



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.A.

TECHNICAL BULLETIN

Bulletin: HQQ-1.

File: Receivers AC.

24-11-52.

Page 1.

MODEL—"HQQ"

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33 $\frac{1}{2}$ 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.

19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)

25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)

31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)

RECEIVER COVERAGE:—

560.7-186.3 Metres.

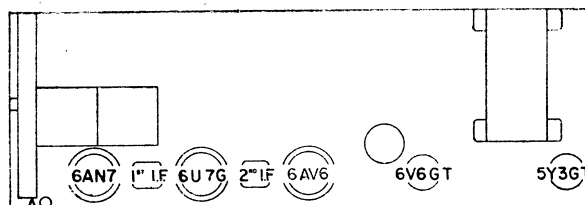
20.13-19.29 Metres (approx.)

25.86-24.79 Metres (approx.)

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.



758/279

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 M195 and PM581.

The receiver chassis has to be removed from the cabinet to align the trimmers of the RF. and IF. circuits. Remove the four push-on type control knobs from front of cabinet and wave change switch knob near record changer by pulling the knobs straight off their spindles. Remove the screws holding the change-over switch bracket to the cabinet. Disconnect the receiver chassis AC. 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 beneath the receiver chassis mount board then slide the chassis out of the cabinet.

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 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 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 540 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 oscl. coil. ind. trim. (iron 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 oscl. coil trim. condenser for logging and peak B/cast ant. trans. trim. condenser for max. output.

- | | | | | |
|-----|---|------------|--|--|
| 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. | | | |

BANDSPREAD COIL IDENTIFICATION MARKS

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

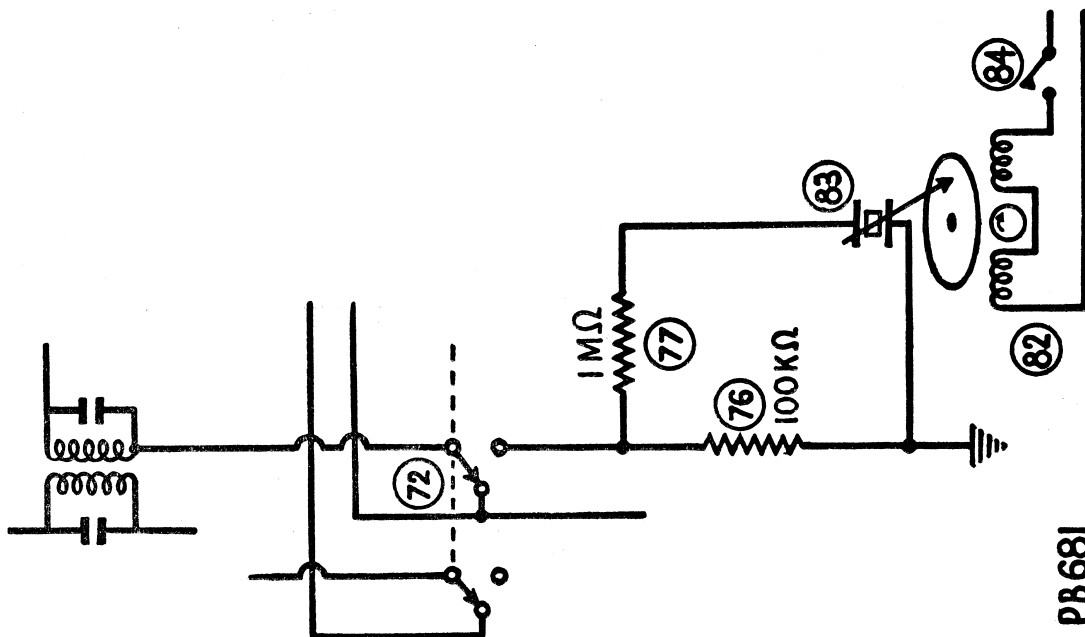
MODEL HQQ 1st PRODUCTION RUN

Model HQQ receivers which have a two position grammo/radio changeover switch and a Collaro 3-speed type 3RC521 record changer with an orthodynamic pick-up head are wired as shown by the circuit drawing on page 4.

The orthodynamic head is a magnetic type with a small switch on top of the head, and has a weight compensation lever type switch on the side of the pick-up arm.

MODEL HQQ 2nd PRODUCTION RUN

Model HQQ receivers which have a two position grammo/radio changeover switch and a Collaro 3-speed type 3RC511 or 3RC521 record changer with two plug-in type crystal cartridge heads are wired according to the circuit diagram on page 4, but the pick-up attenuation circuit is as shown by the diagram below.



MODEL HQQ 3rd PRODUCTION RUN

Model HQQ receivers which have a three position grammo/radio changeover switch and a Collaro 3-speed type 3RC521 record changer with an orthodynamic pick-up head are wired according to the circuit diagram on page 5.

This record changer and pick-up head is the same type which was used on the 1st production run.

The orthodynamic head is a magnetic type with a small switch on the top of the pick-up head and has a weight compensation lever type switch on the side of the pick-up arm.

The function of the 3 position grammo/radio switch on the 3rd production run is as follows:

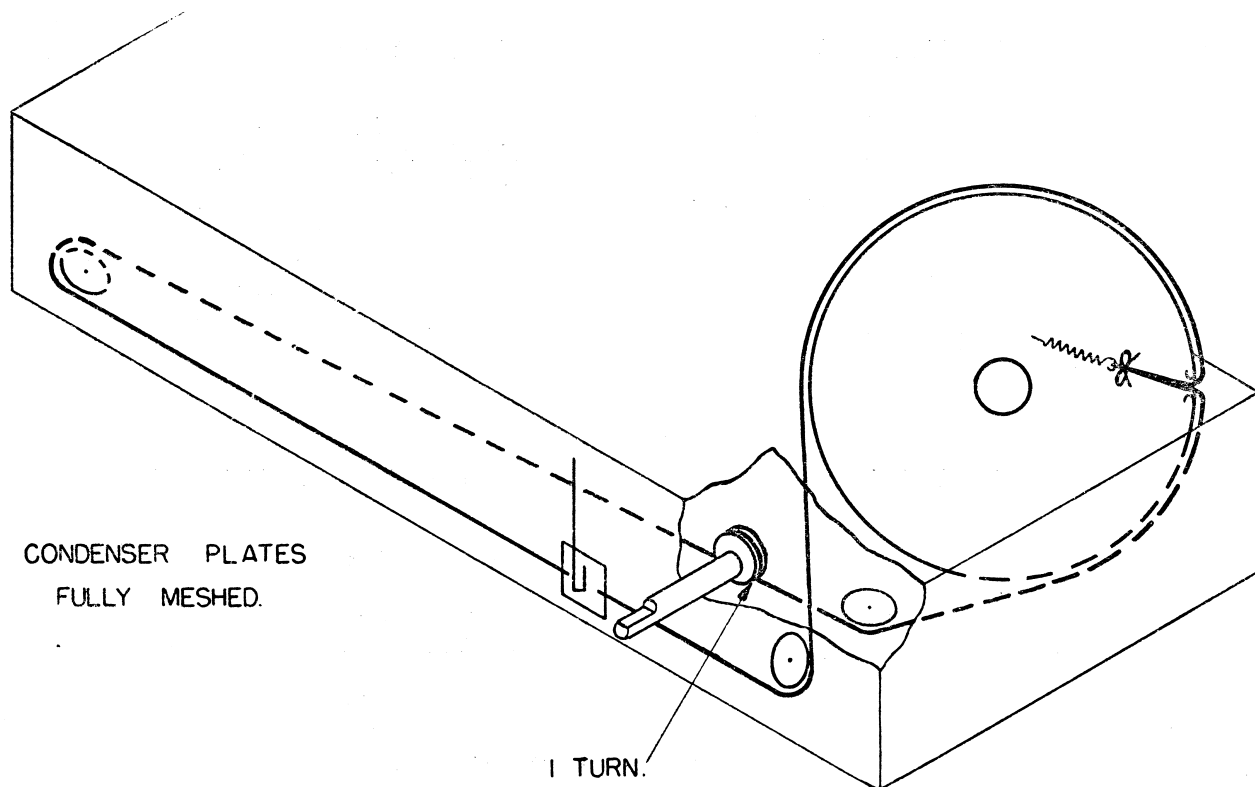
Position 1: Radio operation.

Position 2: Normal grammo operation. This position is used for the majority of records. However, if hum modulation is encountered on some records, turn grammo switch to position 3.

Position 3: Special grammo position providing reduced bass frequencies to eliminate hum modulation.

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.	.0003 MFD Mica Condenser.	10%	1000VT.	PC212
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.	1MMFDD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFDD	1000VT.	PC811
25.	6 MMFD Silvered Mica Condenser.	+1MMFDD-0	1000VT.	PC814
26.	4MMFDD Ceramicon Condenser.	+1MMFDD-0	500V.DCW.	PC830
27.	4 MMFD Ceramicon Condenser.	+1MMFDD-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. }			
32.	16 MFD E'lytic. Cond. Tol.± 20% 525PV. }			
33.	25 MFD E'lytic. Cond. Tol.± 20% 40PV. }			
			Combination type.	PC760
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.	100,000 ohm Carbon Resistor.	10%	½ W.	PR103
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.	200 ohm Wire Wound Resistor.	10%	½ W.	PR176
52.	300 ohm Wire Wound Resistor.	10%	½ W.	PR258
53.	300 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%		PR663
57.	500,000 ohm Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR662

Circuit No.	Description	Tol.±	Rating	Part No.
58.	IF. Transformer.			PT869
59.	IF. Transformer.			PT869
60.	Antenna Trans. B/cast. (iron cored).			PT905
61.	Oscil. Coil B/cast.			PT860
62.	19 Metre Bandsread Coil (blue spot on coil).			PT914
63.	25 Metre Bandsread Coil (white spot on coil).			PT913
64.	31 Metre Bandsread Coil (red spot on coil).			PT912
65.	Speaker Input Trans. 5,000-2 ohms Imped. KBG81			PT799
66.	Choke, 14H, 60 Ma. 520 ohms.			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
71.	8MMFD (Part of antenna coil circuit No. 60).			PC825
72.	Switch-gramo/radio 2 Deck each 3 pole 2 way			PM635
73.	Switch-gramo/radio 2 Deck each 3 pole 3 way			S130
74.	.004 MFD Paper Condenser	20%	600V. DCW	PC221
75.	.5 Megohm Carbon Resistor	10%	½ W.	PR245
76.	100,000 ohm Carbon Resistor	10%	½ W.	PR103
77.	1 Megohm Carbon Resistor	10%	½ W.	PR246
78.	Record Changer: Collaro 3-speed type 3RC521 with orthodynamic head. 200-250V. 50 cycle operation (includes coupling trans. and pick-up head)			M289
	40 cycle Drive Bush			231/524
	Special Grub Screw for drive bush			194/415
79.	Replacement Orthodynamic Head (includes twin needle)			219/524
80.	Coupling Trans.			PT859
	Replacement Twin Needle			M291
81.	Motor ON/OFF Switch - part of record changer			-
82.	Record Changer: Collaro 3-speed type 3RC521 with twin plug-in type crystal cartridge heads 200-250V. 50-cycle operation			M287
	40 cycle Drive Bush			231/524
	Special Grub Screw for drive bush			194/415
83.	Replacement Pick-up head, green spot for 78. RPM recordings			196/524
83.	Replacement Pick-up head, red spot for 45 and 33-1/3 RPM recordings			197/524
84.	Motor ON/OFF Switch part of record changer			-
85.	.00005 MFD Mica Condenser	10%	1000VT	PC141
	This part was added to the last few receivers of the 3rd production run to eliminate oscillation at the L.F. end of the B/cast band.			
86.	8MFD E'lytic. Cond.	20%	525 PV.	PC313
87.	50,000 Ohm Carbon Resistor	10%	1W.	PR115
88.	25,000 Ohm Carbon Resistor	10%	1W.	PR116
89.	.01MFD. Paper Cond.	20%	600V.DCW.	PC140
Valve Shield - 6U7G	PM217	Antenna Terminal		PM306
3-pin Socket	PM532	Dial Reading		21/760
7-pin Socket	A104/58	Dial Reading Clamp		15/760
9-pin Socket	279/250	Dial Drum		A104/698
Cabinet - walnut colour	227/221	Dial Background Assy.		A104/760
Cabinet Handles	299/250	Dial Pointer Assy.		A102/760
Cab. Door Hinges (4)	A101/768	Dial Escutcheon - moulded		202/81
Cab. Speaker Grille	9/760	Screw - 4 - Speaker Mt.		46/560-10
I.F. Trans. Mt.Clip	7/760	Screw - 4 Chassis Mt.		16/560-14
Coil Mt. Clip	6/622	Light Button - red		27/688-1
Knob (4)	167/81	Light Button - clear		27/688-3
Knob - W/C	178/81	Light Button - blue		27/688-4
Knob Retaining Clips	22/755	Light Button - green		27/688-2
Knob G/R. Changeover	4/310-1	Pulley Small		17/87
A.C. Lead Junct. Block	297/250	Pulley Large		13/613



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

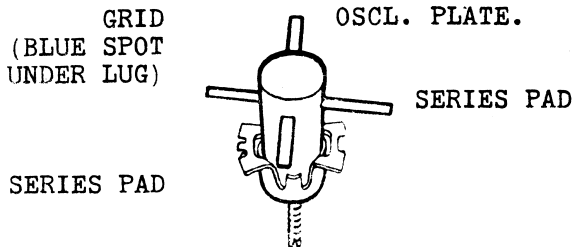
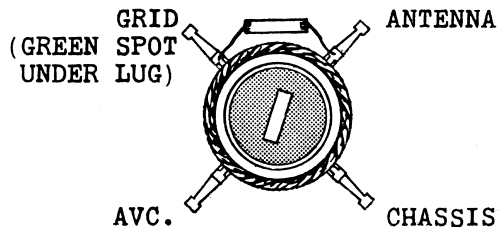
Cord Part No. 7/282.

Tension Spring Part No. 21/698.

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 four push-on type control knobs from front of cabinet and wave change switch knob near record changer by pulling the knobs straight off the spindles. Remove the screws holding the change-over switch bracket to the cabinet. Disconnect the receiver chassis AC. 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 beneath the receiver chassis mount board then slide the chassis out of the cabinet. 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.

OSCL. COIL B/C.**ANTENNA TRANS. B/C. (IRON CORED)****19, 25 AND 31 METRE ANT. TRANS.**

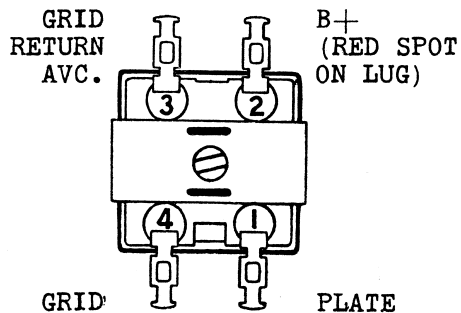
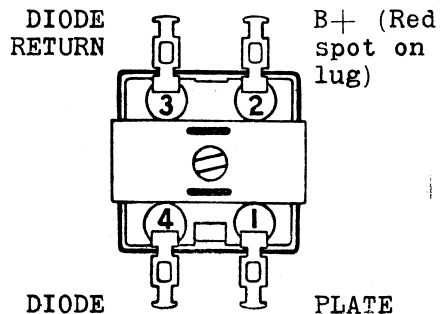
Lead from top lug (iron core end):-
GRID.

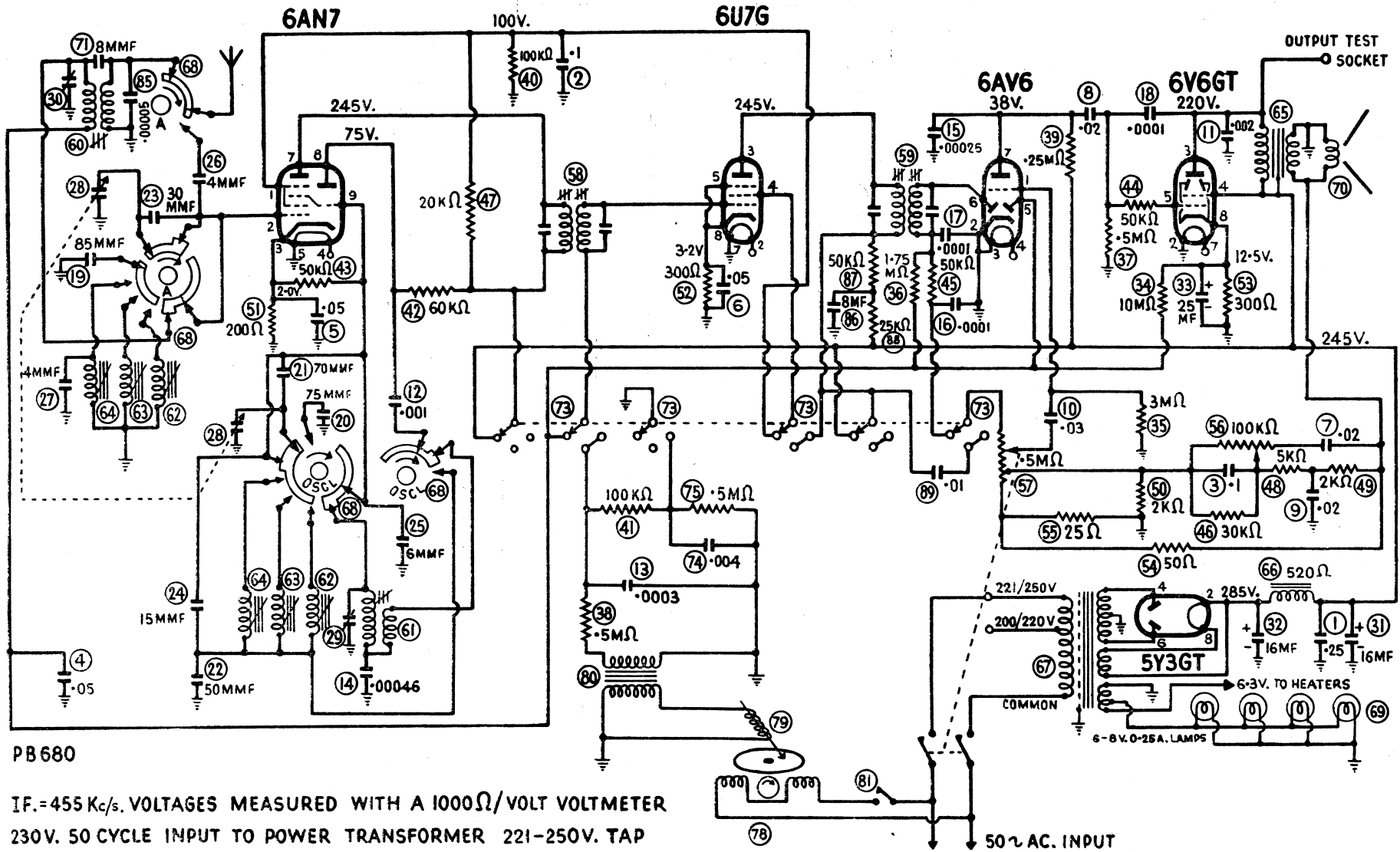
Lead from bottom lug (mounting
end):-CHASSIS - EARTH.

19, 25 AND 31 METRE OSCL. COIL

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

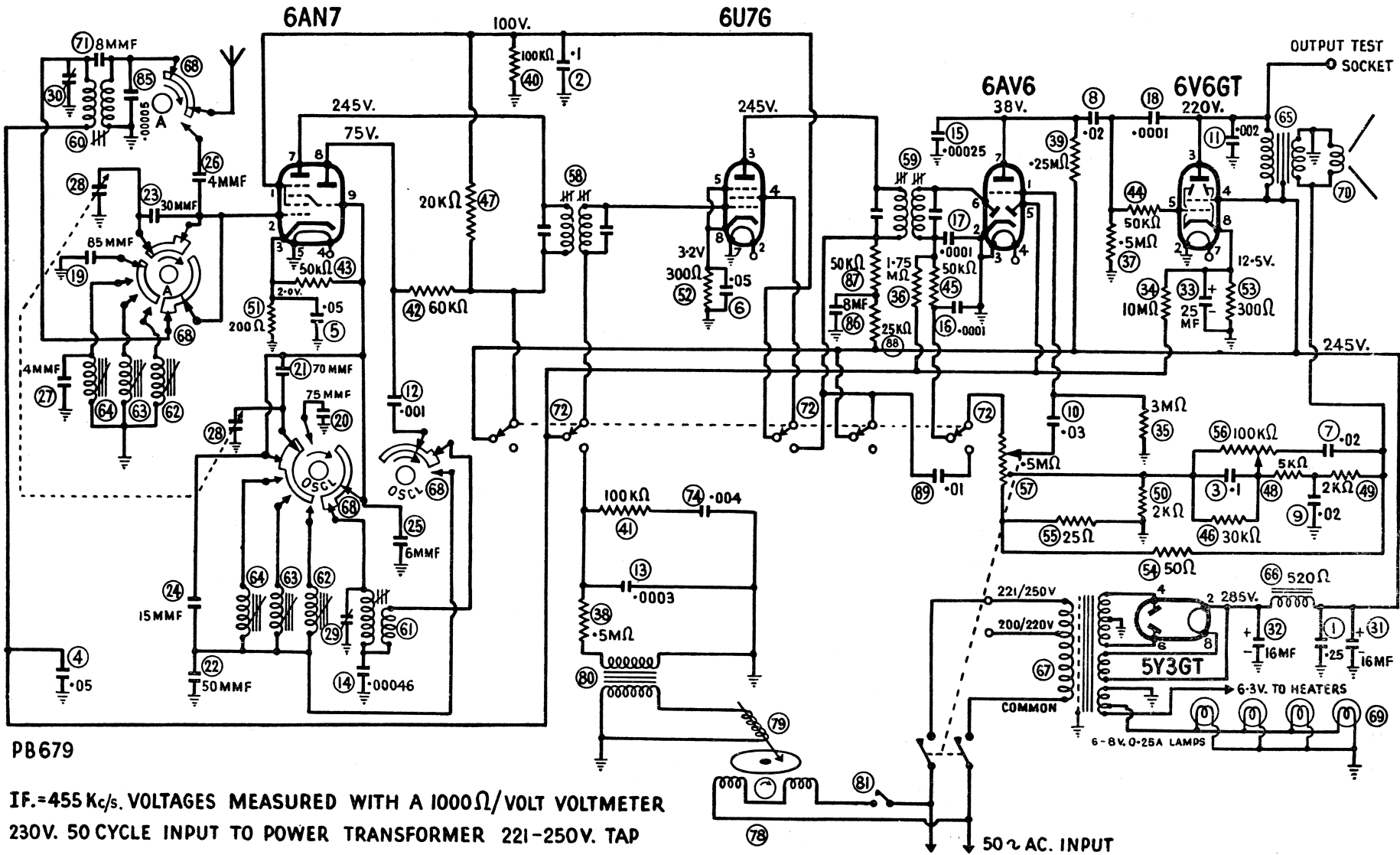
Lead from bottom lug (mounting
end):-OSCL. PLATE.

1st IF. TRANS.**2nd IF. TRANS.**



PB 680

IF.=455 Kc/s. VOLTAGES MEASURED WITH A 1000 Ω /VOLT VOLTMETER
 230V. 50 CYCLE INPUT TO POWER TRANSFORMER 221-250V. TAP
 50~ AC. INPUT



PB 679

IF. = 455 Kc/s. VOLTAGES MEASURED WITH A 1000Ω/VOLT VOLTMETER
 230V. 50 CYCLE INPUT TO POWER TRANSFORMER 221-250V. TAP

50 ~ AC. INPUT