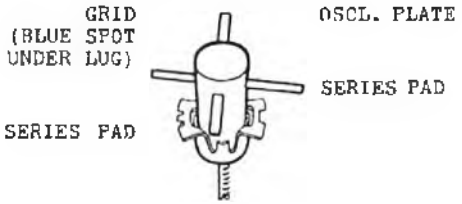


ANTENNA TRANS. B/C. (IRON CORED)

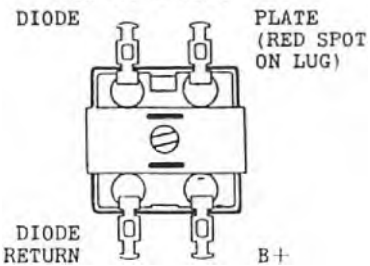


RF. TRANS. B/C. (IRON CORED)

OSCL. COIL B/C.



2nd IF. TRANS.



6N8 R.F. VALVE CATHODE BIAS RESISTOR

Circuit No. 99 an 850 Ohm resistor changed to 860 Ohms consisting of two preferred number value resistors wired in series-
470 Ohm 10% ½W. part No. R4712 and
390 Ohm 10% ½W. part No. R3912

6AD8 I.F. VALVE CATHODE BIAS RESISTOR

Circuit No. 102 a 390 Ohm resistor. When 390 Ohm resistors were in short supply, a 400 Ohm resistor part No. PR268 was used in this position.

SCREEN GRID FEED RESISTOR FOR 6N8, 6AN7 and 6AD8 VALVES

Two 47,000 Ohm 1 watt resistors wired in parallel were used as the screen feed resistor on a small quantity of the first production run. Later production has in this position three 47,000 Ohm 1 watt resistors, all wired in parallel as shown on the circuit on page 6 of bulletin JPP-1.

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126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

MODEL—"JPP"—CONCERTMASTER

GRAMO-RADIO COMBINATION

An automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 9 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

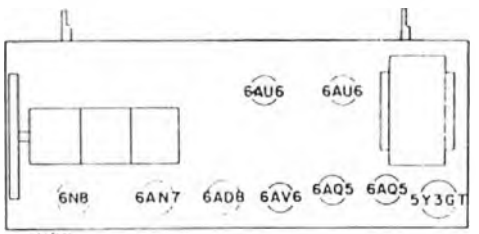
POWER CONSUMPTION:—

Radio Operation:- 80 Watts.-approx.
Gramo Operation:-100 Watts.-approx.

TUNING RANGES:— **RECEIVER COVERAGE:—**

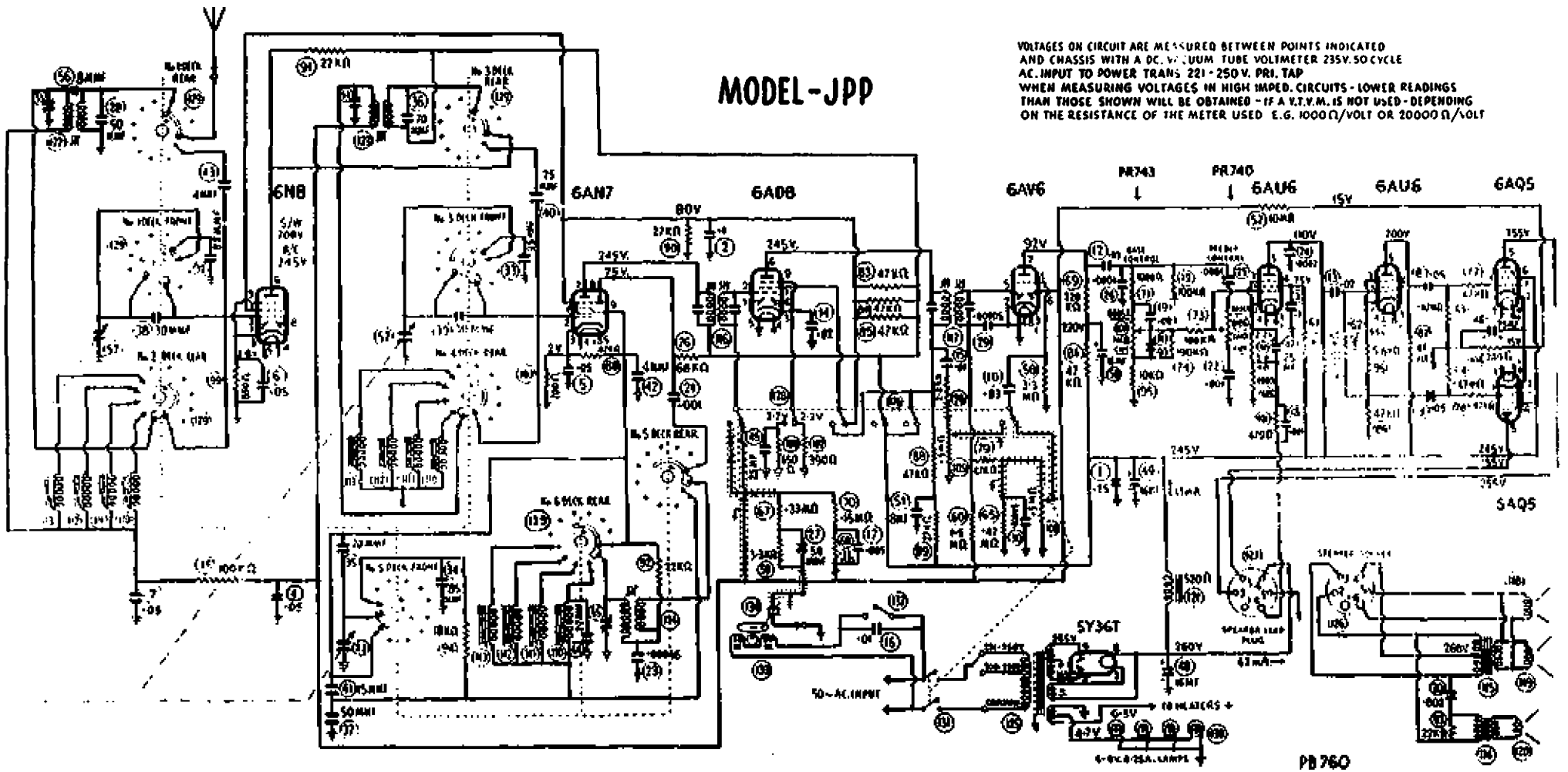
Broadcast Band,	535-1610 Kc/s.		560.7-186.3 Metres.
19 Metre Band,	14.9-15.5 Mc/s.	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band,	11.6-12.1 Mc/s.	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band,	9.4-9.8 Mc/s.	(Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band,	5.95-6.25 Mc/s.	Bandspread)	50.42-48.0 Metres (approx.)

THIS BULLETIN CONTAINS:—



A58a.

ASTOR MODEL JPP.



ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS

Load Impedance: 10,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Bass Tone Control: Min. Bass Position.
Treble Tone Control: Min. Treble Position.
Intermed. Freq.: 455 Kc/s.
Supply Mains: 230 volts 50 cycle AC. input to trans. 221-250V. primary tap.

EQUIPMENT

Signal Generator.
Output Meter.
Mica Capacitor: 0.01MF. (For I.F.T. alignment).
Dummy Antenna: 200MMF. Mica capacitor.
Dummy Antenna: 400 ohm. non-inductive resistor.
Alignment Tools: Type M195 and PM581.
IF. Attenuator: Type M174. This attenuator consists of a 20K ohm ½ w. resistor and a .004MF. cond. wired in series and having clips attached for connecting to the chassis and IF. valve signal grid during alignment of the RF. signal circuits.

To remove chassis from cabinet to align the trimmers of the RF. and IF. circuits. Remove the five push-on type control knobs from front of cabinet, wave change switch knob near record changer and gramo vol. control knob from L.H. side of cabinet by pulling the knobs straight off their spindles. Remove the screws fastening the cabinet back to the cabinet. Disconnect the receiver chassis AC. mains leads from the AC. junction block and the cabinet indicator lamp lead plug from its socket. Pull the pick-up leads out of the sockets on rear of receiver chassis. Remove four screws fastening gramo vol. control bracket on inside of left hand end of cabinet. On the rear edge of the chassis, at each end, a screw through a metal strip fastens the chassis to the cabinet: remove these two screws then slide the chassis out of the cabinet.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 6AD8 IF. valve pin No. 2.	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on valve. Peak 2nd. IF. trans. pri. and sec. for max. output.
2.	To signal grid of 6AN7 valve. Pin No. 2.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st. IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Set centre of dial pointer on centre of end of travel mark on dial reading near 540 Kc/s. Condenser gang plates fully meshed.			
5	Connect IF. attenuator type M174 between receiver chassis and signal grid of 6AD8 IF. valve pin No. 2.			
6.	To antenna terminal.	600 Kc/s.	200 MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim. (iron core) for max. output.
7.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of pointer aligns with 1400 Kc/s. spot on dial reading. Adjust B/cast oscl. coil trim. condenser for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
8.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial spot. Leave the cond. gang and dial pointer set in this position and re-peak the B/cast oscl. coil. ind. trim. (iron core) for max. output, then peak the B/cast antenna and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 600 Kc/s. dial mark, until after the ind. trimmers (iron cores) of both these transformers have been peaked for max. output.
9.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer to 1400 Kc/s. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
10.	Turn wave change switch to 49 metre band (this band must be aligned before the 31 metre, 25 metre and 19 metre bands).			
11.	To antenna terminal.	6.05 Mc/s.	400 ohm non-inductive resistor.	Turn dial pointer and cond. gang to 6.05 Mc/s. Adjust 49 metre band oscl. coil ind. trim. (iron core) for logging and peak 49 metre ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	To antenna terminal.	9.6 Mc/s.	400 ohm non-inductive resistor.	Turn dial pointer and cond. gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

13.	To antenna terminal.	11.8 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 25 metre band. Turn dial pointer and cond. gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.
14.	To antenna terminal.	15.2 Mc/s.	400 ohm non-inductive resistor.	Turn wave change switch to 19 metre band. Turn dial pointer and cond. gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. and RF. trans. trimmers (iron cores) for max. output. Rock cond. gang to and fro through the signal while adjusting.

15. Disconnect IF. attenuator from receiver.

16. Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.

SHORTWAVE COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BLUE spot on iron core end of former.

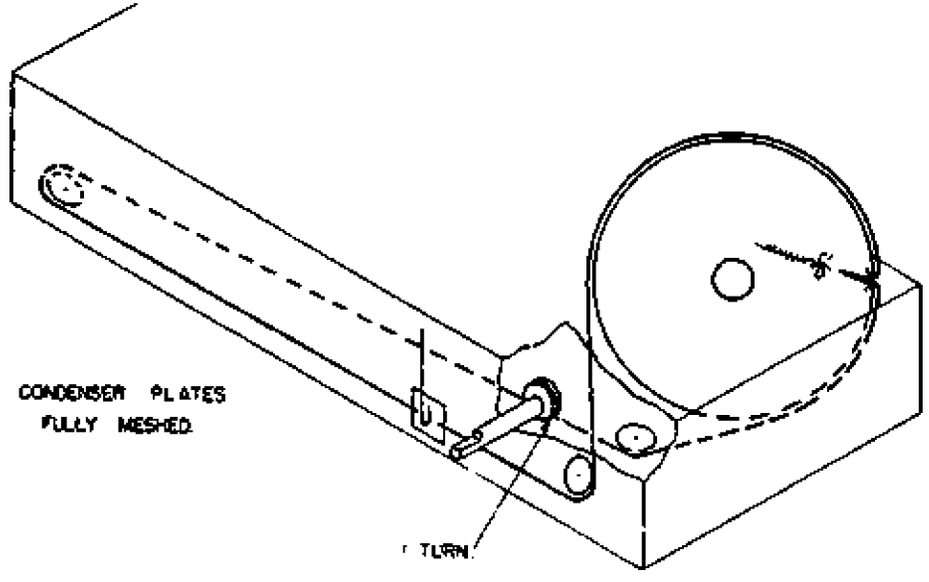
INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.—For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove the chassis from the cabinet as detailed on page 2. The mains lead wire from the switch on the volume control which is attached to the 221-250 volt tap is to be un-soldered from the 221-250 V. tap and then re-soldered to the 200-220 volt tap. Refit the chassis to the cabinet in the exact reverse procedure to removing it.

CORDING OF DIAL DRIVE

Note: 1 turn of dial cord around tuning spindle drive pulley increased to 2 turns.



Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring.

Cord Part No. 34/754.

Tension Spring Part No. 21/693.

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TECHNICAL BULLETIN

MODEL JQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:- 55 Watts.-approx.
Gramo Operation:- 75 Watts.-approx.

TUNING RANGES:—	RECEIVER COVERAGE:—
Broadcast Band, 535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band, 5.95-6.25 Mc/s. (Bandspread)	50.42-48.0 Metres (approx.)

THE GRAMO-RADIO COMBINATION MODEL ''JQR'' IS A MODEL ''HQR'' RECEIVER CHASSIS FITTED INTO A DIFFERENT TYPE CABINET. EXCEPT FOR THE PARTS LISTED BELOW WHICH ARE REQUIRED FOR FITTING TO THE DIFFERENT TYPE CABINET, ALL REFERENCE FOR ALIGNMENT PROCEDURE, CIRCUIT DIAGRAM AND PARTS LIST SHOULD BE MADE TO THE MODEL ''HQR'' SERVICE BULLETIN SHEETS.

Chassis to cabinet mount screws 1/4" x 5/32" Csk. Hd. N.P.	17/560-43
Cup Washer - N.P.	269/250-1
Dial Reading	35/816-3
Cab. Indicator Light Bezel Socket Assy.	A128/30C
Cabinet Assy. - Walnut	267/221-1
Cabinet Assy. - Rose Mahogany	267/221-2
Cabinet Assy. - Brown Mahogany	267/221-3
Cabinet Assy. - Light Walnut	267/221-4

A60.

ASTOR MODEL M3B.

ALIGNMENT PROCEDURE

EQUIPMENT -

R. F. Signal Generator - modulated 400 cps.
Output Meter - 15 Ohm impedance.
Series Capacitor - R. F. Sig. Gen. for I. F. T. alignment . 01 mF Part No. 4003-031-02

Alignment Tools -

a) Blade tip type. Part No. PM581 or 4121-015-01, for trimmer capacitor and I. F. T. core adjustment.

b) Flexible rod type, Part No. 4121-018-01, for oscillator coil core adjustment.

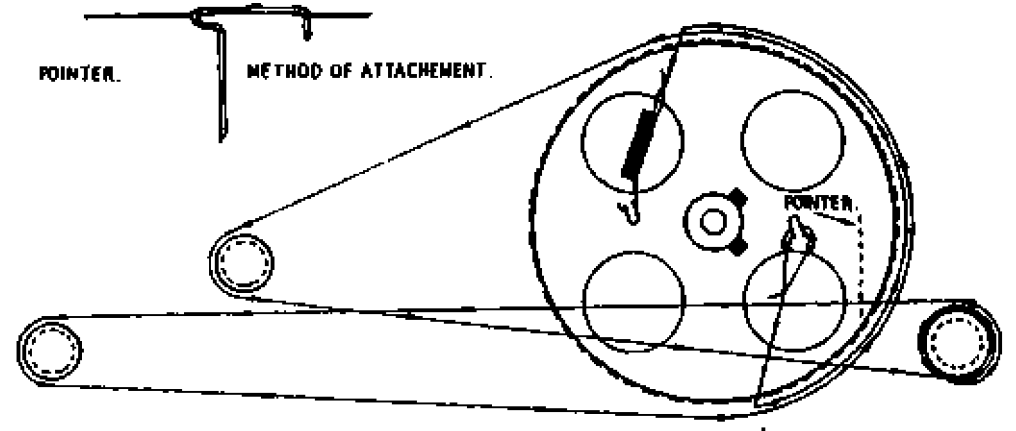
ALIGNMENT CONDITIONS

Remove rear section of cabinet as detailed on Page 1.

Volume Control - maximum volume (fully clockwise).

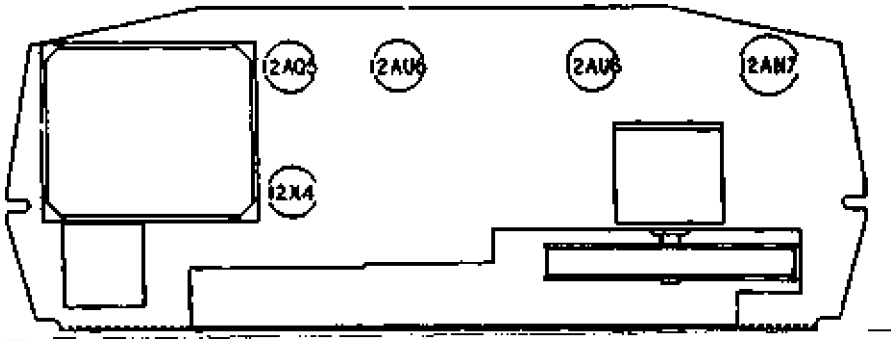
Output Level - 50 milliwatts.

Output Meter Connection - across secondary of output transformer, speaker voice coil disconnected.



NOTE : GANG PLATES FULLY MESHED.

½ TURNS AROUND TUNING SPINDLE



INTERMEDIATE FREQUENCY TRANSFORMER ALIGNMENT

Oper. No.	Generator Connection	Generator Frequency	Instructions
1	.01 mF capacitor in series, to grid of 12AU6 I. F valve.	455 Kc/s	Turn tuning control to high freq. end of travel. Peak 2nd I. F trans. pri. and sec. iron cores for max. output
2.	.01 mF capacitor in series, to grid end of rod aerial.	455 Kc/s	Peak 1st I. F trans pri and sec. iron cores for max. output

SETTING THE DIAL POINTER

Turn tuning control until the tuning condenser gang is at the low frequency end of travel stop, condenser plates fully meshed. Set the centre of dial pointer to the centre of the end of travel spot, right hand end of dial reading.

Positioning of the pointer may be made from the rear of the chassis by sliding the pointer along the dial cord with a pair of long nose pliers

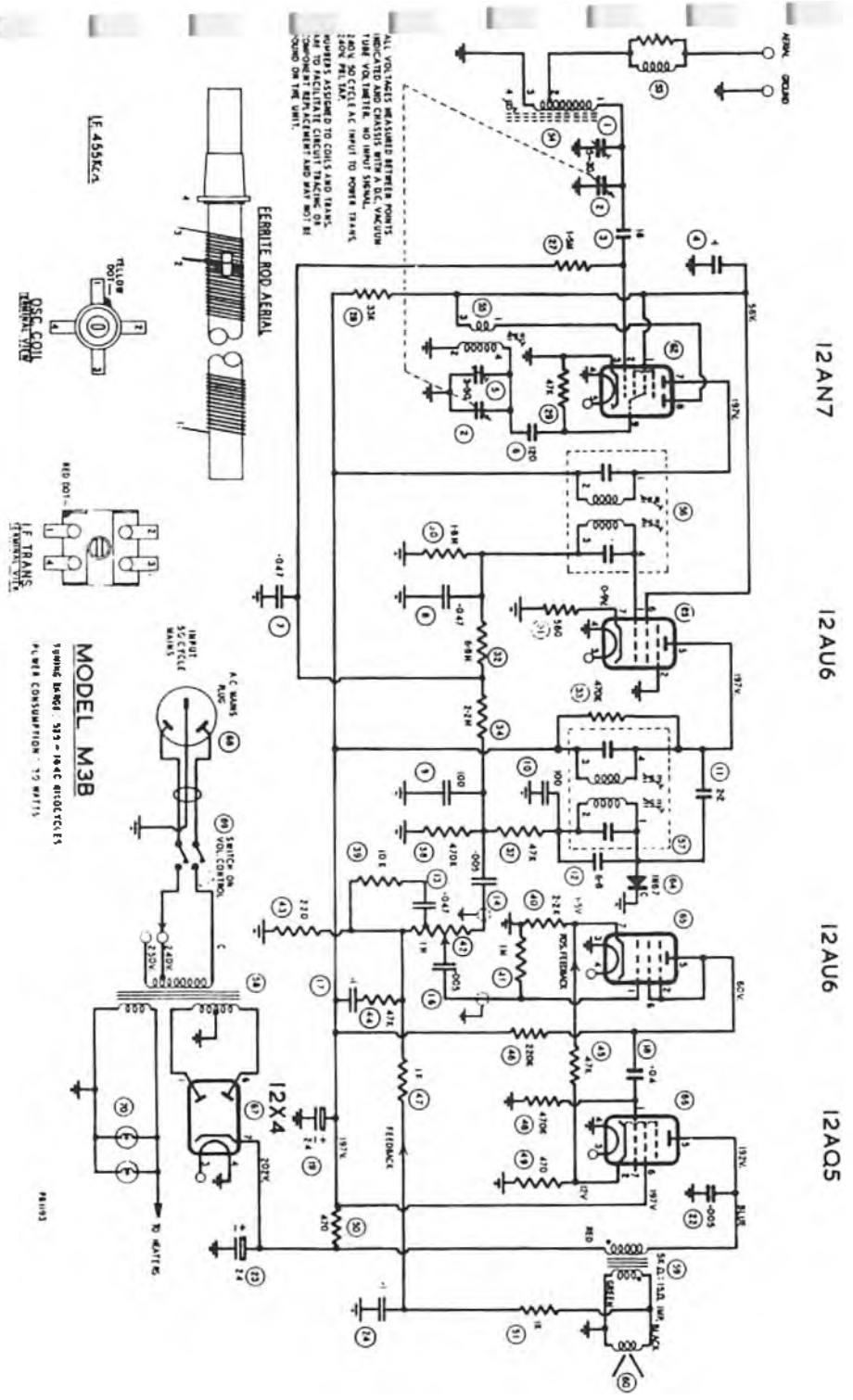
BROADCAST ALIGNMENT

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 vertical wire at a position in line with ferrite rod aerial and located at a position not less than 1 ft. from the inductance trimmer end of ferrite rod.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. A and B.	600 Kc/s	Turn tuning cond. gang and dial pointer to 600 Kc/s dial mark. Leave cond. gang and pointer set in this position. adjust osc. coil iron core and rod aerial inductance trimmer (metal ring) for max. output.
NOTE:	Do not rock the cond. gang to and fro through signal.		
2.	Refer para. A and B.	1400 Kc/s	Turn cond. gang and dial pointer until centre of dial pointer is on centre of 1400 Kc/s mark on dial. Adjust osc. and aerial trimmer condensers for max. output.
3.	Repeat operations 1 and 2.		

Tuning range after alignment 525-1640 Kc/s



ASTOR

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

A60a.

SERVICE DATA

ASTOR MODEL "M3B"

5 VALVE SUPERHETERODYNE BROADCAST BAND
MAINS OPERATED MANTEL RECEIVER

ACCESS TO INTERIOR OF RECEIVER -

The receiver chassis does not have to be removed from the cabinet for alignment of the IF & RF signal circuits. All alignment functions may be made when the rear section of the cabinet is removed from the front section.

REMOVAL OF REAR SECTION OF CABINET -

Prise off the two spring clips from cabinet base with a thin blade screw driver or knife. At the base of the cabinet insert the thin blade into the crevice between the two sections of cabinet, prise the sections apart.

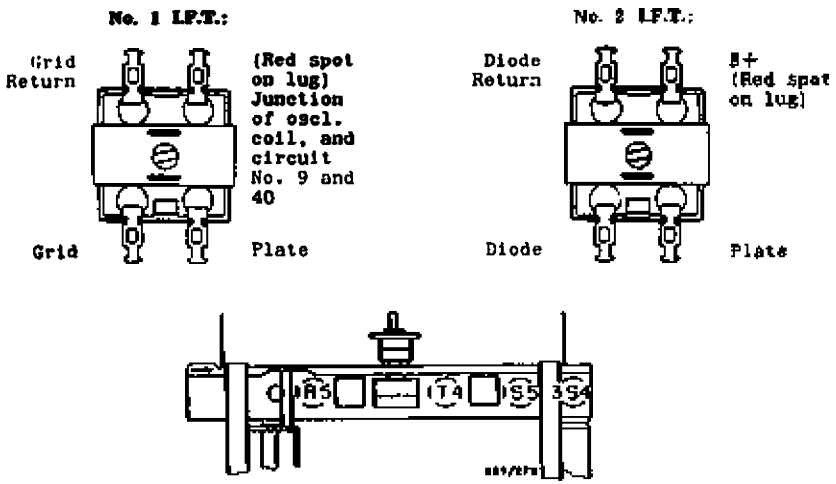
TO REMOVE AND REFIT CHASSIS TO CABINET -

Remove the push-on type knobs.
Unclip two leads from speaker terminals.
At each end of chassis, loosen screw which fastens chassis to cabinet then withdraw chassis.

Reverse procedure to refit chassis.

CHASSIS SERIAL NUMBER -

The serial number is stamped into the chassis below the volume control. When viewing the receiver from the rear the number is visible through the slots in the cabinet, right hand end.



VALVE PLACEMENT DIAGRAM MODEL "MM"

RE-ROUTING OF METAL RECTIFIER CONNECTING LEAD:

The flexible connecting lead between the metal rectifier and the end of the 375 ohm 10 watt wire wound resistor on the bakelite terminal strip has been **wired so that the lead runs between the end of the resistor and the metal bracket holding the ''B'' battery.**

Model ''MM'' receivers with chassis serial numbers below 3300 approx. are to have this lead re-routed so that the lead lies flat along the terminal board under the resistor or is re-routed around the opposite end of the resistor.

This change is important because when the ''B'' battery is fitted the lead becomes pinched between the bracket and the sharp edges of the resistor mount lug.

Should the lug cut through the insulation on the lead and short out the resistor it will cause the metal rectifier to burn out when the receiver is used on A.C. or D.C. mains operation.

AC DC. MAINS LINE RESISTORS:

A quantity of Model ''MM'' receivers (serial numbers 104-2,000) have left the factory with two resistors reversed in the AC/DC. mains line circuit.

No damage can be caused to the receiver with these two resistors reversed when the receiver is operated from dry batteries or if operated on A.C. or D.C. mains with the fly lead connected to the 195-214 volt or 235-260 volt tap.

When the receiver is operated from A.C. or D.C. mains and with the fly lead connected to the 215-234 volt tap the ''A'' and ''B'' voltages may be excessive due to the decrease in the line series resistor.

The two resistors reversed are the 125 Ohm resistor circuit No. 48 and the 140 Ohm resistor circuit No. 47. The correct position of these resistors is as shown in the circuit diagram on page 6.

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126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A61a.

TECHNICAL BULLETIN

MODEL "MM"

4 Tube Superheterodyne Universal Portable Receiver.

FOR OPERATION FROM:

195-260 Volt 40-60 cycle A.C. electric supply mains.
195-260 Volt D.C. electric supply mains or
7.5 volts ''A'' Battery (five 1.5 volts batteries in series) and 67.5 volts ''B'' Battery.

POWER CONSUMPTION:

Battery operation:- 50Ma. ''A'' Battery.
10Ma. ''B'' Battery.

A.C. operation:-100Ma. 230 volts 50 cycle A.C. input fly lead connected to 215-234 volt tap.

D.C. operation:-60Ma. 230 volts D.C. input, fly lead connected to 215-234 volt tap.

TUNING RANGE:

535 to 1620 Kilocycles.

POWER OUTPUT:

250 milliwatts (max.).
100 milliwatts (undistorted).

ALIGNMENT INSTRUCTIONS

EQUIPMENT:

Signal Generator:
Output Meter:
Mica Capacitor: 0.01 MFD (Part No. PC145) for I.F.T. Alignment.
Dummy Antenna: 200MMFD Mica capacitor.
Alignment Tools: Part No. PM581 and M195

ALIGNMENT CONDITIONS:

Load Impedance: 5,000 ohms.
Output Level: 25 milliwatts.
Volume Control: Max. vol. (fully clockwise)
''A'' Battery: 7.5 volts (five 1.5 volt batteries in series).
''B'' Battery: 67.5 volts.
Intermediate Freq.: 455 Kc/s.

To remove chassis from cabinet. Turn vol. control switch off and from receiver remove A.C. cord, cabinet base and ''B'' battery. Remove grub screw from under vol. control knob, then pull knob upwards.

Remove dial reading by unscrewing several screws in centre of dial. Remove the screws, one at each end of handle, also screws in top of cabinet. Unsolder two wires connected to loop antenna, then remove bakelite expander strips from between chassis legs and withdraw chassis from cabinet. Remove loop antenna from cabinet and reconnect to receiver (grid lead to loop sec. inside turn, A.V.C. lead to loop sec. outside turn).

Fully mesh cond. gang plates and refit dial reading so that the centre screws are in the centre of the dial slots.

Fasten a piece of stiff wire to the chassis and fashion it into position to represent the pointer on the cabinet.

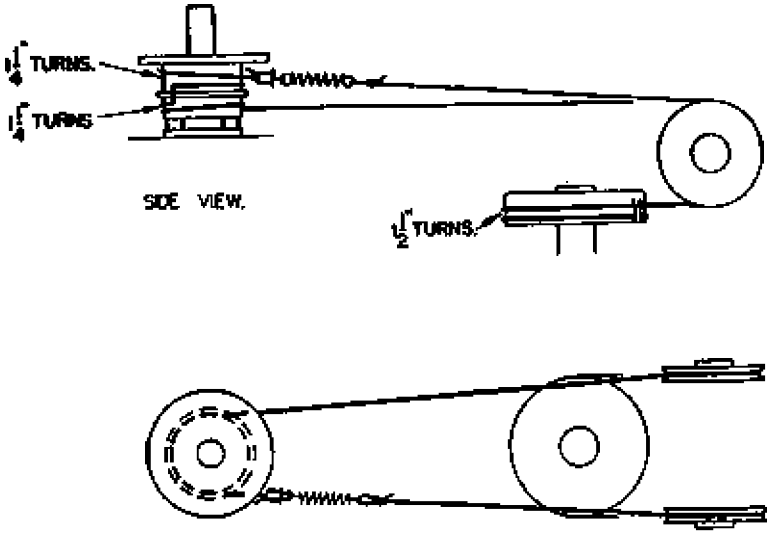
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of IT4 tube (pin No. 6)	455 Kc/s	0.01MFD mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of IR5 tube (pin No. 6)	455 Kc/s	0.01MFD mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Fully mesh the cond. gang plates and set the end of the wire pointer to the end of travel spot on the dial reading near 540 Kc/s.
4.	To AVC end of loop (outside turn of sec.)	600 Kc/s	200MMFD Mica capacitor in series with generator	Turn dial to 600 Kc/s dial spot and adjust oscl. coil inductance trimmer (iron core) for max. output. Rock the cond. gang to and fro through the signal while adjusting.
5.	To AVC end of loop (outside turn of sec.)	1400 Kc/s	200MMFD Mica capacitor in series with generator	Turn dial to 1400 Kc/s dial spot and adjust oscl. coil. trim. condenser for logging and peak loop antenna trim condenser for max. output.
6.				Repeat operations Nos. 4 and 5.
7.				Remove wire pointer and dial reading from chassis. Disconnect loop antenna from chassis and refit loop to cabinet. Refit chassis to cabinet, reconnect loop antenna to receiver and refit dial reading. The slotted holes in the dial reading allow the dial to be moved either way to log the station on the dial to the pointer on the cabinet.
8.	To AVC end of loop (outside turn of sec.)	1400 Kc/s	200MMFD Mica capacitor in series with generator	Turn dial reading to 1400 Kc/s, re-peak loop antenna trimmer condenser for max. output.
9.				Refit the carrying handle, the cabinet base, and make sure the grub screw in the volume control knob is securely tightened.

Tuning range after alignment 535-1620 Kc/s.

CORDING OF DIAL DRIVE:

The length of cord required is 3 feet 6 inches, which includes about 6 inches to spare for tying to the spring.

Cord Part No. 7/282.
Spring Part No. 31/304.



CONDENSER PLATES FULLY OPEN

PREFERRED NUMBER VALUE RESISTORS

Various resistor values have been changed to preferred number value type resistors and are shown on the new circuit, issue No. 3.

Circuit No.	Description	Tol.	Rating	Part No.
40	10 Megohm carbon resistor	10%	½ W.	R1062
41	3.3 Megohm carbon resistor	10%	½ W.	R3352
42	1.8 Megohm carbon resistor	10%	½ W.	R1852
43	.47 Megohm carbon resistor	10%	½ W.	R4742
44	.22 Megohm carbon resistor	10%	½ W.	R2242
45	100,000 Ohm carbon resistor	10%	½ W.	R1042
46 (NS.)	56,000 Ohm carbon resistor	10%	½ W.	R5632
46 (WNS.)	22,000 Ohm carbon resistor	10%	½ W.	R2232
47	68,000 Ohm carbon resistor	10%	½ W.	R6832
48	47,000 Ohm carbon resistor	10%	½ W.	R4732
49	47,000 Ohm carbon resistor	10%	½ W.	R4732
50	47,000 Ohm carbon resistor	10%	½ W.	R4732
51	15,000 Ohm resistor consists of two 33,000 Ohm 1W. 10% resistors part No. Z3332 wired in parallel.			
52	22,000 Ohm carbon resistor	10%	½ W.	R2232
53	22,000 Ohm carbon resistor	10%	1 W.	Z2232
54	2,200 Ohm carbon resistor	10%	½ W.	R2222
55	2,200 Ohm carbon resistor	10%	½ W.	R2222
82	390 Ohm carbon resistor	10%	1 W.	Z3912

6U7G VALVES CHANGED TO 6N8 VALVES

Type 6N8 valves will be used in place of the 6U7G valves on future production runs.

The RF stage 6U7G valve 300 Ohm cathode bias resistor is changed to an 850 Ohm resistor for the 6N8 valve, new circuit No. 88.

The IF stage 6U7G valve 300 Ohm cathode bias resistor is changed to a 1200 Ohm resistor for the 6N8 valve, new circuit No. 89.

Circuit No.	Description	Tol.	Rating	Part No.
88	850 Ohm carbon resistor	10%	½ W.	R8512
89	1200 Ohm carbon resistor	10%	½ W.	R1222
	9 pin socket			279/250
	Adaptor plate (for fitting 9 pin socket in place of 8 pin 6U7G socket on chassis)			33/698

SOCKET CONNECTIONS	6U7G	6N8
Pin No. 1	No connection	Screen grid
" " 2	Heater	Signal grid
" " 3	Plate	Cathode
" " 4	Screen grid	Heater
" " 5	Suppressor grid	Heater
" " 6	—	Plate
" " 7	Heater	Diode
" " 8	Cathode	Diode
" " 9	—	Suppressor grid

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

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File: Receivers AC.
Date: 24-5-55
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TECHNICAL BULLETIN

6AN7 VALVE—6AE8 (X79) VALVE

The 6J8GA or 6J8G converter valve has been changed to a type 6AE8 valve for 200 receivers and will then be changed to a type 6AN7 valve for future production runs.

When a 6AE8 or 6AN7 valve is fitted a 6 MMF condenser (new circuit No. 83) is wired from the oscl. grid to the chassis and a 4 MMF condenser (new circuit No. 84) is wired across the 31 metre antenna coil. The 300 Ohm converter valve cathode bias resistor is also changed to a 200 Ohm resistor, circuit No. 85.

On the second production run of receivers using 6AN7 valves a 22 K. ohm resistor was wired across the B/cast oscl. coil primary and a 10 K. ohm resistor was wired across the bandspread S/wave oscl. coils (new circuit Nos. 86 and 87).

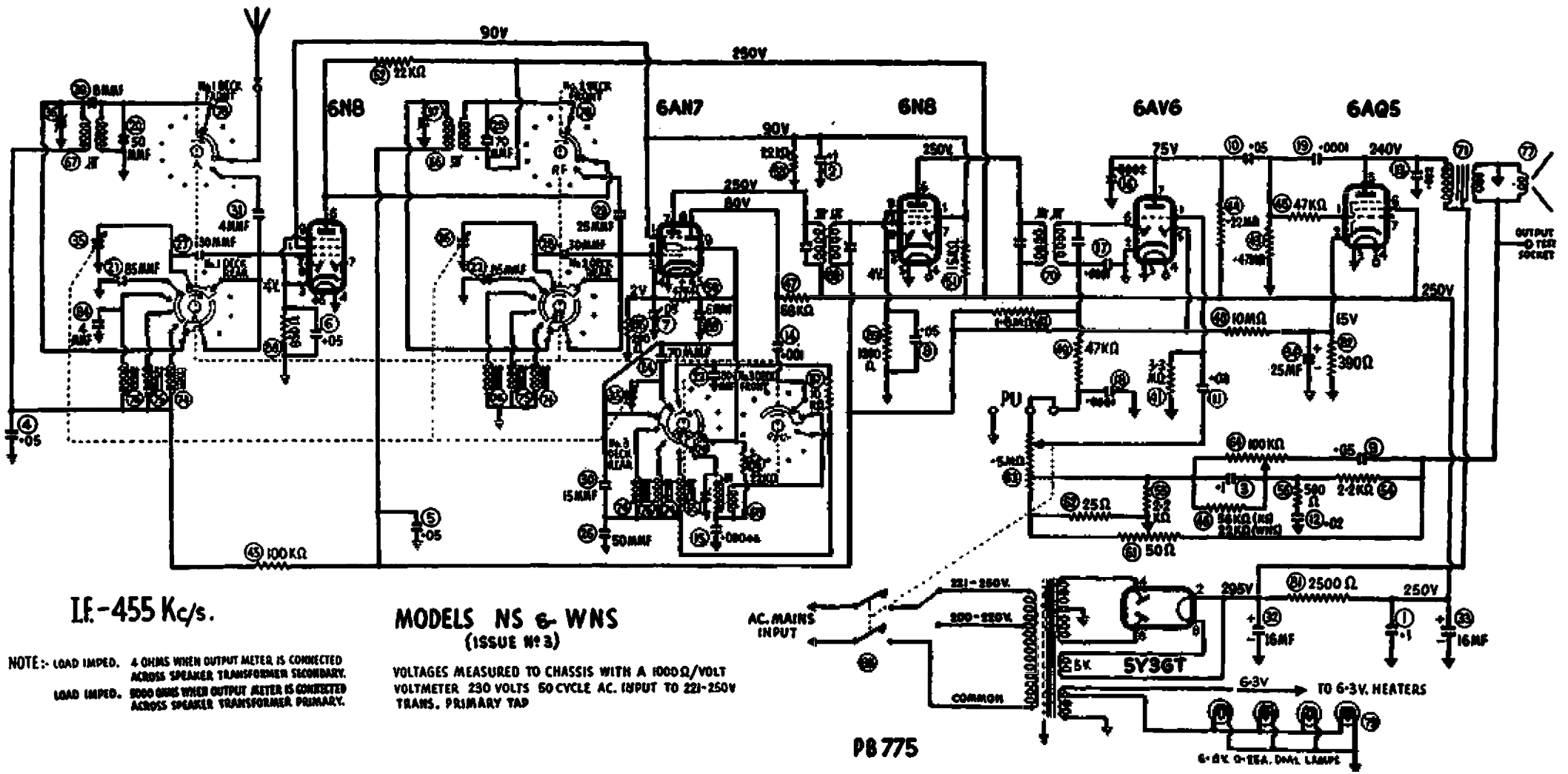
SOCKET CONNECTIONS	6J8GA 6J8G	6AE8	6AN7
Pin No. 1	No connection	Screen grid	Screen grid
" " 2	Heater	Signal grid	Signal grid
" " 3	Plate	Cathode	Cathode
" " 4	Screen grid	Heater	Heater
" " 5	Triode grid	Heater	Heater
" " 6	Triode plate	Plate	Internal connection
" " 7	Heater	Triode grid	Plate
" " 8	Cathode	Triode plate	Triode plate
" " 9	—	Internal connection	Triode grid

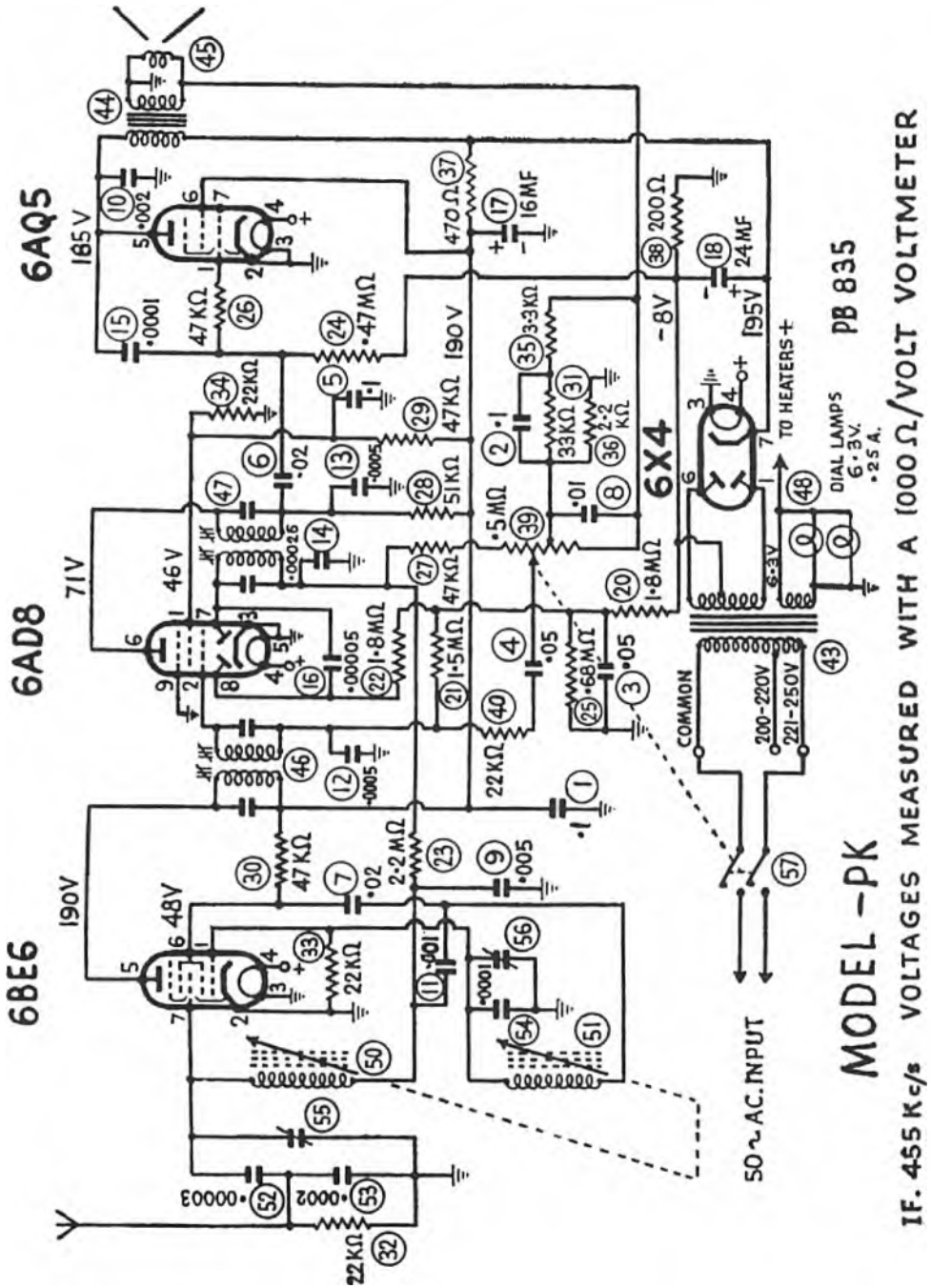
New Circuit No.	Description	Tol.	Rating	Part No.
83	6 MMF ceramicon cond.	+1 MMF-0	500 V. DCW.	PC 831
84	4 MMF ceramicon cond.	+1 MMF-0	500 V. DCW.	PC 830
85	200 Ohm wire wound resistor	10%	½ W.	PR 176
86	22,000 Ohm carbon resistor	10%	½ W.	R2232
87	10,000 Ohm carbon resistor	10%	½ W.	R1032
	9 pin socket			279/250
	Adaptor plate (for fitting 9 pin socket in place of 8 pin 6J8G socket on chassis)			33/698

6AQ5 VALVE

A type 6AQ5 valve will be used in place of the 6V6GT valve on future production runs.

SOCKET CONNECTIONS	6V6GT	6AQ5
Pin No. 1	No connection	Signal grid
" " 2	Heater	Cathode
" " 3	Plate	Heater
" " 4	Screen grid	Heater
" " 5	Signal grid	Plate
" " 6	No connection	Screen grid
" " 7	Heater	Signal grid
" " 8	Cathode	


6N8
6AN7
6N8
6AV6
6AQ5
90V
250V
75V
240V
47KΩ
10MΩ
390Ω
25MF
100KΩ
50Ω
2500Ω
AC. MAINS INPUT
221-250V.
200-250V.
COMMON
5Y3GT
6·3V
TO 6·3V. HEATERS
OUTPUT TO TEST SOCKET
I.F.-455 Kc/s.
MODELS NS & WNS
(ISSUE No 3)
VOLTAGES MEASURED TO CHASSIS WITH A 1000Ω/VOLT VOLTMETER 230 VOLTS 50 CYCLE AC. INPUT TO 221-250V TRANS. PRIMARY TAP
NOTE:- LOAD IMPED. 4 OHMS WHEN OUTPUT METER IS CONNECTED ACROSS SPEAKER TRANSFORMER SECONDARY.
LOAD IMPED. 5000 OHMS WHEN OUTPUT METER IS CONNECTED ACROSS SPEAKER TRANSFORMER PRIMARY.
PB775



MANTEL MODEL "PK"

A63.

ASTOR

4 VALVE SUPERHETERODYNE BROADCAST RECEIVER

FOR OPERATION FROM:

200-250 Volt 50 Cycle AC. Supply Mains.
Power Consumption 40 Watts (approx.).

TUNING RANGE:

535-1640 Kc/s. : 560.7-182.9 Metres.

ALIGNMENT PROCEDURE:

EQUIPMENT:		ALIGNMENT CONDITIONS:	
Signal Generator:		Load Impedance:	5,500 ohms
Output Meter:		Output Level:	50 Milliwatts
Mica Capacitor:	0.01MF (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise
Dummy Antenna:	200MMF Mica Capacitor	Intermed. Freq.:	455 Kc/s.
Alignment Tools:	Type M195 and PM581.	Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap

NOTE 1:

Dummy Antenna: The 200MMF dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment. If it is connected it should be rolled up into a small hank.

NOTE 2:

The receiver chassis does not have to be removed from the cabinet for alignment of the IF. or RF. signal circuits. All alignment functions may be made when the rear section of the cabinet is removed from the front section.

NOTE 3:

To remove cabinet rear section from front section, prise off the two spring clips from the cabinet base with a thin blade screwdriver or knife. At the base of the cabinet insert the thin blade screwdriver or knife into the crevice between the two cabinet sections and prise the rear section of the cabinet away from the front section.

NOTE 4:

Dial Pointer Setting: Turn tuning control knob anti-clockwise until perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set centre of dial pointer on centre of end of travel spots on dial reading near 1700 Kc/s.

NOTE 5:

Positioning of the dial pointer may be made from the rear of the chassis by sliding the pointer along the dial cord with a pair of long-nose pliers.

NOTE 6:

Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned fully anti-clockwise and is hard against the stop.

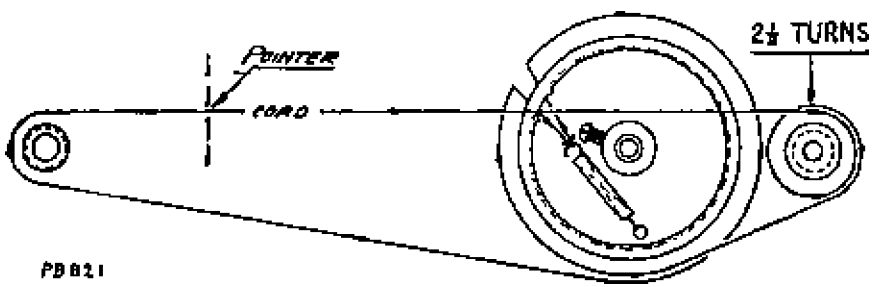
If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

ASTOR MODEL PK.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6AD8 valve (pin No. 2)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator.	Turn tuning control anti-clockwise until perm. tuner iron cores are out of the windings on coil formers and the unit is hard against the stop. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	To antenna junction lug on chassis.	1000 Kc/s.	200MMF Mica capacitor in series with generator.	Turn tuning control until dial pointer aligns with centre of alignment spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer cond., then peak antenna coil trimmer cond. for max. output. Re-peak oscl. coil trim condenser.
5.	Check logging at each end of the dial. Tuning range after alignment 535-1640 Kc/s.			

CORDING OF DIAL DRIVE:

Length of cord required is 46 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Spring Part No. 508/30C.
Dial Pointer Part No. 12/834.



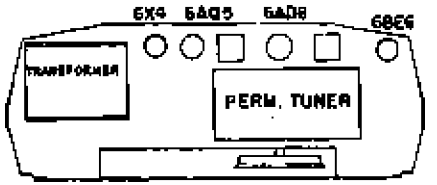
NOTE: PERM TUNER UNIT SPINDLE IN FULLY ANTICLOCKWISE POSITION

CHASSIS SERIAL NUMBER:

The chassis serial number is stamped into the chassis below the volume control. When viewing the receiver from the rear the serial number is visible through the slots in the cabinet back at the right.

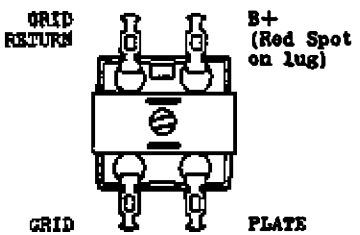
DIAL GLASS REPLACEMENT:

1. Remove chassis from cabinet.
2. Remove all pieces of the broken dial.
3. Remove all traces of plastic material with a sharp knife which was previously formed over the rear of the dial.
4. Place new dial in position. Check that dial faces correctly.
5. Press dial firmly against cabinet, then with a hot soldering iron form the plastic retaining wall material over the dial at positions adjacent to where the original dial was fastened.
6. Refit chassis to cabinet and adjust dial pointer for logging from the rear of the chassis by sliding the pointer along the dial cord the required distance with a pair of long-nose pliers.

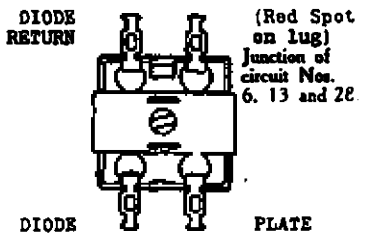


VALVE PLACEMENT DIAGRAM 1150/279

1st IF. TRANS.



2nd IF. TRANS.



ANTENNA TRANS.:

Start of winding—furthest from mounting end—AVC.
Finish of winding—nearest to mounting end—Signal grid.

OSCL. COIL:

Start of winding—furthest from mounting end—Junction of circuit Nos. 7 and 11.
Finish of winding—nearest to mounting end—Oscl. grid.

POWER TRANS. (PT962) 50 cycle.

PRI.

Red lead—common.
Green lead—200-220V.
Black lead—221-250V.

HT. SEC.

Blue lead—start.
Yellow lead—centre tap.
Blue lead—finish.

LT. SEC. (two windings in parallel)

Start and finish in winding wire.

POWER TRANS. (PT983) 40 cycle

PRI.

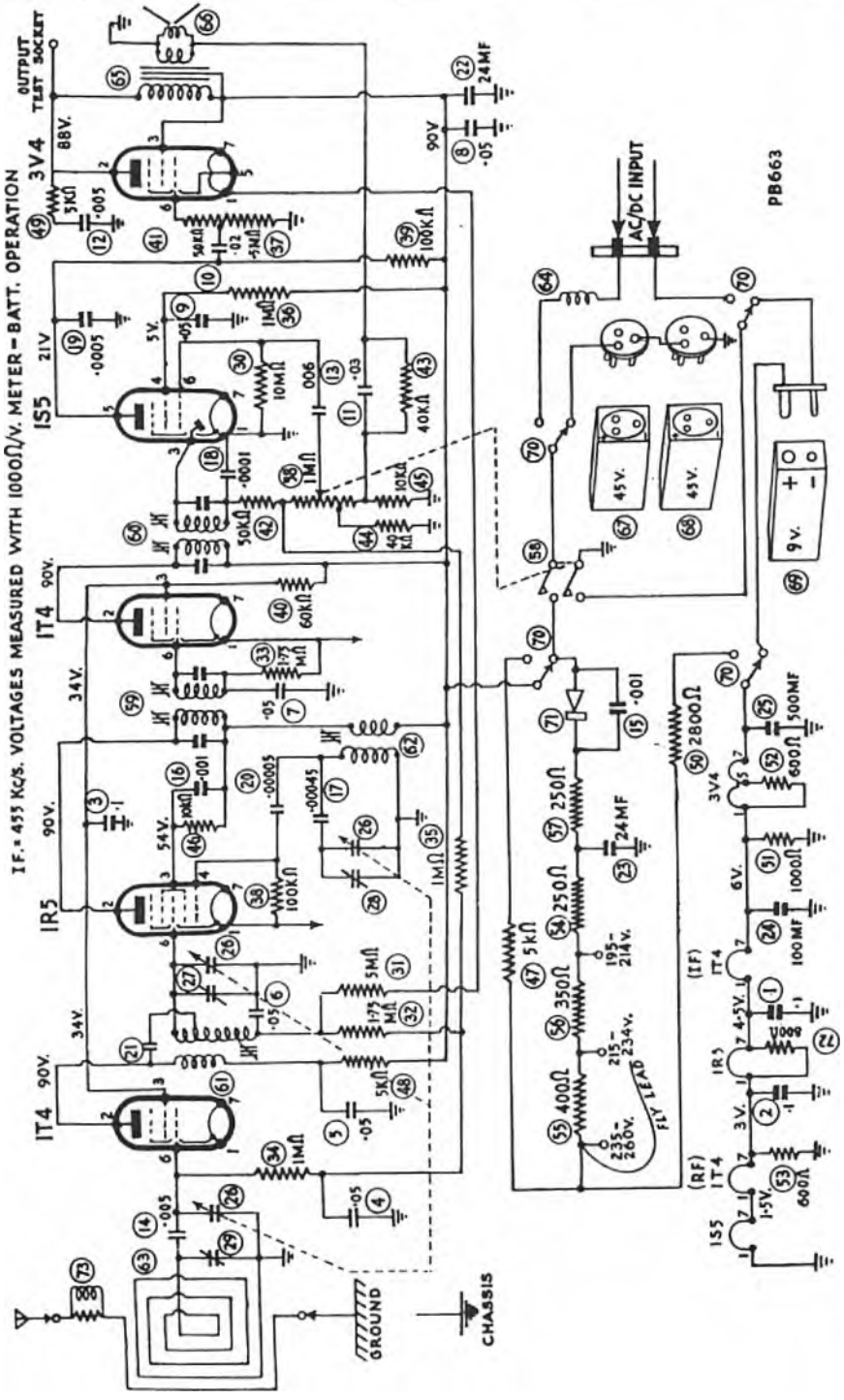
Red Lead—common.
Green lead—220-250V.
Black lead—251-260V.

HT. SEC.

Yellow lead—start.
Blue lead—centre tap.
Yellow lead—finish.

LT. SEC. (two windings in parallel)

Start and finish in winding wire.



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A64

TECHNICAL BULLETIN

MODEL "PS"

5 TUBE SUPERHETERODYNE UNIVERSAL PORTABLE RECEIVER.

FOR OPERATION FROM:

195-260 Volt 40-60 Cycle A.C. electric supply mains.
195-260 Volt D.C. electric supply mains or
9 volts "A" battery and
90 volts "B" battery. (Two 45 volt "B" batteries connected in series.)

POWER CONSUMPTION:

Battery operation:-	50Ma.	"A" Battery.
	11Ma.	"B" Battery.
A.C. operation:-	100Ma.	230 volts 50 cycle A.C. input fly lead connected to 215-234 volt tap.
D.C. operation:-	60Ma.	230 volts D.C., input fly lead, connected to 215-234 volt tap.

TUNING RANGE:

535 to 1640 Kilocycles. 560.7 to 182.9 Metres.

POWER OUTPUT:

250 milliwatts (max.).
100 milliwatts(undistorted)

THIS BULLETIN CONTAINS:

1. Technical Data.
2. Alignment Procedure.
3. Circuit Diagram.

MODEL "PS"

The ''Astor'' Model ''PS'' Universal Portable is a 5 valve superheterodyne broadcast receiver designed to operate from dry batteries fitted inside the carrying case or from A.C. or D.C. electric supply mains. The power cord for connecting the receiver to the supply mains is contained in a small compartment in the base of the carrying case. A switch in the power cord compartment converts the receiver from dry battery operation to A.C.-D.C. mains operation or vice versa.

When operating the receiver as a portable no external connections are necessary as a built-in loop aerial is incorporated in the carrying case. Should the receiver be required to operate in localities where the signal pick-up by the built-in loop aerial is not sufficient to provide reasonable volume, an external aerial and earth may be connected to the two small sockets on the rear of the receiver to increase the signal pick-up.

ALIGNMENT INSTRUCTIONS

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator:	Load Impedance: 10,000 ohms.
Output Meter:	Output Level: 25 milliwatts.
Safety Lamp: 230 volt 40 watt incandescent lamp.	Volume Control: Max. vol. (fully clockwise).
Mica Capacitor: 0.01MF (part No. PC145) for I.F.T. Alignment.	''A'' Battery: 9 volts.
	''B'' Battery: 90 volts (two 45 volt ''B'' batteries connected in series).
Alignment Tools: Part No. PM581 and M195.	Intermediate Freq.: 455 Kc/s.

To remove chassis from cabinet: Turn vol. control switch off and from receiver remove A.C. cord and plug by pulling the plug straight off the 2 pin connector in the A.C. cord compartment. Unscrew four screws in the cabinet base, remove cabinet base, then the ''A'' and ''B'' batteries.

Loosen off the grub-screw under the volume and tuning control knobs, then pull the knobs straight off their spindles. Remove dial reading from cabinet by unscrewing the two nuts on top of the dial.

Inside the cabinet, on each side of the receiver chassis near the top, is a small bracket. A ¼" x 5/32" Whit. screw through each of these brackets fastens the chassis to the cabinet. When these two screws are removed the chassis will slide out of the cabinet. Refitting the chassis to the cabinet is the exact reverse procedure to removing it. Always make sure that the grub-screws under the control knobs are tightened securely.

Operation.	Generator connection.	Generator Frequency.	Dummy Antenna.	Instructions.
1.	The receiver may be aligned when operating it from batteries or from the A.C. or D.C. mains. When operating it from the A.C. or D.C. mains apply the safety lamp between the receiver chassis and ground to make sure the chassis is not above earth potential; if it is, reverse the receiver plug in the power point/light socket.			
2.	Fasten dial on to top of chassis with two ¼" Whit. nuts, then fit knobs on to control spindles.			
3.	Remove speaker and loop aerial from their mounting supports.			
4.	To control grid of IT4 IF valve (pin No. 6).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF trans. pri. and sec. for max. output.
5.	To control grid of IR5 valve (pin No. 6).	455 Kc/s.	0.01MF mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn gang plates fully out of mesh. Peak 1st IF trans. pri. and sec. for max. output.
6.	Repeat operations No. 4 and 5, then refit speaker and loop aerial to their mount supports.			
7.	DIAL POINTER SETTING: Fully mesh cond. gang plates and set apex of tuning knob pointer on end of travel spot on dial reading near 540 Kc/s.			
8.	To inject a signal into the loop aerial, lay approx. two feet of aerial wire in front of the signal generator and connect one end of it to the generator output active terminal. Place receiver approx. two feet distant from the two feet of aerial wire, then stand the receiver chassis on one end so that the speaker is nearest the operator and the control knobs are to the left. The control knobs can be operated with the left hand and all adjustable trimmers are accessible from the right.			
9.	Refer Oper. 8.	600 Kc/s.	—	Turn cond. gang and tuning knob until pointer is on 600 Kc/s. dial mark. Adjust oscl. coil ind. trim (iron core) and RF. trans. ind. trim. (iron core, from bottom of trans.) for max. output. Rock cond. gang to and fro through the signal while adjusting.
10.	Refer Oper. 8.	1400 Kc/s.	—	Turn cond. gang and tuning knob until pointer is on 1400 Kc/s. dial mark. Adjust oscl. coil trim. cond. for logging and peak RF. and loop aerial trimmer condensers for max. output. Rock cond. gang to and fro through the signal when peaking RF. and loop trimmer conds.
11.	Repeat operations No. 9 and 10.			
12.	Refit chassis to cabinet. Make sure the grub-screws under the control knobs are securely tightened. Fit ''B'' batteries securely in position in the cabinet.			
13.	Refer Oper. 8.	1400 Kc/s.	—	With the ''B'' batteries in position in the cabinet peak (from the bottom of the cabinet) the loop aerial trimmer cond. for max. output. Rock cond. gang to and fro through the signal when peaking the trim condenser.

CIRCUIT MODIFICATION

An 800 Ohm. ½ Watt resistor Part No. PR257, circuit No. 72, is wired on the 1R5 valve socket between filament pins 1 and 7.

The resistor has been added to stabilise the current through the filament circuit.

When Model ''PS'' receivers are returned for service a check is to be made to make sure the resistor is included and if not it should be added as it was not included in a quantity of the first production run.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T202)
Power trans Primary Tap-red-common.
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

200-250 Volt 40 or 50 Cycle AC. Mains (Power transformer T203)
Power trans Primary Tap-red-common
" " " " -green-200 Volt mains.
" " " " -black-230-240 Volt mains.
" " " " -white-250 Volt mains.

NOTE: Record changer drive pulley for 40 cycle mains operation is Part No: 846/524

POWER CONSUMPTION:

Radio Operation - 50 Watts-approx.
Crane Operation - 75 Watts-approx.

TUNING RANGE: 535-1640 Kc/s. - 560.7-182.9 Metres.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator: Modulated 400 CPS.
Output Meter:
Mica Capacitor: 0,01MF. (for IF. trans. alignment)
Dummy Antenna: 200MMF. Mica Capacitor.

Alignment Tools:
(a) type M195 for IF. transformer alignment.
(b) type PM581 for broadcast trimmer alignment.

ALIGNMENT CONDITIONS

Output Meter: Connect output meter across secondary winding of one output transformer.

Output Level: 50 milliwatts speaker voice coil disconnected.
" " 20 milliwatts speaker voice coil connected.

Output Meter Impedance: 4 Ohms.

Vol. Control: Max. Vol. Fully clockwise.

Interned. Freq: 455 Kc/s.

Input Voltage: 230 Volts 50 Cycle AC. input to trans. 230-240 volt pri. tap.

Tone Control: Treble position. Fully clockwise.

NOTE:

The speaker baffle board with the receiver chassis attached may be removed from the cabinet as a complete unit.

It is necessary to remove this section of the cabinet with receiver attached to make adjustments to the IF. transformer iron cores. It is not required to be removed for adjustment to the tuning unit trimmer condensers.

Removal instructions for front section of cabinet are detailed on the following pages of this bulletin.

Oper No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1	To signal grid of 6N8 IF. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn grano-radio switch to radio position. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
2	To signal grid of 6BD6 valve pin No. 7	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn perm. tuner so that iron cores are fully out of winding and the unit ishard against the stop. Leave grid wire attached to valve socket. Peak 1st. IF. trans. pri. and sec. for max. output
3				Repeat operations 1 and 2
4	Refit speaker baffle board with receiver chassis attached to main section of cabinet.			

TUNING KNOB SETTING

Turn tuning knob anti-clockwise until perm. tuner unit iron cores are out of windings on coil formers and unit is hard against the stop. Set the centre of end of travel spot near 1700 Kc/s. on tuning knob to align with centre of indicator spot on cabinet.

Positioning of the tuning knob may be made by loosening the two grub screws fastening the tuning spindle to the tuning unit core carriage roller.

BROADCAST ALIGNMENT

NOTE: 1.

Both iron cores in the perm. tuner unit are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron core in the former, when the unit is turned fully anti-clockwise and is hard against the stop.

If incorrect logging and misalignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

NOTE: 2.

The 200 MMF Dummy antenna must be connected to the antenna junction lug on the chassis. Shoula an antenna be connected to the short antenna lead from the receiver it is to be disconnected or rolled into a small hank.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm. tuner and tuning knob until centre of spot at 1000 Kc/s on tuning knob aligns with centre of spot on cabinet. Peak osc1. coil trim. cond. then peak ant. c coil trimmer condenser for max. output. Repeak oscl. coil trimmer condenser.

2. Check logging at each end of tuning knob dial.

Tuning range after alignment 535 to 1640 Kc/s.

AUDIO AMPLIFIER GAIN TEST

Oper. No.	Generator Connection	Generator Frequency	
1.	To antenna junction lug on chassis	1000 Kc/s.	(A) Connect output meter across secondary winding of one channel output transformer. (B) Tune receiver to generator 1000 Kc/s signal. (C) Adjust signal input until output meter reads 20 milliwatts (volume control turned maximum clockwise, speaker voice coil connected). (D) Leave input signal set at this level. Disconnect output meter and then connect output meter across the secondary winding of the other channel output transformer and note the output meter reading. (volume control turned maximum clockwise, speaker voice coil connected.) (E) The difference in output between the amplifier channels must hot exceed 7 milliwatts.

TRANSFORMER CONNECTIONS

POWER TRANSFORMER

PART NO. T202 40 & 50 cycle mains	PART NO. T203 40 & 50 cycle mains
PRI. Red lead - Common	PRI. Red lead - Common
" Green lead - 200V mains	" Green lead - 200V mains
" Black lead - 230 & 240V mains	" Black lead - 230 & 240V mains
	" White lead - 250V mains
Electro-static shield joined internally to centre tap of HT. secondary.	
HT. Secondary	HT. Secondary
Start - Blue lead	Start - Blue lead
Centre tap - yellow lead	Centre tap - yellow lead
Finish - Blue lead	Finish - Blue lead
LT. Secondary	LT. Secondary
Start and finish in winding wire	Start and finish in winding wire

ANTENNA COIL

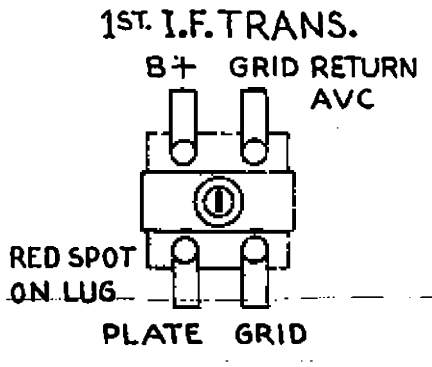
Start of winding - furthest from mounting end - Junction of Circuit No. 2, 41 and antenna.

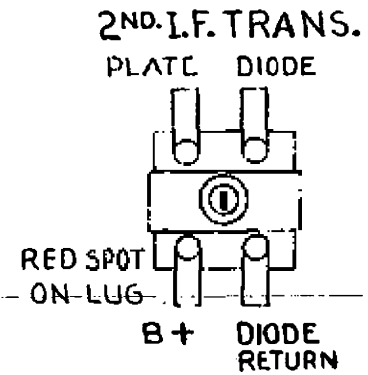
Finish of winding - nearest to mounting end - Junction of Circuit No.1, and 3

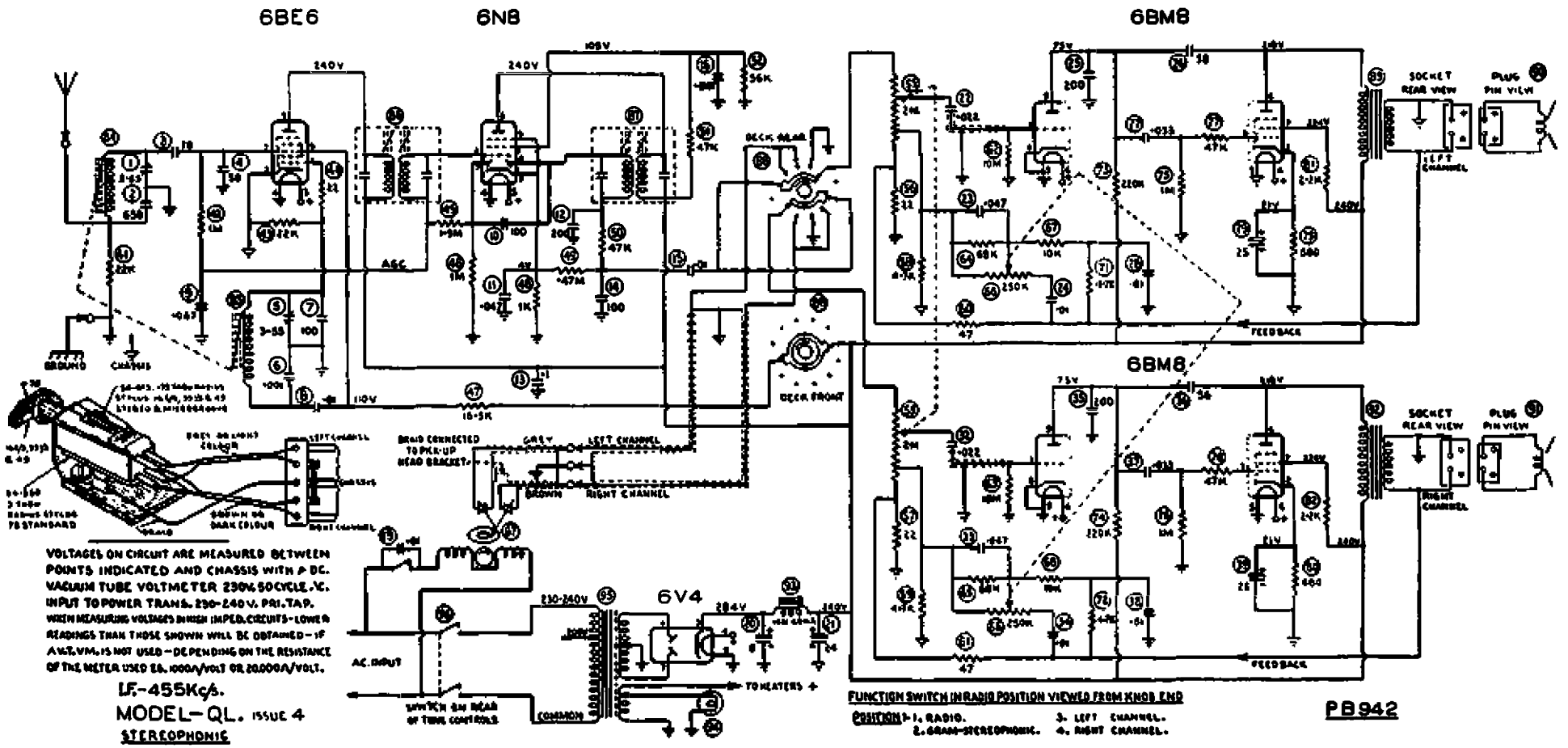
OSCILLATOR COIL.

Start of winding - furthest from mounting end - Junction of Circuit No. 6 and 8

Finish of winding - nearest to mounting end - Junction of Circuit No. 5 7, 43, and 44.






6BE6
6N8
6BM8
6BM8
6V4
240V
110V
230-240V
284V
GROUND
CHASSIS
AGC
DECK REAR
DECK FRONT
BRAID CONNECTED TO PICK-UP HEAD BRACKET
GREY
BROWN
LEFT CHANNEL
RIGHT CHANNEL
AC. INPUT
SWITCH ON REAR OF TONE CONTROLS
COMMON
TO HEATERS
FEEDBACK
SOCKET REAR VIEW
PLUG PIN VIEW
VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 230V. 50 CYCLE A.C. INPUT TO POWER TRANS. 230-240 V. PRI. TAP.
WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS - LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED - IF A V.T.V.M. IS NOT USED - DEPENDING ON THE RESISTANCE OF THE METER USED EG. 1000Ω/VOLT OR 20,000Ω/VOLT.
I.F.-455Kc/s.
MODEL-QL. ISSUE 4
STEREOPHONIC
FUNCTION SWITCH IN RADIO POSITION VIEWED FROM KNOB END
POSITION 1. RADIO. 2. GRAM-STEREOPHONIC. 3. LEFT CHANNEL. 4. RIGHT CHANNEL.
PB942

A66.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

CLOCK RADIO MANTEL MODEL "QM"

4 Valve Superheterodyne Broadcast Receiver.

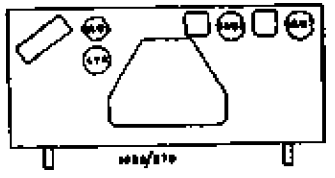
For operation from:-

200-250 Volt 50 Cycle AC. Supply Mains.
Power Consumption 33.5 Watts Radio and Clock.
4.5 Watts Clock only.

Tuning Range:-

535-1640 Kc/s. : 560.7-182.9 Metres

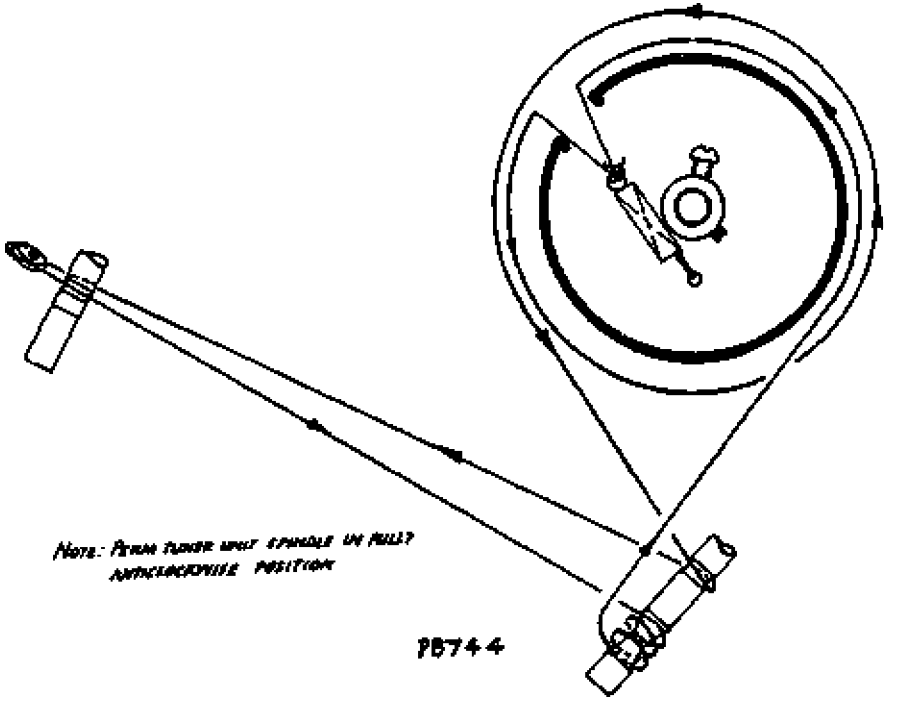
This Bulletin contains:-

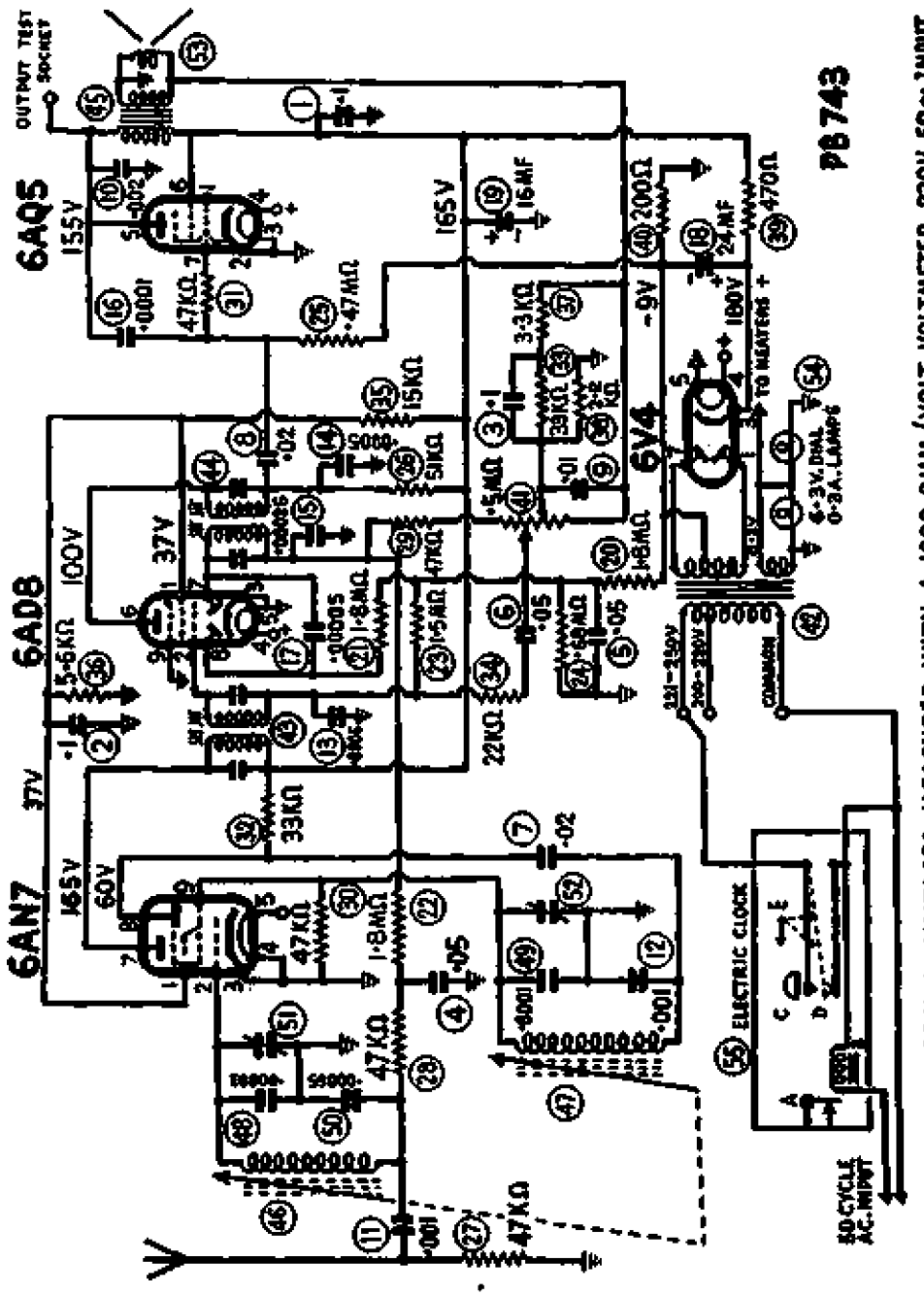


DIAL DRIVE CORDING

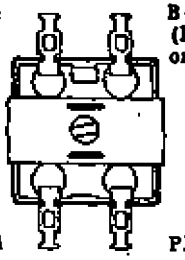
The length of dial cord required is 4 ft. 6 ins. which includes 9 ins. spare tying to the tension spring.

Dial cord	Part No. 34/754
Dial spring	,, ,, 19/449-1
Dial pointer assy.	,, ,, A101/785-2
Dial drum	,, ,, 18/785
Brass collar	,, ,, 56/678-1

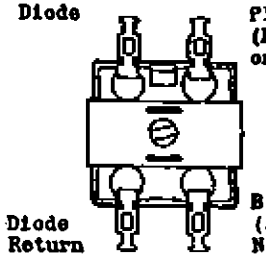




No. 1 IF. TRANS.



No. 2 IF. TRANS.



ANTENNA TRANS.
Start of winding – furthest from mounting end – AVC.
Finish of winding – nearest to mounting end – Signal Grid.

OSCL. COIL
Start of winding – furthest from mounting end – Junction of circuit Nos. 7 and 12.
Finish of winding – nearest to mounting end – Oscl. grid.

POWER TRANSFORMER

Pri. red lead – common.
Pri. green lead – 200-220V.
Pri. black lead – 221-250V.

HT. Sec.
Blue lead – start.
Yellow lead – centre tap.
Blue lead – finish.

LT. Sec. (two windings in parallel)
Start and finish
in winding wire.

DIAL READING MODIFICATION

The dial reading consisted of a printed strip and in front of which was a transparent bar which is held in position in the cabinet by a spring clip at each end of the transparent bar.

The above has been changed so that the dial reading is printed on the rear side of the transparent bar and which is held to the cabinet by the same type spring clip.

Printed dial reading (four printed dial readings)	A115/785	Printed dial bar:	Vic.-Tas.	25/785-1
		.. .. ..	S.A.-W.A.	25/785-2
Transparent dial bar	25/785	.. .. ..	Q'ld.	25/785-3
		.. .. ..	N.S.W.	25/785-4

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DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN-QN-1
File: RECEIVERS BATTERY
Page 1.
Date: 15/6/53

MANTEL MODEL "QN"

8 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19, 25 and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

32 volt D.C. Supply.

CURRENT CONSUMPTION:—

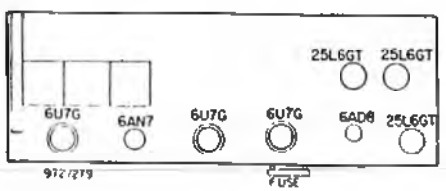
.85 Amps. (Does not include dial lamps or band indicator lamp).
1.1 Amps. (Includes three dial lamps and one band indicator lamp all wired in series. Each lamp 6-8 volt 0.25 amp.).

Tuning Range:—

Broadcast Band, 535-1610 Kc/s.		560.7-186.3 Metres
19 Metre band, 14.9-15.5 Mc/s	(Bandspread)	20.13-19.29 Metres (approx.)
25 Metre band, 11.6-12.1 Mc/s	(Bandspread)	25.86-24.79 Metres (approx.)
31 Metre band, 9.4-9.8 Mc/s	(Bandspread)	31.91-30.61 Metres (approx.)

This Bulletin contains:—

1. Alignment Instructions.
2. Circuit Diagram.



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TECHNICAL BULLETIN

BULLETIN QN-2.
File: Receivers Battery
Date: 18-5-55.
Page: 1.

CIRCUIT MODIFICATION

The 8 MMF mica condenser circuit No. 36 has been changed to a 15 MMF mica condenser tol. ± 1 MMF part No. PC811 to increase the overall gain. New Circuit No. 95.

TYPE 6U7G VALVES CHANGED TO TYPE 6BH5 VALVES

Type 6U7G valves used in the RF. and 1st and 2nd IF. stages have been changed to type 6BH5 valves.

No change is made to the receiver circuit except for the heater string which has two balancing resistors added due to the lower heater current of the 6BH5 valve.

A. A 125 Ohm 3 watt resistor (new circuit No. 96) is wired in parallel with the series connected heaters of the 6BH5 valves in the RF and 1st IF stages.

B. A 62.5 Ohm 2 watt resistor (new circuit No. 97) is wired in parallel with the heater of the 6BH5 valve in the 2nd IF stage.

VALVE PIN CONNECTIONS:

6U7G		6BH5	
Pin No. 1	No connection	Pin No. 1	Screen grid
2	Heater	2	Signal grid
3	Plate	3	Cathode
4	Screen grid	4	Heater
5	Suppressor grid	5	Heater
6	No connection	6	Plate
7	Heater	7	Internal connection
8	Cathode	8	Internal connection
Top cap	Signal grid	9	No connection

COMPONENT PARTS:

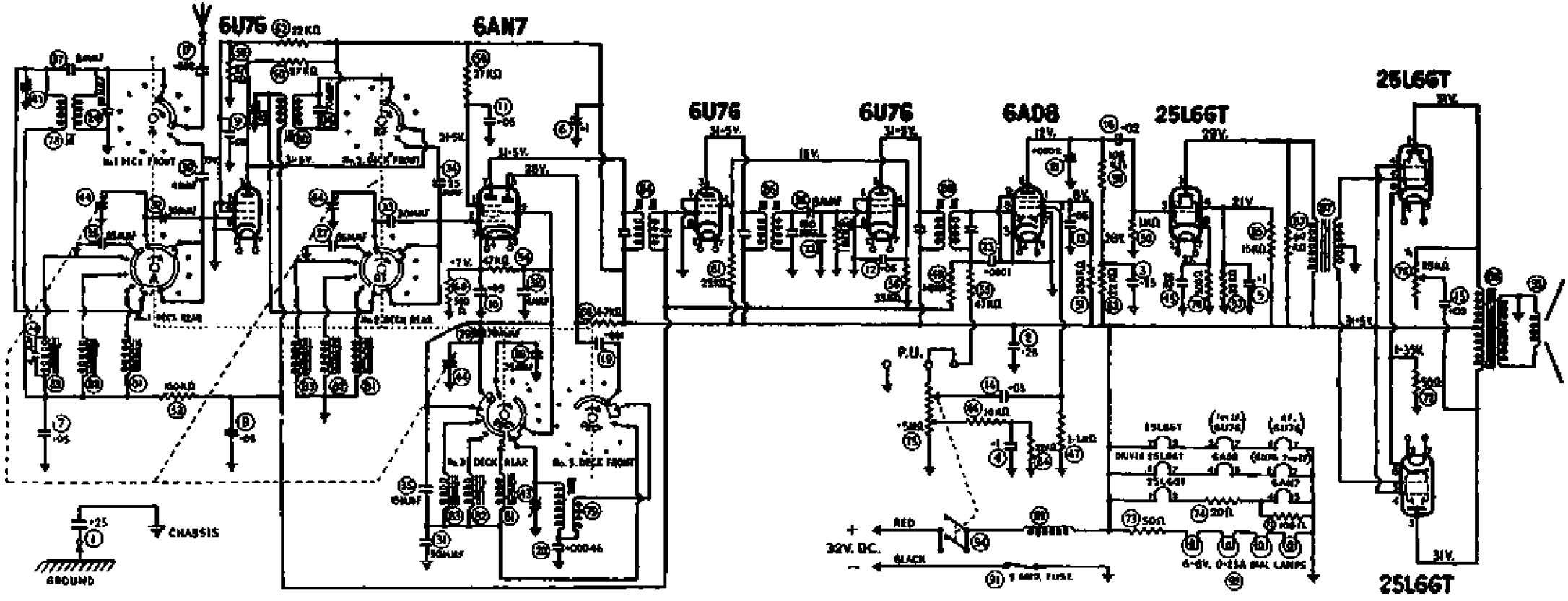
A. 1 off 125 Ohm 3 watt wire wound resistor tol. 10% part No. PR704 (new circuit No. 96).

B. 1 off 62.5 Ohm 2 watt resistor (new circuit No. 97) consists of two 125 ohm 1 watt wire wound resistors tol. + 10% part No. PR788 wired in parallel.

C. 3 off 9 pin valve sockets part No. 279/250 for 6BH5 valves.

D. 3 off adaptor plates Part No. 33/698 for fitting 9 pin sockets to chassis where the 8 pin 6U7G sockets were mounted.

ASTOR MODEL QN.



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER, 32 VOLT D.C. INPUT WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS,- LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED - IF A V.T.V.M. IS NOT USED- DEPENDING ON THE RESISTANCE OF THE METER USED. EG: 1000 Ω/VOLT OR 20,000 Ω/ VOLT.

P8691

ASTOR MODEL QN.

ALIGNMENT INSTRUCTIONS:—

ALIGNMENT CONDITIONS:—

Load impedance	—5,000 ohms.
Output level	—50 milliwatts
Volume control	—Max. Vol. (fully clockwise)
Tone control	—Treble position
Intermediate freq.	—455 Kc/s
A.C. Supply	32 volt D.C. mains

EQUIPMENT:—

Signal generator
Output meter
Mica capacitor —0.01 MFD
Dummy Antenna —200 MMFD Mica capacitor
Dummy Antenna —400 Ohm non-inductive resistor
Alignment tools—Part No. M195 & PM581
I.F. Attenuator —Part No. M174

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G 2nd I.F. valve.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid clip on valve. Peak 3rd IF trans. pri. and sec. for max. output.
2.	To control grid of 6U7G 1st I.F. valve.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Leave grid clip on valve. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To control grid of 6AN7 valve pin No. 2.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Cond. gang plates fully out of mesh. Leave grid wire connected to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
4.	Set centre of dial pointer on centre of end of travel mark on dial reading near 550 Kc/s. Cond. gang plates fully meshed.			
5.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer until dial pointer is on 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim (iron core) for max. output.
6.	To antenna terminal.	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
7.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position. Re-peak the B/cast oscl. coil ind. trim. (iron core) then peak the B/cast ant. and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s. dial mark until after the inductance trimmers of these three transformers have been peaked for max. output.
8.	To antenna terminal.	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
9.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
10.	To antenna terminal.	9.6 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
11.	To antenna terminal.	11.8 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging and peak ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
12.	To antenna terminal.	15.2 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging and peak ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
13.	Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available check the logging at each 100 Kc/s. mark on the dial.			

BANDSPREAD COILS:—

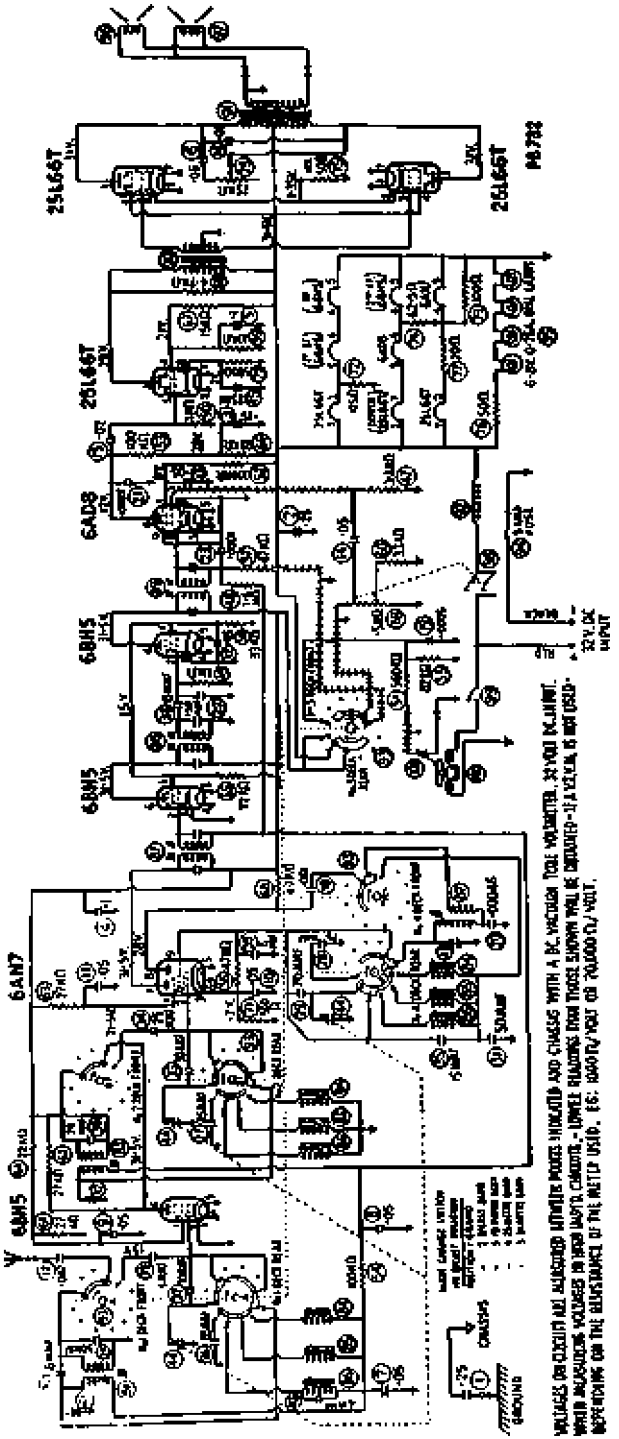
31 metre coil, RED spot on iron core end of former.

25 metre coil, WHITE spot on iron core end of former.

19 metre coil, BLUE spot on iron core end of former.

NOTE:—

The I.F. attenuator part No. M174 (.004 MF cond. and a 20 K. ohm. resistor in series) is connected between the 6U7G 1st. IF. valve control grid and chassis during alignment of the RF. and antenna stages and during the measurement of the overall sensitivity.



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124-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

A68.

TECHNICAL BULLETIN

TABLEGRAM MODEL "QP"

An Automatic 3 Speed Record Changer (78, 45, 33-1/3 r.p.m.) and an 8 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

32 volt D.C. Supply.

CURRENT CONSUMPTION:—

Radio Operation: 0.85 Amps. (Does not include dial lamps or band indicator lamp).
,, ,, 1.1 Amps. (Includes three dial lamps and one band indicator lamp all wired in series. Each lamp 6-8V. 0.25 Amp. part No. PM678).

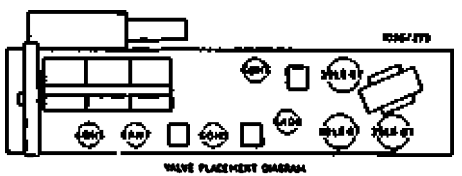
Gramo Operation: 1.6 Amps. (Includes three dial lamps and one band indicator lamp).

TUNING RANGE:—

Broadcast Band, 535-1610 Kc/s.			560.7-186.3 Metres
19 Metre Band, 14.9-15.5 Mc/s	(Bandspread)		20.13-19.29 Metres (approx.)
25 Metre Band, 11.6-12.1 Mc/s	**(Bandspread)**		**25.86-24.79 Metres (approx.)**
31 Metre Band, 9.4-9.8 Mc/s	(Bandspread)		31.91-30.61 Metres (approx.)

THIS BULLETIN CONTAINS:—

1. **Alignment Instructions.**
2. **Circuit Diagram.**



ASTOR MODEL QP.

ALIGNMENT INSTRUCTIONS:—

ALIGNMENT CONDITIONS:—

Load Impedance	—5,000 ohms
Output level	—50 milliwatts
Volume control	—Max. Vol. (fully clockwise)
Tone control	—Treble position
Intermediate freq.	—455 Kc/s
DC Supply	32 volt DC mains

EQUIPMENT:-

Signal generator
Output meter
Mica capacitor —0.01 MFD
Dummy Antenna —200 MMFD Mica capacitor
Dummy Antenna —400 Ohm non-inductive resistor
Alignment tools—Part No. M195 & PM581
IF. Attenuator —Part No. M174

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6BH5 2nd IF. valve Pin No. 2.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid wire attached to valve socket. Peak 3rd IF trans. pri. and sec. for max. output.
2.	To control grid of 6BH5 1st IF. valve Pin No. 2.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To control grid of 6AN7 valve pin No. 2.	455 Kc/s.	0.01 MFD Mica capacitor in series with generator.	Cond. gang plates fully out of mesh. Leave grid wire connected to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
4.	Set centre of dial pointer on centre of end of travel mark on dial reading near 550 Kc/s. Cond. gang plates fully meshed.			
5.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer until dial pointer is on 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim (iron core) for max. output.
6.	To antenna terminal.	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
7.	To antenna terminal.	600 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position. Re-peak the B/cast oscl. coil ind. trim. (iron core) then peak the B/cast ant. and RF. trans. ind. trimmers (iron cores) for max. output. Do not rock the gang to and fro through the signal while adjusting or move the dial pointer off 600 Kc/s. dial mark until after the inductance trimmers of these three transformers have been peaked for max. output.
8.	To antenna terminal.	1400 Kc/s.	200MMFD. Mica capacitor in series with generator.	Turn gang and dial pointer to 1400 Kc/s. dial mark. Adjust B/cast oscl. coil trim. cond. for logging and peak B/cast ant. and RF. trans. trim. condensers for max. output.
9.	Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).			
10.	To antenna terminal.	9.6 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil ind. trim. (iron core) for logging and peak 31 metre ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
11.	To antenna terminal.	11.8 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging and peak ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
12.	To antenna terminal	15.2 Mc/s.	400 Ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging and peak ant. and RF. trans. ind. trimmers (iron cores) for max. output. Rock gang to and fro through the signal while adjusting.
13.	Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available check the logging at each 100 Kc/s. mark on the dial.			

BANDSPREAD COILS:—

31 metre coil, RED spot on iron core end of former.
25 metre coil, WHITE spot on iron core end of former.
19 metre coil, BLUE spot on iron core end of former.

NOTE:—

The I.F. attenuator part No. M174 (.004 MF cond. and a 20 K. ohm resistor in series) is connected between the 6BH5 1st. IF. valve control grid pin No. 2 and chassis during alignment of the RF. and antenna stages and during the measurement of the overall sensitivity.

MODEL "RK"

GRAMO-RADIO TABLEGRAM

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 6 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

POWER CONSUMPTION:—

Radio Operation:- 58 Watts-approx.
Gramo Operation:- 77 Watts-approx.

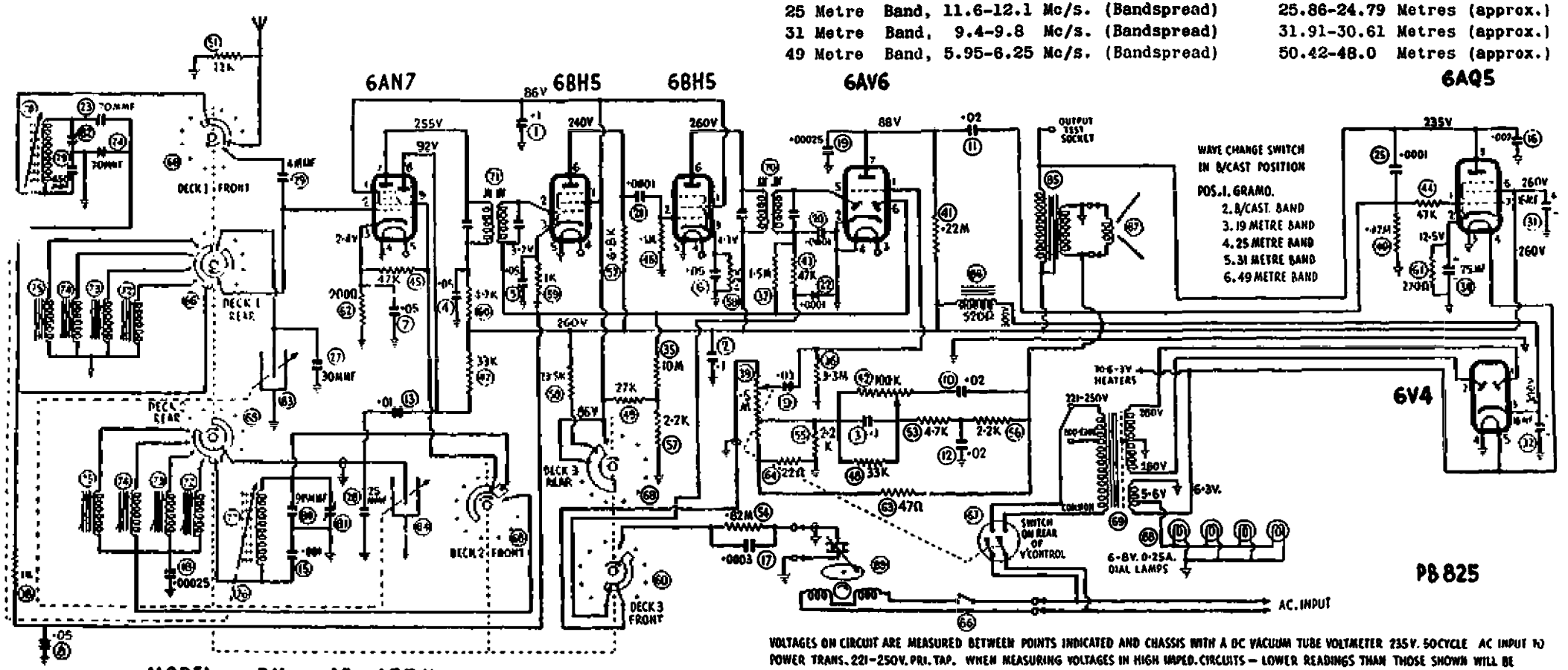
FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

TUNING RANGES:—

Broadcast Band,	535-1610 Kc/s.	560.7-186.3 Metres.
19 Metre Band,	14.9-15.5 Mc/s. (Bandspread)	20.13-19.29 Metres (approx.)
25 Metre Band,	11.6-12.1 Mc/s. (Bandspread)	25.86-24.79 Metres (approx.)
31 Metre Band,	9.4-9.8 Mc/s. (Bandspread)	31.91-30.61 Metres (approx.)
49 Metre Band,	5.95-6.25 Mc/s. (Bandspread)	50.42-48.0 Metres (approx.)

RECEIVER COVERAGE:—



MODEL — RK — IF = 455 Kc/s

VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC VACUUM TUBE VOLTMETER 235V. 50CYCLE AC INPUT TO POWER TRANS. 221-250V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED E.G. 1000Ω/VOLT OR 20,000Ω/VOLT

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:
Output Meter:
Mica Capacitor: 0.01MF (for IF. trans. alignment)
Dummy Antenna: 200MMF Mica capacitor
Dummy Antenna: 400 Ohm non-inductive resistor
Alignment Tools: Type M195 and PM581

ALIGNMENT CONDITIONS

Load Impedance: 5000 ohms.
Output Level: 50 Milliwatts
Vol. Control: Max. Vol. fully clockwise
Intermed. Freq.: 455 Kc/s.
Input Voltage: 230 Volts 50 Cycle AC. input to trans. 221-250 Volt pri. tap
Tone Control: Treble position

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver chassis from cabinet as detailed on page 4.			
2.	To control grid of 6BH5 2nd IF. valve pin No. 2	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn wave change switch to b/cast band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
3.	To control grid of 6AN7 valve, pin No. 2	455 Kc/s.	0.01 MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.

B/CAST AND S/WAVE ALIGNMENT

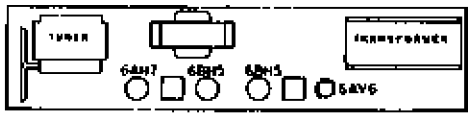
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm. tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200MMF mica capacitor in series with generator	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast oscl. coil trimmer cond., then peak b/cast antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band must be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.8 Mc/s. mark on the dial. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.
9.	To antenna lead	15.2 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for logging, then peak 19 metre antenna coil ind. trim (iron core) for max. output.
10.	To antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

PERM. TUNER SETTINGS

A. Both iron cores are pre-set at the factory to an exact dimension of 2.275" plus or minus .005" between the extreme end of the former protruding through the rubber grommet and the end of the iron core in the former when the unit spindle is turned so that the iron cores are out of the windings on the coil formers and the unit is hard against the stop.

B. The perm. tuner s/wave. tubular tuning condensers are set when the male section is meshed with the female tube section and the unit is hard against the stop. The end of the plastic insulating material on the male section is to be flush with the entrance end of the tube section.

C. If incorrect logging and mis-alignment are to be avoided, no alteration is to be made to vary the settings. Both iron cores in any one perm. tuner unit must have the same colour identification spot on the end of the iron core.



VALVE PLACEMENT DIAGRAM
1147/279

TRANSFORMER CONNECTIONS

B.CAST ANTENNA TRANS.

Start of winding – furthest from mounting end – Antenna.
Finish of winding – nearest to mounting end – Grid.

B.CAST OSCL. COIL.

Start of winding – furthest from mounting end – Oscl. plate.
Finish of winding – nearest to mounting end – Oscl. grid.

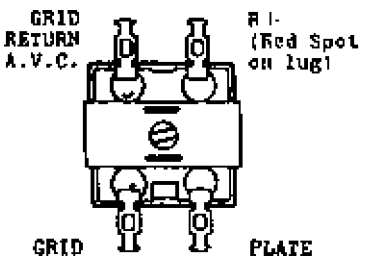
19, 25, 31 AND 49 METRE ANT. TRANS.

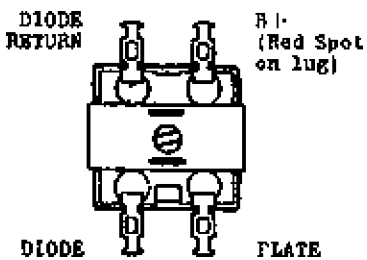
Lead from top lug (iron core end) :– GRID.
Lead from bottom lug (mounting end) :– CHASSIS – EARTH.

19, 25, 31 AND 49 METRE OSCL. COIL

Lead from top lug (iron core end) :– GRID.
Lead from bottom lug (mounting end) :– OSCL. PLATE COND.

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.





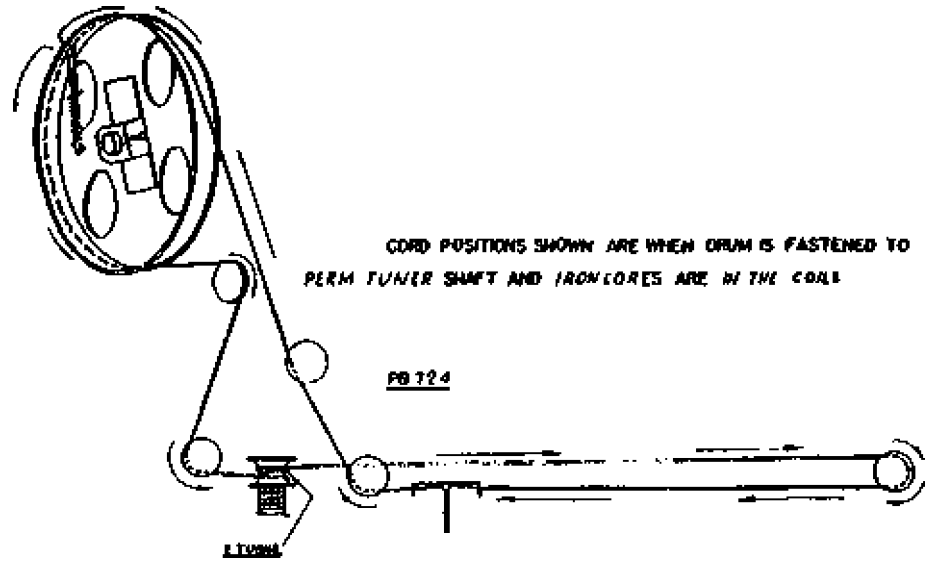
NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to exact dimensions. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

CORDING OF DIAL DRIVE

Length of cord required is 6 ft. 3 ins., which includes about 8 ins. to spare for tying to tension spring.
Cord Part No. 34/754.
Tension Spring Part No. 21/698.



INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE: The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200V. and 220V. on the 200-220V. tap and for any AC. voltage between 221V. and 250V. on the 221-250V. tap.
MAINS VOLTAGE ADJUSTMENT: For 200-220 volt operation:– the receiver chassis does not have to be removed from the cabinet for this adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET. Remove the cabinet base board by unscrewing the four rubber mount feet fastening the base to the cabinet. The AC. mains tap junction strip is located at the left hand end of the chassis. The mains lead wire from the switch on the volume control which is attached to the junction strip tap marked 221-250 volt is to be unsoldered from the 221-250 volt junction strip tap terminal and re-soldered to the junction strip tap marked 200-220 volt. Refit cabinet base board and rubber mount feet.

A70.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN: RQ-1
File: Receivers Portable.
Date: 15/11/55.
Page: 1.

MODEL "RQ" MIDGET PORTABLE

4-VALVE SUPERHETERODYNE

FOR OPERATION FROM:

1.5 Volts "A" battery (two 1.5 volt torch cells in parallel) and 67.5 Volts "B" battery.

POWER CONSUMPTION:

"A" Battery 250mA. "B" Battery. 10mA.

TUNING RANGE:

535 to 1610 Kilocycles. 560.7 to 186.3 Metres.

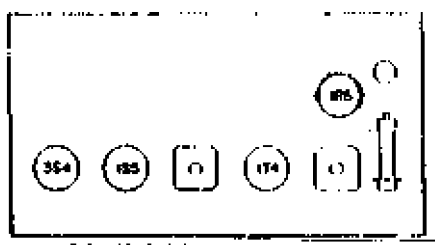
POWER OUTPUT:

180 milliwatts (max.).
100 milliwatts (undistorted).

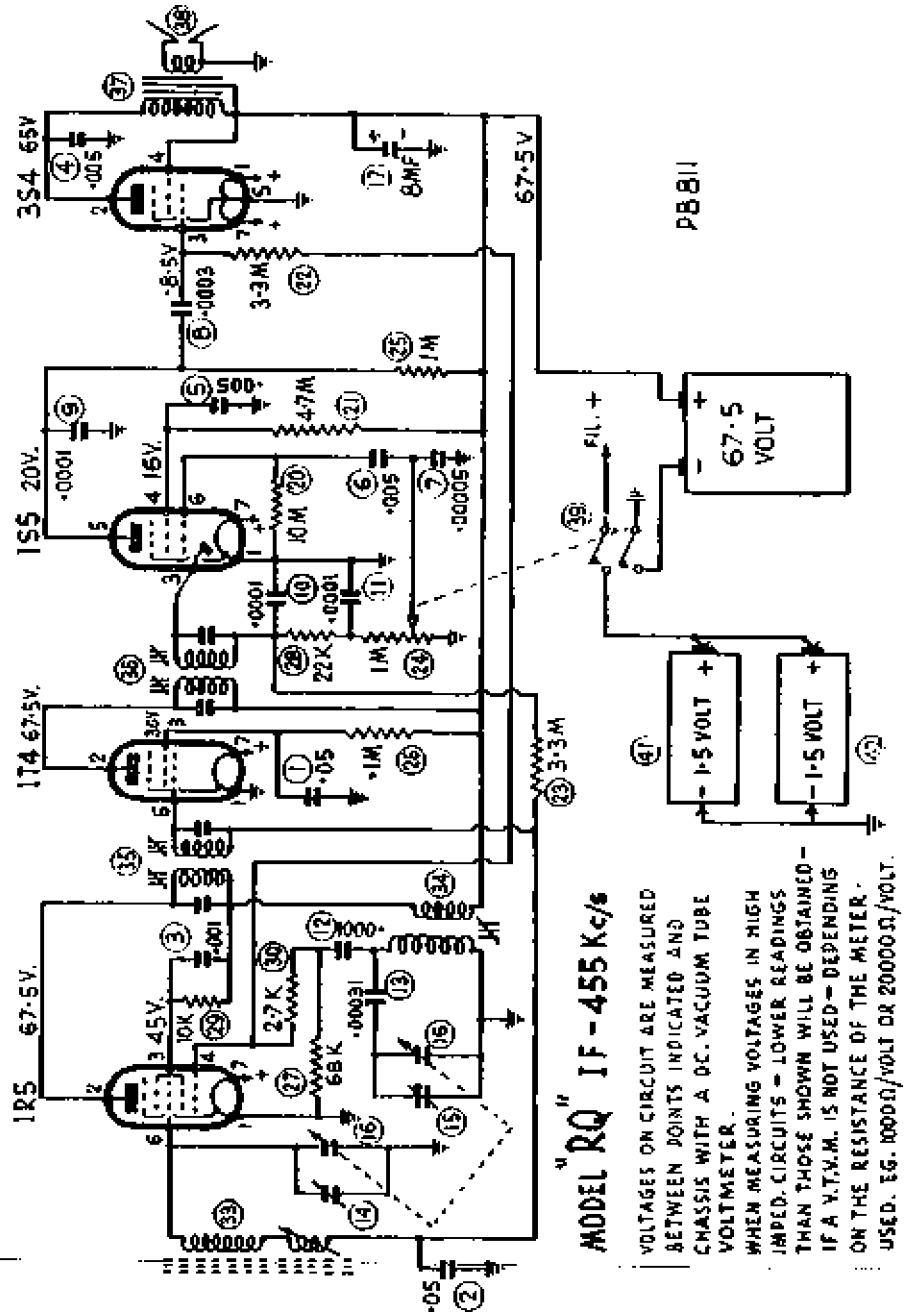
THIS BULLETIN CONTAINS:

Technical Data.
Alignment Procedure.
Circuit Diagram.

I.F. Transformer Connections.



VALVE PLACEMENT DIAGRAM #27/279

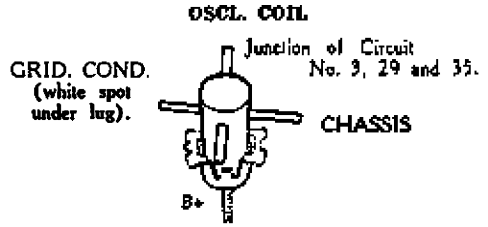


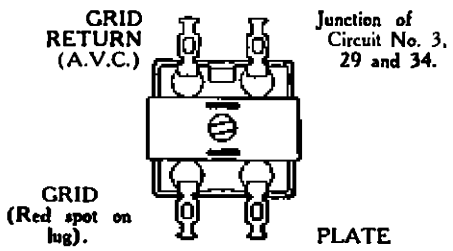
ROD AERIAL CONNECTIONS:

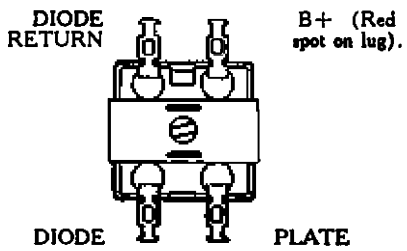
Fixed Winding: Lead from end turn furthest from movable winding—GRID.

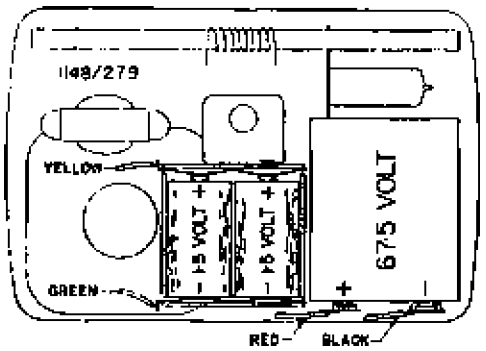
Movable Winding: Lead from end turn furthest from fixed winding—AVC.

The adjacent end turn leads of both windings are joined together as shown on the circuit diagram.









ALIGNMENT INSTRUCTIONS

EQUIPMENT	ALIGNMENT CONDITIONS
Signal Generator.	Load impedance: 5,000 ohms.
Output meter:	Output level: 6 milliwatts.
Mica Capacitor: 0.01 MF (P/No. PC145) for IFT Alignment.	Volume control: Max. volume (fully clockwise).
Alignment tools: PM581 and M399.	"A" battery 1.5 volts.
	"B" battery 67.5 volts.
	I.F. frequency 455 Kc/s.

I.F. TRANS. ALIGNMENT:

The receiver chassis has to be removed from the cabinet to align the I.F. Transformers.

A. Remove push-on volume knob and push-on clear dial cover knob.
B. Place receiver so that carrying handle is uppermost.
C. Gently press on top of cabinet near rear edge and prise top rear section away from front section.
D. Remove "B" battery and "A" battery box.
E. Remove battery box mount plate by unfastening screw fastening it in position.
F. Using a pair of long nose pliers, remove three speed nuts fastening chassis to cabinet by turning the speed nuts 90 deg. to their fastened positions.
G. Unsolder leads connected to speaker.
H. Lift up end of chassis furthest from speaker and withdraw chassis from cabinet.
I. Extend and reconnect leads to speaker.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To signal grid of 1T4 valve (pin No. 6).	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 2nd IFT pri. and sec. for max. output.
2.	To signal grid of 1R5 valve (pin No. 6).	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Peak 1st IFT pri. and sec. for max. output.
3.				Repeat operations Nos. 1 and 2.

BROADCAST ALIGNMENT:

A. Refit receiver chassis to front section of cabinet.
B. Refit dial reading and dial cover pointer knob.
C. DIAL POINTER SETTING: Fully mesh cond. gang plates and set centre of dial pointer on centre of end of travel spot on dial reading near 540 Kc/s. (The three screws which fasten the cond. gang to the chassis when loosened off allow the cond. gang to be moved to align the dial knob pointer to the end of travel spot on the dial.)
D. To inject a signal into the receiver rod aerial, connect to the active terminal of the signal generator approximately 2 ft. of aerial wire, then fashion the wire into a vertical position.
E. Place receiver chassis so that ferrite rod aerial is uppermost and horizontal, and so that the fixed secondary winding end of the ferrite rod points to the 2 ft. of vertical aerial wire. A distance of not less than 1 ft. is to be between the end of the ferrite rod and the 2 ft. of vertical aerial wire attached to the signal generator.

Oper. No.	Generator Connection	Generator Frequency	Instructions
1.	Refer para. D. and E.	600 Kc/s.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave cond. gang and dial pointer set in this position, then peak the oscl. coil ind. trim. (iron core) for max. output. Also peak the movable winding on the ferrite rod for max. output.

A71.

RADIO CORPORATION PTY. LTD.
DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

Bulletin: RR-1.
File: Receivers AC.
16-2-56.
Page 1.

MODEL — RR
GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 6 Valve Superheterodyne Dual Wave Receiver

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

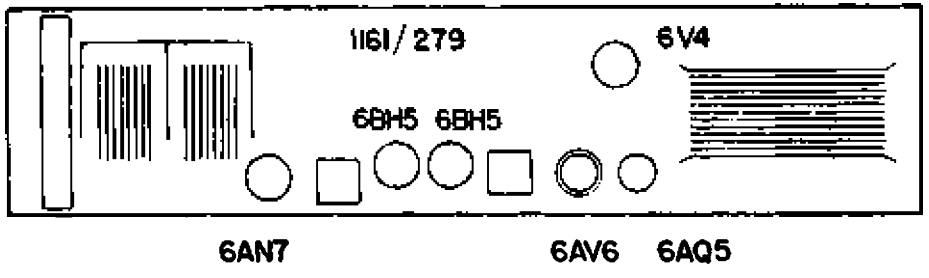
POWER CONSUMPTION:—

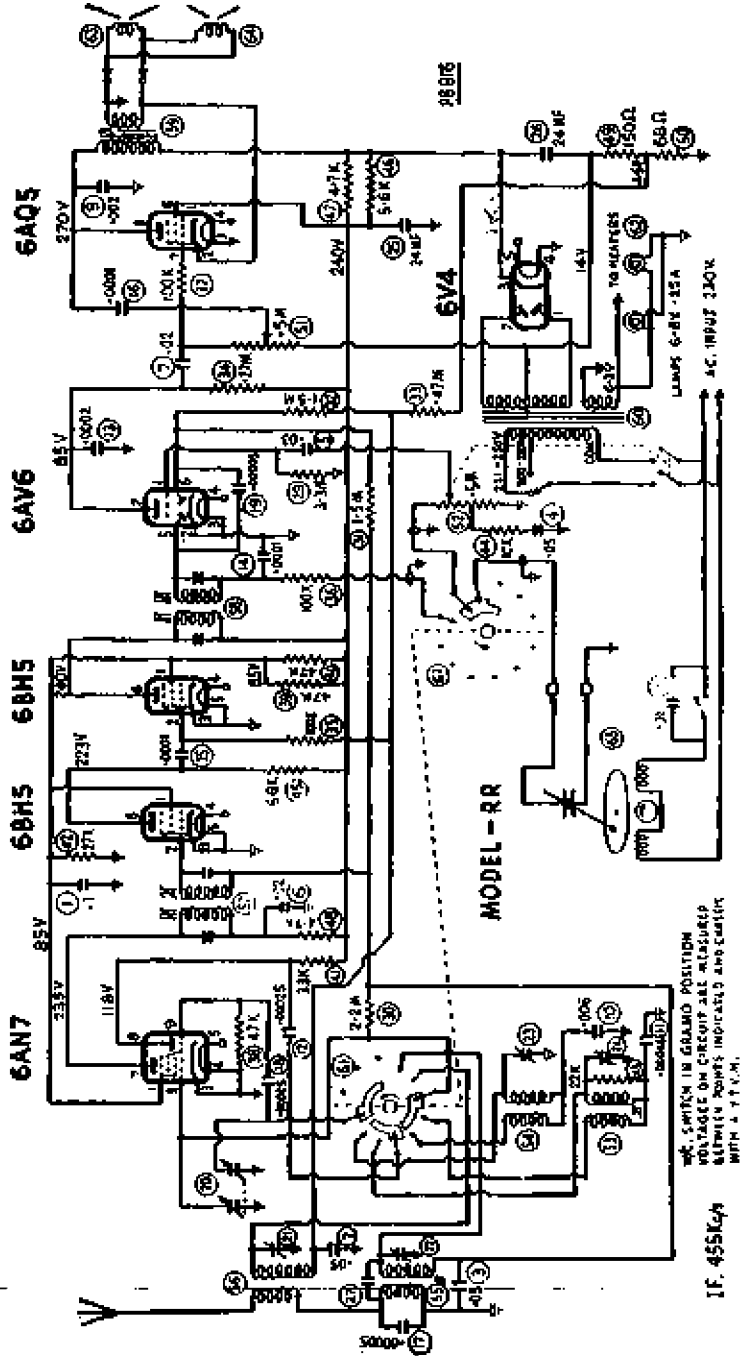
Radio Operation:—55 Watts.—approx.
Gramo Operation:—75 Watts.—approx.

TUNING RANGES:—

Broadcast Band: 535-1610 Kc/s. — 560.7-186.3 Metres.
Shortwave Band: 5.7-16 Mc/s. — 52.63-18.75 Metres approx.

THIS BULLETIN CONTAINS:—





ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator:		Load Impedance:	6,000 ohms.
Output Meter:		Output Level:	50 Milliwatts.
Mica Capacitor:	0.01MF. (for IF. trans. alignment)	Vol. Control:	Max. Vol. fully clockwise.
Dummy Antenna:	200MMF. Mica Capacitor	Intermed. Freq.:	455 Kc/s.
		Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Alignment Tools:	Type M195 and PM581.	Tone Control:	Treble position.

IF. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				Remove receiver chassis from cabinet as detailed on page 8.
2.				Connect speaker leads to speaker sockets.
3.	To control grid of 6BH5 2nd IF. valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn wave change switch to B/cast band position. Peak 2nd IF. trans. pri. and sec. for max. output.
4.	To control grid of 6AN7 valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
5.				Repeat operations No. 3 and 4.

B/CAST BAND ALIGNMENT

1. Fully mesh the cond. gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
2.	To antenna lead from receiver	600 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil inductance trim (iron core) for max. output.
3.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
4.	To antenna lead from receiver	600 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.
5.	To antenna lead from receiver	1400 Kc/s.	200MMF. Mica capacitor in series with generator	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and re-peak antenna trans. trim. condenser for max. output.

S/WAVE BAND ALIGNMENT

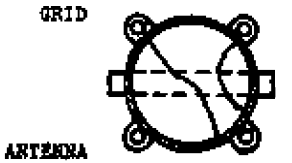
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.				Turn wave change switch to shortwave band position.
2.	To antenna lead from receiver	15 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn dial pointer and gang until centre of pointer aligns with centre of 15 Mc/s. spot on dial reading. Adjust shortwave oscl. coil trim. condenser for logging and peak shortwave antenna coil trimmer cond. for max. output.
3.	To antenna lead from receiver	8 Mc/s.	400 Ohm non-inductive resistor in series with generator	Turn dial pointer and gang until centre of dial pointer aligns with centre of 8 Mc/s. spot on dial reading and check tracking.

MAINS VOLTAGE TAP ADJUSTMENT:—

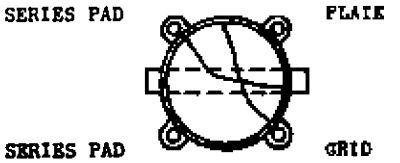
Mains Voltage. — The mains adjustment tap should be adjusted as follows:- For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

Mains Voltage Adjustment. — For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET AND REMOVE THE CHASSIS FROM THE CABINET AS DETAILED ON PAGE 8. The mains voltage junction strip is beneath power transformer end of chassis. The lead from volume control switch which is connected to 221-250 V. tap is to be unsoldered and re-soldered to the 200-220 V. tap.

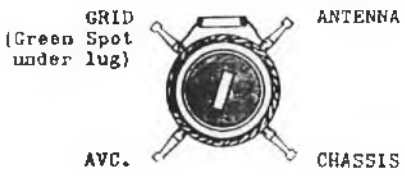
ANTENNA TRANS. S/WAVE



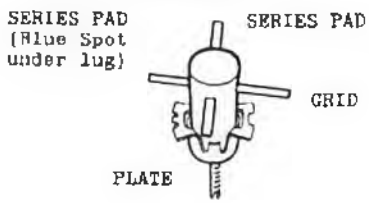
OSCL. COIL S/WAVE



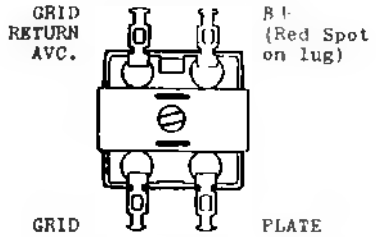
ANTENNA TRANS. B/CAST



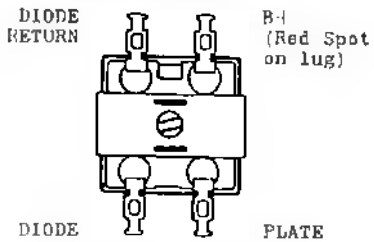
OSCL. COIL B/CAST



1st IF. TRANS.

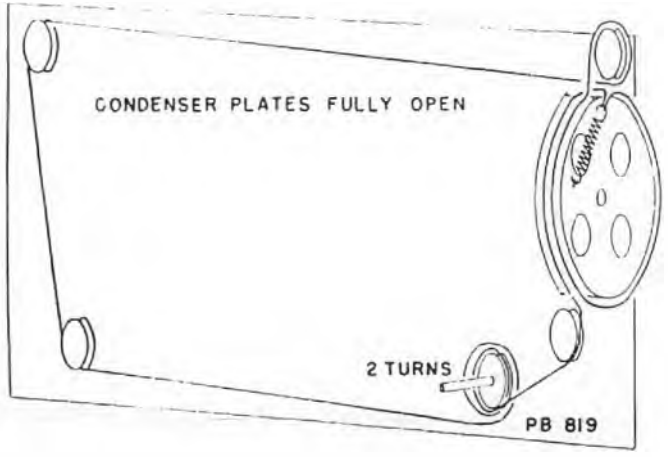


2nd IF. TRANS.



CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring. Cord Part No. 34/754. Tension Spring Part No. 21/698.

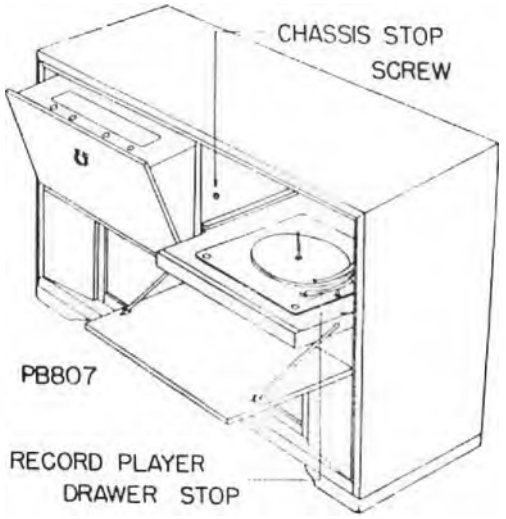


PROCEDURE FOR REMOVAL OF CHASSIS AND RECORD CHANGER FROM CABINET

Before carrying out any of the following operations, disconnect receiver from power point.

To Perform Service Operations on Chassis.

1. Remove screws holding lower end of pneumatic Dashpot. Accessible through open back of Cabinet.
2. Open Record Player Door and screw out Chassis stop screw (R.H. Florentine Bronze) from side of dividing wall. Hold Radio door closed whilst removing screw.
3. Lower the Radio compartment door to the horizontal position on to a suitable support. (Do not lower too far, as hinges will be strained.)



To Remove Chassis.

4. Unplug the Speaker and pick-up leads from Chassis. Free the aerial and earth. Remove Control Knobs. Unscrew power leads to Chassis and player at Junction Block.
5. Unplug indicator light lead from Chassis.
6. Remove 5 Dial retaining screws. Remove Dial which gives access to chassis mounting screws. Remove 4 Chassis Mounting screws and slide Chassis back.
7. Lift Chassis from Cabinet. To re-assemble, reverse above procedure.

Removal of Record Changer Unit.

8. Open Record Changer door and remove Chassis stop screw as described in No. 2 operation.
9. Lower Radio compartment door to gain access to junction block and Chassis.
10. Unscrew power lead from junction block. Disconnect pick-up leads from Chassis.
11. Open Record Changer door and remove Drawer pullarms. Lower door on to suitable support.
12. Remove draw stop screw.
13. Slide changer and drawer assembly free from Cabinet. To re-assemble, reverse the above procedure.

CLOCK RADIO MANTEL MODEL "SQ"

5 Valve Superheterodyne Broadcast Receiver.

For operation from:

200-250 Volt 50 Cycle AC. Supply Mains.

Power trans. primary mains taps: 200-220 volts and 221-250 volts.

Power Consumption 35.5 Watts Radio and Clock.
4.5 Watts Clock only.

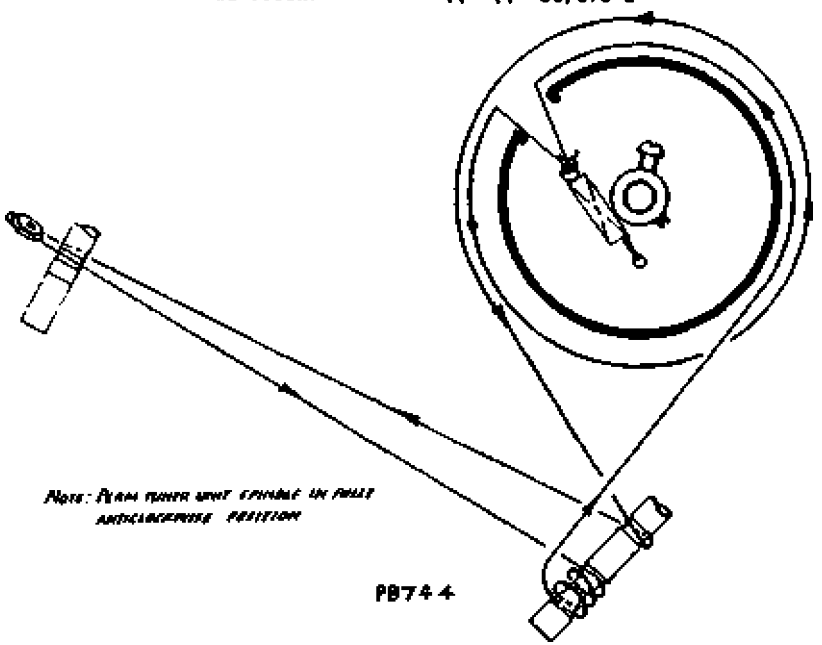
Tuning Range:

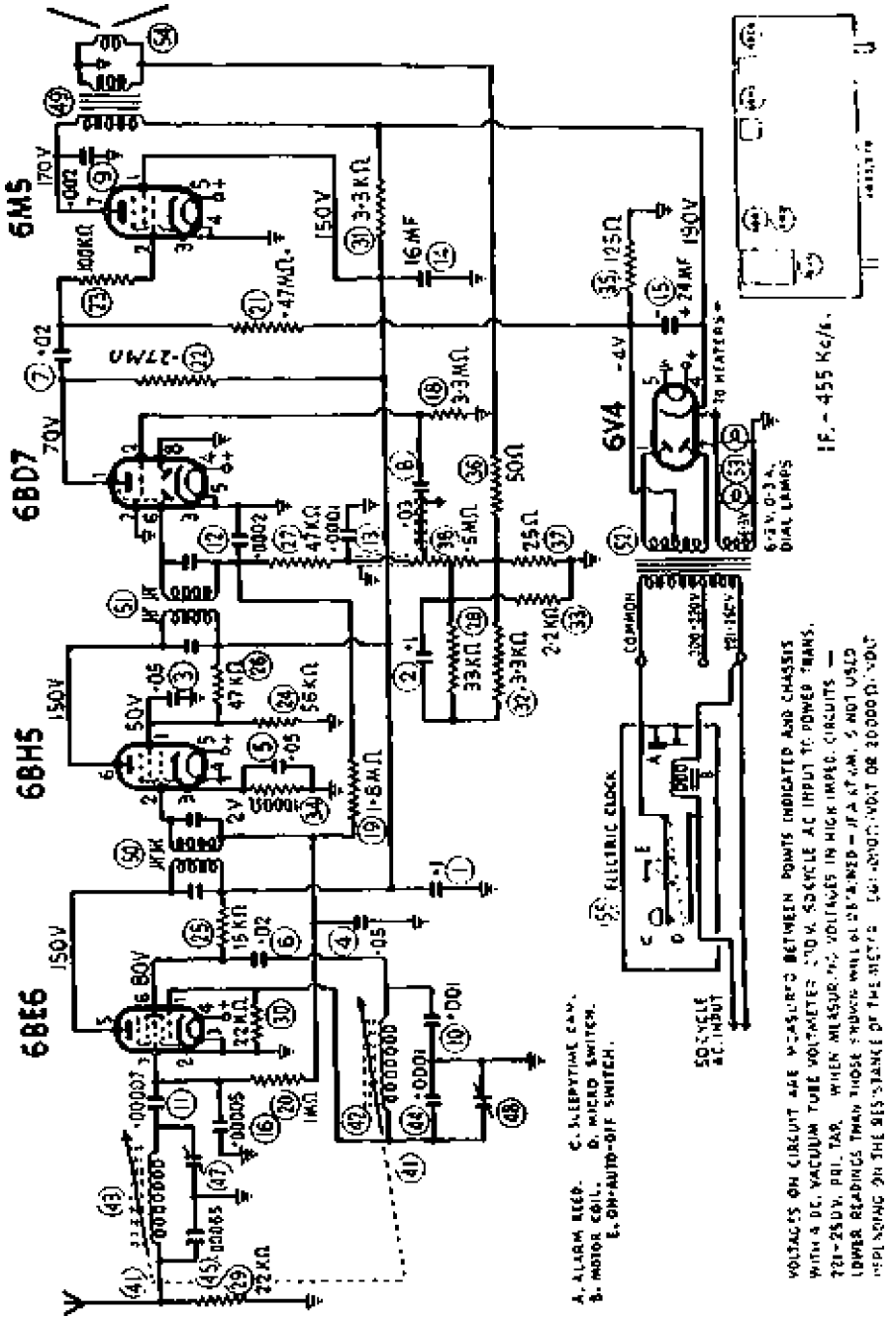
535-1640 Kc/s. : 560.7-182.9 Metres

DIAL DRIVE CORDING

The length of dial cord required is 4 ft. 6 ins. which includes 9 ins. spare for tying to the tension spring.

Dial cord	Part No.	34/754
Dial spring	.. ..	508/30C
Dial pointer assy.	.. ..	A101/785-2
Dial drum	.. ..	18/785
Brass collar	.. ..	56/678-1





ALIGNMENT PROCEDURE

EQUIPMENT		ALIGNMENT CONDITIONS	
Signal Generator	:	Load Impedance	: 7,000 ohms
Output Meter	:	Output Level	: 50 Milliwatts
Mica Capacitor	: 0.01MF (for I.F. trans. alignment)	Vol. Control	: Max. Vol. fully clockwise.
Dummy Antenna	: 200 MMF. Mica Capacitor	Intermed. Freq.	: 455 Kc/s.
Alignment Tool	: Type M195	Input Voltage	: 230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.

Dummy Antenna: The 200MMF. dummy antenna must not be connected to the free end of the 25 ft. antenna during alignment, but must be connected to the antenna junction lug on the chassis. It is not necessary to have the 25 ft. antenna connected to the receiver during alignment, if it is connected it should be rolled up into a small hank.

ALIGNMENT: The I.F. transformer variable iron cores and the trimmer condensers beneath the perm tuner are accessible when the rear section of the cabinet is removed from the front section.

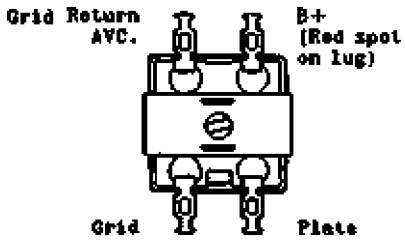
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	From each of the four corners of rear section of cabinet remove the screw and washer then prise the rear section of cabinet off the front section.			
2.	To signal grid of 6BH5 valve (pin No. 2)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01 MF mica capacitor in series with generator	Leave grid wire attached to valve socket. Turn perm tuner so that iron cores are fully out of windings on coil formers. Peak 1st IF trans. pri. and sec. for max. output.
4.				Repeat operations No. 2 and 3.
5.	DIAL POINTER: Turn perm. tuner so that iron cores are fully out of windings on the coil formers and hard against the stop. Set the centre of the dial pointer on the end of travel spot on the dial reading near 1700 Kc/s. From the front of the cabinet the dial pointer may be moved by prising out the spring clip at each end of the dial. Hold the tuning knob with one hand and with a pair of long nose pliers move the top of the dial pointer so that it slides on the dial cord.			
6.	To antenna junction lug on chassis	1000 Kc/s.	200 MMF mica capacitor in series with generator	Turn perm tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak oscl. coil trimmer condenser then peak antenna trans. trim. cond. for max. output. Repeak oscl. coil trim. cond.
7.	Tuning range after alignment 535 – 1640 Kc/s.			
8.	Check logging at each end of the dial; then refit rear section of the cabinet.			

NOTE: Both iron cores are pre-set at the factory to an exact dimension of 2.275" between the extreme end of the former protruding through the rubber grommet, and the end of the iron cores in the former, when the unit is turned fully clockwise and is hard against the stop.
If incorrect logging and mis-alignment are to be avoided, no adjustment of the iron cores must be made to vary this dimension. Both iron cores must have the same colour identification spot on the end of the iron core.

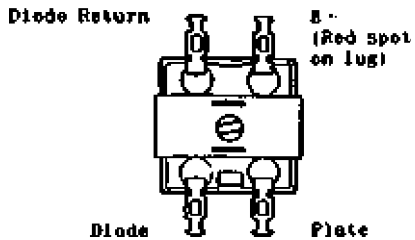
CHASSIS SERIAL NUMBER

The serial number is stamped into the rear edge of the metal chassis. The number is visible when the screw in each of the four rear corners of the cabinet is removed and the rear section of the cabinet is prised off the front section.

No. 1 IF. TRANS.



No. 2 IF. TRANS.



ANTENNA TRANS.

Start of winding – furthest from mounting end – Antenna.
Finish of winding – nearest to mounting end – Grid.

OSCL. COIL

Start of winding – furthest from mounting end – Junction of circuit Nos. 6 and 10.
Finish of winding – nearest to mounting end – Oscl. grid.

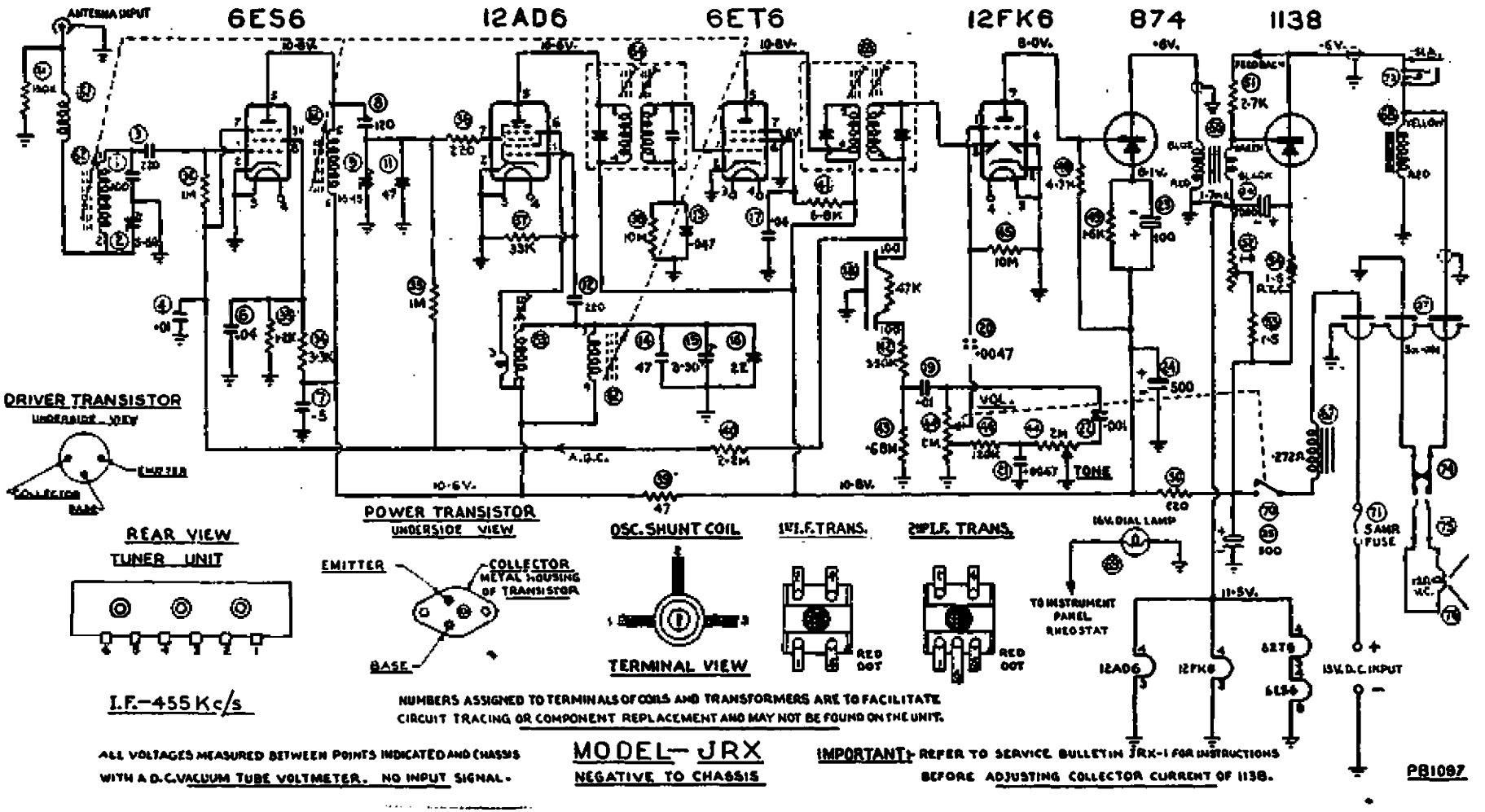
POWER TRANS.

(PT938) 50 cycle

Pri. red lead – common
,, green lead – 200-220V.
,, black lead – 221-250V.

HT. Sec.
blue lead – start
yellow lead – centre tap
blue lead – finish

LT. Sec. (two windings in parallel)
start and finish
in winding wire



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 WITH A D.C. VACUUM TUBE VOLTMETER. NO INPUT SIGNAL.

MODEL— JRX

NEGATIVE TO CHASSIS

IMPORTANT:- REFER TO SERVICE BULLETIN JRX-1 FOR INSTRUCTIONS BEFORE ADJUSTING COLLECTOR CURRENT OF 1138.

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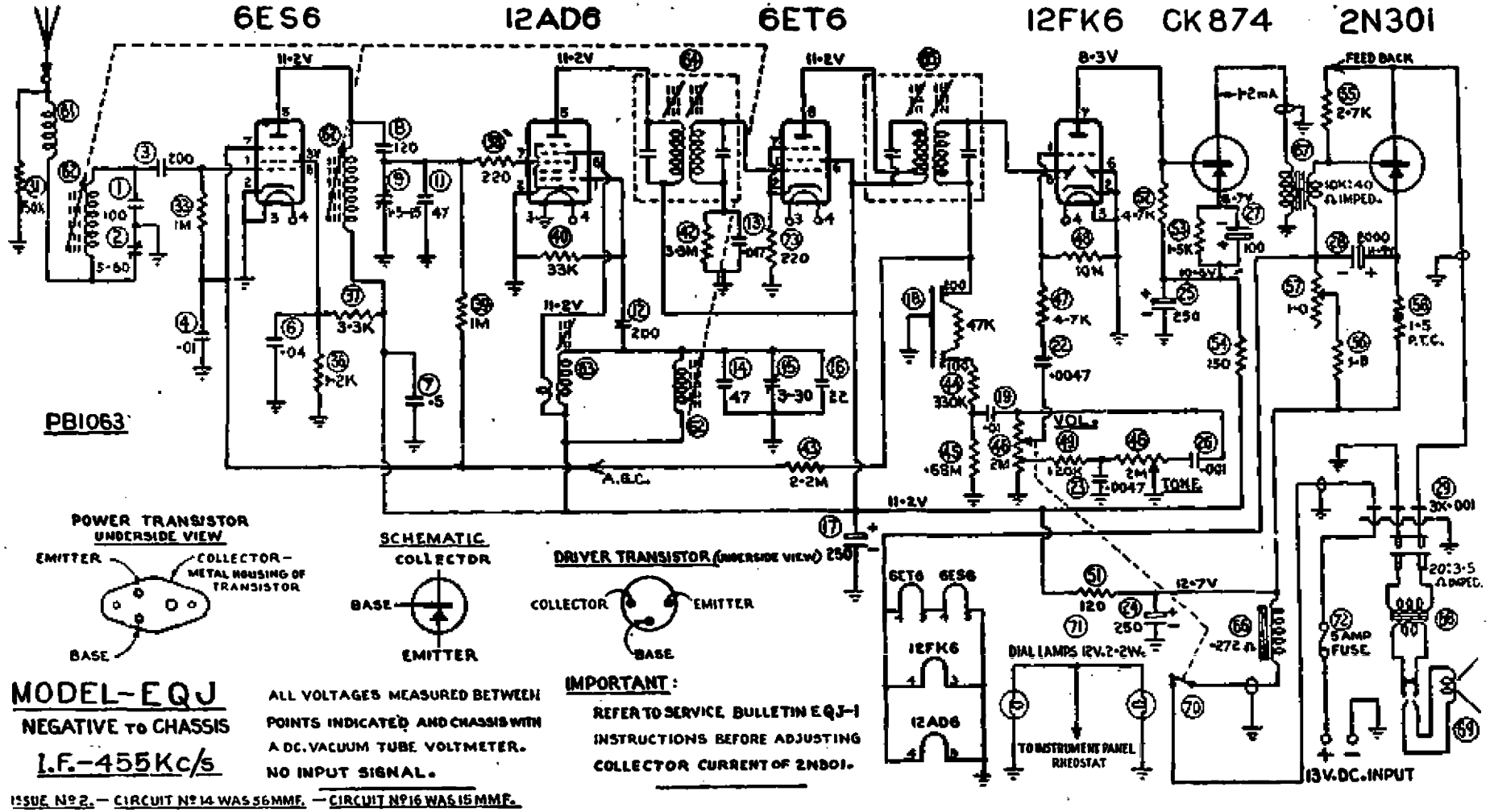


MODEL-EQJ

NEGATIVE to CHASSIS

I.F.-455Kc/s

ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC. VACUUM TUBE VOLTMETER. NO INPUT SIGNAL.

IMPORTANT:

REFER TO SERVICE BULLETIN EQJ-1 INSTRUCTIONS BEFORE ADJUSTING COLLECTOR CURRENT OF 2N301.

ISSUE No 2. — CIRCUIT No 14 WAS 56MMF. — CIRCUIT No 16 WAS 15 MMF.

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

SERVICE BULLETIN

Bulletin: JQV–1
File: Receivers Auto
Date: 26-11-60
Page: 1

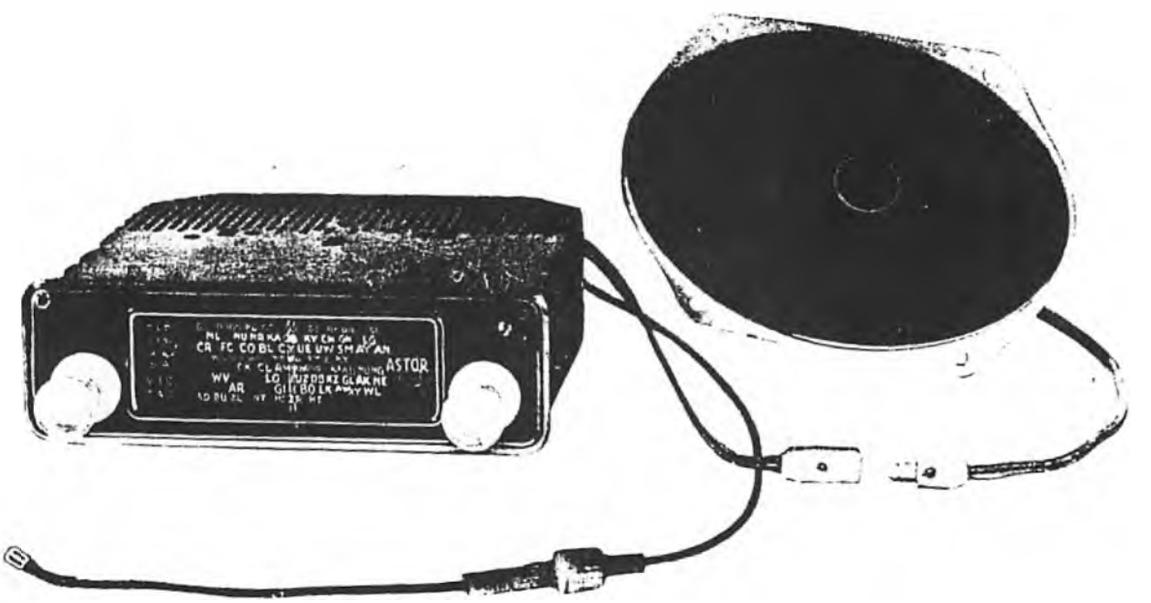
MODEL "JQV"

6 VOLT CAR RADIO RECEIVER (Hybrid) Manual Tuning

ESPECIALLY DESIGNED FOR TAILORED FITTINGS

(Vehicle battery negative terminal connected to chassis)

ILLUSTRATION IS FITTING FOR VOLKSWAGEN SEDAN



SERVICE INSTRUCTIONS (Electrical)

Alignment Instructions.

Receiver Servicing Precautions.

SERVICE INSTRUCTIONS (Mechanical)

Receiver Serial Number.

IF. & RF. Transformer Connections.

Valve and Transistor Placement Diagram.

Dial Cording Diagram.

Circuit Diagram.

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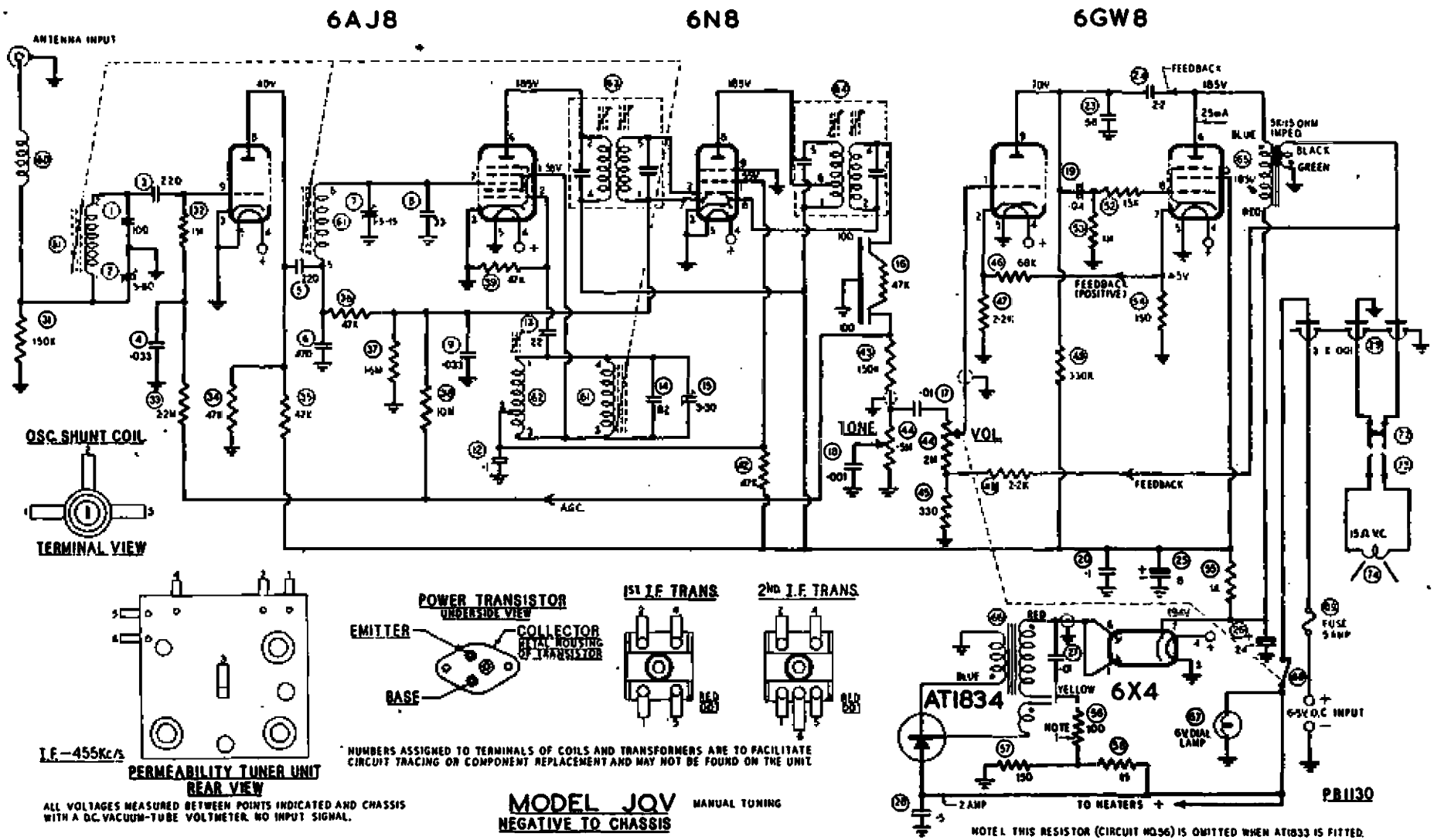

ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM-TUBE VOLTMETER. NO INPUT SIGNAL.

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

MODEL JQV

MANUAL TUNING

NEGATIVE TO CHASSIS

NOTE I. THIS RESISTOR (CIRCUIT NO.56) IS OMITTED WHEN AT1833 IS FITTED.

ELECTRONIC INDUSTRIES LTD.
CAR RADIO DIVISION
ASTOR HOUSE, 161-173 STURT ST., SOUTH MELBOURNE, S.C.4

SERVICE DATA

MODEL "GJL"

SUMMARY OF PRODUCTION CHANGES

POLARITY PLUGS

The Part Numbers of the polarity plugs have been changed.
Plug - positive to chassis A105/397 Plug - negative to chassis A104/397

1 OHM RHEOSTAT - CIRCUIT NO. 56

1 ohm rheostat Part No. R120, has been changed to 1 ohm rheostat Part No. R198.

3.3M OHM RESISTOR - CIRCUIT NO. 41

To stabilize the gain of the I.F. stage the 10M ohm resistor has been changed to 3.3M ohm ± 10% ½W Part No. R3352

TUNER UNIT CHANGED

Receiver produced on chassis which have a formed base plate are fitted with tuner units Part No. L487 in place of tuner unit L350.
The difference between the two tuners is the fitting of a spacer block Part No. 747/81 to the mount face of L487.

OSCILLATOR TUNING CONDENSERS

The parallel combinations of 47pF/22pF and 56pF/15pF condensers have been changed to a single condonser 68pF ±5% 350V DCW Part No. C435.

SPEAKER TRANSFORMER - 20:3.5 OHM IMPEDANCE

Transformer Part No. T246 is to be used as a replacement for T222. This applies to early production receivers which were designed to operate speakers with 3.5 ohm voice coils.

SPEAKER TRANSFORMER - 20:15 OHM IMPEDANCE

To conform with other model car radio receivers, current production 'GJL' receivers are fitted with 20:15 ohm impedance output transformer, Part No.R268

15 OHM VOICE COIL IMPEDANCE SPEAKERS

With the use of 20:15 ohm impedance transformers the following list of part numbers is for speakers which have a voice coil impedance of 15 ohms.

5" dia. type 5F00/87/15	K239
5" x 4" type 54C00/83/15	K251
6" dia. type 6M00/80/15	K236
6" dia. type 6H00/79/15	K237
6" x 4" type 64S1	4056-014-02
6" x 4" type 64S2	4056-014-01
7" x 5" type 75L00/46/15	K249
7" x 5" type 75H00/46/15	K247
8" dia. type 8M00/59/15	K238
9" x 6" type 96L00/69/15	K234
9" x 6" type 96H00/72/15	K233
10" x 3" type 103G05/14/15	K235

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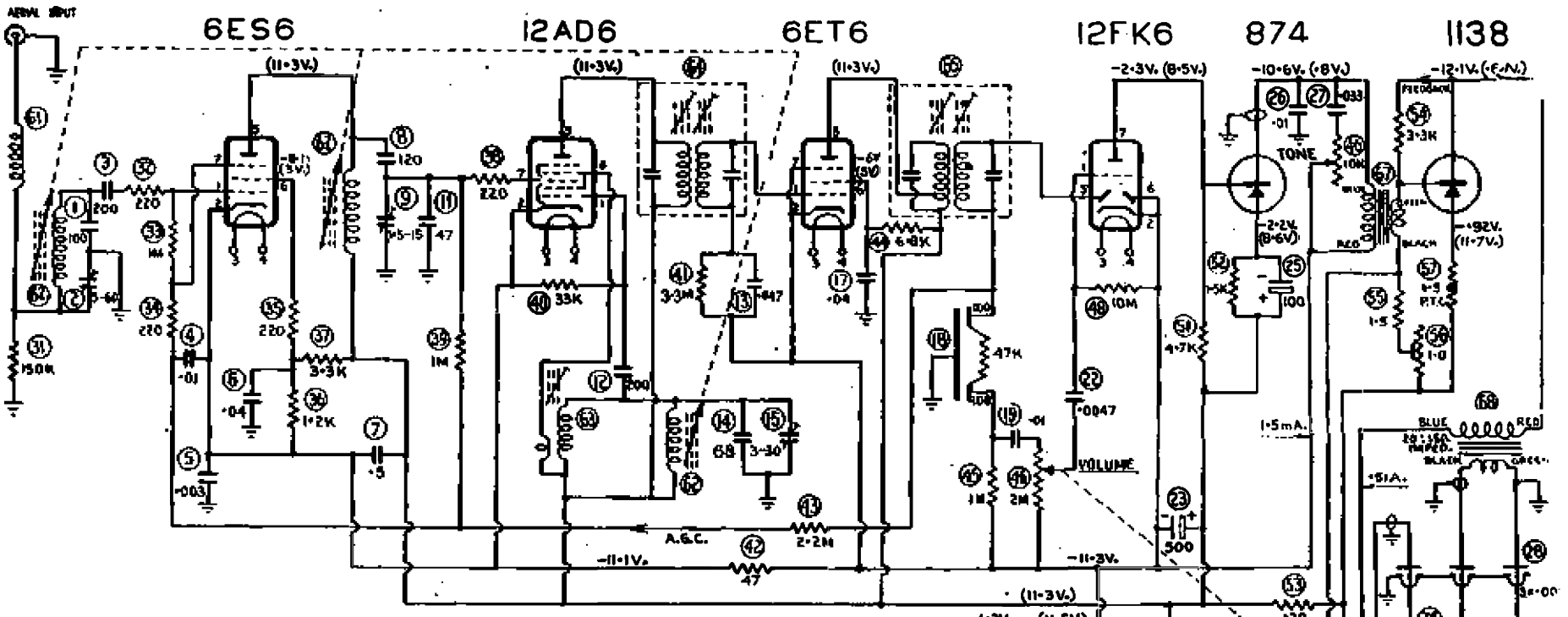

I.F.-455 Kc/s

MODEL-GJL ISSUE 3

POSITIVE OR NEGATIVE TO CHASSIS

CORRECT POLARITY PLUG MUST BE INSERTED INTO SOCKET BEFORE RECEIVER IS CONNECTED TO BATTERY.

ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A VACUUM TUBE VOLTMETER. NO INPUT SIGNAL. VOLTAGE READINGS IN BRACKETS REFER TO NEGATIVE CHASSIS CONDITIONS.

IMPORTANT:

REFER TO SERVICE BULLETIN GJL-1 INSTRUCTIONS BEFORE ADJUSTING COLLECTOR CURRENT OF 1138.

TYPE OUTPUT TRANSFORMER SECONDARY IMPEDANCE WAS 3·5 OHMS. - CIRCUIT NO 41 WAS 10 K OHMS. - CIRCUIT NO 14 WAS 47 - CIRCUIT NO. 16 DELETED - CIRCUIT NO 17 WAS ·047 -