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

Bulletin: QS-1.
File: Receivers AC.
16-4-52.
Page 1.

TECHNICAL BULLETIN

MODEL—"QS"

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.

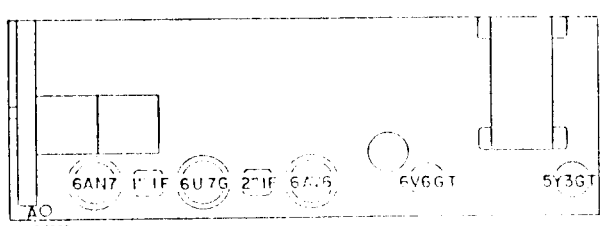
TUNING RANGES:—

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.)

RECEIVER COVERAGE:—

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.



VALVE PLACEMENT DIAGRAM

ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS

Load Impedance: 5,000 ohms.
Output Level: 50 Milliwatts.
Vol. Control: Max. Vol. fully clockwise.
Tone Control: 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: 0.01 MF. (For I.F.T. alignment).
Dummy Antenna: 200MMF. Mica capacitor.
Dummy Antenna: 400 ohm. non-inductive resistor.
Alignment Tools: Type M105 and EM581.

It is not necessary to remove the chassis from the cabinet to re-align the receiver or to check the components on the underside of the chassis. Access to the rear of the chassis is obtained by removing the cabinet back. Access to the underside of the chassis is obtained by pulling the record changer section forward and opening the left and right hand doors. From each of the front top centre corners of the cabinet remove a wood screw then remove the top front section of the cabinet by pressing it downwards. Remove plate covering underside of chassis.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G valve.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn gang 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 lead 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 1400 Kc/s. Condenser gang plates fully meshed.
5.	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 osc. coil. ind. trim. (trim core) for max. output.
6.	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 osc. coil trim. condenser Rock gang and peak B/cast ant. trans. trim. condenser for max. output.

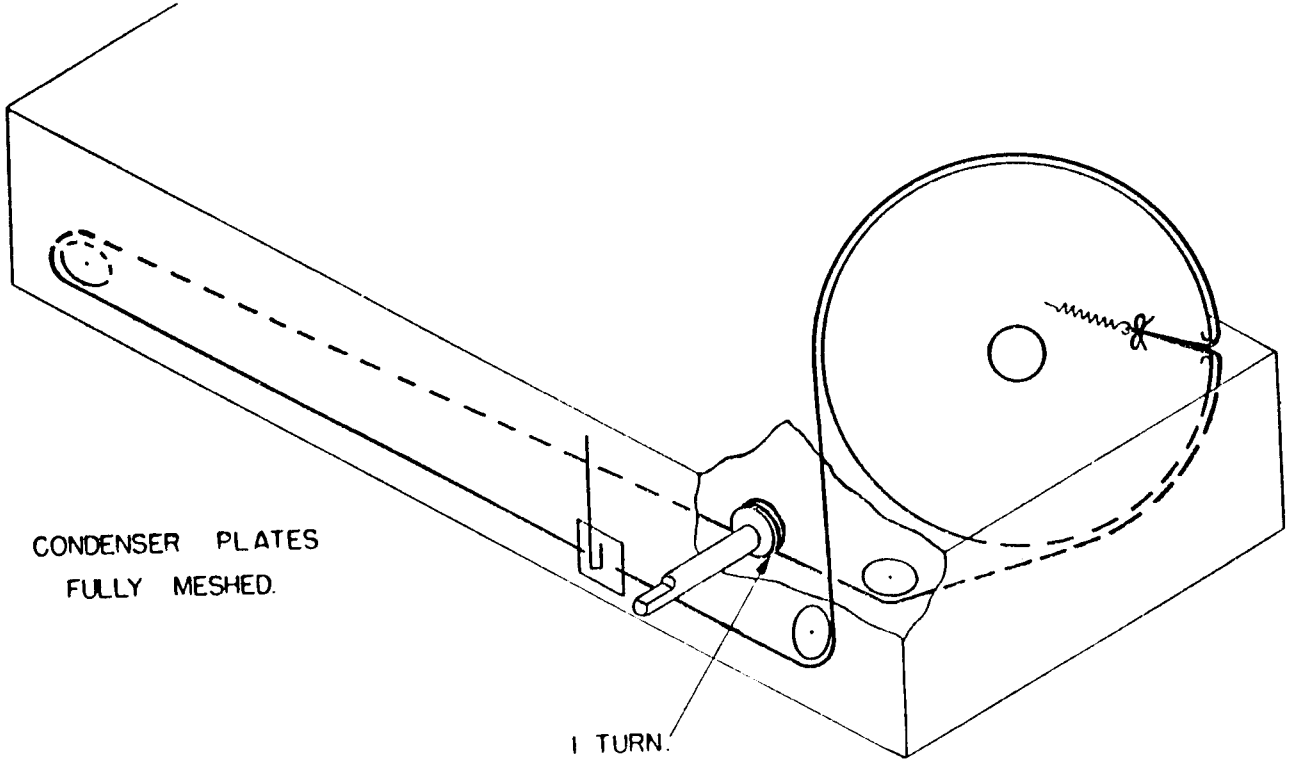
Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
7.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial spot. Leave the gang and dial pointer set in this position and re-peak the B/cast oscl. coil. ind. trim. (iron core) for max. output, then peak the B/cast antenna trans. ind. trim. (iron core) 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. trim. (iron core) of both of these transformers has been peaked for max. output.
8.	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. trans. trim. cond. 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.	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 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. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12.	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. 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.			

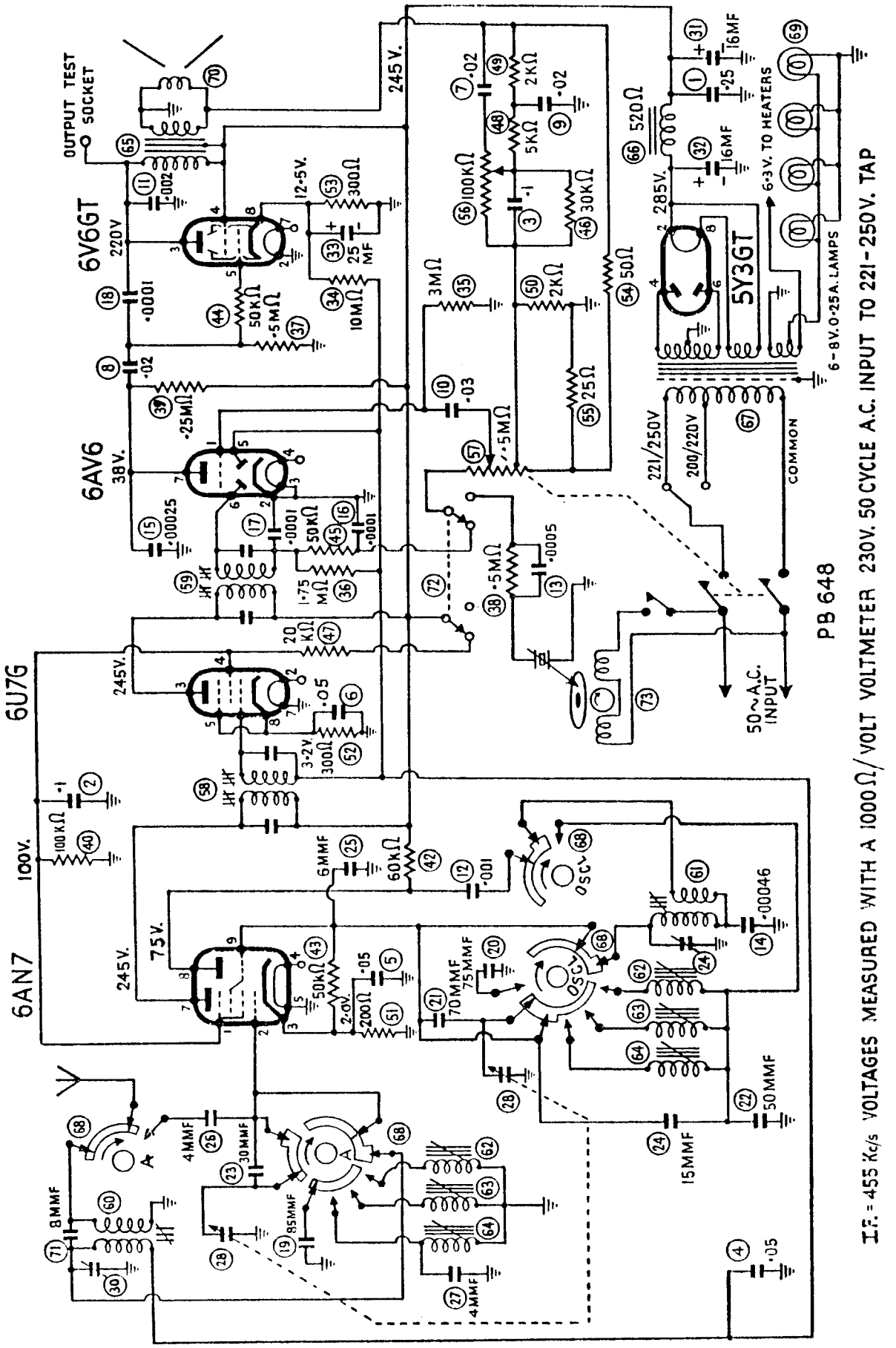
CORDING OF DIAL DRIVE.

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. 7/282.

Tension Spring Part No. 21/698.

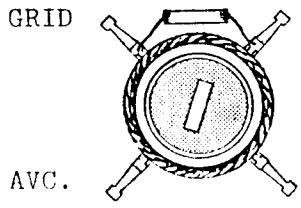



OUTPUT TEST SOCKET
6V6GT
6AV6
6U7G
6AN7
5Y3GT
245 V.
220V
38 V.
245V.
100v.
75 V.
285V.
6·3 V. TO HEATERS
6-8V.0·25A. LAMPS
221/250V
200/220V
COMMON
50~A.C. INPUT
PB 648
OSC
A
I.F. = 455 Kc/s VOLTAGES MEASURED WITH A 1000Ω/VOLT VOLTMETER 230V. 50 CYCLE A.C. INPUT TO 221-250V. TAP

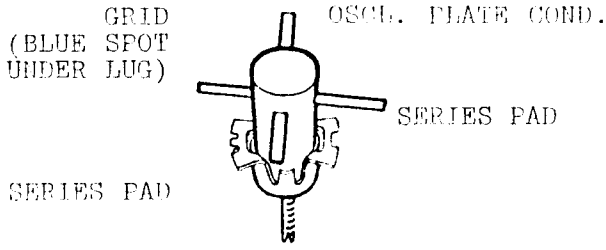
Circuit No.	Description.	Tol.±	Rating.	Part No.
1.	.25 MFD Paper Condenser.	20%	400V.DCW.	PC128
2.	.1 MFD Paper Condenser.	20%	400V.DCW.	PC103
3.	.1 MFD Paper Condenser.	20%	200V.DCW.	PC218
4.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
5.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
6.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
7.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
8.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
9.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
10.	.03 MFD Paper Condenser.	20%	200V.DCW.	PC303
11.	.002 MFD Paper Condenser.	20%	600V.DCW.	PC112
12.	.001 MFD Mica Condenser.	10%	1000VT.	PC108
13.	.0005 MFD Mica Condenser.	10%	1000VT.	PC144
14.	.00046 MFD Mica Condenser.	2½%	1000VT.	PC728
15.	.00025 MFD Mica Condenser.	10%	1000VT.	PC126
16.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
17.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
18.	.0001 MFD Mica Condenser.	10%	1000VT.	PC571
19.	85 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC809
20.	75 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC871
21.	70 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC799
22.	50 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC801
23.	30 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
25.	6MMFD Silvered Mica Condenser	+1MMFD-0	1000VT.	PC814
26.	4MMFD Ceramicon Condenser	+1MMFD-0	500V.DCW.	PC830
27.	4 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
28.	2 Gang Varb. Condenser.			PC636
29.	0-30 MMFD Trimmer Cond. Wire Wound.			PC663
30.	1.5-18 MMFD Trimmer Condenser.			PC250
31.	16 MFD E'lytic. Cond. Tol.+ 20% 525PV.	Combination type.		PC760
32.	16 MFD E'lytic. Cond. Tol.+ 20% 525PV.			
33.	25 MFD E'lytic. Cond. Tol.+ 20% 40PV.			
34.	10 Megohm Carbon Resistor.	10%	1 W.	PR236
35.	3 Megohm Carbon Resistor.	10%	½ W.	PR282
36.	1.75 Megohm Carbon Resistor.	10%	½ W.	PR248
37.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
38.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
39.	.25 Megohm Carbon Resistor.	10%	1 W.	PR496
40.	100,000 ohm Carbon Resistor.	10%	1 W.	PR165
41.				
42.	60,000 ohm Carbon Resistor.	10%	1 W.	PR415
43.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
44.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
45.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
46.	30,000 ohm Carbon Resistor.	10%	½ W.	PR151
47.	20,000 ohm Carbon Resistor.	10%	1 W.	PR171
48.	5,000 ohm Carbon Resistor.	10%	½ W.	PR250
49.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
50.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
51.	300 ohm Carbon Resistor.	10%	½ W.	PR258
52.	300 ohm Carbon Resistor.	10%	½ W.	PR258
53.	500 ohm Wire Wound Resistor.	10%	1 W.	PR122
54.	50 ohm Wire Wound Resistor.	10%	½ W.	PR280
55.	25 ohm Wire Wound Resistor.	10%	½ W.	PR281
56.	100,000 ohm Potentiometer.	20%		PR699
57.	500,000 ohm Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR662
58.	IF. Transformer.			PT869
59.	IF. Transformer.			PT869
60.	Antenna Trans. P/cast. (iron cored).			PT905
61.	Osc1. Coil P/cast.			PT860
62.	19 Metre Bandspread Coil (blue spot on coil).			PT914

Circuit No.	Description	Tol.±	Rating.	Part No.
63.	25 Metre Bandspread Coil (White spot on coil).			PT913
64.	31 Metre Bandspread Coil (red spot on coil).			PT912
65.	Speaker Input Trans. 5,000-2 ohms Imped. KBG81			PT799
66.	Choke, 14H, 60 Ma.			PT806
67.	Power Transformer, 200-250 Volt 50 cycle mains.			PT807
	Power Transformer, 200-260 Volt 40 cycle mains.			PT809
68.	Wave change switch.			S169
69.	Dial Lamp, 6.3V. 0.25A. Min. Screw Base, T 3¼ Bulb.			PM678
70.	12" Permag. Speaker, type 12M magnet.			K172
	12" Permag. Speaker, type 12K magnet.			K172-1
71.	8MMFD (Part of antenna coil circuit No. 55).			PC825
72.	Change-over switch gramo-radio.			S176
Valve Shield (6U7G)				PM217
Antenna Terminal				PM306
8-Pin Socket				PM532
7-Pin Socket				A104/58
9-Pin Socket				279/250
73.	Record Changer: Collaro 3-speed type 3RC511 (less plug-in heads), 200-250 Volt 50 cycle			M279
40 Cycle Drive Bush for Collaro 3RC511 Changer				213/524
Replacement pick-up Head 78 r.p.m. - Green spot				196/524
Replacement pick-up Head 33-1/3, 45 r.p.m. - Red spot				197/524
I.F. Transformer Mount Clip				7/760
Coil Mount Clip				6/622
Indicator Light Button - Red				27/688-1
Indicator Light Button - Clear				27/688-3
Indicator Light Button - Blue				27/688-4
Indicator Light Button - Green				27/688-2
Knob (2) top knob on dial				167/81
Knob (2) on-side of cabinet				178/81
Knob - Retaining Clips				22/755
Knob - Gramo-Radio Change-Over				4/310-1
Dial Escutcheon - Moulded				202/81
Dial Reading				21/760
Dial Reading Clamp				15/760
Dial Background Assembly				A104/760
Dial Pointer Assembly				A102/760
Dial Drum				A104/698
Dial Cord 5 ft. 6 ins.				7/282
Dial Cord Spring				21/698
Speaker Lead Clip Term. Strip Assembly				A105/698
Dial Lamp Socket Assembly (3)				A105/661
Indicator Lamp Socket and Arm Assembly - on W/C Switch				A110/698
Basket Weave - Speaker Grille				5/760
Pulley - Small				17/87
Pulley - Large				13/613
Screw (4), Speaker Mount				46/560-10
Screw (4), Chassis to Cabinet Mount				16/560-8
Screw (8), cabinet back to cabinet				17/560-10
A.C. Lead Junction Block - Moulded Type				297/250
Cabinet - Walnut colour				219/221-5
Cabinet - Honey colour				219/221-6
Cabinet - Mahogany Colour				219/221-7
Cabinet - Honey Blonde Colour				219/221-8
Cabinet handles - specify colour				213/221

ANTENNA TRANS. B/C.



OSCL. COIL B/C.



19, 25 and 31 METRE ANT. TRANS.

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

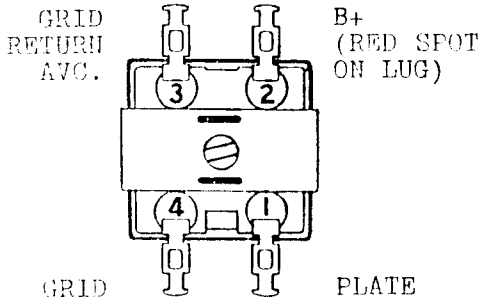
Lead from bottom lug (mounting end):—CHASSIS - EARTH.

19, 25 and 31 METRE OSCL. COIL

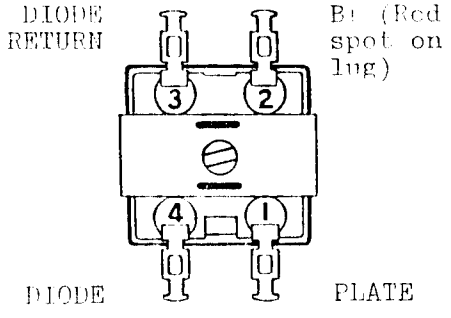
Lead from top lug (iron core end):—
GRID.

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

1st IF. TRANS.



2nd IF. TRANS.



INSTRUCTIONS FOR CHANGING MAINS INPUT VOLTAGE TAPS.

MAINS VOLTAGE:

The mains 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.

Mains Voltage Adjustment:

For 200-220 Volt Operation:—The receiver chassis does not have to be removed from the cabinet for this adjustment. DISCONNECT THE RECEIVER FROM THE MAINS POWER POINT. Pull the record changer forward and open the left and right-hand doors. Remove a wood screw from each of the front top centre corners of the cabinet then remove the front top section of the cabinet by pressing it downwards. Remove plate covering underside of chassis. Unsolder the mains lead wire from the switch on the volume control which is attached to the 221 volt tap and resolder it to the 200 volt tap. Refit front of cabinet in exact reverse procedure to removing it.

INSTRUCTIONS FOR REMOVING CHASSIS FROM CABINET.

It is not necessary to remove the chassis from the cabinet to re-align the receiver or to check the components on the underside of the chassis. Access to the rear of the chassis is obtained by removing the cabinet back. Access to the underside of the chassis is obtained by pulling the record changer section forward and opening the left and right hand doors. From each of the front top centre corners of the cabinet remove a wood screw then remove the top front section of the cabinet by pressing it downwards. Remove plate covering underside of chassis.

Should it be required to remove the chassis from the cabinet the following instructions should be carefully adhered to.

1. Remove all knobs (5) from control shafts.
2. Remove dial retaining cups by turning them anti-clockwise.
3. Remove cabinet back from cabinet.
4. Remove gramo radio/change-over switch from side of cabinet.
5. Remove pick-up leads from single pin sockets beneath motor board.
6. Unfasten speaker leads from lead clips on chassis.
7. Unfasten receiver A.C. leads from mains junction block.
8. Remove wave change and tone control extension spindles.
9. Lay the cabinet face downwards on a thick cushion so that the top front edge of the cabinet is raised about 18 inches. From the rear of the cabinet push the record changer section forward —about half out of the cabinet.
10. Remove two screws from each end of the chassis front bracket and two screws from each end bracket. These screws are the ones which hold the brackets to the cabinet. Do not remove the screws which fasten the brackets to the chassis.
11. Bend over the top of the cabinet and move the chassis toward the record changer. Tilt the right hand end of the chassis upward until the chassis is diagonally across the cabinet then gradually move the chassis to the right and bring the back of the chassis up out of the cabinet.